



EXISTING CONDITIONS TECHNICAL MEMORANDUM

SR 417 (Seminole Expressway) Sanford Airport Connector PROJECT DEVELOPMENT & ENVIRONMENT STUDY

CFX Contract Number: 002067

CFX Project Number: 417-246A

Prepared for:

Central Florida Expressway Authority
4974 ORL Tower Road
Orlando, FL 32807

Submitted by:

Ardurra Group, Inc.
3000 Dovera Dr #200
Oviedo, FL 32765

September 2024

Table of Contents

1.0 Project Information	1
1.1 Project Background and Description	1
1.2 Purpose and Need	4
Regional Connectivity	4
Anticipated Transportation Demand	5
Capacity	6
Safety	6
Modal Connectivity	7
Social Demand	7
1.3 Project Status	8
2.0 Existing Conditions	11
2.1 Existing Roadway Conditions	11
2.1.1 Existing Roadway Network	11
2.1.2 Existing Roadway Characteristics	12
2.1.3 Existing Traffic Volumes	21
2.1.5 Drainage	29
2.1.6 Floodplains	39
2.1.7 Utilities and Railroad	41
2.4 Environmental Conditions	42
2.4.1 Existing Land Use	42
2.4.2 Cultural Features	44
2.4.3 Social Features	46
2.4.4 Wetlands and Other Surface Waters	48
2.4.5 Water Resources	48
2.4.6 Protected Species and Habitat	51
2.5 Physical Environment	55
2.5.1 Geotechnical	55
2.5.2 Contamination	62
2.5.3 Air Quality	66

2.5.4 Noise	66
2.5 Structures.....	66
2.6 Lighting.....	67
2.7 Intelligent Transportation Systems	67

Figures

Figure 1: General Project Location	2
Figure 2: Project Study Area	3
Figure 3: CFX 2045 Master Plan Projects.....	9
Figure 4: SR 417 Sanford Airport Connector Future Expressway.....	10
Figure 5: Existing Pedestrian and Bicycle Facilities	15
Figure 6: Existing Typical Section – East Lake Mary Boulevard	16
Figure 7: 2022 Existing AM and PM Peak Hour Intersection Volumes	23
Figure 8: 2022 Intersection Lane Geometry	24
Figure 9: Relevant Existing Permits.....	32
Figure 10: Permitted Stormwater Facilities.....	38
Figure 11: FEMA Floodplain Areas.....	40
Figure 12: Existing Land Use and Developments	43
Figure 13: Cultural Resources Map.....	45
Figure 14: Existing Community Facilities.....	47
Figure 15: Waterbody (WBID) Map.....	50
Figure 16: Existing Natural Constraints.....	54
Figure 17: USGS Quadrangle Map.....	61

Tables

Table 1: Design Speed and Posted Speed.....	12
Table 2: Context Classifications	13
Table 3: Access Management Classifications	13
Table 4: Horizontal Curves	17
Table 5: SR 417 Existing Horizontal Alignment Deficiencies	18
Table 6: SR 417 Existing Vertical Alignment Deficiencies	19
Table 7: Interchanges, Intersections and Signalization	20
Table 8: 2022 Traffic and Volume to LOS D MSV Ratios	22

Table 9: 2022 Existing AM and PM Peak Hour Intersection LOS/Delay (sec)	25
Table 10: 2022 Traffic and Volume to LOS D MSV Ratios.....	27
Table 11: Existing AM and PM Peak Hour Intersection LOS/Delay (sec)	28
Table 12: Existing Permits Summary	29
Table 13: Summary of Permitted Stormwater Facilities.....	36
Table 14: Existing Utilities.....	41
Table 15: WBID Water Quality Summary.....	49
Table 16: Potential Listed Species and Likelihood of Occurrence.....	51
Table 17: Seminole County NRCS Soils (March 2023).....	55
Table 18: Potential Contamination Site Summary	62

1.0 Project Information

1.1 Project Background and Description

The Project Development and Environment (PD&E) Study for the State Road 417 (Seminole Expressway) Sanford Airport Connector was initiated by the Central Florida Expressway Authority in May 2024 to further develop and evaluate transportation alternatives to provide direct access from SR 417 to the Orlando Sanford International Airport (also known as SFB by their International Air Transport Association Airport Code). The goal of the project is to identify a recommended improvement to provide direct access from SR 417 to the airport and to help address roadway capacity needs associated with anticipated future traffic growth in the area. This PD&E Study evaluates a new expressway connection from SR 417 to SFB and alternative mobility programs within the project corridor, including multimodal and intermodal facilities. **Figure 1** shows the general project location and **Figure 2** shows the project study area. The study area has been expanded beyond the study area for the Concept, Feasibility & Mobility (CF&M) Study for this project to include the area along East Lake Mary Boulevard to SR 417 for the evaluation of a new elevated expressway along East Lake Mary Boulevard from SR 417 to the airport.

The objective of the PD&E Study is to evaluate each mobility option based on engineering, traffic, economic and environmental evaluations and to identify a Preferred Alternative. This study includes the evaluation of the physical, natural, social and cultural environment, right-of-way considerations and cost estimates, as well as the following goals:

- Identify transportation mobility options
- Enhance direct access to the Orlando Sanford International Airport
- Enhance mobility for the area's growing population and economy
- Provide consistency with local plans and policies
- Promote regional connectivity
- Fulfill the recommendation of Seminole Board of County Commissioners to re-evaluate this corridor

Figure 1: General Project Location

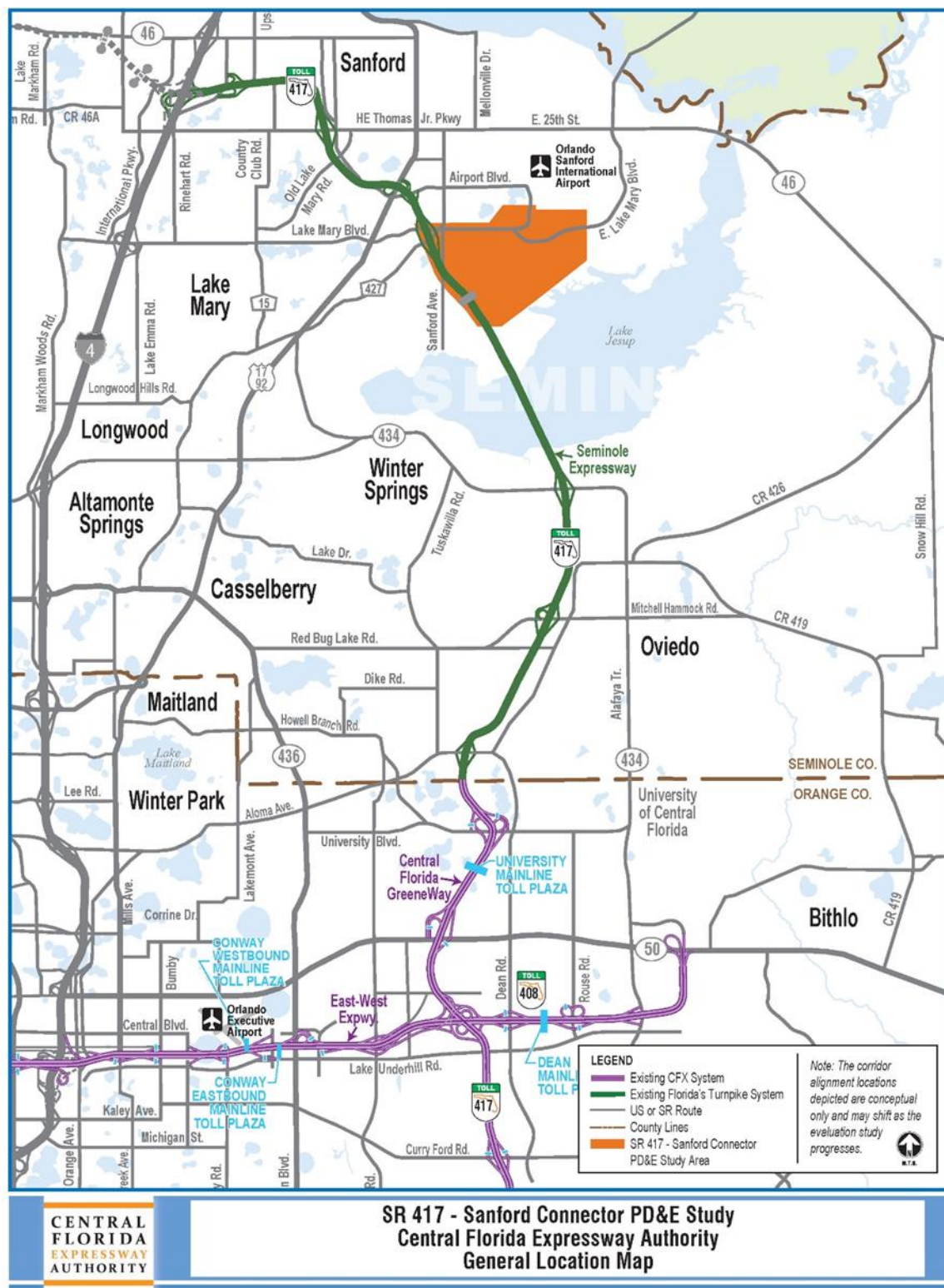
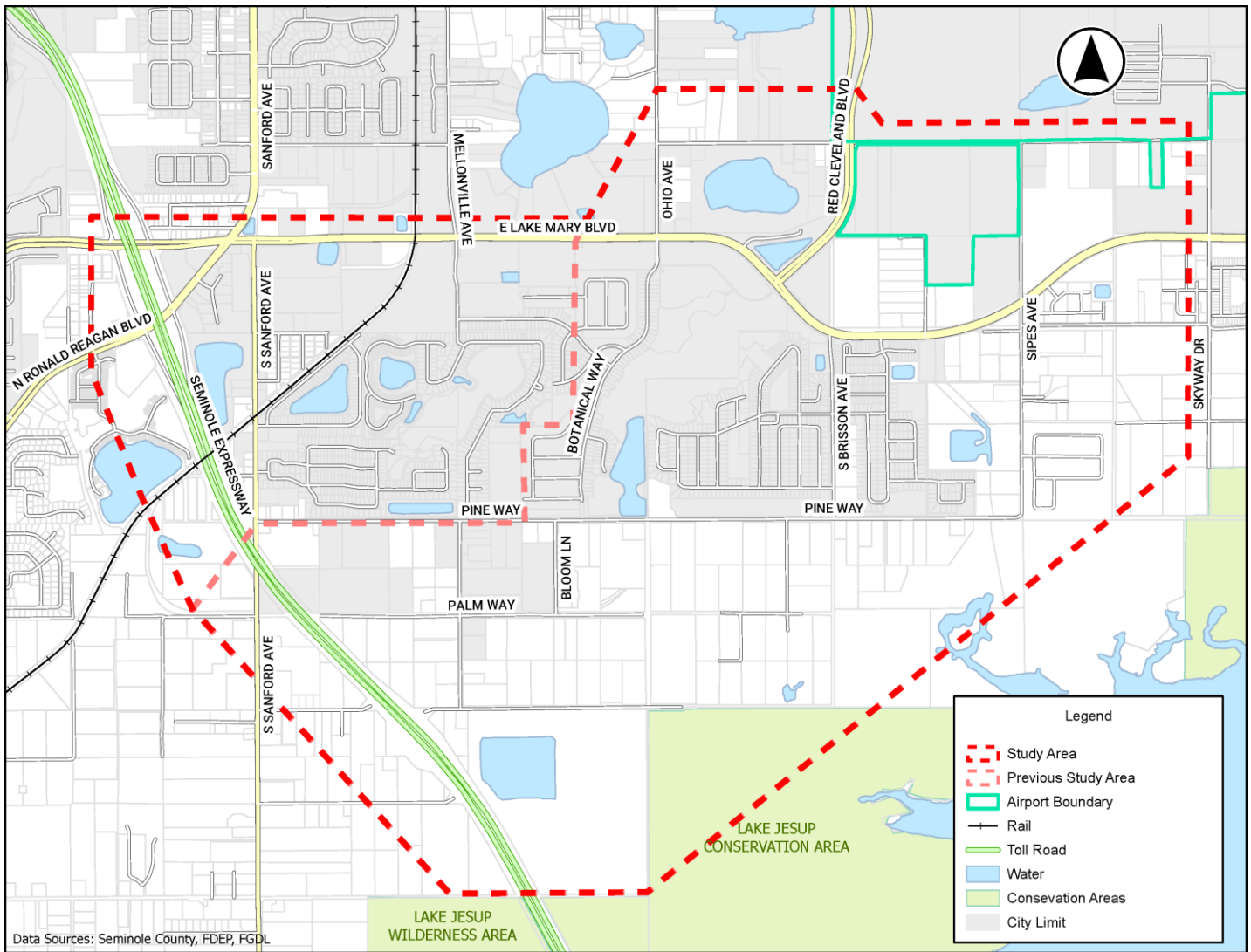


Figure 2: Project Study Area



1.2 Purpose and Need

The purpose of the proposed SR 417 (Seminole Expressway) Sanford Airport Connector is to provide a direct, limited access connection between SR 417 and SFB to provide better connectivity and accommodate future traffic growth in the area. The primary access to the airport is along East Lake Mary Boulevard via Red Cleveland Boulevard, which extends north from the airport entrance to the airport terminal. A proposed connector would provide a limited access connection directly to SFB from SR 417, thereby reducing the demand along East Lake Mary Boulevard and improving travel time for all users. The proposed improvements are to 1) enhance regional connectivity, 2) accommodate transportation demand, 3) provide needed capacity, 4) improve safety, 5) support modal connectivity and 6) serve social and economic growth.

Regional Connectivity

SFB is a designated Strategic Intermodal System (SIS) Strategic Growth Commercial Service Airport. SR 417 serves as a SIS Highway Corridor providing regional connectivity west of the airport and connects to two designated SIS Strategic Growth Highway Connectors: East Lake Mary Boulevard between SR 417 and Red Cleveland Boulevard and Red Cleveland Boulevard between East Lake Mary Boulevard and Airport Boulevard. Airport passengers using East Lake Mary Boulevard are intermixed with local, non-airport traffic. For example, northbound SR 417 traffic exiting the interchange at Ronald Reagan Boulevard (CR 427) and East Lake Mary Boulevard, travel through three signalized intersections within 0.3 miles of the SR 417 northbound off-ramp, impeding traffic flow and increasing travel time for airport users. In addition to the designated SIS route, airport access to the passenger terminal is also provided via Airport Boulevard from SR 46/Sanford Avenue.

Results from traffic analyses conducted for the CF&M Study are summarized throughout this section and are presented in a memorandum titled SR 417 to Orlando Sanford International Airport Connector Concept Traffic Analysis Memorandum (CDM Smith 2023). A desktop travel time analysis was conducted to compare travel times between the existing route from SR 417 northbound to SFB via East Lake Mary Boulevard and the proposed connector to SFB. Both routes started on northbound SR 417 at the Lake Jesup mainline toll plaza and terminated at the SFB terminal building. The analysis found that the proposed connector could reduce the travel distance by 28% and reduce travel time to SFB by as much as 51% during the PM peak period. In addition, travel time savings are expected to be higher in future conditions when traffic demand is anticipated to increase, and congestion worsens at the SR 417 and Ronald Reagan Boulevard (CR 427) and East Lake Mary Boulevard interchange. A direct connection from SR 417 to SFB is expected to enhance regional connectivity by improving access to the airport, increasing mobility options and providing enhanced system linkage between the SIS facilities.

Anticipated Transportation Demand

As part of the CF&M Study traffic analysis, an origin and destination evaluation was performed to identify travel patterns for trips originating from SR 417 south and north of the Ronald Reagan Boulevard (CR 427) and East Lake Mary Boulevard interchange to the SFB terminal, using data from StreetLight Data, Inc. Review of the one-way 2022 Annual Average Daily Traffic (AADT) indicates that 5% of the trips from northbound SR 417 access the airport terminal through either Airport Boulevard (2%) and Red Cleveland Boulevard (3%), while 9% continue travel on East Lake Mary Boulevard, east of Red Cleveland Boulevard. Origin and destination data indicate that no trips from southbound SR 417 enter the airport terminal but that 3% of the trips continue on East Lake Mary Boulevard, east of Red Cleveland Boulevard. It is expected that 17% (or 4,400 vehicles per day one-way) of northbound and southbound SR 417 trips would potentially be diverted to the proposed connector if it was in place in the year 2022. Based on the traffic analysis, the AADT along SR 417, south of the Ronald Reagan Boulevard (CR 427) and East Lake Mary Boulevard interchange, is anticipated to increase from 61,150 in the year 2022 to 118,100 by 2050 (93% increase). In addition, AADT at the SR 417 and Ronald Reagan Boulevard (CR 427) and East Lake Mary Boulevard interchange ramps to/from the south is anticipated to increase from 17,750 to 33,100 by 2050 (87% increase). The analysis also indicates that the proposed connector could potentially divert as much as 51% (17,000 AADT) of traffic in the year 2050 from the SR 417 and Ronald Reagan Boulevard (CR 427) and East Lake Mary Boulevard interchange ramps to/from the south, thereby reducing congestion and improving operations at the existing interchange.

The traffic analysis also indicates that AADT along East Lake Mary Boulevard, west of Red Cleveland Boulevard, is anticipated to increase from 23,800 to 36,500 by 2050 (53% increase). However, the analysis indicates that the proposed connector is anticipated to reduce traffic demand along this segment of East Lake Mary Boulevard, by as much as 46% (or 17,000 AADT) in 2050. East of Red Cleveland Boulevard, the AADT along East Lake Mary Boulevard is anticipated to increase from 23,000 in 2022 to 35,400 in 2050 (54% increase). The proposed connector is also anticipated to divert 3,800 trips from Airport Boulevard, east of Sanford Avenue, as well as 17,000 trips from Ronald Reagan Boulevard (CR 427), south of East Lake Mary Boulevard, in 2050.

As documented in the 2021 Airport Master Plan Update for SFB, the number of passengers in 2017 was 1,436,224. The plan also forecasts the number of passengers to nearly double to 2,747,325 by 2037, further indicating that traffic demand along East Lake Mary Boulevard and Red Cleveland Boulevard is likely to increase in future years. The plan also notes that the air freight tonnage through the airport in 2017 totaled 332 tons, with an expected increase to 1,671 tons by the year 2037 (WS Atkins, Inc. 2021).

The FDOT Florida Traffic Online website indicates that the 2021 Average Annual Daily Truck Traffic along Airport Boulevard is 274 or 6% of total traffic, and 2860 or 13% along East Lake Mary

Boulevard (FDOT n.d.). Based on the forecasted increase in air freight tonnage through the airport, it is anticipated that truck traffic will also increase.

Capacity

The existing traffic demand (2022) analysis shows that westbound East Lake Mary Boulevard (west of Red Cleveland Boulevard) experiences a Level of Service D Volume to Capacity ratio of 0.8 during the AM peak hour, which increases to 0.9 east of Red Cleveland Boulevard. The existing traffic operations analysis also indicates extended delays and long queues during peak periods at the SR 417 and Ronald Reagan Boulevard (CR 427) and East Lake Mary Boulevard interchange. The adjacent intersections at East Lake Mary Boulevard at Ronald Reagan Boulevard (CR 427) and Sanford Avenue (CR 425) also operate unacceptably and impact operations at the interchange. Congestion mostly occurs along the facilities approaching and within the interchange footprint including the SR 417 northbound off-ramp, East Lake Mary Boulevard and Ronald Reagan Boulevard (CR 427). Providing additional capacity with a direct connection from SR 417 to the airport is anticipated to alleviate congestion at the existing interchange.

