

# Draft Contamination Screening Evaluation Report

## Neptune Road PD&E Study

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Prepared for:



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**EXECUTIVE SUMMARY**

In accordance with the Florida Department of Transportation (FDOT) Project Development and Environment (PD&E) Manual Part 2, Chapter 20 (January 14, 2019), this *Contamination Screening Evaluation* was conducted for the proposed improvement to Neptune Road. The project is located within unincorporated Osceola County and the City of St. Cloud, Florida. An Advance Notification Package was distributed to state and federal agencies on August 31, 2018.

This project involves a 3.9-mile segment of Neptune Road extending from Partin Settlement Road to US 192 in Osceola County. The section east of the St. Cloud canal (Canal C-31) (approximately 1.1 miles in length) is within the City of St. Cloud. From Partin Settlement Road to Old Canoe Creek Road, the proposed project improves the existing 2-lane roadway to a 4-lane, divided roadway with a curbed median, bicycle and pedestrian facilities (i.e., bike lanes and multi-use paths). From Old Canoe Creek Road to US 192, the project widens the existing 2-lane roadway to either 4-lanes or 5-lanes with a multi-use path on the north side and a sidewalk on the south side.

This report presents the findings of the contamination screening evaluation. This report identifies and evaluates known or potential contamination sites, presents recommendations concerning these sites, and discusses possible project impacts or impacts to the proposed project.

A total of 24 sites were assigned Contamination Risk Potential Ratings. A “Low Risk” rating was assigned to 21 of the sites and 3 sites were assigned a rating of “Medium Risk.” The site ratings are summarized for each alignment alternative in the table below.

**Table 5: Alignment Alternative Risk (from Section 8.0, page 29)**

PD&E Considerations	Partin Settlement Road to Old Canoe Creek Road		Old Canoe Creek Road to US 192	
	1 (North)	2 (South)	A (4-Lane)	B (5-Lane)
Potential Contamination Parcels (Low + Medium + High Risk = Total)	6 + 3 + 0 = 9	6 + 3 + 0 = 9	15 + 1 + 0 = 16	15 + 1 + 0 = 16

1 - Widening occurs to the north  
2 – Widening occurs to the south

As shown in the table above, a total of 25 sites are listed for both segments (9 + 16) since one of the sites (the historical Kissimmee-St. Cloud Rail Line) appears in both segments of the project. There does not appear to be a difference in contamination risk between the alternatives for each segment.

A total of 10 stormwater ponds are under consideration to address stormwater management. Due to shallow groundwater levels, it is anticipated that the ponds will be designed as wet detention facilities.

**Table 6: Pond Site Risk Rating** (excerpt from Section 8.0, page 30)

Pond Site No.	Alignment Alternative	Risk Potential
1A	Partin Settlement Road to Old Canoe Creek Road	Medium
1B		Low
2A		Medium
2B		Low
2C		Low
3A		Medium
3B		Low
4A	Old Canoe Creek Road to US 192	Low
4B		Medium
5		Low

Mr. Randy Stafford, FDOT 5 District Contamination Impact Coordinator (DCIC) reviewed this report and the review comments were submitted in a November 25, 2019 email. He recommended that Level II Impact to Construction Assessments (Level II Assessments) be performed as follows:

- Site No. 2, a Chevron gas station on the southeast corner of the Neptune Road and Partin Settlement Road intersection should be evaluated for petroleum concerns,
- The drainage conveyance near the historical railroad alignment in Pond 1A should be sampled for arsenic, and
- The former and current agricultural land uses at Ponds 2A and 4B should be sampled for arsenic, pesticide, and herbicide constituents.

This CSER should be updated during the design phase to determine if additional assessment is warranted due to changes in site conditions, status of the sites identified or project design.

## PROJECT OVERVIEW

### 1.1 INTRODUCTION

In accordance with the Florida Department of Transportation (FDOT) Project Development and Environment (PD&E) Manual Part 2, Chapter 20 (January 14, 2019), this Contamination Screening Evaluation Report (CSER) was conducted to determine potential effects associated with the proposed widening of Neptune Road in Osceola County, Florida. The project is located within unincorporated Osceola County and the City of St. Cloud, Florida. See Location and Project Limits Maps – **Figures 1 and 2**. An Advance Notification Package, dated August 31, 2018, was submitted to the State Clearinghouse, local, state and federal agencies and the federally recognized tribes for comment on the proposed project.

The purpose of this report is to present the findings of the contamination screening evaluation. This report identifies and evaluates known or potential contamination sites, presents recommendations concerning these sites and discusses possible impacts to the proposed project.

### 1.2 PROJECT DESCRIPTION

This project involves a 3.9-mile segment of Neptune Road extending from Partin Settlement Road to US 192 in Osceola County. The section east of the St. Cloud canal (Canal C-31) (approximately 1.1 miles in length) is within the City of St. Cloud. From Partin Settlement Road to Old Canoe Creek Road, the proposed project improves the existing 2-lane roadway to a 4-lane, divided roadway with a curbed median, with bicycle and pedestrian facilities (i.e., bike lanes and multiuse paths). From Old Canoe Creek Road to US 192, the project widens the existing 2-lane roadway to either 4-lanes or 5-lanes with a multiuse path on the north side and a sidewalk on the south side. Bridge structures are to be replaced and stormwater management ponds will be constructed. **Figure 1** illustrates the project location and **Figure 2** shows the project limits.

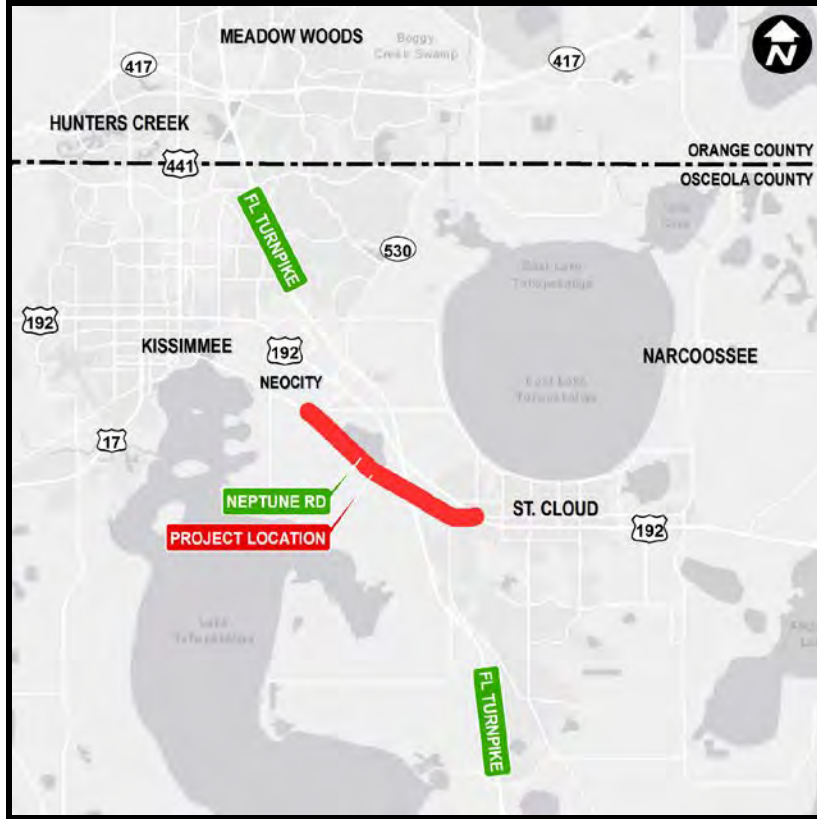


Figure 1: Project Location

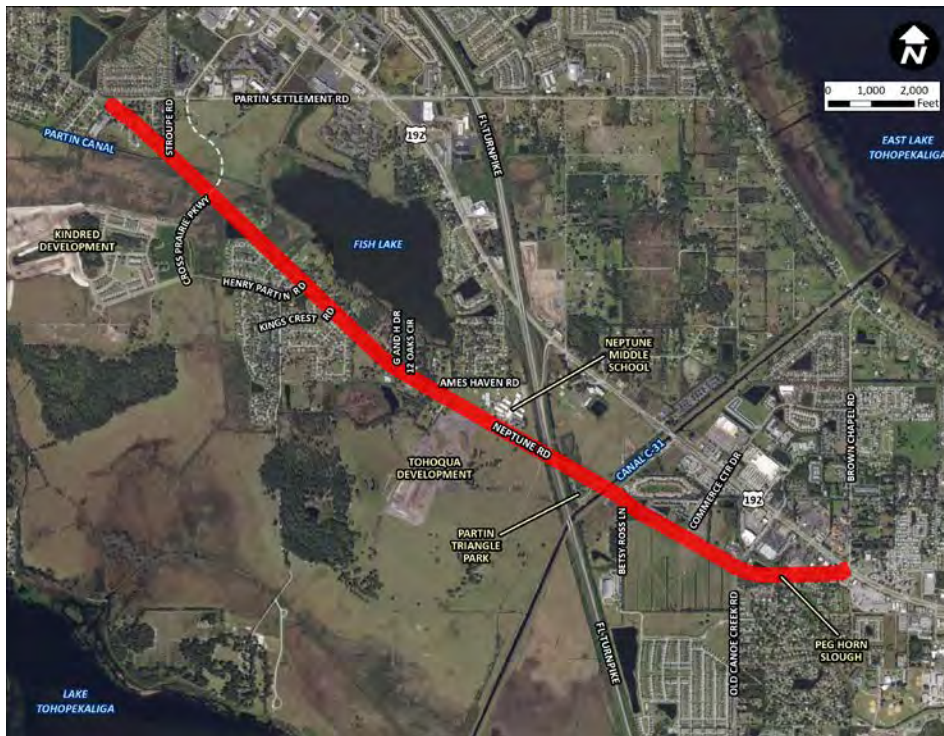


Figure 2: Project Limits



### **1.3 PURPOSE AND NEED**

The primary purpose of improving Neptune Road is to enhance mobility from US 192 and St. Cloud to Downtown Kissimmee, improve access to NeoCity, and improve overall traffic operations of the existing highway network within the project study area. The secondary objectives are to provide transportation infrastructure to support economic growth, provide consistency with local plans and policies, and enhance safety.

The need for the project is to provide system linkage, provide additional capacity, address transportation demand, meet social and economic needs, provide improved modal interrelationships, improve safety and achieve consistency with transportation plans.

#### System Linkage

Neptune Road is classified as an Urban Minor Arterial from Downtown Kissimmee (west of Partin Settlement Road) to Old Canoe Creek Road and an Urban Major Collector from Old Canoe Creek Road to US 192 (which is an urban Principal Arterial-Other). In 2009, the portion of Neptune Road north of Partin Settlement Road was widened to 4-lanes with a grass median, bicycle lanes, a sidewalk on the east side of the road and a multi-use trail (Neptune Road Pathway) on the west side of the road. The proposed improvement will extend the multi-modal typical section further east to Old Canoe Creek Road and improve the roadway and pedestrian connect to US 192, thereby creating improved system linkage.

#### Capacity

The 2017 annual average daily traffic (AADT) volume on Neptune Road, between Partin Settlement and Old Canoe Creek Road, was 18,100 resulting in a volume to capacity (V/C) ratio of 1.02. This overcapacity condition produces level of service (LOS) F operating conditions. The proposed improvement would result in a V/C ratio of 0.45 (considering the 2017 AADT) and LOS C.

#### Transportation Demand

Osceola County is the second fastest growing county in Florida. Based on the Bureau of Economic and Business Research (BEBR) estimates, the County's 2017 population of 337,614 is expected to increase to 649,800 by 2045 (the medium projection), representing an increase of 92 percent. In addition, two major developments are currently being constructed (Kindred and Tohoqua) which will add approximately 6,800 residential dwelling units with access to this portion of Neptune Road. These developments are part of the County's East of Lake Toho Conceptual Master Plan which will ultimately include up to 33,400 dwelling units, approximately two million square feet of commercial development and approximately three million square feet of office space.

#### Social and Economic Needs

Neptune Road provides access between downtown Kissimmee and downtown St. Cloud and serves NeoCity and the Neptune Middle School. Neo City is a 500-acre technology district established by Osceola County, located between Neptune Road and US 192, just north of Partin Settlement Road. It also provides recreational use along the Neptune Road Pathway. The proposed improvement will

provide improved access to these uses, thereby enhancing economic growth and access to the middle school.

#### Modal Interrelationships

The proposed improvement will include enhancing the Neptune Road Pathway and adding bicycle lanes and sidewalks. Recognizing the rapid advancement of automated vehicles, strategies to support automated vehicles and automated transit will be considered and incorporated into the improvement where appropriate.

#### Safety

The proposed divided roadway will replace the existing undivided roadway, resulting in improved safety conditions by reducing the potential for head-on collisions.

#### Consistency with Transportation Plans

The need for improving this portion of Neptune Road was identified in the County's comprehensive plan and the MetroPlan Orlando Cost Feasible 2040 Long Range Transportation Plan (LRTP). Table 10 of Technical Report 3: Plan Development & Cost Feasible Projects, adopted by MetroPlan Orlando January 2016 and updated June 2017, includes three segments which together make up the proposed project:

- Neptune Road, from Partin Settlement Road to Henry Partin Road, widen to 4 Lanes
- Neptune Road, from Henry Partin Road to Old Canoe Creek Road, widen to 4 Lanes
- Neptune Road, from Old Canoe Creek Road to US 192, widen to 4 Lanes

MetroPlan Orlando's FY 2017/18-2021/22 Transportation Improvement Program (TIP) includes three segments which together make up the proposed project:

- Neptune Road Phase II (Project No. 92071), from Partin Settlement Road to Neptune Middle School Eastern Driveway, widen to 4 Lanes
- Neptune Road Phase III (Project No. 92072), from Neptune Middle School Eastern Driveway to Old Canoe Creek Road, widen to 4 Lanes
- Neptune Road Phase IV (Project No. 92097), from Old Canoe Creek Road to US 192, widen to 4 Lanes

The three segments are identified as locally funded by Osceola County for preliminary engineering (PE) in 2018/2019, and right-of-way (ROW) and construction (CST) in 2021/2022.

## **2.0 ALTERNATIVES ANALYSIS**

### **2.1 NO-BUILD ALTERNATIVE**

The No-Build Alternative is an option where the proposed project activity (i.e., widening Neptune Road) would not take place. The No-Build Alternative provides the baseline for establishing environmental impacts of the build alternatives.

## **2.2 TRANSPORTATION SYSTEM MANAGEMENT AND OPERATIONS ALTERNATIVE**

A Transportation System Management and Operations (TSM&O) Alternative generally provides short-term improvements that extend the service life of the facility. TSM&O Alternatives include activities and strategies designed to optimize the performance and utilization of the existing infrastructure through implementation of systems, services, and projects to preserve the capacity and improve the security, safety, and reliability of the transportation system. Example TSM&O strategies include upgrades or additions to the existing facility, such as arterial traffic management systems, traffic incident management, work zone traffic management, road weather management, traveler information services, congestion pricing, parking management, traffic control, commercial vehicle operations, transit priority signals systems, and freight management.

The No-Build Alternative already includes providing the maximum number of lanes (through and turn lanes) at the signalized intersections; therefore, the existing intersections have already been optimized and the analysis of No-Build conditions is representative of a TSM&O Alternative. Additional through lanes will need to be added to provide the needed capacity and transportation demand identified in the purpose and need for the project. Therefore, no TSM&O Alternative was considered.

## **2.3 MULTIMODAL ALTERNATIVES**

All build alternatives include provisions for bicycles, pedestrians and automobiles. Transit is not currently provided along Neptune Road and it is not planned to be provided. Transit (bus) is provided along US 192 which runs parallel to Neptune Road.

## **2.4 BUILD ALTERNATIVES**

The concept alternatives under consideration are described in the following sections. Typical sections and concept plans for the alternatives are included in **Appendix A**.

### **2.4.1 Partin Settlement Road to Old Canoe Creek Road**

#### **2.4.1.1 Alternative 1**

From Partin Settlement Road to Old Canoe Creek Road, Alternative 1 includes a 4-lane divided roadway (with 11-foot lanes), a 22-foot raised median, 4-foot bicycle lanes in each direction, curb and gutter, a 10-foot planting strip (varies due to existing power transmission pole locations) on both sides, 12-foot multiuse path on both sides, and a 4-foot clear area adjacent to each multiuse path. This typical section will require +/- 140 feet of right-of-way (depending on the location of the existing power transmission poles). The posted speed limit for this section will be 45 MPH.

From Partin Settlement Road to west of G and H Drive, the additional right of way for Alternative 1 will be acquired primarily on the north side of the existing roadway. From G and H Drive to Canal C-31, additional right of way will be acquired from both the north and south sides of the road to avoid

relocating KUA power transmission poles. From Canal C-31 to Old Canoe Creek Road, the additional right of way will be acquired primarily on the south side of the existing roadway.

#### **2.4.1.2 Alternative 2**

The typical section for Alternative 2 is basically the same as for Alternative 1, with the difference being that Alternative 2 includes relocating power transmission poles from the south side of Neptune Road to the north side of Neptune Road, from Partin Settlement Road to just west of G and H Drive.

From Partin Settlement Road to Old Canoe Creek Road, Alternative 2 includes a 4-lane divided roadway (with 11-foot lanes), a 22-foot raised median, 4-foot bicycle lanes in each direction, curb and gutter, a 10-foot planting strip on both sides, 12-foot multiuse path on both sides, and a 4-foot clear area adjacent to each multiuse path. The existing power transmission poles will be relocated to the north side of the shared use path within a 9-foot envelope. This typical section will require 139 feet of right-of-way. The posted speed limit for this alternative will be 45 MPH.

From Partin Settlement Road to west of G and H Drive, the additional right of way for Alternative 2 will be acquired primarily on the south side of the existing roadway. From G and H Drive to Canal C-31, additional right of way will be acquired from both the north and south sides of the road to avoid relocating power transmission poles. From Canal C-31 to Old Canoe Creek Road, the additional right of way will be acquired primarily on the south side of the existing roadway.

#### **2.4.2 Old Canoe Creek Road to US 192**

##### **2.4.2.1 Alternative A**

From Old Canoe Creek Road to US 192, Alternative A includes a 4-lane undivided roadway (with 10-foot lanes), curb and gutter, a 10-foot planting strip on both sides (where possible within the existing right-of-way), a nine to 10-foot multiuse path with a 4-foot clear area (where possible within the existing right-of-way) on the north side, and a 6-foot sidewalk on the south side. This typical section will require between 60 and 82 feet and is anticipated to be constructed within the existing right-of-way. The posted speed limit for this alternative will be 35 MPH.

From Old Canoe Creek Road to US 192, no additional right of way is anticipated to be acquired for Alternative 1.

##### **2.4.2.2 Alternative B**

Whereas Alternative A includes improving this segment without acquiring additional right-of-way; Alternative B includes providing a two-way center turn lane which will require additional right-of-way.

From Old Canoe Creek Road to US 192, Alternative B includes a 5-lane roadway (with 10-foot travel lanes and an 11-foot two-way left turn lane), curb and gutter, a 10-foot planting strip on both sides

(where possible within existing right-of-way), a nine to 10-foot multiuse path with a 4-foot clear area (where possible within existing right-of-way) on the north side, and a 6-foot sidewalk on the south side. This typical section will require between 70 and 95 feet. The posted speed limit for this alternative will be 35 MPH.

From Old Canoe Creek Road to US 192, the additional right of way for Alternative B will be acquired primarily on the north side of the existing roadway.

### **3.0 LAND USE**

The following section discusses the historical and future land uses within the project corridor.

#### **3.1 HISTORICAL LAND USE**

Historical land uses were identified from a series of documents including a radius report and Sanborn Fire Insurance Map report provided by Environmental Data Resources (EDR) in **Appendix B** and **Appendix C**, respectively. The following is a discussion of the historical use of the project corridor.

##### **3.1.1 Historical Aerial Photographs**

Historical aerial photographs of the study area were reviewed to evaluate past land use and to identify features that may indicate hazardous material or petroleum contamination. Available historical aerial photographs of the study area were accessed from Google Earth, the Florida Department of Transportation, and the University of Florida websites. Aerial photographs for the following years were reviewed: 1944, 1951, 1971, 1982, 1994, 1999, 2003, 2008, 2013, and 2018. Aerial photographs are included as **Appendix D**.

###### **1944-1951**

- Neptune Road (CR 525), Partin Settlement Road, and US 192 are visible at this time.
- An historical rail alignment is visible in the 1944 aerial photograph.
- A few residential buildings are visible along both sides of Neptune Road.
- The study area consists predominantly of cattle pastures and range land.
- A large sod farm is visible on the west side of Neptune Road, south of Fish Lake.
- A citrus grove is visible on the west side of Neptune Road, south of Fish Lake.
- A citrus grove is visible on the north and south sides of Neptune Road, between the St. Cloud Canal and Old Canoe Creek Road.
- A citrus grove is visible on the north side of Neptune Road, within the northwest quadrant of the Neptune Road and US 192 intersection.
- An apparent commercial building is visible on the southwest corner of the Neptune Road and US 192 intersection.

1971

- Florida's Turnpike (SR 91) is visible crossing Neptune Road in the central portion of the alignment near Canal C-31.
- Additional residential properties are visible on the southwest quadrant of the Partin Settlement Road and Neptune Road intersection.
- The citrus grove on the west side of Neptune Road, south of Fish Lake has increased in size.
- The citrus grove on Neptune Road between the Canal C-31 and Old Canoe Creek Road has increased in size south of Neptune Road. Pond 4B is located in this area of citrus groves.
- A gas station is visible on the south side of US 192, southeast of the Neptune Road and US 192 intersection.
- Additional residential and commercial buildings are visible along both sides of Neptune Road.
- A canal is being excavated across Neptune Road about 1,200 feet west of US 192. This canal falls within Pond 5.
- A cattle watering pond has been excavated in Pond 2A.

1982

- A gas station is visible on the southeast corner of the Neptune Road and Partin Settlement Road intersection.
- A park with associated pavement areas is visible on the south side of Neptune Road, just west of Canal C-31.
- A commercial plaza is visible on the south side of US 192, southeast of the Neptune Road and US 192 intersection.
- A commercial building has been constructed in the citrus grove within the northwest quadrant of the Neptune Road and US 192 intersection.
- Additional residential and commercial buildings are visible along Neptune Road and on the north side of US 192.
- The southern third of Pond 1A has been excavated into a pond or borrow pit.

1994

- The large sod farm on the west side of Neptune Road, south of Fish Lake has been partially developed with a residential community.
- The cattle watering pond in Pond 2A has been backfilled and a larger pond excavated.
- A cattle pen and a small citrus grove have been placed on Pond 2A.
- An apparent agricultural operation is visible immediately east of Pond 2A.
- The citrus grove on the west side of Neptune Road, south of Fish Lake has been developed into a residential community.
- Neptune Middle School is visible on the north side of Neptune Road west of SR 91.
- An apparent borrow pit is visible on the north side of Neptune Road, just east of SR 91.

- Canoe Creek Road has been extended to the north from Neptune Road to meet US 192.
- A commercial plaza has been constructed on the north side of Neptune Road, between Old Canoe Creek Road and US 192.
- Additional residential and commercial buildings are visible along Neptune Road and the north side of US 192.

1999 - 2003

- A cell tower has been constructed on the south side of Neptune Road, just east of Canal C-31.
- The St. Cloud Police Department building has been constructed on the northeast corner of the Neptune Road and Old Canoe Creek Road intersection.

2008

- A residential community is visible on the northeast corner of Neptune Road and Partin Settlement Road.
- Neptune Elementary School is visible south of Neptune Road east of Canal C-31.
- The citrus grove between Canal C-31 and Old Canoe Creek Road has been partially developed on the north side of Neptune Road with a multi-family residential community.
- A commercial plaza has been constructed north of Neptune Road on the west side Old Canoe Creek Road.
- A stormwater pond has been excavated south of and adjacent to Pond 4A.

2013-2018

- No obvious changes are noted from earlier aerial photograph findings.

