Orange Park
Traffic Circulation Study

North Florida TPO
Transportation Planning Organization
PLAN • FUND • MOBILIZE


Welcome to
Town of
Orange
Park
Bird and
Tree Sanctuary

Orange Park
Traffic Circulation Study
Final Report

Prepared For:

North Florida TPO
Transportation Planning Organization
PLAN • FUND • MOBILIZE

December 2018

Prepared By:

ETM
England-Thims & Miller, Inc.
VISION ▪ EXPERIENCE ▪ RESULTS

Table of Contents

Executive Summary v
1. Introduction 2
2. Stakeholder Input 7
3. Existing Conditions 18
4. Future Volumes and Level of Service 60
5. Plan and Policy Review 66
6. Summary of Mobility Conditions 78
7. Recommendations 82
8. Implementation 106

Appendices (under separate cover)

Appendix A | Online Survey Results
Appendix B | Additional Demographic Maps and Commuting Tables
Appendix C1 | Additional Crash Data
Appendix C2 | Pedestrian/Bicycle Collision Diagram
Appendix D | Related Goals, Objectives and Policies

List of Figures

Figure 1 | Study Area 3
Figure 2 |Traffic Concerns 10
Figure 3 | Location of Traffic Backups and Concerns 11
Figure 4 | Options Participants Would Consider 15
Figure 5 | Regional Context 19
Figure 6 | Population Density 21
Figure 7 | Working Residents 25
Figure 8 | Top Five Places Where Study Area Residents are Employed 26
Figure 9 | Top Ten Census Tracts Where Residents are Employed 27
Figure 10 | Job Density (Commuting Data) 29
Figure 11 | Top 25 Census Tracts Where Employees Live 31
Figure 12 | Functional Classification 34
Figure 13 | Traffic Signals on Major Roadways 36
Figure 14 | At-Grade Rail Crossings 37

Figure 15 | Existing Pedestrian Facilities 39
Figure 16 | Existing Bicycle Facilities 41
Figure 17 | Existing Clay Transit Bus Routes 43
Figure 18 | Existing Public Bus Routes 45
Figure 19 | Existing Land Use 47
Figure 20 | Existing Traffic Conditions 49
Figure 21 | Traffic Crashes 51
Figure 22 | Severe Crashes 53
Figure 23 | Pedestrian and Bicycle Crashes 55
Figure 24 | Intersections with 30 or more Crashes 57
Figure 25 | Future Traffic Volumes and Level of Service (2020) 63
Figure 26 | Estimated Traffic Volumes and Level of Service (2035) 64
Figure 27 | Eastbound on Wells Road approaching DeBarry Avenue 90
Figure 28 | Westbound on Wells Road approaching DeBarry Avenue 90
Figure 29 | Signal Head Replacement 91
Figure 30 | Approach Marking 91
Figure 31 | Proposed Pedestrian Network Improvements 99
Figure 32 | Proposed Bicycle Network Improvements 100
Figure 33 | Proposed Pedestrian & Bicycle Network 101

List of Tables

Table 1 | Major Trip Attractors and Employers 23
Table 2 | Highest Crash Intersections 58
Table 3 | Future Traffic Volumes 61
Table 4 | Future Level of Service (LOS) [15] 62
Table 5 | Policies, Plans and Studies Reviewed 73
Table 5 | Policies, Plans and Studies Reviewed - continued 74
Table 5 | Policies, Plans and Studies Reviewed - continued 75
Table 6 | Summary of Recommendations 106
Table 6 | Summary of Recommendations - continued 107

Executive Summary

Executive Summary

Traffic affects the small-town character of the Orange Park area by impeding the quality of life and walking conditions of its residents. US 17/Park Avenue is a constrained arterial connection to the City of Jacksonville which crosses through the Town of Orange Park (the Town), bisects the community, hinders walkability and reduces community character. On average, this roadway carries between 53,500 to 84,000 vehicles daily through the Town with significant through traffic due to the proximity to I-295, Fleming Island and Jacksonville. The roadway network and a rail line split the study area into several quadrants resulting in limited opportunity for roadway, pedestrian and bicycle connectivity.

To improve the movement of people and freight, improve the pedestrian environment and enhance small-town character, the North Florida Transportation Planning Organization (North Florida TPO), in cooperation with the Town, conducted a traffic circulation study. The study's analysis revealed both opportunities and limitations to develop a well connected, safe and multimodal traffic circulation system. These conditions are described below:

- The study area contains some of the highest population and employment densities within Clay County.
- Commuting throughout the study area is significant.
    - Residents - Eighty-eight percent of working residents (over 11,000 workers) travel to jobs located outside the area. Half of working residents travel to jobs located in Jacksonville.
    - Employees - Most of the area's employees live outside the area. Ninety-two percent of those who work within the study area (over 18,000 workers) live outside the area.
    - In addition to people traveling to and from the study area, many people travel through the Town on a regular basis. For example, 45 percent of Fleming Island's working residents (approximately 5,400 workers) commute to Jacksonville; and about 30 percent of Fleming Island's employees (over 2,000) live in Jacksonville. Likely, many of these commuters travel through the Town and/or study area.
- Traffic concerns identified by survey participants were primarily related to the major state roadways of US 17/Park Avenue and SR 224/Kingsley Avenue. Additional concerns include cut-through traffic along neighborhood streets.

- Currently, there is significant congestion on US 17/Park Avenue between SR 224/Kingsley Avenue and I-295. In the year 2020, this congestion is expected to extend south of SR 224/Kingsley Avenue. Additionally, in the year 2035, congestion on SR 224/Kingsley Avenue west of US 17/Park Avenue is expected to increase beyond acceptable levels. Based on forecast traffic volumes, the First Coast Expressway is expected to reduce traffic through the Town by approximately three percent. The First Coast Expressway is a multi-lane, limited access toll road located southwest of the study area that will link Clay County with St. Johns and Duval Counties.

- There are several areas of concern due to traffic crashes within the study area.

    - The highest crash intersections (i.e., intersections with 30 or more crashes within a three-year analysis period) are located along US 17/Park Avenue, Wells Road and College Drive. Wells Road at DeBarry Avenue has the highest crash rate (1.056) and crash frequency (66 crashes).

    - Fatal and incapacitating injury crashes are primarily located along US 17/Park Avenue, Wells Road, SR 224/Kingsley Avenue, College Drive and Doctors Lake Drive.

    - Concentrations of pedestrian/bicycle crashes are located mostly along US 17/Park Avenue, Wells Road and SR 224/Kingsley Avenue.

- The Orange Park Bicycle and Pedestrian Sub-area Plan was completed in 2016, creating a framework for this study's recommendations. Additional studies, plans and projects also provide options for consideration.

The study's recommendations seek to increase ease of travel and enhance safety, while fostering community character. Suggestions to consider focus on traffic engineering modifications along roadways, such as complete street and/or traffic calming improvements; enhancements to the pedestrian, bicycle and transit network; enhancements in public transit services; and land use and development changes to help facilitate a more walkable and multimodal community. Crucial to these suggestions is a proposed comprehensive program to reduce the number of people driving alone to work in their vehicles. This program, called transportation demand management (TDM), is focused on changing the travel behavior or work schedules of commuters traveling through the Orange Park area. The TDM program will require coordination with major employers and regional transportation agencies.

A highlight of this study's suggested improvements is a town center-main street redevelopment concept intended to be an attractive focal point for the Town, featuring multimodal connections and transit supportive development. The concept addresses the Town's desire for enhanced community character and walkable streets by integrating multimodal planning and design concepts with local land use planning. It is hoped that convenient access to transit and pedestrian facilities can be a key attraction that fosters a mix of land uses and increased density that ultimately will support more walking and transit use, less congestion and a more livable environment.

1 Introduction

1. Introduction

Purpose and Goals

The purpose of this study was to recommend improvements for the movement of people and freight in the Town. The study's goals are derived from the study's purpose as listed in the scope of services: 1) to improve the movement of people and freight, 2) to improve the pedestrian environment and 3) to enhance the Town's small-town character. During a meeting with study stakeholders, the attribute "small-town character" was clarified and defined as improving multimodal transportation opportunities. It was also revealed that the Town would like to attract more families and create a sense of community.

Background

The Town of Orange Park is an incorporated community within northeast Clay County. It is in northeast Florida immediately to the southwest of Jacksonville, Florida. A significant percentage of Clay County residents drive north into Jacksonville to work. As a result, the Town and nearby portions of Clay County face traffic flow challenges including the improvement of the pedestrian environment.

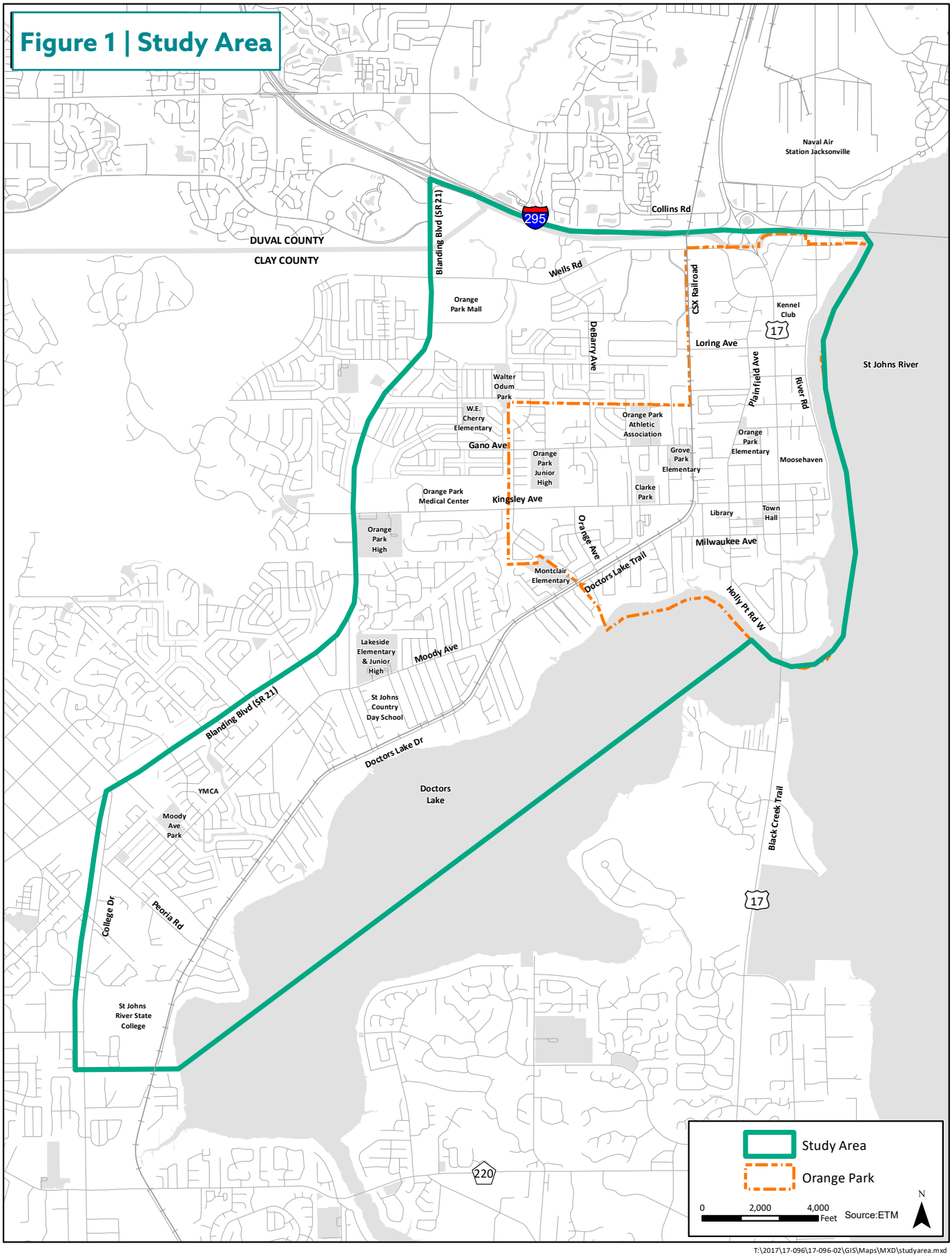
In August 2016, the North Florida TPO completed the Orange Park Bicycle and Pedestrian Sub-Area Plan that identified improvements to the pedestrian and bicycle network. Following the study, the Town Council approved five priorities from the Subarea Plan. The following recommendations from the 2016 Bicycle and Pedestrian Subarea Plan will be incorporated into this Traffic Circulation Study.

1. Connect Doctors Lake Path to Black Creek Trail (estimated $997,500) - Extend the existing Doctors Lake Trail to SR 224/Kingsley Avenue and construct a multi-use path from Doctors Lake Trail to US 17/Park Avenue to connect with the Black Creek Trail at Smith Street.
2. Study the potential for a path along the CSX Railroad north to Naval Air Station Jacksonville
3. Path to Wells Road (Orange Park Mall) – (estimated $494,625) – Construct a multi-use trail from Sigsbee Road north to Wells Road to the Orange Park Mall.
4. Install HAWK Beacons on Kingsley Avenue and on Park Avenue (estimated $400,000) – Provide for pedestrian activated, signalized mid-block crossings to create high visibility crosswalks.
5. Milwaukee Avenue Sidewalk/Boardwalk (estimate $135,000) – Construct a boardwalk and sidewalk on Milwaukee Avenue from Carnes Street to Plainfield Avenue to connect with existing sidewalks.

Study Area

The study area (*Figure 1*) consists of the Town in its entirety and nearby portions of unincorporated Clay County. The nearby portions of Clay County were included to help facilitate a more comprehensive study analysis. Bounded by I-295 to the north, Doctors Lake to the south, SR 21/ Blanding Boulevard and College Drive to the west and the St. Johns River to the east, the study area encompasses approximately 14 square miles. Although I-295 and SR 21/Blanding Boulevard both bound the study area, they are not part of the study area.

Figure 1 | Study Area



(This page was intentionally left blank)

2 Stakeholder Input


STATE
LAW
STOP
FOR
WITHIN
CROSSWALK

2. Stakeholder Input

Stakeholder Meetings

Meetings convened with a steering committee to help guide the study. The steering committee was comprised of staff from the following local, regional and state agencies:

- North Florida TPO
- Town of Orange Park
    - o Economic & Community Development
    - o Public Works
    - o Police Department
- Clay County, Economic and Development Services, Planning and Zoning
- Clay Transit/Clay County Council on Aging
- Jacksonville Transportation Authority (JTA)
- Florida Department of Transportation (FDOT), District Two – Northeast, Traffic Operations

The steering committee met to kick off the study January 19, 2018 and again April 20, 2018. At the kick-off meeting the committee discussed the traffic circulation, conditions, concerns and potential improvements summarized below. A third meeting was held October 24, 2018 to review the draft report.

Summary of Traffic Conditions and Concerns discussed January 19, 2018

- The Town would like to attract more families and create a sense of community.
- Small-town character - multimodal opportunities are needed within the Town.
- Pedestrians near apartments cross US 17/Park Avenue on the north end of the study area.
- Many pedestrians cross midblock, particularly on US 17/Park Avenue.
- Vehicle speeds on US 17/Park Avenue are an issue, particularly during less congested times of the day.
- Rear end crashes are very prevalent on US 17/Park Avenue.
- Both southbound and northbound traffic on US 17/Park Avenue is heavy in the morning.
- In addition to Clay County residents commuting to Jacksonville, Jacksonville residents utilize US 17/Park Avenue to commute to Clay County businesses located south of the study area such as AT&T and Vystar in Fleming Island.
- Traffic shifts between US 17/Park Avenue and SR 21/Blanding Boulevard contribute to traffic improvement challenges on these corridors.
- Although it may make sense from a traffic flow perspective, residents do not appear to want Plainfield Avenue utilized as a reliever for US 17/Park Avenue.
- Many older and/or long-time residents in the Town do not like the idea of change within the community.

- Proposed traffic calming on River Road was not implemented in response to community concerns.
- FDOT adjusted the cycle lengths of traffic signals along US 17/Park Avenue a few years ago to accommodate traffic demand and improve traffic flow. FDOT noted significant southbound traffic around 3 p.m. when workers leave NAS Jacksonville and, as a result, increased the cycle lengths to facilitate southbound travel.
- FDOT studied the potential for an additional left turn lane (i.e., triple lefts) at Park and Kingsley Avenues. The Town Council did not approve the additional lane.
- In Clay County, future development is generally anticipated west of the study area near SR 21/Blanding Boulevard and Oakleaf Plantation as well as south of the study area in the Lake Asbury area.
- Committee members would like to know the anticipated impact of the First Coast Expressway on the Town of Orange Park.

Suggestions from Individual Steering Committee Members (January 19, 2018)

- Extend the Black Creek and Doctor's Lake Trails.
- Add a pedestrian bridge over US 17/Park Avenue.
- Implement regional projects from Northeast Florida Regional Transportation Commission (RTC) planning efforts.
- Extend Doctor's Lake Drive along the CSX Railroad right-of-way north to Wells Road.
- Waterborne transportation along the St. Johns River from Clay County to Jacksonville was suggested as an alternative. The JTA studied this option a few years ago.
- Digital speed signs and variable posted speeds as a solution to speeding on US 17/Park Avenue.
- Transit-oriented Design (TOD) and transit service along the CSX rail line.
- A multi-use path along the rail line, an extension of the Doctor's Lake Trail, was proposed in the Orange Park Bike/Ped Sub Area Plan.

Online Survey Results

Overview

An online survey provided an opportunity for members of the community to identify traffic circulation concerns and potential solutions. The 16-question public opinion survey was active over seven weeks, from Tuesday, March 27, 2018 to Wednesday, May 16, 2018. Diverse ways to collect community input were offered including a study area map for survey participants to indicate traffic concerns and opportunities, enter detailed comments and agree with comments from other participants. The survey was available on the North Florida TPO and Town's websites and Facebook pages, and included in North Florida TPO electronic newsletters. In total 522 people participated in the survey. A summary of participant characteristics and traffic concerns is presented below. Appendix A contains full survey results.

Participant Characteristics

Based on the online survey, 43 percent of survey participants (over 200 people) indicated they live within the study area. Another 45 percent live within Clay County outside the study area and 12 percent live in a different county. In total, the survey captured participation from 57 percent who live outside the study area, potentially related to the significant traffic that travels through the Orange Park study area from other areas in Clay County (such as Fleming Island) and from Jacksonville. Forty (40) percent of survey participants work within the study area, 28 percent work in Duval County and 22 percent work in Clay County outside the study area. Overall, most survey participants are female (70 percent), between ages 20 and 54 years old (86 percent), have two or more vehicles in their household (84 percent) and have an annual household income of at least $70,000 (61 percent). Over half the survey participants (54 percent) travel along US 17/Park Avenue within the study area almost daily, while another 31 percent travel the corridor at least weekly.

Traffic Concerns

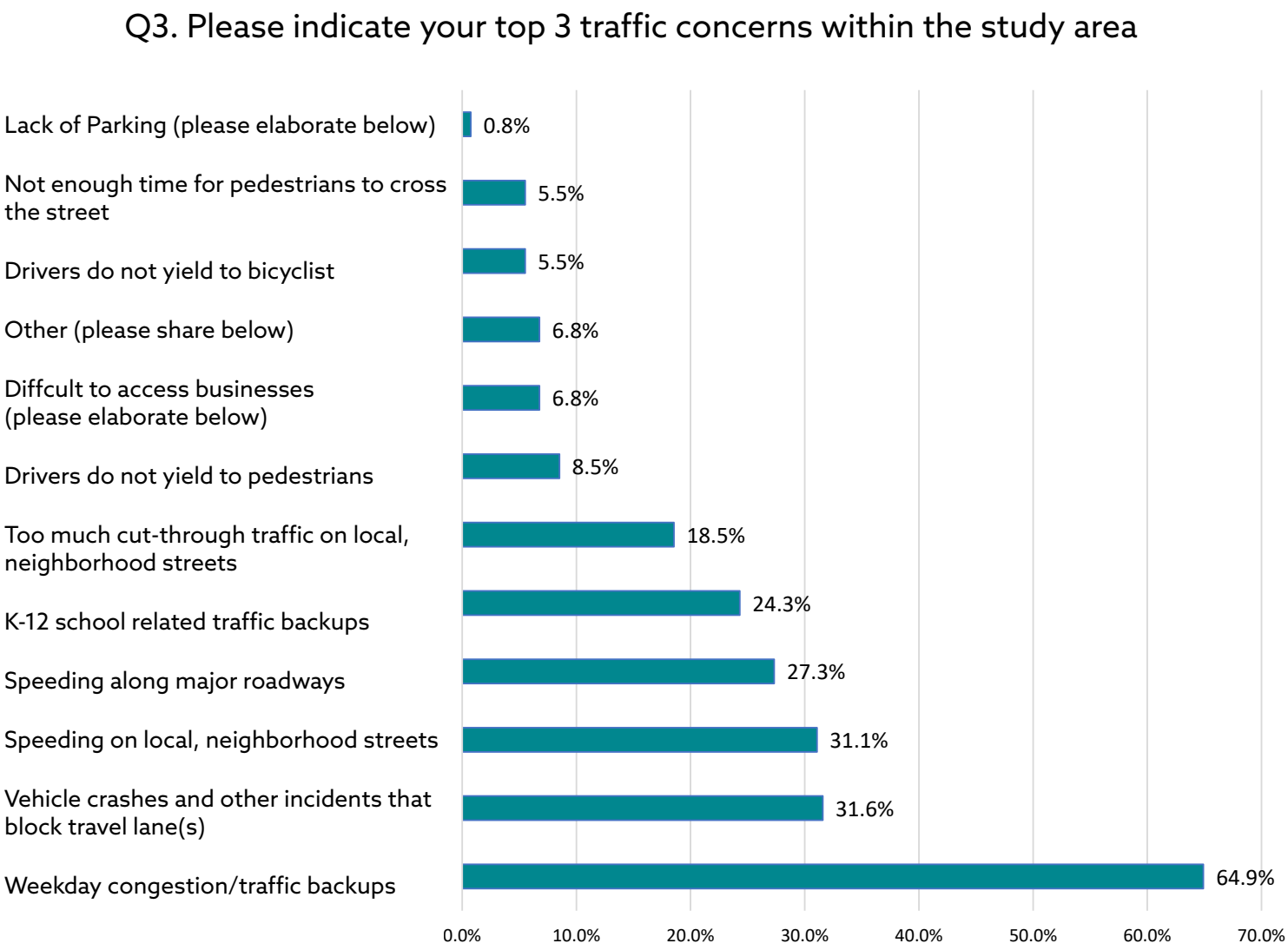
General Traffic Concerns

Survey participants were asked to select their top three traffic concerns within the study area (Question 3).