Review of the future 2050 No-Action analysis indicates that the Volume to LOS D Maximum Service Volumes ratio during the PM Peak Hours at SR 417 for the northbound exit ramp at the Ronald Reagan Boulevard (CR 427) and East Lake Mary Boulevard interchange is 1.0. The future 2050 Build analysis indicates that the proposed connector is expected to divert northbound traffic away from the interchange and reduce the Volume to LOS D MSV ratio to 0.5 in 2050, and further indicates that the proposed connector could reduce traffic along the following arterial segments:

- East Lake Mary Boulevard, west of Red Cleveland Boulevard
- Airport Boulevard, east of Sanford Avenue
- CR 427, south of East Lake Mary Boulevard

The future 2050 No-Action analysis indicates the Volume to LOS D MSV ratios at these arterial segments are expected to be between 1.1 to 1.2. However, the future 2050 Build analysis indicates that the Volume to LOS D MSV ratios is expected to be reduced to between 0.6 and 0.9.

The future 2050 No-Action analysis indicates that the westbound through movements for the East Lake Mary Boulevard and Red Cleveland Boulevard intersection are expected to operate at LOS F during the AM peak period. However, the future 2050 Build indicates that the overall operations are expected to operate at a LOS E during the AM peak period. Because of the existing constrained capacity and expected increase in traffic volumes, additional capacity is anticipated to be needed for satisfactory traffic operations in future years.

Safety

Because of the three signalized intersections within 0.3 miles of the SR 417 northbound off-ramp, traffic at the SR 417 northbound off-ramp occasionally backs up onto the SR 417 mainline,

impacting safety and operations along SR 417. The proposed connector would divert traffic from the SR 417 and Ronald Reagan Boulevard (CR 427) and East Lake Mary Boulevard interchange, thereby enhancing safety and operations at the interchange.

Modal Connectivity

The U.S. Department of Transportation Federal Aviation Administration National Plan of Integrated Airport Systems 2023-2027 published September 30, 2022, designates SFB as a Small Hub, Primary Commercial Service airport facility. Primary Commercial Service airports are publicly owned airports that receive scheduled air carrier service with 10,000 or more passenger boardings per year. Small Hub airports are defined as accounting for 0.05% and 0.25% of total U.S. passengers. The 2021 Airport Master Plan Update for SFB forecasts enplanements to increase 91%, and air freight tonnage to increase 400% by the year 2037. The proposed connector is anticipated to support mobility to other modes of travel at SFB.

Social Demand

According to the University of Florida's Bureau of Economics and Business Research (BEBR) Florida Population:

2020 Census Summary, Seminole County's population grew from 422,718 in 2010 to 470,856 in 2020, or 11.4%. The BEBR data also showed that the city of Sanford experienced a 14% increase in population over the same period (BEBR 2021). Further, BEBR estimates that Seminole County's population is projected to grow approximately 21% by the year 2050 (BEBR 2022).

Land use in the area is primarily comprised of residential, agricultural and undeveloped lands. However, a review of planned developments in the study area shows that the region is undergoing extensive land use changes, resulting in increased traffic generators. As of July 2023, the city of Sanford's Building Division Online Permitting Service noted there are 10 residential, commercial and industrial planned developments in the study area (City of Sanford 2023). These planned developments account for 55% of the undeveloped lands in the study area, or 349 acres of 637 acres of undeveloped lands. Of the planned developments, five are residential developments, which are expected to create an additional 849 single-family houses and townhomes in the study area.

As a result, local traffic along East Lake Mary Boulevard and surrounding roadways is expected to increase. The proposed connector is expected to divert traffic from East Lake Mary Boulevard, providing local traffic with increased mobility to and from the existing and planned development in the area.

1.3 Project Status

The Central Florida Expressway Authority (CFX) identified the SR 417 Sanford Airport Connector in their 2045 Master Plan, shown in **Figure 3**. CFX conducted a Concept, Feasibility, and Mobility (CF&M) Study for this proposed new direct connect expressway between SR 417 and East Lake Mary Boulevard at Red Cleveland Boulevard, and developed four potential corridors to determine if they are viable and fundable in accordance with CFX policies and procedures. The CF&M Study determined that there were no fatal flaws with any of the four corridors, but the project was not considered financially viable (toll revenue over 30 years did not cover at least 50% of project costs). However, the CFX Board approved the findings of the SR 417 Sanford Airport Connector CF&M Study at the August 10, 2023 board meeting, and directed staff to move forward to the Project Development & Environment (PD&E) Study phase. The Board indicated a desire to further refine the alignments and project costs and to identify potential funding partners that could help make the project financially viable. The PD&E Study will also evaluate a fifth corridor which consists of an elevated two-lane expressway along East Lake Mary Boulevard between SR 417 and Red Cleveland Boulevard that was suggested by the CFX Environmental Stewardship Committee near the end of the CF&M Study.

The need for a direct connect expressway between SR 417 and Red Cleveland Boulevard at East Lake Mary Boulevard is supported by both Seminole County and the Orlando Sanford International Airport. The proposed project is also consistent with the CFX 2045 Master Plan as a Short-Term Project which means it is recommended for design and construction. See **Figure 4** from the CFX 2045 Master Plan for more information on this project.

Figure 3: CFX 2045 Master Plan Projects



Figure 4: SR 417 Sanford Airport Connector Future Expressway



2.0 Existing Conditions

2.1 Existing Roadway Conditions

The existing roadway network in the study area consists of an expressway, principal arterials, minor arterials and minor collector facilities as well as local roads. SR 417 is a major north/south corridor for commercial and private transportation. The study area includes two interchanges (SR 417 and CR 427/Lake Mary Boulevard), ten at-grade signalized intersections (SR 417 southbound ramps at East Lake Mary Boulevard and Ronald Reagan Boulevard, SR 417 northbound ramps at East Lake Mary Boulevard and Ronald Reagan Boulevard, East Lake Mary Boulevard at Ronald Reagan Boulevard, Sanford Avenue at East Lake Mary Boulevard, Mellonville Avenue at East Lake Mary Boulevard, Ohio Avenue (north)/ Silvervista (south) at East Lake Mary Boulevard, Red Cleveland Boulevard at East Lake Mary Boulevard, and Skyway Drive at East Lake Mary Boulevard) and six unsignalized at-grade intersections along East Lake Mary Boulevard at (Skyraider Court, Brisson Avenue, Night Heron Drive, Laura Avenue, Sipes Avenue, and Red Cleveland Boulevard at Marquette Avenue. The SR 417 project corridor has two existing bridges and one bridge culvert within the project study area.

2.1.1 Existing Roadway Network

The existing roadway network under evaluation consists of an expressway, principal arterials, minor arterials and minor collector facilities as well as local roads. The following list describes some of the existing conditions of the roadway network:

- SR 417 is a four-lane divided roadway with a maximum median width of 78 feet. The northbound direction consists of two 12-foot-wide travel lanes and an 8-foot-wide inside shoulder (4 feet unpaved).
- East Lake Mary Boulevard is a four-lane divided roadway with 11-foot-wide travel lanes. Adjacent to the outside lanes are 4-foot-wide designated bike lanes. Sidewalks are present along both sides of the roadway. Along the south side of the roadway, the sidewalk width varies between 5 and 8 feet, while the sidewalk width along the north is consistently 5 feet.
- Red Cleveland Boulevard is a four-lane divided roadway with two 12-foot-wide travel lanes in each direction. Adjacent to the outside lanes are 4-foot-wide undesignated bike lanes. Both sides of the roadway include 5-foot-wide sidewalks.
- CR 425/South Sanford Avenue is a two-lane undivided roadway, with one 10-foot-wide travel lane in each direction. There are no pedestrian or bicycle facilities along the roadway within the study area.
- Intersection and signalization information was collected using the East Lake Mary Boulevard Plans of Proposed Roadway Construction from September 2002 (Seminole County Public Works Department PS- 0137), Google Earth and field reviews.

2.1.2 Existing Roadway Characteristics

2.1.2.1 Roadway Design and Posted Speeds

The design and posted speeds for SR 417 and East Lake Mary Boulevard are the same, at 70 mph (SR 417) and 50 mph (East Lake Mary Boulevard). The design speed for Red Cleveland Boulevard is 50 mph while its posted speed is 40 mph, and CR 425/South Sanford Avenue has a design speed of 40 mph* while its posted speed is 35 mph. **Table 1** provides the existing posted speed limits along the existing SR 417 corridor.

Table 1: Design Speed and Posted Speed

Roadway	Design Speed (mph)	Posted Speed (mph)
SR 417	70	70
East Lake Mary Boulevard	50	50
Red Cleveland Boulevard	50	40
CR 425/South Sanford Avenue	40 *	35

* Assumed 5 mph greater than posted speed limit

2.1.2.2 Context Classification

The FDOT context classification system applies to all FDOT highways functionally classified as arterials or collectors and ensures that projects along these highways harmonize with the surrounding land use characteristics and the intended uses of the roadway. By informing planners and engineers about the type and intensity of uses along various roadway segments, state roadways can be planned, designed and maintained to be supportive of safe and comfortable travel for their anticipated users.

Eight FDOT context classifications are used to describe unique land use contexts in Florida. The context classifications range from "C1 - Natural" to "C6 - Urban Core". The context classification provides insight to the types of road users that can be expected, and corresponding design criteria reflect their diversity of needs. The only roadway within the study area that falls under the FDOT Context Classification guidelines is SR 417. The context classification for SR 417 was identified using the FDOT Straight-Line Diagram and the existing SR 417 Resurfacing Project Plans (FPID 440292-1-52-01 [FY 2021]).

The local government-maintained roads were also classified according to the FDOT Context Classification Guide (July 2020). **Table 2** summarizes the context classification determinations for the project as provided by FDOT.

Table 2: Context Classifications

Roadway	Context Classification
SR 417	Not Applicable (Limited Access Facility)
East Lake Mary Boulevard	C3C*
CR 425/South Sanford Avenue	C3R*
Red Cleveland Boulevard	C3C*

* Determined for non-State Highway System roadways

2.1.2.3 Access Management

The only roadway within the study area that falls under the FDOT access management guidelines is SR 417. The access management classification for SR 417 was identified using the FDOT Access Management geographic information system files (FDOT n.d.). The local government-maintained roads were classified according to the FDOT *Access Management Guidebook* (FDOT 2019).

The Seminole County Comprehensive Plan (Transportation Element) implementation of the State Access Management Program and the control of access connections to the State Highway System are consistent with the FDOT Access Management guidelines and are coordinated with FDOT through the County's access permitting process (Seminole County 2022). **Table 3** lists the existing access management classifications for the roads within the study area.

Table 3: Access Management Classifications

Roadway	Access Management Classification
SR 417	1 - Freeway
East Lake Mary Boulevard	3 - Restrictive with 660-foot Connection Spacing
CR 425/South Sanford Avenue	4 - Non-Restrictive with 2,640-foot Signal Spacing
Red Cleveland Boulevard	3 - Restrictive with 660-foot Connection Spacing

2.1.2.4 Pedestrian and Bicycle Facilities

Within the study area, contiguous 5-foot-wide sidewalks are present on both the north and south sides of East Lake Mary Boulevard. However, just east of Ohio Avenue, the sidewalk on the south side of East Lake Mary Boulevard transitions to the 8-foot-wide multi-use Lake Mary Pathway trail. Sidewalks are also present along many of the cross streets that intersect with East Lake Mary Boulevard.

In addition, the Marl Beds Flat Trailhead and Trail is located within the Lake Jesup Conservation Area in the southern portion of the study area, at the eastern terminus of Oak Way. The trail entrance

contains undesignated parking for vehicles and is accessible only by Oak Way. The trail is open to the public Monday through Sunday from 6 a.m. to 8 p.m. Existing pedestrian and bicycle facilities are shown on **Figure 5**.

2.1.2.5 Typical Section

The existing typical section along East Lake Mary Boulevard consists of a four-lane divided roadway with 11-foot lanes and a 22-foot grassed median. There are also five-foot sidewalks on each side of the roadway and four-foot marked on-road bike lanes. **Figure 6** is a graphical representation of the existing typical section.

Figure 5: Existing Pedestrian and Bicycle Facilities

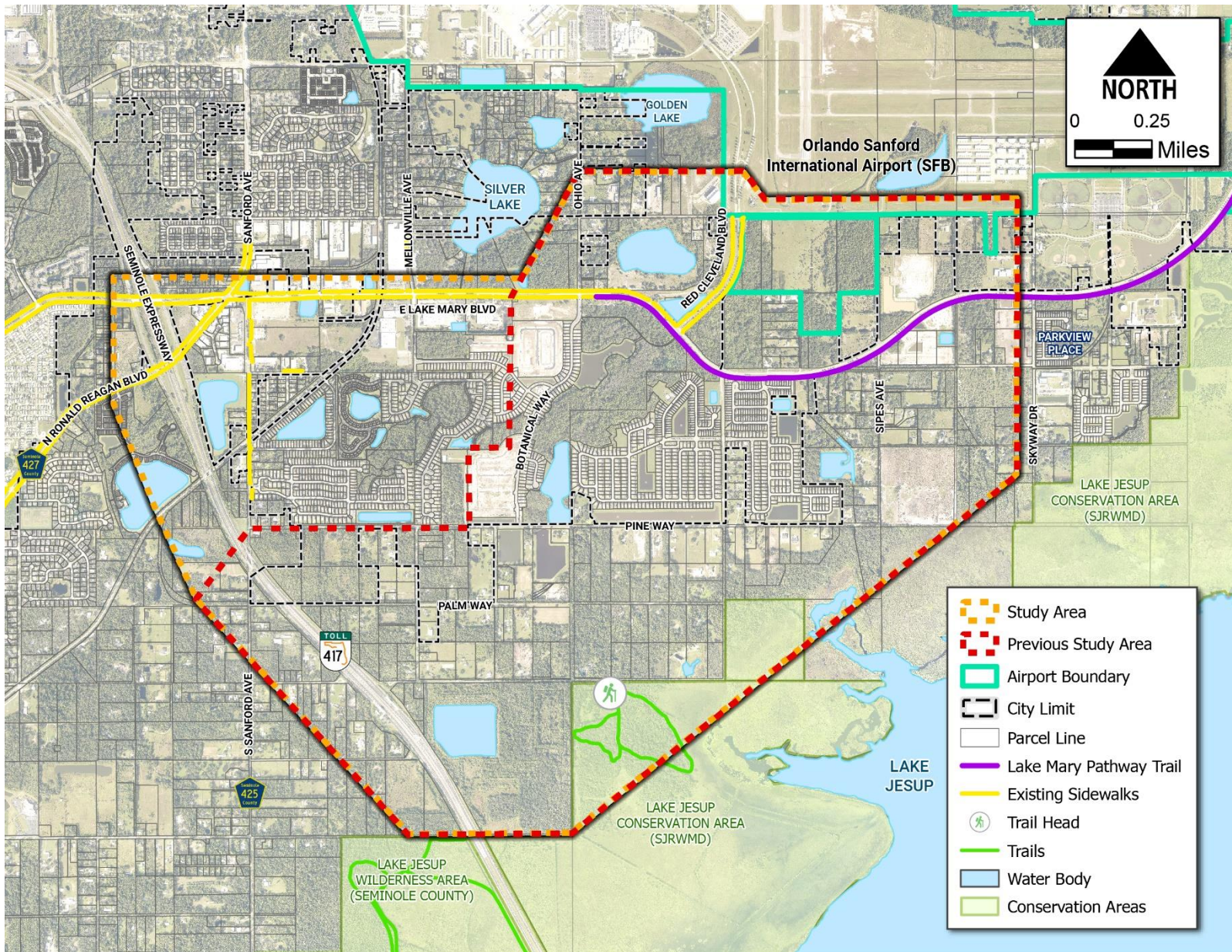
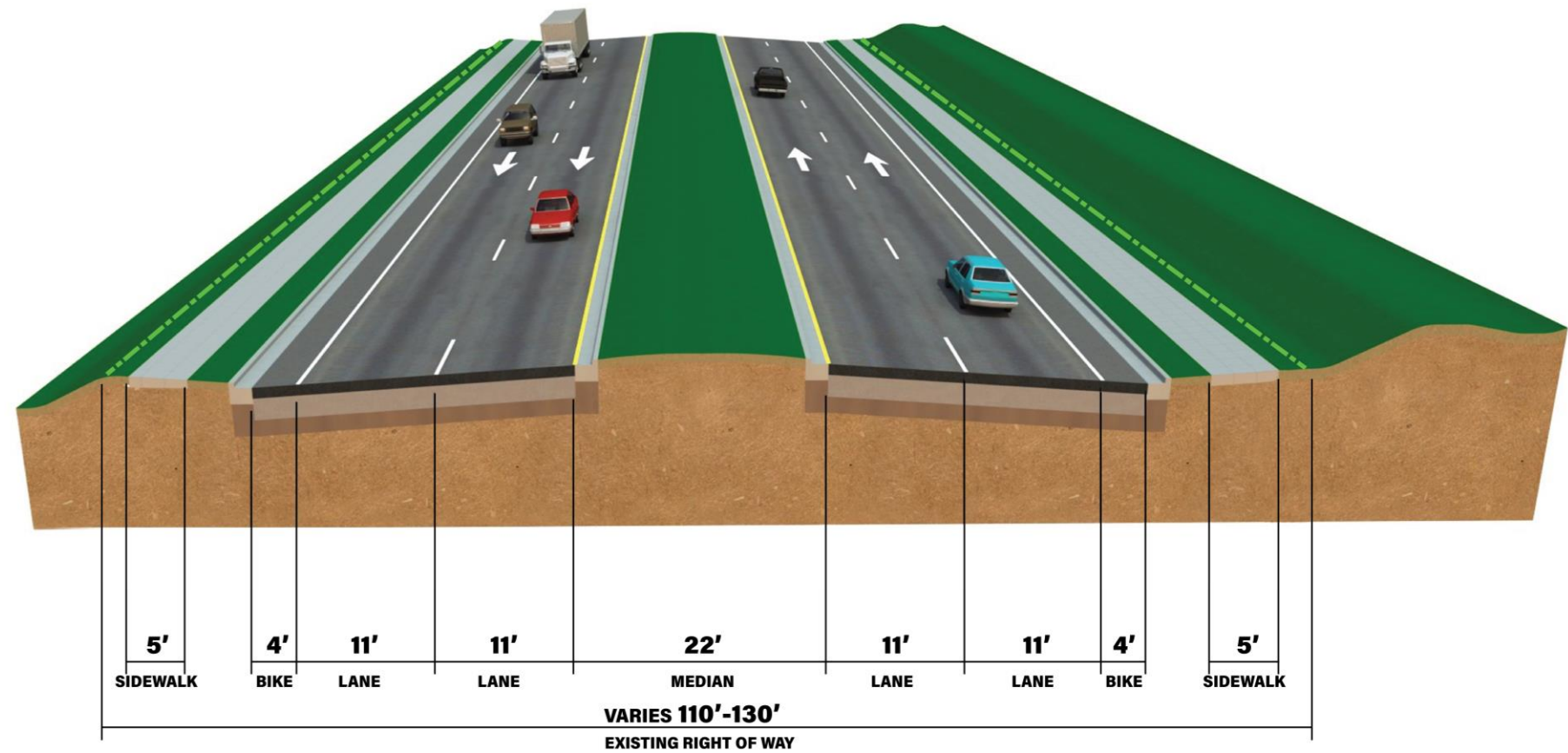


Figure 6: Existing Typical Section – East Lake Mary Boulevard



2.1.2.6 Pavement Condition

A Pavement Survey and Evaluation Report was completed for SR 417 as part of the pavement design package for the resurfacing project (FPID 440292-1-52-01). The evaluation found that the pavement conditions along SR 417 mainline in the study area ranged from poor to good based on visual observation (Tierra 2018), with visible cracking observed. Based on Google Earth and field reviews, pavement conditions along East Lake Mary Boulevard, CR 425/South Sanford Avenue and Red Cleveland Boulevard are good.

2.1.2.7 Horizontal Alignment

Table 4 lists the horizontal curves within the study limits.