The historical aerial photographs are provided in **Appendix D**. Site details identified in the historical aerial photographs are included in the Potential Contamination Site Descriptions in **Appendix E**.

### **3.1.2 City Directories**

City Directories are historical listings of businesses and residences in a given area, similar to a standard telephone book. The site occupant and addresses listed for previous years can identify past land uses. We contracted with Environmental Data Resources (EDR) to provide a city directory review for the study area. EDR researched city directories from 1971 through 2014 at approximately 5-year intervals.

The **City Directory Table** in **Appendix F** summarizes the historical city directory listings that correspond with potential contamination sites within the study area. The city directory review did not reveal any gas stations or other commercial/industrial land uses that were not found in the site reconnaissance or environmental database searches. The EDR City Directory Report is included in **Appendix F**. The city

directory review confirmed the locations of gas stations identified during site reconnaissance and environmental database searches.

### **3.1.3 Fire Insurance Maps**

Fire insurance maps are used by insurance companies in assessing fire risk. These maps contain details about building construction, business type, building contents, fuel storage tanks, and other factors affecting fire risk.

Historical fire insurance maps were not available for the study area. The EDR Sanborn Fire Insurance Map report is included in **Appendix C**.

### **3.1.4 USGS Quadrangle Map**

The study area has been transposed on the United States Geological Survey (USGS) St. Cloud North and St. Cloud South Quadrangle maps for this area as shown on **Figure 3**. The USGS Quadrangle maps indicate that the topography within the study area ranges from +55 to +75 feet above the National Geodetic Vertical Datum (NGVD). The highest elevation (+75 feet NGVD) is located within a former citrus grove south of Fish Lake.

No landfills, borrow pits, or quarries are depicted that would represent potential contamination concerns on, or in the immediate vicinity of, the study area.

### **3.1.5 Historical Quadrangle Maps**

We reviewed historical quadrangle maps at the [www.Historicaerials.com](http://www.Historicaerials.com) website. The maps for 1954, 1966, 1972, 1976, 1981, 1987, 2012, and 2015 were reviewed.

- Neptune Road (CR 525) is visible extending from US 192 to Partin Settlement Road in the 1954 through 2015 maps.
- Partin Settlement Road is visible in the 1954 through 1987 maps as ending at Neptune Road. It extends to US 192 in the 2012 and 2015 maps.
- Old Canoe Creek Road is visible in the 1954 through 2015 maps.
- US 192 (13<sup>th</sup> Street) is visible in the 1954 through 2015 maps.
- Fish Lake and Canal C-31 are visible in the 1954 through 2015 maps.
- SR 91 (Turnpike) is visible in the 1972 through 2015 maps.

The historical quadrangle maps do not depict landfills, quarries, or other conditions are depicted that would represent potential contamination concerns on, or in the immediate vicinity of, the study area.



### 3.2 EXISTING AND FUTURE LAND USE

#### *Existing Land Use*

Existing land use within the study area was determined through the interpretation of 1" = 100' scale aerial photography, review of land cover GIS data from SFWMD and field reconnaissance. Existing land use was mapped based on the Florida Land Use, Cover and Forms Classification System (FLUCFCS) (FDOT, 1999) for the study area and is depicted in **Figure 4**.

#### *Future Land Use*

Future land use (FLU) was determined based on a review of GIS data from Osceola County. FLU for the study area is depicted on **Figure 5**. The study area is partially developed with residential and commercial land uses. However, there are some agriculture land uses still remaining within the study area. The FLU shows these agriculture areas as either mixed use or low density residential. The population in Osceola County, specifically in Kissimmee and surrounding communities, is expected to grow which is indicative on the FLU maps. The proposed improvements along Neptune Road will help support this population growth and change in land uses.

#### *Habitat and Vegetative Cover*

Land covers within the study area have been assigned habitat classifications per the FLUCFCS. The study area contains twenty-one land cover classes. A FLUCFCS map is included (see **Figure 4**), and a description by FLUCFCS type, and calculated total acreages are provided in **Table 1**.

TABLE 1 SUMMARY OF LAND COVER/LAND USE WITHIN THE STUDY AREA			
FLUCFCS Code	FLUCFCS Type	Description	Acres
111	Fixed single family units, low density	This land use consists of low density, rural single family residences within the study area.	5.2
121	Fixed single family units, medium density	This land use type consists of medium density, single family residences; this category encompasses the majority of the residential land use within the study area.	111.4
132	Mobile home units	This land use consists of G & H Mobile Home Park, located between Neptune Road and Fish Lake within the study area.	2.6
133	Multiple dwelling units, low rise	This land use consists of apartment buildings and duplexes. Within the study area, this land use is scattered between Florida's Turnpike and US-192.	21.4
139	High density under construction	This land use consists of Tohoqua, a residential community which is which is currently under construction. This site is located on the south side of Neptune Road, facing Neptune Middle School.	14.7
141	Retail sales and services	This land use consists of several shopping centers within the study area, with most being located between Old Canoe Creek Road and US-192.	29.2
171	Educational facilities	This land use designation is for Neptune Middle School, located north of Neptune Road and adjacent to the west of Florida's Turnpike	15.5
172	Religious	This land use encompasses various churches and associated facilities, such as religious schools and organizations.	12.1

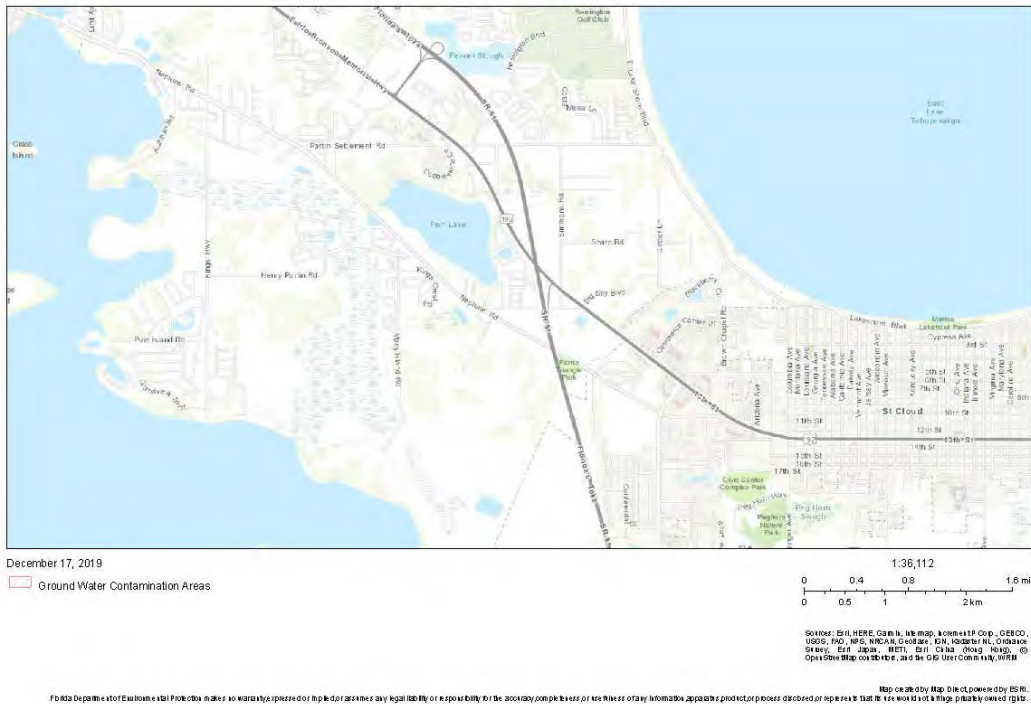
**TABLE 1 SUMMARY OF LAND COVER/LAND USE WITHIN THE STUDY AREA**

FLUCFCS Code	FLUCFCS Type	Description	Acres
175	Governmental	This land use consists of a St. Cloud Police Department station at the corner of Old Canoe Creek Road and Neptune Road.	4.4
185	Parks and zoos	This category includes two Osceola County parks located within the study area, Partin Triangle Park and Neptune Middle School Sports Fields.	15.3
190	Open land	This land use consists of undeveloped, inactive areas within the study area with no structures or indication of intended use.	3.9
211	Improved pastures	This land use consists of open prairie that has been mowed and maintained with brush control and fertilizer, with evidence of utilization by cattle. Vegetation observed was predominated by bahia grass ( <i>Paspalum notatum</i> ), with scattered cogon grass ( <i>Imperata cylindrica</i> ) and cabbage palms ( <i>Sabal palmetto</i> ).	53.9
245	Floriculture	This land use consists of areas dedicated to the cultivation of decorative flowering plants. Within the study area, this consists of the Tom Ritter Orchids nursery.	2.2
261	Fallow crop land	This land use type consists of harvested, inactive agricultural fields within the study area.	30.4
434	Hardwood-conifer mixed	This land use consists of various upland forested areas scattered along Florida's Turnpike and Neptune Road. Canopy vegetation included live oak ( <i>Quercus virginiana</i> ) and slash pine ( <i>Pinus elliotti</i> ). Other vegetation observed includes Brazilian pepper ( <i>Schinus terebinthifolius</i> ), cabbage palms, and beggarticks ( <i>Bidens spp.</i> ).	17.8
510	Streams and waterways	This category includes various drainage features that run through the study area, such as roadside ditches and South Florida Water Management District (SFWMD) canals. Vegetation observed along the banks of these ditches included cattail ( <i>Typha spp.</i> ), pickerelweed ( <i>Pontederia cordata</i> ), and torpedograss ( <i>Panicum repens</i> ).	10.1
534	Reservoirs less than 10 acres	This category includes stormwater retention areas serving various developments along Neptune Road. Vegetation observed included cattail and St. Augustine grass ( <i>Stenotaphrum secundatum</i> ).	8.1
617	Mixed wetland hardwoods	This forested wetland community is scattered about the study area, but with similar species composition and hydrology. The canopy observed included bald cypress ( <i>Taxodium distichum</i> ) and red maple ( <i>Acer rubrum</i> ), with a scattered shrub layer consisting of Brazilian pepper ( <i>Schinus terebinthifolius</i> ), Carolina willow ( <i>Salix caroliniana</i> ) and elderberry ( <i>Sambucus canadensis</i> ). The herb stratum includes Virginia chainfern ( <i>Woodwardia virginica</i> ) and marsh fern ( <i>Thelypteris palustris</i> ).	18.5
641	Freshwater marshes	This herbaceous wetland community is scattered about the study area, but with similar species composition and hydrology. Vegetation observed included sofrush ( <i>Juncus spp.</i> ), maidencane ( <i>Panicum hemitomon</i> ), primrose willow ( <i>Ludwigia peruviana</i> ), elderberry, saltbush ( <i>Baccharis hamifolia</i> ), and scattered red maple.	26.8
643	Wet prairies	This herbaceous wetland community is located between the Fish Lake canal and Neptune Road. These areas were historically used as cattle pasture. Vegetation observed included maidencane, sofrush, torpedograss ( <i>Panicum repens</i> ), arrowhead ( <i>Sagittaria lancifolia</i> ).	10.8
814	Roads and highways	This land use consists of roads and associated right-of-way that are located throughout the study area.	80.1
<b>Grand Total</b>			<b>494.4</b>
<p>1. Land cover and land uses based on the Florida Land Use, Cover and Forms Classification System (FLUCFCS). Acreage is based on the 500-foot study area boundary.</p> <p>2. Data compiled by Kimley-Horn and Associates, Inc. 2019</p>			

### 3.2.1 EDB Delineated Areas

The Florida Legislature required the FDEP to implement the Delineated Areas Program in 1988 under Chapter 62-524, FAC. The purpose of the program was to protect public health and groundwater resources by regulating potable water well construction and testing standards for areas of known groundwater contamination. During the period 1962 to 1980, the Florida Department of Agriculture and Consumer Services (FDACS) conducted widespread applications of ethylene dibromide (EDB), an agricultural pesticide, to control nematodes in citrus groves. In 1983, the FDEP began testing groundwater in potable wells throughout Florida due to the discovery of EDB in wells in other states. The delineated areas of EDB groundwater contamination are shown on the FDEP Map Direct website. The potable wells, agricultural or residential, with confirmed impacts were shown on the website with a 1,000-foot buffer zone in an attempt to project future migration of contaminants. However, this does not mean that there is not EDB contamination outside of that 1,000-foot zone.

Figure 6.  
EDB Delineated Area Map



After reviewing these EDB-delineated areas on the FDEP Map Direct website, in the vicinity of the study area, we found no EDB delineated areas appear within the study area.

### 3.2.2 Agricultural Land Use

Citrus groves, plant nurseries, and agricultural fields were present within the study area in historical aerial photographs. Agricultural features include vegetation planted in rows, striated fields (row crops), barns and sheds, irrigation wells, well pumps, pump houses, and spray tank filling stations.

Trees, plants, and crops are cultivated in rows. This is a typical signature of an agricultural property. Citrus groves, plants in nurseries, and agricultural crops such as melon cultivation are common agricultural land uses.

Irrigation wells, well pumps, and spray tank filling stations are commonly found associated with agricultural properties. The irrigation wells are often connected to a pump and irrigation system. Irrigation systems can include metal, plastic and historically, transite (asbestos), irrigation lines that run from the well to water the planted vegetation. Some irrigation systems have fertilizer and chemical tanks that are interconnected with the irrigation system, allowing the crops to be fertilized or treated with agricultural chemicals using the irrigation system. Many farms spot-spray Round-Up, an herbicide for unwanted weeds and vegetation.

Irrigation pumps are commonly found inside small buildings or “pump houses”. Irrigation pumps can be electrical or fuel powered. The pumps that are powered by electricity often have an associated electrical transformer and the pumps powered by fuel (often diesel fuel) have an associated fuel tank. Fuel powered pumps are typically larger and require more maintenance such as changing of oil and greasing or lubricating moving parts. Historically, some farmers would drain the used-oil to the ground as opposed to collecting and recycling the used-oil.

Some properties also have filling pipes for spray tanks that can be on trucks, tractors, or trailers. The filling pipe is sometimes a garden hose; however, a gallows-like pipe in an inverted “L” shape with a downspout is common. Pesticides and herbicides are added to the tanks and the tanks filled with water for application to the plants. Chemicals can be spilled and tanks can be allowed to overflow. In some instances, stagnant fluids remaining in the tanks are discharged at the filling location.

Barns and pole barns are used for equipment and material storage. Often the farms have tractors, water tank trucks or trailers, and various spray equipment. Chemicals that may be stored for farm use include pesticides, herbicides, tractor and truck fuel, oil, and fertilizers. Some farms have a maintenance barn where vehicle repair and maintenance is performed. Some of these facilities had aboveground or underground fuel tanks for fueling various farm equipment.

Historically many citrus groves, vineyards, and plant nurseries would heat the groves when temperatures dropped in the winter, to protect the crops from frost or freeze. The most commonly used heater was the smudge pot. A smudge pot would be used to burn diesel fuel, oil, waste oil, kerosene or other flammable liquids. Some farmers would burn old tires in them or on the ground. Other farmers had fuel-powered pole-mounted fans to create a breeze that would theoretically keep frost from forming.

Some farms also have dumping areas; these can be in surface piles or excavated holes in the ground, such as side-slopes of hills. Common types of dumped objects include agricultural chemical containers,

tires, irrigation piping, plant pots, plant or tree cuttings, and various broken farming equipment. Some farms have on-site landfills or dumps where farm and house-related debris has been buried.

Agricultural contamination can include pesticides, herbicides, petroleum, and other impacts. Pesticide and herbicide impacts can be residual amounts from routine spraying, from spills, or from areas where it was stored. Petroleum impacts can be from fueling spills, overfilling fuel tanks, vehicles, or smudge pots, and discharges from rusted tanks and smudge pots. Other impacts could be from electrical transformers (PCB), discharging used-oil to the ground during pump or vehicle maintenance and repairs, or burning old tires on the ground to heat an area during a cold spell.

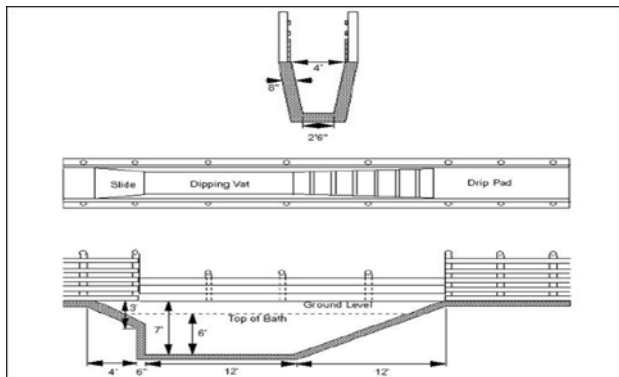
Although there were no obvious signs of environmental impacts observed during the site reconnaissance, residual impacts to the soil or groundwater could exist based on the aforementioned potential use of contaminants of concern in agricultural operations.

### 3.2.3 Railroad Corridors

The Kissimmee to St. Cloud Rail Line was constructed along the Neptune Road alignment in 1888. The rail line extended along the south side of Neptune Road west of Canal C-31 and along the north side of Neptune Road east of Canal C-31. This rail line is discussed as Site No. 24 in **Appendix E**.

### 3.2.4 Cattle Dip Vats

Cattle dip vats were a response to cattle tick fever in the 1890s. The United States Department of Agriculture (USDA) initiated the cattle dip vat program in 1906 and approximately 3,200 cattle dip vats had been constructed by 1940.



Cattle dip vats were used until the 1960s and many vats have not been located, or documented. Cattle dip vats were used to apply pesticides to cattle and other livestock, kill ticks, and thereby eliminate tick-borne diseases. The vats were typically constructed of concrete. They consisted of four sections; the entrance slide, dipping vat, exit stairs and drip pad. Cattle were funneled into a chute leading to the entrance slide, then slide down into the pesticide-filled vat, swim or walk

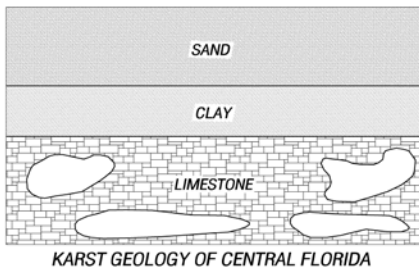
across the vat and walk up the exit stairs to the drip pad. The vats were roughly four feet wide, seven feet deep, and 40 feet long as shown on the included diagram.

Due to the relatively small size of the vat and the narrow profile, it is difficult to identify a cattle dip vat from aerial photographs, or in a wooded area. Cattle dip vats are typically identified when the land owner reveals the location, when they are located near historical cattle pens and chutes, and by

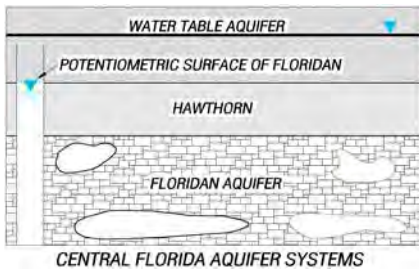
happening upon them. To add to the difficulty in identifying historical cattle dip vats, many landowners removed the vats when the program was closed. They either dug up the vat or broke up the concrete and covered it with soil.

No cattle dip vats were identified within the study area through public record and database review, historical aerial photograph review, or site reconnaissance. Based on available information, we found no evidence that cattle dip vats within the study area contribute to contamination risk for this project.

**4.0 GEOLOGIC AND HYDROLOGIC FEATURES**

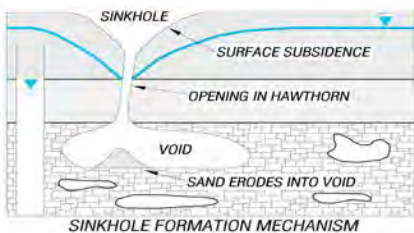


Due to its prevalent geology, referred to as karst, Central Florida is prone to the formation of sinkholes, or large, circular depressions created by local subsidence of the ground surface. The nature and relationship of the three sedimentary layers typical of Central Florida geology cause sinkholes. The deepest, or basement, layer is a massive cavernous limestone formation known as the Floridan aquifer.



The Floridan aquifer limestone is overlain by a silty or clayey sand, clay, phosphate, and limestone aquitard (or flow-retarding layer) ranging in thickness from nearly absent to greater than 100 feet and locally referred to as the Hawthorn Group (Hawthorn). The Hawthorn is in turn overlain by a 40 to 70-foot thick surficial layer of sand, bearing the water table aquifer. The likelihood of sinkhole occurrence at a given site within the region is determined by the relationship among these three layers, specifically by the water (and soil)-transmitting capacity of the Hawthorn at that location.

relationship among these three layers, specifically by the water (and soil)-transmitting capacity of the Hawthorn at that location.

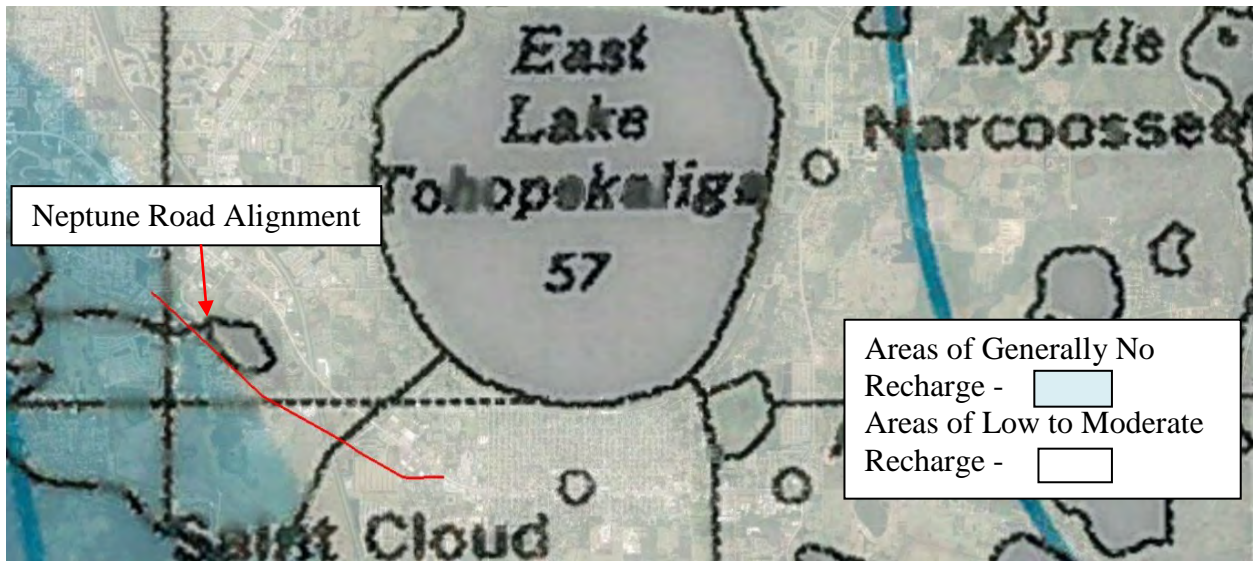


The water table aquifer is comprised of Recent and Pleistocene sands and is separated from the Eocene limestone of the Floridan aquifer by the Miocene sands, clays and limestone of the Hawthorn. Since the thickness and consistency of the Hawthorn is variable across Central Florida, the likelihood of groundwater flow from the upper to the lower aquifer (known as aquifer recharge) will also vary by geographical location.

In areas where the Hawthorn is absent, water table groundwater (and associated sands) can flow downward to cavities within the limestone aquifer, like sand through an hourglass, recharging the Floridan aquifer, and sometimes causing the formation of surface sinkholes. This process of subsurface erosion associated with recharging the Floridan aquifer is known as raveling. Thus, in Central Florida, areas of effective groundwater recharge to the Floridan aquifer have a higher potential for the formation of surface sinkholes.

Based solely on the data provided in the U.S. Geological Survey Map entitled “Recharge and Discharge Areas of the Floridan Aquifer in the St. Johns River Water Management District and Vicinity, Florida,” 1984, the study area lies in an areas of generally no recharge and low to moderate recharge. Therefore, we can conclude based solely on this data that it also lies in an area where the relative risk of sinkhole formation is generally low compared to the overall risk across Central Florida.