- All participants – *Figure 2* shows that the top traffic concern selected was weekday congestion/ traffic backups (65 percent of question 3 participants), followed by vehicle crashes and other incidents that block travel lane(s) (32 percent), speeding on local, neighborhood streets (31 percent), speeding along major roadways (27 percent) and K-12 school-related traffic backups (24 percent).

- Study Area Residents Only – Study area residents also chose weekday congestion/traffic backups (58 percent) as their top traffic concern. Compared to all participants, however, study area residents were slightly less concerned with vehicle crashes/incidents (21 percent) and more concerned with too much cut-through traffic on neighborhood streets (26 percent). Additionally, study area residents were concerned about speeding on local neighborhood streets (37 percent), K-12 school related traffic backups (27 percent) and speeding along major roadways (25 percent responses).

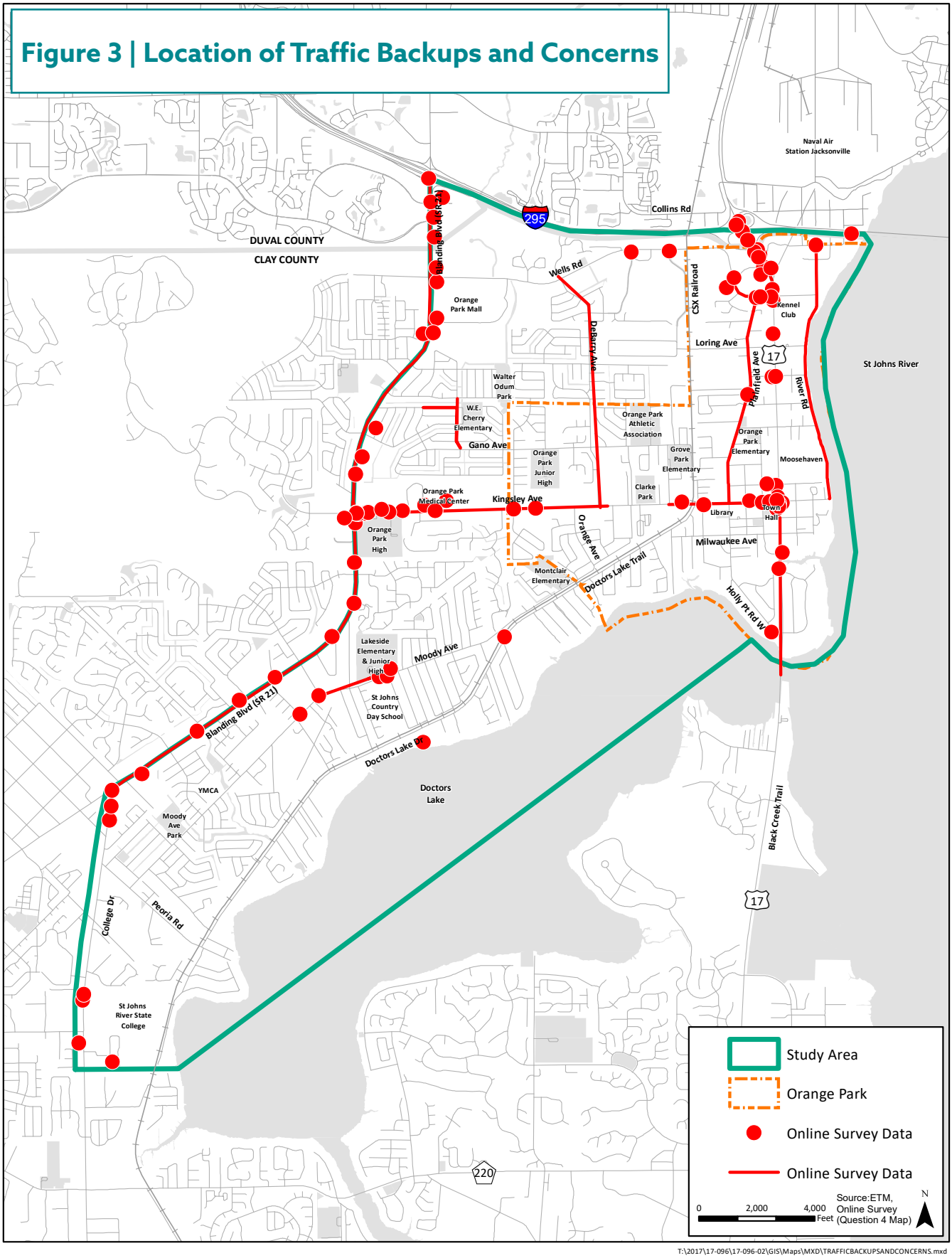
Figure 2 |Traffic Concerns



Location of Traffic Concerns

Online survey participants were asked to indicate where they experience traffic backups within the study area by placing points and lines on a map and describing their concerns (Question 4). *Figure 3* shows that survey participants experience traffic backups or other traffic concerns throughout the study area, along principal and minor arterials and along collector and local roadways. The next two pages summarize these concerns.

Figure 3 | Location of Traffic Backups and Concerns



T:\2017\17-096\17-096-02\GIS\Maps\MXD\TRAFFICBACKUPSANDCONCERNS.mxd

Specific Traffic Concerns

Traffic concerns identified by survey respondents are primarily related to the major, state roadways of US 17/Park Avenue, Kingsley Avenue and Blanding Boulevard. Additional concerns expressed by survey respondents include cut-through traffic along "local" roadways, however many of the roadways cited as "local" are classified as collector roadways.

Below is a summary of specific concerns from survey participants (Questions 3, 4 and 9).

US 17/Park Avenue

- Congestion/Traffic Backups along US 17 through the I-295 interchange area, from Wells Road to Collins Road
  - o Turning from northbound US 17/Park Avenue onto I-295 southbound entrance ramp drivers try to quickly shift across multiple lanes to reach the far-right lane.
  - o I-295 southbound exit ramp traffic merging onto southbound US 17/Park Avenue.
  - o Turning left from eastbound Wells Road to northbound US 17/Park Avenue.
- Congestion/Traffic Backups at Kingsley Avenue
  - o Turning left from eastbound SR 244/Kingsley Avenue onto northbound US 17/Park Avenue.
  - o Turning left from northbound US 17/Park Avenue onto westbound SR 244/Kingsley Avenue.
  - o Southbound traffic merging to the right to turn right onto westbound Kingsley Avenue.
- Poorly timed traffic signals.
- The following concerns were also mentioned for US 17/Park Avenue:
  - o One or two comments state that it is difficult to turn onto US 17/Park Avenue in the morning from Holly Point W./Elbow Road due to northbound US 17/Park Avenue traffic using Holly Point W./Elbow Road as a shortcut to westbound SR 244/Kingsley Avenue.
  - o One or two comments state that the green time for the traffic on Loring Avenue at US 17/Park Avenue is too short.
  - o Speeding on US 17/Park Avenue, including speeding just south of the study area, on the Doctor's Inlet Bridge.

US-17/Park Avenue northbound,south of SR 224/Kingsley Avenue

Kingsley Avenue

- Congestion/Traffic Backups at US 17/Park Avenue.
- Congestion/Traffic Backups at and near SR 21/Blanding Boulevard.
  - o The traffic backups in front of Orange Park High School (OPHS); difficult to turn from OPHS onto westbound Kingsley Avenue to travel south on Blanding Boulevard.
- Long red light (for Kingsley Avenue traffic) at the Orange Park Medical Center.
- The following concerns were also mentioned for Kingsley Avenue:
  - o Congestion/Traffic Backups at Doctor's Lake Drive and Railroad Avenue.
  - o Speeding on Kingsley Avenue, including speeding to beat the traffic lights.

Local and/or Collector Roadways (neighborhood streets)

- Cut through traffic, speeding and/or not stopping at stop signs: Plainfield Avenue, Montclair neighborhood, Holly Point West, River Road, Orange Avenue, DeBarry, Bellair Boulevard, Grove Park Circle, Grove Park Drive (between Gano Avenue and Grove Park Drive South), Gano Avenue, corner of McIntosh and Smith Streets, Milwaukee Avenue and Doctor's Lake Drive.
  - o Someone noted that speeds up to 50+ mph and 4,500 vehicles per day cut through on Plainfield Avenue.
  - o One survey respondent noted dangerous conditions for pedestrians and children on Grove Park Drive, noting that cars drive ten to 12 miles per hour over the speed limit (between Gano Avenue and Grove Park Drive South).
- Difficulty turning left onto College Drive from St. Johns River State College due to the traffic along College Drive.
- Traffic backups near K-12 schools such as on Moody Avenue near Lakeside Junior High School and on streets near W.E. Cherry Elementary.
- There was mention that vehicle sensors on Corporate Way near Wells Road need adjusting.

Pedestrian and Bicycle Concerns

- Not enough sidewalks in multifamily areas, such as Crossing Boulevard near Wells Road and nearby apartments.
- Not enough bike lanes.
- Drivers not yielding to or watching for pedestrians/bicyclists, particularly at the crosswalks.
- Pedestrians and bicyclists not watching for vehicles; pedestrians crossing between cars.

Additional Issues

- Multiple comments regarding drivers not obeying traffic laws and/or not driving safely.
  - o Drivers changing lanes as they turn, especially to turn onto I-295 from US 17/Park Avenue or from SR 21/Blanding Boulevard.
  - o Running stop signs or red lights.
  - o Speeding (i.e., school zones, cut-through traffic and along major roadways).
  - o Blocking intersections, such as at Kingsley Avenue and Smith Street.
  - o Using cell phones while driving.

- Congestion/Traffic Backups along SR 21/Blanding Boulevard, especially south of I-295 and near the Orange Park Mall.
- Congestion/traffic backups contribute to degrading the quality of life/character in the study area.
- A few survey participants don't like the red-light cameras and say they contribute to poor driving behaviors and tickets issued to drivers stuck in the intersection behind cars.
- Difficult to access businesses and local roadways from US 17/Park Avenue and from Kingsley Avenue, and vice versa, particularly if there is no signal.
- It was suggested to add parking at the corner of River Road and Kingsley Avenue.

Suggested Improvement Options (Online Survey)

Below is a summary of the suggested improvement options from survey participants.

General Options

Survey participants were asked to select potential options that would best improve the movement of people and goods within and through the study area (Question 5).

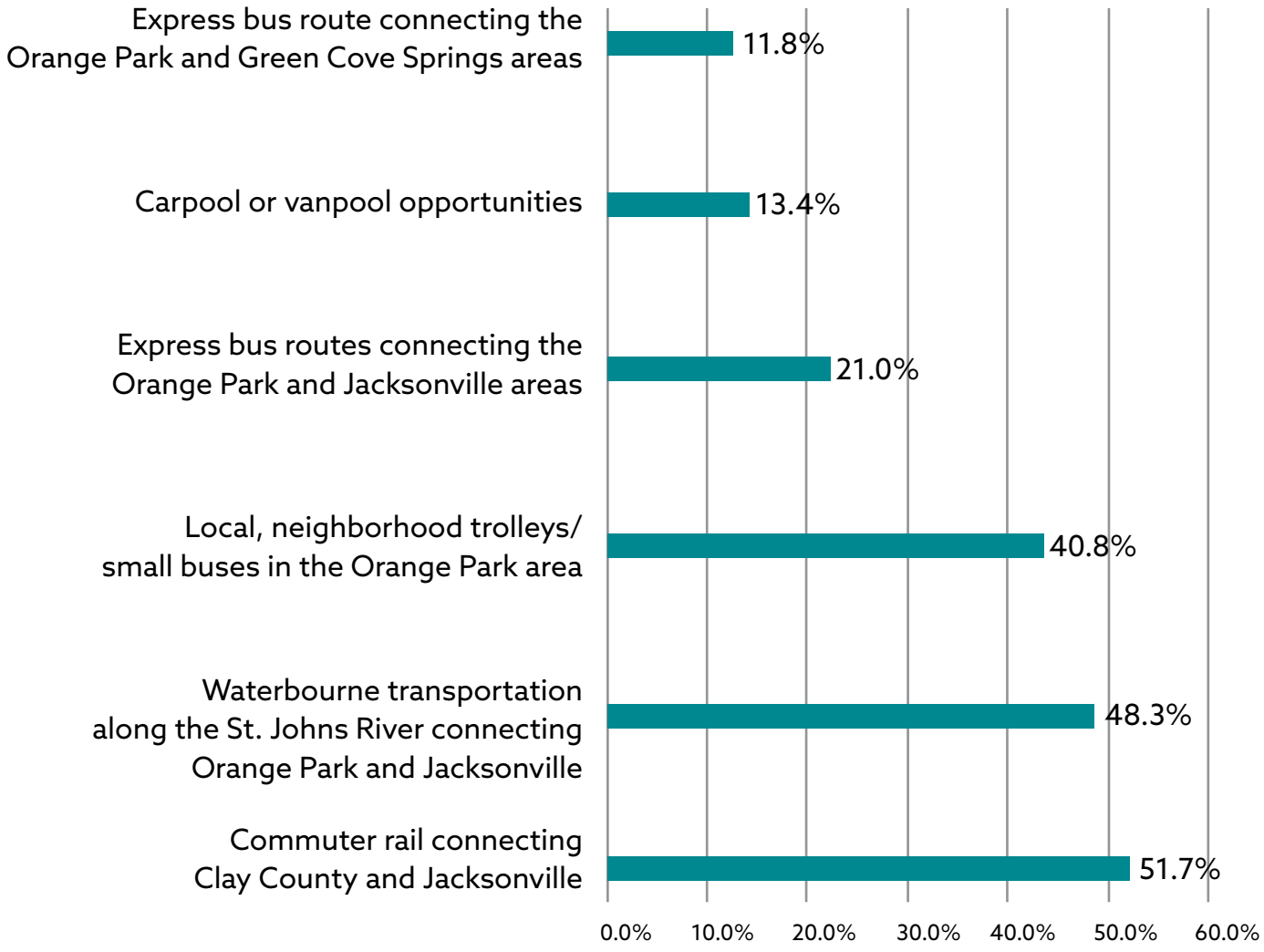
- All Survey Participants - Overall the top five traffic options selected were changes to the signal timing (47 percent of question 5 participants), additional north-south roadways within the study area (42 percent), additional turn lanes at intersections (31 percent), commuter rail connecting Clay County and Jacksonville (30 percent) and additional and/or extended multi-use trails for pedestrian and bicycle use (16 percent).
- Study Area Residents Only – Study area residents selected the same top five traffic options as the overall survey participants.

Survey participants were asked to select the transportation options they would consider using if the options met their travel needs (Question 6).

- All Survey Participants – *Figure 4* shows that overall the top three transportation options survey participants would consider using were commuter rail connecting Clay County and Jacksonville (52 percent of question 6 participants), waterborne transportation along the St. Johns River (48 percent), and local, neighborhood trolleys/small buses in the Orange Park area (41percent).
- Study Area Residents Only – Study area residents selected the same top three transportation options as the overall survey participants.

Figure 4 | Options Participants Would Consider

Q6. Select the transportation options you would consider using if they met your travel needs.



Percent participants (out of 238 participants for question 6)

More Specific Options

Below are more specific options suggested by survey participants (Questions 5, 6 and 9).

US 17/Park Avenue at I-295

- Add another lane from northbound US 17 to southbound I-295.
- Innovative rebuild of the US 17 and I-295 interchange.
- Overpass/Flyover ramp at US 17.

Traffic Signals and Turn Lanes

- Longer green time for traffic turning at major intersections.
  - o US 17/Park Avenue and Kingsley.
  - o US 17/Park Avenue and Wells Road intersections.
- Signal coordination to provide priority to traffic turning at major intersections.
  - o US 17/Park Avenue and Kingsley.
  - o US 17/Park Avenue and Wells Road intersections.
- Traffic signals that know when no vehicles are waiting (and, therefore, do not provide green time).
- Longer left turn lanes where there are currently traffic backups, in general.
- Additional suggestions:
  - o One or two suggestions for turn lanes at Plainfield and Kingsley [perhaps from southbound Plainfield Avenue].
  - o One or two suggestions for a turn lane from Orange Avenue onto Kingsley Avenue.
  - o One or two suggestions for a traffic light at US 17/Park Avenue and Blake Avenue.

Local and/or Collector Roadways (neighborhood streets)

- Minimize cut-through and speeding traffic through neighborhoods streets.
- More law enforcement for speeders and those not following stop signs and traffic lights.

Pedestrian and Bicycle

- Additional sidewalks, particularly in multifamily areas where they do not exist.
- Additional bike lanes.
- Pedestrian and driver education.
- Crosswalk needed on Plainfield Avenue near curve at San Robar Drive for school children.

Public Transportation

- Transit service where people live within the study area. DeBarry Avenue was specifically mentioned.
- More frequent service and longer service hours.
- Water ferry from Doctor's Lake to NAS Jacksonville.
- Continue coordination with the Regional Transportation Commission, working on integrated transit services between northeast Florida counties.

3

Existing Conditions

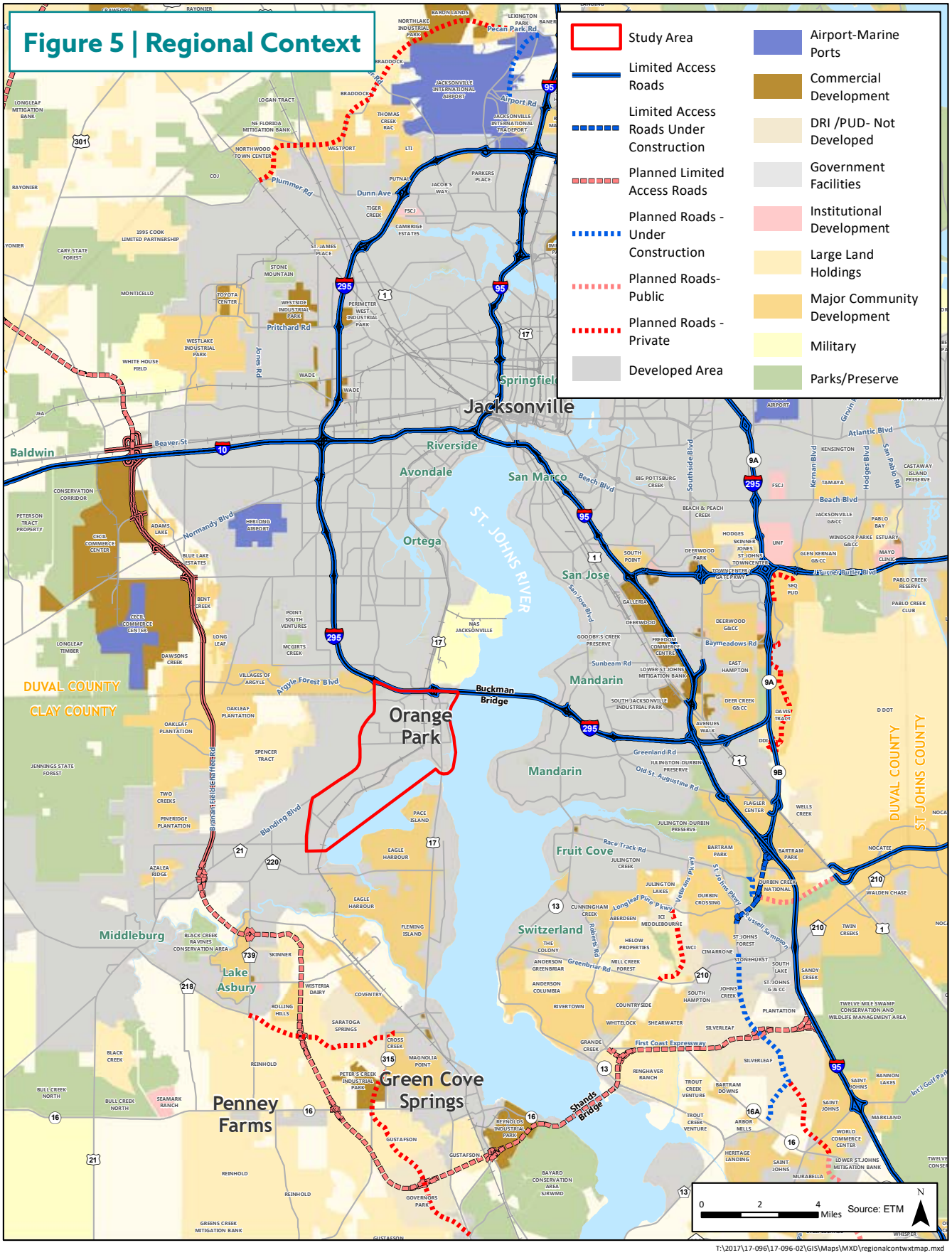
3. Existing Conditions

Regional Context

The study area is located within northeast Clay County, immediately southwest of Jacksonville in Duval County. The area is bounded on the north by I-295 which provides access to I-95 to the east and I-10 to the north. The land in this portion of Clay County is part of the Jacksonville Urbanized Area and mostly developed.