Table 4: Horizontal Curves

Roadway	Point of Intersection	Design Speed (mph)	Limits	Deflection (Degrees, Minutes, Seconds)	Radius (feet)	Length of Curve (feet)	Degree of Curve (Degrees, Minutes, Seconds)
SR 417	MP 9.809	70	PC = MP 9.600 PT = MP 10.015	16°30'00"	7639	2,191.20	0°45'00"
	MP 10.655	70	PC = MP 10.412 PT = MP 10.890	25°15'00"	5730	2,523.84	1°00'00"
East Lake Mary Boulevard	Sta. 77+62.86	50	PC=Sta. 73+20.0 0 PT=Sta. 81+53.46	47°55'27"	996.45	833.46	5°45'00"
	Sta. 95+99.58	50	PC=Sta. 91+55.5 1 PT=Sta. 99+91.00	48°02'27"	996.45	835.49	5°45'00"
Red Cleveland Boulevard	Sta. 23+94.24	50	PC=Sta. 18+86.0 0 PT=Sta. 28+42.74	47°50'13"	1145.92	956.74	5°00'00"

PC = point of curve, PI = point of intersection, PT = point of tangent, Sta. = station

Florida's Turnpike Enterprise documented the existing SR 417 design characteristics as part of the 2007 PD&E Study conducted for the proposed widening of SR 417. This document identified existing design deficiencies with some of the ramps at the CR 427 and East Lake Mary Boulevard interchange as noted in **Table 5** below.

Table 5: SR 417 Existing Horizontal Alignment Deficiencies

Mainline or Ramp Location	Approximate Location, PI Station ¹	Design Element	Existing Condition	AASHTO Criteria	FDOT Criteria	Variation (V) or Exception (E)	Remarks
Ramps	NB exit ramp CR 427, STA 106+52.26	Horizontal Curve Length	259.91'	n/a	Min = 400' Desirable = 750'	V	Does not meet FDOT minimum
	NB entrance ramp Lake Mary Blvd. STA 131+91.99	Horizontal Curve Length	366.58'	n/a	Min = 400' Desirable = 750'	V	Does not meet FDOT minimum
	NB entrance ramp Lake Mary Blvd. STA 140+55.07	Horizontal Curve Length	366.58'	n/a	Min = 400' Desirable = 750'	V	Does not meet FDOT minimum
	SB entrance ramp Lake Mary Blvd. STA 340+78.85	Horizontal Curve Length	183.17'	n/a	Min = 400' Desirable = 750'	V	Does not meet FDOT minimum
	SB entrance ramp Lake Mary Blvd. STA 346+51.02	Horizontal Curve Length	223.28'	n/a	Min = 400' Desirable = 750'	V	Does not meet FDOT minimum

1 – Ramp Stations based on existing construction plans

2.1.2.8 Vertical Alignment

East Lake Mary Boulevard

The existing vertical alignment along East Lake Mary Boulevard is essentially flat with a saw tooth vertical profile using 0.3% up and down grades with no vertical curves.

SR 417

Florida's Turnpike Enterprise documented the existing SR 417 design characteristics as part of the 2007 PD&E Study conducted for the widening of SR 417. This document identified existing vertical and design deficiencies as identified in **Table 6**.

Table 6: SR 417 Existing Vertical Alignment Deficiencies

Mainline or Ramp Location	Approximate Location, PI Station ¹	Design Element	Existing Condition	AASHTO Criteria	FDOT Criteria	Variation (V) or Exception (E)	Remarks
Mainline	S. of Toll Plaza, STA 1794+00	Vertical Curve Length, sag	500'	n/a	800'	V	Does not meet FDOT minimum
	N. of Toll Plaza, STA 1802+25	Vertical Curve Length, sag	500'	n/a	800'	V	Does not meet FDOT minimum
	Lake Mary Blvd. Bridge, STA 1874+50	K-Value, crest	481'	247	506	V	Meets AASHTO minimum
	NB entrance ramp Lake Mary Blvd. STA 129+00	Vertical Curve Length, sag	150'	n/a	200'	V	Does not meet FDOT minimum
	NB entrance ramp Lake Mary Blvd. STA 136+68	Vertical Curve Length, crest	150'	n/a	300'	V	Does not meet FDOT minimum
Ramps	SB exit ramp, Lake Mary Blvd., STA 339+76	K-Value, sag	31.4	96	96	E	Does not meet AASHTO Minimum K-Value
	SB exit ramp, Lake Mary Blvd., STA 339+76	Vertical Curve Length, sag	100'	n/a	200'	V	Does not meet FDOT minimum
	SB exit ramp, Lake Mary Blvd., STA 343+26	K-Value, sag	52.1	96	96	E	Does not meet AASHTO Minimum K-Value
	SB exit ramp, Lake Mary Blvd., STA 343+26	Vertical Curve Length, sag	150'	n/a	200'	V	Does not meet FDOT minimum
	SB exit ramp Lake Mary Blvd. STA 345+52	K-Value, crest	129.9	84	136	V	Meets AASHTO minimum

1 – PI Stations based on existing construction plans

2.1.2.9 Intersections and Signalization

Ten signalized intersections are located at the northbound and southbound ramps for SR 417 at Lake Mary Boulevard and Ronald Reagan Boulevard, Lake Mary Boulevard at Ronald Reagan Boulevard, East Lake Mary Boulevard/Sanford Avenue, East Lake Mary Boulevard/Mellonville Avenue, East Lake Mary Boulevard/Ohio Avenue (north)/ Silvervista Boulevard(south), East Lake Mary Boulevard/Red Cleveland Boulevard, and Skyway Drive. There are also six unsignalized intersections within the study limits along East Lake Mary Boulevard at Skyraider Court, Brisson Avenue, Night Heron Drive, Laura Avenue, and Sipes Avenue, and on Red Cleveland Boulevard/Marquette Avenue. **Table 7** summarizes the intersections and signalization along East Lake Mary Boulevard and Red Cleveland Boulevard.

Table 7: Interchanges, Intersections and Signalization

Roadway	Intersection Type	Intersection Control	Turn Lanes (Left-Turn Directions)	Crosswalks
SR 417				
Lake Mary Boulevard	Half diamond interchange	Signalized	Three-Way Left-Turn Lanes (NBL, WBL, SBL)	East/West
Ronald Reagan Boulevard	Half diamond interchange	Signalized	Four-Way Left-Turn Lanes (EBL, SBL, NBL, WBL)	East/West
East Lake Mary Boulevard				
Sanford Avenue	Three-leg (southbound)	Three-Way Signalized	Two-Way Left-Turn Lanes (WBL, NBL)	East/West & North/South
Mellonville Avenue	Four-leg	Four-Way Signalized	Four-Way Left-Turn Lanes (EBL, WBL, NBL, SBL)	East/West & North/South
Ohio Avenue (north)/ Silvervista Blvd (south)	Four-leg	Four-Way Signalized	Three-Way Left-Turn Lanes (EBL, SBL, WBL)	East/West
Skyraider Court	Three-leg (southbound)	One-Way Stop	Two-Way Left-Turn Lanes (EBL, SBL)	East/West
Red Cleveland Boulevard	Three-leg (southbound)	Three-Way Signalized	Two-Way Left-Turn Lanes (EBL, SBL)	East/West & North/South
Brisson Avenue South	Three-leg (northbound)	Three-Way Signalized	Three-Way Left-Turn Lanes (EBL, WBL, NBL)	East/West
Night Heron Drive	Two-leg (northbound)	One-Way Stop	Right Turn Only	East/West
Laura Avenue	Three-leg (southbound)	One-Way Stop	Three-Way Left-Turn Lanes (EBL, WBL, SBL)	None
Sipes Avenue	Four-leg	Two-Way Stop	Four-Way Left-Turn Lanes (NBL, EBL, SBL, WBL)	East/West

Skyway Drive	Four-leg	Four-Way Signalized	Four-Way Left-Turn Lanes (NBL, EBL, SBL, WBL)	East/West
Red Cleveland Boulevard				
Marquette Avenue	Four-leg	Two-Way Stop	Four-Way Left-Turn Lanes (SBL, WBL, NBL)	None

EBL = eastbound left NBL = northbound left SBL = southbound left WBL = westbound left

2.1.3 Existing Traffic Volumes

As part of the previous CF&M Study, field observations and a desktop review of existing traffic conditions were conducted within the study area in August and September 2022. There is existing congestion within the SR 417 and CR 427/Lake Mary Boulevard interchange footprint. The adjacent intersections on Lake Mary Boulevard at CR 427 and Sanford Avenue also operate unacceptably and impact operations at the interchange. During the morning commute, the main congestion occurs along East Lake Mary Boulevard in the westbound direction approaching the interchange. In the evening, congestion occurs primarily at the SR 417 and CR 427/Lake Mary Boulevard northbound off-ramp, where queues sporadically back up to the SR 417 mainline. The queues are primarily caused by unacceptable operations at the off-ramp and downstream intersections on East Lake Mary Boulevard. For example, northbound SR 417 traffic exiting the interchange at Ronald Reagan Boulevard (CR 427) and East Lake Mary Boulevard are required to travel through three signalized intersections within 0.3 mile of the SR 417 northbound off-ramp, impeding traffic flow and increasing travel time for users. Florida's Turnpike Enterprise (FTE) has programmed turn-lane improvements at the interchange and adjacent intersections to improve operations in the near term. FTE also has long-term plans to add capacity at the interchange.

A summary of the 2022 existing traffic and volume to LOS D MSV ratios is shown in **Table 8**. The results show that the roadway segments and ramps within the area of interest have a volume to LOS D MSV ratio of 0.9 or less in the year 2022. However, this analysis does not consider operations at the intersections, which are usually the initial points of failure for arterials. As previously indicated, a review of the existing conditions operations showed congestion at the interchange and adjacent intersections, due to capacity deficiencies.

Figure 7 shows the final 2022 existing year peak hour volumes in the AM and PM conditions for the Red Cleveland Boulevard intersections at Lake Mary Boulevard and Marquette Avenue. The 2022 existing lane geometry at the two intersections is depicted on **Figure 8**.

Table 8: 2022 Traffic and Volume to LOS D MSV Ratios

Location	SR 417			Lanes /Direction	AADT		AM Peak Hour		PM Peak Hour		Volume to LOS D MSV Ratios*					
											AADT		AM Peak Hour		PM Peak Hour	
					SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB
Airport Boulevard/US 17-92				1/2	3,000	3,450	250	299	294	340	0.2	0.1	0.1	0.1	0.2	0.1
				2+1 Aux	24,250	25,850	2,027	2,022	2,464	2,506	0.5	0.6	0.4	0.4	0.5	0.5
CR 427/Lake Mary Boulevard				1	2,850	3,850	251	321	224	369	0.2	0.2	0.1	0.2	0.1	0.2
				1	8,350	9,400	777	782	682	918	0.4	0.5	0.4	0.4	0.4	0.5
Lake Jesup Mainline Toll Plaza				2	29,750	31,400	2,553	2,483	2,921	3,055	0.8	0.9	0.7	0.7	0.8	0.8
SR 434				1	4,500	4,350	304	533	548	294	0.2	0.2	0.2	0.3	0.3	0.2
	Lake Mary Boulevard				EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
West of Red Cleveland Boulevard				2	11,950	11,850	898	1,618	1,430	780	0.5	0.5	0.5	0.8	0.7	0.4
East of Red Cleveland Boulevard				2	11,500	11,500	898	1,696	1,428	688	0.5	0.5	0.5	0.9	0.7	0.3
	Red Cleveland Boulevard				SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB
North of Lake Mary Boulevard				2	2,350	2,850	171	250	315	226	0.1	0.1	0.1	0.1	0.2	0.1
	Airport Boulevard				EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
East of Sanford Avenue				1	3,350	3,350	248	242	237	377	0.4	0.4	0.3	0.3	0.3	0.5
	CR 427				SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB
South of Lake Mary Boulevard				2	13,650	14,700	1,434	1,107	981	1,478	0.6	0.7	0.7	0.6	0.5	0.8

AADT and peak hour volumes based on days of the week and peak periods with the highest demand. Values in purple indicate peak hour directional volumes.

*Volume to LOS D MSV Ratios are provided for freeway mainline and arterials. For ramps, Volume to Capacity (LOS E) ratios are provided.

Figure 7: 2022 Existing AM and PM Peak Hour Intersection Volumes

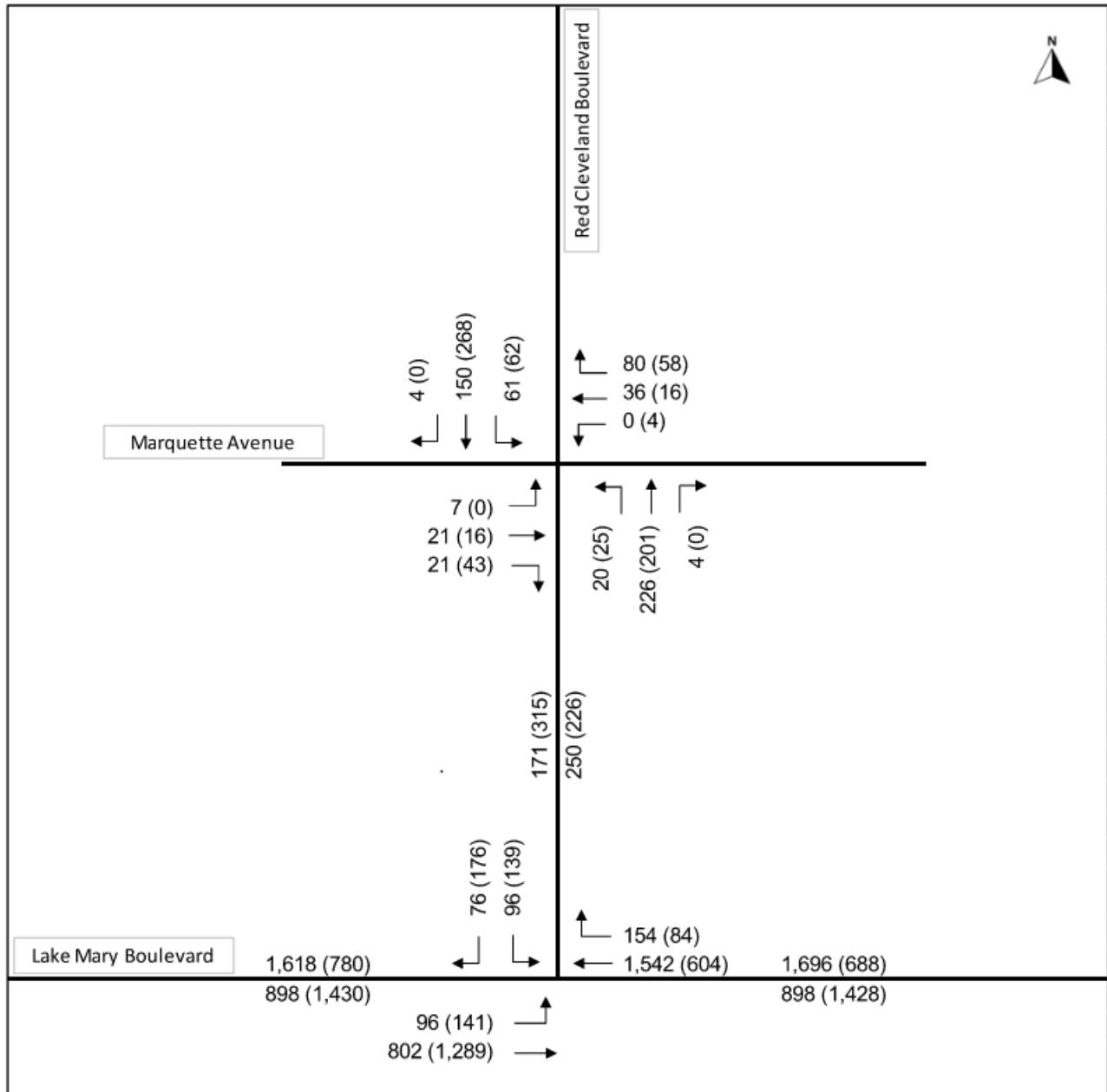
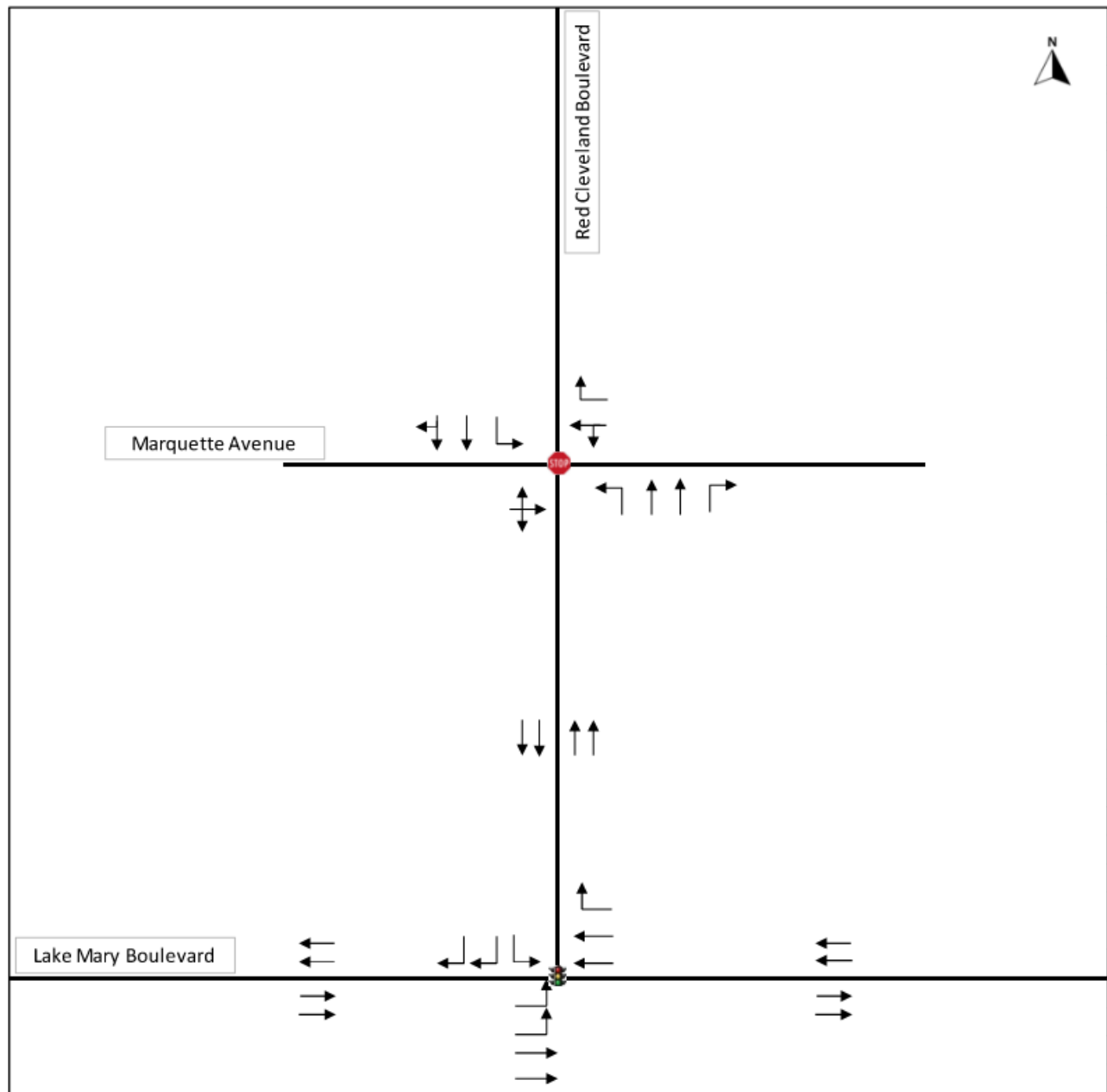


Figure 8: 2022 Intersection Lane Geometry



The intersection LOS and delay was evaluated using the Synchro software, Version 11. Queue lengths were estimated using SimTraffic. The analysis results for the 2022 AM and PM peak hours are summarized in **Table 9**. The results show that all movements are currently operating at an acceptable LOS D or better at the Lake Mary Boulevard intersection, and LOS B or better at the Marquette Avenue intersection in both the AM and PM peak hours.