**Figure 7.**  
**Recharge and Discharge Areas of the Floridan Aquifer**



**4.1 SURFACE WATER**

The study area encompasses surface water bodies including roadside swales, stormwater ponds, excavated ditches, Fish Lake, and Canal C-31. Neptune Road and the Neptune Road Pathway both have bridges crossing Canal C-31. Surface water features are not expected to impact this project.

**4.2 GROUNDWATER**

GEC performed the Preliminary Geotechnical Investigation, which was documented in our report dated March 11, 2019. Groundwater was encountered between 2.3 to 6.9 feet below existing land surface at the proposed pond locations. Seasonal high water tables are estimated to range from 0.5 ft to 4.9 feet deep.

Groundwater levels vary seasonally and with changes in subsurface conditions between boring locations. Alterations in surface and/or subsurface drainage brought about by site development can also affect groundwater levels. *Therefore, groundwater depths measured at different times or at different locations along the project alignment can be expected to vary from those measured during this investigation.*

For the purposes of this report, estimated seasonal high groundwater levels are defined as groundwater levels that are anticipated at the end of the wet season of a “normal rainfall” year under current site conditions. We define a “normal rainfall” year as a year in which rainfall quantity and distribution were at or near historical rainfall averages.

### **4.3 WELLS**

The FDEP Map Direct and the Florida Department of Health (FDOH) EH Water Well Surveillance websites were reviewed for wells within the study area. A total of 21 well locations were identified within the study area on the FDOH website. The 21 wells appear to be potable water wells.

The FDEP website revealed public water supply wells at Partin Triangle Park and the gas station on the southeast corner of the Neptune Road and Partin Settlement Road intersection. It also located four Florida Geological Survey wells and three additional South Florida Water Management District wells on the east side of Canal C-31, across from Partin Triangle Park. These wells appear to be used to monitor aquifer conditions and are not indicative of contamination concerns.

No permitted oil or gas wells and no injection wells were identified within the study limits.

### **4.4 SOILS**

Based on a review of the USDA/NRCS Soil Survey for Osceola County, there are twenty (20) major soil types within the study area. **Table 2** includes a summary of the soil types found in the study area (see NRCS Soils Map - **Figure 8**).



TABLE 2 NRCS SOILS IDENTIFIED IN THE STUDY AREA IN OSCEOLA COUNTY

Soil ID Number	Soil Name	% of soil within study area	Parent Material	Drainage Class	Water Capacity	Hydraulic Conductivity	Depth to Restrictive Feature	Groundwater Depth
1	Adamsville sand	1.24	Sandy marine deposits	Somewhat poorly drained	Low	rapid	>80 inches	18 to 42 inches
5	<b>Basinger fine sand</b>	<b>3.32</b>	<b>Sandy marine deposits</b>	<b>Poorly drained</b>	<b>Low</b>	<b>Very rapid</b>	<b>&gt;80 inches</b>	<b>6 inches</b>
9	Cassia Fine Sand	0.57	Sandy marine deposits	Somewhat poorly drained	Low	Moderately rapid	>80 inches	18 to 42 inches
10	<b>Delray Loamy Fine Sand, Depressional</b>	<b>5.01</b>	<b>Sandy and loamy marine deposits</b>	<b>Very poorly drained</b>	<b>Low</b>	<b>Moderately rapid</b>	<b>&gt;80 inches</b>	<b>0 inches</b>
15	<b>Hontoon Muck</b>	<b>0.01</b>	<b>Herbaceous organic material</b>	<b>Very poorly drained</b>	<b>Very high</b>	<b>Very rapid</b>	<b>&gt;80 inches</b>	<b>0 inches</b>
16	Immokalee Fine Sand	26.13	Sandy marine deposits	Poorly drained	Low	Moderately rapid	>80 inches	6-18 inches
17	<b>Kaliga Muck</b>	<b>0.38</b>	<b>Herbaceous organic material over stratified loamy marine deposits</b>	<b>Very poorly drained</b>	<b>Very high</b>	<b>Moderately slow to moderately high</b>	<b>&gt;80 inches</b>	<b>0-6 inches</b>
22	Myakka Fine Sand	21.03	Sandy marine deposits	Poorly drained	Very low	Moderately rapid	>80 inches	6-18 inches
23	Myakka-Urban Land Complex	<0.01	Sandy marine deposits	Poorly drained	Very low	Moderately rapid	>80 inches	6-18 inches
24	Narcoossee Fine Sand	0.06	Sandy marine deposits	Moderately well drained	Very low	Rapid	>80 inches	24-42 inches
32	<b>Placid Fine Sand, Depressional</b>	<b>9.99</b>	<b>Sandy marine deposits</b>	<b>Very poorly drained</b>	<b>Low</b>	<b>Rapid</b>	<b>&gt;80 inches</b>	<b>0-6 inches</b>
33	Placid Variant Fine Sand	0.50	Sandy marine deposits	Somewhat poorly drained	Low	Rapid	>80 inches	18-42 inches
34	Pomello Fine Sand, 0-5% Slopes	0.13	Sandy marine deposits	Moderately well drained	Low	Moderately rapid	>80 inches	24-42 inches
36	<b>Pompano Fine Sand</b>	<b>0.08</b>	<b>Sandy marine deposits</b>	<b>Poorly drained</b>	<b>Low</b>	<b>Rapid</b>	<b>&gt;80 inches</b>	<b>3-18 inches</b>

TABLE 2 NRCS SOILS IDENTIFIED IN THE STUDY AREA IN OSCEOLA COUNTY

Soil ID Number	Soil Name	% of soil within study area	Parent Material	Drainage Class	Water Capacity	Hydraulic Conductivity	Depth to Restrictive Feature	Groundwater Depth
38	Riviera Fine Sand	0.01	Sandy and loamy marine deposits	Poorly drained	Moderate	Moderately rapid	>80 inches	3-18 inches
39	Riviera Fine Sand, Depressional	0.02	Sandy and loamy marine deposits	Very poorly drained	Low	Moderately rapid	>80 inches	0-6 inches
40	Samsula Muck	10.21	Herbaceous organic material over sandy marine deposits	Very poorly drained	Very high	Rapid	>80 inches	0-6 inches
42	Smyrna Fine Sand	6.38	Sandy marine deposits	Poorly drained	Low	Moderately rapid	>80 inches	6-18 inches
45	Vero Fine Sand	3.41	Sandy and loamy marine deposits	Poorly drained	Moderate	Rapid	>80 inches	6-18 inches
46	Wauchula Fine Sand	11.06	Sandy and loamy marine deposits	Poorly drained	Moderate	Moderately low to moderately rapid	>80 inches	6-18 inches

**Bold denotes hydric soils.**

There is 0.45% of the project area within water, which was not included in the table.

*Data Compiled by Kimley-Horn and Associates, Inc. 2019*

Of the twenty (20) soil types mapped within the study area, nine (9) are designated hydric soils (*Hydric Soils of Florida Handbook*, Fourth Edition, 2007). These soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation. In addition, eleven (11) of the non-hydric soil types within the study area may contain hydric inclusions within the lower elevation areas.

Please refer to the Report of Preliminary Geotechnical Investigation dated March 11, 2019 for more detailed information regarding soil conditions within the Neptune Road Corridor.

## **5.0 METHODOLOGY**

We conducted this evaluation in general accordance with Chapter 20 of the FDOT PD&E Manual dated January 14, 2019. The study area is defined by the following distances from the right of way:

- All sites within 500 feet
- Non-landfill solid waste sites within 1,000 feet
- Solid waste landfills, CERCLA, or National Priorities List (NPL) sites within ½ mile

We reviewed relevant information from the FDEP, USEPA, and local agencies in Osceola County to identify known or potential contamination sites within the study area. Historical aerial photographs and other published historical sources were reviewed as part of this CSER. We performed a site reconnaissance of the properties within the study area and attempted to interview individuals with knowledge of the study area's environmental status.

## **5.1 DATA COLLECTION**

### **5.1.1 Public Record Review**

We conducted a review of the public record for the study area including information obtained from the USEPA and the FDEP. As a part of our review, a regulatory database search was obtained from EDR. The EDR Radius Map Report is included in **Appendix B**.

### **5.1.2 Florida Department of Environmental Protection (FDEP) Databases**

The FDEP has compiled several databases that are useful in identifying potential sources of hazardous material or petroleum product contamination. The FDEP databases reviewed for this study and their common abbreviations are provided in **Appendix G**.

### **5.1.3 United States Environmental Protection Agency (USEPA) Databases**

The federal government has compiled several databases that are useful in identifying potential sources of hazardous material or petroleum product contamination. The federal databases reviewed for this study and their common abbreviations are provided in **Appendix H**.

#### **5.1.4 FDEP OCULUS Document Management System, Map Direct Website, and Nexus Portal**

The FDEP uses the OCULUS Document Management System, Map Direct Website, and Nexus Portal to provide public record information for petroleum or hazardous material releases to the environment, generators of hazardous waste, and solid waste facilities. Information contained in this data management system includes the status of active and abandoned storage tanks, tank inspection reports, tank closure reports, environmental assessment reports, remedial action reports, hazardous waste generator compliance details, and solid waste facility compliance details.

We reviewed the OCULUS Document Management System, Map Direct Website, and Nexus Portal within the search distances provided in Section 5.0. The results of our review have been incorporated in our Potential Contamination Site Descriptions in **Appendix E**. The FDEP OCULUS, Map Direct and Nexus Portal Information can be found in **Appendix I**.

#### **5.1.5 Interviews**

Mr. Mike Bryant, the Osceola County Pollution Prevention Inspector, was interviewed via email on February 13, 2019. Mr. Bryant stated that he was not aware of any major environmental concerns associated with the Subject Property or surrounding properties. However, he stated that he was aware of arsenic in the groves along the Neptune Road corridor and he also mentioned the use of chlorine tanks associated with the Pinch-A-Penny (Site 9).

Mr. Mark Gantz, the Osceola County Fire Inspector, was interviewed via email on February 13, 2019. Mr. Gantz stated that he was not aware of any environmental concerns associated with the Subject Property or surrounding properties.

An online request to Toho Water Authority was submitted on February 13, 2019, relating to Parkway Water Treatment Plant (Site 1). As of the date of this report, we have not received a response.

On February 14, 2019, Ms. Ruth Rauenzahn, Environmental Program Supervisor with Orange County Environmental Protection Division, was interviewed via email. Ms. Rauenzahn was unable to provide any additional documentation regarding the potential contamination sites.

Additionally, Ms. Ruth Rauenzahn forwarded our request regarding address no. 2017 Neptune Road (Site 2) to Ms. Carol White with Orange County Environmental Protection Division. Ms. White responded by stating that a Remedial Action Plan was never submitted for the site and that she is still waiting on a response from FDEP concerning the multiple discharges at the site. She also provided the attached Task 4 Interim Assessment Report, which is the most updated data for the site.

No additional interviews were performed in the preparation of this assessment. The interview documentation is included in **Appendix J**.

### 5.1.6 Site Reconnaissance

Site reconnaissance of the study area was conducted on February 14, 2019. The purpose of the reconnaissance was to document existing conditions and evaluate whether current land uses could result in hazardous material or petroleum product contamination of environmental media.

The properties within the project study area were visually inspected for evidence of contamination such as stressed vegetation, underground tank vent and fill pipes, dumping, accumulated areas of debris, evidence of buried materials, and ground staining.

Details of the site reconnaissance are incorporated in the Potential Contamination Site Descriptions in **Appendix E**. Photographs obtained for each potential contamination site are also included in **Appendix E**.

## 5.2 POTENTIAL IMPACT DETERMINATION

Based on the results of the contamination screening activities, we assigned Contamination Potential Risk Ratings to sites. The risk rating system was developed by FDOT and incorporates four levels of risk: **No, Low, Medium and High**. For a description of the four risk levels please refer to **Appendix K**.

## 6.0 PROJECT IMPACTS

As a result of this evaluation, we have assigned Contamination Potential Risk Ratings to 24 sites. The 24 site locations are shown on **Figure 9**. The contamination status of each site and a more detailed description and a photograph of each site are included in **Appendix E**.

Using the FDOT Contamination Potential Risk Ratings presented in **Appendix K**, we have identified **21 Low Risk** sites and **3 Medium Risk** sites.

Of the ten potential pond sites, six were assigned a **Low Risk** rating and four were assigned a **Medium Risk** rating. The pond sites are discussed in Section 8.0.

## 7.0 SOIL SAMPLING

No soil sampling was performed within the CSER process. Level II Impact to Construction Assessments are typically performed on Medium and High Risk sites during the design phase to evaluate potential construction impacts.

## 8.0 CONCLUSIONS AND RECOMMENDATIONS

A total of 24 sites were assigned Contamination Risk Potential Ratings. A “Low Risk” rating was assigned to 21 of the sites and 3 sites were assigned a rating of “Medium Risk”, as listed below. The site locations are shown on **Figure 9**. **Appendix E** summarizes the findings for each rated site.

**Table 3: Low Risk Sites (21)**

Site No.	Site Name	Site Address	Risk Potential
1	Parkway Water Treatment Plant	2107 Partin Settlement Road	Low
3	Cleaners Express Inc	1407 Westminster Way	Low
4	Neptune Middle School	2727 Neptune Road	Low
5	Partin Triangle Park	2830 Neptune Road	Low
6	Crown Castle - W. St. Cloud Or1087-813141	5101 Neptune Road	Low
7	St. Cloud City - Police Department	4700 Neptune Road	Low
8	Avatar Car Wash - St. Cloud	4607 Neptune Road	Low
9	Pinch-A-Penny	4507 Old Canoe Creek Road	Low
10	Tractor Supply Company #506	4267 13th Street	Low
11	Porky's Comedy Club & Dinner Theater	4251/4253 13th Street	Low
12	Jimmy Bear's BBQ/Oak Park Cleaners	4247/4249 13th Street	Low
13	Physical Therapy	4237 13th Street	Low
14	Family Dentistry	4301 Neptune Road	Low
15	Mizu Asian Food Market	4045 13th Street	Low
16	Living Well Chiropractic	4041 13th Street	Low
17	Mattress One/Verizon	3701-3707 13th Street	Low
18	Acupuncture-massage-weight loss-pain mgt-herbs	4119 Neptune Road	Low
19	CVS Pharmacy #3139	3555 13th Street	Low
20	Tire Kingdom #6216	3551 13 <sup>th</sup> Street	Low
21	Urgent Walk-in Clinic/Sports Medicine	3501/3503 13th Street	Low
22	Gerber Collision & Glass	3550 13th Street	Low

**Table 4: Medium Risk Sites (3)**

Site No.	Site Name	Site Address	Risk Potential
2	Chevron on Neptune Road	2017 Neptune Road	Medium
23	Agricultural Property	Neptune Road west of Canoe Creek Road	Medium
24	Kissimmee to St. Cloud Rail Line	Neptune Road	Medium

The site ratings are summarized for each alignment alternative in the table below.

**Table 5: Alignment Alternative Risk**

PD&E Considerations	Partin Settlement Road to Old Canoe Creek Road		Old Canoe Creek Road to US 192	
	1 (North)	2 (South)	A (4-Lane)	B (5-Lane)
Potential Contamination Parcels (Low + Medium + High Risk = Total)	6 + 3 + 0 = 9	6 + 3 + 0 = 9	15 + 1 + 0 = 16	15 + 1 + 0 = 16

1 - Widening occurs to the north  
 2 - Widening occurs to the south

As shown in the table above, a total of 25 sites are listed for both segments (9 + 16) since one of the sites (the historical Kissimmee-St. Cloud Rail Line) appears in both segments of the project. There does not appear to be a difference in contamination risk between the alternatives for each segment.

A total of 10 stormwater pond sites were evaluated and assigned Contamination Risk Potential Ratings based on the previous land uses, adjoining land uses and adjacent or nearby contamination risk sites as follows:

**Table 6: Pond Site Risk Rating**

Pond Site No.	Alignment Alternative	Risk Potential	Comments
1A	Partin Settlement Road to Old Canoe Creek Road	Medium	Adjacent to historical agricultural property; adjacent to historical railroad
1B		Low	Cattle pasture
2A		Medium	Excavation and backfill activities, plant nursery and adjacent agricultural property; adjacent to historical railroad
2B		Low	Residential area
2C		Low	Adjacent to school
3A		Medium	Adjacent to historical railroad
3B		Low	Cattle Pasture, adjacent to canal
4A	Old Canoe Creek Road to US 192	Low	Cattle pasture
4B		Medium	Historical citrus grove
5		Low	Residential and commercial area

Mr. Randy Stafford, FDOT 5 District Contamination Impact Coordinator (DCIC) reviewed this report and the review comments were submitted in a November 25, 2019 email. He recommended that Level II Impact to Construction Assessments (Level II Assessments) be performed as follows:

- Site No. 2, a Chevron gas station on the southeast corner of the Neptune Road and Partin Settlement Road intersection should be evaluated for petroleum concerns,
- The drainage conveyance near the historical railroad alignment in Pond 1A should be sampled for arsenic, and
- The former and current agricultural land uses at Ponds 2A and 4B should be sampled for arsenic, pesticide, and herbicide constituents.

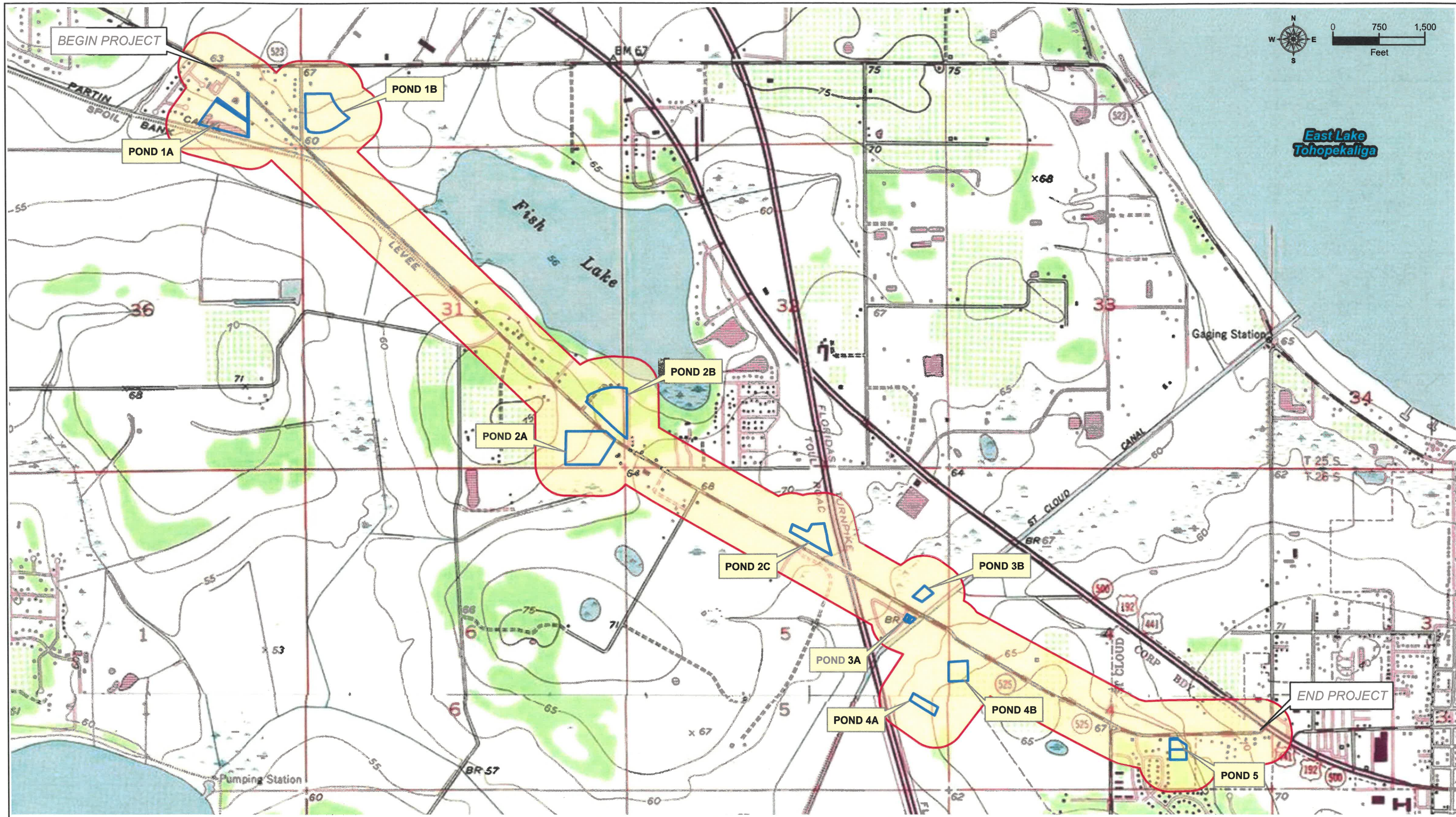
This CSER should be updated during the design phase to determine if additional assessment is warranted due to changes in site conditions, status of the sites identified or project design.