Much of Clay County's future population and employment growth is anticipated to occur west and south of the study area. The First Coast Expressway is a planned, limited-access roadway that will link these growth areas with Duval and St. Johns Counties.

Figure 5 | Regional Context



T:\2017\17-096\17-096-02\GIS\Maps\MXD\regionalcontwxtmap.mxd

Population, Major Employers and Work Travel

Figures 6 through 10 illustrate relative densities, representing the greatest concentrations of residents and jobs in red and orange and the smallest concentrations in shades of green. Appendix B contains supporting demographic maps and data.

Population

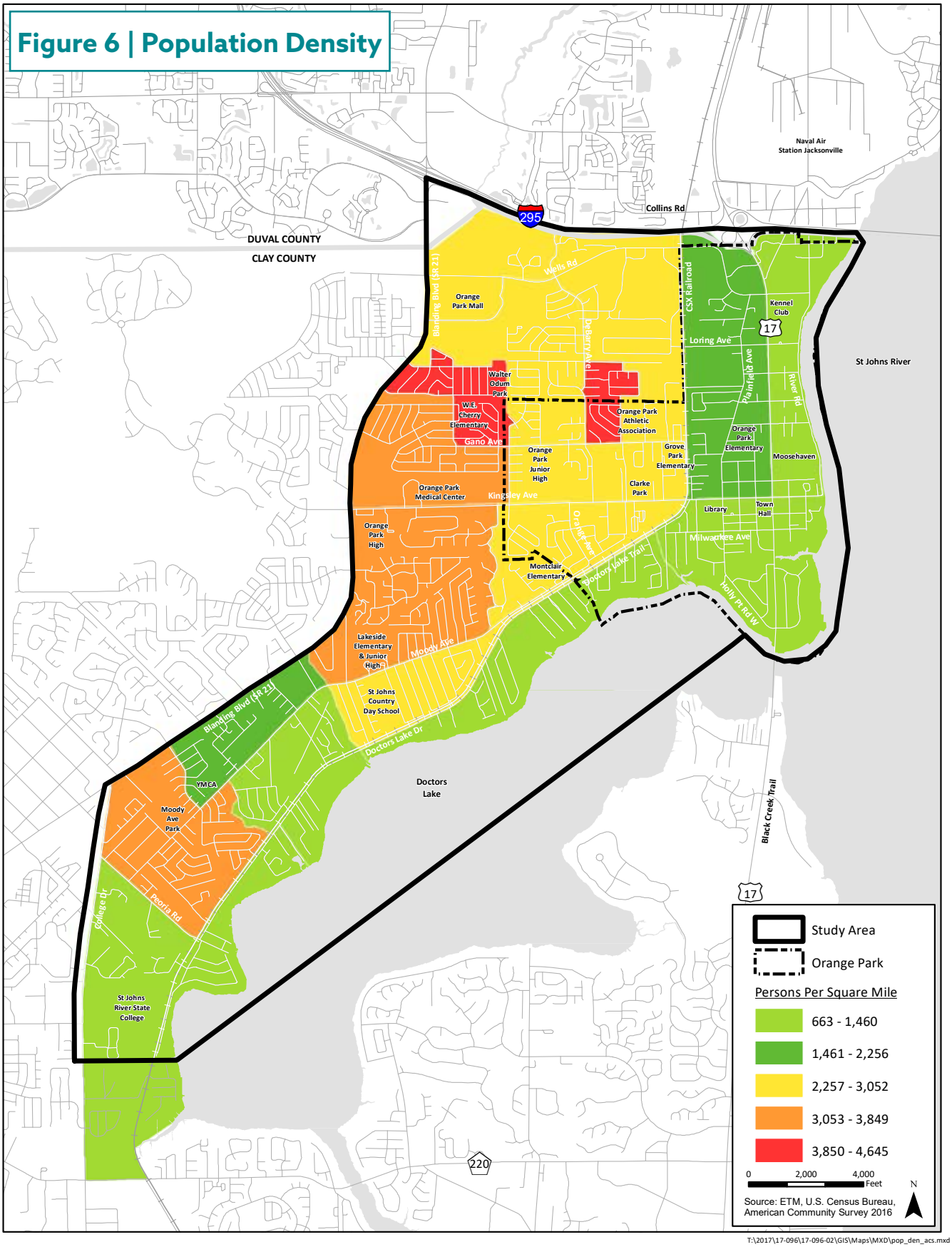
Residents and employees are highly concentrated within the study area. *Figure 6* shows that population densities range from over 600 persons to over 4,000 persons per square mile. The more heavily populated areas are located on the west side of the study area generally between the railroad track and SR 21 / Blanding Boulevard. Approximately 29,000 residents live in the entire study area[1].

The Town's population is 30 percent of the study area population, at 8,600 residents[2]. Approximately 22 percent of the Town's population is 65 years old or over and median household income is $49,869 dollars.

From 2010 through 2017, population has only slightly increased from 8,412 to 8,622 people.

[1]U.S. Census Bureau, American Community Survey, 2016
[2]U.S. Census Bureau, American Community Survey, 2016 (5-Year Population Estimate)

Figure 6 | Population Density



T:\2017\17-096\17-096-02\GIS\Maps\MXD\pop_den_acs.mxd

Major Employers

Over 19,400 employees work in the entire study area[3], with over 25 percent employed in Health Care & Social Services and 17 percent employed in retail trade. Data from Clay County's Comprehensive Plan Evaluation and Appraisal Report (EAR) indicates that five of the nine major trip attractors within Clay County are located within the study area. These five trip attractors consist of three private sector employers (Parallon Business Solutions, Orange Park Medical Center and General RV Center), the Orange Park Mall and the St. Johns River State College. Table 1 lists major trip attractors and employers within the study area.

[3] Esri Infogroup, Inc., 2017

Table 1 | Major Trip Attractors and Employers

Major Trip Attractor	Approximate Number of Employees/ Students [4]	Location
Orange Park Medical Center	1,360	SR 224/Kingsley Avenue & Professional Center Drive
Orange Park Mall	1,000[5]	Wells Road & SR 21/Blanding Boulevard
Parallon Business Solutions	800	Crossing Boulevard & Wells Road
Bestbet Orange Park/ Jacksonville	620[6]	US 17/Park Avenue & Wells Road
General RV Center	310	Wells Road & Crossing Boulevard
Life Care Center of Orange Park (nursing home, rehab)	250	SR 224/Kingsley Avenue & Professional Center Drive
Life Care Center of Wells Crossing (nursing Home)	180	Crossing Boulevard & Wells Road
Moosehaven Retirement Community	150	US 17/Park Avenue & McIntosh Avenue
Andromeda Systems Inc.	130	Crossing Boulevard & Wells Road
Fishman and Tobin	110	Wells Road east of the CSX Railroad Track
Cracker Barrel, Orange Park	110	Eldridge Loop & US/Park Avenue
Town of Orange Park, executive and legislative offices	100	US 17/Park Avenue & SR 224/ Kingsley Avenue
St. Johns River State College, Orange Park Campus	2,650 students	College Drive & Old Jennings Road

Source: DEO, 2017 3rd quarter; Clay County Comprehensive Plan EAR, 2017; ETM, 2018

[4]Rounded to nearest ten
[5]Includes approximately 35 percent full time workers and 65 percent park time workers at 120 stores.
[6]Number of employees includes payroll for the Jacksonville location. Additionally, some employees may work at both locations (Orange Park and Jacksonville) throughout the week.

Work Travel Characteristics [7]

A significant percentage of workers travel to and from the study area. Work travel origin and destination (O-D) characteristics are described in Figures 7 – 10.

Working Residents

Figure 7 illustrates where working residents live within the study area. Like overall population density, the highest densities of working residents are generally located on the west side of the study area and near US 17/Park Avenue and Wells Road, south of I-295.

Of the approximately 12,800 working residents, 88 percent travel outside the study area to work. Of these, 84 percent drive alone.

Half of the study area's working residents (approximately 6,500 people) travel to Jacksonville to work. Another 24 percent work in Clay County. *Figures 8 and 9* illustrate the primary locations where study area residents commute.

The top five places study area residents work are as follows:

1. Jacksonville (6,480 workers)
2. Bellair-Meadowbrook Terrace CDP (710 workers)
3. Green Cove Springs (695 workers)
4. The Town of Orange Park (650 workers)
5. Lakeside CDP (530 workers)

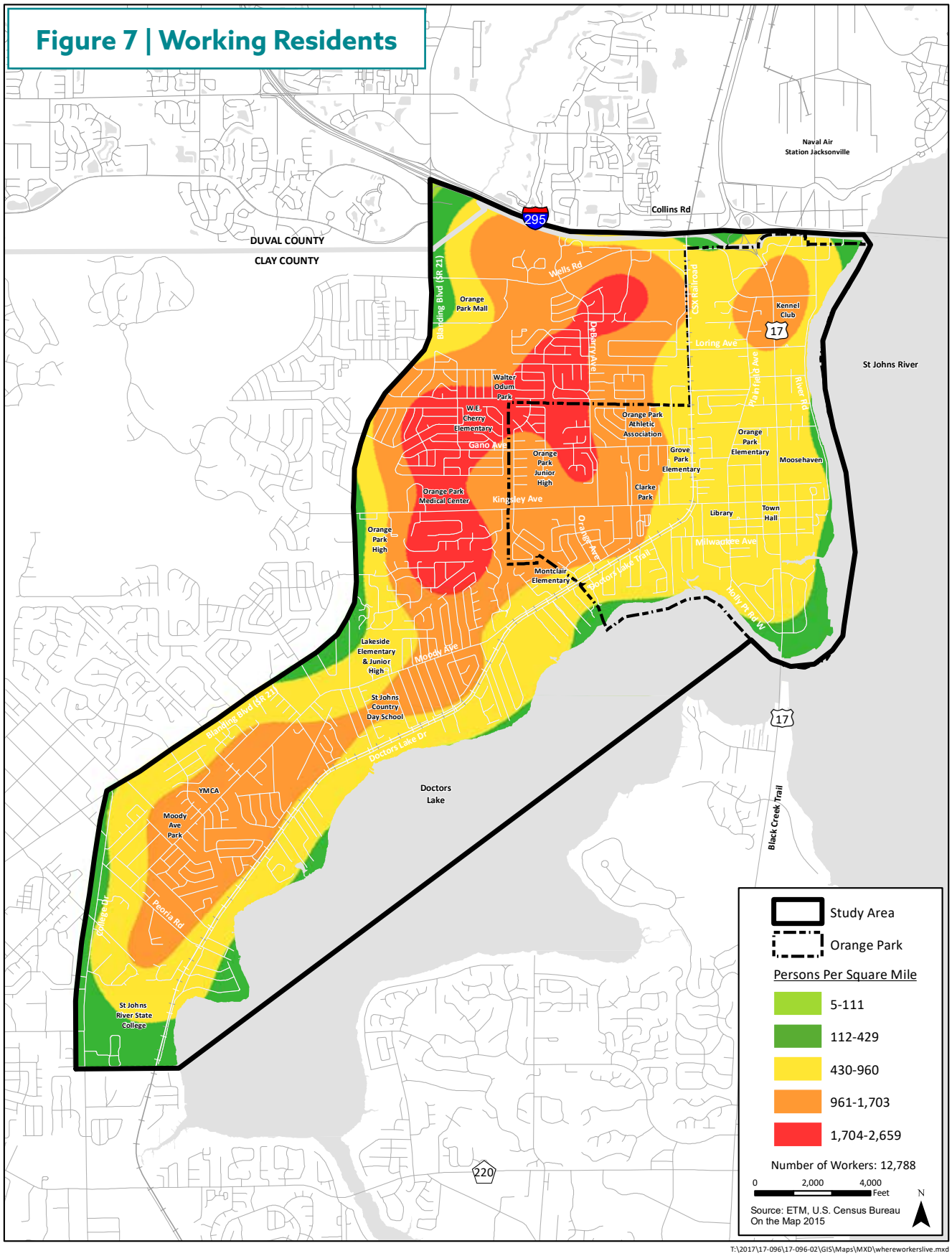
Fleming Island is the next highest place study area residents work, with approximately 300 workers.

Census tracts provide a more specific indication of where study area residents are employed. The top ten census tracts study area residents work is listed below. Approximately five percent of study area residents work in Clay County's Tract 314, located in the Green Cove Springs area.

1.	Tract 314	Green Cove Springs area (655 workers)
2.	Tract 306	Orange Park area east of the CSX rail line (440 workers)
3.	Tract 166.01	Southeast Jacksonville, along US 1/Philips Highway (370 workers)
4.	Tract 8	Southbank area of downtown Jacksonville (360 workers)
5.	Tract 171	Riverside area of Jacksonville (280 workers)
6.	Tract 172	Northbank area of downtown Jacksonville (275 workers)
7.	Tract 144.12	Includes Baptist S. Hospital/Flagler Cntr/Bartram Pk. area (270 workers)
8.	Tract 304	Study area, Orange Park Medical Center (265 workers)
9.	Tract 144.01	Jacksonville Town Center/Beach Boulevard (260 workers)
10.	Tract 303.03	Study area, Crossing Boulevard area (235 workers)

[7] U.S. Census OntheMap Application and LEHD Origin-Destination Employment Statistics. (Beginning of quarter employment, 2nd Quarter of 2002-2015)

Figure 7 | Working Residents



T:\2017\17-096\17-096-02\GIS\Maps\MXD\whereworkerslive.mxd

Figure 8 | Top Five Places Where Study Area Residents are Employed

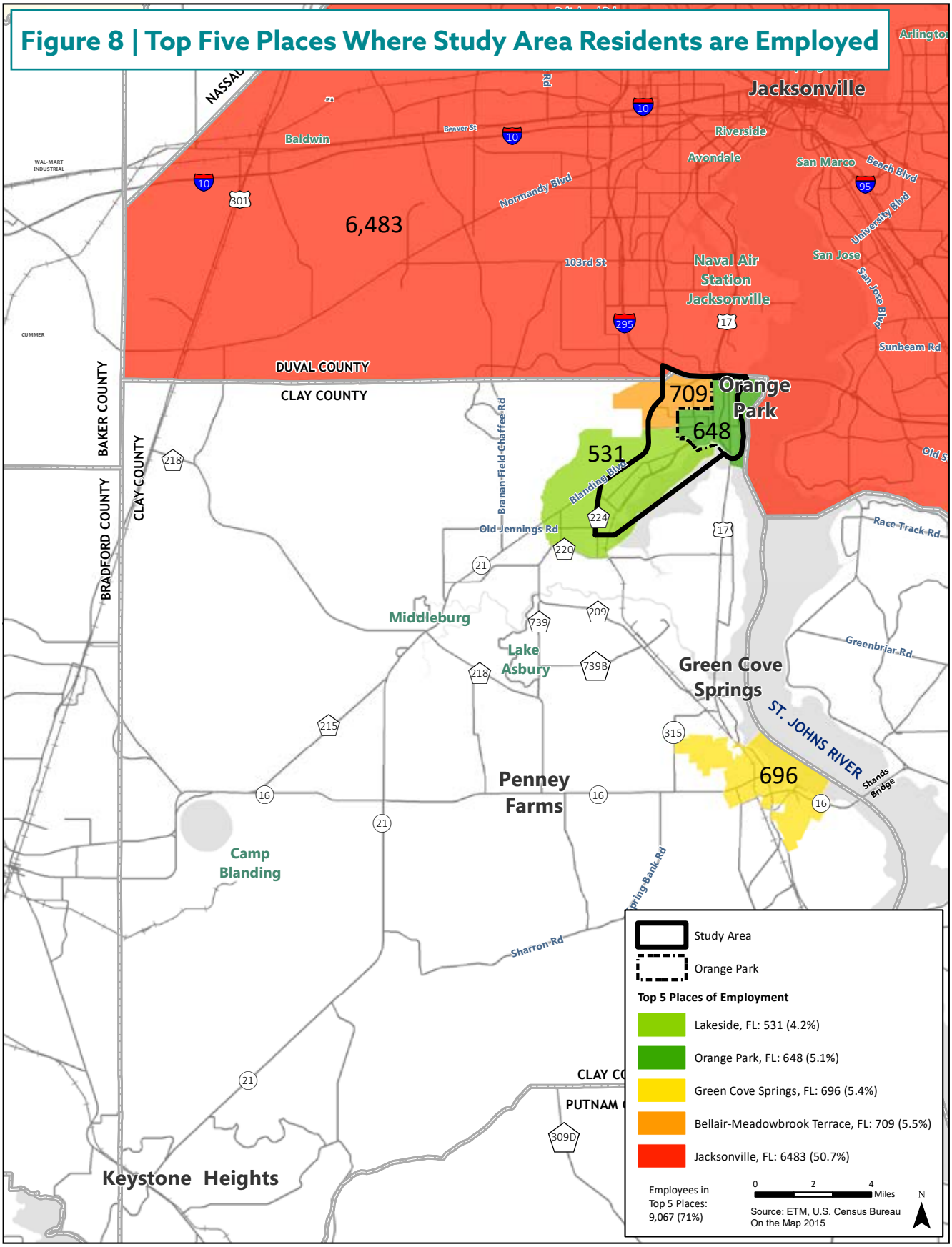
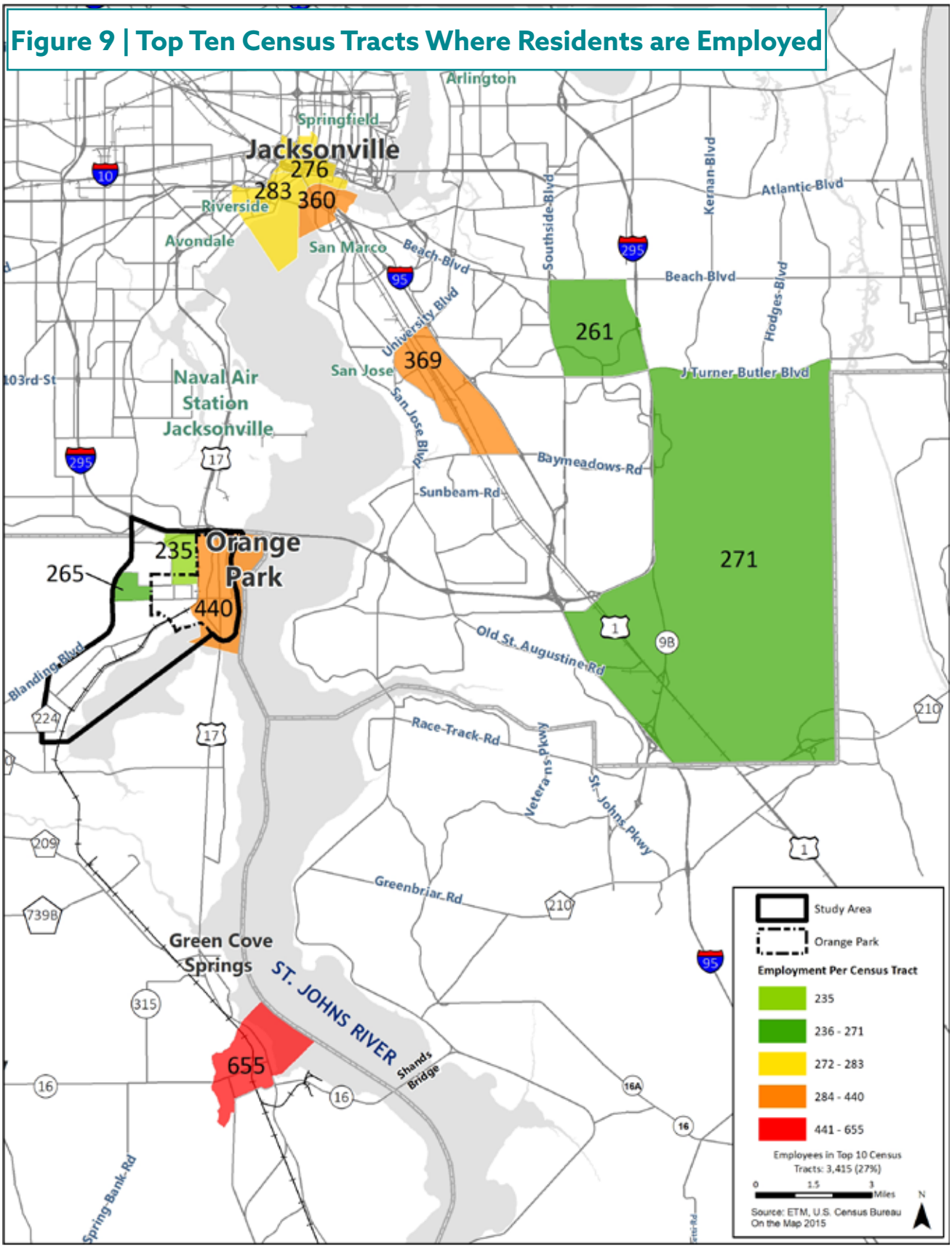