Table 9: 2022 Existing AM and PM Peak Hour Intersection LOS/Delay (sec)

Intersection	Approach	Movement	LOS	Delay (seconds)	Maximum Queue Length (Feet)*
			AM (PM)	AM (PM)	AM (PM)
Lake Mary Boulevard and Red Cleaveland Boulevard (Signalized)	Eastbound	Left	D (C)	43.3 (34.7)	107 (128)
		Through	A (A)	4.9 (8.9)	148 (208)
		Right	-	-	-
	Westbound	Left	-	-	-
		Through	C (B)	20.3 (16.2)	334 (176)
		Right	A (A)	3.4 (3.8)	87 (70)
	Northbound	Left	-	-	-
		Through	-	-	-
		Right	-	-	-
	Southbound	Left	D (D)	47.6 (37.2)	143 (181)
		Through	-	-	-
		Right	C (A)	21.8 (3.5)	78 (107)
	Overall Intersection		B (B)	16.7 (13.3)	
Red Cleaveland Boulevard and Marquette Avenue (Unsignalized)	Eastbound	Left	B (B)	13.3 (11.9)	67 (69)
		Through	B (B)	13.3 (11.9)	67 (69)
		Right	B (B)	13.3 (11.9)	67 (69)
	Westbound	Left	B (B)	11.5 (11.3)	61 (52)
		Through	B (B)	11.5 (11.3)	61 (52)
		Right	B (B)	11.5 (11.3)	72 (66)
	Northbound	Left	A (A)	7.6 (8.0)	35 (43)
		Through	A (A)	0.0 (0.0)	-
		Right	A (A)	0.0 (0.0)	-
	Southbound	Left	A (A)	7.9 (7.9)	50 (44)
		Through	A (A)	0.0 (0.0)	-
		Right	A (A)	0.0 (0.0)	-
	Overall Intersection		B (B)	13.3 (11.9)	-

*SimTraffic maximum queue length

2.1.3.1 Roadway Operational Conditions

Table 10 summarizes the 2022 existing traffic and volume to LOS D MSV ratios. The roadway segments and ramps within the area of interest had a volume to LOS D MSV ratio of 0.9 or less in

2022. However, this analysis does not consider operations at the intersections, which are usually the initial points of failure for arterials, and as previously noted congestion exists at the interchange.

The intersection LOS and delays were evaluated in both the AM and PM Peak Hours. The results indicated that at the East Lake Mary Boulevard and Red Cleveland Boulevard intersection, all movements operate at an acceptable LOS D or better. Additionally, the intersection of Red Cleveland Boulevard and Marquette Avenue operate at an LOS B or better. The analyses are summarized in **Table 11**.

Table 10: 2022 Traffic and Volume to LOS D MSV Ratios

Location	No. of Lanes per Direction	Two-Way AADT	AM Peak Hour		PM Peak Hour		Volume to LOS D MSV Ratios			
			SB	NB	SB	NB	AM Peak Hour	NB	SB	NB
SR 417										
At Airport Blvd. (ramps to and from the south)	1/2	6,450	250	299	294	340	0.1	0.1	0.2	0.1
Mainline – South of Airport Boulevard	2 + 1 Aux	50,100	2,027	2,022	2,464	2,506	0.4	0.4	0.5	0.5
At CR 427/East Lake Mary Boulevard (ramps to and from the north)	1	6,700	251	321	224	369	0.1	0.2	0.1	0.2
At CR 427/East Lake Mary Boulevard (ramps to and from the south)	1	17,750	777	782	682	918	0.4	0.4	0.4	0.5
At Lake Jesup Mainline Toll Plaza	2	61,150	2,553	2,483	2,921	3,055	0.7	0.7	0.8	0.8
At SR 434 (ramps to and from the north)	1	8,850	304	533	548	294	0.2	0.3	0.3	0.2
East Lake Mary Boulevard			EB	WB	EB	WB	EB	WB	EB	WB
West of Red Cleveland Boulevard	2	23,800	898	1,618	1,430	780	0.5	0.8	0.7	0.4
East of Red Cleveland Boulevard	2	23,000	898	1,696	1,428	688	0.5	<i>0.9</i>	0.7	0.3
Red Cleveland Boulevard			SB	NB	SB	NB	SB	NB	SB	NB
North of East Lake Mary Boulevard	2	5,200	171	250	315	226	0.1	0.1	0.2	0.1
Airport Boulevard			EB	WB	EB	WB	EB	WB	EB	WB
East of Sanford Avenue	1	6,700	248	242	237	377	0.3	0.3	0.3	0.5
CR 427			SB	NB	SB	NB	SB	NB	SB	NB
South of Lake Mary Boulevard	2	28,350	1,434	1,107	981	1,478	0.7	0.6	0.5	0.8

Notes:

AADT and peak hour volumes based on days of week and peak periods with highest demand Values shaded indicate peak hour directional volumes

Freeway Mainline & Arterials Ratios in Volume to LOS D MSV

Ramps Ratios in Volume to Capacity LOS E

Bold & italic values indicate roadway is approaching or exceeding capacity

Table 11: Existing AM and PM Peak Hour Intersection LOS/Delay (sec)

Intersection	Approach	Movement	LOS	Delay (Seconds)	Maximum Queue Length (Feet)*
			AM (PM)	AM (PM)	AM (PM)
Lake Mary Boulevard and Red Cleveland Boulevard (Signalized)	Eastbound	Left	D (C)	43.3 (34.7)	107 (128)
		Through	A (A)	4.9 (8.9)	148 (208)
		Right	-	-	-
	Westbound	Left	-	-	-
		Through	C (B)	20.3 (16.2)	334 (176)
		Right	A (A)	3.4 (3.8)	87 (70)
	Northbound	Left	-	-	-
		Through	-	-	-
		Right	-	-	-
	Southbound	Left	D (D)	47.6 (37.2)	143 (181)
		Through	-	-	-
		Right	C (A)	21.8 (3.5)	78 (107)
	Overall Intersection		B (B)	16.7 (13.3)	
Red Cleveland Boulevard and Marquette Avenue (Unsignalized)	Eastbound	Left	B (B)	13.3 (11.9)	67 (69)
		Through	B (B)	13.3 (11.9)	67 (69)
		Right	B (B)	13.3 (11.9)	67 (69)
	Westbound	Left	B (B)	11.5 (11.3)	61 (52)
		Through	B (B)	11.5 (11.3)	61 (52)
		Right	B (B)	11.5 (11.3)	72 (66)
	Northbound	Left	A (A)	7.6 (8.0)	35 (43)
		Through	A (A)	0.0 (0.0)	-
		Right	A (A)	0.0 (0.0)	-
	Southbound	Left	A (A)	7.9 (7.9)	50 (44)
		Through	A (A)	0.0 (0.0)	-
		Right	A (A)	0.0 (0.0)	-
	Overall Intersection		B (B)	13.3 (11.9)	-

*SimTraffic maximum queue length

2.1.5 Drainage

The existing drainage system within the study area is comprised of an open system where runoff ultimately drains to Lake Jesup. The five alignments within the project limits drain primarily to two named waterways and various channelized ditches which then discharge to Lake Jesup. These two named waterways are Six Mile Creek and Phelps Creek (aka Navy Canal). As this area is highly developed, runoff generally flows from north to south, and drains into existing ponds, roadside ditches and swales before discharging into Lake Jesup. Existing Stormwater Management Facilities (SMFs) within the study area include wet detention ponds, dry retention ponds, and linear swales.

The terrain within the study area is relatively flat, and elevations range from 3-feet to 94-feet NAVD. The elevations are lower in the vicinity of Lake Jesup, located southeast of the study limits. The existing land use within the study area consists mainly of roadways, residential (low density and rural), commercial and services, agriculture, and institutional. There are a number of existing retention ponds located within the study area.

Existing Permits

Previous construction plans and existing St. Johns River Water Management District (SJRWMD) permits within the study area were researched to obtain existing stormwater and drainage design information. Summarized in **Table 12** and shown in **Figure 9** are the existing permits deemed to be relevant to the study as they are in close proximity to the proposed alignments and may potentially be impacted by the proposed alignments or may be an option for proposed project stormwater management. All existing permitted SMFs eventually discharge to Lake Jesup.

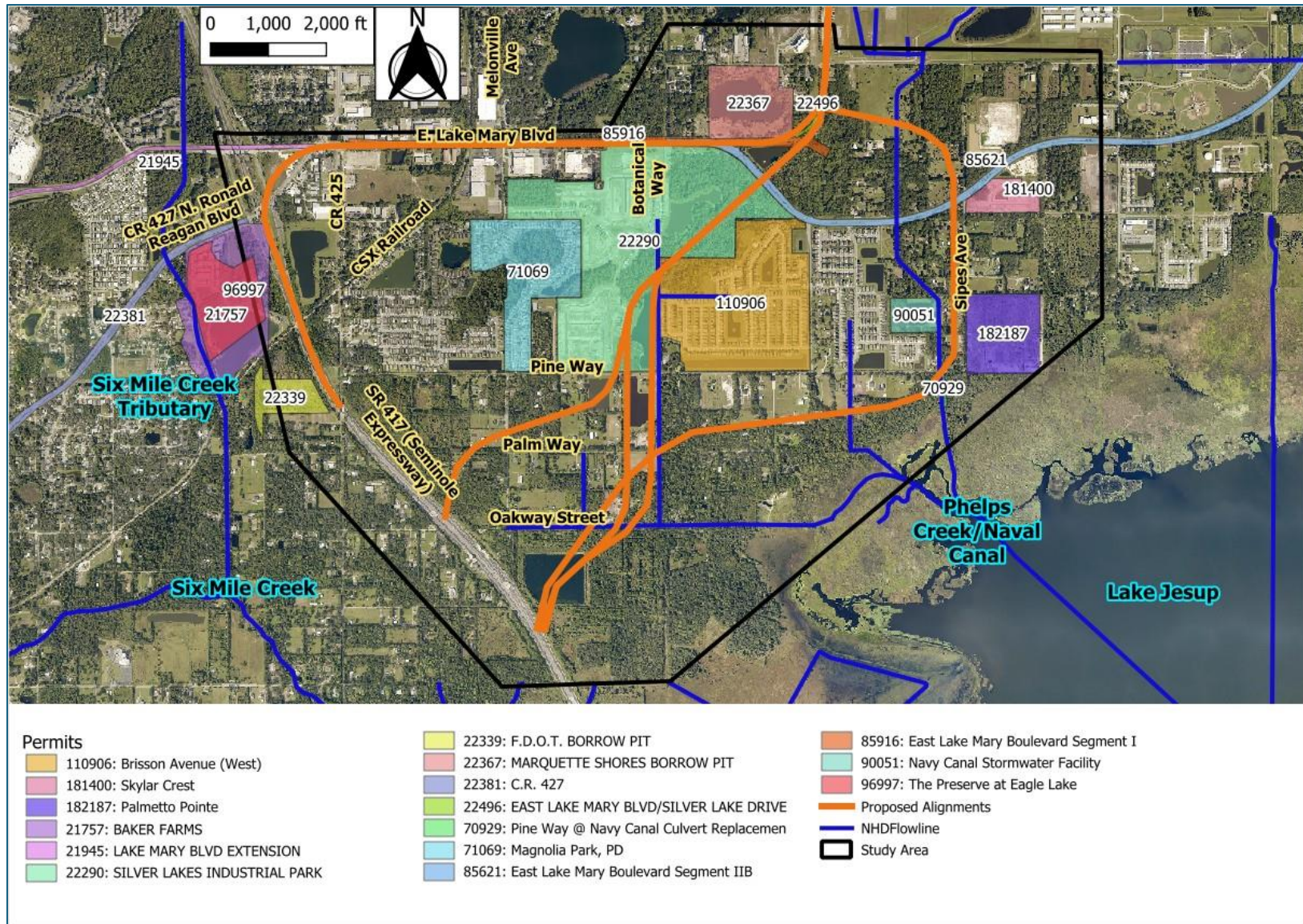
Table 12: Existing Permits Summary

Project Name	Application No.	Date Issued	Description
Baker Farms	21757	1/08/1985	Single family residential subdivision
Lake Mary Boulevard	21945-12	4/08/1996	Widening of US 17-92 to Sanford Ave and construction of wet detention ponds.
Silver Lakes Industrial Park	22290-2	12/7/1992	Construction of lot industrial subdivision consisting of streets, stormwater management facilities, and conservation and mitigations areas.
Silver Lakes Industrial Park	22290-3	1/11/1993	Construction of a conveyance network for a 46-lot industrial subdivision.
Sylvestri Estates	22290-10	9/29/2016	Construction stormwater management system to serve 215 acres single family development.

Project Name	Application No.	Date Issued	Description
Sylvestri Lakes SD Sanford	22290-12	6/21/2021	Construction of a Stormwater Management System
Sylvestri Lakes Amenity Center Sanford	22290-14	10/14/2021	Minor modification of Permit No. 22290-12 to include the construction and operation of a 1.5 - acre project.
Safari Commercial Parcels	22290-15	2/5/2023	Minor modification of Permit No. 22290-12 to include the construction and operation of a 14.25-acre project.
Sylvestri Lakes S/D (Transfer) Sanford	22290-17	7/24/2023	Operation and maintenance transfer of a surface water management system serving a 229.084-acre single-family residential development.
SFB Crossing	22290-18	Pending	Minor modification of Permit No. 22290-12 to include the construction and operation of a 9.31-acre project.
FDOT Borrow Pit	22339-1	9/08/1992	Excavation of a proposed borrow pit
White Construction Borrow Pits CR 427	22339-3	9/08/1992	Construction of two borrow pits
FDOT Borrow Pit	22339-5	7/13/1993	Modification of previous permit – excavation only in dry instead of wet.
Marquette Shores Borrow Pit	22367-3	2/09/1993	Restoration of a Borrow Pit
CR 427	22381-1	2/08/1994	Roadway Improvements from SR 434 to Longwood-Lake Mary Road.
East Lake Mary Boulevard Segment IIA	22496-3	6/10/2002	The proposed project includes the construction of a surface water management system consisting of the modification and expansion (by two lanes) of a 0.5-mile segment of Lake Mary Boulevard, a 0.45-mile segment of Airport Road and construction of a 0.17-mile segment of Frontage Road.
East Lake Mary Boulevard Segment IIB	22496-4	4/08/2003	Modification of the existing permit 4-117-22496-3 for the extension of East Lake Mary Blvd. consisting of approximately 3.70 miles of a four-lane roadway on a new alignment with an urban section.
East Lake Mary Boulevard Segment I	22496-5	11/12/2002	The project site extends along the East Lake Mary Boulevard right-of-way from Sanford Avenue to Ohio Avenue, in Seminole County.

Project Name	Application No.	Date Issued	Description
Pine Way @ Navy Canal Culvert Replacement	70929 - 1	5/02/2001	The project consists of replacing six existing 42" pipes and a 10'x5' box culvert under the Pine Way crossing at the Navy Canal with equiv. sized 3-10'x4' box culverts.
Magnolia Park, PD	71069-1	8/14/2001	Construction a surface water management system consisting of a 170 lots single-family subdivision on 64.570-acre site. The system includes two wet detention systems and a storm sewer system.
Navy Canal Stormwater Facility	90051-1	9/07/2004	Construction of a 5 acres off-line wet detention pond and the impoundment of water along the historical flow path of Navy Canal for the purpose of reducing pollutant load to Lake Jessup.
The Preserve at Eagle Lake	96997-1	7/29/2005	Construct a surface water management to serve a 65.63 acres single family attached townhome development.
Brisson East	110906-3	8/31/2012	Construction of a Surface Water Management System with stormwater treatment by wet detention.
Brisson East Residential Development	110906-5	4/30/2014	Modification of a Surface Water Management System with stormwater treatment by wet detention.
Brisson West Residential Development	110906-7	11/3/2017	Construction of a Surface Water Management System with stormwater treatment by wet detention.
Skylar Crest Townhomes Stormwater Management System	181400-1	5/09/2022	Construction and operation of a Stormwater Management System for a 14.69 acre(s) multifamily residential project known as Skylar Crest.
Palmetto Pointe	182187 - 2	10/11/2023	Construction and operation of a Stormwater Management System for a 39.76 acres project.
SR 417 (Seminole Expressway)	FDEP Permit No. MS59173333 9 & 591723289	Unknown	Construction of SR 417 and Stormwater Management System in Seminole County

Figure 9: Relevant Existing Permits



There are existing SMFs within the study area which were permitted by SJRWMD and which could be impacted by the project. There are four wet detention ponds (Pond A, Pond B, Pond C, and Pond 1) that were permitted for the reconstruction of East Lake Mary Boulevard. Pond A, Pond B, and Pond C were permitted for the reconstruction of East Lake Mary Boulevard from Sanford Avenue to Ohio Avenue (Application No. 22496-5). Pond 1 was permitted for the reconstruction from east of Ohio Avenue to east of East Lake Mary Boulevard's intersection with the Sanford Airport Entrance (Application No. 22496-4).

Basin A is an open basin and extends from Sanford Avenue to approximately 600-ft east along East Lake Mary Boulevard. The runoff from Basin A drains to Pond A. Basin A has 5.15 acres of impervious area and the existing treatment volume is governed by the 2.5-inch over the impervious area criteria. The pond was designed to provide more than the required treatment volume. There is a pond located south of Pond A and on the south side of East Lake Mary Boulevard. The Pond A outfall ties into the pond outfall to the south and both discharge to an existing CR 427 outfall which ultimately outfalls to Lake Jesup.

Basin B is an open basin and extends from approximately 600-feet east of Sanford Avenue to the Seaboard Coastline Railroad. The total basin area is 71.56 acres, of which 46.72 acres are onsite and 24.84 acres are offsite. Offsite runoff is separated from onsite runoff from the proposed roadways. The offsite basin includes a portion of the Cardinal Homes Site that drains into an adjacent lake. Treatment is provided for the onsite roadway right-of-way (R/W) within Basin B. This area includes a 5.65-acre area with 3.36 acres being impervious area. The roadway runoff is collected in a closed conveyance system and directed to wet detention Pond B located northwest of the railroad and East Lake Mary Boulevard intersection. The existing treatment volume is governed by the 2.5-inch over the impervious area criteria. An existing pond for a commercial site located south of East Lake Mary Boulevard ties into the roadway system while all other offsite runoff is routed in a separate conveyance system and directed to its existing outfall at the railroad crossing. The Pond B outfall crosses the railroad north of East Lake Mary Boulevard and discharges into a canal that drains to the existing triple 48-inch culverts to the south. This system ultimately discharges to the Mellonville Road outfall to the east and ultimately into Lake Jesup.

Basin C is an open basin and extends from the Seaboard Coastline Railroad crossing to Ohio Avenue including the west side of Ohio Avenue. Basin C has a total drainage area of 51.58 acres, of which 10.42 acres are onsite basin and 41.16 acres are offsite basin. The land use consists of primarily industrial, residential, and agricultural located mostly to the north of East Lake Mary Boulevard. Treatment is provided for the onsite roadway R/W within Basin C plus 1.98 acres of the offsite basin, for a total area of 12.40 acres with 6.40 acres of impervious area. The existing treatment volume is governed by the 2.5-inch over the impervious area criteria. The roadway runoff discharges into wet detention Pond C and outfalls into the Silver Vista Stormwater Management System outfall and ultimately into Lake Jesup.