## 9.0 REFERENCES

- EDR Environmental Database Records and Historical Use Information Report
- Osceola County Natural Resource Conservation Service Soil Survey
- Osceola County Property Appraiser’s website
- Historical Aerials by NETRonline
- Florida Department of Transportation Aerial Photographs
- Google Earth Aerial Photographs
- The University of Florida Aerial Photographs
- United States Department of Interior Geological Survey Quadrangle Map
- Florida Department of Environmental Protection OCULUS, Map Direct, and Nexus Websites
- US Environmental Protection Agency
- Orange County Environmental Protection Division
- Osceola County Hazardous Waste Compliance Division (oversees the Osceola County tank cleanup sites)
- Osceola County Compliance Inspectors Office
- FDOH EH Water Well Surveillance Website



**FIGURE 3**  
**USGS QUADRANGLE MAP**



USGS Quadrangle Map

Neptune Road From Partin Settlement Road to US 192  
 Project Development & Environment Study  
 Osceola County, Florida



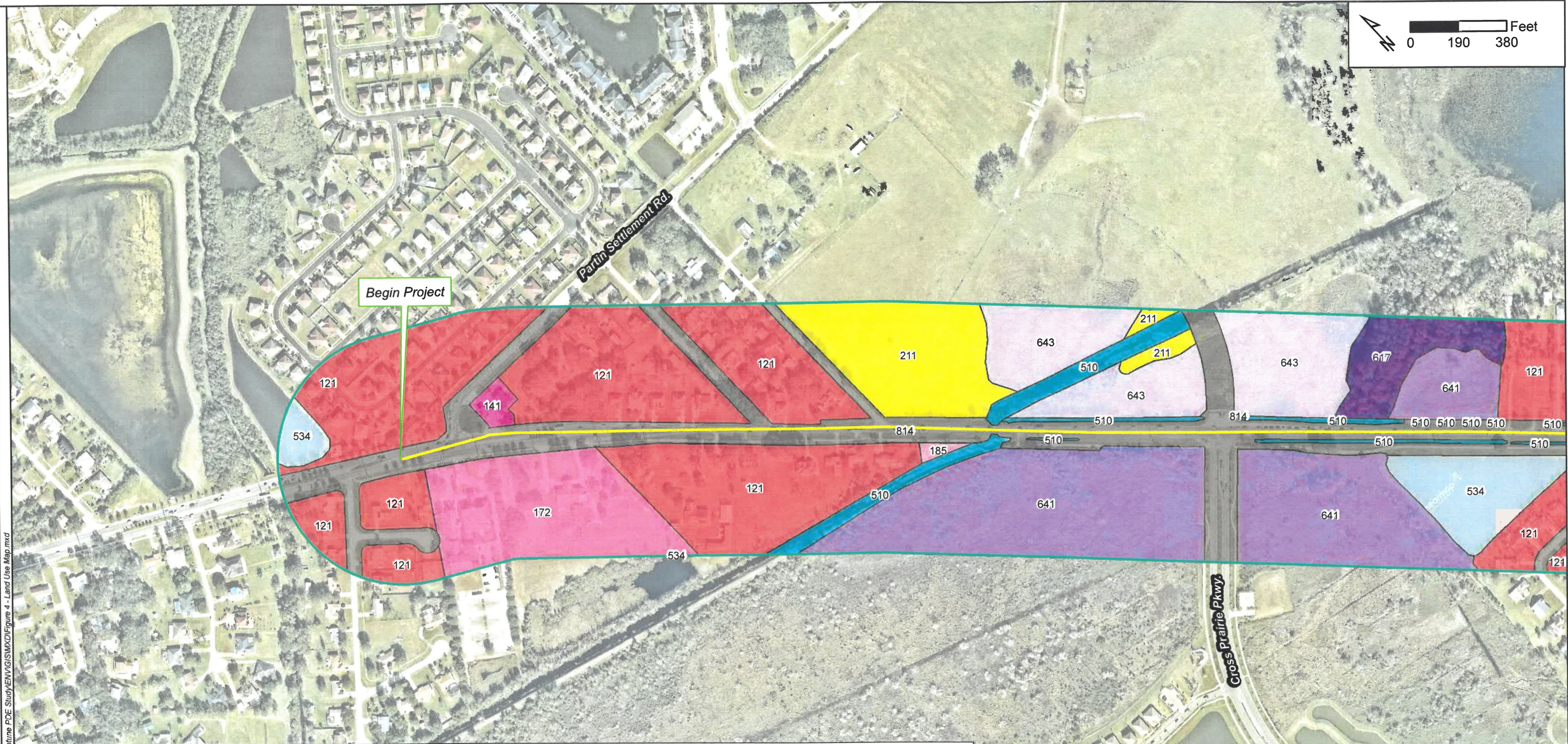
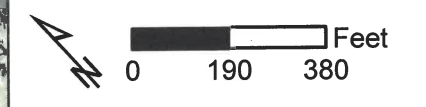
1 inch = 1,500 feet

FEBRUARY 2019

JOB NUMBER: 4234G

FIGURE 3

**FIGURE 4**  
**FLORIDA LAND USE, COVER AND**  
**FORMS CLASSIFICATION SYSTEM MAPS**



Legend		FLUCFCS Code: Description	
	Neptune Road Limits		121: Fixed single family units, medium density
	Neptune Road 500-foot buffer		141: Retail sales and services
			172: Religious
			185: Parks and zoos
			211: Improved pastures
			510: Streams and waterways
			534: Reservoirs - less than 10 ac.
			617: Mixed wetland hardwoods
			641: Freshwater marshes
			643: Wet prairies
			814: Roads and highways

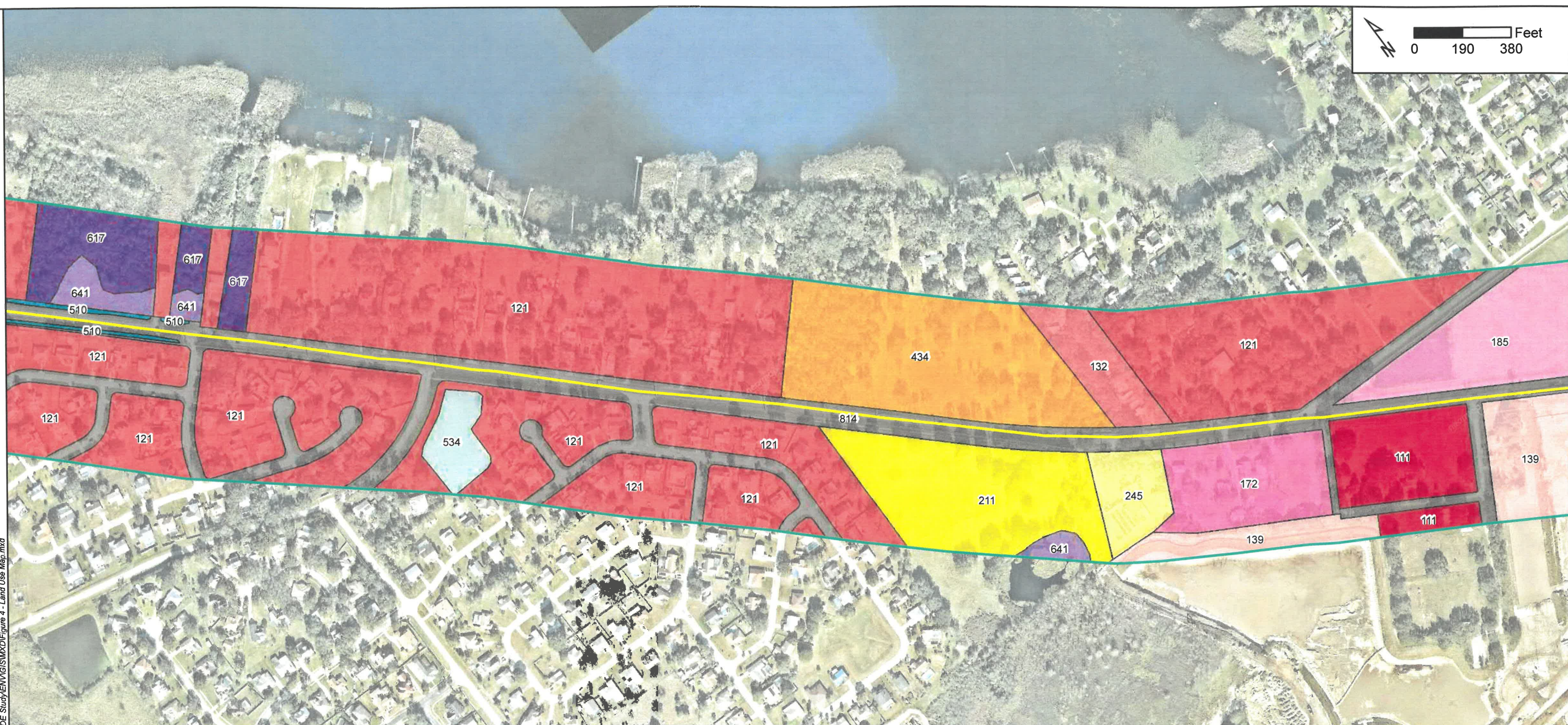
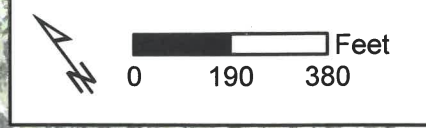
K:\VRB\_Environmental\149244410 Neptune PDE Study\ENV\GIS\SWX\Figure 4 - Land Use Map.mxd

Source: ESRI

**Florida Land Use, Cover and Forms Classification System (FLUCFCS) Map**

**Neptune Road from Partin Settlement Road to US 192  
Project Development & Environment Study  
Osceola County, Florida**





**Legend**

Neptune Road Limits	<b>FLUCFCS Code: Description</b>	172:Religious	510:Streams and waterways
Neptune Road 500-foot buffer	111:Fixed single family units, low density	185:Parks and zoos	534:Reservoirs - less than 10 ac.
	121:Fixed single family units, medium density	211:Improved pastures	617:Mixed wetland hardwoods
	132:Mobile home units	245:Floriculture	641:Freshwater marshes
	139:High density under constructuin	434:Hardwood-conifer mixed	814:Roads and highways

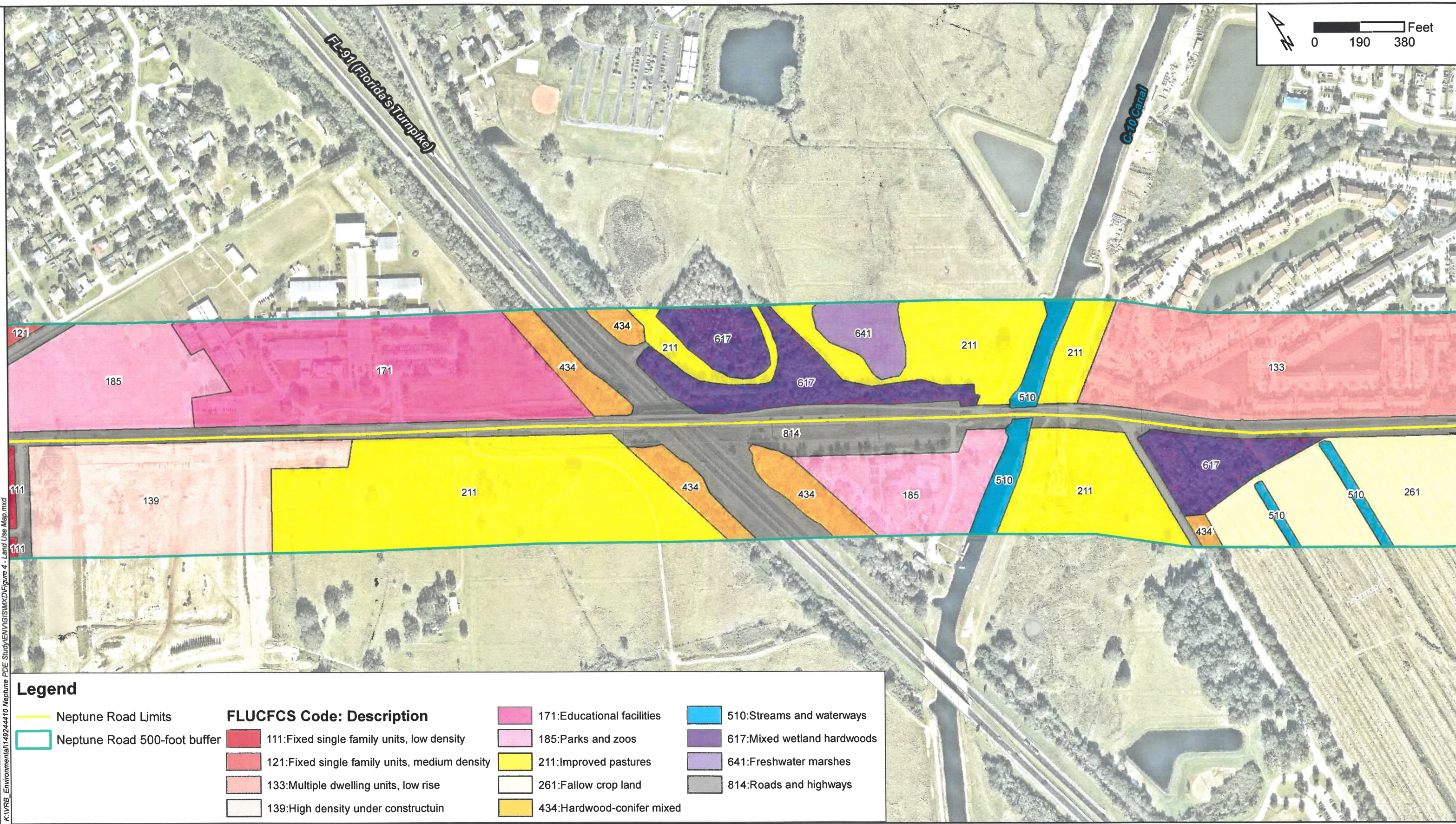
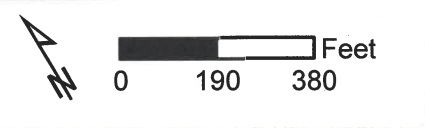
K:\VPRB\_Environmental\14924410 Neptune PDE Study\ENV\GIS\MXD\Figure 4 - Land Use Map.mxd

Source: ESRI

**Florida Land Use, Cover and Forms Classification System (FLUCFCS) Map**

**Neptune Road from Partin Settlement Road to US 192  
Project Development & Environment Study  
Osceola County, Florida**





K:\VRB\_Environmental\14924410 Neptune PDE Study\ENV\GIS\MXD\Figure 4 - Land Use Map.mxd

**Legend**

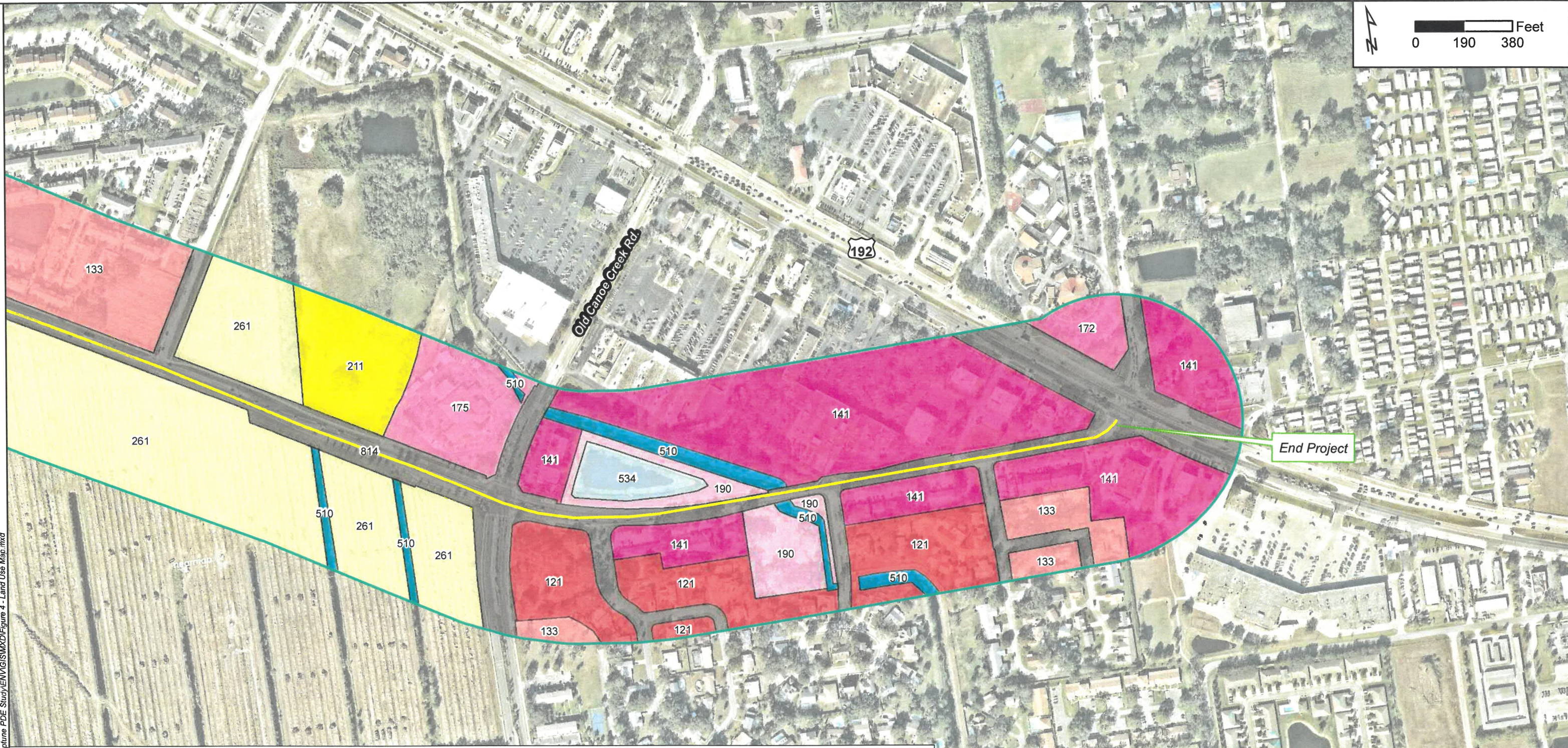
Neptune Road Limits	<b>FLUCFCS Code: Description</b>	171: Educational facilities	510: Streams and waterways
Neptune Road 500-foot buffer	111: Fixed single family units, low density	185: Parks and zoos	617: Mixed wetland hardwoods
	121: Fixed single family units, medium density	211: Improved pastures	641: Freshwater marshes
	133: Multiple dwelling units, low rise	261: Fallow crop land	814: Roads and highways
	139: High density under constructuin	434: Hardwood-conifer mixed	

Source: ESRI

**Florida Land Use, Cover and Forms Classification System (FLUCFCS) Map**

**Neptune Road from Partin Settlement Road to US 192  
Project Development & Environment Study  
Osceola County, Florida**





K:\VRB\_Environmental\149244410 Neptune PDE Study\ENV\GIS\MXD\Figure 4 - Land Use Map.mxd

Legend	
	Neptune Road Limits
	Neptune Road 500-foot buffer
FLUCFCS Code: Description	
	121: Fixed single family units, medium density
	133: Multiple dwelling units, low rise
	141: Retail sales and services
	172: Religious
	175: Governmental
	190: Open land
	211: Improved pastures
	261: Fallow crop land
	510: Streams and waterways
	534: Reservoirs - less than 10 ac.
	814: Roads and highways

Source: ESRI

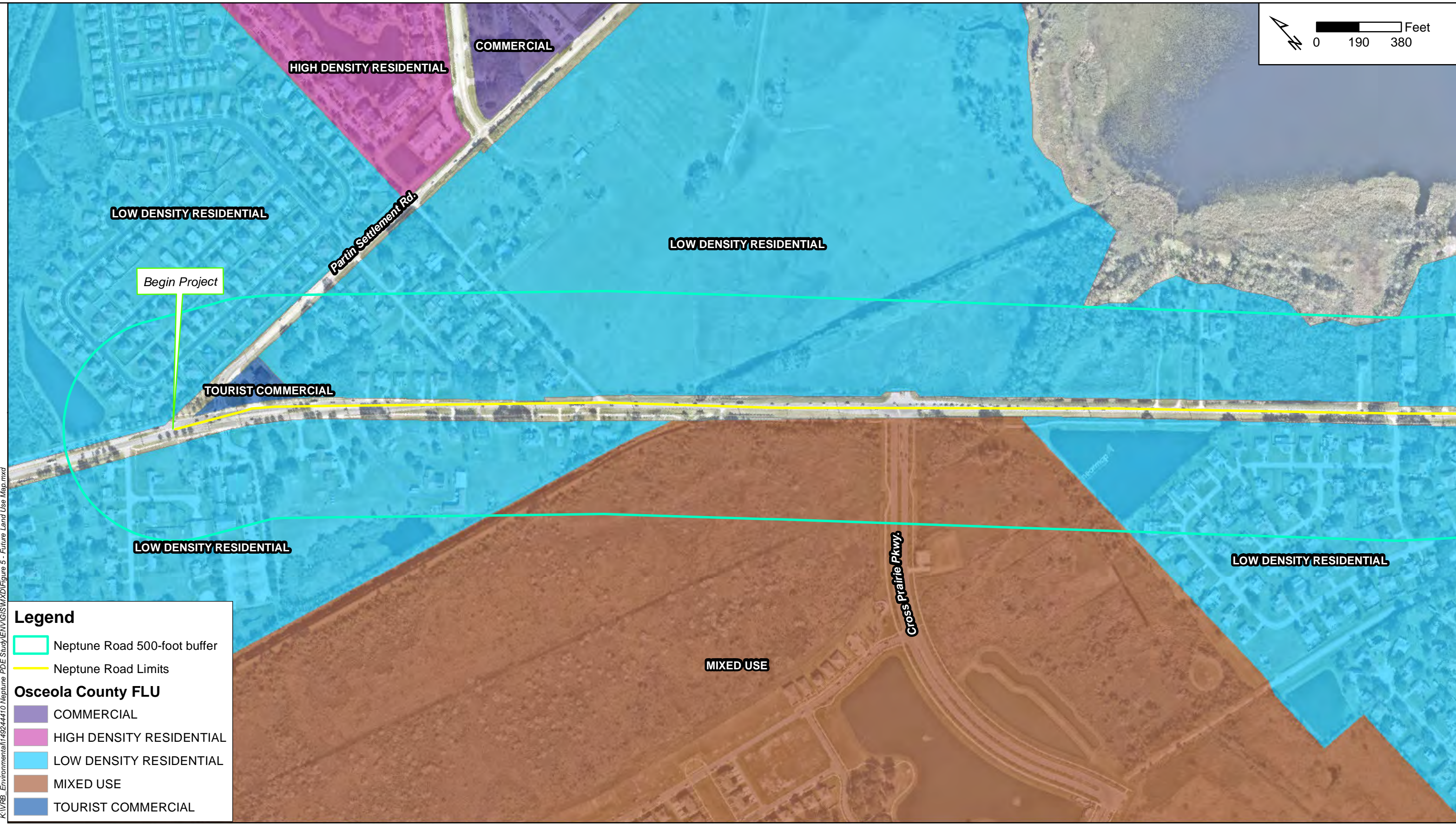
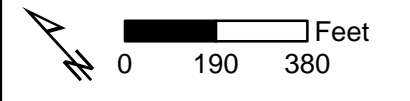
**Florida Land Use, Cover and Forms Classification System (FLUCFCS) Map**

**Neptune Road from Partin Settlement Road to US 192  
Project Development & Environment Study  
Osceola County, Florida**



**FIGURE 5**  
**OSCEOLA COUNTY FLU MAPS**





**Legend**

- Neptune Road 500-foot buffer
- Neptune Road Limits

**Osceola County FLU**

- COMMERCIAL
- HIGH DENSITY RESIDENTIAL
- LOW DENSITY RESIDENTIAL
- MIXED USE
- TOURIST COMMERCIAL

K:\V\RB - Environmental\14924441\0 Neptune PDE Study\ENV\GIS\MXD\Figure 5 - Future Land Use Map.mxd

Source: NearMap

**Osceola County Future Land Use (FLU) Map**  
**Neptune Road from Partin Settlement Road to US 192**  
**Project Development & Environment Study**  
**FPID: 445415-1**  
**Osceola County, Florida**

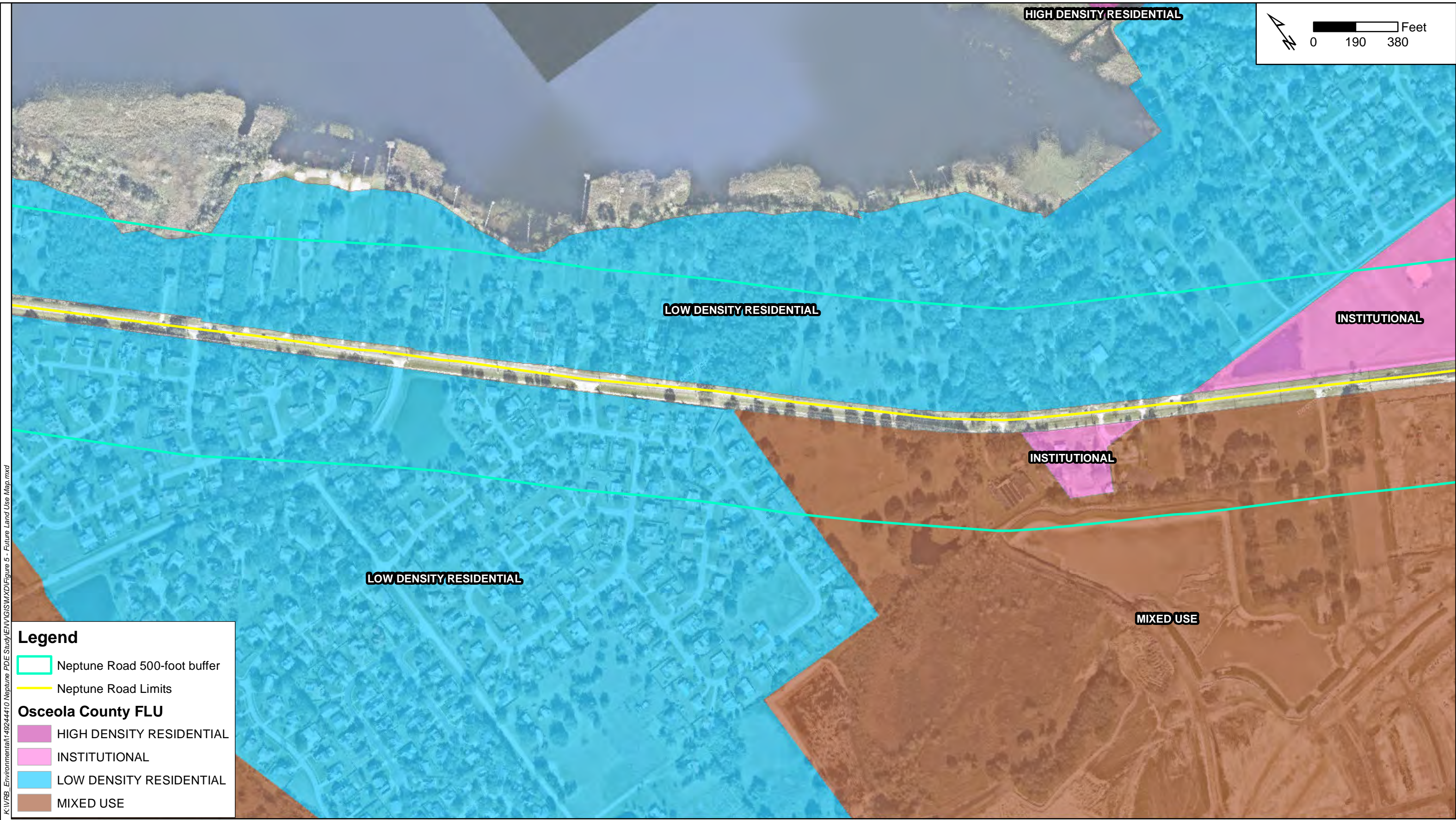


1 inch = 400 feet

DECEMBER 2019

JOB NUMBER: 149244410

FIGURE 5 - Page 1 of 4



K:\V\RB - Environmental\14924441\0 Neptune PDE Study\ENV\GIS\MXD\Figure 5 - Future Land Use Map.mxd

