

EXISTING CONDITIONS REPORT

Boggy Creek Road Alignment Study from Simpson Road to Narcoossee Road Osceola County

Osceola County Project Number: PS2011479-DG

Prepared for:

**Osceola County Board of County Commissioners
Osceola County, Florida**

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TABLE OF CONTENTS

1.0	INTRODUCTION	1-1
1.1	Project Description.....	1-1
2.0	EXISTING CONDITIONS	2-1
2.1	Existing Roadway Characteristics	2-1
2.1.1	Functional and Context Classification.....	2-1
2.1.2	Access Classification.....	2-1
2.1.3	Typical Sections	2-1
2.1.4	Existing Posted Speeds.....	2-1
2.1.5	Right-of-Way	2-1
2.1.6	Multi-Modal Accommodations.....	2-2
2.1.6.1	Pedestrian Facilities.....	2-2
2.1.6.2	Bicycle Facilities.....	2-2
2.1.6.3	Transit Facilities	2-2
2.1.7	Horizontal and Vertical Geometry.....	2-2
2.1.8	Intersections and Signalization	2-2
2.1.9	Signage.....	2-23
2.2	Existing Drainage Conditions	2-3
2.2.1	Existing Drainage Basins.....	2-4
2.2.1.1	Drainage Basin 1	2-4
2.2.1.2	Drainage Basin 2	2-4
2.2.1.3	Drainage Basin 3	2-4
2.2.1.4	Drainage Basin 4	2-5
2.2.1.5	Drainage Basin 5	2-5
2.2.1.6	Drainage Basin 6	2-5
2.2.1.7	Drainage Basin 7	2-5
2.2.1.8	Drainage Basin 8	2-5
2.2.1.9	Drainage Basin 9	2-5
2.2.1.10	Drainage Basin 10	2-5
2.2.1.11	Drainage Basin 11	2-6
2.3	Existing Bridge Conditions	2-6
2.4	Soils.....	2-6
2.5	Lighting.....	2-9
2.6	Utilities	2-9
2.7	Environmental Characteristics.....	2-11
2.7.1	Socio-Economic	2-11
2.7.2	Land Use.....	2-12
2.7.3	Historic and Archaeological Resources	2-19
2.7.4	Wetlands and Other Surface Waters	2-22
2.7.5	Threatened and Endangered Species	2-30
2.7.6	Floodplains and Floodway.....	2-33
3.0	TRAFFIC	3-1
3.1	Existing Traffic Conditions.....	3-1
3.1.1	Traffic Count Information	3-3

TABLE OF CONTENTS

3.1.2	Existing Traffic Volumes	3-3
3.1.3	Year 2019 Turning Movement Counts	3-6
3.1.4	2019 Year LOS Analysis	3-6
3.1.4.1	Year 2019 Intersection LOS Analysis	3-6
3.1.4.2	Year 2019 Roadway Operational Analysis	3-8
3.2	Crash Data Review	3-8
3.2.1	Existing Crash Data Statistics.....	3-9
3.2.2	Existing Crash Data by Crash Type.....	3-10
3.2.3	Existing Crash Data by Intersections	3-10
3.2.4	Overview of Fatal Crashes	3-11
3.2.5	Crash Frequency & Crash Rate Development.....	3-12
3.3	Development of Design Characteristics	3-12
3.3.1	Standard K Factor	3-13
3.3.2	D Factor	3-13
3.3.3	T & DHT Factors	3-13
3.3.4	Recommended Design Traffic Characteristics.....	3-14

LIST OF FIGURES

Figure 1-1: Project Location Map	1-2
Figure 2-1a: Existing Land Use Map	2-13
Figure 2-1b: Existing Land Use Map	2-14
Figure 2-1c: Existing Land Use Map	2-15
Figure 2-1d: Existing Land Use Map	2-16
Figure 2-1e: Existing Land Use Map	2-17
Figure 2-1f: Existing Land Use Map	2-18
Figure 2-2a: Previous Recorded Archaeological Resources.....	2-20
Figure 2-2b: Previous Recorded Historic Resources.....	2-21
Figure 2-3a: Wetlands Map.....	2-24
Figure 2-3b: Wetlands Map.....	2-25
Figure 2-3c: Wetlands Map.....	2-26
Figure 2-3d: Wetlands Map.....	2-27
Figure 2-3e: Wetlands Map.....	2-28
Figure 2-3f: Wetlands Map.....	2-29
Figure 2-4: Floodplains Map.....	2-1
Figure 3-1: Existing and Future No-Build Lane Geometries	3-2
Figure 3-2: Existing Base Year 2019 Annual Average Daily Traffic (AADT)	3-5
Figure 3-3: Existing Base Year 2019 Turning Movement Counts	3-7

LIST OF TABLES

Table 2-1: Existing Right-of-Way Widths	2-1
Table 2-2: Existing Horizontal Curves	2-2
Table 2-3: Summary of Existing Cross Drains	2-3
Table 2-4: Summary of Existing Drainage Basins	2-4
Table 2-5: USDA NRCS Soil Survey Information: Osceola County	2-7
Table 2-6: USDA NRCS Soil Survey Information: Orange County	2-8
Table 2-7: Summary of Existing Utilities	2-11
Table 2-8: Osceola County Socio-Economic Data.....	2-122
Table 2-9: Previously Recorded Archaeological Resources	2-19
Table 2-10: Previously Recorded Historic Resources.....	2-19
Table 2-11: Potentially Occurring Protected Species	2-30
Table 3-1: Traffic Volumes & Characteristics Summary	3-4
Table 3-2: Year 2019 Peak Intersection Analysis Summary	3-6
Table 3-3: Year 2019 Roadway Operational Analysis Summary	3-8
Table 3-4: Crash Summary by Year and Severity	3-9
Table 3-5: Crash Summary by Year and Conditions	3-9
Table 3-6: Crash Summary by Year and Crash Type	3-10
Table 3-7: Intersection Crash Summary by Severity	3-11
Table 3-8: Intersection Crash Summary by Conditions.....	3-11
Table 3-9: Crash Frequency & Crash Rate Summary	3-12
Table 3-10: Recommended Range of D Values	3-13
Table 3-11: Recommended Design Traffic Characteristics.....	3-14

1.0 INTRODUCTION

Osceola County commissioned an alignment study for the widening of Boggy Creek Road, a two-lane undivided east-west collector roadway. The study will identify all the environmental, physical, and cultural considerations of the proposed corridor, develop engineering refinements, provide a conceptual design and recommend a preferred alignment that will facilitate and support future growth along Boggy Creek Road and in Osceola County. The purpose of this Existing Conditions Report is to document available information regarding the existing facility by documenting the inventory of roadway, structure, and environmental elements of the project. This “analysis helps to identify or confirm design and operational deficiencies associated with the project area, as well as to verify, refine, and support the purpose and need for the project.”

1.1 Project Description

Osceola County is conducting a corridor alignment study to evaluate alternative roadway design and alignments for the widening of Boggy Creek Road from Simpson Road to Narcoossee Road, a distance of approximately 6-miles. A Project Location Map is shown in [Figure 1-1](#).

The purpose of the alignment study is to develop alternative conceptual design alignments, considering various typical sections for the widening of Boggy Creek Road from the existing 2-lane roadway to a 4-lane roadway to accommodate the future traffic volumes. The study will assess the need for capacity and operational improvements and identify all the environmental, physical, and cultural considerations of the proposed corridor, develop engineering refinements, and provide a conceptual design that will facilitate and support future development along Boggy Creek Road.

Figure 1-1: Project Location Map



2.0 EXISTING CONDITIONS

2.1 Existing Roadway Characteristics

2.1.1 Functional and Context Classification

According to Osceola County, Boggy Creek Road is classified as an Urban Major Collector roadway and has a C3R – Suburban Residential context classification.

2.1.2 Access Classification

Boggy Creek Road is currently undivided, two-lane roadway and considered an Access Management Class Seven facility.

2.1.3 Typical Sections

Boggy Creek Road is an existing 2-lane undivided east-west collector roadway with 12-foot wide travel lanes, flush shoulders and roadside ditches for drainage. There are existing left and right turn lanes at existing side streets, school entrances and commercial driveways along the corridor. Side slopes along the roadway are typically 1:4 or flatter, are grassed and exhibit no signs of any significant erosion.

2.1.4 Existing Posted Speeds

The posted speed limit along the corridor varies from 45 mph on the western limits to 55 mph on the eastern limits. From the beginning of the project at Simpson Road to just east of Turnberry Road, the speed limit is posted at 45 mph. From east of Turnberry Road to Narcoossee Road, the posted speed limit is 55 mph. There are two school zones located at East Lake Elementary School and the Renaissance Charter School.

2.1.5 Right-of-Way

The existing right-of-way (R/W) width varies along the project corridor from 100-feet to 130-feet wide. The existing R/W widths are summarized in [Table 2-1](#).

Table 2-1: Existing Right-of-Way Widths

Limits		Approx Distance (feet)	R/W Width (LEFT) (feet)	R/W Width (RIGHT) (feet)	R/W Width (TOTAL) (feet)
From	To				
Simpson Rd	E of Morningside Dr	750	50	65	115
E of Morningside Dr	E of Fish Camp Rd	7,500	50	50	100
E of Fish Camp Rd	W of Holiday Woods	1,350	50	65	115
W of Holiday Woods	Elem. School Entrance	2,600	65	65	130
Elem. School Entrance	E of Turnberry	1,200	65	50	115
E of Turnberry	W of Rustic	10,300	50	50	100
W of Rustic	W of Rustic	350	50	55	105
W of Rustic	E of Rustic	1,250	50	50	100
E of Rustic	Fells Lane	3,400	50	65	115
Fells Lane	Narcoossee Road	2,500	65	50	115

2.1.6 Multi-Modal Accommodations

The Osceola County Trail Network Feasibility Analysis identifies the Boggy Creek Road corridor as a future trail facility.

2.1.6.1 Pedestrian Facilities

Existing sidewalks are intermittent throughout the corridor. In general, sidewalks are located adjacent to the schools, Austin-Tindall Sports Complex and the newer subdivisions and developments. A 10-foot wide sidewalk is located adjacent to Tohopekaliga High School and the Renaissance Charter School.

2.1.6.2 Bicycle Facilities

No dedicated bicycle facilities exist along the corridor.

2.1.6.3 Transit Facilities

There are no existing bus routes or facilities located in the study corridor. Based on the latest Osceola County Comprehensive Plan - 2040 Transit System plans, transit-related improvements are not planned on Boggy Creek Road within the project limits.

2.1.7 Horizontal and Vertical Geometry

Boggy Creek Road generally runs in an east-west alignment along the study corridor. There are five (5) existing horizontal curves, as summarized in [Table 2-2](#).

Table 2-2: Existing Horizontal Curves

PC Station	PI Station	PT Station	Deflection Angle	Degree of Curve	Radius (feet)	Length (feet)
109+39.01	117+99.83	125+56.51	48°-31'-10" LT	2°-59'-59"	1,910.08	1,617.50
163+98.41	171+11.99	177+64.24	40°-58'-12" LT	2°-59'-59"	1,910.08	1,365.83
246+33.06	259+45.47	267+58.06	84°-58'-57" LT	3°-59'-57"	1,432.69	2,125.00
286+54.04	294+08.16	300+42.37	55°-31'-48" RT	3°-59'-57"	1,432.69	1,388.33
326+41.47	320+12.91	323+68.35	29°-04'-09" RT	3°-59'-57"	1,432.69	726.88

The topography of Boggy Creek Road between Simpson Road and Fells Cone Boulevard is virtually flat. However, ground elevations range between elevation 80 feet at the intersection with Fells Cove Boulevard and 64 feet at the intersection with Narcoossee Road.

The existing right-of-way is well maintained. Sight distances along the corridor are adequate for the posted speeds with minimal roadside hazards present.

2.1.8 Intersections and Signalization

The existing traffic analysis focused on a total of nine (9) study intersections, of which four (4) are signalized and the remaining five (5) are unsignalized.

- Simpson Road at Boggy Creek Road – Signal Controlled
- East Lake Pointe Drive at Boggy Creek Road – Stop Controlled

- Nele Road/ Tohopekaliga High School at Boggy Creek Road – Signal Controlled
- Springlake Village Boulevard at Boggy Creek Road – Stop Controlled
- Turnberry Boulevard/Austin Tindall Park at Boggy Creek Road – Signal Controlled
- North Pointe Boulevard at Boggy Creek Road – Stop Controlled
- Timber Lane/ Creek Bank Drive at Boggy Creek Road – Stop Controlled
- Fells Cove Boulevard at Boggy Creek Road – Stop Controlled
- Narcoossee Road at Boggy Creek Road – Signal Controlled

2.1.9 Signage

The existing signage consists of ground mounted regulatory and guide signs that are in good condition with adequate reflectivity. The existing signs will be inventoried during the design process and each sign will be recommended for replacement or relocation as appropriate. There are no overhead signs within the project corridor.