Basin 1 is an open basin encompassed by the East Lake Mary Boulevard, Airport Entrance Road, and Frontage Road. The total basin area is 42.87 acres, of which 20.92 acres being onsite and 21.95 acres of offsite basin. Offsite runoff is separated from the runoff of the proposed roadways. Offsite runoff is collected and conveyed through the offsite ditches and cross drains southeasterly to a wetland area. Onsite runoff is collected by curb inlets and conveyed by storm sewer system to Pond 1 prior to discharge to a wetland area. Onsite Basin 1 has 9.92 acres of impervious area and the existing treatment volume is governed by the 2.5-inch over the impervious area criteria. Pond 1 discharges southeasterly into a low wetland area and ultimately into Lake Jesup.

A wet detention pond (Track Pond P-7), was permitted for the construction of Sylvestri Lake development (Application 22290-10). The development included the construction of one new stormwater management pond and a change in the land use from industrial to single family residential and commercial. This pond discharges into an adjacent unnamed wetland, which ultimately discharges to Lake Monroe. This site was originally permitted as Silver Lakes Industrial Park (46 lot industrial park), Permit No. 4-117-0317, Application No. 22290.

Two wet retention ponds (Track Ponds P-5 and P-6) were permitted for the construction of Sylvestri Lake development (Application 22290-17). The development included the construction of new stormwater management ponds and single family residential. These ponds discharge into an existing ditch. This site was originally permitted as Silver Lakes Industrial Park (46 lot industrial park), Permit No. 4-117-0317, Application No. 22290.

There is a remnant SR 417 borrow pit (aka Esterson Borrow Pit) located east of SR 417 and south of Oakway; however, there is no available information for this location on the SJRWMD permit website. There are two borrow pits located south of CR 427, and west of Sanford Avenue and Pine Way Road, and adjacent to SR 417 (Seminole County Expressway) which were originally operated and maintained by White Construction Company; however, the intent was that FDOT assume ownership after project construction. The purpose of the borrow pits was to provide fill for the SR 417 (Seminole County Expressway) construction. The west pit originally had an area of 25.8 acres and was approximately 38-feet deep. The east pit originally had an area of 14.1 acres and was approximately 36-feet deep. The west borrow pit was permitted for floodplain compensation use within The Preserve at Eagle Lake (96997-1). The east borrow pit is within the upstream offsite basin that drains to this site.

Four dry treatment facilities (Treatment Swale I5-1, Treatment Swale I5-2, Pond I5-1 and Pond I6-3) were permitted for the construction of the Seminole Expressway (SR 417) which was originally constructed in two phases. Phase I, which was permitted prior 1995, is a 12-mile phase between Aloma Avenue (SR 426) and US 17-92. Phase II, which was permitted after 1995, is a six-mile phase between US 17-92 and I-4. The project construction was permitted by the USACE as an Individual Permit (No: 89IPI-90868) and FDEP (Permit Nos. MS591733339 and 591723289) as an MSSW

Permit. As part of Seminole Expressway Widening project (2007), the permitted stormwater management systems were evaluated to determine if they had adequate capacity to handle the volume requirements for the eight-lane widening. None of the four facilities mentioned above were modified.

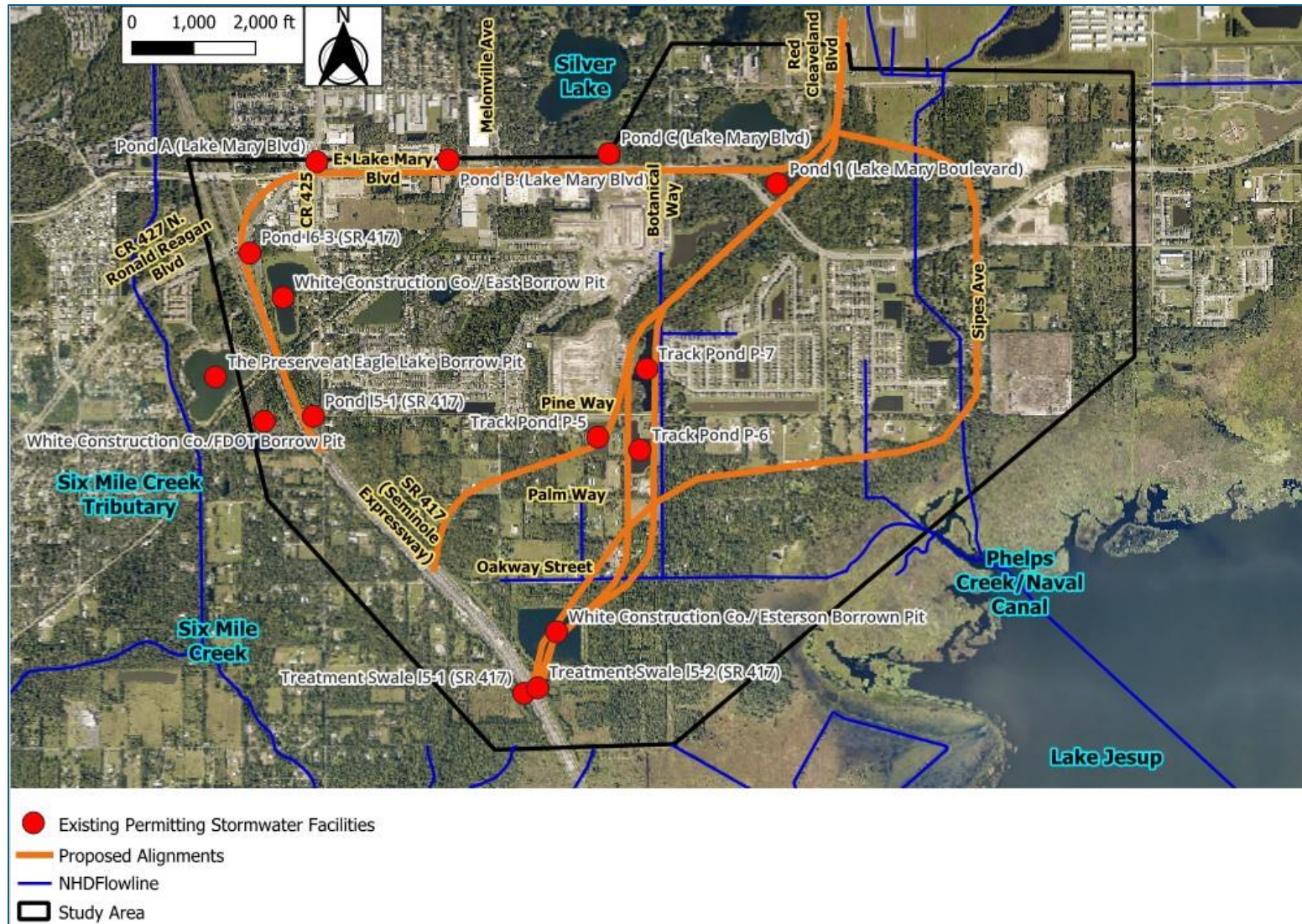
Refer to **Table 13** and **Figure 10** for a Summary of the Permitted Stormwater Facilities and a map depicting the location of these permitted facilities.

Table 13: Summary of Permitted Stormwater Facilities

Application No.	Treatment Facility	Treatment Method	Treatment Criteria	Onsite Basin Area (ac)	Required Treatment (ac-ft)	Provided Treatment (ac-ft)	Discharge Location	Special Criteria	Comments
22496-5	Pond A (Lake Mary Boulevard)	Wet Detention	Greater of: 1-inch over basin, 2.5-inch over impervious	9.11	1.07	1.08	Lake Jesup	Attenuated Peak Flow for the Mean Annual and 25-yr 24-hour Storm Events.	Pond A: Treated impervious area = 5.15 acres. Pond B: Treated impervious area = 3.36 acres. Pond C: Treated impervious area = 6.54 acres. Reference: Stormwater Management Calculations, Volume 1, East Lake Mary Boulevard, Segment I, dated September 2002.
	Pond B (Lake Mary Boulevard)			5.65	0.70	0.75			
	Pond C (Lake Mary Boulevard)			12.40	1.36	1.38			
22496-4	Pond 1 (Lake Mary Boulevard)	Wet Detention	Greater of: 1-inch over basin, 2.5-inch over impervious	13.83	2.07	2.10	Lake Jesup	Attenuated Peak Flow for the Mean Annual and 25-yr 24-hour Storm Events.	Treated impervious area = 9.92 acres. Reference: Drainage Calculations and Permitting Narrative, East Lake Mary Boulevard, Segment II-A, dated January 2002.
22290-17	Track Pond P-5 (Sylvestri Lakes)	Wet Retention	Greater of: 1-inch over basin, 2.5-inch over impervious	79.62	6.64	6.64	Lake Jesup	Attenuated Peak Flow for the 25-year 24-hour Storm Events.	Treated impervious area = 22.72 acres (pavement). Reference: Sylvestri Lake Drainage Plans, dated April 2020. West Pineway Pond (P-5) and East Pineway Pond (P-6) in Sylvestri Lakes Stormwater Calculations Report, dated February 2021.
	Track Pond P-6 (Sylvestri Lakes)	Wet Retention							

Application No.	Treatment Facility	Treatment Method	Treatment Criteria	Onsite Basin Area (ac)	Required Treatment (ac-ft)	Provided Treatment (ac-ft)	Discharge Location	Special Criteria	Comments
22290-10	Track Pond P-7 (Sylvestri Lakes)	Wet Detention	Greater of: 1-inch over basin, 2.5-inch over impervious + 50% to discharge an impaired waterbody	52.50	10.03	16.35	Lake Jesup	Attenuated Peak Flow for the 25-year 24-hour Storm Events.	Treated impervious area = 32.03 acres. Reference: Originally Permitted under SJRWMD 4-117-0317, Application No. 22290. Known as Pond 2 in Sylvestri Estates Master Stormwater Management System Calculations Report, dated January 13, 2016.
327008	Esterson Borrow Pit	Historic ERP – White Construction Co., Inc.; No information available							
22339-3	FDOT Borrow Pits	Currently being used as detention ponds - White Construction Co., Inc.; Minimal stormwater information available							Reference: Originally Permitted under SJRWMD 4-117-0343, Application 22339.
USACE Individual Permit No. 89IPI-90868 FDEP Permit Nos. MS591733339 and 591723289 as an MSSW Permit.	Treatment Swale I5-1	Dry Retention	Greater of: 0.5-inch over basin, 2.5-inch over impervious	75.40	1.6	1.6	Lake Jesup Floodplain	Attenuated Peak Flow for the 25-year 24-hour Storm Events.	Reference: Originally permitted by the USACE as Individual Permit No. 89IPI-90868 and FDEP Permit No. MS591733339 and 591723289 as an MSSW Permit. Stormwater Alternative Report for Seminole Expressway Widening PD&E, dated May 2007.
	Treatment Swale I5-2			19.50	0.8	N/A	Sanford Avenue ditch east of SR 417 / Lake Jesup		
	Pond I6-3	Dry Retention w/ Underdrain		8.40	0.4	0.4	Six Mile Creek Tributary / Lake Jesup		

Figure 10: Permitted Stormwater Facilities



2.1.6 Floodplains

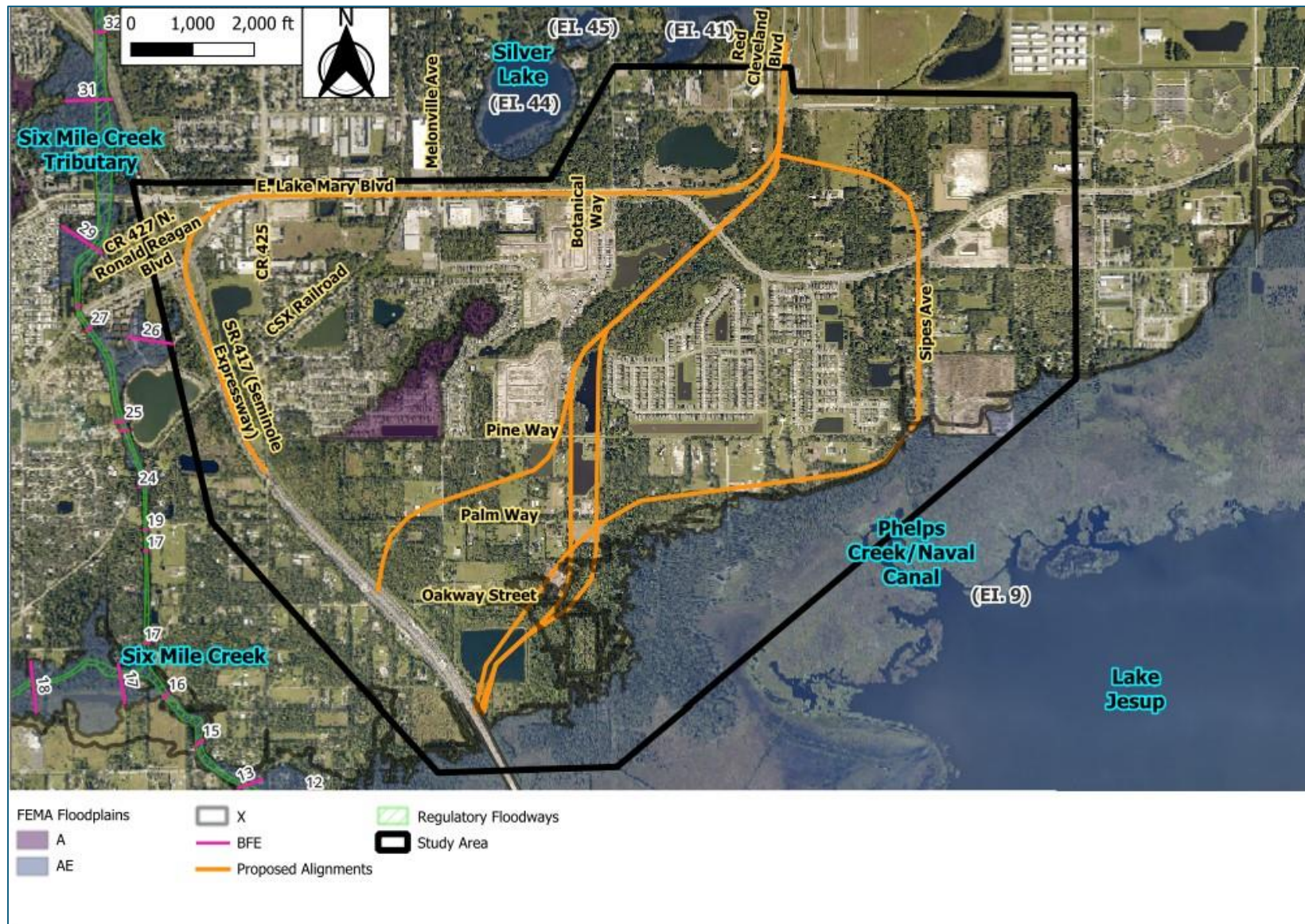
The Federal Emergency Management Agency (FEMA) has determined the 100-year floodplain limits in the vicinity of the project limits in the form of Flood Insurance Rate Maps (FIRM). In **Figure 11**, the 100-year floodplain limits are presented from Seminole County and Incorporated Areas panels 12117C0070F, 12117C0090F, 12117C0160F and 12117C0180F effective 9/09/2007.

The FEMA maps indicate that the floodplains in the general vicinity of the project location are Zone X, Zone A, and Zone AE. Most of the study area lies in Zone X, which is a zone determined to be outside the 0.2% (500-yr) annual chance floodplain. Zone A is a zone within 1% (100-yr) annual chance floodplain without a base flood determined. Zone AE is a zone within 1% (100-yr) annual chance floodplain with a base flood determined.

While the study area contains a few areas of Zone A and Zone AE floodplains, only one section of a proposed alignment, which extends along the southeast side of the study area, skims the edge of the Zone AE floodplain associated with Lake Jesup that has a determined base flood elevation of 9-feet NAVD. There is one Zone A floodplain within the study area which is located east of SR 417 and south of Lake Mary Blvd. There are no regulated floodways within the study area.

During the PD&E Study, engineering design features and hydrological drainage structures will be designed such that stormwater transport, flow, and discharge meet or exceed flood control requirements. A Location Hydraulic Report (LHR) will be prepared as part of the PD&E Study.

Figure 11: FEMA Floodplain Areas



2.1.7 Utilities and Railroad

The existing utility facilities include electric, gas, water, sewer and communications. A Sunshine 811 ticket was created on August 6, 2024, to determine the major utilities along or crossing the existing ROW. **Table 14** lists the existing utilities in the study area.

Table 14: Existing Utilities

UAO NAME	CONTACT	PHONE NUMBER	EMAIL
AT&T – Distribution	Kirby Spencer	386-366-4588	ks2488@att.com
Charter Communications	John Smith	407-448-5513	john.smith5@charter.com
Cit of Sanford Public Works	Jeff David	-	jeff.davis@sanfordfl.gov
City of Sanford Utilities Department	Deborah Cole Donovan Tucker	407-688-5000	deborah.cole@sanfordfl.gov donovan.tucker@sanfordfl.gov
Florida Public Utilities	Johnny Hill	352-636-7056	jhill@fpuc.com
Florida Power & Light (Distribution)	Christopher Buonanni	407-328-1911	christopher.buonanni@fpl.com
Florida Power & Light (Transmission)	Martin Mikhail Craig Ledbetter	561-532-7082	martin.mikhail@fpl.com craig.ledbetter@fpl.com
Seminole County - Environmental Services	Paul Zimmerman	407-665-2021	pzimmerman@seminolecountyfl.gov
Seminole County – Traffic Engineering	Charles Wetzel	407-665-5686	cwetzel@seminolecountyfl.gov
Uniti Fiber	James Mosley	251-654-8216	james.mosley@uniti.com
Zayo Group	Kate Peters	815-274-7274	kate.peters@cobbfindley.com zayoflrelocations@zayo.com

There is one at-grade CSX railroad crossing on East Lake Mary Boulevard within the study area located west of Mellonville Avenue.

2.4 Environmental Conditions

2.4.1 Existing Land Use

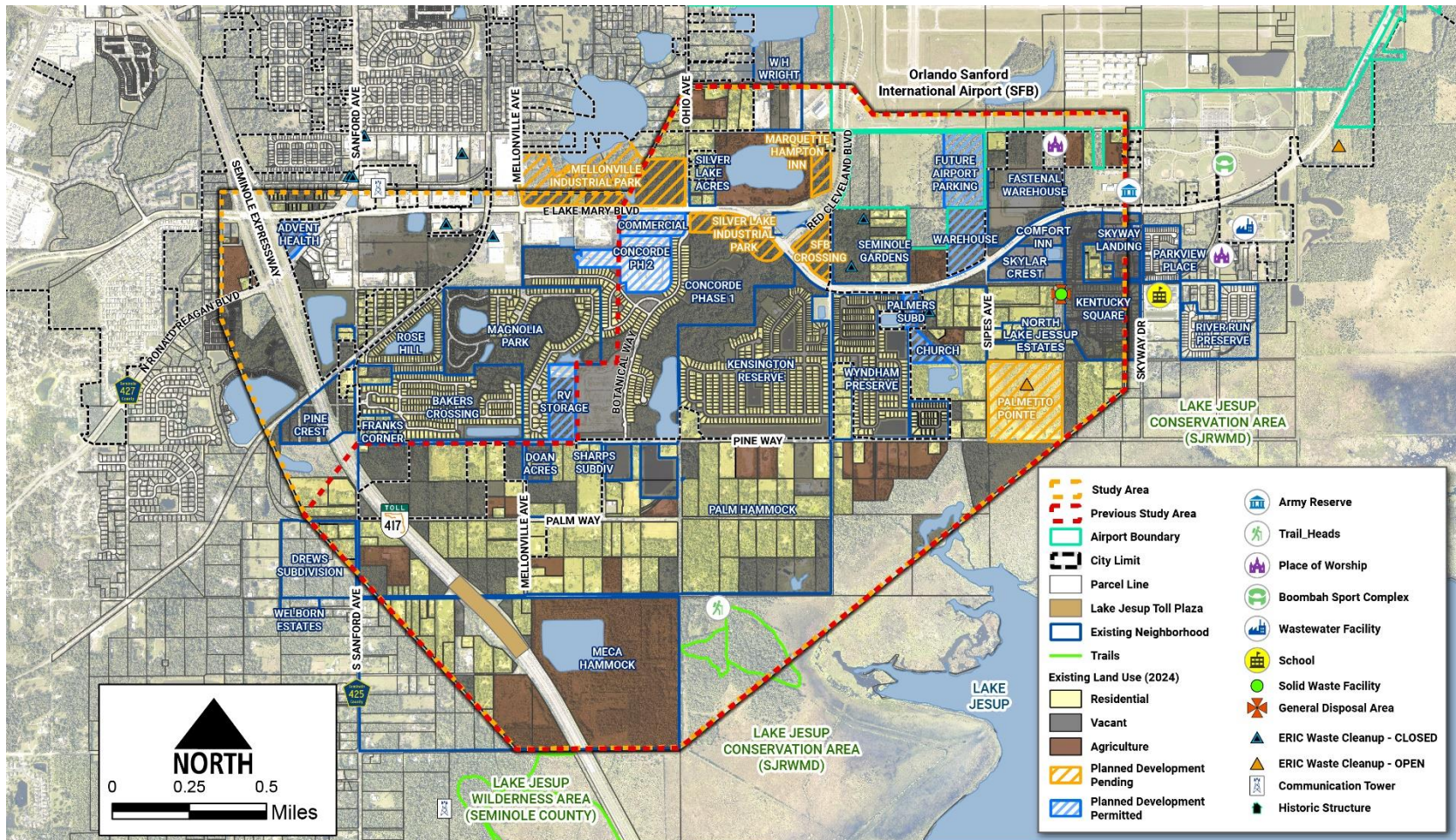
Existing generalized land uses within the project study area mainly consist of residential (37.9%), vacant residential (16.66%), public/semi-public (10.69%), agricultural (10.44%), and vacant nonresidential (5.82%), with remaining land uses made up of small percentages of other types.