**Legend**

- Neptune Road 500-foot buffer
- Neptune Road Limits

**Osceola County FLU**

- HIGH DENSITY RESIDENTIAL
- INSTITUTIONAL
- LOW DENSITY RESIDENTIAL
- MIXED USE

Source: NearMap

**Osceola County Future Land Use (FLU) Map**  
**Neptune Road from Partin Settlement Road to US 192**  
**Project Development & Environment Study**  
**FPID: 445415-1**  
**Osceola County, Florida**

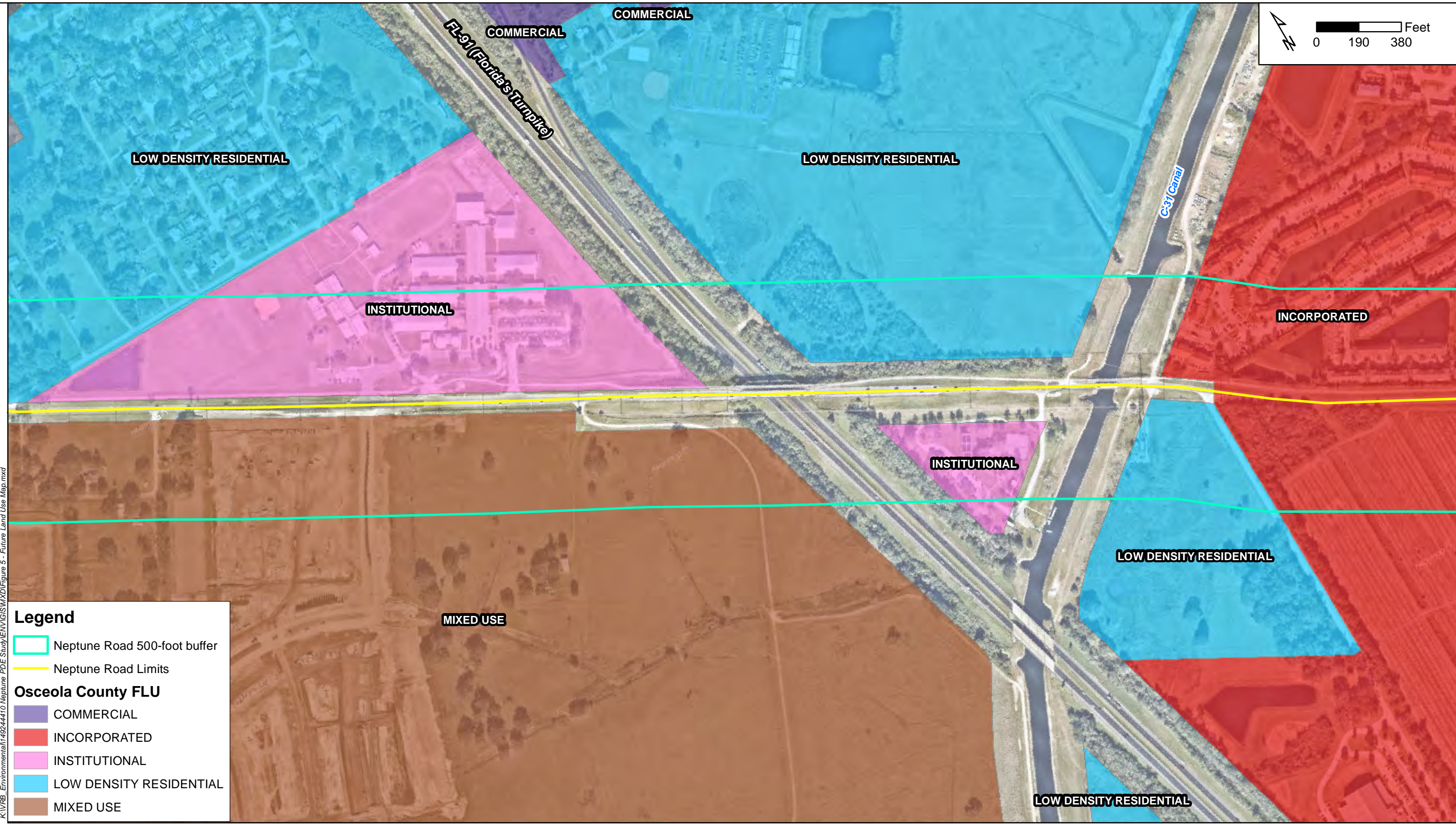


1 inch = 400 feet

DECEMBER 2019

JOB NUMBER: 149244410

FIGURE 5 - Page 2 of 4



K:\V\RB - Environmental\14924441\0 Neptune PDE Study\ENV\GIS\MXD\Figure 5 - Future Land Use Map.mxd  
Source: NearMap

**Osceola County Future Land Use (FLU) Map**  
**Neptune Road from Partin Settlement Road to US 192**  
**Project Development & Environment Study**  
**FPID: 445415-1**  
**Osceola County, Florida**

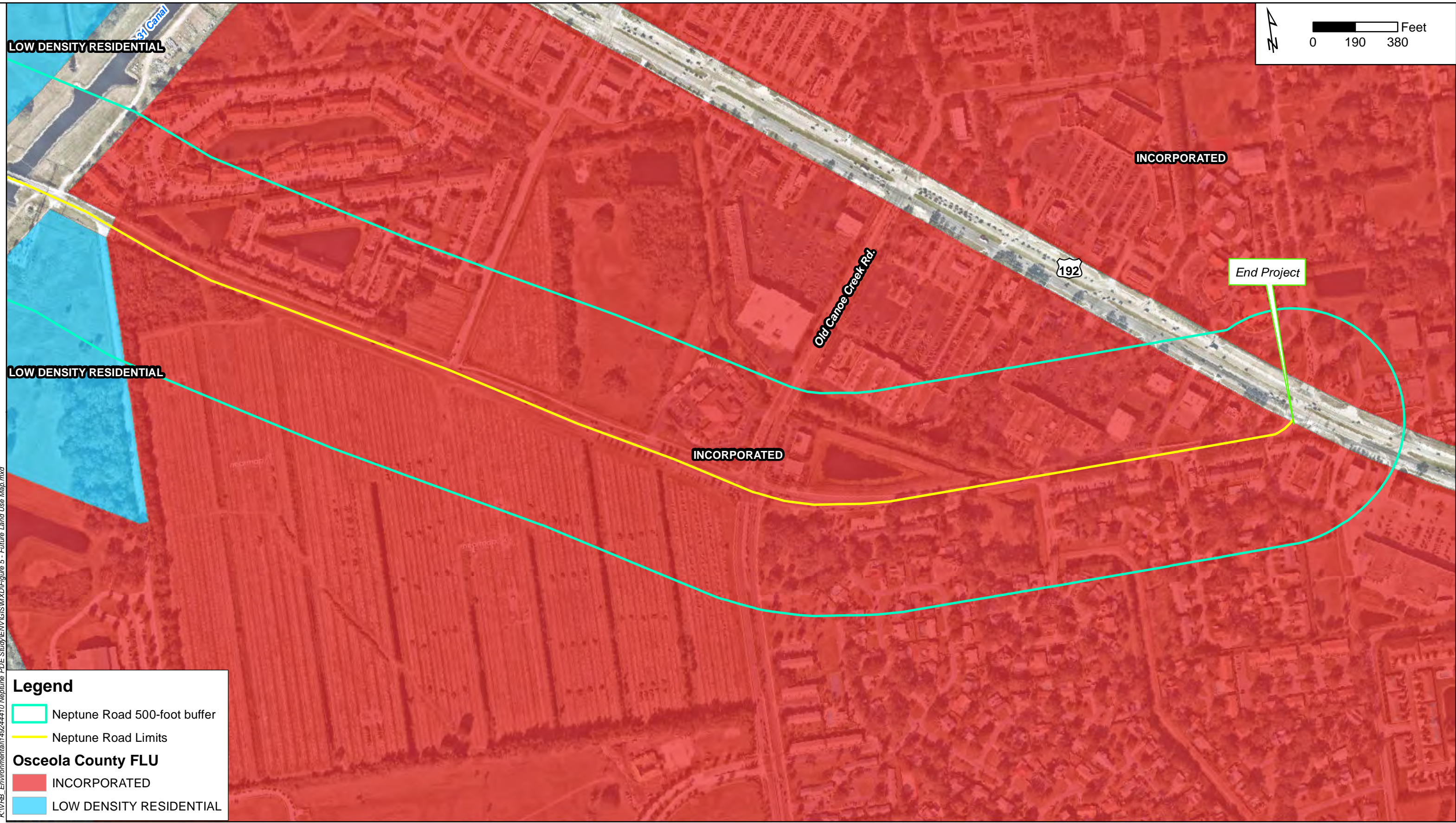


1 inch = 400 feet

DECEMBER 2019

JOB NUMBER: 149244410

FIGURE 5 - Page 3 of 4



**Legend**

- Neptune Road 500-foot buffer
- Neptune Road Limits

**Osceola County FLU**

- INCORPORATED
- LOW DENSITY RESIDENTIAL

K:\V\RB - Environmental\14924441\0 Neptune PDE Study\ENV\GIS\MXD\Figure 5 - Future Land Use Map.mxd

Source: NearMap

**Osceola County Future Land Use (FLU) Map**  
**Neptune Road from Partin Settlement Road to US 192**  
**Project Development & Environment Study**  
**FPID: 445415-1**  
**Osceola County, Florida**



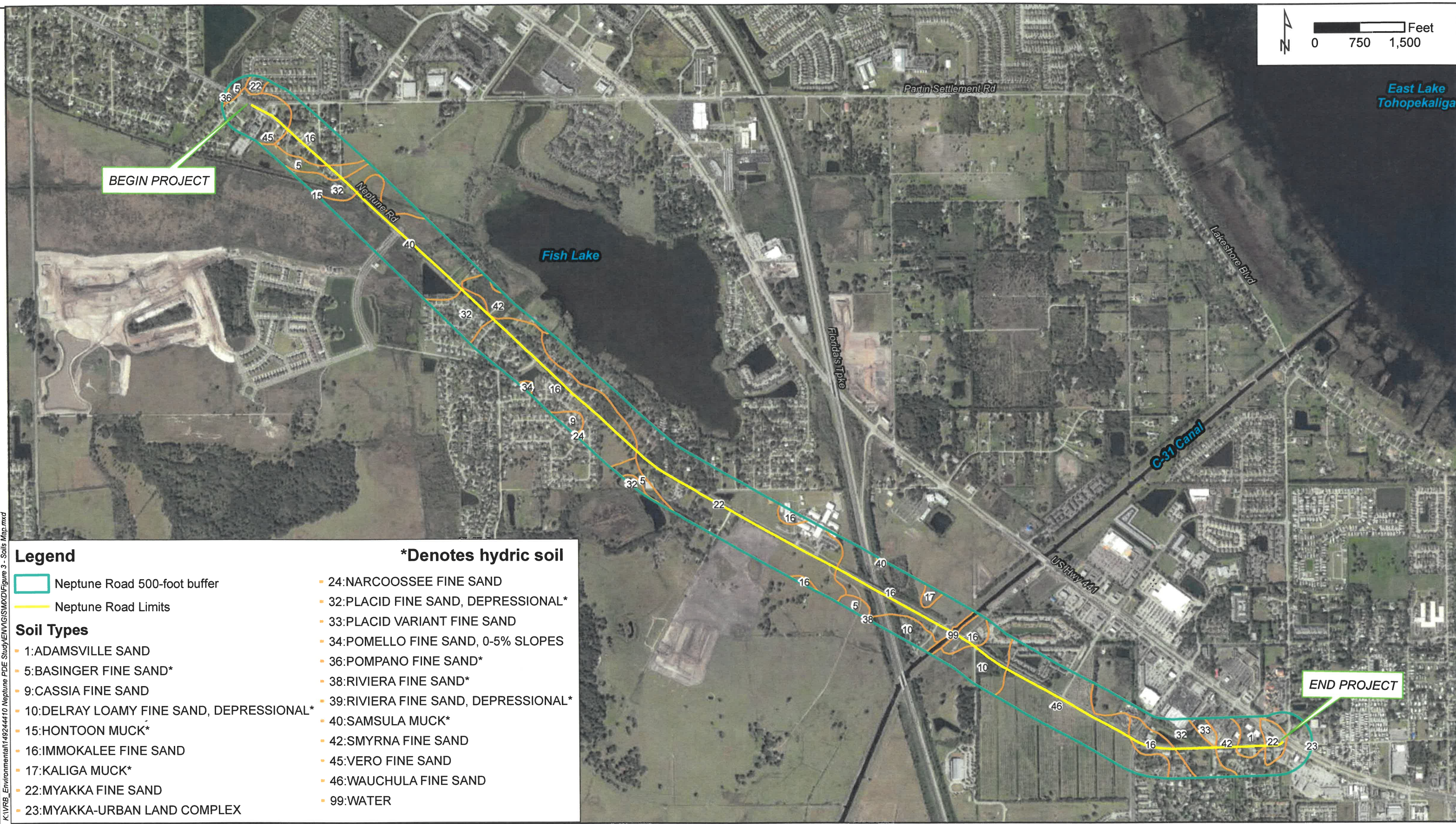
1 inch = 400 feet

DECEMBER 2019

JOB NUMBER: 149244410

FIGURE 5 - Page 4 of 4

**FIGURE 8**  
**NRCS SOILS MAP**



**Legend**

- Neptune Road 500-foot buffer
- Neptune Road Limits

**Soil Types**

- 1: ADAMSVILLE SAND
- 5: BASINGER FINE SAND\*
- 9: CASSIA FINE SAND
- 10: DELRAY LOAMY FINE SAND, DEPRESSIONAL\*
- 15: HONTOON MUCK\*
- 16: IMMOKALEE FINE SAND
- 17: KALIGA MUCK\*
- 22: MYAKKA FINE SAND
- 23: MYAKKA-URBAN LAND COMPLEX

**\*Denotes hydric soil**

- 24: NARCOOSSEE FINE SAND
- 32: PLACID FINE SAND, DEPRESSIONAL\*
- 33: PLACID VARIANT FINE SAND
- 34: POMELLO FINE SAND, 0-5% SLOPES
- 36: POMPANO FINE SAND\*
- 38: RIVIERA FINE SAND\*
- 39: RIVIERA FINE SAND, DEPRESSIONAL\*
- 40: SAMSULA MUCK\*
- 42: SMYRNA FINE SAND
- 45: VERO FINE SAND
- 46: WAUCHULA FINE SAND
- 99: WATER

K:\VRB\_Environmental\149244410 Neptune PDE Study\ENV\GIS\MXD\Figure 3 - Soils Map.mxd

Source: ESRI

**Natural Resources Conservation Service (NRCS) Soils Map**

**Neptune Road From Partin Settlement Road to US 192  
Project Development & Environment Study  
Osceola County, Florida**



**FIGURE 9**  
**POTENTIAL CONTAMINATION SITE LOCATION MAP**



**Potential Contamination Site Location Map**

**Neptune Road From Partin Settlement Road to US 192  
Project Development & Environment Study  
Osceola County, Florida**

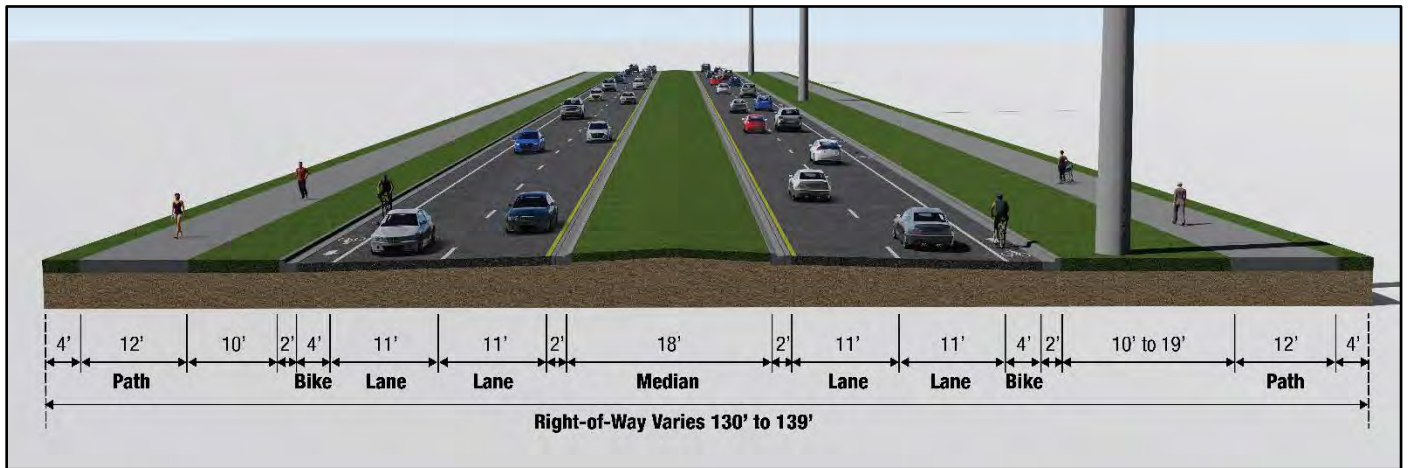




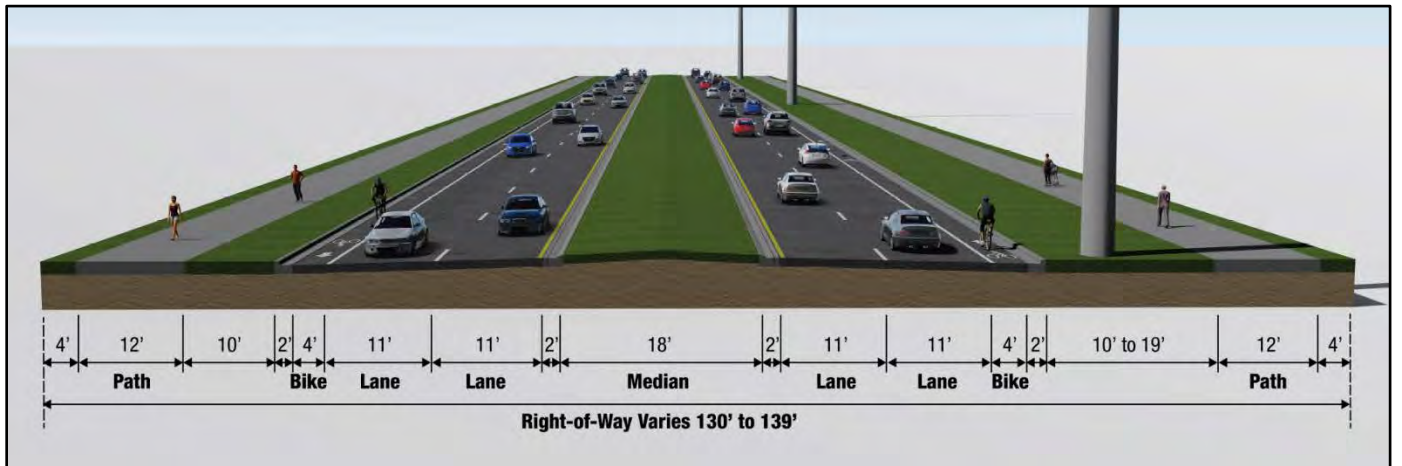
**APPENDIX A**

**TYPICAL SECTIONS AND CONCEPT PLANS**

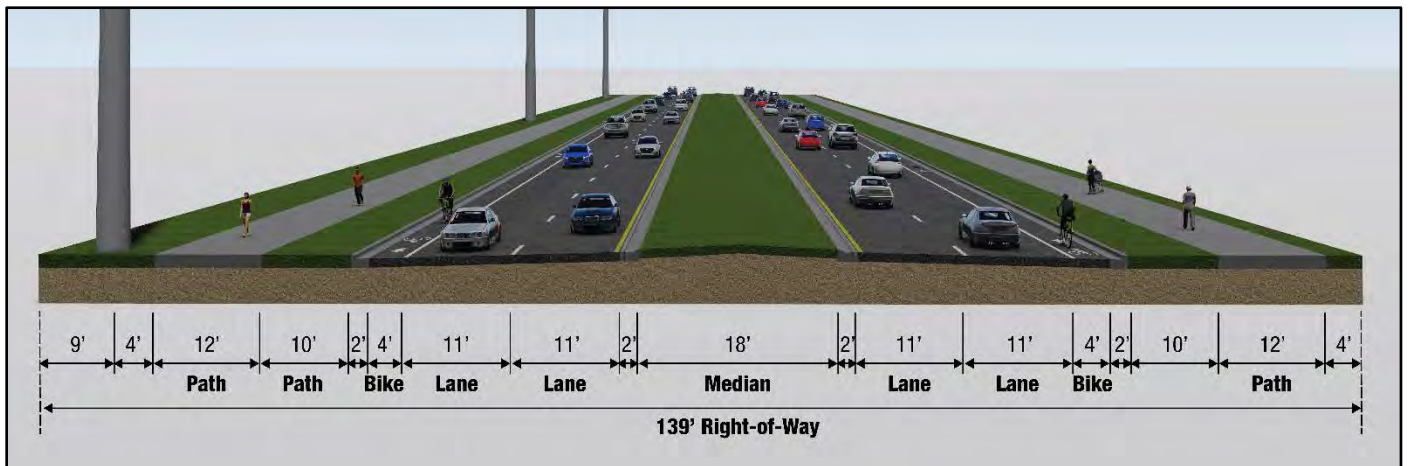
Alternative 1 – Typical Section from Partin Settlement Road to Ames Haven Road



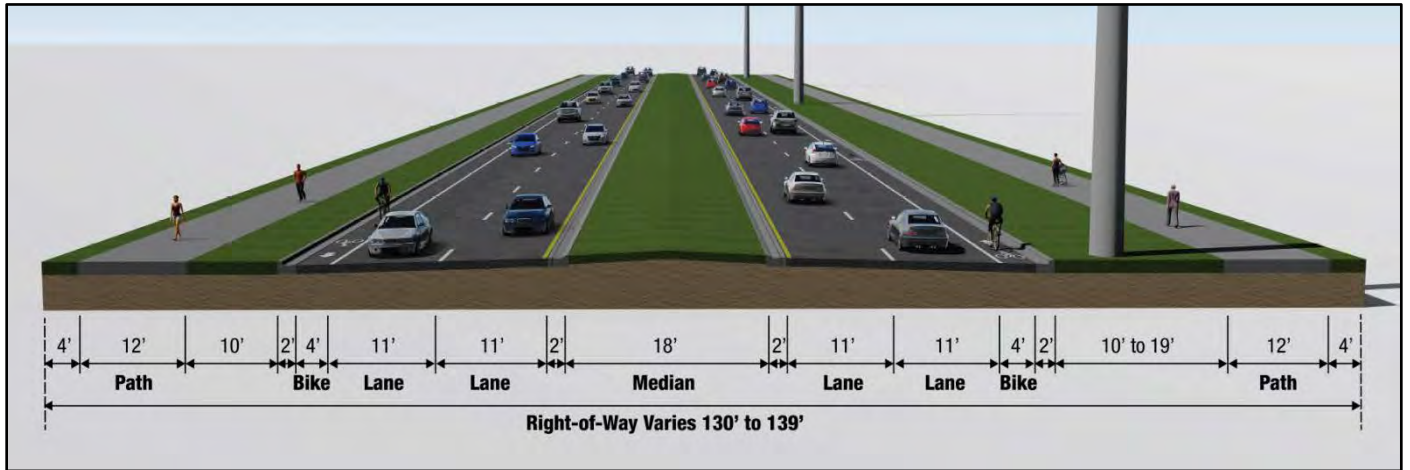
Alternative 1 – Typical Section from Ames Haven Road to Old Canoe Creek Road