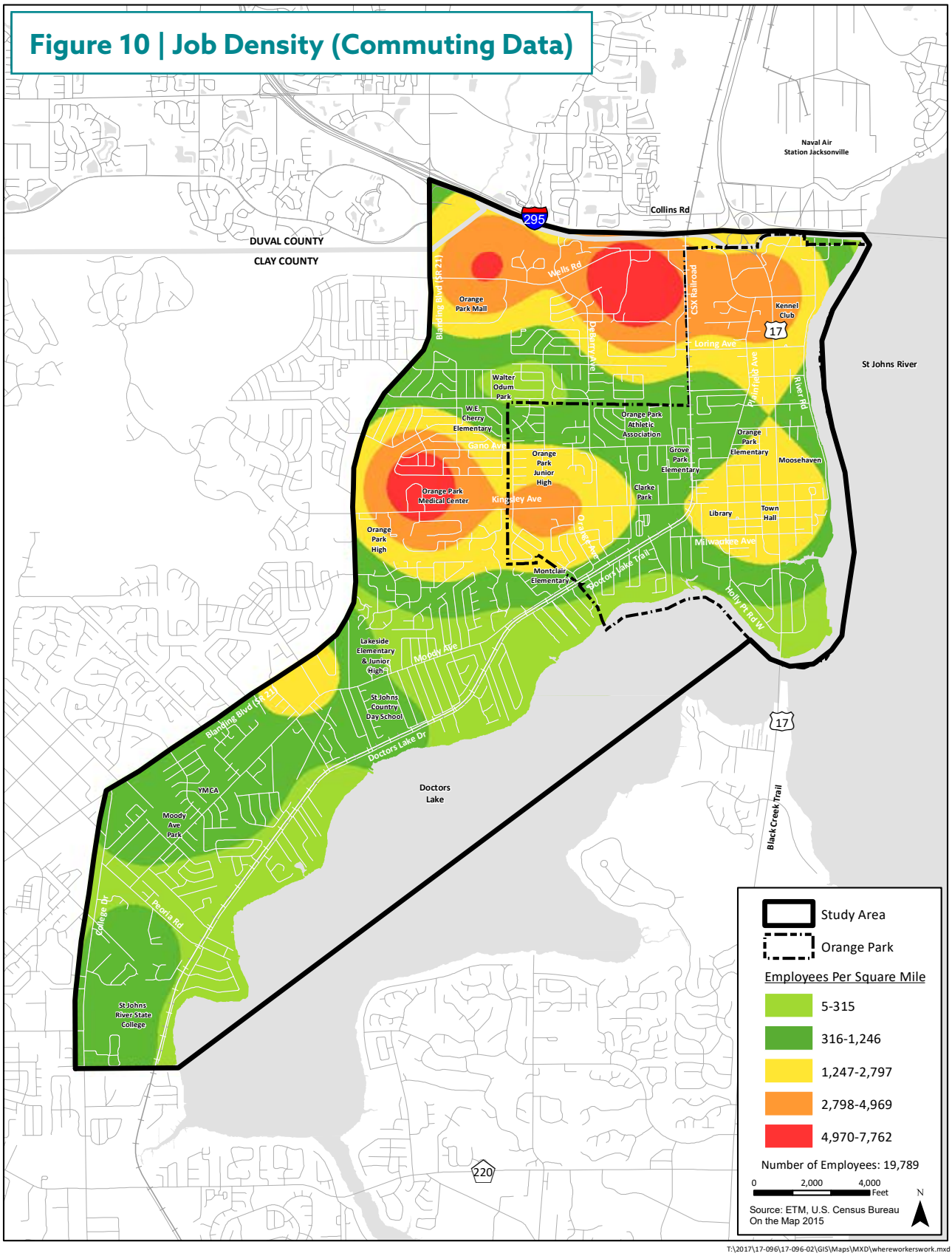
Figure 9 | Top Ten Census Tracts Where Residents are Employed



Study Area Employees

Figure 10 illustrates where employees work within the study area. The highest densities of jobs are located along Wells Road and along SR 224/Kingsley Avenue east of SR 21/Blanding Boulevard.

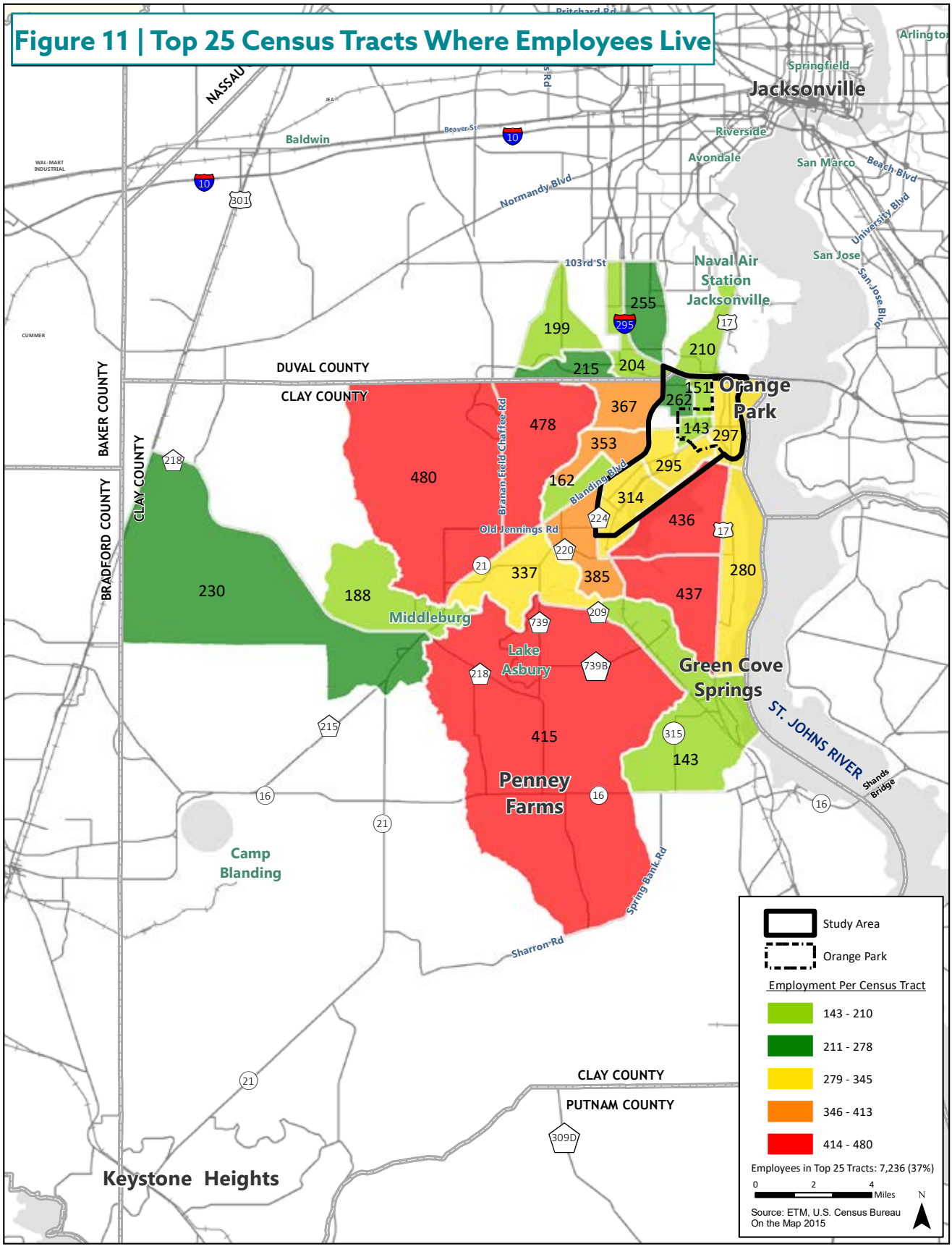
Figure 10 | Job Density (Commuting Data)



T:\2017\17-096\17-096-02\GIS\Maps\MXD\whereworkerswork.mxd

Study area employees mostly travel from Duval and Clay Counties. Approximately 38 percent travel from Duval County, 34 percent travel from Clay County and five percent travel from St. Johns County. In *Figure 11*, the top 25 Census tracts where study area employees travel from are located to the west of the study area between Blanding Boulevard and Branan Field Chaffee Road (includes the Oakleaf Plantation area), to the south of the study area along US 17 (includes the Fleming Island area) and south of the study area near Lake Asbury and Penney Farms.

Figure 11 | Top 25 Census Tracts Where Employees Live



Fleming Island Travel Characteristics

During a steering committee meeting, it was discussed that a significant portion of study area traffic on US 17/Park Avenue travels to and from Fleming Island. As part of existing conditions, this section describes work travel origin and destination (O-D) characteristics for the unincorporated census designated place of Fleming Island. Fleming Island is in Clay County, just south of the study area on the other side of the Doctor's Inlet Bridge, generally at US 17 and CR 220. Appendix B3 contains supporting data.

Where Fleming Island Residents Work

Forty-five percent of Fleming Island's working residents (approximately 5,400 workers) commute to Jacksonville. Many, if not most, of these workers likely use US 17/Park Avenue within the study area to travel north to Duval County. Another 30 percent travel to various parts of Clay County to work. Only three percent work in St. Johns County.

Within Jacksonville, the top six census tracts where Fleming Island residents work are generally located in downtown Jacksonville, including the Riverside area, and the southside area of Jacksonville, including the Town Center. Within Clay County, the top four census tracts where Fleming Island residents work are generally located in the Green Cove Springs, Fleming Island and Orange Park areas.

Where Fleming Island Employees Live

Of Fleming Island's approximately 7,160 employees, 87 percent live outside Fleming Island. Individuals who work in Fleming Island mostly travel from Clay and Duval Counties. Forty (40) percent of Fleming Island's employees live within Clay County, 30 percent come from Duval County (over 2,000) and eight percent come from St. Johns County.

Multimodal Transportation Network

This section of the report describes characteristics of the multimodal transportation network, including roadways, sidewalks, bike lanes, trails and public transit routes.

Roadways

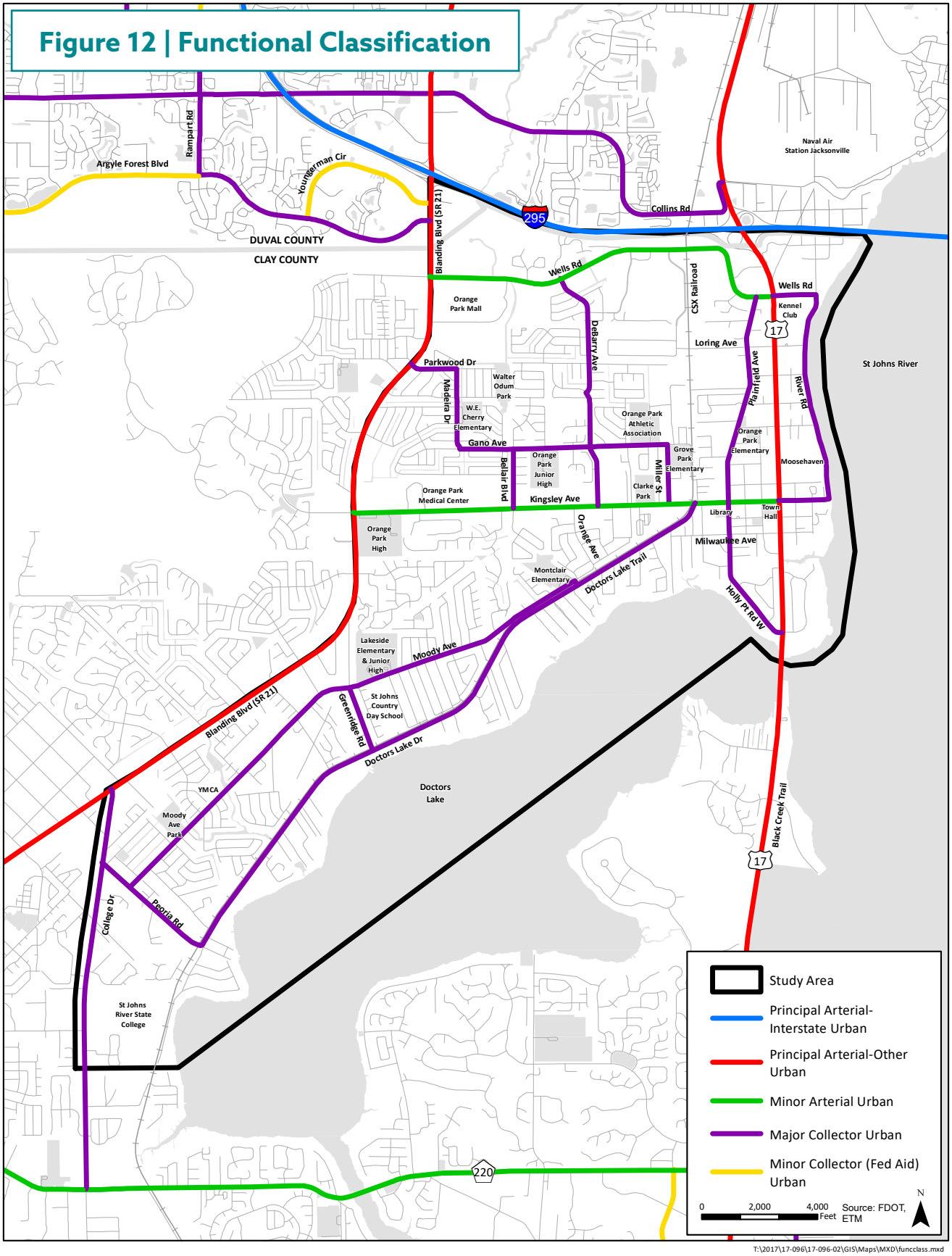
Three major arterials provide the primary mobility within the study area: US 17/Park Avenue, SR 224/Kingsley Avenue and Wells Road. US 17/Park Avenue provides local and regional north-south mobility and SR 224/Kingsley Avenue and Wells Road provide east-west mobility and local connectivity. Although not part of this study, SR 21/Blanding Boulevard is a north-south principal arterial immediately to the west.

Characteristics of the area's major roadways are summarized below. *Figures 12 and 13* illustrate the Federal Functional Classification System and location of traffic signals on major roadways, respectively. Functional classification is the assignment of roadways into systems according to the character of service they are intended to provide in relation to the total roadway network. The system describes a roadway's role in serving the flow of traffic (mobility) versus providing access to land development. Generally, roadways either primarily serve travel mobility (i.e., interstates, freeways and principal arterials), primarily provide access to land development (i.e., local) or provide a combination of both travel mobility and access (i.e., minor arterials and collectors). The Federal Functional Classification System must be reviewed and updated every ten years, after the decennial census. This process involves coordination between federal, state, regional and local stakeholders and changes to the system require FHWA approval.

US 17/Park Avenue – As an Urban Principal Arterial-Other and a state roadway (SR 15), US 17/Park Avenue is the predominant north-south roadway within the Town. The arterial carries traffic through the study area and provides regional connectivity within North Florida. It intersects with I-295 in Duval County at the northern limits of the Town and the study area. Immediately north of the study area, on the other side of I-295, US 17/Park Avenue connects to Naval Air Station Jacksonville, a major employer. South of the Doctors Inlet Bridge, the roadway connects to unincorporated Fleming Island and other large master planned communities. US 17/Park Avenue is also an emerging roadway on Florida's Strategic Intermodal System (SIS), further highlighting the regional and statewide significance of the roadway.

In the study area, US 17/Park Avenue is a six to eight lane divided roadway with no on street parking and median strips with turning lanes. The posted speed limit is 40 to 45 mph and traffic signals are spaced generally between 1,000 and 2,600 feet apart with a couple exceptions where the traffic light spacing is less than 1,000 feet. The roadway is constrained, with few options for widening.

Figure 12 | Functional Classification



T:\2017\17-096\17-096-02\GIS\Maps\MXD\funcclass.mxd

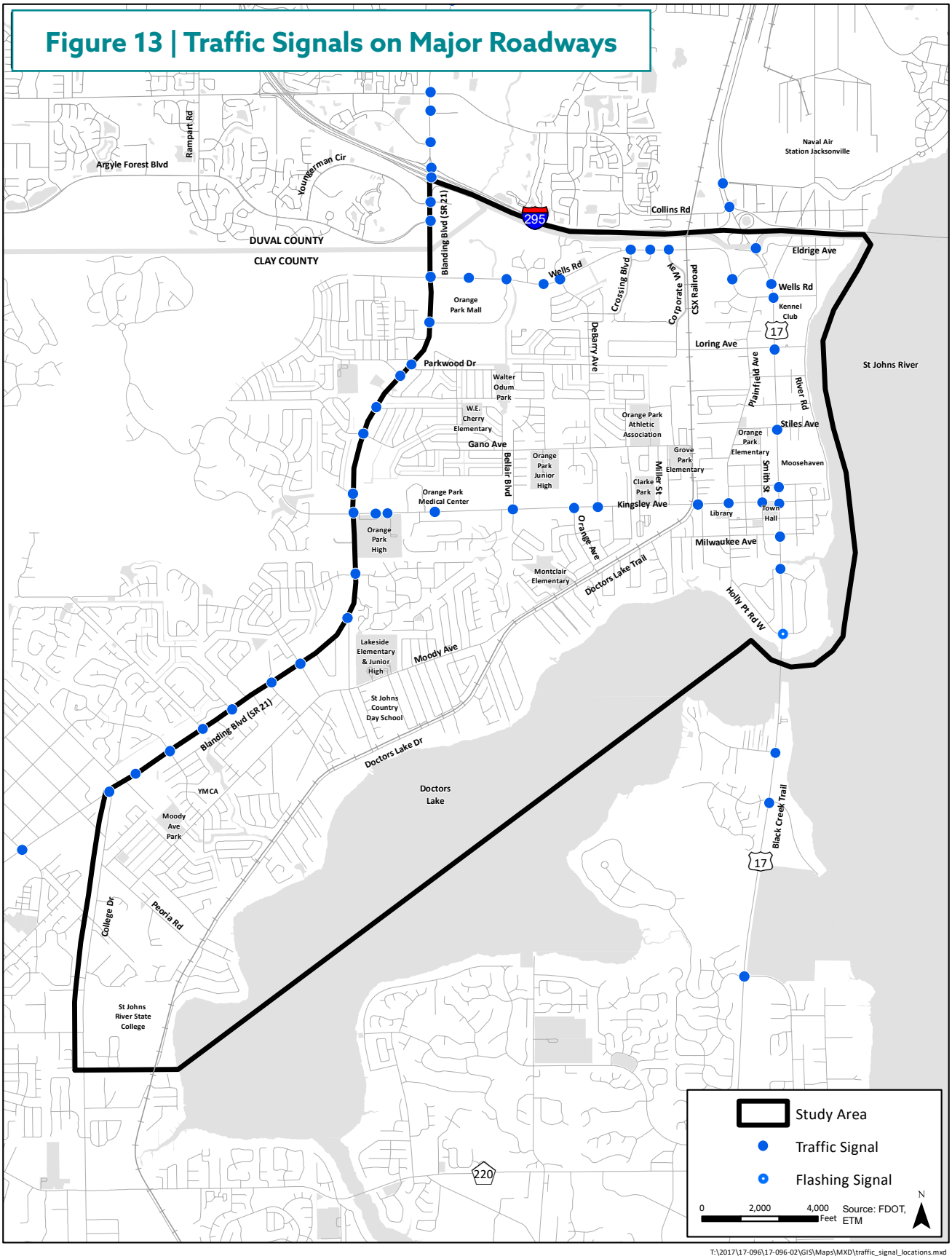
SR 224/Kingsley Avenue – SR 224/Kingsley Avenue is an approximately 2.78-mile Urban Minor Arterial and state roadway (SR 224), that links US 17/Park Avenue with SR 21/Blanding Boulevard. It provides east-west connectivity between the Town and Clay County. SR 224/Kingsley Avenue provides access to the Orange Park Medical Center, a major employer in the area, as well as Lowe's, the Orange Park High School, residential and other supporting residential land uses. SR 224/Kingsley Avenue is a divided four to five lane roadway with a posted speed limit of 35 to 40 mph. East of US 17/Park Avenue, Kingsley Avenue is a two-lane collector roadway that continues approximately three blocks, providing access to River Road and the St. Johns River.

Wells Road – An Urban Minor Arterial roadway, Wells Road links US 17/Park Avenue with SR 21/ Blanding Boulevard and the Orange Park Mall. Approximately two to three miles in length, Wells Road provides east-west connectivity between the Town and Clay County. The roadway is lined with predominantly commercial businesses and services including large private employers and Altierus Career College. Wells Road is a divided four-lane roadway with a posted speed limit of 30 mph east of the railroad track near US 17/Park Avenue and 45 mph west of the track.

In addition, some study area roadways are categorized as major collector roadways. These include, but are not limited to, the north-south roadways of Plainfield Avenue, DeBarry Avenue, and College Drive as well as Doctors Lake Drive, Moody Avenue and Peoria Road. Study area roadways not assigned a functional classification are referred to as local roadways in this report.

Several Major Collector roadways on the Federal Functional Classification system are not listed as collectors in the local comprehensive plans. The Town's Comprehensive Plan (2025 Transportation Plan Map) shows only the following collector roadways: Plainfield Avenue (Wells Road to Kingsley Avenue), Doctors Lake Drive (S. Town Limits to SR 224/Kingsley Avenue, Loring Avenue) (US 17/Park Avenue to the CSX Railroad) and DeBarry Avenue (N. Town limits to Kingsley Avenue). Clay County's 2040 Traffic Circulation Map shows College Drive as the only collector roadway within the study area.