The Seminole County Future Land Use Map identifies the following dominant land uses within the study area: Suburban Estates (SE), Preservation/Managed Lands (PML), and Low Density Residential (LDR).

The northeast portion of the study area near the Orlando Sanford International Airport is under the jurisdiction of the City of Sanford. Future land uses designated by the City of Sanford within the project area include: Low Density Residential (LDR), Suburban Estates (SE), Resource Protection (RP), and General Commercial (GC).

The following developments are under construction or have been approved by the City of Sanford for future construction within the project study area: Sylvestri Estates (Concorde Phase 2), Park View Place Phase 3 (Skyway Townhomes), Comfort Inn, and Skylar Crest. Existing land uses, neighborhoods, and planned developments are shown on **Figure 12**.

Figure 12: Existing Land Use and Developments



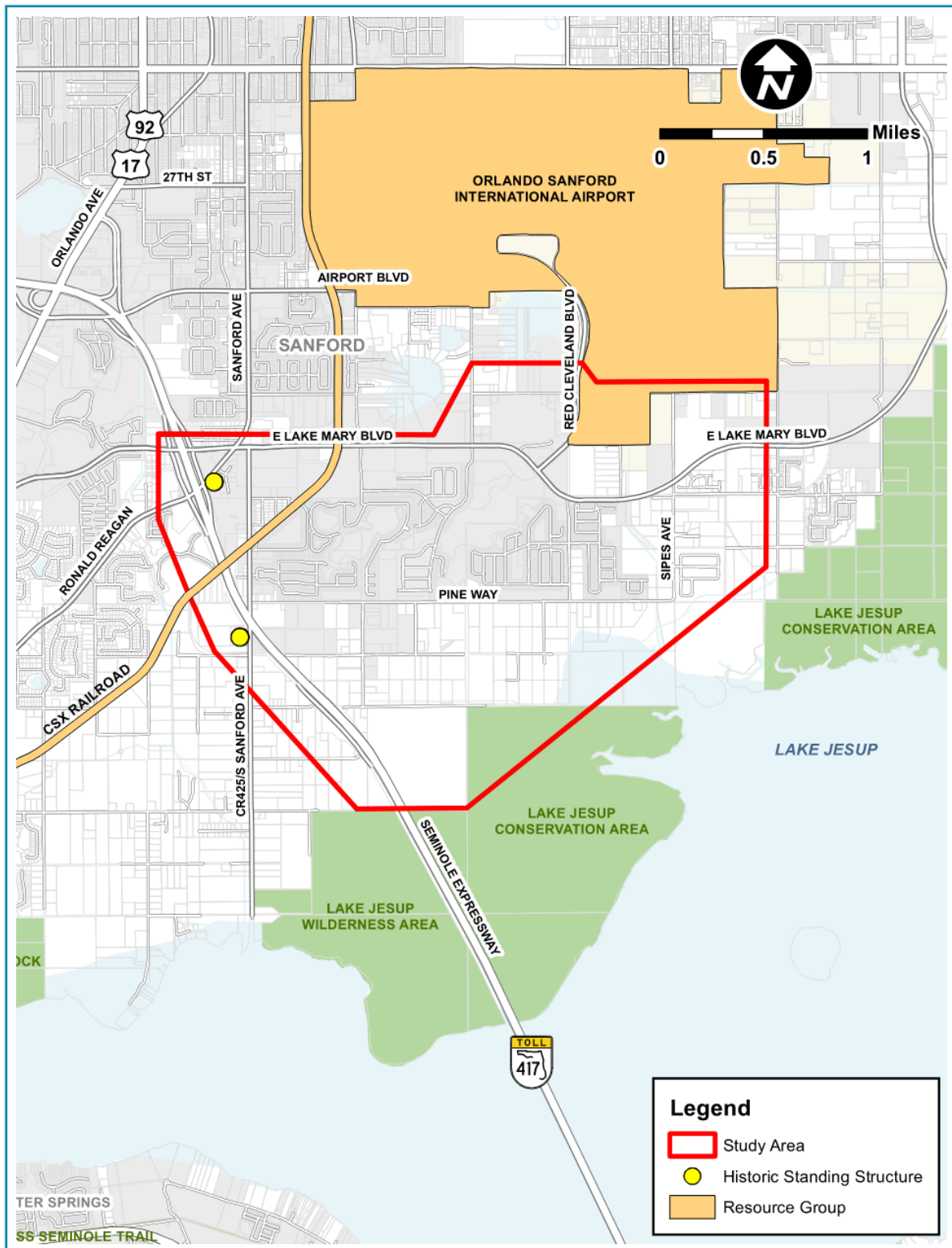
2.4.2 Cultural Features

GIS analysis identified one Bureau of Archaeological Research (BAR) Florida Site File archaeological or historic site within the project study area. The site, known as Cardinal (site ID SE01769) prehistoric campsite, was found ineligible for listing in the National Register of Historic Places (NRHP). GIS analysis also identified two BAR Florida Site File historic standing structures (4258 Sanford Ave, and 7441 CR 427), and two resource groups (CSX railroad, and Orlando Sanford International Airport). Both standing structures were found to be ineligible for listing in the NRHP, and the CSX railroad is eligible for listing in the NRHP. The two BAR Florida Site File historic standing structures and two resource groups are shown on **Figure 13**.

Previous research indicates that only the southern boundary of the Orlando Sanford International Airport resource group (8SE02162) is located within the northern boundary of the study area. This resource group (8SE02162) was first recorded during a 2006 Cultural Resource Assessment Survey of State Road 46 from SR 15/600 to SR 415, Seminole County, Florida conducted by Southeastern Archaeological Research, Inc. in 2006 (SEARCH 2006; Survey No. 12630). During this survey, three known historic resources were considered contributing resources to the resource group. These include two buildings, Building 37 (8SE01727) and Building 117 (the old Gasoline Service Station [8SE01728]), and the runways (not assigned Florida Master Site File numbers). None of the associated resources are located within the study area. In 2006, the SHPO evaluated the resource group as having insufficient information to make a determination of eligibility. The resource was updated in 2015 during the Cultural Resource Assessment Survey Update State Road 46 from Mellonville Avenue to State Road 415, Seminole County, Florida, at which time, the resource group was determined ineligible for listing in the NRHP by the SHPO (SEARCH 2015; Survey No. 22257). While no historic resources associated with the Orlando Sanford International Airport resource group (8SE02162) are located within the project study area, the Naval Air Station Sanford Memorial Park is located at the northeast intersection of Red Cleveland Boulevard and Marquette Avenue along the northern edge of the study area.

Several Archaeological and Historical Surveys and Cultural Resource Assessment Surveys have been conducted between 1990 and 2020 and cover the entire project study area. An updated CRAS will be prepared during the PD&E Study, and coordination with the SHPO will take place, if applicable.

Figure 13: Cultural Resources Map



2.4.3 Social Features

2.4.3.1 Population/Demographics

The Environmental Screening Tool (EST) Sociocultural Data Report (SDR) was used for demographic data (the SDR can be found within the Community Coordination section of the EST). The SDR uses the Census 2018-2022, American Community Survey (ACS) data and reflects the approximation of the population based on the project study area intersecting the Census Block Groups along the project corridor.

The SDR identified the population within the project study area as 58.8% minority population. This is higher than the 42.94% identified in Seminole County. Population age 65 and over is 9.98% of the study area, and 3.88% of the population is below the poverty level. Additionally, 8.17% of the population 20 to 64 years of age have a disability. Among households in the study area that are limited English speaking, 8 speak Spanish, 4 speak Indo-European, and 18 speak Asian and Pacific Island languages.

2.4.3.2 Community Facilities

Within the project study area there is one place of worship, Iglesia Cristiana Bethel. Just outside of the project study boundary is one recreation center (Boombah Recreation Park), one school (Galileo School for Gifted Learning), and the Sanford Army Reserve Center. **Figure 14** identifies the existing community facilities.

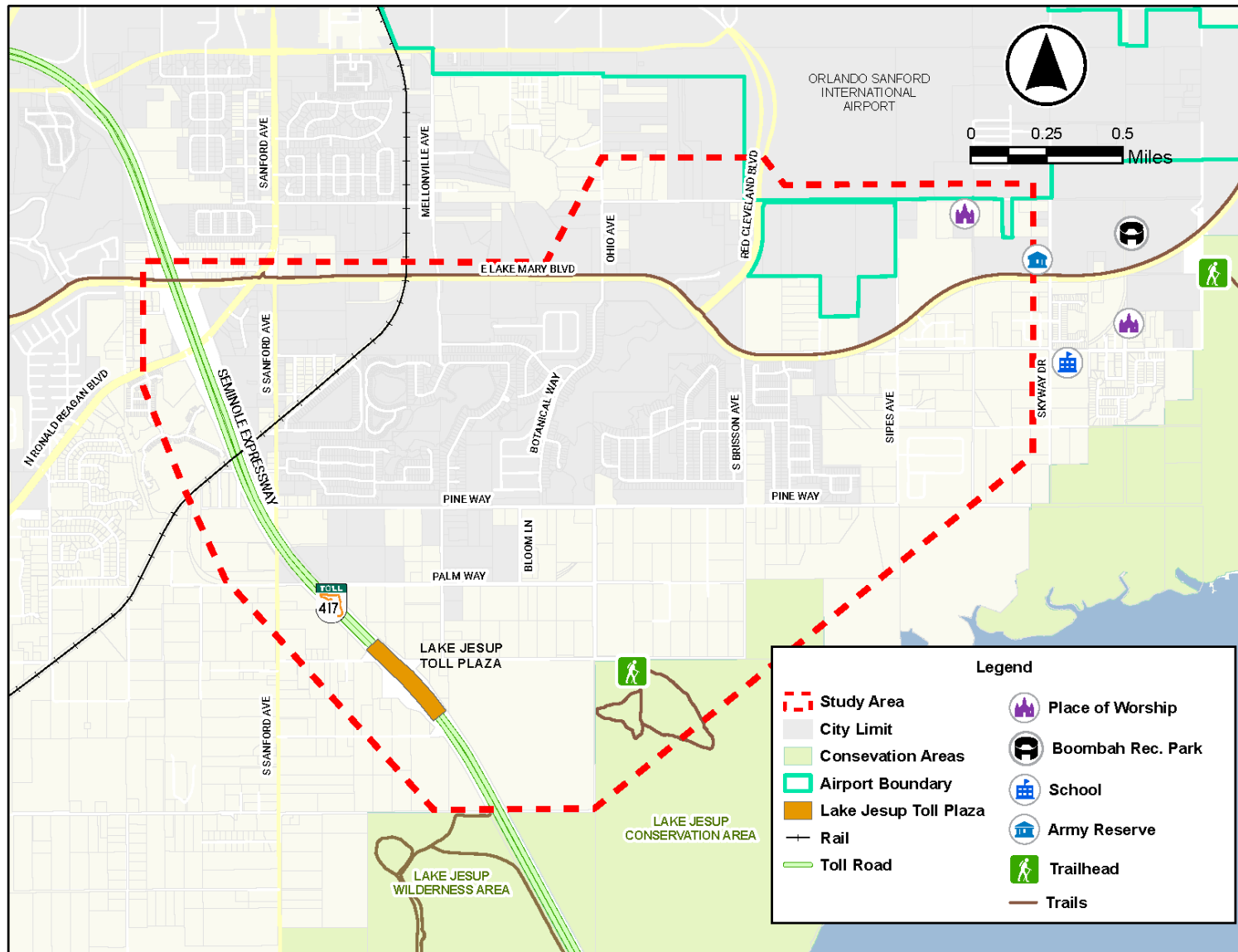
2.4.3.3 Parks and Recreation

There are two existing recreational trails, the Lake Jesup Conservation Area Trail, and the Lake Mary Boulevard Trail within the project study area. The Lake Jesup Conservation Area is designated as a Florida Natural Areas Inventory (FNAI) state managed conservation land. Local Florida parks and recreational facilities located within the study area include the Lake Jesup Park and Wilderness Area, and the Marl Bed Flats Tract Trailhead.

2.4.3.4 Transit

The Sanford Orlando International Airport is located adjacent to the project study limits. There are no public transit facilities (Lynx, SunRail, etc.) located within the study area.

Figure 14: Existing Community Facilities



2.4.4 Wetlands and Other Surface Waters

Approximately 786 acres of land within the project study area are identified as wetlands by the United States Fish and Wildlife Service (USFWS) National Wetlands Inventory dataset. This includes Palustrine (freshwater pond, freshwater emergent wetlands, freshwater forested/shrub wetland), Riverine, and Lacustrine (lake) wetlands.

Approximately 5 to 6 acres of surface waters are present within the study area including Navy Canal, Phelps Creek, and Golden Lake. Smaller ponds and/or retention ponds are also located within the study area but do not have available data. A Natural Resources Assessment (NRE) will be prepared as part of the PD&E Study.

2.4.5 Water Resources

The project study area is within the Lake Jesup Basin, which is in the Middle St. Johns River Basin and within the jurisdiction of the St. Johns River Water Management District. The Lake Jesup Basin discharges into Lake Jesup, which ultimately outfalls to the north into the St. Johns River. The entire project study area is located within the Surficial Aquifer System of Florida.

Surface water runoff from this project discharges within five WBID basins which ultimately discharges to the St. Johns River. The WBIDs are Lake Jesup Drain (WBID 2981B1), Lake Jesup Drain (WBID 2981C), Phelps Creek/Navy Canal (WBID 2982), Six Mile Creek (WBID 2984) and a small portion of Chub Creek (2985). Three waterbodies are verified impaired: Phelps Creek/Navy Canal (WBID 2982), Chub Creek (WBID 2984) and Six Mile Creek (WBID 2984). Lake Jesup (WBID 2981) has been delisted from the impaired waterbodies list, however, all the project WBIDs are on the Waters Not Attaining Standards Study List except Lake Jesup Drain (WBID 2981C). **Table 15** presents a summary of the WBID water quality for the watersheds to which the project basins will discharge.

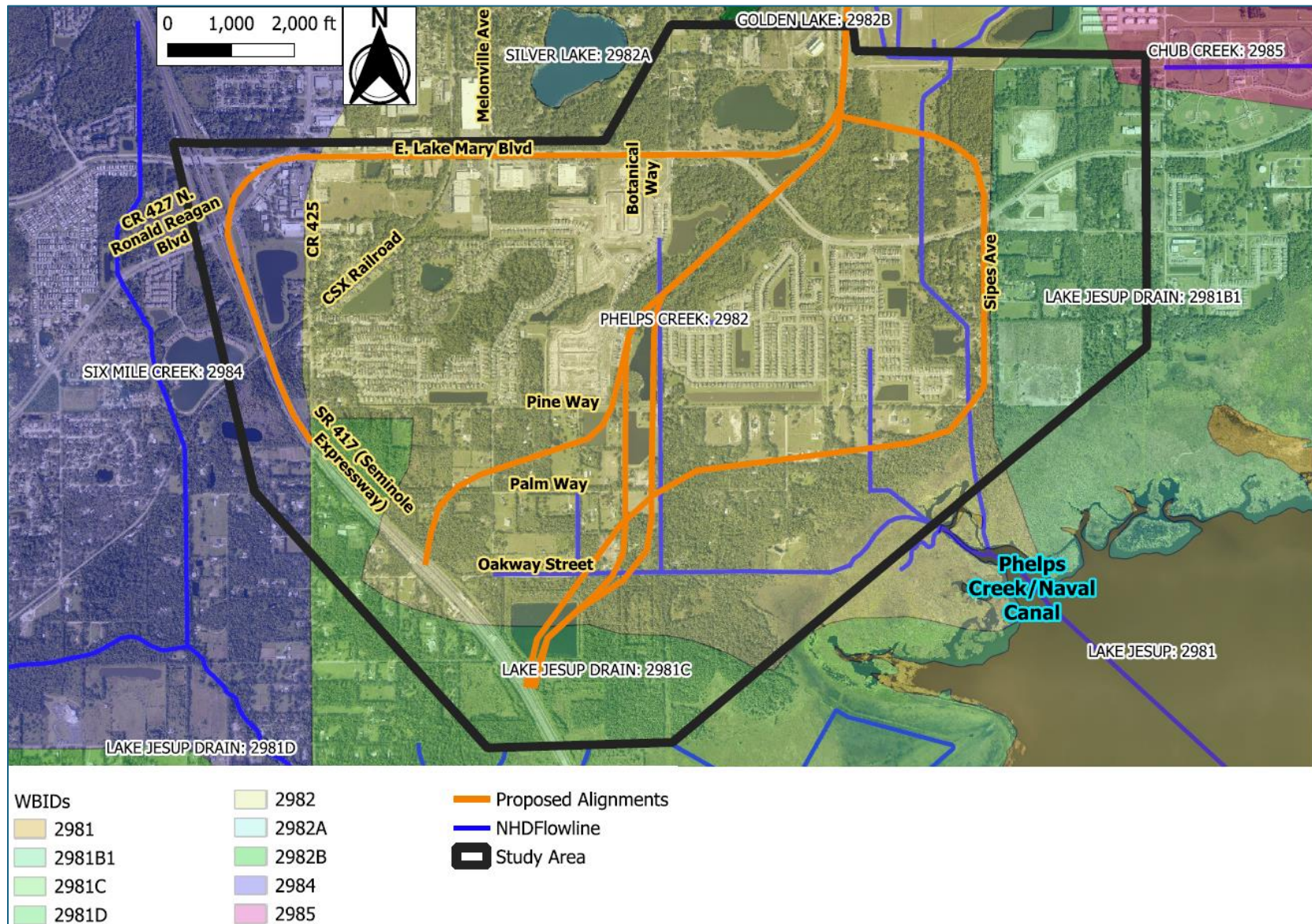
The entire project limits are located within the Lake Jesup Basin Management Action Plan (BMAP) which has established Total Maximum Daily Loads (TMDLs) for specific pollutants (such as nitrogen and phosphorous). The project is located within the jurisdiction of the St. Johns River Water Management District (SJRWMD) and is within the Middle St. Johns Watershed. There are no Outstanding Florida Waters or Outstanding Florida Springs within the project study area.