2.2 Existing Drainage Conditions

There are no Outstanding Florida Water bodies (OFW) within the project limits. The project is located within the Unnamed Run, Kissimmee River, and Jim Branch sub-basins of the Kissimmee River Watershed under the jurisdiction of the SFWMD. The project traverses two (2) Water Body Identification Numbers (WBID’s): Jim Branch (WBID 3172A) and East Lake Tohopekaliga Drain (WBID 3172C). WBID 3172C is impaired for nutrients (macrophytes).

There are nine (9) existing cross drains and one (1) bridge culvert (#924036) within the project limits. The bridge culvert allows Jim Branch to flow north beneath the roadway south toward East Lake Tohopekaliga. The existing cross drain locations are summarized in [Table 2-3](#).

Table 2-3: Summary of Existing Cross Drains

Structure No.	Station	Description
CD – 01	123+00	Double 24” RCP
CD – 02	146+25	Double 24” HDPE
CD – 03	151+00	Double 24” HDPE
CD – 04	175+00	Triple 36” RCP
CD – 05	240+00	Triple 36” RCP
CD – 06	268+00	Double 30” RCP
Bridge Culvert-01	303+50	Triple 5’ x 8’ CBC
CD – 07	344+00	Double 30” RCP
CD – 08	364+50	Double 30” RCP
CD – 09	386+40	Double 24” RCP

The size and geometry of all cross drains have been verified during field investigations. During the design phase, a hydraulic analysis will be performed on all cross drains and recommendations will be made to either extend or replace each one based on this analysis, physical condition, and remaining design service life.

2.2.1 Existing Drainage Basins

There are eleven (11) existing roadway basins which are described in the following sections. The existing drainage basins are summarized in [Table 2-4](#).

Table 2-4: Summary of Existing Drainage Basins

Basin	From Station	To Station	Total Length (ft)	Outfall Location
Basin 1	106+00	135+70	2970	CD-01
Basin 2	135+70	169+00	3330	CD-03
Basin 3	169+00	204+00	3500	CD-04
Basin 4	204+00	240+00	3600	CD-05
Basin 5	240+00	289+50	4950	CD-06
Basin 6	289+50	303+50	1400	Bridge Culvert-01
Basin 7	303+50	334+00	3050	Bridge Culvert-01
Basin 8	334+00	354+00	2000	CD-07
Basin 9	354+00	376+80	2280	CD-08
Basin 10	376+80	396+00	1920	CD-09
Basin 11	396+00	417+00	2100	Lake Ajay Canal

2.2.1.1 Drainage Basin 1

Basin 1 begins at Simpson Road at station 106+00 and continues southeast until a high point in the roadway at station 135+70. Currently stormwater runoff from the roadway is collected and conveyed in a roadside ditch toward CD-01 at station 123+00 and discharged offsite. Runoff from much of the adjacent residential areas drains into the existing roadside ditches where it is then conveyed to CD-01.

2.2.1.2 Drainage Basin 2

Basin 2 begins at a high point in the roadway at station 135+70 and continues southeast until a high point in the roadway at Lake Vista Drive at station 169+00. Stormwater runoff within the basin is collected in roadside ditches and conveyed to CD-03 at station 151+00 and discharged offsite. At approximately stations 146+25 an offsite lateral ditch crosses beneath Boggy Creek Road via CD-02 at station 146+25. The stormwater runoff is then conveyed southeast to CD-03 within the roadside ditch along the southwest side of the roadway.

2.2.1.3 Drainage Basin 3

Basin 3 begins at a high point in the roadway at Lake Vista Drive at station 169+00 and continues east to another high point in the roadway at Holiday Woods Drive at station 204+00. Stormwater runoff within the basin is collected in roadside ditches and conveyed west to CD-04 at station 175+00 and discharged offsite. The existing stormwater management facility that services Tohopekaliga High School discharges to CD-04 via a concrete weir structure.

2.2.1.4 Drainage Basin 4

Basin 4 begins at a high point in the roadway at Holiday Woods Drive at station 204+00 and continues east until CD-05 at station 240+00. Stormwater runoff within the basin is collected in roadside ditches and conveyed east to CD-05 and discharged offsite.

2.2.1.5 Drainage Basin 5

Basin 5 begins at CD-05 at station 240+00 and continues north to a high point in the roadway at Timber Lane at station 289+50. Stormwater runoff within the basin is collected in roadside ditches and conveyed north or south to CD-06 at station 268+00 and discharged offsite toward the east. The existing stormwater management facility located on the west side of the roadway at station 267+00 discharges to CD-06 via a depression in the berm. Another small lateral ditch discharges into the western roadside swale at station 268+50 and conveyed south to CD-06.

2.2.1.6 Drainage Basin 6

Basin 6 begins at a high point in the roadway at Timber Lane at station 289+50 and continues north to the Bridge Culvert at station 303+50. The bridge culvert allows Jim Branch to flow beneath Boggy Creek Road toward the south where it eventually discharges into East Lake Tohopekaliga. Stormwater runoff within the basin is collected in roadside ditches and conveyed north towards the bridge culvert and discharged offsite.

2.2.1.7 Drainage Basin 7

Basin 7 begins at the Bridge Culvert at station 303+50 and continues northeast to a highpoint in the roadway at Osprey Lane at station 334+00. The bridge culvert allows Jim Branch to flow beneath Boggy Creek Road toward the south where it eventually discharges into East Lake Tohopekaliga. Stormwater runoff within the basin is collected in roadside ditches and conveyed southwest towards the bridge culvert and discharged offsite.

2.2.1.8 Drainage Basin 8

Basin 8 begins at a highpoint in the roadway at Osprey Lane at station 334+00 and continues east to another roadway high point at Rustic Drive at station 354+00. Within this Basin stormwater runoff is collected in roadside swales and conveyed to CD-07 at station 344+00 and discharged offsite. The runoff discharges into a lateral ditch which flows through the Rustic Acres subdivision and into East Lake Tohopekaliga.

2.2.1.9 Drainage Basin 9

Basin 9 begins at a highpoint in the roadway at Rustic Drive at station 354+00 and continues east to another high point in the roadway at Fells Cove Boulevard at station 376+80. Within this basin stormwater runoff is collected in roadside swales and conveyed to CD-08 at station 364+50 and discharged offsite through a closed storm sewer system which conveys the runoff through the Fell's Cove subdivision and into East Lake Tohopekaliga.

2.2.1.10 Drainage Basin 10

Basin 10 begins at a highpoint in the roadway at Fells Cove Boulevard at station 376+80 and continues east to another roadway high point at station 396+00. Stormwater runoff within this

basin is collected in roadside swales and conveyed to CD-09 at station 386+40 and discharged offsite through a closed storm sewer system which conveys the runoff through the Fell's Cove subdivision and into East Lake Tohopekaliga.

2.2.1.11 Drainage Basin 11

Basin 11 begins at a highpoint in the roadway at station 396+00 and continues east to the end of the project at Narcoossee Road at station 417+00. Stormwater runoff within this basin is collected in roadside swales and conveyed east toward Narcoossee Road. The stormwater runoff then enters the closed storm sewer system constructed for Basin F of the Narcoossee Road Segment 3 Widening (SFWMD Permit #49-01006-P) and conveyed south along the west side of Narcoossee Road for a distance of approximately 3350 feet and discharged directly into Lake Ajay Canal (SFWMD Canal 29B). According to the existing permit, compensating treatment for Basin F was provided in the adjacent stormwater ponds: Pond D3 Comp and Pond E1 Comp.

2.3 Existing Bridge Conditions

The existing bridge culvert (924036) at Jim Branch Creek is cast-in-place concrete and consists of three cells, 8-feet wide and 5-feet high. The culvert was originally built in 1950 and extended on both sides in 2011. The culvert is in good condition with minor cracking and spalling. The culvert is 71 years old and near the end of its service life, therefore, replacement of the bridge culvert with the roadway improvements is recommended.

2.4 Soils

The soil survey for Osceola County (dated 2012) and Orange County (dated 2011) published by the USDA NRCS has been reviewed within the project vicinity. USDA Soil Survey Geographic database (SSURGO) data was also obtained from SFWMD to create a soils map for the project limits using GIS ArcMap. SSURGO data was compared to the soil survey by USDA NRCS and found no deviation.

The soils encountered along the project limits are mostly Hydrologic Soil Group (HSG) A/D, with a small area of HSG A near Tohopekaliga High School as well as toward the end of the project between Fells Lane and Narcoossee Road. Group A soils have low runoff potential and high infiltration rates even when thoroughly wetted. They consist chiefly of deep, well to excessively drained sand or gravel and have a high rate of water transmission. Group D soils have high runoff potential. They have very low infiltration rates when thoroughly wetted and consist chiefly of clay soils with a high swelling potential, soils with a permanent high-water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very low rate of water transmission. If a soil is assigned to a dual HSG, the first letter is for drained areas and the second is for un-drained areas. Only the soils that in their natural condition are in group D are assigned to dual classes. According to the Soil Survey, there are 17 different soil types located along the project limits within Osceola County and 9 different soil types located along the project limits within Orange County. [Table 2-5](#) and [Table 2-6](#) provide data from the USDA NRCS Soil Survey for each of the soil types that the Boggy Creek Road alignment crosses.

Table 2-5: USDA NRCS Soil Survey Information: Osceola County

Soil No.	USDA Soil Name	Seasonal High Ground Water		HSG	Total Required Right-of-Way (ac)		
		Depth* (feet)	Duration (months)		Depth (inches)	Unified	AASHTO
1	Adamsville Sand	2.0-3.5	Jun-Nov	A	0-4	SP-SM	A-3, A-2-4
					4-80	SP-SM, SP	A-3, A-2-4
5 & 6	Basinger Fine Sand	+2.0-1.0	Jun-Feb	A/D	0-80	SP, SP-SM	A-3, A-2-4
9	Cassia Fine Sand	1.5-3.5	Jul-Jan	A/D	0-20	SP, SP-SM	A-3
					20-28	SP-SM, SM	A-3, A-2-4
					28-88	SP, SP-SM	A-3
10	Delray Loamy Fine Sand	+2.0-1.0	Jun-Mar	A/D	0-14	SP-SM, SM	A-3, A-2-4
					14-44	SP-SM	A-3, A-2-4
					44-62	SM, SM-SC, SC	A-2-4, A-2-6
					62-80	SM	A-2-4
22	Myakka Fine Sand	0-1.0	Jun-Feb	A/D	0-27	SP, SP-SM	A-3
					27-37	SM, SP-SM	A-3, A-2-4
					37-82	SP, SP-SM	A-3
24	Narcoossee Fine Sand	2.0-3.5	Jun-Nov	A	0-5	SP-SM	A-3
					5-22	SP, SP-SM	A-3
					22-26	SP-SM	A-3, A-2-4
					26-80	SP, SP-SM	A-3
27	Ona Fine Sand	0-1.0	Jun-Nov	B/D	0-6	SP-SM, SP	A-3
					6-15	SP-SM, SM	A-3, A-2-4
					15-80	SP-SM, SP	A-3
31	Pits	---	---	---	---	---	---
32	Placid Find Sand	+2.0-1.0	Jun-Mar	A/D	0-24	SP, SP-SM, SM	A-3, A-2-4
					24-80	SP, SP-SM, SM	A-3, A-2-4
33	Placid Variant Sand	1.5-3.0	Jul-Dec	A/D	0-17	SP-SM	A-3, A-2-4
					17-80	SP-SM	A-3, A-2-4
34	Pomello Fine Sand	2.0-3.5	Jul-Nov	A	0-47	SP, SP-SM	A-3
					47-58	SP-SM, SM	A-3, A-2-4
					58-60	SP, SP-SM	A-3
.39	Riviera Fine Sand	+2.0-1.0	Jun-Feb	C/D	0-24	SP, SP-SM	A-3, A-2-4
					24-38	SM, SM-SC, SC	A-2-4
					38-61	SM-SC, SC	A-2-4, A-2-6
					61-80	SP, SP-SM	A-3, A-1
40	Samsula Muck	+2.0-1.0	Jan-Dec	A/D	0-22	PT	---
					22-65	SP-SM, SM, SP	A-3, A-2-4
42	Smyrna Fine Sand	0-1.0	Jan-Dec	A/D	0-14	SP, SP-SM	A-3
					14-25	SM, SP-SM	A-3, A-2-4
					25-56	SP, SP-SM	A-3
					56-80	SM, SP-SM	A-3, A-2-4
43	St. Lucie Fine Sand	>6.0	---	A	0-80	SP	A-3
44	Tavares Fine Sand	3.5-6.0	Jun-Dec	A	0-80	SP, SP-SM	A-3