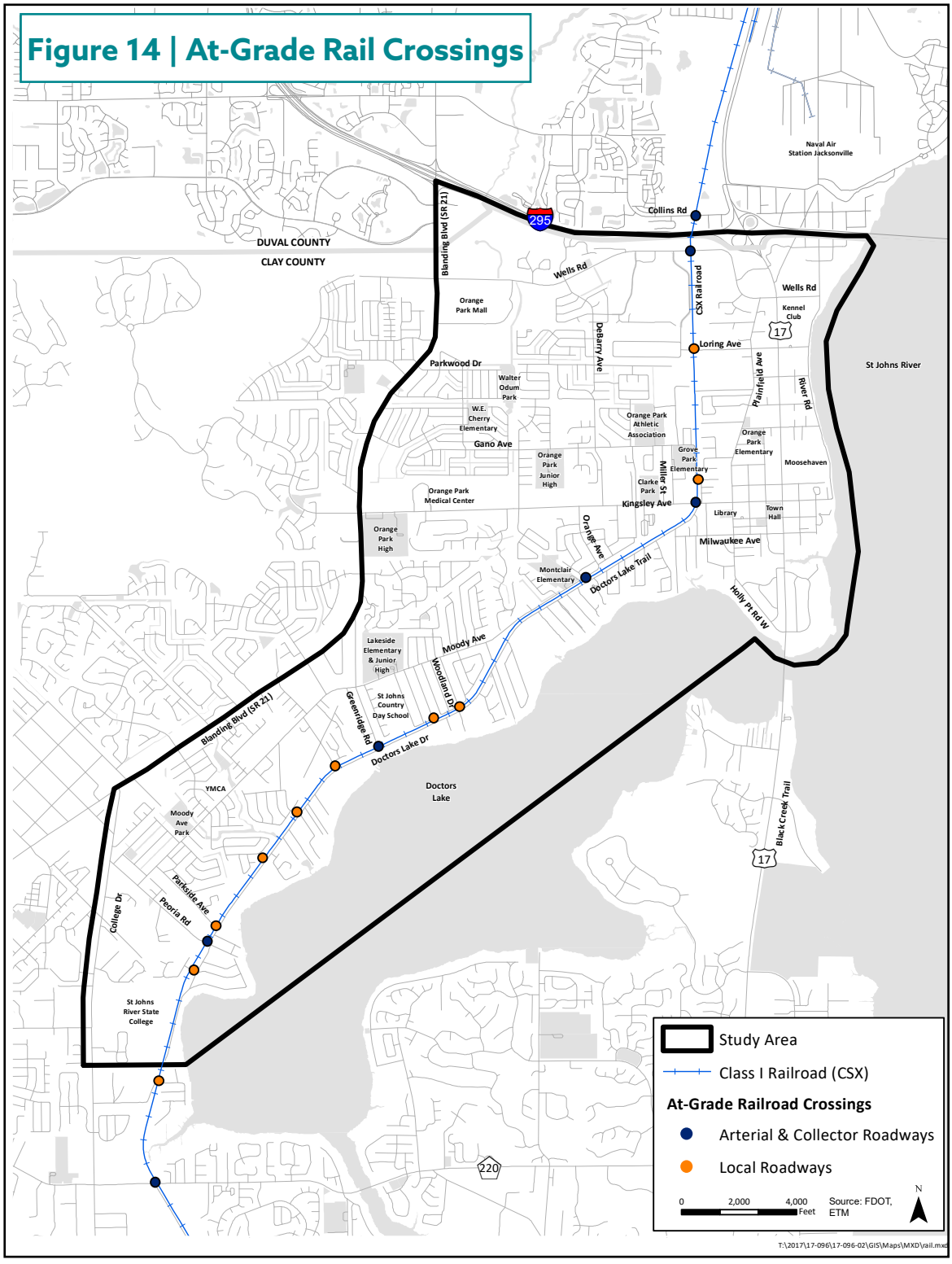
Figure 13 | Traffic Signals on Major Roadways



T:\2017\17-096\17-096-02\GIS\Maps\MXD\traffic_signal_locations.mxd

At-Grade Rail Crossings - An active CSX rail line crosses north-south through the study area, from north of I-295, across Wells Road and SR 244/Kingsley Avenue, along Doctors Lake Drive and along the St. Johns River State College to the south. The rail line contributes to poor east-west roadway connectivity as there are limited opportunities for at-grade roadway crossings over the rail line. *Figure 14* displays at-grade rail crossings within the study area.

Figure 14 | At-Grade Rail Crossings



Pedestrian and Bicycle Network

As contained in the Bicycle and Pedestrian Sub-Area Plan, *Figures 15 and 16* display the area's existing system of pedestrian and bicycle infrastructure, respectively. Within the study area, the existing system is comprised of approximately five miles of multi-use trails (Doctors Lake Trail and Black Creek Trail), five miles of buffered bike lanes (along SR 224/Kingsley Avenue), seven miles of non-buffered bike lanes (along portions of Wells Road, US 17//Park Avenue and College Drive) and 100 miles of sidewalks.

While the sidewalk network is substantial in places, as seen on *Figure 15*, significant gaps in connectivity exist within the network. Sidewalks generally exist along both sides of US 17/Park Avenue north of Smith Street and one side of US 17/Park Avenue south of Smith Street. Sidewalks are also located along most of Wells Road and along SR 224/Kingsley Avenue. There are several locations with short sidewalk gaps including, but not limited to, three gaps on US 17/Park Avenue between Wells Road and I-295, two on Wells Road (near Eldridge Avenue and at the CSX rail line), two along Doctors Lake Drive near the CSX rail line and one on College Drive.

Doctors Lake Trail


SR 224 / Kingsley Avenue

Figure 15 | Existing Pedestrian Facilities

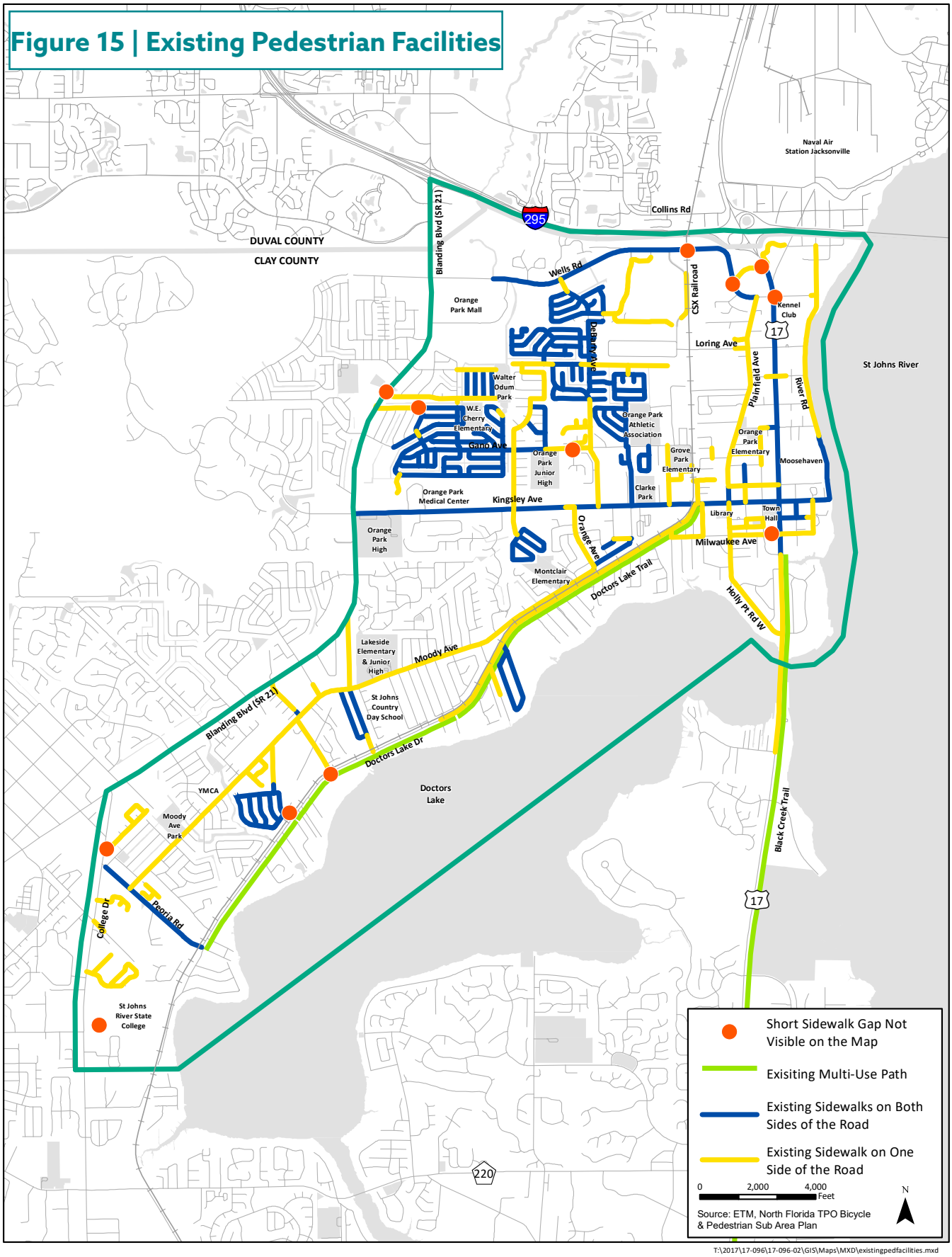


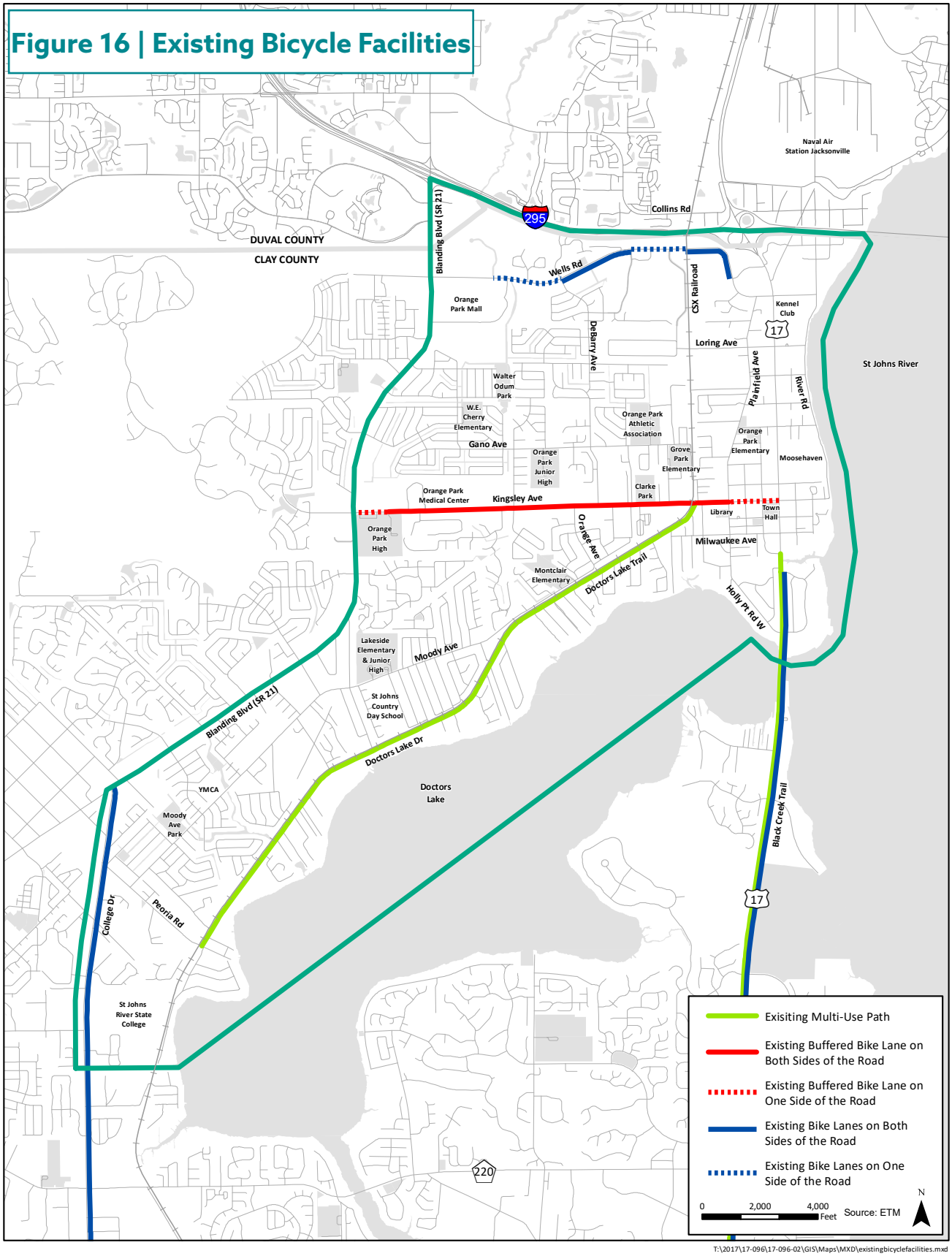
Figure 16 shows that the area generally lacks appropriate bicycling infrastructure that could support users of varying abilities. As noted in the Bicycle and Pedestrian Subarea Plan, the connectivity of a safe bicycling infrastructure and a lack of connection between the Black Creek Trail and the Doctors Lake Trail are primary concerns.

Although SR 224/Kingsley Avenue has buffered bike lanes on most of the roadway, there are two bicycle lane gaps on SR 224/Kingsley Avenue. One is westbound from the east entrance of Orange Park High School to Blanding Boulevard (approximately 1,200 ft.) and the second is eastbound from Plainfield Avenue to US 17 (approximately 1,700 ft.).

Several bicycle lane gaps exist on Wells Road, as follows:

- Eastbound and westbound from Eldridge Avenue to US 17 (~1,600 ft.)
- Westbound from just east of the railroad track to Corporate Way (~800 ft.)
- Westbound from the Orange Park Northway signal to Blanding Boulevard (~2,600 ft.)
- Eastbound briefly at/near the railroad tracks (~150′)
- Eastbound from Blanding Boulevard to the signal at the Waterford Apartments (~4,000 ft.)

Figure 16 | Existing Bicycle Facilities



T:\2017\17-096\17-096-02\GIS\Maps\MXD\existingbicyclefacilities.mxd

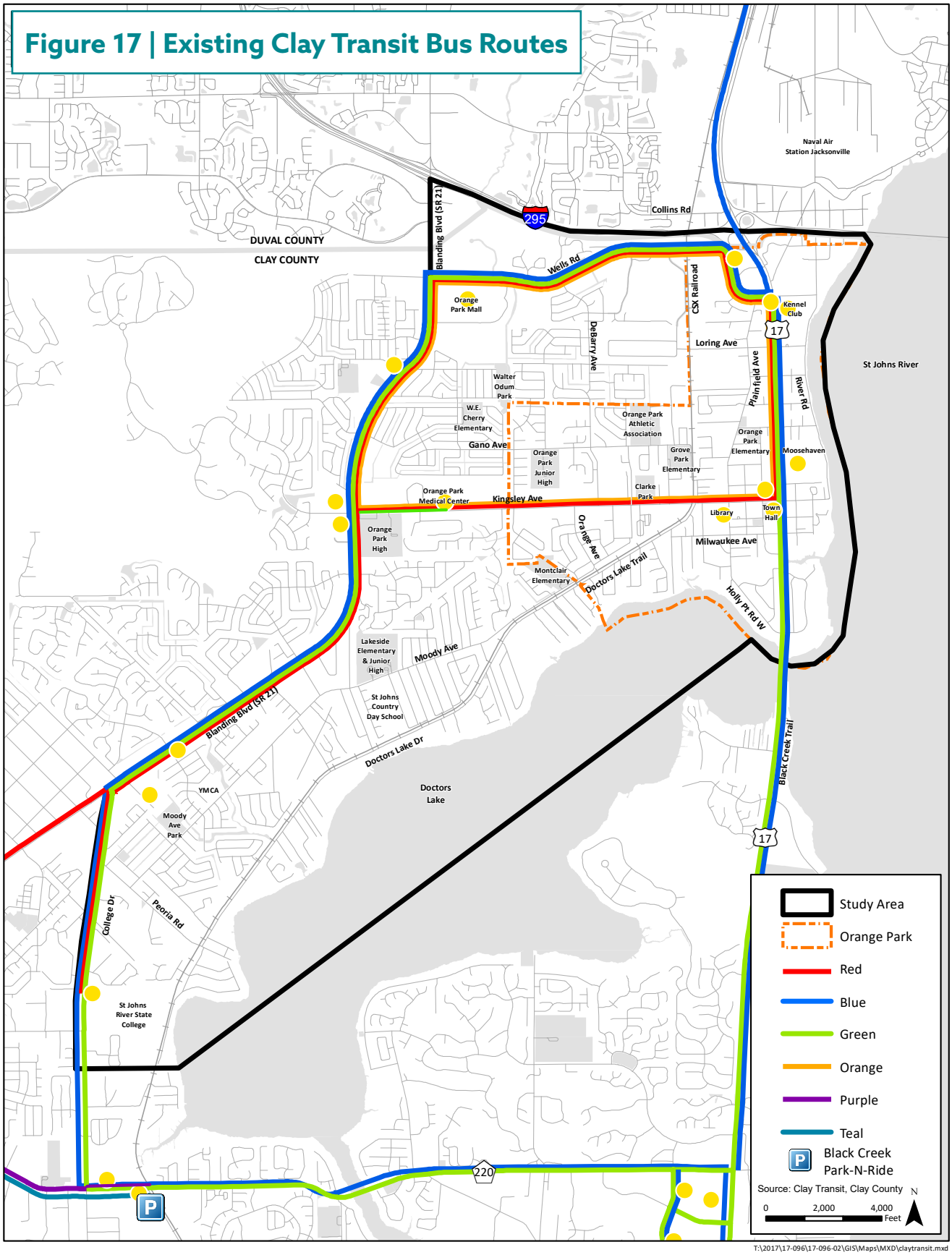
Public Transportation

Public transit within the study area is mainly provided by Clay Transit, a division of the Clay County Council on Aging (COA), and the Jacksonville Transportation Authority (JTA). Transit service is also provided by Ride Solutions, a public transit system based in Putnam County. Although three bus systems offer multiple bus routes overall, many routes offer very infrequent service and stops. As a result, there may be limited potential for coordinated connections between these bus systems. *Figures 17 and 18* illustrate existing bus routes and major bus stops.

Clay Transit Vehicle

Clay Transit operates four bus routes within the study area (the Orange, Red, Green and Blue Lines) that travel and stop along the area's major corridors, providing service to multiple activity centers. The Orange Line circulates around the northern portion of the study area hourly between 9:30 a.m. to 3:45 p.m. weekdays, offering six trips a day. The Red Line serves as a major connection between the study area and Middleburg approximately 5:50 a.m. to 7:15 p.m. weekdays, at three- to four-hour frequencies, offering seven one-way trips a day (approximately three round trips a day). The Blue and Green Lines connect the study area to Green Cove Springs.

Figure 17 | Existing Clay Transit Bus Routes



Both bus routes travel along a similar alignment except that the Blue Line serves NAS Jacksonville, a major employer just north of the study area. The Blue Line operates approximately 6 a.m. to 4 p.m. weekdays at five-hour frequencies, offering two roundtrips a day. The Green Line operates approximately 5:30 a.m. to 7:15 p.m. weekdays at two- to three-hour frequencies, with a five-hour midday gap, and offers four round trips a day. There is also a Green Line Saturday route.

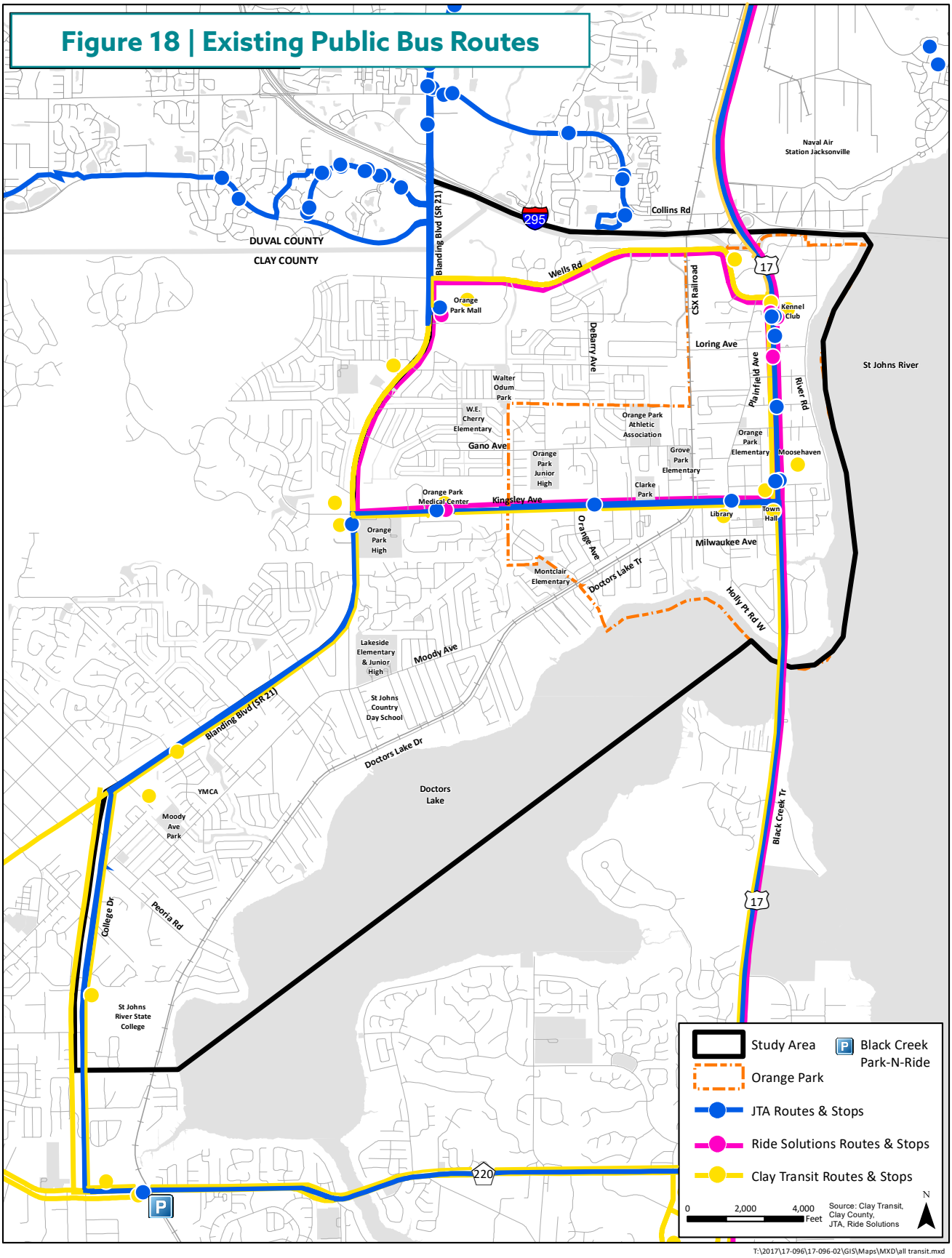
JTA bus routes link the study area to Jacksonville. Connections between Clay Transit and JTA bus routes, within the study area, are primarily made at the Orange Park Mall.