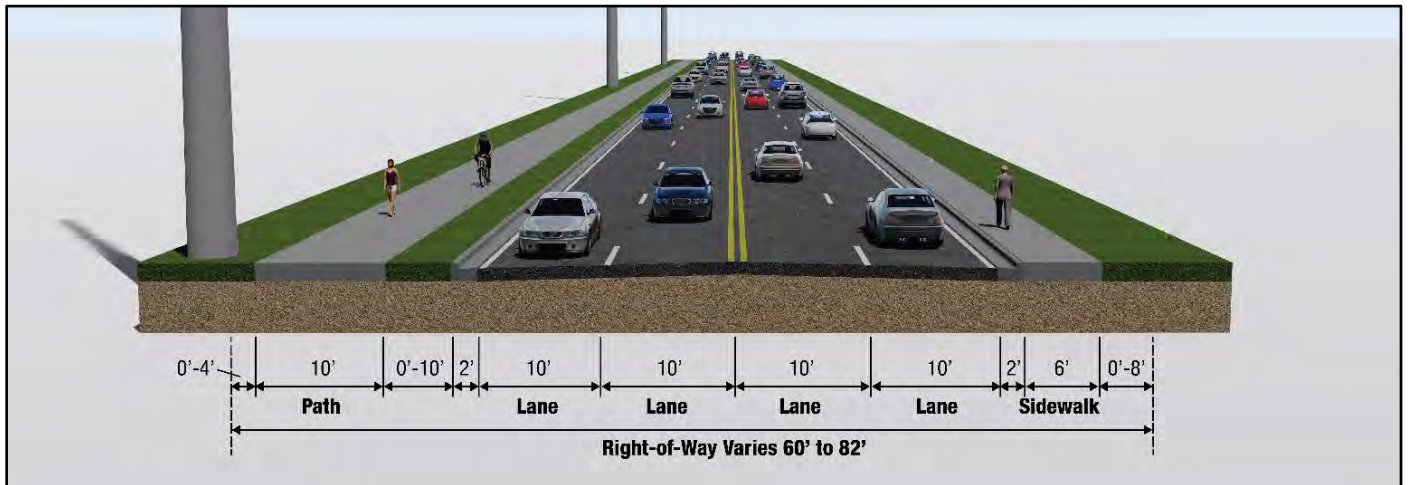
Alternative 2 – Typical Section from Partin Settlement Road to Ames Haven Road



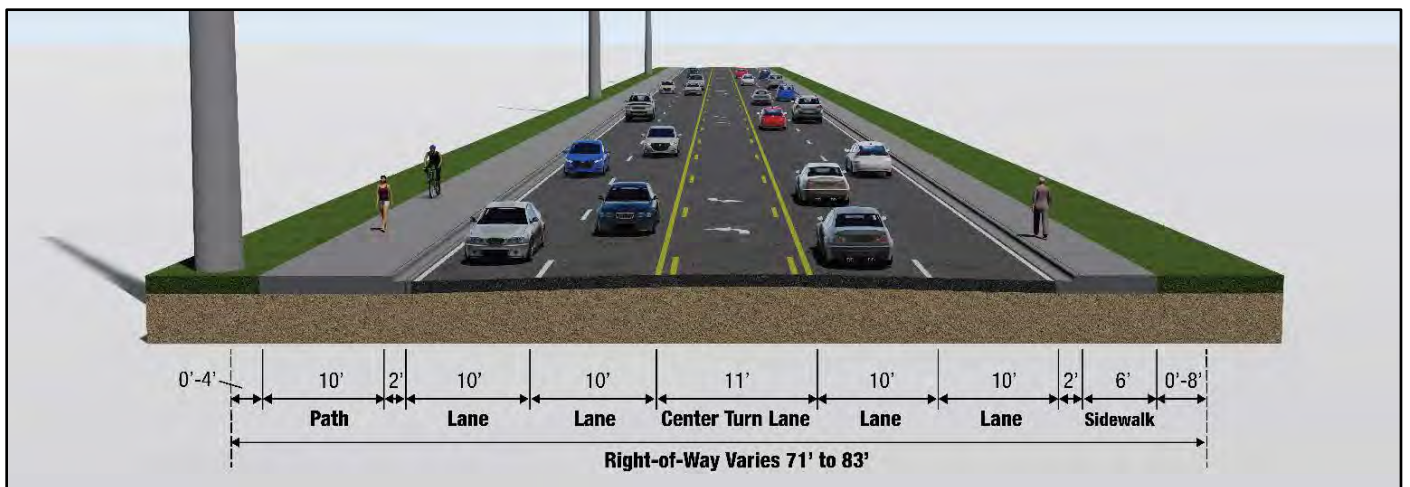
Alternative 2 – Typical Section from Ames Haven Road to Old Canoe Creek Road



Alternative A – Typical Section from Old Canoe Creek Road to US 192



Alternative B – Typical Section from Old Canoe Creek Road to US 192

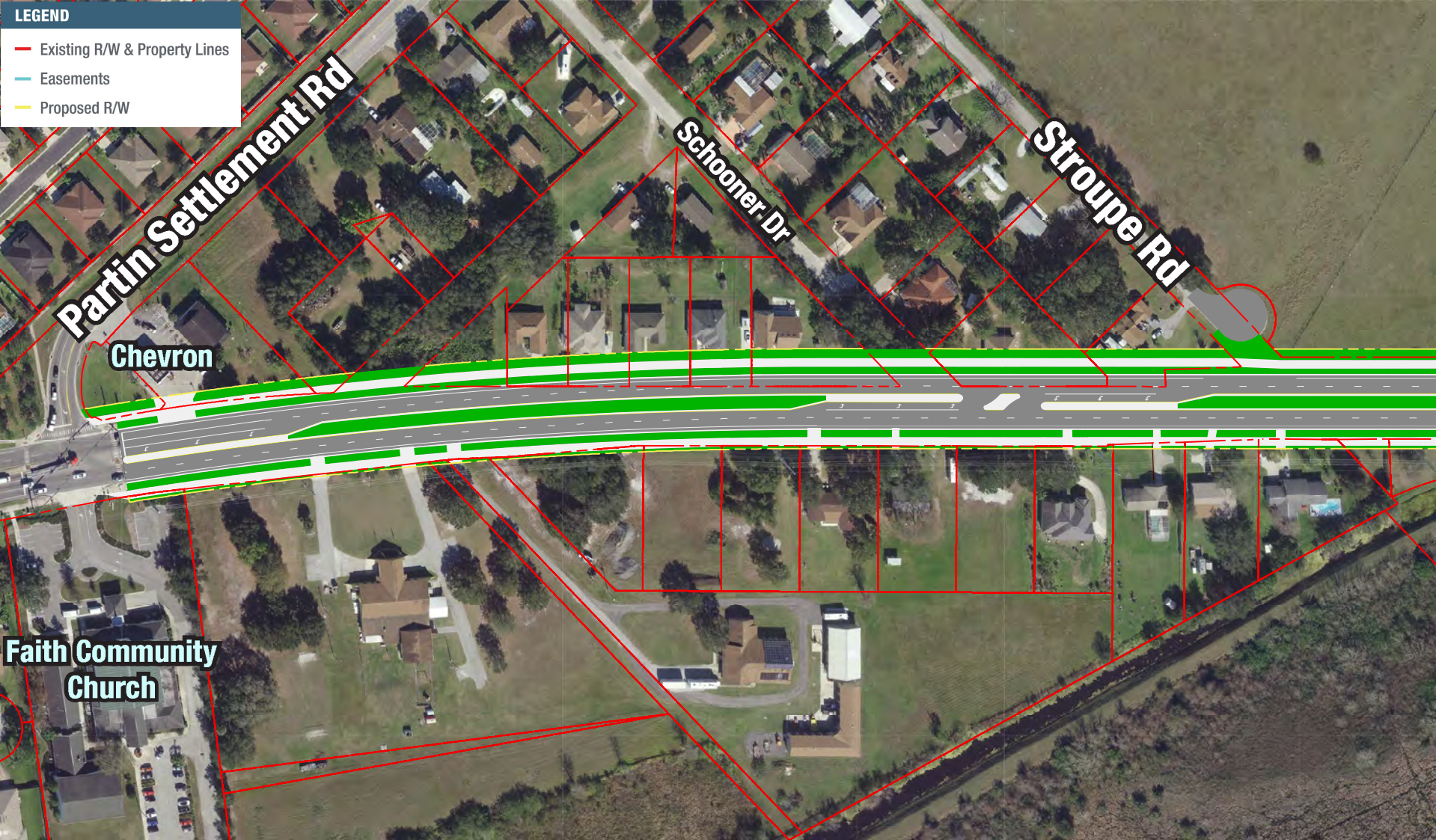


# Alternative 1 from Partin Settlement Road to Ames Haven Road

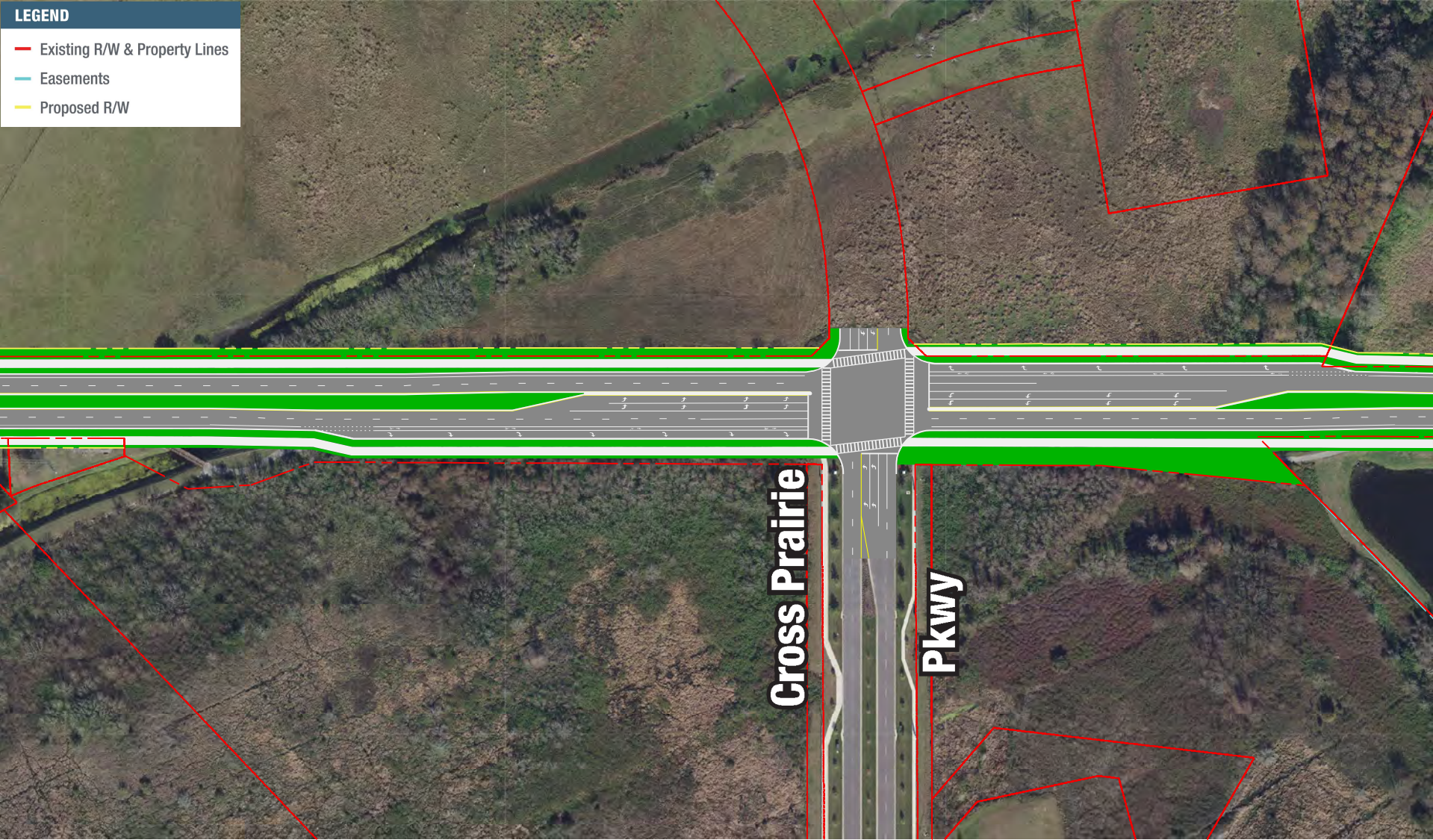
- LEGEND**
- Existing R/W & Property Lines
  - Easements
  - Proposed R/W



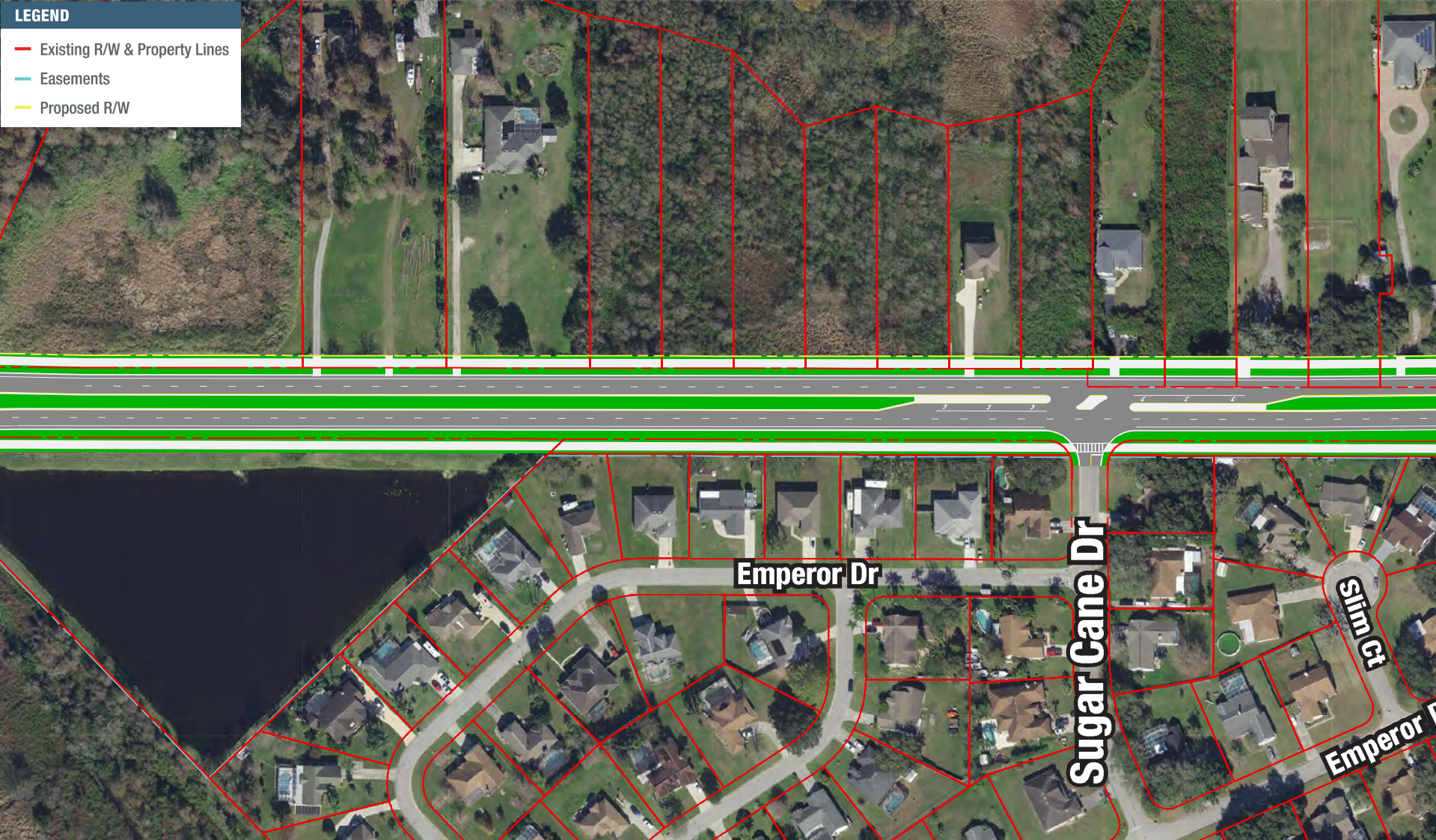
Alternative 1 from Partin Settlement Road to Ames Haven Road



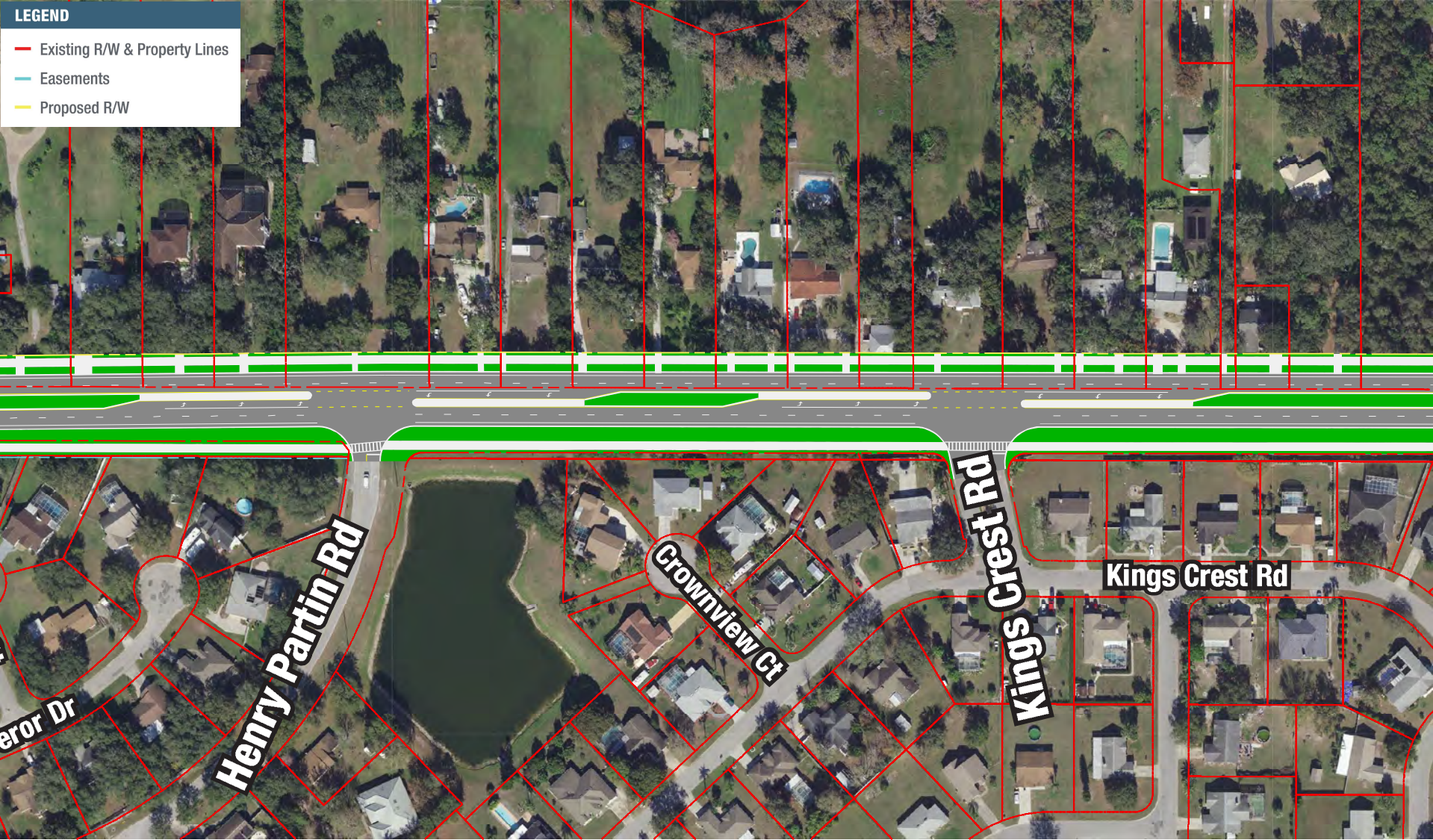
Alternative 1 from Partin Settlement Road to Ames Haven Road