Table 2-6: USDA NRCS Soil Survey Information: Orange County

Soil No.	USDA Soil Name	Seasonal High Ground Water		HSG	Total Required Right-of-Way (ac)		
		Depth* (feet)	Duration (months)		Depth (inches)	Unified	AASHTO
2	Archbold Fine Sand	3.5-6.0	Jun-Nov	A	0-80	SP	A-3
4	Basinger Fine Sand	>6.0	---	A/D	0-7	SP	A-3
					7-32	SP, SP-SM	A-3, A-2-4
					32-47	SP, SP-SM	A-3, A-2-4
					47-80	SP, SP-SM	A-3, A-2-4
26	Ona Fine Sand	0-1.0	Jun-Nov	B/D	0-5	SP-SM, SP	A-3
					5-18	SP-SM, SM	A-3, A-2-4
					18-80	SP-SM, SP	A-3
34	Pomello Fine Sand	2.0-3.5	Jul-Nov	A	0-42	SP, SP-SM	A-3
					42-54	SP-SM, SM	A-3, A-2-4
					54-80	SP, SP-SM	A-3
37	St. John's Fine Sand	0-1.0	Jun-Nov	B/D	0-12	SP, SP-SM	A-3
					12-24	SP, SP-SM	A-3
					24-44	SP-SM, SM	A-3, A-2-4
					44-80	SP, SP-SM	A-3
40	Samsula Muck	+2.0-1.0	Jan-Dec	A/D	0-40	PT	---
					40-80	SP-SM, SM, SP	A-3, A-2-4
42	Sanibel Muck	+1.0-1.0	Jun-Feb	A/D	0-11	PT	---
					11-15	SP, SP-SM	A-3
					15-80	SP, SP-SM	A-3
44	Smyrna Fine Sand	0-1.0	Jul-Oct	A/D	0-17	SP, SP-SM	A-3, A-2-4
					17-27	SM, SP-SM	A-3, A-2-4
					27-80	SP, SP-SM	A-3
54	Zolfo Fine Sand	2.0-3.5	Jun-Nov	A	0-6	SP-SM	A-3, A-2-4
					6-64	SP-SM, SM	A-3, A-2-4
					64-80	SP-SM, SM	A-3, A-2-4

2.5 Lighting

Currently, Boggy Creek Road has no roadway lighting except at the following signalized intersections:

- Nele Road/ Tohopekaliga High School at Boggy Creek Road
- Turnberry Boulevard/Austin Tindall Park at Boggy Creek Road
- Narcoossee Road at Boggy Creek Road

The intersection lighting consists of light fixtures mounted on the signal uprights.

2.6 Utilities

Eighteen (18) Utility/Agency Owners (UAO's) were identified within the study corridor through Sunshine 811 One Call:

AT&T Florida

Mr. Alan Reynolds
Manager OSP Plng & Eng Design
5100 Steyr Street
Orlando, FL 32819
(407) 351-8180
ar2916@att.com

City of St. Cloud

Mr. Corey Clough
Engineering Assistant
1300 9th Street
St. Cloud, FL 34769
(407) 957-7222
cclough@stcloud.org

Bright House Networks

Mr. Marvin Usry
Construction Supervisor
3767 All American Boulevard
Orlando, FL 32810
(407) 532-8509
Marvin.Usryjr@charter.com

Comcast Communications

Mr. Joe Von Schmidt
Senior Wireless Network Engineer
8130 CR LEG A
Leesburg, FL 34788
(407) 957-7222
Joseph_VonSchmidt

CenturyLink Local

Mr. Marlon Brown
UAO Project Representative
925 1st Street Room 103
Altamonte Springs, FL 32701
(863) 452-3132
marlon.n.brown@centurylink.com

Duke Energy LLC Distribution

Ms. Lindsay Olivieri
Land Representative
3300 Exchange Place
Lake Mary, Florida 32746
(407)-942-9657
lindsay.olivieri@duke-energy.com

CenturyLink National (Level 3)

Ms. Xan Rypkema
Project Business Analyst
1025 Eldorado Boulevard
Broomfield, CO 80021
(720) 888-1089
NationalRelo@centurylink.com

Duke Energy LLC Transmission

Ms. Jennifer Williams
Designer I
4427 Pet Lane, Suite 101
Lutz, FL 33559
(813) 909-1210
JEWilliams@pike.com

Hotwire Communications

Mr. Eddie Miranda
UAO Project Representative
2100 West Cypress Creek Road
Fort Lauderdale, FL 33309
(321) 710-1733
EMiranda@Hotwiremail.com

Kissimmee Utility Authority

Mr. Felix Escobar
UAO Project Representative
1701 West Carroll Street
Kissimmee, FL 34741
(407) 933-7777 x6600
fescobar@kua.com

Orange County Utilities

Mr. Jose Hernandez
UAO Project Representative
9150 Curry Ford Road
Orlando, FL 32825
(407) 254-9718
jose.hernandez2@ocfl.net

Orlando Utilities Commission Electric

Mr. Rick Parker
UAO Representative
100 W. Anderson Street
Orlando, FL 32802
(407) 434-2159
rparker@ouc.com

Orlando Utilities Commission Water

Ms. Steve Grubbs
Sr. Engineering Associate
6003 Pershing Ave.
Orlando, FL 32822
(407) -434-2560
Sgrubbs@ouc.com

Sprint

Mr. Jon Baker
Network Engineer II
360 S. Lake Destiny Dr, Suite A.
Orlando, FL 32810
(321) 280-9596
Jon.Baker@sprint.com

Summit Broadband

Ms. Michelle Daniel
Network Documentation Specialist
4558 SW 35th Street, Suite 100
Orlando, FL 32811
(407) 996-1183
mdaniel@summit-broadband.com

TECO Peoples Gas

Mr. Shawn Winsor
Gas Design / Project Manager
600 West Robinson Street
Orlando, FL 32801
(407) 420-6663
swinsor@tecoenergy.com

TOHO Water Authority

Mr. Robert Pelham
UAO Project Representative
951 Martin Luther King Blvd
Kissimmee, FL 34741
(407) 944-5132
jose.hernandez2@ocfl.net

Uniti Fiber

Mr. Michel-Lee Chapuseaux
UAO Representative
107 St. Francis St. STE. 1800
Mobile, AL 36602
(352) 256-1524
michel-lee.chapuseaux@uniti.com

Six of these utility companies, CenturyLink National, Duke Energy LLC Distribution, Duke Energy LLC Transmission, Hotwire Communications, Orange County Utilities, and Orlando Utilities Commission (OUC) - Water, indicated they do not have facilities within the limits of the study. Of the remaining twelve, ten have potential conflicts between their facilities and the proposed project, depending on what improvements are being made. Potential conflicts include buried fiber, buried copper, water mains, wastewater mains, and power poles. If Kissimmee Utility Authority or OUC Electric is in conflict, the joint users on the poles will be in conflict as well. The UAO's are summarized in [Table 2-7](#). A detailed description of the existing utilities and easements and their influence on the alignment alternatives are documented in the *Utility Assessment Package*, dated September 2020.

Table 2-7: Summary of Existing Utilities

Utility Agency Owner (UAO)	Existing Facilities
AT&T Florida	Direct buried fiber optic cable along the south and north side of Boggy Creek Road
Bright House Networks (Spectrum)	Underground facilities and aerial facilities on the south and north side of Boggy Creek Road
CenturyLink Local	Underground copper and fiber lines on the south and north side of Boggy Creek Road
City of St. Cloud	2" water line at the south east corner of Majestic Oak Drive and Boggy Creek Road
Comcast Communications	Underground and aerial, copper and fiber lines on the south and north side of Boggy Creek Road
Kissimmee Utility Authority	Unresponsive to date
OUC Electric	Unresponsive to date
Sprint	Unresponsive to date
Summit Broadband	Underground 144-count fiber and vault/handhold at the SE corner of Boggy Creek Road & Simpson Road.
TECO Peoples Gas	Gas line running along the east side of Narcoossee Road
TOHO Water Authority	Wastewater: 6" to 20" wastewater force mains throughout the project limits. Water: 10" to 30" water mains throughout the project limits
Uniti Fiber	Underground line running along the west side of Narcoossee Road

All the existing utilities appear to have the capability to adjust and/or relocate their services within the corridor without causing major inconvenience to their customers. The potential utility impacts will not have an effect on the recommendation of a build alternative.

2.7 Environmental Characteristics

2.7.1 Socio-Economic

Osceola County has a total area of 1,506 square miles, of which 1,327 square miles is land. A review of the 2010 Census data from the Florida Statistical Abstract prepared by the Bureau of Economic and Business Research (BEBR) estimated that the population for Osceola County was 370,552 in 2019, which represents a 37.8 percent increase in nine years since 2010. This is the highest percent population change for a Florida County during that time frame. The population per square mile from 2010 to 2019 jumped to 279 from 202. Osceola County has a considerable amount of people under the age of 44 (61.1%) and children ages 17 and younger make up about one fourth of the population. The United States Census estimates that the median value of owner-occupied housing units from 2014 to 2018 to be \$179,800. [Table 2-8](#) summarizes the socio-economic data for Osceola County and the study area.

Table 2-8: Osceola County Socio-Economic Data

Statistic	Osceola County
Population - 2010	268,685
Population - 2019	370,552
% increase in population (2010 – 2019)	37.8%
Projected population – 2020	380,700
Median age	35.7
% 65 and older – 2018	13.2%
Total households - 2019	123,464
Average persons per household	2.97
Per capita income	\$21,331
Median household income (in 2018 dollars), 2014 – 2018	\$50,063
Percent Hispanic – 2018	53.1%
Percent Minority, Non-Hispanic (estimate) – 2018	14.4%

2.7.2 Land Use

The existing land use along the project corridor is mainly residential, with a mix of commercial and agricultural lands. Established commercial businesses along the corridor include Circle K, Family Dollar, Wawa, McDonalds and 7-11. Learning institutions include Tohopekaliga High School, East Lake Elementary School and the Renaissance Charter School. The Austin-Tindall Sports Complex is also located along the corridor. Access to the East Lake Fish Camp and The Floridian RV Resort are directly from Boggy Creek Road. A map showing the existing land-use in the vicinity of the study corridor is shown in [Figures 2-1a thru 2-1e](#).

Figure 2-1a: Existing Land Use Map



Figure 2-1b: Existing Land Use Map



Figure 2-1c: Existing Land Use Map



Figure 2-1d: Existing Land Use Map



Figure 2-1e: Existing Land Use Map



Figure 2-1f: Existing Land Use Map



2.7.3 Historic and Archaeological Resources

A **Cultural Resource Assessment Survey**, dated September 2020, was prepared to determine if any significant or potentially significant cultural resources, including archaeological sites and historic resources, will be impacted by the construction of any of the proposed corridor alternatives. To encompass all potential improvements, the Area of Potential Effects (APE) was defined to include the existing and proposed Boggy Creek Road right-of-way from Simpson Road to Narcoossee Road. This APE was extended to the back or side property lines of parcels adjacent to the right-of-way, or a distance of no more than 328 feet (100 meters) from the right-of-way line

The background research indicated that two archaeological sites have been recorded within the APE, shown in [Figure 2-2a](#) and summarized in [Table 2-9](#). Both archaeological sites included have been determined not eligible for listing in the NRHP by the SHPO.

Table 2-9: Previously Recorded Archaeological Resources

Previously Recorded FMSF No.	Site Name	Time Period	Site Type	SHPO Evaluation
8OS02365	Northshore 2	19 th -20 th Century American, 1821-present	Historic dump site	Ineligible
8PO06855	Grassy Lake	Late Archaic, St. Johns 700 BC- AD 1500, 20 th Century American, 1900-present		Ineligible

Historic/architectural background research included a review of the Florida Master Site File (FMSF) and the NRHP resulted in the identification and evaluation of three previously recorded historic resources within the Boggy Creek Road APE. Three previously recorded resources (8OS01933, 8OS02666, and 8OS02667) were determined to have been demolished within the Boggy Creek Road APE. These sites are shown in [Figure-2-2b](#) and summarized in [Table 2-10](#).