Table 15: WBID Water Quality Summary

Basin	WBID	Group Name	BMAP	TMDL	Waters Not Attaining Standards	
					Verified Impaired ⁽¹⁾	Study List ⁽²⁾
Lake Jesup Drain	2981B1	Middle St. Johns	Lake Jesup	--	--	DO
Lake Jesup Drain	2981C			--	--	--
Phelps Creek / Navy Canal	2982			--	FC	FC
Six Mile Creek	2984			--	FC	FC
Chub Creek	2985			--	FC & DO	FC, DO, TN & TP
Lake Jesup	2981			TN & TP	--	TN & TP
<u>Water Quality Parameters:</u> FC – Fecal Coliform/ Bacteria; DO – Dissolved Oxygen; TN – Total Nitrogen: TP- Total Phosphorous						
<u>Notes:</u> (1) Impaired waterbodies per FDEP Comprehensive Verified List (November 2022) (2) Other waters not attaining standards per FDEP Comprehensive Study List (November 2022)						

A Waterbody ID map is shown in **Figure 15**. A Water Quality Impact Evaluation (WQIE) and a Pond Siting Report (PSR) will be prepared as part of the PD&E Study.

Figure 15: Waterbody (WBID) Map



2.4.6 Protected Species and Habitat

The study area lies within the USFWS Consultation Area for the Audubon's crested caracara (*Caracara plancus audubonii*), Everglade snail kite (*Rostrhamus sociabilis floridanus*), Florida scrub-jay (*Aphelocoma coerulescens*) and the West Indian manatee (*Trichechus manatus*). Additionally, the USFWS Information for Planning and Consultation (IPaC) online tool identifies the following federally listed species with reasonable potential to occur in the study area: eastern black rail (*Laterallus jamaicensis jamaicensis*), wood stork (*Mycteria americana*), and the eastern indigo snake (*Drymarchon corais couperi*). The IPaC also identified the candidate insect species tricolored bat (*Perimyotis subflavus*), monarch butterfly (*Danaus plexippus*) and the federally endangered plants pygmy fringe-tree (*Chionanthus pygmaeus*) and Okeechobee gourd (*Cucurbita okeechobeensis ssp*). There is no USFWS-designated critical habitat within the study area. **Table 16** lists the species with potential to occur in the study area. Natural constraints identified in the study area are shown on **Figure 16**. A NRE will be prepared as part of this PD&E Study.

Table 16: Potential Listed Species and Likelihood of Occurrence

Species	Common Name	FWC	USFWS	Habitat	Probability of Species Presence or Occurrence
Reptiles					
<i>Drymarchon corais couperi</i>	Eastern indigo snake	FT	T	Hydric hammock, palustrine, sandhill scrub, upland pine forest, mangrove swamp	Medium
<i>Gopherus polyphemus</i>	Gopher tortoise	T	--	Old field, sandhill, scrub, xeric hammock, ruderal, dry prairie, pine flatwood	High
<i>Lampropeltis extenuate</i>	Short-tailed snake	T	--	Open, sandy soils that are well drained	Low
<i>Pituophis melanoleucus mugitus</i>	Florida pine snake	T	--	Well-drained, sandy open area or longleaf pine forests, sandhills	Low
Birds					
<i>Antigone canadensis pratensis</i>	Florida sandhill crane	T	--	Basin marsh, depression marsh, dry prairies, marl prairie, pastures, human-altered suburban landscapes	High

Species	Common Name	FWC	USFWS	Habitat	Probability of Species Presence or Occurrence
<i>Aphelocoma coerulescens</i>	Florida scrub-jay	FT	T	Relict dune ecosystems or scrub on well drained to excessively well drained sandy soils	Low
<i>Athene cunicularia floridana</i>	Florida burrowing owl	T	--	Native prairies and cleared areas with short groundcover	Low
<i>Caracara plancus audubonii</i>	Audubon's crested caracara	FT	T	Open prairie and pastures with cabbage palm	Medium
<i>Egretta caerulea</i>	Little blue heron	T	--	Estuarine, lacustrine, riverine, tidal marsh, tidal swamp	High
<i>Egretta rufescens</i>	Reddish egret	T	--	Open, marine tidal flats and shorelines with little vegetation	Low
<i>Egretta tricolor</i>	Tricolored heron	T	--	Cypress domes, scrub cypress, freshwater marshes and sloughs, and sawgrass marshes	Medium
<i>Falco sparverius paulus</i>	Southeastern American kestrel	T	--	Sandhill, mesic flatwoods, ruderal, dry prairie	Medium
<i>Haliaeetus leucocephalus</i>	Bald eagle	--	*	Forests, estuarine, lacustrine, riverine, tidal marsh, tidal swamp	High
<i>Laterallus jamaicensis</i>	Eastern black rail	FT	T	Salt, brackish, and freshwater marshes, pond borders, wet meadows, and grassy swamps	Low
<i>Mycteria americana</i>	Wood Stork	FT	T	Nest in forested wetlands and foraging in swamps, ponds, and marshes with water depths of 4-12 inches	High
<i>Rostrhamus sociabilis plumbeus</i>	Everglade snail kite	FT	T	Emergent and littoral woody vegetation along the shores of waterbodies	Low
Mammals					

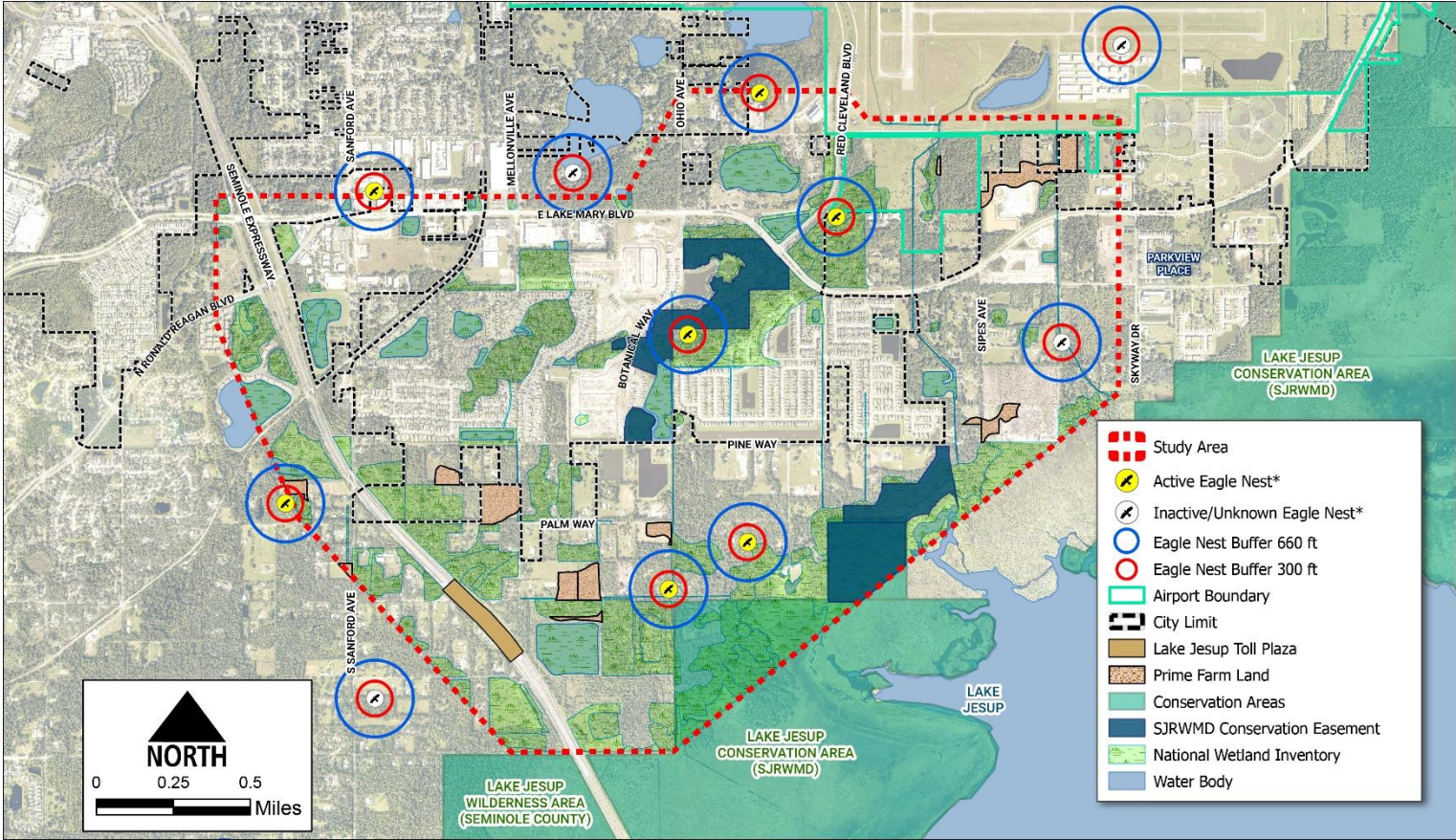
Species	Common Name	FWC	USFWS	Habitat	Probability of Species Presence or Occurrence
<i>Perimyotis subflavus</i>	Tricolored bat		C	Forested areas and human structure	High
<i>Trichechus manatus</i>	West Indian manatee	FT	T	Marine, estuarine, and freshwater systems with connectivity to the coast	Medium
<i>Ursus americanus floridanus</i>	Florida black bear	M	**	Flatwoods, swamps, sub ridges, and bayheads with dense understory	Medium

*The bald eagle is afforded federal protection through the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act

**The Florida black bear is no longer listed as threatened; however, it is protected under the FAC 68A-4.009 Florida Black Bear Conservation

Key: E = endangered, T = threatened, C = candidate for listing, FE = federally endangered, FT = federally threatened, M = managed

Figure 16: Existing Natural Constraints



2.5 Physical Environment

2.5.1 Geotechnical

The study area can exhibit artesian groundwater flow conditions that would affect deep excavations or drilled shafts for any proposed alignment. In addition, flowing wells used by farmers for irrigation are shown throughout the study area on the USGS quadrangle map (**Figure 17**), but mostly in the western portion of the area of interest.

The shallow soils depicted on the Web Soil Survey maps are predominantly poorly drained fine to excessively well drained sands with varying silt content (AASHTO Soil Classifications A-3, A-2-4) to approximately 6.5 feet deep. However, several soils include sandy loam to sandy clay loam (AASHTO Soil Classifications A-2-6, A-4, A-6) from approximately 2.5 feet to 6.5 feet below ground surface.

Seasonal high groundwater level estimates for the majority of the soils are within 2 feet of the ground surface; several listed soils have up to 2 feet of standing water during the wet season. A few soil types (in the north-central portion of the study area) are reported with seasonal high groundwater ranging between 2 and 6 feet deep. Information on NRCS Soils found in Seminole County is provided in **Table 17**.

The sandy soils are generally suitable for roadway construction and are classified by FDOT as Select material. The clayey soils are classified by FDOT as Plastic materials. Plastic soils are not typically suitable for use as fill for embankment construction and excavation backfill because of the increased difficulty with handling, moisture conditioning, and compacting these soils. Shallow groundwater can impact roadway grades and stormwater pond site selection, design and construction. These challenges will have to be addressed during potential future design and construction phases of the project, as recommended.

Table 17: Seminole County NRCS Soils (March 2023)

Unit No.	Soil Name		Depth (Inches)	Soil Description	Classification		Depth to Seasonal High Groundwater Depth (feet)	Hydrologic Soil Group
					Unified	AASHTO		
2	Adamsville-Sparr fine sands	Adamsville	0-4 4-80	Fine sand Fine sand	SP-SM SP-SM, SP	A-3, A-2-4 A-3, A-2-4	2.0-3.5	A
		Sparr	0-4 4-41	Fine sand Fine sand	SP-SM, SM SP-SM, SM	A-3, A-2-4 A-3, A-2-4	1.5-3.5	A/D
			41-43 43-72 72-80	Sandy loam Fine sandy loam Sandy loam	SC-SM, SC, SM SC-SM, SC SC-SM, SC, SM	A-2-4 A-2, A-4, A-6 A-2, A-4, A-6		

Unit No.	Soil Name		Depth (Inches)	Soil Description	Classification		Depth to Seasonal High Groundwater Depth (feet)	Hydrologic Soil Group
					Unified	AASHTO		
6	Astatula-Apopka fine sands, 0 to 5 percent slopes	Astatula	0-4 4-80	Fine sand Fine sand	SP-SM, SP SP-SM, SP	A-3 A-3	>6	A
		Apopka	0-3 3-64 64-80	Fine sand Fine sand Sandy clay loam	SP-SM, SP SP-SM, SP SC-SM, SC	A-3 A-3 A-2-4, A-2-6, A-4, A-6	>6	A
9	Basinger and Delray fine sands	Basinger	0 – 5 5 – 30 30 – 50 50 – 80	Fine sand Fine sand Fine sand Fine sand	SP SP-SM, SP SP-SM, SP SP-SM, SP	A-3 A-3, A-2-4 A-3, A-2-4 A-3, A-2-4	0.0 – 1.0	A/D
		Delray	0 – 12 12 – 50 50 – 80	Fine sand Fine sand Sandy loam	SC-SM, SP-SM, SM SP-SM SC-SM, SC, SM	A-3, A-2-4 A-3, A-2-4 A-2-4, A-2-6	0.0 – 0.5	A/D
10	Basinger, Samsula, and Hontoon soils, depressional	Basinger	0 – 6 6 – 18 18 – 35 35 – 80	Mucky fine sand Fine sand Fine sand Fine sand	SP-SM, SP SP-SM, SP SP-SM, SP SP-SM, SP	A-3, A-2-4 A-3, A-2-4 A-3, A-2-4 A-3, A-2-4	+2.0 – 0.0	A/D
		Hontoon	0 – 30 30 – 80	Muck Fine sand	PT SP-SM, SM, SP	A-8 A-3, A-2-4	+2.0 – 0.0	A/D
		Samsula	0-80	Muck	PT	A-8	+2.0 – 0.0	A/D
11	Basinger and Smyrna fine sands, depressional	Basinger	0 – 5 5 – 15 15 – 25 25 – 80	Mucky fine sand Fine sand Fine sand Fine sand	SP-SM, SP SP-SM, SP SP-SM, SP SP-SM, SP	A-3, A-2-4 A-3, A-2-4 A-3, A-2-4 A-3, A-2-4	+2.0 – 0.0	A/D
		Smyrna	0 – 2 2 – 15 15 – 25 25 – 80	Fine sand Fine sand Fine sand Fine sand	SP-SM, SP SP-SM, SP SP-SM, SM SP-SM, SP	A-3, A-2-4 A-3 A-3, A-2-4 A-3	+2.0 – 0.0	A/D
13	EauGallie and Immokalee fine sands	EauGallie	0 – 5 6 – 18 18 – 30 30 – 45 45 – 64 64 – 80	Fine sand Fine sand Fine sand Fine sand Fine sand Fine sand	SP-SM, SP SP-SM, SP SP-SM, SM SP-SM, SP SC-SM, SC, SM	A-3 A-3 A-3, A-2-4 A-3, A-2-4 A-2-4, A-2-6	0.5 – 1.5	A/D

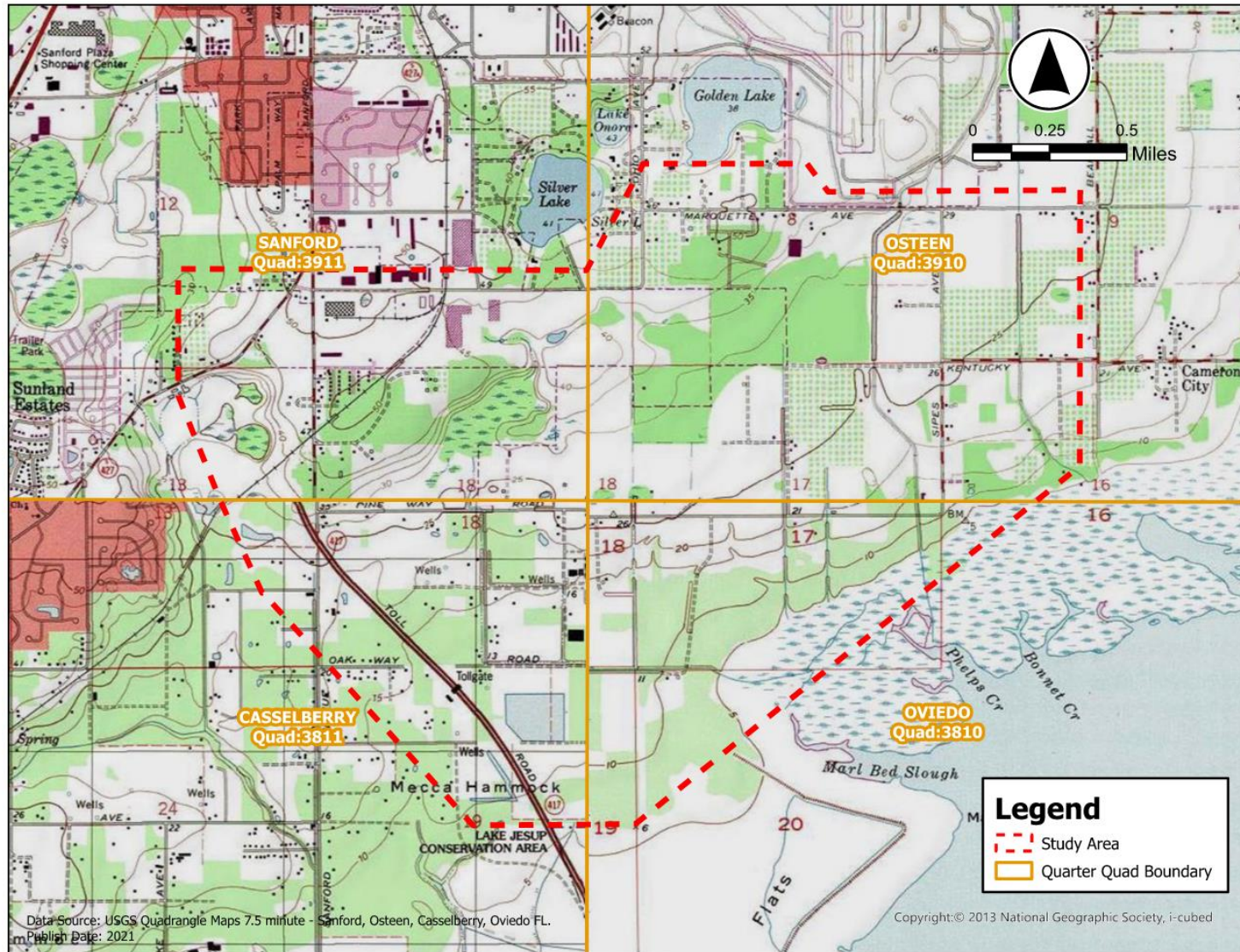
Unit No.	Soil Name		Depth (Inches)	Soil Description	Classification		Depth to Seasonal High Groundwater Depth (feet)	Hydrologic Soil Group
					Unified	AASHTO		
					SP-SM, SM	A-3, A-2-4		
		Immokalee	0 – 4 4 – 42 42 – 62 62 – 80	Fine sand Fine and Fine sand Fine sand	SP-SM, SP SP-SM, SP SP-SM, SM SP-SM, SP	A-3 A-3 A-3, A-2-4 A-3	0.5 – 1.5	A/D
15	Felda and Manatee mucky fine sands, depressional	Felda	0 – 4 4 – 28 28 – 36 36 – 46 46 – 80	Mucky fine sand Fine sand Sandy clay loam Loamy sand Fine sand	SP-SM, SP SP-SM, SP SC-SM, SC, SM SP-SM, SP SP-SM, SP	A-3 A-3 A-2-4, A-2-6 A-3, A-2-4 A-3	+2.0 – 0.0	A/D
		Manatee	0 – 14 14 – 19 19 – 33 33 – 50 50 – 80	Mucky fine sand Loamy sand Sandy loam Fine sandy loam Loamy fine sand	SP-SM, SM SC-SM, SC, SM SC-SM, SC, SM SC-SM, SC, SM SC-SM, SC, SM	A-3, A-2-4 A-2-4 A-2-4 A-2-4 A-2-4	+2.0 – 0.0	B/D
17	Brighton, Samsula, and Sanibel mucks	Brighton, drained	0 – 8 8 – 80	Muck Mucky peat	PT PT	A-8 A-8	+1.0 – 0.0	A/D
		Samsula, drained	0 – 26 26 – 30 30 – 80	Muck Mucky fine sand Fine sand	PT SP-SM, SP SP-SM, SM, SP	A-8 A-3 A-3, A-2-4	+2.0 – 0.0	A/D
		Sanibel, drained	0 – 6 6 – 8 8 – 80	Muck Mucky fine sand Fine sand	PT SP-SM, SP SP-SM, SP	A-8 A-3 A-3	+1.0 – 0.0	A/D
19	Manatee, Floridana, and Holopaw soils, frequently flooded	Manatee, flooded	0 – 10 10 – 33 33 – 52 52 – 80	Fine sand Loamy sand Sandy clay loam Loamy fine sand	SP-SM, SM SC-SM, SC, SM SC-SM, SC, SM SC-SM, SC, SM	A-3, A-2-4 A-2-4 A-2-4 A-2-4	0.0 – 0.5	B/D
		Floridana, flooded	0 – 18 18 – 29 29 – 80	Mucky fine sand Fine sand	SP-SM, SM SP-SM, SP SC-SM, SC	A-3, A-2-4 A-3 A-2-4, A-2-6	0.0 – 0.5	C/D