# Alternative 1 from Partin Settlement Road to Ames Haven Road

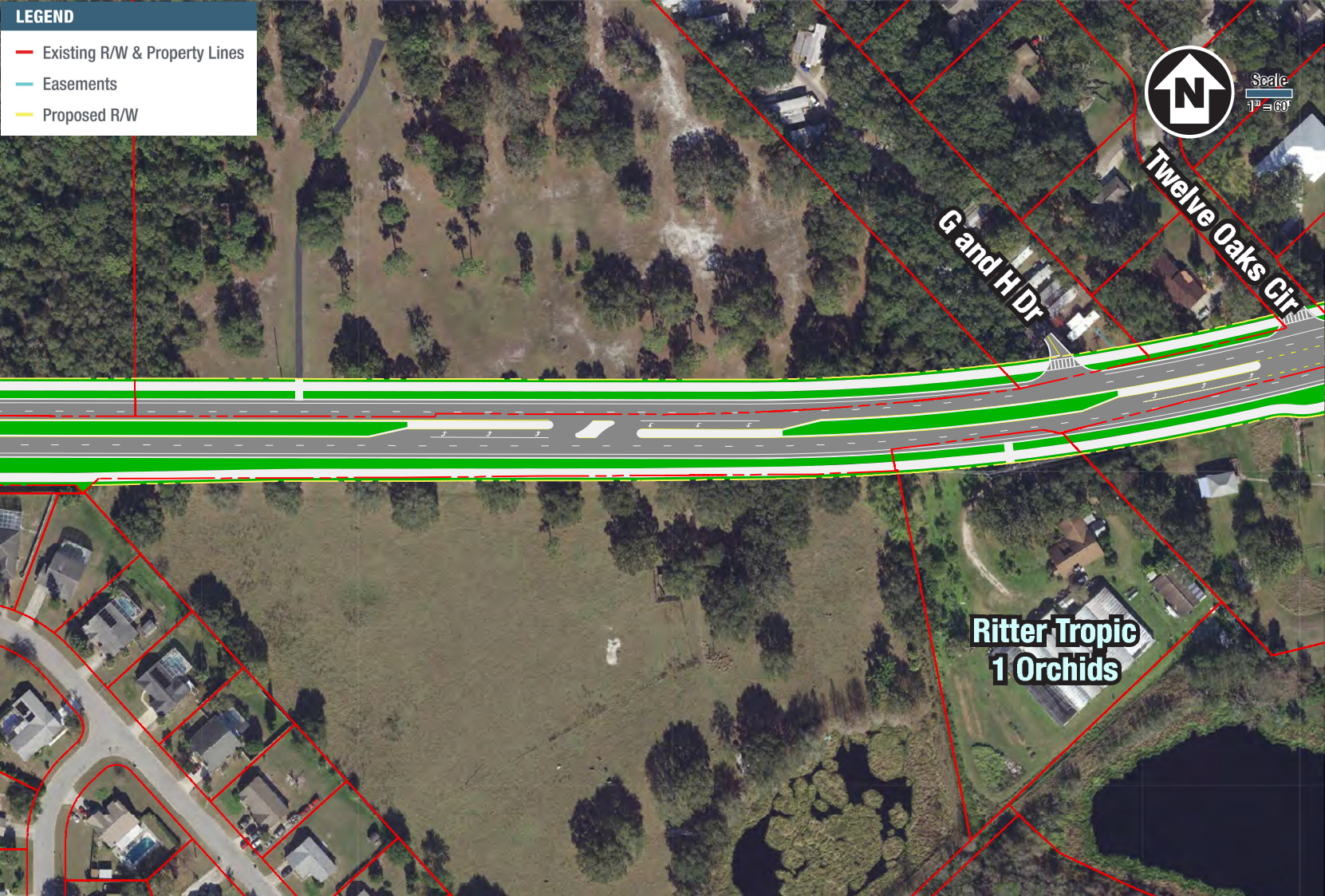


Alternative 1 from Partin Settlement Road to Ames Haven Road





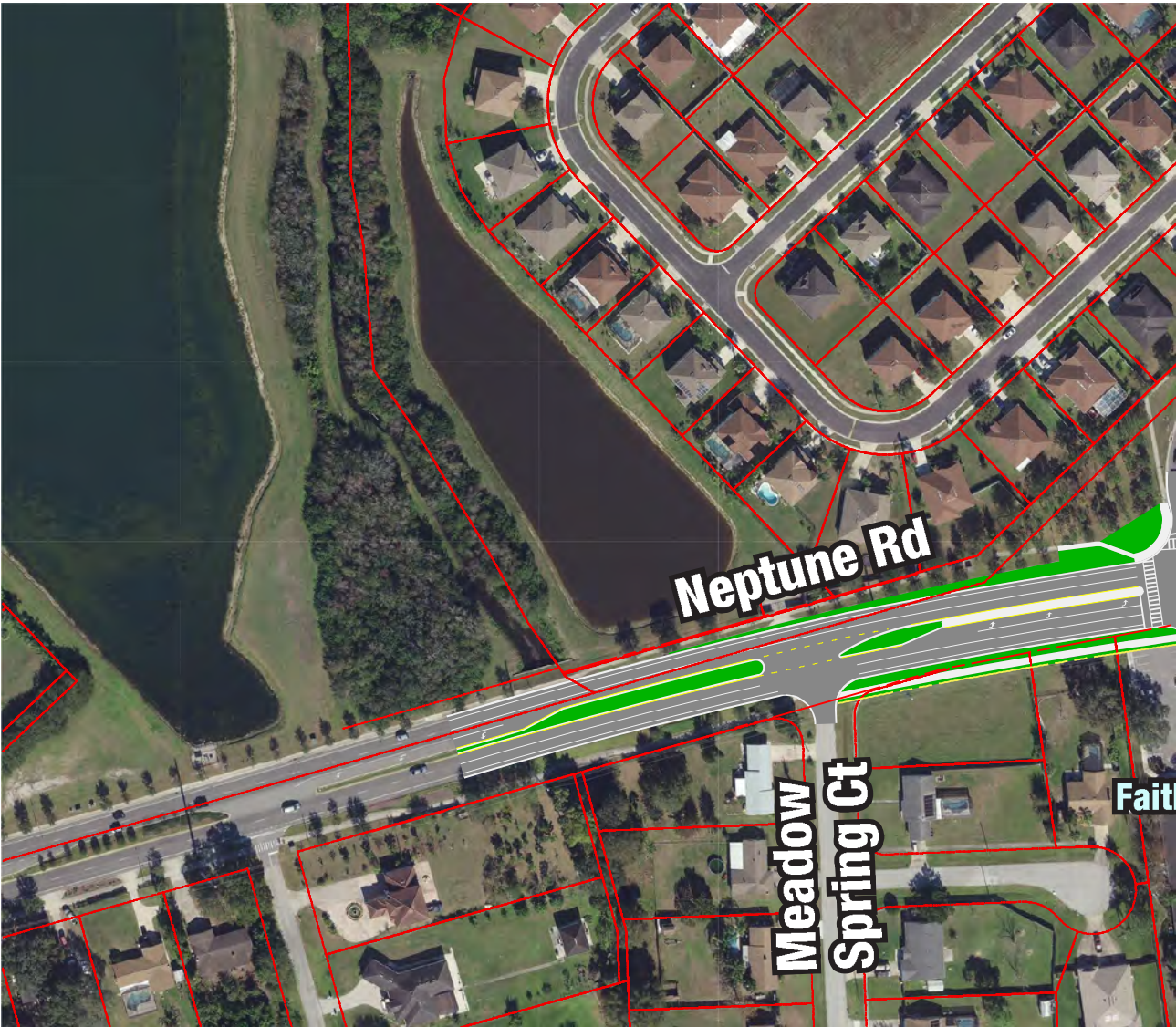
# Alternative 1 from Partin Settlement Road to Ames Haven Road



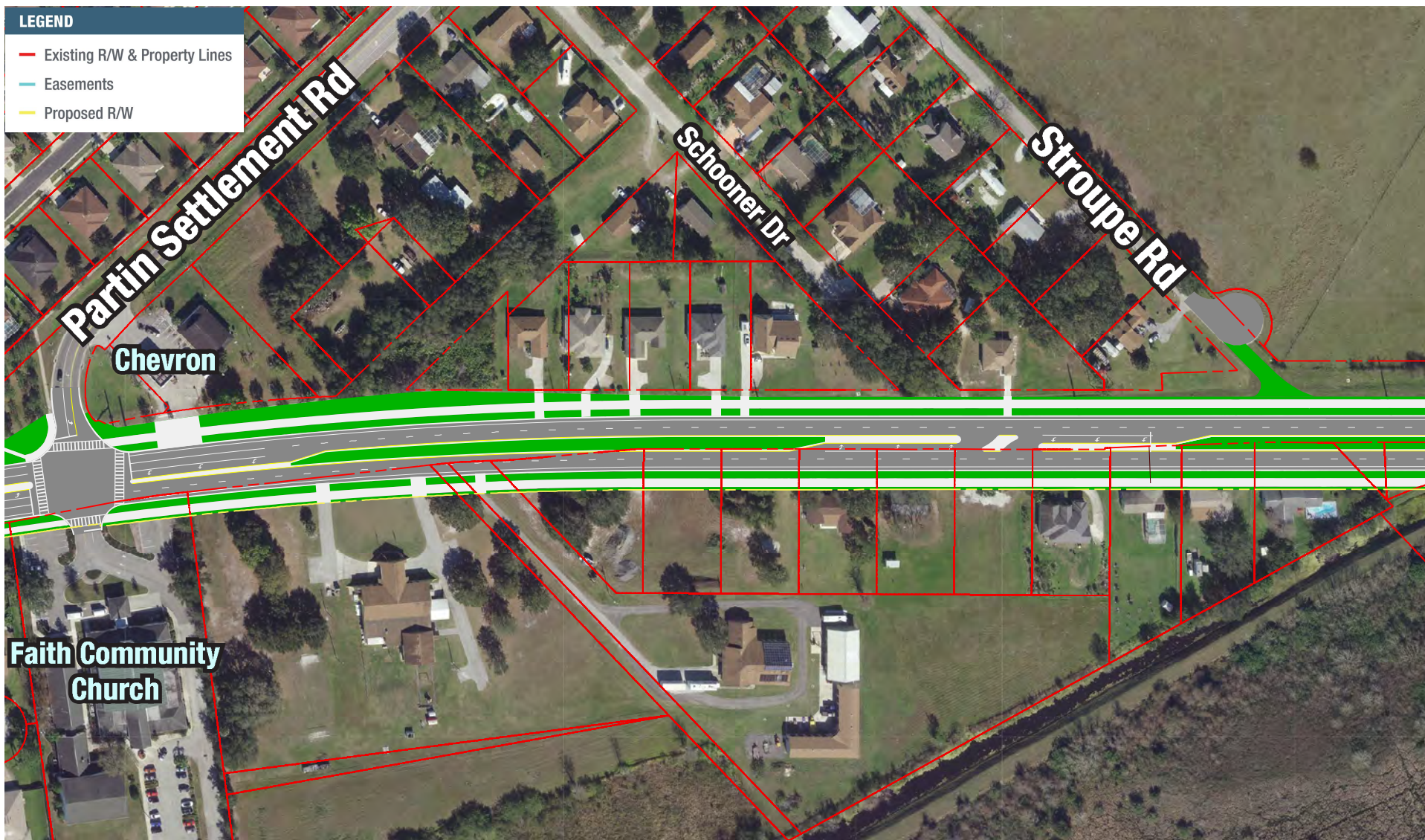
Alternative 2 from Partin Settlement Road to Ames Haven Road

**LEGEND**

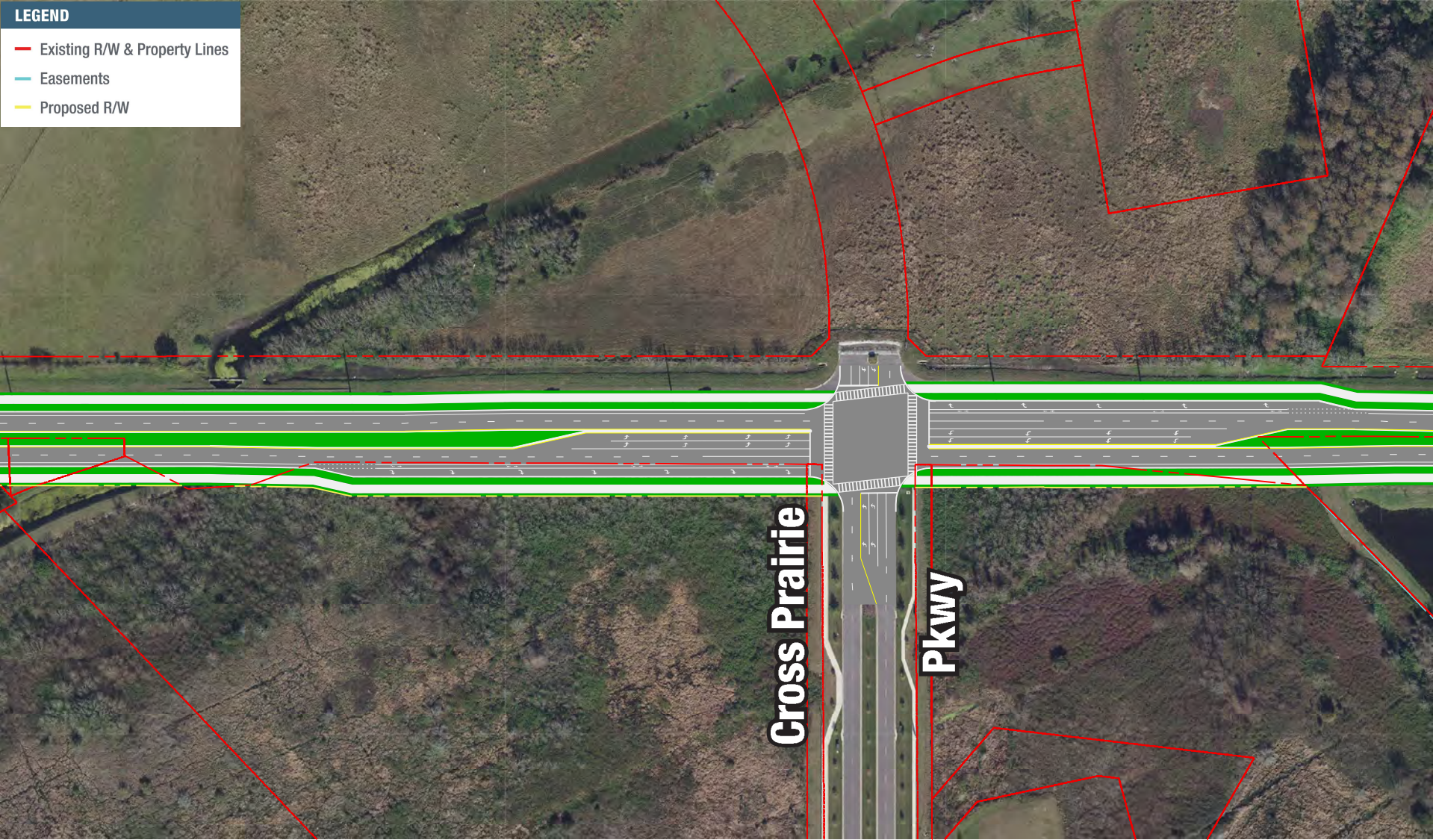
- Existing R/W & Property Lines
- Easements
- Proposed R/W



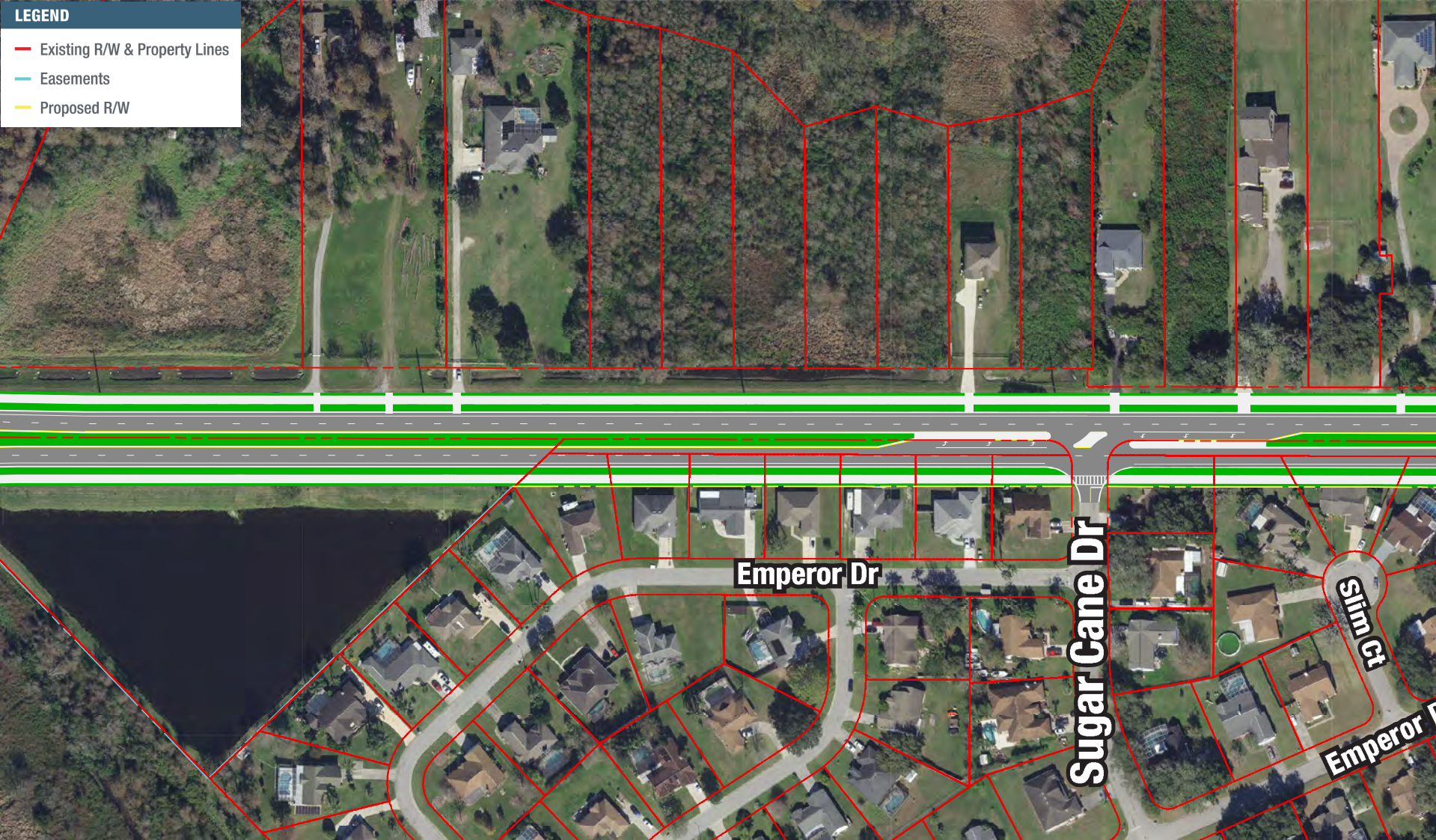
# Alternative 2 from Partin Settlement Road to Ames Haven Road



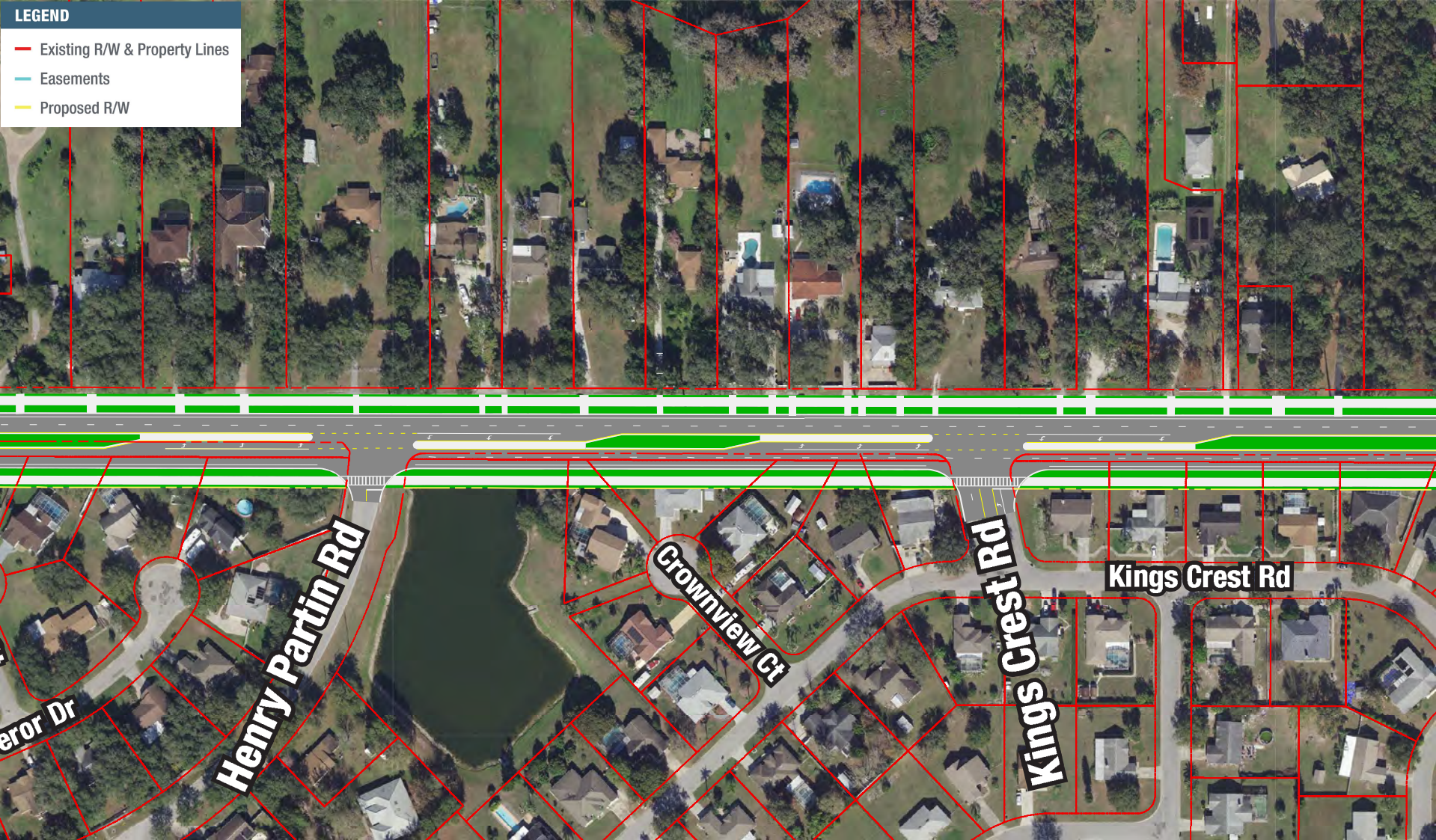
Alternative 2 from Partin Settlement Road to Ames Haven Road



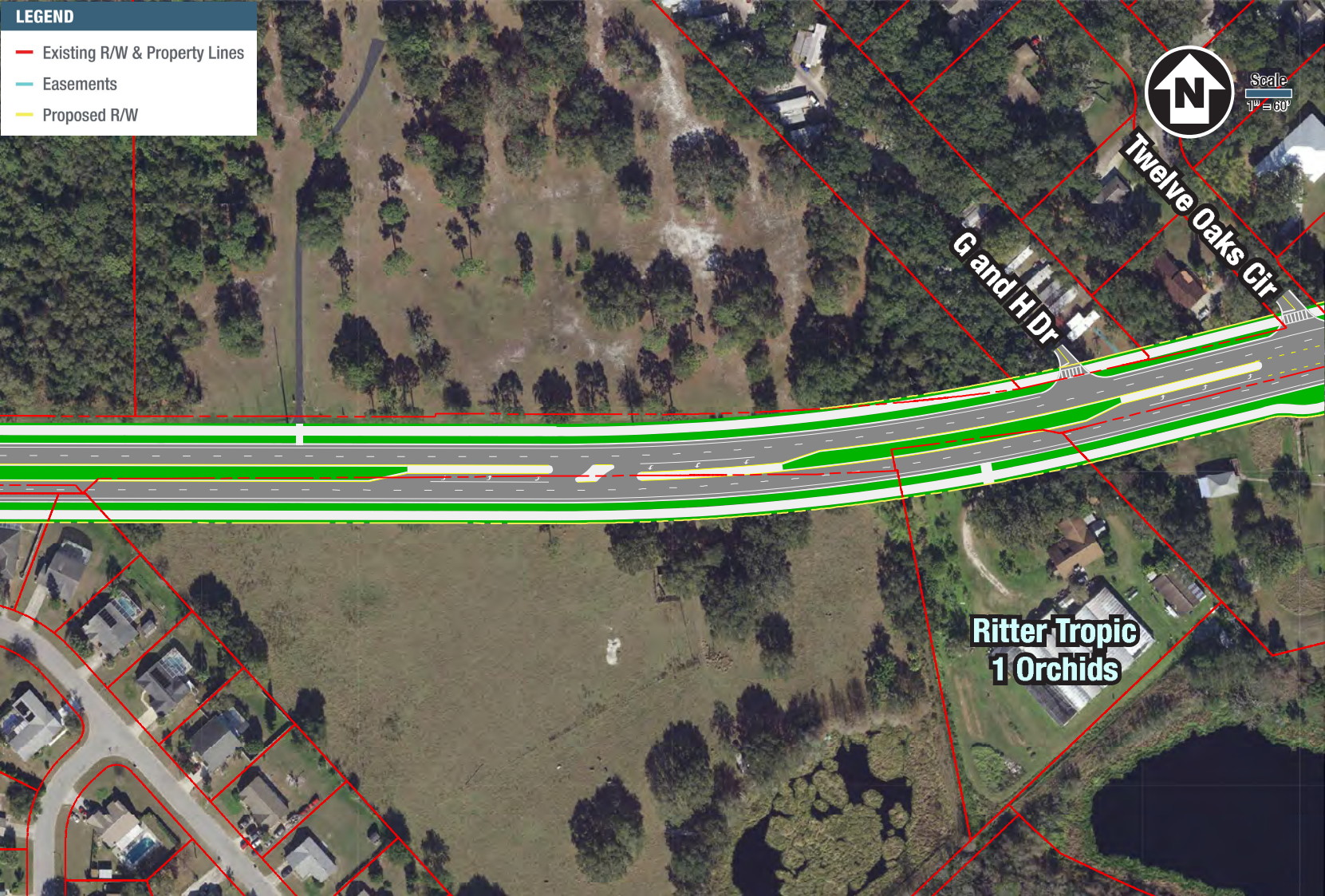
Alternative 2 from Partin Settlement Road to Ames Haven Road