Table 2-10: Previously Recorded Historic Resources

Previously Recorded FMSF No.	Address/Site Name	Build Date	Use	SHPO Evaluation
8OS01933	SR 530 N	c.1953		Ineligible
8OS02666	3699 Boggy Creek Road	c.1955		Not Evaluated by SHPO
8OS02667	3675 Boggy Creek Road	c.1930		Ineligible
8OS02823	4492 Boggy Creek Road	c.1961	Single Family	Ineligible
8OS02921	4520 Boggy Creek Road	c.1973	Single Family	Ineligible
8OS02922	4558 Boggy Creek Road	c.1971	Single Family	Ineligible

These historic resources include two Frame Vernacular (c. 1961 and 1971) and one Ranch style building (c. 1973) constructed between circa 1914 and 1966. All three buildings were determined ineligible for listing in the NRHP by the State Historic Preservation Officer (SHPO). No further architectural work is recommended.

Figure 2-2a: Previous Recorded Archaeological Resources

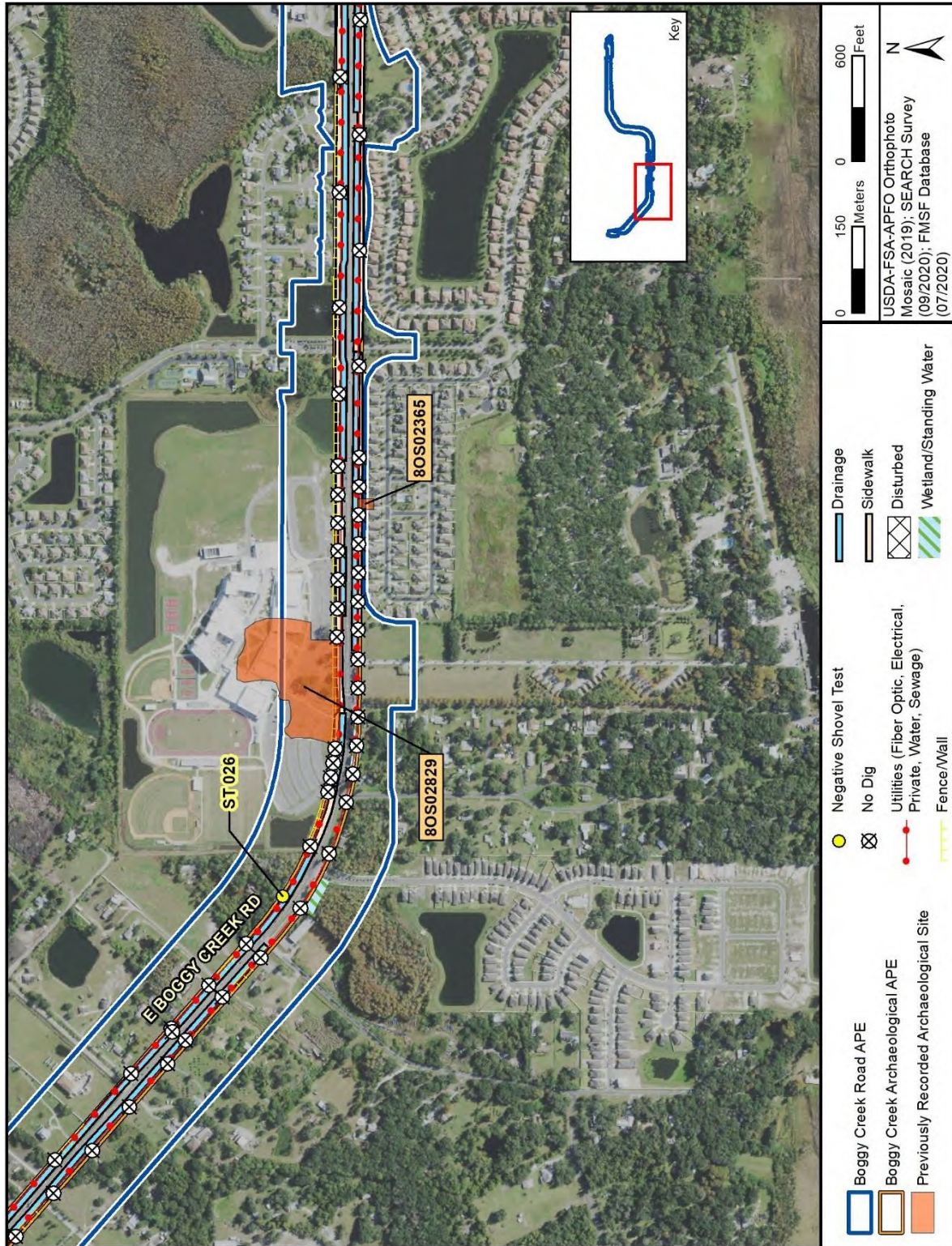
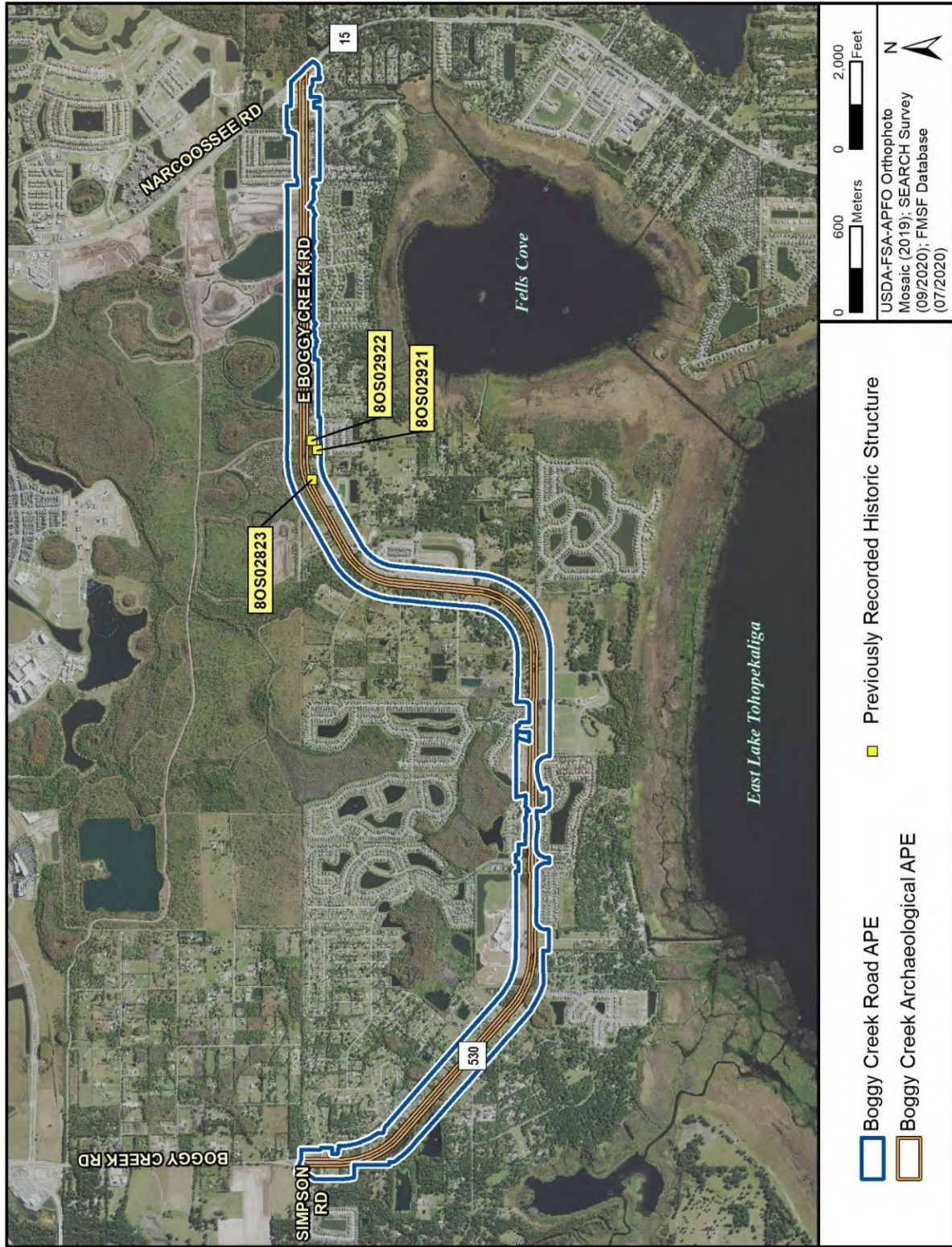


Figure 2-2b: Previous Recorded Historic Resources



2.7.4 Wetlands and Other Surface Waters

A detailed evaluation of the existing wetlands and surface waters was documented in the *Final Natural Environmental Evaluation Memorandum*, dated September 2020. The wetlands in the vicinity of the study corridor are shown in [Figures 2-3a thru 2-3f](#). An inventory of wetlands was accomplished using the United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) database, United States Geological Survey (USGS) Quadrangle Maps, National Resources Conservation Service (NRCS) Osceola County Soil Survey, SWFWMD Land Use and Cover Forms data, aerial photography and ground-truthing. The field reviews were conducted in April 2019.

Using the above information, an analysis was performed to identify wetland areas. These areas were mapped on aeriels and labeled using the Florida Land Use Cover and Forms Classification System (FLUCFCS) and corresponding NWI code, where applicable. The full detailed analysis of the wetland areas and corresponding aeriels can be found in the *Natural Environmental Evaluation Memorandum*.

FLUCFCS 510 - Streams and Waterways

This land use class includes small tributaries and streams that are located within the cross the existing roadway corridor. One named tributary is located within the existing Boggy Creek Road ROW limits, identified as Jim Branch. A triple box culvert is currently located at the Jim Branch Creek crossing. Within the immediate project limits the creek is lined with riprap, roadside bahiagrass (*Paspalum notatum*) and forested hardwood communities.

FLUCFCS 530 – Reservoirs (Upland-Cut) Other Surface Waters (OSWs)

Within the study area, OSW features associated with the existing roadway and surrounding development are located throughout the project. These include roadside ditches that were historically dredged from uplands during the original construction of the roadway, and large borrow areas, created historically to transport upland fill material offsite.

Along the existing ROW corridor, ditch systems are dominated by bahiagrass with some presence of opportunistic and hydric vegetation such as sedges (*Cyperus* spp. and *Carex* spp.), marsh pennywort (*Hydrocotyle* sp.), and beggartick (*Bidens alba*). Other upland-cut OSWs include a large borrow area within the study boundary. Once an abandoned citrusgrove, the area is overgrown with thick vegetation including Florida elderberry (*Sambucus nigra* subsp. *Canadensis*), Brazilian pepper (*Schinus terebinthifolia*), Peruvian primerosewillow (*Ludwigia peruviana*), cattail (*Typha* spp.), red maple (*Acer rubrum*), and other occasional canopy species surrounding the edges including oaks (*Quercus* spp.) and native pines (*Pinus* spp.).

The large borrow areas are part of a permitted borrow site, approved by SWFWMD in 2000, concurrent with SWFWMD Permit # 49-01043-P. These borrow areas are extremely overgrown with nuisance and exotic vegetation similar to species listed above.

FLUCFCS 617- Mixed Wetland Hardwoods

Within the study limits, there are remnants of mixed wetland hardwood systems that extend beyond the study boundary. These systems are of moderate ecological value and have some exotic/nuisance species encroachment. Canopy species include red maple and various oaks, with encroachment of Brazilian pepper midstory. Groundcover is comprised of cinnamon fern (*Osmundastrum cinnamomeum*) and other opportunistic species such as dogfennel (*Eupatorium capillifolium*) and pennywort.

FLUCFCS 621 - Cypress

These wetlands are dominated by both bald and pond cypress (*Taxodium* sp.). Within the project study area, these cypress domes have a scattered understory of wax myrtle (*Myrica cerifera*), red maple, Carolina willow (*Salix caroliniana*), and loblolly bay (*Persea borbonia*). The shrub and ground cover near the edge of these systems consist of a mixture of native, exotic, and opportunistic species. Some prevalent vegetation observed include common buttonbush (*Cephalanthus occidentalis*), Peruvian primrose-willow, swamp fern (*Telmatoblechnum serrulatum*), dogfennel, Florida elderberry, wild taro (*Xanthosoma sagittifolium*), lizard's tail (*Saururus cernuus*), Brazilian pepper, and Cinnamon fern.