Unit No.	Soil Name		Depth (Inches)	Soil Description	Classification		Depth to Seasonal High Groundwater Depth (feet)	Hydrologic Soil Group
					Unified	AASHTO		
				Fine sandy loam				
		Holopaw, flooded	0 – 6 6 – 50 50 – 80	Fine sand Fine sand Fine sandy loam	SP-SM, SP SP-SM, SP SC-SM, SC, SM	A-3 A-3 A-2-4, A-2-6	0.0 – 1.0	A/D
20	Myakka and EauGallie fine sands	Myakka	0 – 5 5 – 28 28 – 45 45 – 80	Fine sand Sand, fine sand Sand, fine sand, loamy fine sand Sand, fine sand	SP-SM, SP SP-SM, SP SP-SM, SM SP-SM, SP	A-3 A-3 A-3, A-2-4 A-3	0.5 – 1.5	A/D
		EauGallie	0 – 5 5 – 18 18 – 30 30 – 41 41 – 60 60 – 8	Fine sand Fine sand Sand, fine sand Fine sand, sand Sandy loam, sandy clay loam Sand, loamy sand	SP-SM, SP SP-SM, SP SP-SM, SM SP-SM, SP SC-SM, SC, SM SP-SM, SM	A-3 A-3 A-3, A-2-4 A-3, A-2-4 A-2-4, A-2-6 A-3, A-2-4	0.5 – 1.5	A/D
22	Nittaw muck, occasionally flooded		0 – 2 2 – 10 10 – 60 60 – 80	Muck Sandy loam, fine sand, mucky fine sand Sandy clay, clay Sandy loam, fine sand	PT SP-SM, SM CL, CH SC-SM, SP-SM, SM, SP	A-8 A-3, A-2-4 A-7 A-3, A-2-4	0.0 – 0.5	C/D
23	Nittaw, Okeelanta, and Basinger soils, frequently flooded	Nittaw, flooded	0 – 4 4 – 9 9 – 80	Muck Mucky fine sand Fine sand	PT SP-SM, SM CL, CH	A-8 A-3, A-2-4 A-7	0.0 – 0.5	C/D
		Okeelanta, flooded	0 – 42 42 – 80	Muck Fine sand	PT	A-8 A-3, A-2-4	0.0 – 0.5	A/D

Unit No.	Soil Name		Depth (Inches)	Soil Description	Classification		Depth to Seasonal High Groundwater Depth (feet)	Hydrologic Soil Group
					Unified	AASHTO		
					SP-SM, SM, SP			
		Basinger, flooded	0 – 4 4 – 22 22 – 38 38 – 80	Fine sand Fine sand Sand, fine sand Sand, fine sand	SP SP SP-SM, SP SP-SM, SP	A-3 A-3 A-3, A-2-4 A-3, A-2-4	0.0 – 0.5	A/D
24	Paola-St. Lucie sands, 0 to 5 percent slopes	Paola	0 – 3 3 – 25 25 – 80	Sand Sand Sand	SP SP SP	A-3 A-3 A-3	>6	A
		St. Lucie	0-2 2-80	Sand Sand	SP SP	A-3 A-3	>6	A
25	Pineda-Pineda, wet, fine sand, 0 to 2 percent slopes	Pineda	0 – 1 1 – 5 5 – 36 36 – 54 54 – 80	Fine sand Fine sand Fine sand Fine sandy loam Fine sand	SP-SM, SM SP-SM, SM SP-SM, SM SC-SM, SC, CL SP-SM, SM	A-3, A-2-4 A-3, A-2-4 A-3, A-2-4 A-2-4, A-4, A-6 A-3, A-2-4	0.5 – 1.5	A/D
26	Udorthents, excavated		0 – 7 7 – 80	Fine sand Sand, fine sand	SP-SM, SP SP-SM, SP	A-3 A-3	3.5 – 6.0	A
27	Pomello fine sand, 0 to 5 percent slopes		0 – 4 4 – 55 55 – 67 67 – 80	Fine sand Fine sand Fine sand Fine sand	SP-SM SP-SM SP-SM SP-SM	A-3 A-3 A-2-4 A-3, A-2-4	2.0 – 3.5	A
29	St. Johns and EauGallie fine sands	St. Johns	0 – 12 12 – 22 22 – 54 54 – 80	Fine sand Fine sand Fine sand Fine sand	SP-SM, SP SP-SM, SP SP-SM, SM SP-SM, SP	A-3 A-3 A-3, A-2-4 A-3	0.5 – 1.5	B/D
		EauGallie	0 – 3 3 – 16 16 – 35 35 – 38 38 – 72 72 – 80	Fine sand Fine sand Fine sand Fine sand Sandy clay loam Loamy sand	SP-SM, SP SP-SM, SP SP-SM, SM SP-SM, SP SC-SM, SC, SM SP-SM, SM	A-3 A-3 A-3, A-2-4 A-3, A-2-4 A-2-4, A-2-6 A-3, A-2-4	0.5 – 1.5	B/D
31	Tavares-Millhopper	Tavares	0 – 6 6 – 80	Fine sand Fine sand	SP-SM, SM SP-SM, SM	A-3, A-2-4 A-3, A-2-4	3.5-6.0	A

Unit No.	Soil Name		Depth (Inches)	Soil Description	Classification		Depth to Seasonal High Groundwater Depth (feet)	Hydrologic Soil Group
					Unified	AASHTO		
	fine sands, 0 to 5 percent slopes	Millhopper	0 – 6 6 – 64 64 – 72 72 – 80	Fine sand Fine sand Fine sandy loam Sandy clay loam	SP-SM, SM SP-SM, SM SC-SM, SM, CL SC, SM, CL	A-3, A-2-4 A-3, A-2-4 A-2-4, A-4, A-6 A-2-4, A-6	3.5-6.0	A
34	Urban land, 0 to 2 percent slopes		--	--	--	--	--	--
35	Wabasso fine sand, 0 to 2 percent slopes		0 – 4 4 – 16 16 – 28 28 – 32 32 – 48 48 – 80	Fine sand Fine sand Fine sand Fine sand Fine sandy loam Loamy fine sand	SP-SM, SM SP-SM, SM SP-SM, SM SP-SM, SM SC-SM, SC, CL SM	A-3, A-2-4 A-3, A-2-4 A-3, A-2-4 A-3, A-2-4 A-2-4, A-4, A-6 A-2-4, A-4	0.5 – 1.5	A/D

Figure 17: USGS Quadrangle Map



2.5.2 Contamination

Data provided by FDEP, USGS, and the NRCS was evaluated to determine potential contamination site impacts. Within the project study area, there are eleven hazardous waste facilities, three petroleum contamination monitoring sites, six storage tank contamination monitoring, and four super act risk sources. There are also forty-nine USEPA National Pollutant Discharge Elimination System (NPDES) locations and one Brownfield location. The following four solid waste facilities are located within the project study area: Brisson Road Dump, Kentucky Avenue Dump, Marquette Shores Borrow Pit, and the Sunland Park debris and staging area. Additional concerns include a historical railroad alignment and historical agricultural land uses (citrus groves and row crops).

Of the sites identified, fourteen are ranked as Low, twelve are ranked as Medium, and one site is ranked as High. Details on each site are provided in **Table 18**.

The location of these sites will be given consideration when determining alignment alternatives. No superfund sites were identified within the study area. A Contamination Screening Evaluation Report (CSER) will be completed during the PD&E Study.

Table 18: Potential Contamination Site Summary

Site No.	Facility Name and Address	Facility ID	Concerns	Risk Rating
1	Seminole County Main Expressway Plaza 875 Oakway	9400810	This site maintains a 500-gallon aboveground emergency generator diesel tank. No complaints, violations, or discharges have been recorded at this site.	Low
2	Acousticfab Inc 110 Keyes Avenue	FLR000098988	This site is registered as a conditionally exempt small quantity hazardous waste generator. A May 2003 inspection did not find any violations.	Low
3	Kemco Industries Inc 70 Keyes Avenue	FLD984262741	This site is a former very small quantity hazardous waste generator. No complaints, violations, or discharges have been recorded at this site.	Low
4	Barry Wehmiller 3795 South Sanford Avenue	FLD984179804	This site is a former small quantity hazardous waste generator. No complaints, violations, or discharges have been recorded at this site.	Low
5	7-Eleven Food Store #32766 7500 CR 427	9801629	This site is an active gas station. A discharge was reported in August 2006 and received a Site Rehabilitation Completion Order in March 2008.	Medium

Site No.	Facility Name and Address	Facility ID	Concerns	Risk Rating
6	Kangaroo Express Inc #1226 7499 CR 427	8732155; FLD984199935	<p>This site is an active gas station. A discharge was recorded at this site in January 1992 and received a No Further Action status in December 1993.</p> <p>This site is also a conditionally exempt small quantity hazardous waste generator. No complaints, violations, or discharges have been recorded at this site regarding hazardous waste.</p>	Medium
7	Ryder Truck Rental #070 3651 South Sanford Avenue	8516718; FLD134224161	<p>A Site Rehabilitation Completion Order was rescinded in January 2022 due to groundwater and soil petroleum exceedances found in April 2021. No further remediation activities have occurred.</p> <p>This site is also a conditionally exempt small quantity hazardous waste generator and was in compliance in November 2011.</p>	Medium
8	Cardinal Industries 3701 South Sandford Avenue	8732703; FLD122417009	<p>This site has ongoing remediation activities for groundwater exceedances located about 3 feet to 15 feet below ground surface and 40 feet south of South Sanford Avenue.</p> <p>This site is also a former small quantity hazardous waste generator. No complaints, violations, or discharges have been recorded at this site regarding hazardous waste.</p>	Medium
9	Cobia Boat Co Silver Lake Road (East Lake Mary Boulevard)	FLD067859231	A complaint was filed at this former small quantity hazardous waste generator in July 1983, and the site returned to compliance in April 1987.	Low
10	American Bronze Foundry 1650 East Lake Mary Boulevard	FLR000096628	A complaint regarding dumping was reported at this site in October 2002 and the site returned to compliance in June 2005.	Low

Site No.	Facility Name and Address	Facility ID	Concerns	Risk Rating
11	RL Best; 1775 East Lake Mary Boulevard Brownfield Site and Area	BF591601000; BF591601001; ERIC_11194; FLR000017285	<p>This Brownfield Site received a Site Rehabilitation Completion Order in November 2019. Aluminum-impacted groundwater extends north, under East Lake Mary Boulevard and could impact potential dewatering in this area.</p> <p>This site is also a former conditionally exempt small quantity hazardous waste generator. No complaints, violations, or discharges have been recorded at this site regarding hazardous waste.</p>	Medium
12	Cobia Boat Co; Aronow Powerboats Inc 500 Silver Lake Drive (East Lake Mary Boulevard)	8631279; FLD984182964	<p>Two 2,000-gallon underground storage tanks were removed from this site in February 1991. Contaminated soil was removed, and no groundwater impacts were found.</p> <p>This site is also a former small quantity hazardous waste generator. No complaints, violations, or discharges have been recorded at this site.</p>	Low
13	Datamax Corporation 1770 East Lake Mary Boulevard	FLD984234542	This site is a former small quantity hazardous waste generator. No complaints, violations, or discharges have been recorded at this site.	Low
14	Ultra Brake 501 Silver Lake Drive (East Lake Mary Boulevard)	FL0000871798	This site is a former small quantity hazardous waste generator. No complaints, violations, or discharges have been recorded at this site.	Low
15	Quality Automotive Co 1875 East Lake Mary Boulevard	FLR000060707	This site is a former conditionally exempt small quantity hazardous waste generator. No complaints, violations, or discharges have been recorded at this site.	Low
16	Andrew's Pit Andrews Road	8840660	This site formerly maintained a 500-gallon aboveground diesel tank. A July 1986 Preliminary Contamination Survey for Site No. 17 reported low levels of carbon disulfide in the groundwater at this site.	Medium
17	Rush Hampton Part A-1985; Emerson Electric Co 1201 Silver Lake Drive (East Lake Mary Boulevard)	ERIC_5813; FLD982088924	<p>A July 1986 Preliminary Contamination Survey reports contamination impacts at Site No. 16, and did not find any impacts at this site.</p> <p>This site is also a former small quantity hazardous waste generator. No complaints, violations, or discharges have been recorded at this site.</p>	Low

Site No.	Facility Name and Address	Facility ID	Concerns	Risk Rating
18	Invacare Corp 2101 East Lake Mary Boulevard	FLD981466972	A complaint was filed at this former small quantity hazardous waste generator in July 1997 regarding a leaking chemical tank, and a follow up inspection did not find any violations or spills.	Low
19	Montfort Food Distribution Co 2301 East Lake Mary Boulevard	8838745	Two 10,000-gallon underground storage tanks were removed in October 1998. No soil or groundwater contamination impacts were found upon their removal.	Low
20	Marquette Shores Borrow Pit C&D Marquette Avenue and Ohio Avenue	27164	This site was a construction demolition debris disposal site, that received a No Further Action status. Debris may remain on-site.	Medium
21	Sanford Airport FUDS Site	FL49799F467500	This site is a former Naval Air Station with the potential for soil and groundwater impacts.	Medium
22	Brisson Road/Avenue Landfill/Dump 2861 East Lake Mary Boulevard	ERIC_8881; ERIC_5591; ERIC_5562; 83721	This site is an abandoned landfill. An April 2015 Supplemental Site Assessment Report found high methane soil exceedances, metal groundwater exceedances, and remaining solid waste debris on-site. An October 2015 Addendum recommends a No Further Action for the groundwater due to low levels of exceedances. Landfill debris remains on-site. Additional areas of contamination impacts could exist.	High
23	Kentucky Avenue Dump Kentucky Avenue	87854	This site is a former landfill and received a No Further Action status in July 2001 due to low groundwater contaminants. Debris remains on-site. Additional areas of contamination impacts could exist.	Medium
24	Kentucky Square Kentucky Street at Skyway Drive	ERIC_11200	Arsenic groundwater exceedances exist in the groundwater at the site, and are stable and below Natural Attenuation Default Concentrations.	Medium
25	Historical Citrus Groves and Row Crops	N/A	Typical concerns associated with citrus groves and row crops include pesticide/herbicide storage and usage, grove heating during cooler winter months (smudge pots and other grove heating equipment), tractor and equipment maintenance and fueling, underground and aboveground fuel storage tanks, irrigation pumps and maintenance, and asbestos irrigation lines.	Medium

Site No.	Facility Name and Address	Facility ID	Concerns	Risk Rating
26	Historical Railroad	N/A	Historical railroads have the potential for residual arsenic, creosote, polynuclear hydrocarbon, and pesticide and herbicide impacts.	Medium
27	Sunland Park Debris Staging Area 180 Collins Drive	98048	This is an inactive disaster debris management area with no recorded contamination impacts.	Low

2.5.3 Air Quality

As of March 2020, the Florida Department of Environmental Protection (DEP) announced that Florida meets all National Ambient Air Quality Standards (NAAQS) statewide under the Clean Air Act.

Construction activities will cause short-term air quality impacts in the form of dust from earthwork and unpaved roads. These impacts will be minimized whenever possible. An Air Quality Analysis will be conducted as part of the PD&E Study.

2.5.4 Noise

The project study area is a rapidly growing high development section of Seminole County. In addition to newly proposed and permitted growth, other potentially noise sensitive sites located within the project study area include the Iglesia Cristiana Bethel Religious Center, the Lake Jesup Park and Wilderness Area, Marl Bed Flats Tract Trailhead, Lake Jesup Conservation Area Trail, and the Lake Mary Boulevard Trail. Noise impacts to existing and planned developments will vary depending on the alternative selected. A Noise Study Report will be prepared during the PD&E Study.

2.5 Structures

There are ten existing bridges and one bridge culvert within the project study area. Bridge No.'s 770043 and 770044 carry southbound and northbound SR 417 over CR 425/South Sanford Avenue, Bridge No.'s 770047 and 770048 carry SR 417 southbound and northbound over East Lake Mary Boulevard, Bridge No.'s 770045 and 770046 carry SR 417 southbound and northbound over CR 427/North Ronald Reagan Boulevard, and Bridge No.'s 770042 and 770941 carry SR 417 southbound and northbound over the CSX railroad. While the bridge inspection reports were not readily available, the FDOT Florida Bridge Information did not note any structural deficiencies or that they were functionally obsolete. The Sufficiency Rating and Health Index of all the bridges identified were greater than 90%.

A bridge concrete box culvert was identified on East Lake Mary Boulevard. The culvert is located approximately 200 feet east of Laura Avenue and conveys water along the Naval Canal/Phelps Creek. A bridge number was not found on the structure, and no records of the bridge culvert are documented in the FDOT Florida Bridge Information data. However, the bridge culvert is identified in the East Lake Mary Boulevard Construction Plans from September 2002 (Seminole County Public Works Department PS-0137) as X-4. The bridge culvert is a triple barrel culvert that spans 33.75 feet and is 6 feet high. According to the construction plans, the length of the bridge box culvert is approximately 130 feet.

2.6 Lighting

The existing lighting in the study area is limited. A recommendation from the East Lake Mary Boulevard Small Area Study suggested a recommended improvement of adding pedestrian-scale lighting along East Lake Mary Boulevard.

2.7 Intelligent Transportation Systems

The Metroplan Orlando Intelligent Transportation Systems (ITS) Master Plan (May 2017) identifies fiber optic lines along East Lake Mary Boulevard managed by Seminole County. There are no Closed-Circuit Television Cameras (CCTV) or Dynamic Messaging Signs (DMS) identified in the study area that are managed by Seminole County. As noted in the Master Plan, CCTV coverage is provided predominantly by FDOT cameras installed on state facilities, and adaptive control systems employ both video detection and in-ground loops. Traffic signals are equipped for Transit Signal Priority (TSP) and use Infrared detection for emergency preemption functions. These systems may exist but are not managed by Seminole County.

The CFX ITS Master Plan (February 2022) details the existing ITS infrastructure along SR 417. This includes CCTV, DCS, and Traffic Management Stations (TMS). Additionally, CFX has installed an interconnected fiber optic backbone along both sides of SR 417.