Alternative 2 from Partin Settlement Road to Ames Haven Road

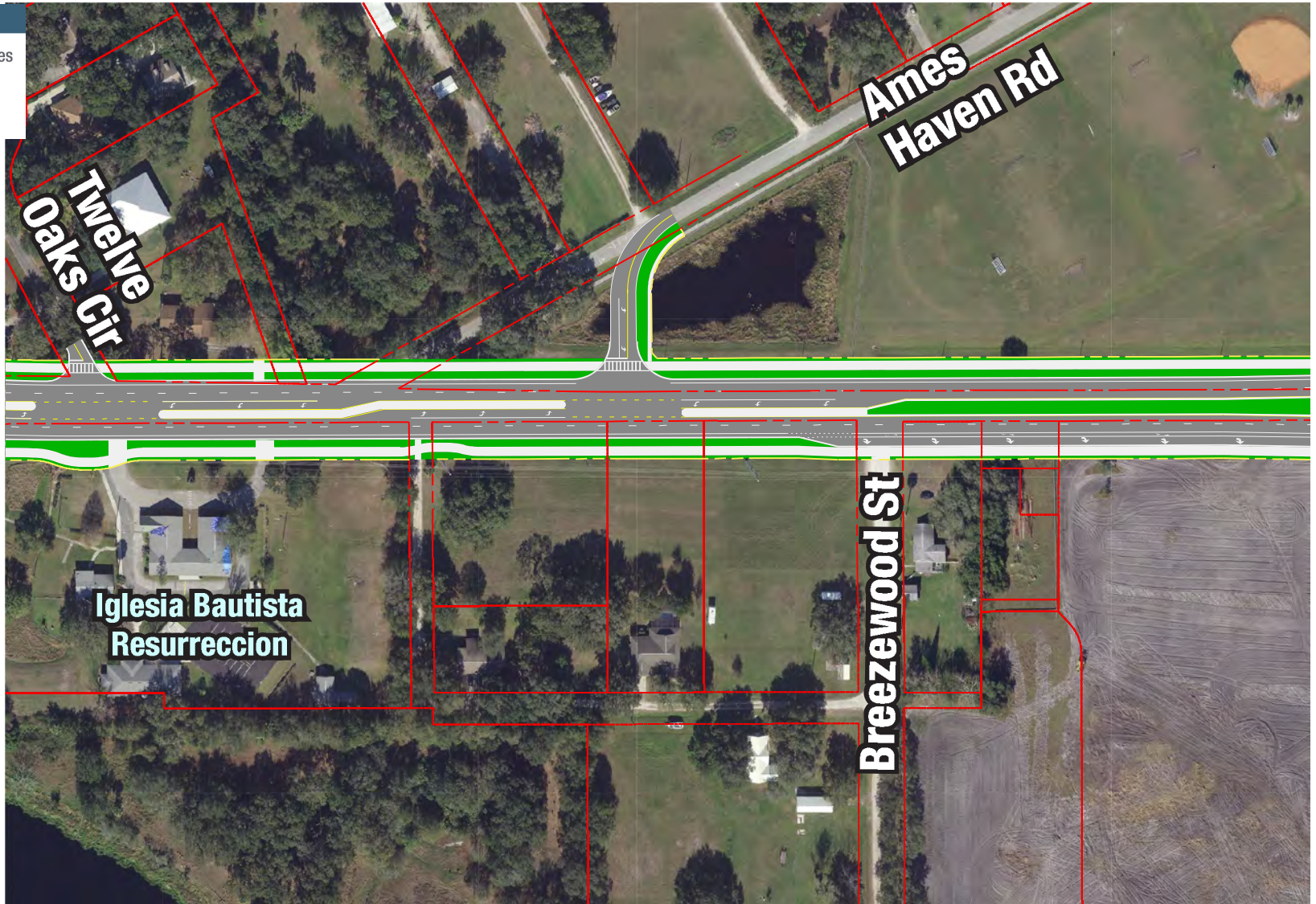


# Alternative 2 from Partin Settlement Road to Ames Haven Road



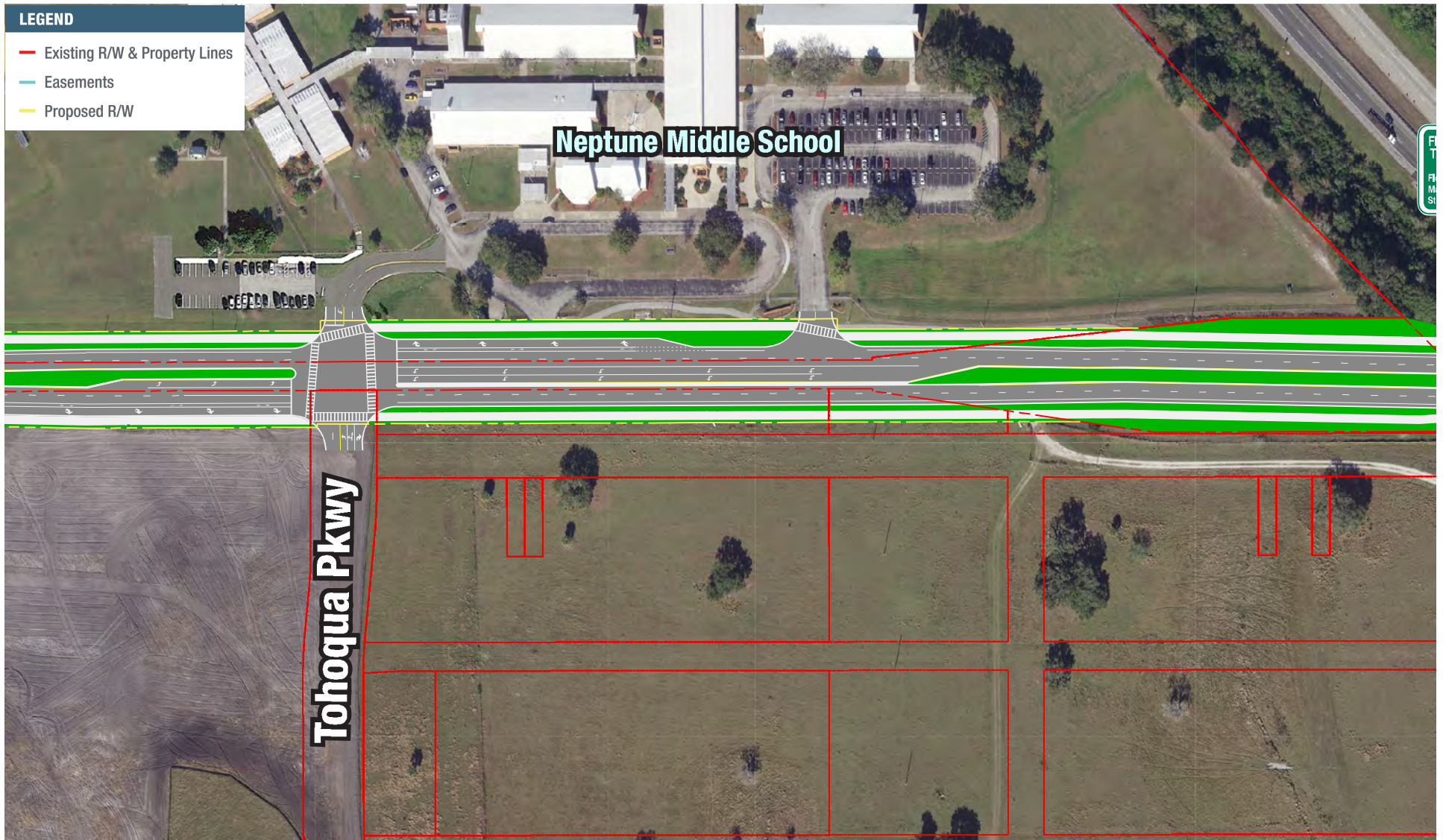
# Alternatives 1 & 2 from Ames Haven Road to Old Canoe Creek Road

- LEGEND**
- Existing R/W & Property Lines
  - Easements
  - Proposed R/W

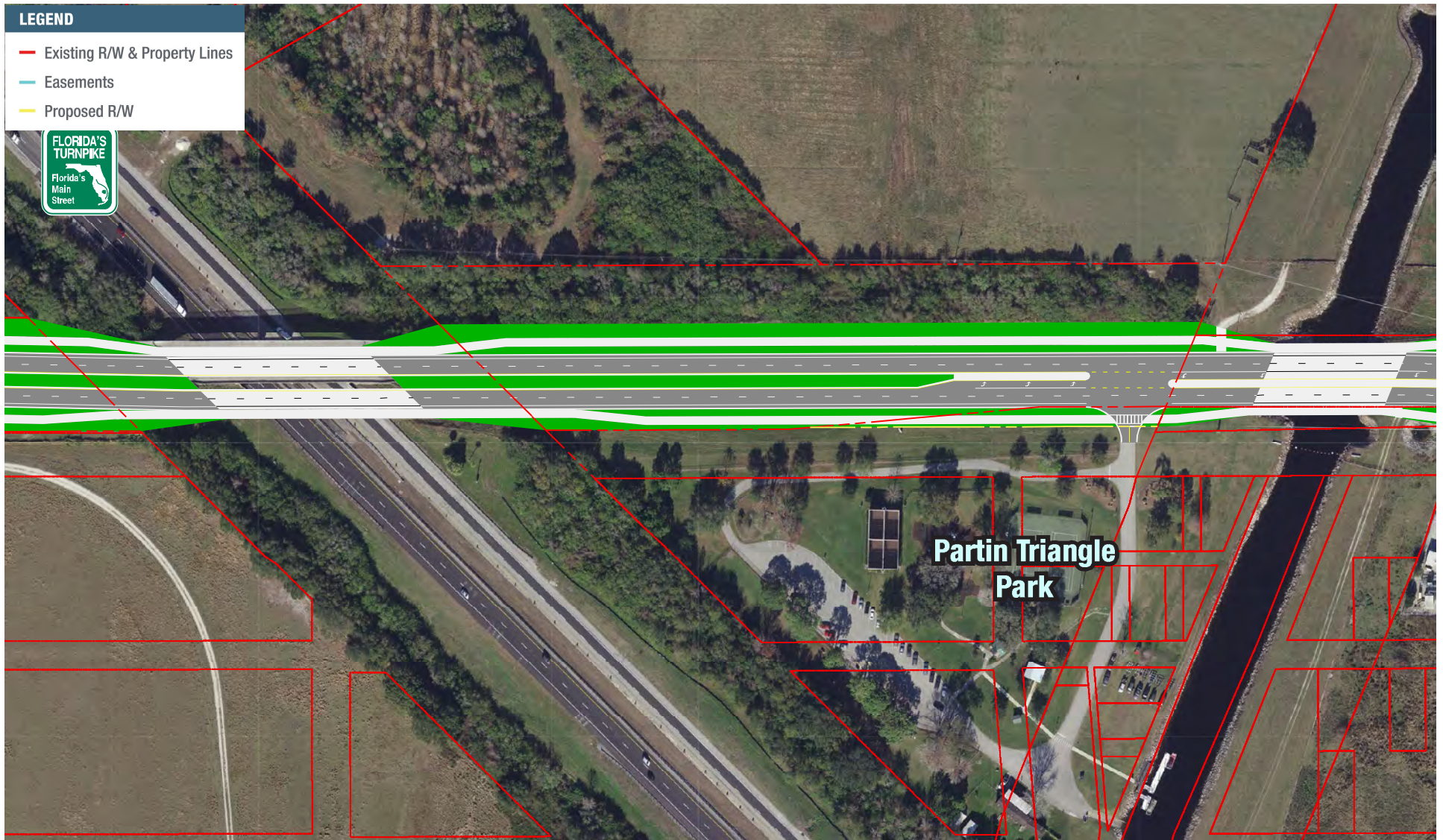




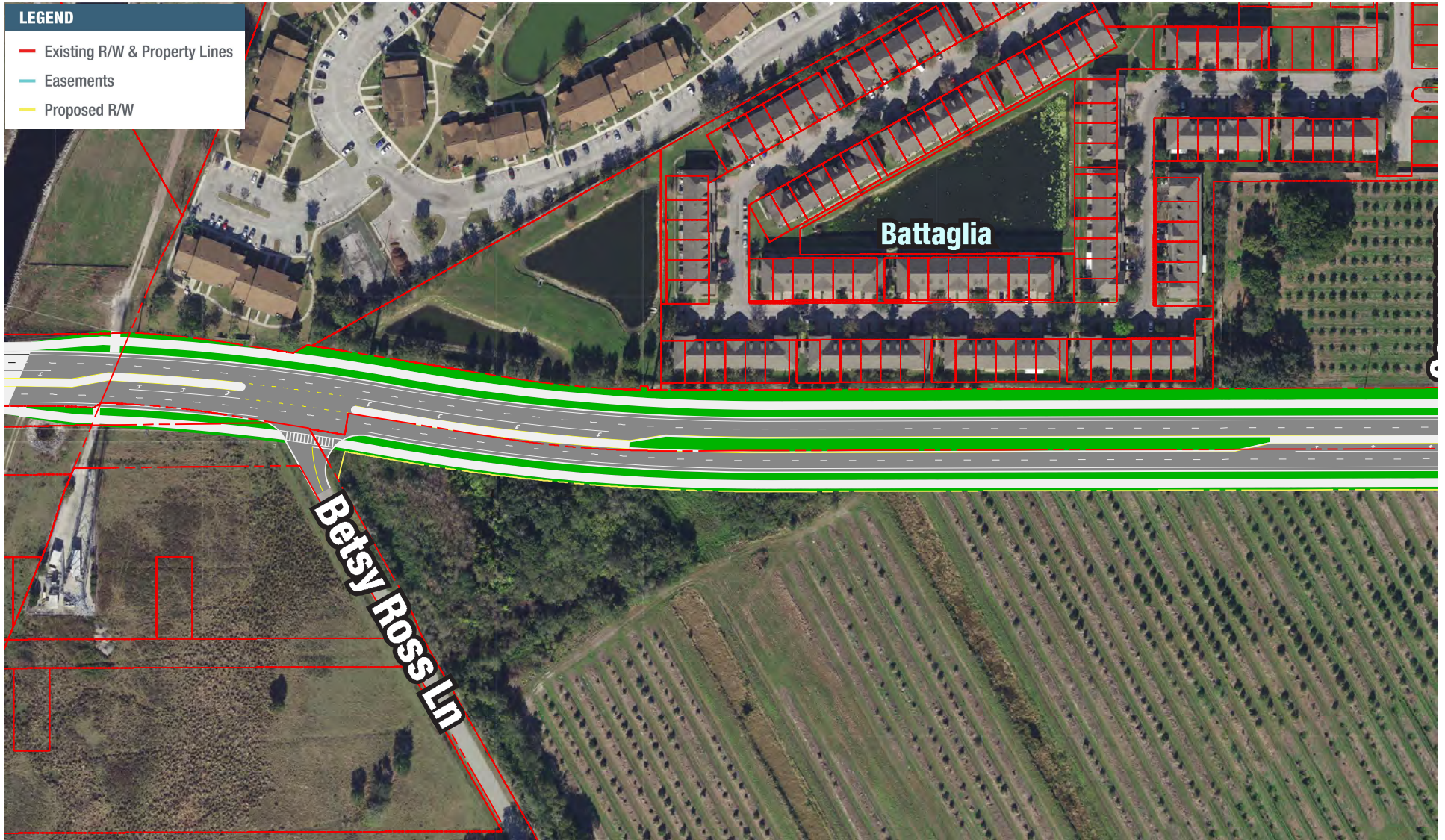
# Alternatives 1 & 2 from Ames Haven Road to Old Canoe Creek Road



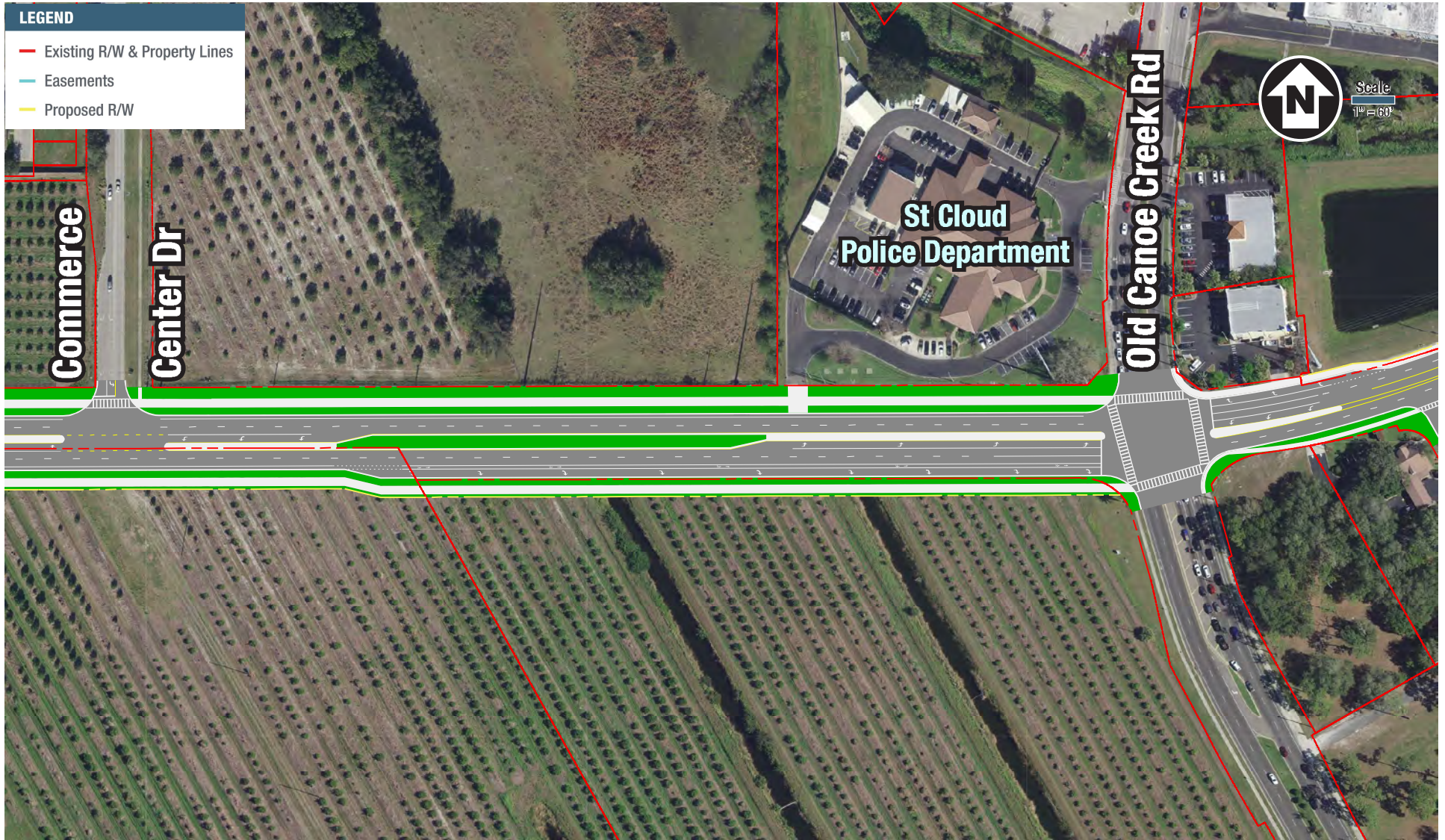
# Alternatives 1 & 2 from Ames Haven Road to Old Canoe Creek Road



# Alternatives 1 & 2 from Ames Haven Road to Old Canoe Creek Road



# Alternatives 1 & 2 from Ames Haven Road to Old Canoe Creek Road



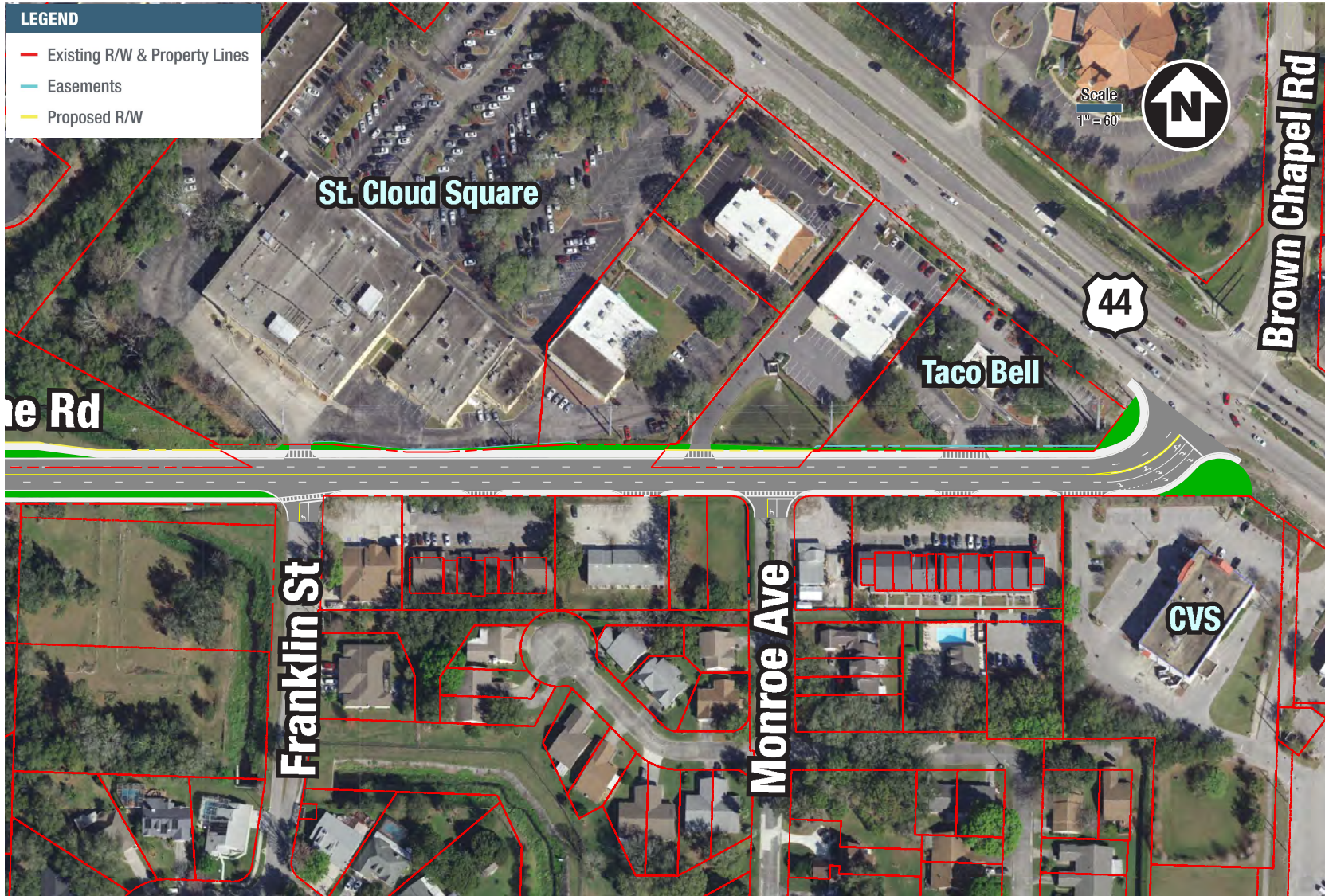
# Alternative A from Old Canoe Creek Road to US 192

## LEGEND

- Existing R/W & Property Lines
- Easements
- Proposed R/W



# Alternative A from Old Canoe Creek Road to US 192



# Alternative B from Old Canoe Creek Road to US 192

- LEGEND**
- Existing R/W & Property Lines
  - Easements
  - Proposed R/W



# Alternative B from Old Canoe Creek Road to US 192