The Park-Blanding/Route 5 operates daily between the Orange Park Mall and downtown Jacksonville, traveling along SR 21/Blanding Boulevard. The Regional Express/Route 201 offers four round trips weekdays between downtown Jacksonville and the Black Creek Park & Ride lot, located just south of the study area in Clay County. The route travels along US 17/Park Avenue, SR 21/Blanding Boulevard and SR 224/Kingsley Avenue with limited stops. JTA's Oakleaf Community Shuttle/Route 301 provides service to nearby employers and retail in Jacksonville's OakLeaf Plantation area.

JTA Bus Stop at Orange Park Mall
(with Clay Transit stop in the background)

Ride Solutions has two bus routes that make stops within the study area. The Orange Park Commuter Route travels between Palatka (in Putnam County) and the Orange Park Mall along US 17/Park Avenue and other major roadways within the study area, with two one-way weekday trips. The Palatka-Jacksonville Greyhound route, a partnership with Greyhound, makes two one-way trips daily between Palatka and downtown Jacksonville, traveling along US 17/Park Avenue within the study area.

Figure 18 | Existing Public Bus Routes

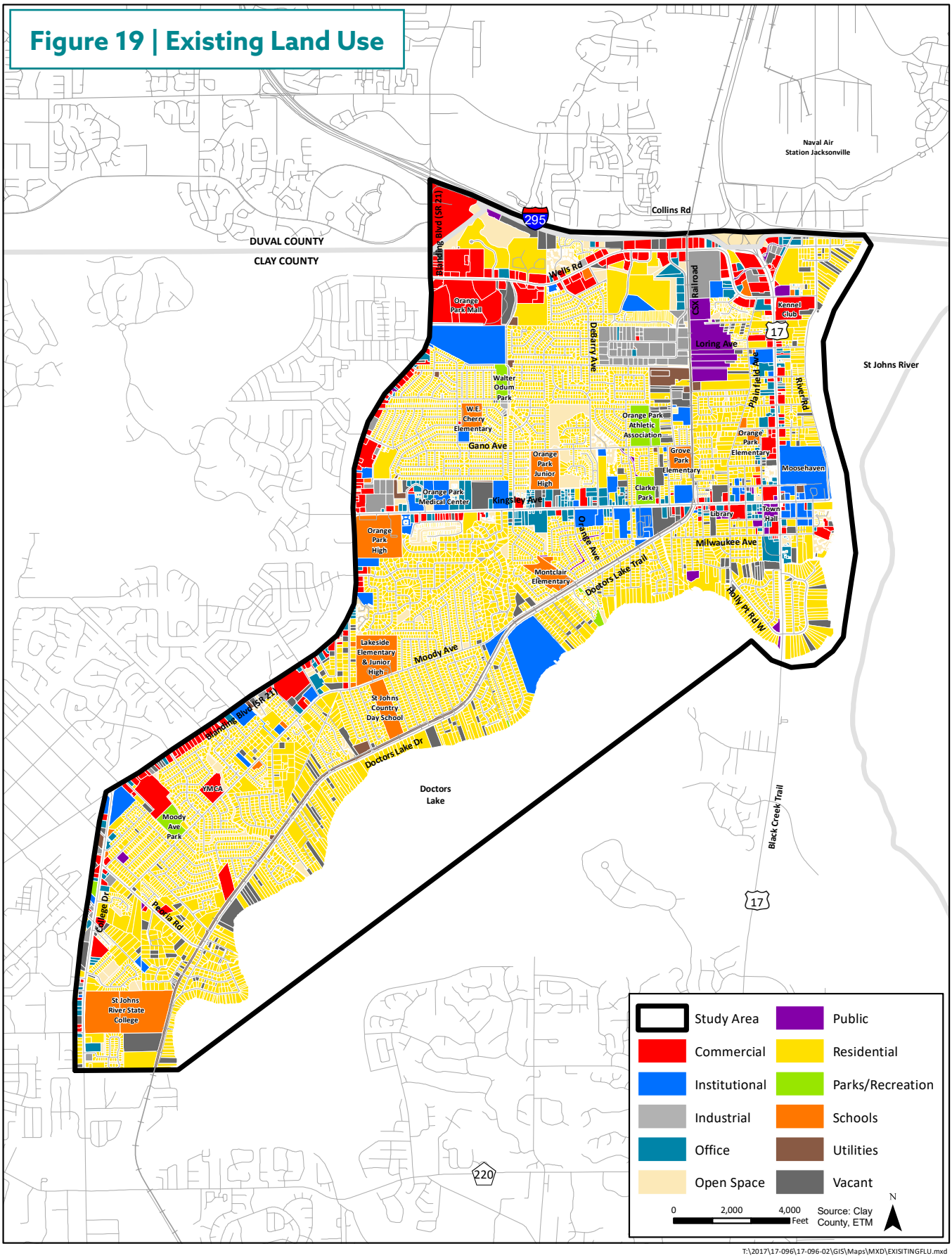


Land Use

Figure 19 illustrates existing land use. Study area land is mostly built out and generally consists of commercial, office and institutional uses along the major, linear roadway corridors of US 17/Park Avenue, SR 224/Kingsley Avenue, Wells Road and SR 21/Blanding Boulevard. These uses can be described as a mixture of regional, community and local uses. The predominant character of much of this development is medical office/use related to medical care, treatment or rehabilitation. The medical center and surrounding medical uses support multiple assisted living facilities[8] . Regional commercial uses, such as hotels, interstate restaurants, warehouse/distribution and regional entertainment are generally located near I-295. Although residential uses predominantly border collector and local streets, some residential use borders portions of the major corridors. Pockets of community services (such as parks, public/government and assisted living) and industrial uses are located throughout.

[8]Orange Park Commercial Use Plan/Expansion Study as part of the 2014 Community Planning Technical Assistance Grant, prepared by SLF Consulting, Inc., May 2015

Figure 19 | Existing Land Use



T:\2017\17-096\17-096-02\GIS\Maps\MXD\EXISITINGFLU.mxd

Traffic Volume and Capacity

This section describes traffic volumes and truck percentages from existing available data sources: FDOT District Two Level of Service Report, FDOT Florida Traffic Information CD and the North Florida TPO's website compilation of traffic counts. In addition to traffic volumes and truck percentages, roadway level of service was calculated using generalized service volume tables, found in FDOT's Quality/Level of Service Handbook. A roadway segment's level of service generally describes roadway conditions from the driver's perspective and is represented by the letters A through F. Generally, level of service A (LOS A) describes primarily free flow travel speed conditions and LOS F characterizes extremely low travel speeds or congested conditions.

Figure 20 shows annual average daily traffic (AADT) and daily level of service within and near the study area.

- **AADT and Truck Percentages –**
  - Within the study area, US 17/Park Avenue carries the highest number of vehicles, ranging from approximately 53,500 to 84,500 vehicles, and the highest percentage of truck traffic, approximately five to six percent of the AADT.
  - SR 224/Kingsley Avenue, Wells Road and College Drive carry traffic volumes ranging from approximately 20,100 to 31,000 vehicles.
  - Remaining traffic volumes range from approximately 1,510 to 10,500 vehicles and include roadways such as Plainfield Avenue, DeBarry Avenue, Doctors Lake Drive, Bellair Boulevard, Moody Avenue and Peoria Road.

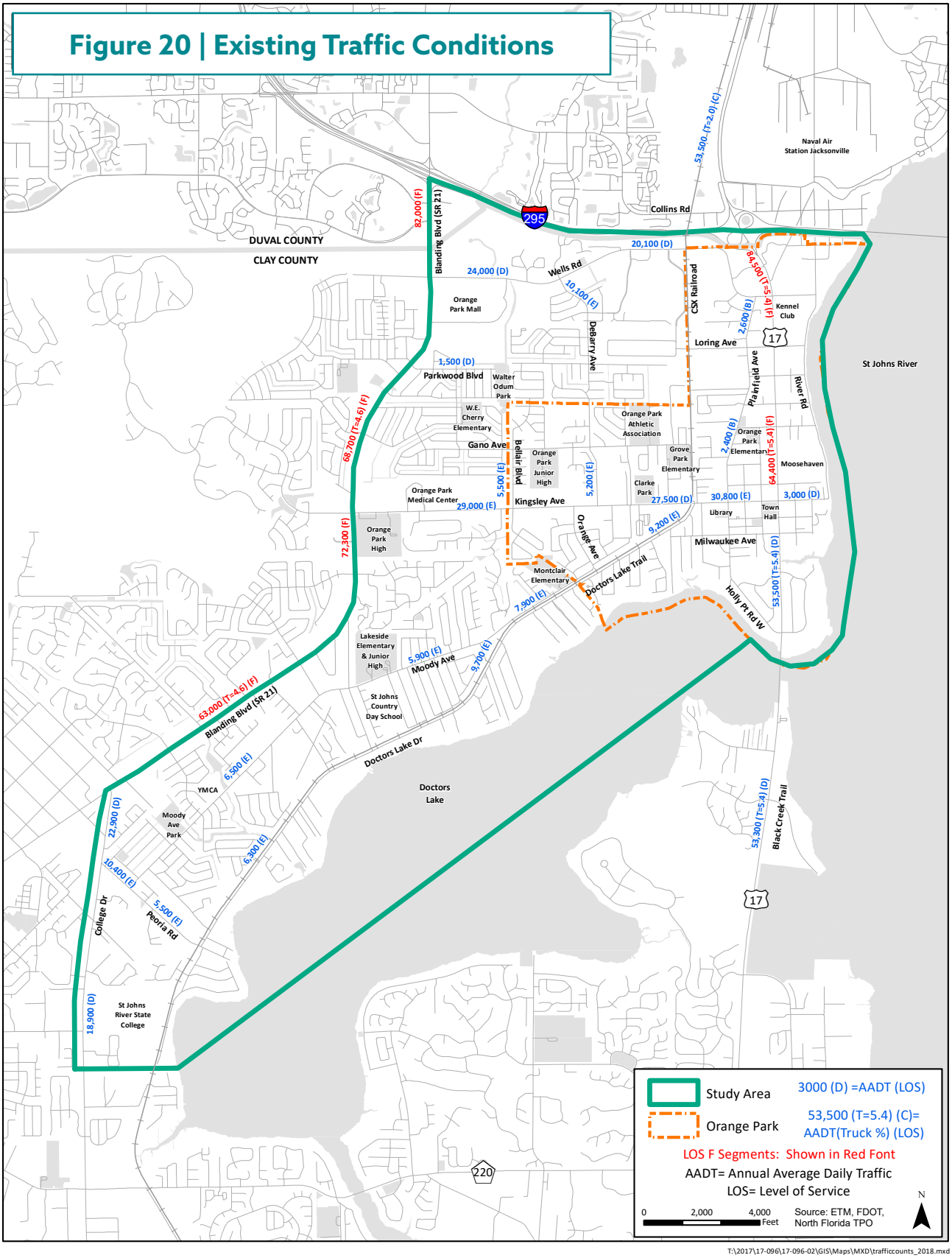
- **Level of Service –**
  - A roadway segment's level of service standard refers to an acceptable level of service target. For planning purposes, comparing existing level of service with the adopted level of service standard, on a daily basis, provides an indication of roadway performance.
  - Within the study area, US 17/Park Avenue is below the adopted level of service north of SR 224/Kingsley Avenue (LOS F) and south of I-295 (LOS F). On US 17/Park Avenue the adopted (minimum acceptable) level of service standard is LOS D.
  - DeBarry Avenue north of SR 224/Kingsley Avenue and Doctors Lake Drive south of SR 224/Kingsley Avenue are both below their adopted level of service standard, LOS D.

Based on a review of the local comprehensive plan and EAR documents, the following study area roadways are constrained. Generally, constrained roadways cannot be widened significantly beyond the current number of lanes due to physical, environmental, political and/or severe economic constraints.

- US 17/Park Avenue from I-295 to CR 220/Doctors Inlet Road (south of the study area)
- Plainfield Avenue from Wells Road to SR 224/Kingsley Avenue
- Doctor's Lake Road from Greenridge Road to the Town limits

Although not part of the study area, SR 21/Blanding Boulevard from Collins Road (north of the study area in Duval County) to College Drive, is also constrained.

Figure 20 | Existing Traffic Conditions



T:\2017\17-096\17-096-02\GIS\Maps\MXD\trafficcounts_2018.mxd

Crash Analysis

To gain a more complete understanding of traffic circulation within the study area, the study team performed an analysis and mapping of vehicular, pedestrian and bicycle crashes. Using Signal Four Analytics data, analysis was performed on crashes reported from January 1, 2015 through December 31, 2017. Signal Four Analytics provides up-to-date crash report data through an interactive, web-based system. The system is funded by the State of Florida and developed and maintained by the GeoPlan Center at the University of Florida.

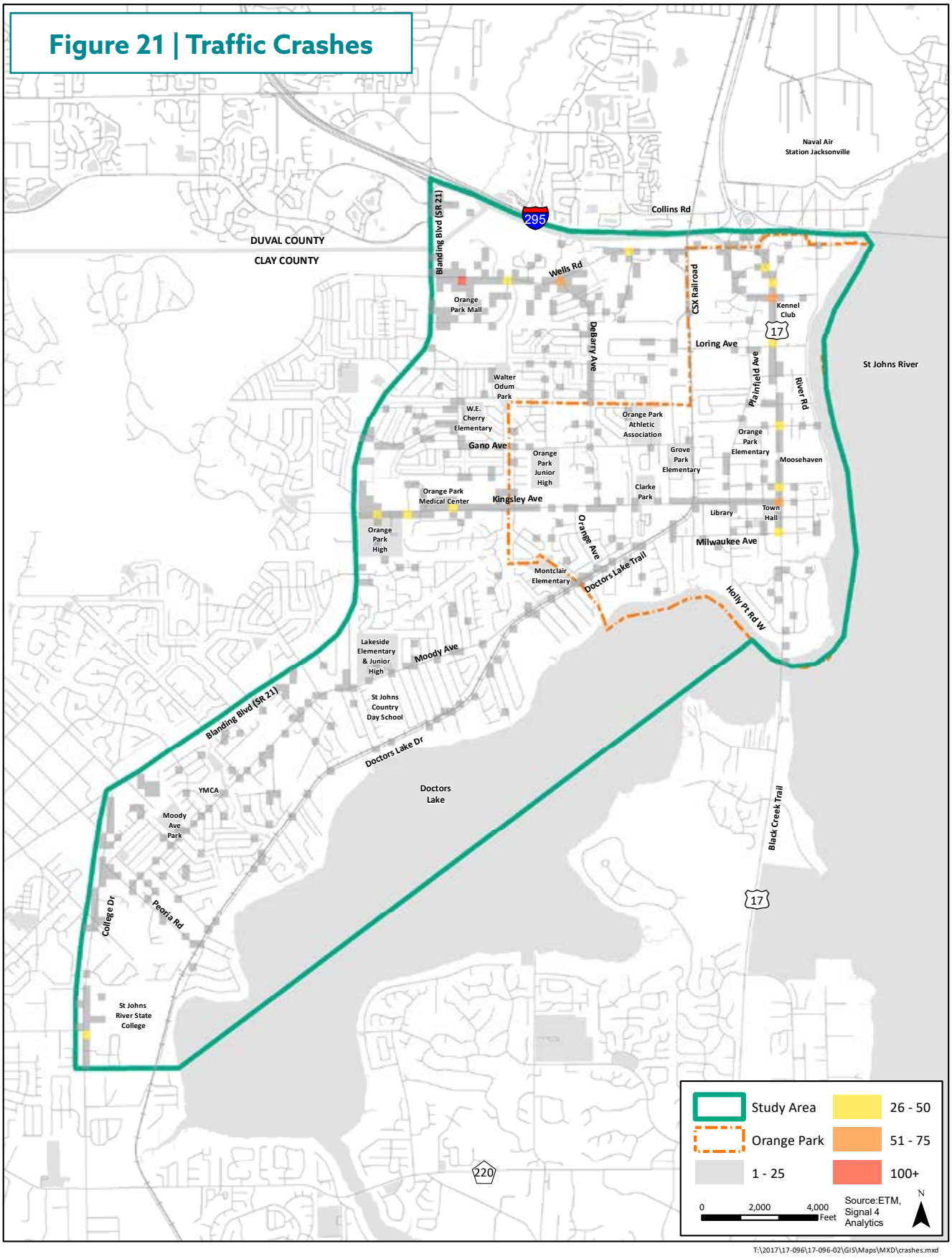
At the time of this analysis, over 2,000 total crashes were reported during the three-year period. Over 350 (17 percent) involved injuries and five involved fatalities. Many of the reported crashes were rear-end (28 percent) and head-on (13 percent) crashes. Approximately, one-half the total reported crashes occurred on dry pavement (56 percent) during clear weather (49 percent) and daylight (48 percent) conditions[9]. Eleven percent (225 crashes) of total crashes were distraction related. A relatively small percentage of crashes were alcohol or drug related, two and one percent, respectively.

Figure 21 shows general locations where crashes are concentrated across the study area. Orange squares, representing approximately 51 to 75 crashes each, are located at Wells Road & DeBarry Avenue, US 17/Park Avenue & Wells Road and US 17/Park Avenue & SR 224/Kingsley Avenue. The highest concentration of crashes within the study area (shown in red) is located near the Orange Park Mall. A closer examination of these crashes revealed that many occurred in nearby parking lots.

Severe crashes, pedestrian/bicycle crashes and highest crash intersections are described on the following pages. Appendix C contains more detailed crash data.

[9] For these categories (i.e., pavement, weather and light conditions) many crashes in the crash database were reported as "unknown" or "other" conditions. Smaller percentages reported wet pavement, rain or dark lighting conditions, seven percent, five percent and twelve percent, respectively

Figure 21 | Traffic Crashes



Severe Crashes

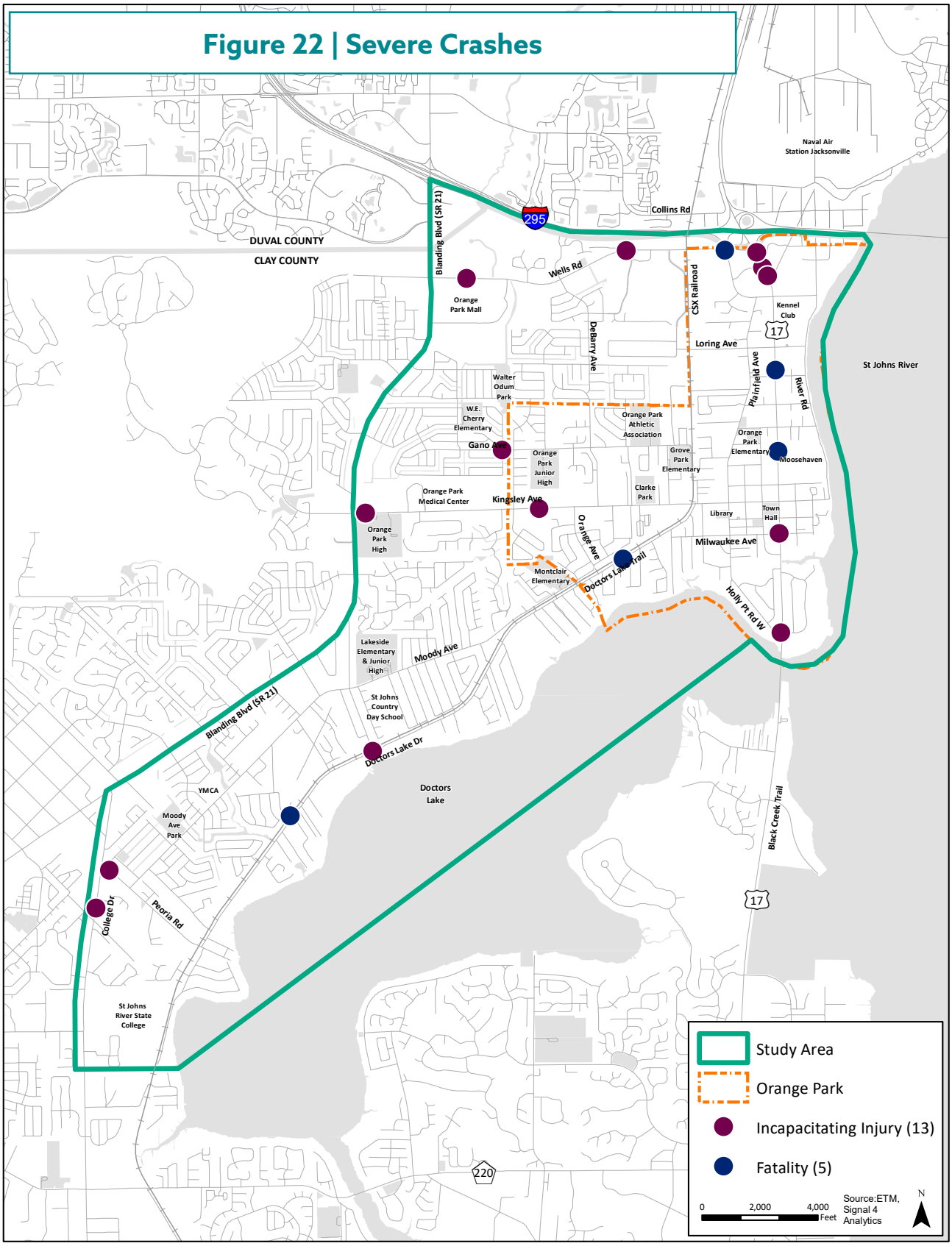
Figure 22 illustrates incapacitating injury and fatal crashes, the most severe crashes. Incapacitating injury crashes involve injuries that require at least one person to be transported to a medical facility for treatment, typically by Emergency Medical Services. Fatal crashes result in at least one death.