FLUCFCS 630 – Wetland Forested Mixed

There is one wetland system within the study area. Primary canopy species include oaks, pines, cypress, and red maple. Understory composition contains some opportunistic species, with similar species observed in nearby Mixed Wetland Hardwoods.

Figure 2-3a: Wetlands Map



Figure 2-3b: Wetlands Map



Figure 2-3c: Wetlands Map



Figure 2-3d: Wetlands Map

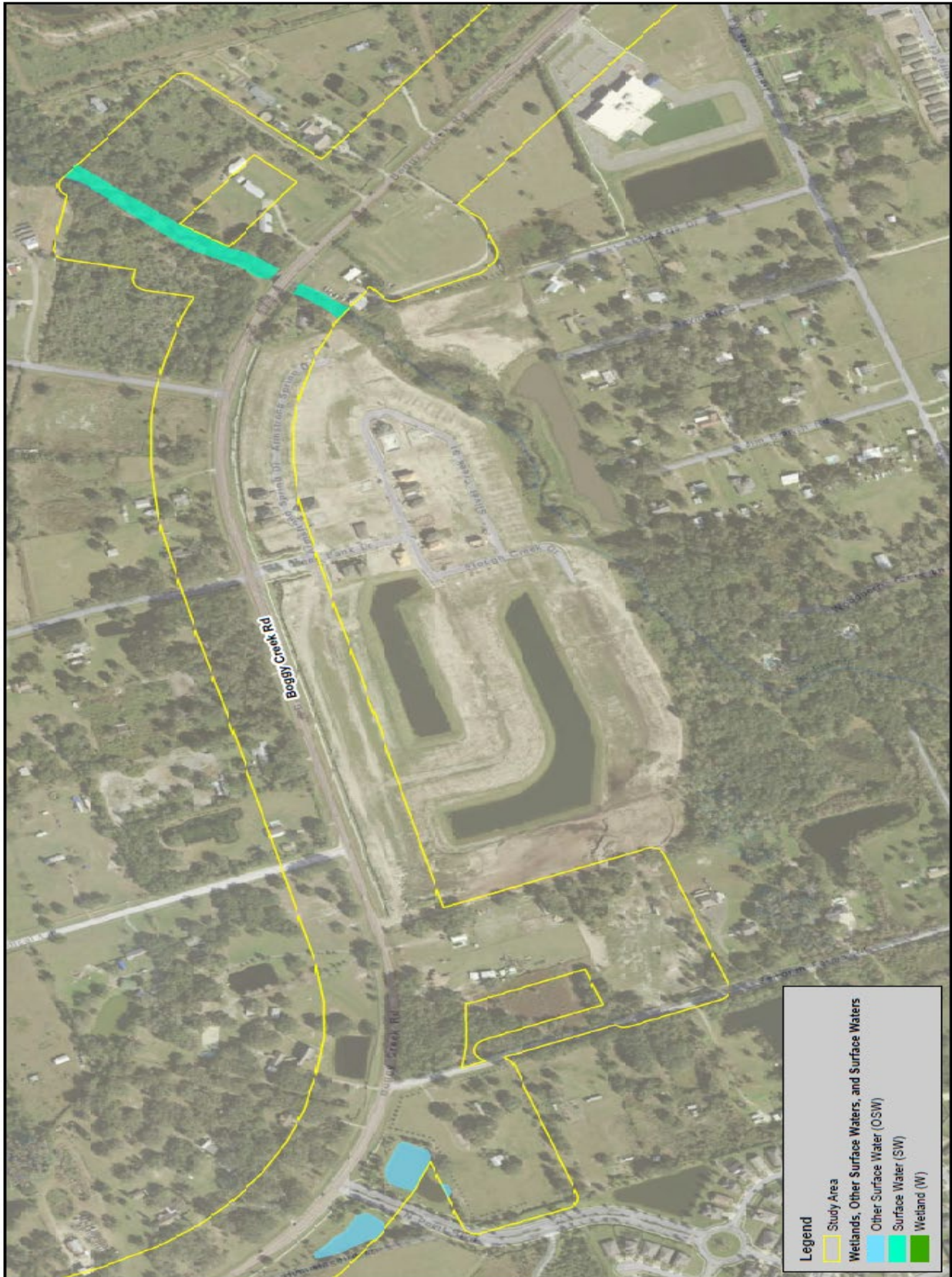


Figure 2-3e: Wetlands Map



Figure 2-3f: Wetlands Map



2.7.5 Threatened and Endangered Species

Protected species have been evaluated and documented in the *Natural Environmental Evaluation Memorandum*, dated September 2020, in order to determine the potential impacts to threatened and endangered species within the study corridor. Federal listed species are protected under the Endangered Species Act of 1973 under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS). Within the state of Florida, federal and state listed species are protected under Chapter 68A-27, F.A.C, which also states that all species listed by the USFWS and the NMFS that occur within Florida are also included on the Florida Endangered and Threatened Species List as Federally-designated Endangered, Federally-designated Threatened, Federally-designated due to Similarity of Appearance, or Federally-designated Non-Essential Experimental Population Species. In Florida, state protected animal species are under the jurisdiction of the Florida Fish and Wildlife Conservation Commission (FWC), while state protected plant species are under the jurisdiction of the Florida Department of Agriculture & Consumer Services (FDACS) by *Rule 5B-40 Florida Administrative Code*. [Table 2-11](#) lists the protected species potentially occurring within the study area based on the habitat available on site, and whether the species was observed.

Table 2-11: Potentially Occurring Protected Species

Common Name	Scientific Name	Federal Status	State Status	Likelihood of Occurrence	Preliminary Project Effects
Plants					
Ashe's calamint	<i>Calamintha ashei</i>	Not Listed	Threatened	None	No adverse effect anticipated
Beautiful paw-paw	<i>Deeringothamnus pulchellus</i>	Endangered	Endangered	None	No adverse effect anticipated
Britton's beargrass	<i>Nolina brittoniana</i>	Endangered	Endangered	None	No adverse effect anticipated
Carter's warea	<i>Warea carteri</i>	Endangered	Endangered	None	No adverse effect anticipated
Celestial lily	<i>Nemastylis floridana</i>	Not Listed	Endangered	None	No adverse effect anticipated
Chapman's sedge	<i>Carex chapmanni</i>	Not Listed	Threatened	None	No adverse effect anticipated
Clasping warea	<i>Warea amplexifolia</i>	Endangered	Endangered	None	No adverse effect anticipated
Comb polypody	<i>Pecluma ptilota var. bourgeauana</i>	Not Listed	Endangered	None	No adverse effect anticipated
Cutthroatgrass	<i>Coleataenia abscissa</i>	Not Listed	Endangered	None	No adverse effect anticipated
Florida beargrass	<i>Nolina atopocarpa</i>	Not Listed	Threatened	None	No adverse effect anticipated
Florida blazing star	<i>Liatris ohlingerae</i>	Endangered	Endangered	None	No adverse effect anticipated
Florida bonamia	<i>Bonamia grandiflora</i>	Threatened	Endangered	None	No adverse effect anticipated
Florida spiny pod	<i>Matelea floridana</i>	Not Listed	Endangered	None	No adverse effect anticipated
Florida willow	<i>Salix floridana</i>	Not Listed	Endangered	None	No adverse effect anticipated
Giant orchid	<i>Pteroglossispis ecristata</i>	Not Listed	Threatened	None	No adverse effect anticipated
Hand fern	<i>Ophioglossum palmatum</i>	Not Listed	Endangered	None	No adverse effect anticipated

Hartwrightia	<i>Hartwrightia floridana</i>	Not Listed	Threatened	None	No adverse effect anticipated
Large-flowered rosemary	<i>Conradina grandiflora</i>	Not Listed	Threatened	None	No adverse effect anticipated
Lewton's polygala	<i>Polygala lewtonii</i>	Endangered	Endangered	None	No adverse effect anticipated
Lowland loosestrife	<i>Lythrum flagellare</i>	Not Listed	Endangered	None	No adverse effect anticipated
Many-flowered grass-pink	<i>Calopogon multiflorus</i>	Not Listed	Threatened	None	No adverse effect anticipated
Narrowleaf naiad	<i>Najas filifolia</i>	Not Listed	Threatened	None	No adverse effect anticipated
Nodding pinweed	<i>Lechea cernua</i>	Not Listed	Threatened	None	No adverse effect anticipated
Paper-like nailwort	<i>Paronychia chartacea</i>	Threatened	Endangered	None	No adverse effect anticipated
Pine pinweed	<i>Lechea divaricata</i>	Not Listed	Endangered	None	No adverse effect anticipated
Pinewoods bluestem	<i>Andropogon acrtatus</i>	Not Listed	Threatened	None	No adverse effect anticipated
Plume polypody	<i>Pecluma plumula</i>	Not Listed	Endangered	None	No adverse effect anticipated
Pygmy fringe tree	<i>Chionanthus pygmaeus</i>	Endangered	Endangered	None	No adverse effect anticipated
Redmargin zephyrlily	<i>Zephyranthes simpsonii</i>	Not Listed	Threatened	None	No adverse effect anticipated
Sand Butterfly Pea	<i>Centrosema arenicola</i>	Not Listed	Endangered	None	No adverse effect anticipated
Scrub bluestem	<i>Schizachyrium niveum</i>	Not Listed	Endangered	None	No adverse effect anticipated
Scrub buckwheat	<i>Eriogonum longifolium</i> var. <i>gnaphalifolium</i>	Threatened	Endangered	None	No adverse effect anticipated
Scrub lupine	<i>Lupinus aridorum</i>	Endangered	Endangered	None	No adverse effect anticipated
Scrub plum	<i>Prunus geniculata</i>	Endangered	Endangered	None	No adverse effect anticipated
Short-leaved rosemary	<i>Conradina brevifolia</i>	Endangered	Endangered	None	No adverse effect anticipated
Small's jointweed	<i>Polygonella myriophylla</i>	Endangered	Endangered	None	No adverse effect anticipated
Star Anise	<i>Illicium parviflorum</i>	Not Listed	Endangered	None	No adverse effect anticipated
Toothed maiden fern	<i>Thelypteris serrata</i>	Not Listed	Endangered	None	No adverse effect anticipated
Yellow fringeless orchid	<i>Platanthera integra</i>	Not Listed	Endangered	None	No adverse effect anticipated
Reptiles					
Blue-tailed mole skink	<i>Plestiodon egregious lividus</i>	Threatened	Threatened	Low	Potential for adverse effect
Eastern indigo snake	<i>Drymarchon corais couperi</i>	Threatened	Threatened	Moderate	May affect, but is not likely to adversely affect
Florida pine snake	<i>Pituophis melanoleucus mugitus</i>	Not Listed	Threatened	Low	No adverse effect anticipated
Gopher tortoise	<i>Gopherus polyphemus</i>	Not Listed	Threatened	High (Observed)	No adverse effect anticipated

Sand Skink	<i>Neoseps reynoldsi</i>	Threatened	Threatened	Low	Potential for adverse effect
Birds					
Bald eagle	<i>Haliaeetus leucocephalus</i>	Not Listed	Not Listed	High	May affect, but is not likely to adversely affect
Crested caracara	<i>Polyborus plancus audubonii</i>	Threatened	Threatened	Low	May affect, but is not likely to adversely affect
Everglade snail kite	<i>Rostrhamus sociabilis plumbeus</i>	Endangered	Endangered	None	No adverse effect anticipated
Florida burrowing owl	<i>Athene cunicularia floridana</i>	Not Listed	Threatened	Low	No adverse effect anticipated
Florida grasshopper sparrow	<i>Ammodramus savannarum floridanaus</i>	Endangered	Endangered	Low	No adverse effect anticipated
Florida sandhill crane	<i>Grus canadensis pratensis</i>	Not Listed	Threatened	High	No adverse effect anticipated
Florida scrub-jay	<i>Aphelocoma coerulescens</i>	Threatened	Threatened	Low	No adverse effect anticipated
Little blue heron	<i>Egretta caerulea</i>	Not Listed	Threatened	Moderate	No adverse effect anticipated
Osprey	<i>Pandion haliaetus</i>	Not Listed	Not Listed	Moderate	No effect
Red-cockaded woodpecker	<i>Picoides borealis</i>	Endangered	Endangered	Low	May affect, but is not likely to adversely affect
Southeastern American kestrel	<i>Falco sparverius paulus</i>	Not Listed	Threatened	Moderate	No adverse effect anticipated
Tricolored heron	<i>Egretta tricolor</i>	Not Listed	Threatened	Moderate	No adverse effect anticipated
Wood stork	<i>Haliaeetus leucocephalus</i>	Threatened	Threatened	Moderate	May affect, but is not likely to adversely affect
Mammals					
Florida black bear	<i>Ursus americanus floridanus</i>	Not Listed	Not Listed	Low	No adverse effect anticipated
Florida bonneted bat	<i>Eumops floridanus</i>	Endangered	Endangered	None	No adverse effect anticipated
Florida panther	<i>Puma [=Felis] concolor coryi</i>	Endangered	Endangered	None	No adverse effect anticipated

2.7.6 Floodplains and Floodway

According to the Federal Emergency Management Agency (FEMA), the relevant Flood Insurance Rate Map (FIRM) panel numbers are 12097C0085G and 12097C0105G dated June 18, 2013. The FEMA FIRM indicates that the roadway is located within Zone X of the FEMA 100-year floodplain with the exception of the area adjacent to Jim Branch, which is designated as Zone A of the FEMA 100-year floodplain. These areas have a 1% probability of flooding every year and where predicted flood water elevations have not been established. Additionally, there are some pockets of Floodplain designated as Zone AE of the FEMA 100-year floodplain located north of Boggy Creek Road between Tindall Access Road and Fells Lane. Zone AE are areas that have a 1% probability of flooding every year and Base Flood Elevations are shown. There are no federally regulated floodways within the project limits. The FEMA FIRM Map is shown in [Figure 2-4](#).