A total of 18 incapacitating injury and fatal crashes occurred over the analysis period. Six of these most severe crashes occurred on US 17/Park Avenue (33 percent). Other roadways with two or more severe crashes include Wells Road, Doctors Lake Drive and SR 244/Kingsley Avenue.

Of the 18 incapacitating injury and fatal crashes, a total of six were pedestrian related (33 percent), two were bicycle related (11 percent) and three were motorcycle related (17 percent)[10]. Nine severe crashes (50 percent) occurred during daylight conditions, while six (33 percent) occurred during dark conditions (four dark-lighted and two dark-not lighted). Two of the 18 severe crashes were alcohol related (11 percent) and three were distraction related (17 percent). One fatal crash involved a train at an at-grade rail crossing at Doctors Lake Drive.

[10]The crash types for four incapacitating injury crashes were reported as "other" in the crash database however individual crash reports for these four crashes revealed they were pedestrian/bicycle related.

Figure 22 | Severe Crashes



T:\2017\17-096\17-096-02\GIS\Maps\MXD\Incapacitating Injury and Fatal Crashes.mxd

Pedestrian and Bicycle Crashes

During the analysis period 26 pedestrian and 11 bicycle crashes occurred within the study area, 37 total pedestrian/bicycle crashes. Eighty-six percent of these crashes involved an injury or fatality (one fatal crash and 31 injury crashes). Pedestrian-only crashes (i.e., the one fatal crash and 23 of the 31 injury crashes) tend to be even more severe as 92 percent of pedestrian crashes involved an injury or fatality.

As a reference, during this same period, 2,142 crashes of any type occurred within the study area. While pedestrian and bicycle crashes accounted for almost two percent of all crashes, they accounted for nine percent of all injury crashes, 54 percent of all incapacitating injury crashes and 20 percent of all fatal crashes.

The geographic distribution of pedestrian and bicycle crashes in the study area is shown in *Figure 23*. Four roadways had more than one pedestrian or bicycle crash in the same general area: US 17/Park Avenue, SR 224/Kingsley Avenue, Wells Road and College Drive. Of the four roadways, SR 224/Kingsley Avenue near the Orange Park Medical Center contained the greatest concentration of pedestrian and bicycle crashes (eight pedestrian and bicycle crashes per mile) and the greatest concentration of pedestrian crashes per mile (four pedestrian crashes per mile).

- US 17/Park Avenue – Eight pedestrian and bicycle crashes were reported along US 17/Park Avenue between Eldridge Avenue and McIntosh Avenue (~1.5 miles), approximately five pedestrian and bicycle crashes per mile. In terms of crash severity for pedestrian and bicycle crashes on US 17/Park Avenue, there was one fatal pedestrian crash located south of Stiles Avenue and one incapacitating injury pedestrian crash located south of Eldridge Avenue. Six of the eight pedestrian and bicycle crashes (75 percent) on US 17/Park Avenue involved vehicles turning right from side streets or driveways onto or from US 17/Park Avenue. For the other two crashes, the pedestrians were reported to have darted across the roadway.

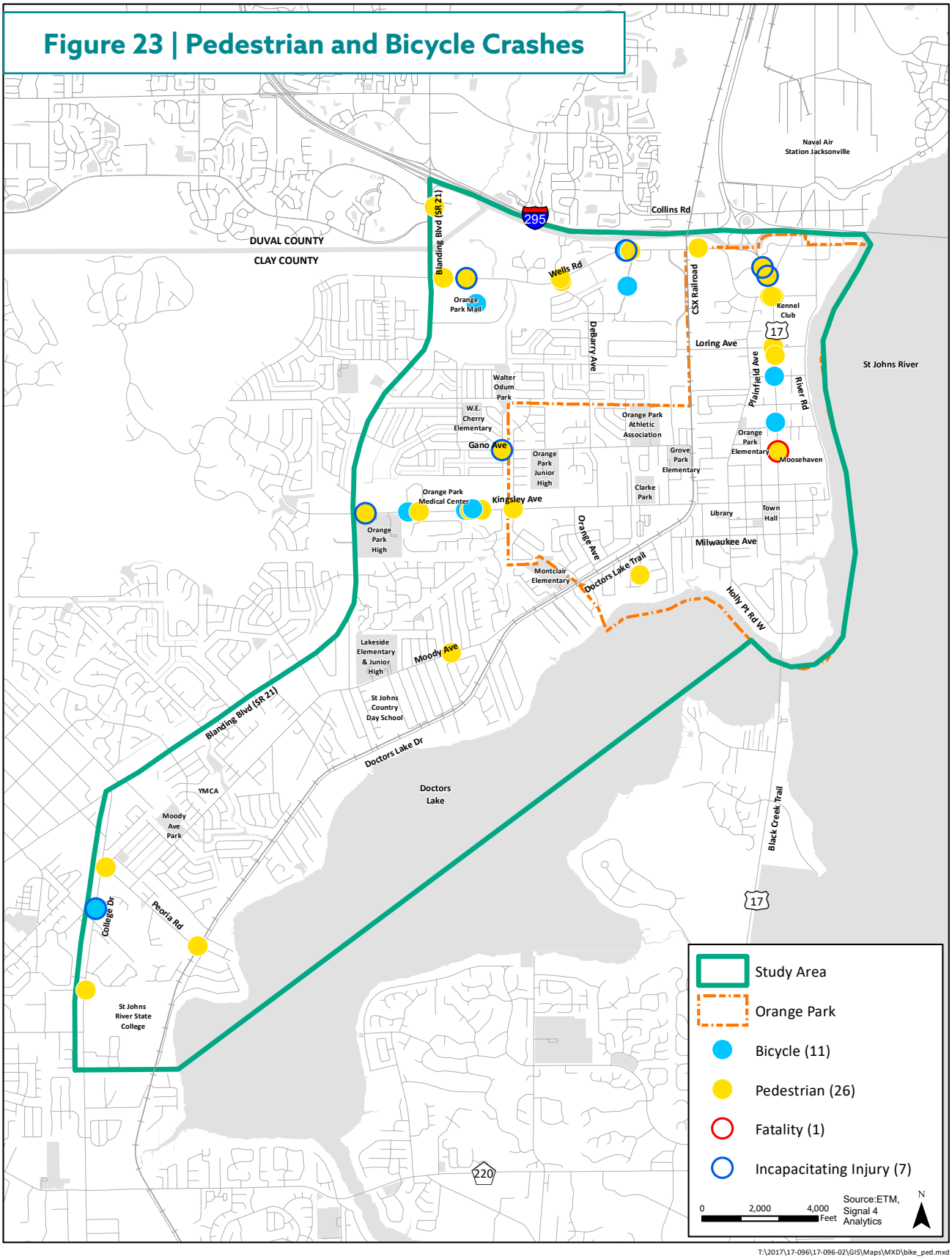
- SR 224/Kingsley Avenue – Eight pedestrian and bicycle crashes were reported along SR 224/Kingsley Avenue generally between SR 21/Blanding Boulevard and Village Way/Bellair Boulevard (~1 mile), approximately eight pedestrian and bicycle crashes per mile. Five of the eight pedestrian and bicycle crashes involved right turning vehicles. Four of the five right-turning crashes involved bicyclists traveling the wrong way (against traffic). It is unknown if they were using the bike lane or not.

- Wells Road – Eight pedestrian and bicycle crashes were reported along Wells Road between SR 21/Blanding Boulevard and Eldridge Avenue (~2 miles), approximately four pedestrian and bicycle crashes per mile.

- College Drive – Two pedestrian and bicycle collisions occurred along College Drive between Peoria Road and Peoria Cemetery Road (~0.8 miles), approximately two pedestrian and bicycle crashes per mile.

The bike/pedestrian crashes are plotted on a Collision Diagram, located in Appendix C, illustrating more specific crash locations, direction of travel and general crash characteristics. Most of the pedestrian and bicycle crashes occurred during the day and on dry pavement.

Figure 23 | Pedestrian and Bicycle Crashes



Intersection Analysis

Crashes were evaluated at the signalized intersections on four major roadways in the study area: US 17/Park Avenue, SR 224/Kingsley Avenue, Wells Road and College Drive. These were identified as being the highest crash locations in the study area. The first step in this analysis was to identify collisions from approximately 500 feet on each intersection approach.

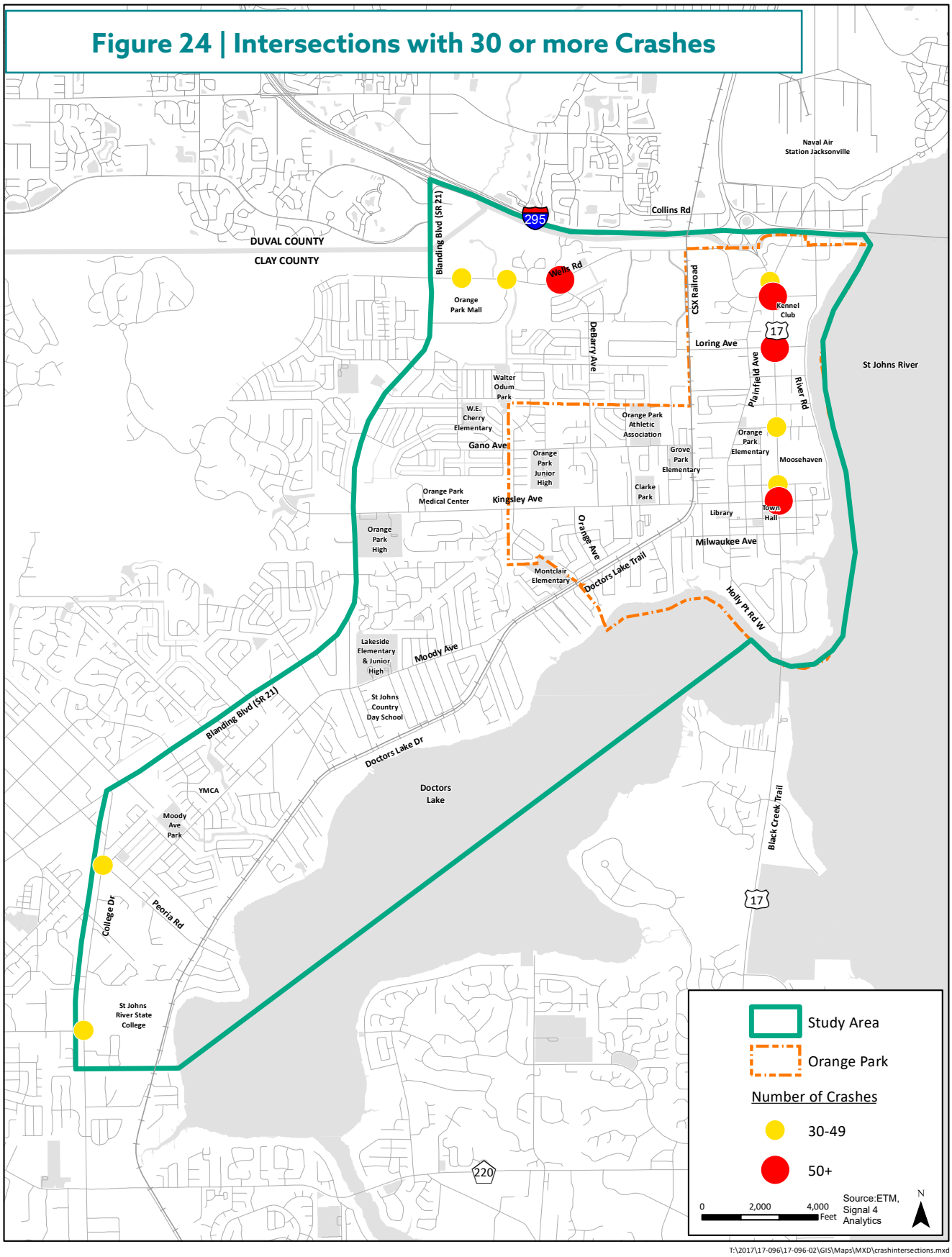
Crash Frequency (2015 – 2017)

Intersections with the highest number of crashes during the analysis period (years 2015 through 2017) are shown in *Figure 24* and listed below from highest to lowest. All eleven intersections have more than 30 crashes and the highest four intersections have 50 or more crashes. US 17/Park Avenue has the most intersections with 30 or more crashes (six intersections), followed by Wells Road (three intersections) and College Drive (two intersections).

1. Wells Road at DeBarry Avenue - 66 crashes
2. US 17 at Wells Road - 64 crashes
3. US 17 at Kingsley Avenue – 60 crashes
4. US 17 at Loring Avenue - 51 crashes
5. Wells Road at Retail Stores (At Home / Home Depot) – 40 crashes
6. Wells Road at Orange Park Northway – 38 crashes
7. US 17 at Stiles Avenue - 36 crashes
8. US 17 at Old Orange Park Road – 35 crashes
9. College Drive at Old Jennings Road – 34 crashes
10. US 17 at McIntosh Avenue – 32 crashes
11. College Drive at Peoria Road – 31 crashes

In addition to the 11 intersections listed, an initial review of the crash data revealed 56 crashes at the SR 224/Kingsley Avenue and Orange Park High School (west entrance)/Lowes intersection. Upon further review of the 56 crashes that were depicted at the Orange Park High School signal, 35 of the crashes were in a parking lot and 21 crashes occurred at the intersection.

Figure 24 | Intersections with 30 or more Crashes



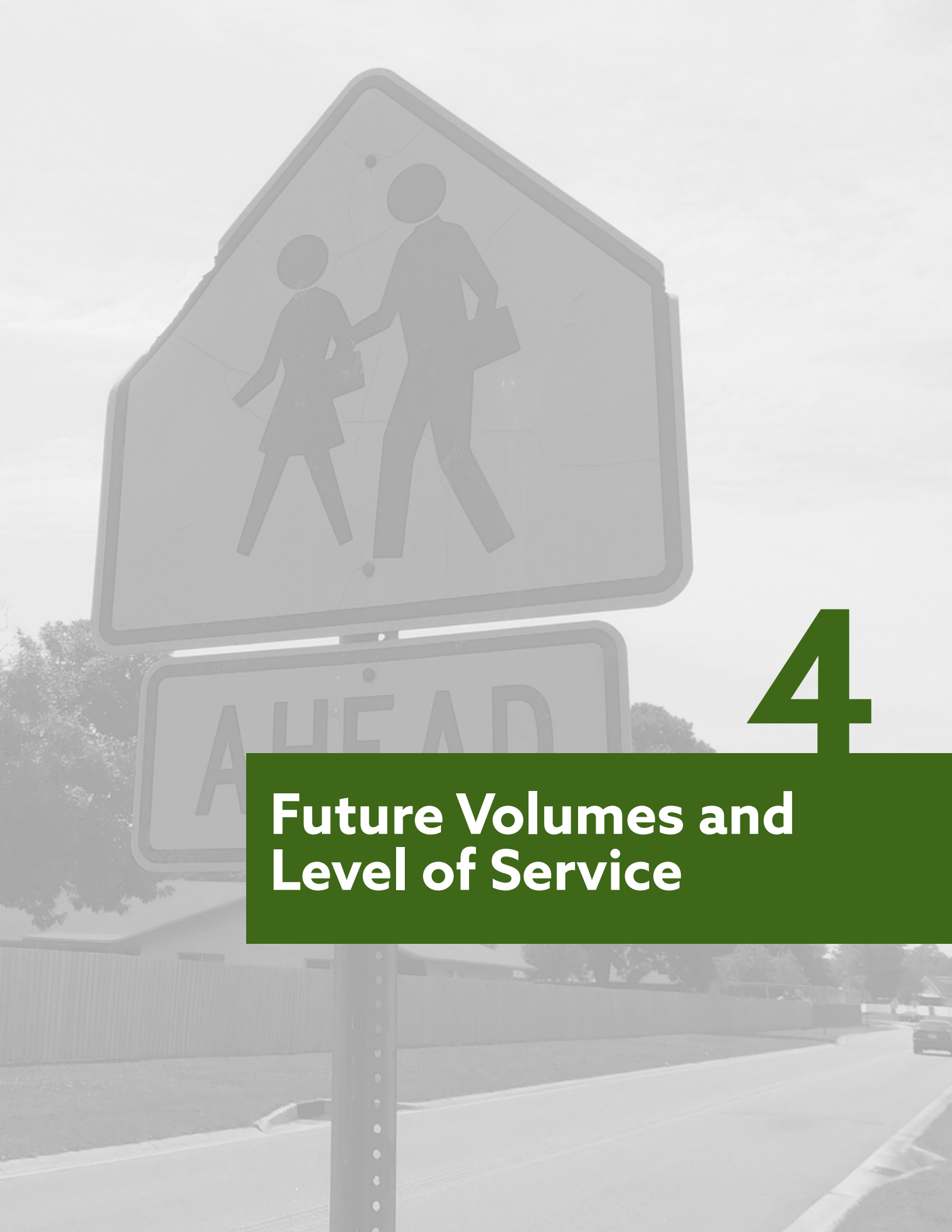
Crash Rates

Table 2 shows a ranking for each intersection by crash rate and by crash frequency. A crash rate (per millions of entering vehicles) was computed for each intersection with 30 or more crashes. Wells Road at DeBarry Avenue has the highest crash rate (1.056) and the highest crash frequency (66).

Table 2 | Highest Crash Intersections

Intersection	Crash Rate	Crash Rate Rank	Number of Crashes (Frequency)	Crash Frequency Rank
Wells Road at DeBarry Avenue	1.056	1	66	1
College Drive at Old Jennings Road	0.954	2	34	9
College Drive at Peoria Road	0.635	3	31	11
Wells Road at Retail Stores (At Home / Home Depot)	0.580	4	40	5
Wells Road at Orange Park Northway	0.551	5	38	6
US 17/Park Avenue at SR 224/ Kingsley Avenue	0.384	6	60	3
US 17/Park Avenue at Loring Avenue	0.360	7	51	4
US 17/Park Avenue at Wells Road	0.290	8	64	2
US 17/Park Avenue at McIntosh Avenue (at Moosehaven)	0.284	9	32	10
US 17/Park Avenue at Stiles Avenue	0.251	10	36	7
US 17/Park Avenue at Old Orange Park Road	0.186	11	35	8

Source: ETM, 2018



4

Future Volumes and Level of Service

4. Future Volumes and Level of Service

As previously mentioned, land is generally built out within most of the study area, particularly within the Town. Much of Clay County's future population and employment growth is anticipated to occur west and south of the study area. The First Coast Expressway is a planned, limited-access roadway that will link these growth areas with Duval and St. Johns Counties.

The study team prepared future traffic volumes and level of service for the study area. After a review of forecast volumes from the region's travel demand model, adjusted volume estimates were prepared using the following methodology.

Adjusted volume estimates were prepared by applying forecast growth rates to counted traffic volumes. For state roadways, forecast growth rates were calculated using year 2020 and year 2035 volume forecasts contained in the FDOT District Two Level of Service Report. For other study area roadways, forecast growth rates were calculated using year 2020 and year 2035 forecasts from the Northeast Florida Regional Planning Model (NERPM), the region's travel demand model. Level of service was calculated using the most recent FDOT Quality/Level of Service Handbook Tables.

Tables 3 - 4 and *Figures 25 - 26* describe year 2020 and 2035 volume and level of service estimates within and near the study area. Traffic volumes are generally expected to increase an average of one percent annually on major roadways within the study area. In the short term, in year 2020, level of service on US 17/Park Avenue south of SR 224/Kingsley Avenue is anticipated to fall below adopted service levels (below LOS D). In the longer term, in year 2035, level of service on SR 224/ Kingsley Avenue west of US 17/Park Avenue is expected to fall below adopted levels (below LOS E).