Figure 2-4: Floodplains Map



3.0 TRAFFIC

This section provides a summary of the detailed information contained in the *Final Project Traffic Analysis Report (PTAR), dated January 2021*, prepared as part of this alignment study. A more detailed discussion of the traffic data collection efforts and development of the existing and future year daily and peak hour traffic volumes, as well as the existing and future year peak hour traffic operations analyses that were conducted for this alignment study are provided in the *Traffic Analysis Methodology for Project Traffic Analysis Report*.

3.1 Existing Traffic Conditions

Boggy Creek Road is classified as a minor arterial that is primarily a north/south facility that begins from Narcoossee Road to the south in Osceola County and terminates to the north at the SR 528 / Beachline Expressway in Orange County. Within the study corridor, Boggy Creek Road is partially an east/west facility & partially north/south facility and a two (2) lane undivided roadway that serves the travel demands of various residential developments, schools, and related businesses.

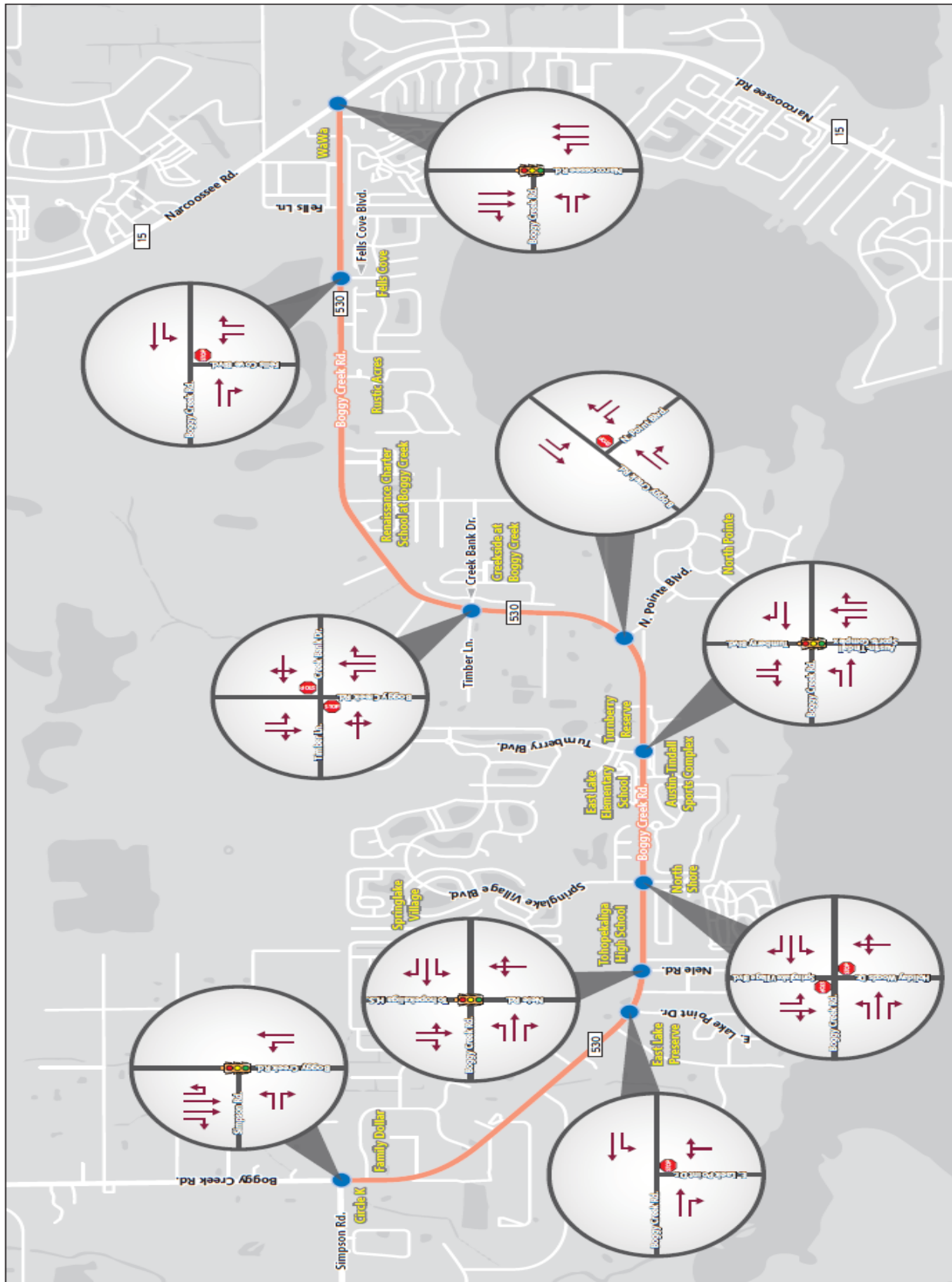
The project study corridor includes a total of nine (9) study intersections, of which four (4) are signalized and the remaining five (5) are unsignalized. The study intersections to be evaluated are listed below:

- Simpson Road at Boggy Creek Road – Signal Controlled
- East Lake Pointe Drive at Boggy Creek Road – Stop Controlled
- Nele Road/ Tohopekaliga High School at Boggy Creek Road – Signal Controlled
- Springlake Village Boulevard at Boggy Creek Road – Stop Controlled
- Turnberry Boulevard/Austin Tindall Park at Boggy Creek Road – Signal Controlled
- North Pointe Boulevard at Boggy Creek Road – Stop Controlled
- Timber Lane/ Creek Bank Drive at Boggy Creek Road – Stop Controlled
- Fells Cove Boulevard at Boggy Creek Road – Stop Controlled
- Narcoossee Road at Boggy Creek Road – Signal Controlled

The existing (2019) and future no-build intersection lane geometries for the study area roadways are shown in [Figure 3-1](#).

Due to the COVID-19 pandemic, it was determined that traffic counts collected in the field would be skewed. In analyzing the year 2019 operating conditions of the intersections and roadway segments, traffic counts collected and obtained from StreetLight data for the year 2019 (pre COVID-19) were used along with the existing roadway and intersection geometry. The turning movement volumes collected were compared with previous studies, seasonally adjusted, balanced when required and used for the existing year 2019 LOS analysis for the intersections and roadway segments. The existing conditions intersection and roadway LOS analyses were performed using Synchro 10 software.

Figure 3-1: Existing and Future No-Build Lane Geometries



3.1.1 Traffic Count Information

Traffic volumes for the Boggy Creek Road study corridor for year 2019 were obtained from FDOT, Osceola County, Orange County, and StreetLight data. StreetLight data was used to collect turning movement counts for pre-COVID traffic conditions at study intersections. Year 2019 FDOT axle and seasonal adjustment factors for Orange County were obtained from FDOT 2019 Florida Traffic Online.

3.1.2 Existing Traffic Volumes

The available traffic count information from the 2019 Orange County annual counts and 2019 Osceola County annual counts were used to develop existing traffic characteristics for the Boggy Creek Road study corridor and the intersecting side streets.

Based on the volume counts obtained, peak hour traffic flow (K measured) and, directional split (D measured) for the roadways in the study area were derived. These field-measured adjustment factors provide an indication of existing traffic flow characteristics (i.e., constrained or unconstrained flow) which will be compared against the recommended ranges that are acceptable to the FDOT's Project Traffic Forecasting Handbook.

The existing year 2019 Annual Average Daily Traffic (AADT) volumes for the individual roadway segments are provided in [Table 3-1](#). In addition, the table summarizes the field measured roadway characteristics based on the actual peak hour obtained from the roadway traffic counts from Osceola County and Orange County.

Utilizing the turning movement volumes at each intersection and the existing measured characteristics based on the roadway traffic counts, the base year AADT volumes were adjusted to be consistent with the turning movement volumes at each study intersection. [Figure 3-2](#) provides the adjusted existing base year AADT's for the study corridor. Note that the AADT volumes for the existing base year 2019 conditions were derived by applying the K measured factor from traffic volume counts obtained from Osceola County and Orange County, to the adjusted existing turning movement volumes that were collected as part of this study.

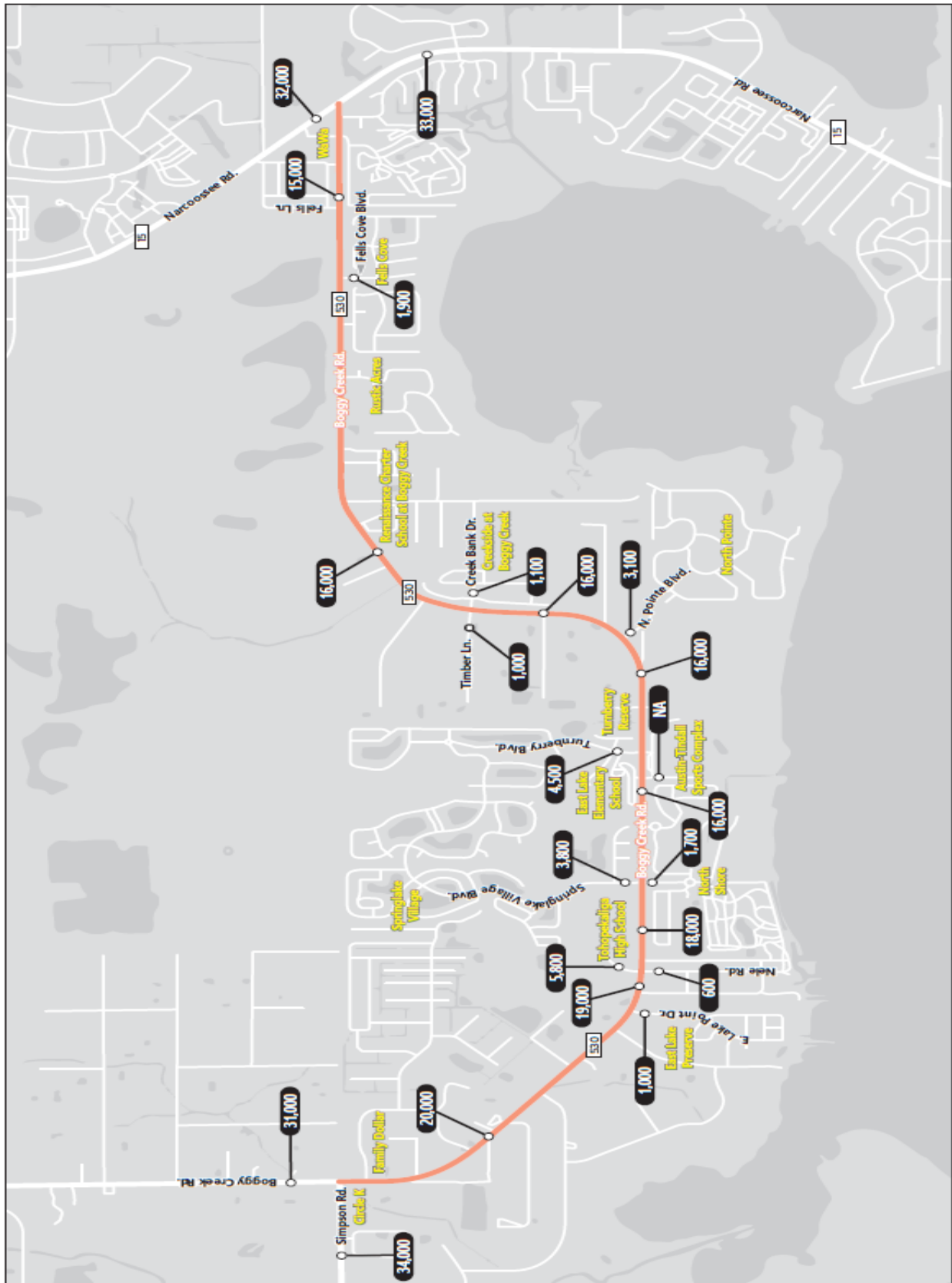
Table 3-1: Traffic Volumes & Characteristics Summary

Roadway Segment	Measured Characteristic						Seasonal Adj ¹	Axle Adj ²	Adjusted AADT ³
	ADT	Peak Hour	NB/EB	SB/WB	K Factor	D Factor			
Boggy Creek Road									
North of Simpson Road	31,712	1,941	1,225	716	6.1%	63.1%	0.96	0.99	30,000
		2,041	892	1,149	6.4%	56.3%			
Simpson Road to Austin Tindall Park	18,581	1,489	620	869	8.0%	58.4%	0.96	0.99	18,000
		1,409	787	622	7.6%	55.9%			
Austin Tindall Park to Narcoossee Road	15,334	1,138	737	401	7.4%	64.8%	0.96	0.99	15,000
		1,169	458	711	7.6%	60.8%			
Narcoossee Road									
North of Boggy Creek Road	31,742	2,375	1,832	543	7.5%	77.1%	1.03	0.99	32,000
		2,537	922	1,615	8.0%	63.7%			
South of Boggy Creek Road	35,090	2,959	2,142	817	8.4%	72.4%	0.96	0.99	33,000
		2,739	728	2,011	7.8%	73.4%			
Simpson Road									
West of Boggy Creek Road	27,868	1,582	819	763	5.7%	51.8%	0.95	0.99	26,000
		1,528	673	855	5.5%	56.0%			

Notes:

1. Most Recent Seasonal Adjustment Factors were obtained from FDOT 2019 Florida Traffic Online
2. Most Recent Axle Factors were obtained from FDOT 2019 Florida Traffic Online
3. Adjusted Average Annual Daily Traffic (AADT) = Measured ADT * Seasonal Adjustment * Axle Adjustment

Figure 3-2: Existing Base Year 2019 Annual Average Daily Traffic (AADT)



3.1.3 Year 2019 Turning Movement Counts

Turning movement counts were obtained for the AM and PM peak hour conditions for the nine (9) study intersections from StreetLight data, checked for reasonableness (with previous traffic studies) and balanced for upstream and downstream flows. The turning movement counts from the side streets were adjusted based on the previous projects and then through movements on Boggy Creek Road were adjusted for reasonableness based on engineering judgement. The adjusted base year AM and PM peak hour turning movement volumes for the study corridor are shown in [Figure 3-3](#).

3.1.4 2019 Year LOS Analysis

An analysis of the LOS performance based on existing geometry serves as one of the factors in identifying roadway and intersection improvements needed to accommodate existing and future travel demand. Intersection levels of service were determined utilizing Highway Capacity Manual (HCM) 6th edition methodologies within Synchro 10.0 software. For the study roadway segments, LOS was determined using arterial speeds from Synchro 10.0. The signal timing data provided by the Osceola County were used in the intersection LOS analysis for all the signalized intersections.

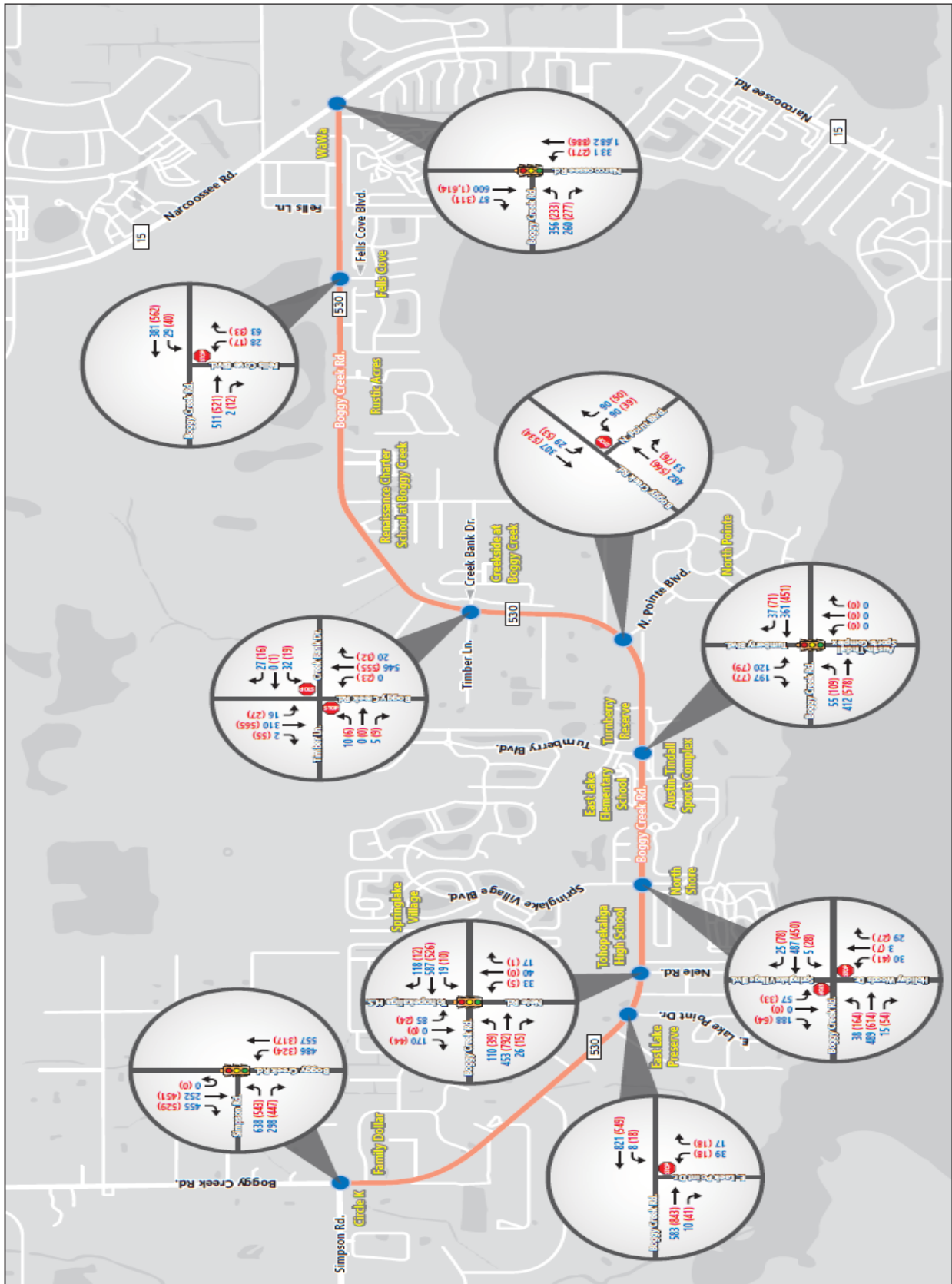
3.1.4.1 Year 2019 Intersection LOS Analysis

The year 2019 AM and PM peak hour turning movement volumes along with existing intersection geometry and signal timings were used in the intersection LOS analysis. A summary of the traffic operations LOS analysis for the study intersections are included in [Table 3-2](#). All of the signalized intersections were found to operate at LOS D or better except Boggy Creek Road at Simpson Road intersection. For all the unsignalized intersections where the minor street movements operate under stop control, were found to operate at a LOS C or better except for the minor streets of Springlake Village Boulevard and East Lake Point Drive that were found to operate at LOS E (or LOS F).

Table 3-2: Year 2019 Peak Intersection Analysis Summary

Intersection Location	Control	2019 AM		2019 PM	
		Delay	LOS	Delay	LOS
Simpson Road	Signal	135.7	F	73.5	E
E. Lake Point Drive	Stop	8.8 / 36.2	A/E	10.1 / 28.6	A/D
Nele Road/Tohopekaliga High School	Signal	35.9	D	10.4	B
Springlake Village Boulevard	Stop	8.7 / 41.1	A/E	9.2 / 124.1	A/F
Turnberry Boulevard	Signal	1.3	A	1.5	A
North Point Boulevard	Stop	8.7 / 22.3	A/C	9.2 / 32.0	A/D
Timber Lane/Creek Bank Drive	Stop	8.8 / 19.1	A/C	9.0 / 28.6	A/D
Fells Cove Boulevard	Stop	8.6 / 20.5	A/C	8.8 / 25.9	A/D
Narcoossee Road	Signal	40.7	D	40.3	D

Figure 3-3: Existing Base Year 2019 Turning Movement Counts



3.1.4.2 Year 2019 Roadway Operational Analysis

The existing base year roadway segment LOS analysis was performed for the base year traffic conditions for AM and PM peak hours based on Osceola County’s roadway classification standards. Osceola County currently classifies Boggy Creek Road as an urban minor arterial. Utilizing this appropriate roadway classification, the roadway segment LOS analysis was performed using the most current Osceola County Roadway Network Capacity Report Tables.

As shown in [Table 3-3](#), all roadway segments along Boggy Creek Road were found to operate with an acceptable level of service (LOS) C or better condition, except for the roadway segments from north of Simpson Road to Nele Road that were found to operate at an LOS F condition during year 2019 AM peak hour conditions. During 2019 PM peak hour conditions, all roadway segments along Boggy Creek Road were found currently operating at LOS C condition or better except the roadway segments from north of Simpson Road to Springlake Village Boulevard that were found operating at LOS F condition.

Table 3-3: Year 2019 Roadway Operational Analysis Summary

Roadway Segment	Lanes	Capacity	AM PEAK DESIGN HOUR			PM PEAK DESIGN HOUR		
			VOLUME	V/C RATIO	LOS	VOLUME	V/C RATIO	LOS
North of Simpson Road	2	880	1,195	1.36	F	980	1.11	F
Simpson Road to East Lake Point Drive	2	880	1,043	1.19	F	898	1.02	F
East Lake Point Drive to Nele Road	2	880	829	0.94	E	861	0.98	E
Nele Road to Springlake Village Boulevard	2	880	724	0.82	C	832	0.95	E
Springlake Village Boulevard to Turnberry Boulevard	2	880	575	0.65	C	714	0.81	C
Turnberry Boulevard to North Pointe Boulevard	2	1,660	549	0.34	C	665	0.41	C
North Pointe Boulevard to Timber Lane	2	1,660	572	0.36	C	616	0.38	C
Timber Lane to Fells Cove Boulevard	2	1,660	583	0.36	C	647	0.40	C
Fells Cove Boulevard to Narcoossee Road	2	1,660	616	0.38	C	602	0.37	C

3.2 Crash Data Review

A safety analysis was conducted based on the approved Traffic Analysis Methodology that follows the criteria contained in the Highway Safety Manual (HSM). The safety analysis is based on the latest available five (5) years of crash data from (January 1, 2015 to December 31, 2019). The safety analysis will be based on the following methodology:

- Identifying the Crash Severity & Conditions
- Identifying the Crash Type
- Identifying the Number of Crashes by Study Intersections
- Overview of Fatal crashes

- Development of Roadway Segment Crash Frequency and Crash Rates
- Conduct Comparison of Crash Rate to FDOT Districtwide and Statewide Statistics

3.2.1 Existing Crash Data Statistics

Crash data for nine (9) intersections on Boggy Creek Road, from Simpson Road to Narcoossee Road, were collected from Signal Four Analytics. The data covers crashes occurring between the dates of January 1, 2015 to December 31, 2019 (latest available five (5) years of data). A total of 509 crashes occurred within the study corridor during the five (5) year analysis period. [Table 3-4](#) and [Table 3-5](#) summarize the crash severity and conditions along the Boggy Creek Road study corridor for each year from January 2015 to December 2019.

As shown in [Table 3-4](#), out of the 509 total crashes that occurred over the five (5) year period, there were a total of 5 fatal crashes (0.98%), 220 injury crashes (43.22%), and 284 (55.80%) property damage only crashes. In addition, a total of 7 crashes (1.38%) occurred during the five (5) year study period that involved being under the influence of Alcohol and Drugs.

Based on [Table 3-5](#), out of the 509 total crashes that occurred, there were a total of 313 (61.5%) crashes occurred during the daylight hours, 156 crashes (30.7%) during dark conditions, 25 crashes (4.9%) during dawn conditions, and 15 (2.9%) crashes were reported to have occurred during dusk conditions. In addition, a total of 455 (89.4%) crashes occurred during dry roadway conditions with the remaining 54 (10.6%) occurring during wet and slippery roadway conditions.

Table 3-4: Crash Summary by Year and Severity

Year	Total Number of Crashes	Fatal Crashes	Injury Crashes	Property Damage Only Crashes	Under the Influence of Alcohol	Under the Influence of Drugs
2015	70	0	35	35	0	0
2016	75	2	30	43	1	1
2017	88	1	36	51	2	0
2018	151	0	67	84	3	0
2019	125	2	52	71	0	0
2015-2019	509	5	220	284	6	1
Average / Year	101.8	1.0	44.0	56.8	1.2	0.2
Percent	N/A	0.98%	43.22%	55.80%	1.17%	0.20%

Table 3-5: Crash Summary by Year and Conditions

Year	Total Number of Crashes	Dry Conditions	Wet Conditions	Daylight Conditions	Dawn Conditions	Dusk Conditions	Dark Conditions
2015	70	66	8	33	3	2	32
2016	75	66	9	40	5	2	28
2017	88	78	10	59	3	2	24
2018	151	136	15	105	6	5	35
2019	125	113	12	76	8	4	37
2015-2019	509	455	54	313	25	15	156
Average / Year	101.8	91.0	10.8	62.6	5.0	3.0	31.2
Percent	N/A	89.4%	10.6%	61.5%	4.9%	2.9%	30.7%

3.2.2 Existing Crash Data by Crash Type

[Table 3-6](#) shows the summary of the crashes by crash types. Per the summary, Rear End crashes accounted for most crashes (41.26% of total) within the study corridor followed by Left Turn crashes (26.13% of total), Off Road crashes (7.86% of total), and Other crashes (11.00% of total). There were a total of 4 crashes (0.79% of total) that involved pedestrian and bicycles that were reported in the last five (5) years.

Table 3-6: Crash Summary by Year and Crash Type

Crash Type	2015	2016	2017	2018	2019	Total	Average / Year	Percent
Rear End	19	28	41	64	58	210	42.0	41.26%
Head On	1	1	1	1	2	6	1.2	1.18%
Side Swipe	1	4	8	2	9	24	4.8	4.72%
Roll-Over	4	1	3	2	0	10	2.0	1.96%
Angle	1	0	3	4	1	9	1.8	1.77%
Left Turn	23	22	21	37	30	133	26.6	26.13%
Right Turn	4	2	3	3	0	12	2.4	2.36%
Off Road	8	6	2	14	10	40	8.0	7.86%
Ped & Bicycle	1	1	0	1	1	4	0.8	0.79%
Animal	1	1	1	1	1	5	1.0	0.98%
Other	7	9	5	22	13	56	11.2	11.00%
Total	70	75	88	151	125	509	101.8	100.00%

3.2.3 Existing Crash Data by Intersections

A review was performed for the crash data over the five (5) year study period at the study intersections. [Table 3-7](#) and [Table 3-8](#) summarizes the crash severity and conditions at the study intersections along the Boggy Creek Road study corridor for each year from January 2015 to December 2019.

Out of the 360 total intersections crashes that occurred over the five (5) year period at the study intersections, there was a total of 1 fatal crash (0.28%), 159 injury crashes (44.12%), and 200 (55.60%) property damage only crashes.

Out of the 360 total intersection crashes that occurred, there were a total of 212 (58.9%) crashes occurred during the daylight hours, 120 crashes (33.4%) during dark conditions, 16 crashes (4.4%) during dawn conditions, and 12 (3.3%) crashes were reported to have occurred during dusk conditions. In addition, a total of 320 (88.9%) crashes occurred during dry roadway conditions with the remaining 40 (11.1%) occurring during wet and slippery roadway conditions.

The signalized intersection of Simpson Road had the highest number of crashes, with a total of 172 followed by the signalized intersection of Narcoossee Road with 123 crashes. The third highest number of crashes was found to occur at the signalized intersection of Turnberry Boulevard/Austin Tindall Park at 23 crashes. The remaining study intersections were found to have less than 15 crashes that occurred over the five (5) year study period.

Table 3-7: Intersection Crash Summary by Severity

No.	Intersection Location	Control	Total Number of Crashes	Fatal Crashes	Injury Crashes	Property Damage Only Crashes
1	Simpson Road	Signal	172	0	82	90
2	E. Lake Point Drive	Stop	2	0	1	1
3	Nele Road/Tohopekaliga High School	Signal	8	0	1	7
4	Springlake Village Boulevard	Stop	15	0	6	9
5	Turnberry Boulevard	Signal	23	1	9	13
6	North Point Boulevard	Stop	7	0	3	4
7	Timber Lane/Creek Bank Drive	Stop	5	0	1	4
8	Fells Cove Boulevard	Stop	5	0	3	2
9	Narcoossee Road	Signal	123	0	53	70
Total			360	1	159	200

Table 3-8: Intersection Crash Summary by Conditions

No.	Intersection Location	Total Number of Crashes	Roadway Conditions		Lighting Conditions			
			Dry	Wet	Daylight	Dawn	Dusk	Dark
1	Simpson Road	172	156	16	89	8	6	69
2	East Lake Point Drive	2	2	0	1	0	0	1
3	Nele Road/Tohopekaliga High School	8	7	1	4	3	0	1
4	Springlake Village Boulevard	15	12	3	9	0	0	6
5	Turnberry Boulevard	23	22	1	17	2	0	4
6	North Point Boulevard	7	6	1	6	0	0	1
7	Timber Lane/Creek Bank Drive	5	5	0	3	0	0	2
8	Fells Cove Boulevard	5	5	0	3	0	0	2
9	Narcoossee Road	123	105	18	80	3	6	34
Total		360	320	40	212	16	12	120

3.2.4 Overview of Fatal Crashes

The following provides more details on the cause of five (5) fatal accidents occurred over the five (5) year study period from January 2015 to December 2019 based on the crash reports obtained from Signal Four Analytics:

1. The first fatality crash occurred during August 2016 and involved the motorist driving under the influence of alcohol and drugs. Based on the crash report, this was a single vehicle accident that included a driver and one passenger. The vehicle was travelling east along Boggy Creek Road near the intersection of East Lake Road and as the driver of the vehicle failed to maintain control of the vehicle, the vehicle ran off the roadway and collided with a tree. The crash occurred in dark (unlighted) and dry conditions.

2. The second fatality involved improper vehicle operation and occurred during September 2016. While travelling east along Boggy Creek Road approaching the intersection of High Plains Lane, the driver failed to safely navigate the curvature of the roadway and crossed into the westbound travel lanes causing a head-on collision with another vehicle. The crash occurred in dark (unlighted), and dry conditions.
3. The third fatality occurred during July 2017, with the driver heading east along Boggy Creek Road approaching the intersection of East Lake Road within the roadway curvature. The driver at fault failed to navigate the curve and crossed over in the westbound travel lanes into oncoming traffic for a head-on collision. The crash occurred in daytime, and dry conditions.
4. The fourth fatality occurred during October 2019, involved a motorcyclist travelling east along Boggy Creek Road after passing the intersection of High Plains Lane. The motorcyclist attempted to overtake and pass a vehicle and collided with another vehicle approaching in the westbound travel lanes. This resulted in a 4-vehicle crash due to improper lane change and passing. The crash occurred in dark (unlighted), in slippery, wet conditions.
5. The final fatality occurred during October 2019. The driver at fault was travelling east along Boggy Creek Road failed to stay within the appropriate travel lane while negotiating the curvature of the roadway resulting in a head-on collision. The crash occurred in dark (unlighted), and dry conditions.

Overall, the fatal crashes are similar in that four out of five fatalities were head-on collisions, and four out of five occurred during nighttime, dark (unlighted) conditions.

3.2.5 Crash Frequency & Crash Rate Development

Crash rates and frequencies along the study corridor were developed based on the five (5) year crash information obtained from Signal Four Analytics. [Table 3-9](#) summarizes the crash frequency and crash rate for the corridor.

It is to be noted that FDOT District Five and FDOT statewide crash rates for a similar facility is 3.10 and 3.65, respectively. Based on this information, Boggy Creek Road from Simpson Road to East Lake Point Drive and from Fells Cove Boulevard to Narcoossee Road can be categorized as high crash segments.

Table 3-9: Crash Frequency & Crash Rate Summary

Roadway Segment	AADT	Number of Crashes	Segment Length	Crash Frequency	Crash Rate
Simpson Road to East Lake Point Drive	20,000	239	1.29	47.8	5.08
East Lake Point Drive to Springlake Village Boulevard	19,000	50	0.57	10	2.53
Springlake Village Boulevard to Fells Cove Boulevard	16,000	83	3.28	16.6	0.87
Fells Cove Boulevard to Narcoossee Road Percent	15,000	137	0.76	27.4	6.58

3.3 Development of Design Characteristics

The design traffic characteristics established in this section will be used in developing the Annual Average Daily Traffic (AADT) projections for the roadway segments in the future year conditions. These characteristics are determined based on the procedures outlined in the FDOT's Project Traffic Forecasting Handbook, dated January 2019.

3.3.1 Standard K Factor

The existing measured traffic characteristics for the study corridor are shown in [Table 3-1](#) for the mainline segments and major minor streets based on existing base year traffic counts. Based on the evaluation of the existing measured characteristics and the FDOT recommended Standard K value of 9.0%, a standard K Factor of 9.0% is recommended to be used for Boggy Creek Road.

3.3.2 D Factor

The peak hour directional percent factor (D) represents the percentage of traffic during the peak hour that travels in the roadway's peak direction. This directional distribution factor, D factor, is based on the median value of the directional factors for the highest 200 hours of volumes for each continuous count station. In determining this factor for the study corridor and side streets, statewide guidelines obtained from the 2019 FDOT Project Traffic Forecasting Handbook for D factor were compared to D factors obtained from the field collected traffic counts.

The measured D for the study area roadways is shown in [Table 3-1](#), respectively. The average of the measured D factors for the major streets of Boggy Creek Road, Narcoossee Road, and Simpson Road were found to be at 59.9%, 71.7%, and 53.2%, respectively.

[Table 3-10](#) provides the current recommended range of D values from the FDOT Project Traffic Forecasting Handbook (2019) for an urbanized and rural arterial roadway.

Table 3-10: Recommended Range of D Values

Area and Highway Type	Value	FDOT Recommendation
Urban Arterial	Low	50.8%
	Medium	57.9%
	High	67.1%
Rural Arterial	Low	51.1%
	Medium	58.1%
	High	79.6%

A D factor of 58.9% is recommended for Boggy Creek Road based on the average of the FDOT medium recommended and measured characteristics. Similarly, for Simpson Road a D factor of 55.6% is recommended based on the average of the existing measured characteristics and FDOT medium recommended D factor. For Narcoossee Road the existing measured D Factor was found to be an average value of 71.7%. However, as growth in this area is anticipated and based on engineering judgement a D factor of 57.9% is recommended for Narcoossee Road based on the FDOT recommended medium value.

3.3.3 T & DHT Factors

The daily truck factor, T factor represents the percentage composition of medium sized and heavy trucks occurring in the traffic stream for a 24-hour period. The design hour truck, DHT, is the percentage of truck traffic during the peak hour and is recommended as one-half of the T factor in the Project Traffic Forecasting Handbook.

For this study, a T factor of 7.5% and DHT factor of 4.0% is recommended along the Boggy Creek Road (CoSite 927050) study corridor based on the Florida Traffic Online information and various other studies conducted along or in the vicinity of the study corridor. For Simpson Road (CoSite 927049) and Narcoossee Road (CoSite 927045) a T factor of 8.7% and 6.9% and DHT factor of 4.5% and 3.5% are recommended respectively. For the remaining minor side streets due based on the land uses being more residential, it is recommended to use a T factor of 2.0%.

3.3.4 Recommended Design Traffic Characteristics

Table 3-11 provides a summary of the recommended design traffic characteristics within the study corridor.

Table 3-11: Recommended Design Traffic Characteristics

Roadway	Recommended Design Characteristics			
	K Factor	D Factor	T Factor	DHT Factor
Boggy Creek Road	9.0%	58.9%	7.5%	4.0%
Narcoossee Road	9.0%	57.9%	6.9%	3.5%
Simpson Road	9.0%	55.6%	8.7%	4.5%
Other Side Streets	Existing	Existing	2.0%	Existing