Based on forecast traffic volumes, the First Coast Expressway is expected to reduce traffic through the Town by approximately three percent. The First Coast Expressway is a multi-lane, limited access toll road located southwest of the study area that, once completed, will link Clay County with St. Johns and Duval Counties.

Table 3 | Future Traffic Volumes

Roadway Location		Existing AADT	2020 AADT	2035 AADT	Annual Percent Change [11]
Arterials (Major Roadways)					
US 17/Park Avenue	S of I-295	84,500	86,000	91,500	0.42%
US 17/Park Avenue	N of SR 224/ Kingsley Avenue	64,400	66,800	77,200	0.96%
US 17/Park Avenue	S of Milwaukee Avenue	53,500	57,700	73,600	1.69%
SR 224/Kingsley Avenue	W of US 17/Park Avenue	30,800	32,200	37,600	1.06%
SR 224/Kingsley Avenue	W of CSX Rail Line	27,500	28,600	32,700	0.92%
SR 224/Kingsley Avenue	W of Bellair Boulevard	29,000	30,200	34,500	0.92%
Wells Road	W of CSX Rail Line	20,100	20,500	23,300	0.78%
Wells Road	W of Orange Park N. Way	24,000	24,800	28,200	0.85%
Collectors					
Bellair Boulevard	N of SR 224/Kingsley Avenue	5,500	5,700	7,200	1.43%
College Drive	S of SR 21/Blanding Boulevard	22,900	23,500	28,800	1.21%
College Drive	N of Old Jennings Road	18,900	19,000	19,600	0.19%
DeBarry Avenue	N of SR 224/Kingsley Avenue	5,200	5,300	6,400	1.10%
DeBarry Avenue	S of Wells Road	10,100	10,400	12,900	1.30%
Doctors Lake Drive	S of SR 224/Kingsley Avenue	9,200	9,400	11,100	0.99%
Doctors Lake Drive	SW of Moody Avenue	9,700	9,950	12,200	1.21%
Doctors Lake Drive	NE of Peoria Road	6,300	6,500	8200	1.40%
Kingsley Avenue	E of US 17/Park Avenue	3,000	3,200	5,800	3.53%
Moody Avenue	SW of Doctors Lake Drive	5,900	5,950	6,200	0.26%
Moody Avenue	NE of Peoria Road	6,500	6,600	7,700	0.90%
Parkwood Drive	E of SR 21/Blanding Boulevard	1,500	1,600	2,500	2.73%
Peoria Road	SE of College Drive	10,400	10,600	12,500	0.97%
Peoria Road	SE of Moody Avenue	5,500	5,700	7,600	1.72%
Plainfield Avenue	S of Wells Road	2,600	2,700	3,300	1.26%
Plainfield Avenue	N of SR 224/Kingsley Avenue	2,400	2,500	2,900	1.00%

Source: FDOT District Two Level of Service Report; Northeast Florida Regional Planning Model (NERPM); ETM, 2018

[11] Estimated annual percent change from existing to year 2035.

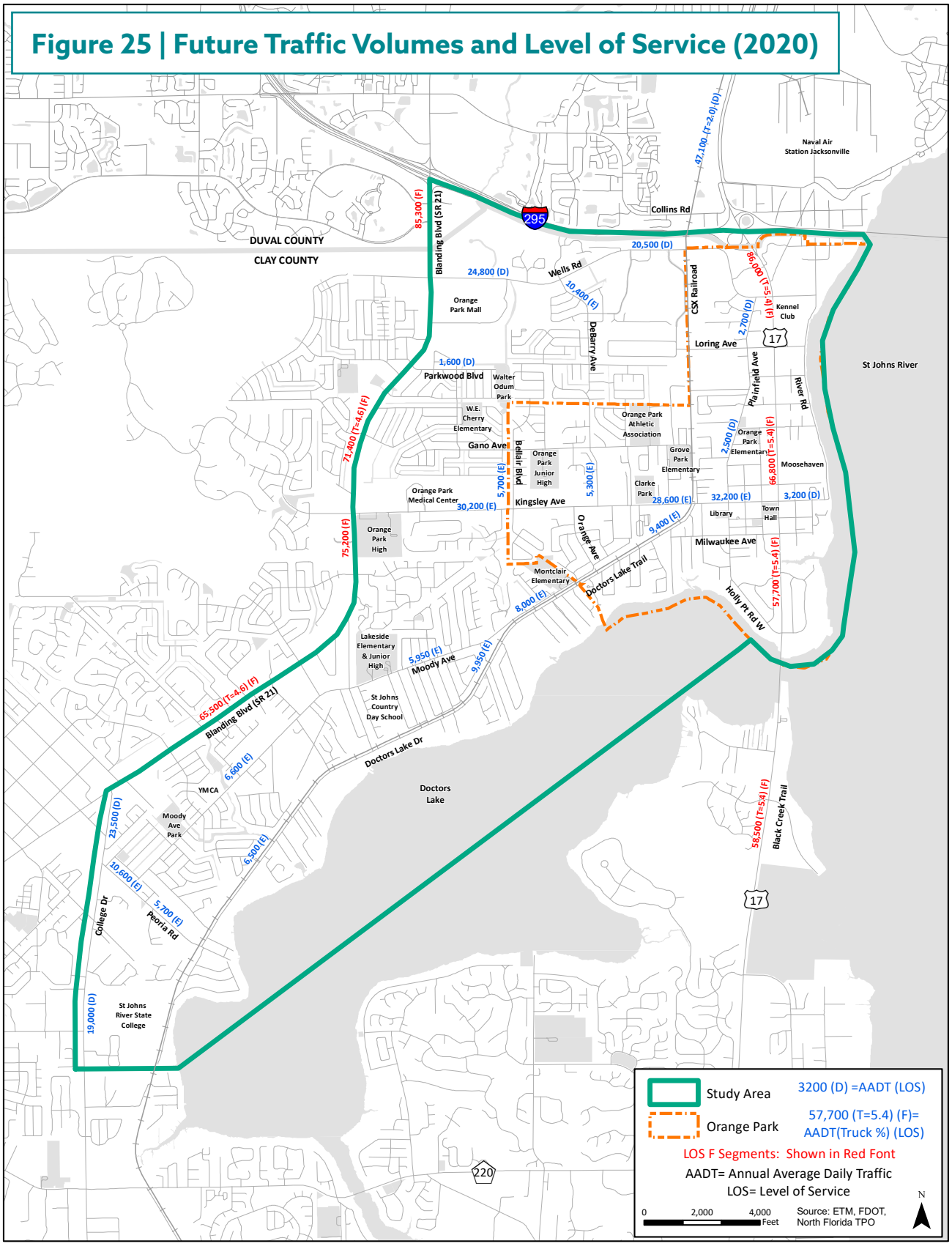
Table 4 | Future Level of Service (LOS) [15]

Roadway Location		LOS Standard	Existing LOS	2020 LOS	2035 LOS
Arterials (Major Roadways)					
US 17/Park Avenue	S of I-295	D	F	F	F
US 17/Park Avenue	N of SR 224/ Kingsley Avenue	D	F	F	F
US 17/Park Avenue	S of Milwaukee Avenue	D	D	**F**	**F**
SR 224/Kingsley Avenue	W of US 17/Park Avenue	E	E	E	**F**
SR 224/Kingsley Avenue	W of CSX Rail Line	E	D	**E**	**E**
SR 224/Kingsley Avenue	W of Bellair Boulevard	E	E	E	E
Wells Road	W of CSX Rail Line	E	D	D	D
Wells Road	W of Orange Park N. Way	E	D	D	**E**
Collectors					
Bellair Boulevard	N of SR 224/Kingsley Avenue	n/a	E	E	E
College Drive	S of SR 21/Blanding Boulevard	E	D	D	**E**
College Drive	N of Old Jennings Road	E	D	D	D
DeBarry Avenue	N of SR 224/Kingsley Avenue	D	E	E	E
DeBarry Avenue	S of Wells Road	n/a	E	E	E
Doctors Lake Drive	S of SR 224/Kingsley Avenue	D	E	E	E
Doctors Lake Drive	SW of Moody Avenue	E	E	E	E
Doctors Lake Drive	NE of Peoria Road	E	E	E	E
Kingsley Avenue	E of US 17/Park Avenue	n/a	D	D	**E**
Moody Avenue	SW of Doctors Lake Drive	E	E	E	E
Moody Avenue	NE of Peoria Road	E	E	E	E
Parkwood Boulevard	E of SR 21/Blanding Boulevard	n/a	D	D	D
Peoria Road	SE of College Drive	E	E	E	E
Peoria Road	SE of Moody Avenue	E	E	E	E
Plainfield Avenue	S of Wells Road	D	B	**D**	**D**
Plainfield Avenue	N of SR 224/Kingsley Avenue	D	B	**D**	**D**

Source: ETM, 2018

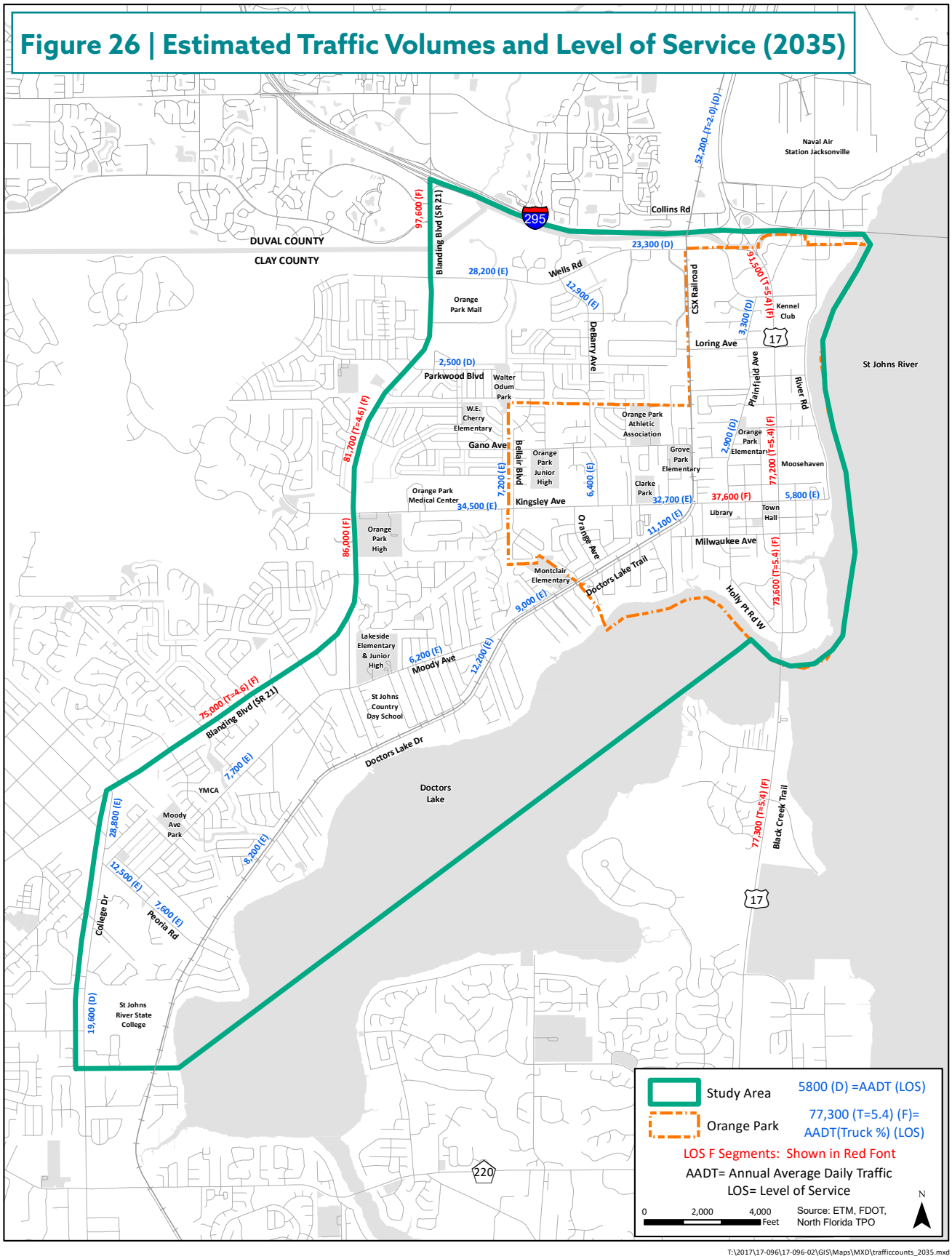
[15]Level of service below adopted service levels is shown as red. Decreasing level of service is shown as bold. N/A segments do not have a standard identified in the county or local comprehensive plan.

Figure 25 | Future Traffic Volumes and Level of Service (2020)



T:\2017\17-096\17-096-02\GIS\Maps\MXD\trafficcounts_2020.mxd

Figure 26 | Estimated Traffic Volumes and Level of Service (2035)



T:\2017\17-096\17-096-02\GIS\Maps\MXD\trafficcounts_2035.mxd

5 Plan and Policy Review

5. Plan and Policy Review

This section focuses on important policies, plans and studies that may influence the Orange Park Traffic Circulation Study and provide some additional context within which the transportation system operates. The primary objective of this section is to identify related items of interest to the study, including planned or programmed projects, strategies or policies. These items of interest may impact traffic, mobility needs or other conditions within the study area and may help provide direction for study recommendations.

Table 5 contains a complete list of documents reviewed as part of the plan and policy review. The major studies and plans are summarized below. Appendix D contains specific plan goals, objectives and policies related to traffic circulation within the study area.

State and Regional Plans

Florida Transportation Plan

The Florida Transportation Plan (FTP) is a single overarching statewide plan guiding Florida's transportation future. The 2040 Policy Element, completed in December 2015, contains long-range goals as well as 30 objectives to guide Florida through the next 25 years toward reaching a 50-year vision. Goals encourage safety and security; agile, resilient and quality infrastructure; efficient and reliable mobility for people and freight; more transportation choices for people and freight; and transportation solutions that support economic competitiveness and quality places to live, learn, work and play.

Long Range Transportation Plan

The Long Range Transportation Plan (LRTP) is created by the North Florida Transportation Planning Organization (TPO) and acts as the blueprint to maintain and improve the regional transportation system. This multi-modal plan defines a vision of the region's transportation needs over the next 20 years and contains future goals, strategies and projects, including cost feasible projects for which funding has been identified and the reasonable expectation of funding is available to implement the projects (called the Cost Feasible Plan). In Northeast Florida, the LRTP is updated every five years to address new and evolving road, transit, freight and pedestrian needs. The goals and objectives are meant to enhance the following: economic competitiveness, livability, safety, mobility and accessibility, equity in decision making and system preservation.

The plan's cost feasible projects within and near the study area are listed below:

Roadway Capacity

- Modify interchange at I-295 West Beltway at US 17/Park Street to Wells Road.
- Add two express lanes on I-295 East Beltway, from I-95 South to SR 13 San Jose Boulevard (Buckman Bridge).
- Add four express lanes on I-295 Buckman Bridge, from SR 13 San Jose Boulevard to W. of US 17.
- Add four express lanes on I-295 West Beltway, from US 17 to I-95 north interchange.
- New interchange at US 17 and Collins Road just north of I-295.
- New toll road (SR 23 First Coast Expressway) from I-95 to SR 21/Blanding Boulevard [The First Coast Expressway is now completely funded. The bridge over the St. Johns River is funded for construction to start in 2023; and the portion from SR 21 to the bridge is funded for construction to begin in 2019.]

Transportation Systems Management & Operations (TSM&O) and Safety

The TPO's interactive LRTP website map identifies the locations below as TSM&O projects.

- TSM&O on US 17/Park Avenue from SR 224/Kingsley Avenue to SR 16.
- Intersection safety projects on Blanding Boulevard at Wells Road and N of SR 224/Kingsley Avenue.

Pedestrian and Bicycle

The TPO's interactive LRTP website map identifies the location below as a ped/bike project. Also, US 17/Park Avenue is shown as a Florida Greenway Corridor.

- Bicycle/Pedestrian area shown at US 17/Park Avenue and SR 224/Kingsley Avenue.

Park and Ride (P&R) Lots

The TPO's interactive LRTP website map identifies the locations below as P&R lot projects.

- P& R lot at US 17/Park Avenue and Wells Road at the Best Bet establishment/Kennel Club.
- P&R lot on Wells Road, East of Blanding Boulevard, in the Orange Park Mall area.
- P&R lots along Blanding Boulevard.

Transit Lines

- Bus Rapid Transit (BRT) (Southwest First Coast Flyer) along SR 21/Blanding Boulevard from the Jacksonville Regional Transportation Center in downtown Jacksonville to the Orange Park Mall at Wells Road and SR 21/Blanding Boulevard.
- BRT along SR 21/Blanding Boulevard from Wells Road to CR 218.
- Commuter Rail along the CSX Line from downtown Jacksonville to Green Cove Springs (funded as capacity upgrades to freight rail). A JTA study identified the southwest commuter rail line as one of three potential commuter rail lines in the region.

Freight

- Roadway grade separation at CSX railway and Wells Road.
- Roadway grade separation at CSX railway and Kingsley Avenue.

Orange Park Bicycle and Pedestrian Sub-Area Plan

A comprehensive Bicycle and Pedestrian Sub-Area Plan, completed for the North Florida TPO in 2016, detailed wayfinding routes and several infrastructure enhancements to create a preferred network for pedestrians and bicyclists. To enhance pedestrian and bicycle connectivity, the plan recommends linking important community destinations such as parks, schools, shopping, recreation, transit and civic sites, and establishes the need for sidewalk infill, special emphasis crosswalk striping, multi-use path construction, shared-lane markings, possible mid-block crossings with high-intensity activated crosswalk (HAWK) beacons and future studies.

Following the Bicycle and Pedestrian Sub-Area Plan, the Town Council approved five priorities from the Subarea Plan:

1. Connect Doctors Lake Path to Black Creek Trail (estimated $997,500) - Extend the existing Doctors Lake Trail to Kingsley Avenue; construct a multi-use path from Doctors Lake Trail to Park Avenue on Kingsley Avenue, which includes reducing the width of travel lanes; and extend the trail south along Park Avenue to connect with the Black Creek Trail at Smith Street.
2. Path along Railroad North to Naval Air Station Jacksonville – Study the potential to develop a multi-use trail from Doctors Lake Trail along the railroad tracks north into Duval County and then to the naval base.
3. Path to Wells Road (Orange Park Mall) – (estimated $494,625) – Construct a multi-use trail from Sigsbee Road north to Wells Road, on the east side of Walter Odum Park to the Orange Park Mall. *Note that this project lies entirely outside the Town limits.*
4. Install HAWK Beacons on Kingsley Avenue at Clarke Park and on Park Avenue at Moosehaven (estimated $400,000) – Provide for pedestrian activated, signalized mid-block crossings to create high visibility crosswalks where the existing traffic signals are spaced far apart.
5. Milwaukee Avenue Sidewalk/Boardwalk (estimate $135,000) – Construct a boardwalk and sidewalk on Milwaukee Avenue from Carnes Street to Plainfield Avenue to connect with existing sidewalks on either side, next to Johnson Slough.

As part of the Bicycle and Pedestrian Sub-Area Plan, there is a review of the Clay County and Town Comprehensive Plans and Land Development Codes that identifies bicycle and pedestrian related goals, objectives and policies (pages 36 – 41).

Regional Transit Action Plan

The Regional Transit Action Plan is a planning product of the Northeast Florida Regional Transportation Commission (NEFRTC) that brought together transit stakeholders from all regional counties to identify and prioritize implementable projects that improve regional transit services. It was initiated to identify best practices for regional transportation coordination that may be implemented in the Northeast Florida region. The intent of the plan is to build on the ongoing improvement efforts in regional mobility coordination and regional transit services in Northeast Florida. The plan is separated into short-term, mid- and long-range projects. Highlights of implementation strategy recommendations related to Clay County's public transportation system are listed below.

- Support regional transit service and regional connectivity –
  - o Regional Transit Hub at Cecil Commerce Center Parkway in Oakleaf – connections to Duval, Clay and Baker counties.
- Develop innovative methods to transport people –
  - o Increase frequency and coordination of service between Middleburg, Orange Park and regional employment.
  - o Increase frequency and coordination of service between Palatka, Green Cove Springs and regional employment.
- Identify future transit corridors along existing and new transportation facilities -
  - o FDOT is constructing a First Coast Expressway from I-10 in Duval County through Clay and St. Johns Counties to I-95. This new road is anticipated to drive new home construction and employment opportunities.

First Coast Flyer Southwest Bus Rapid Transit (Purple Line) Station Area Concept Plans, Final

This document describes 13 station areas along the Jacksonville Transportation Authority's (JTA) planned 12.9-mile southwest corridor bus rapid transit (BRT) line. It includes a schematic site concept of the BRT line's southernmost station, located in Clay County at the Orange Park Mall. The concept is for planning purposes and illustrates potential development considerations for the BRT station and potential nearby transit-oriented development (TOD). The station is to be accessed via Orange Park Northway Road, the mall ring road, and enters the parking lot from the south side of the mall. The station is located between the Sears Auto Center outparcel and the main mall structure.

Clay County

Clay County Comprehensive Plan

Both the Land Use and Transportation Elements of Clay County's 2025 Comprehensive Plan focus on the goal to provide a high quality of life and efficient movement and circulation system to meet the needs of all present and future residents of Clay County. Objectives within the plan emphasize working toward a balanced transportation system that consists of both public and private transportation networks and are safe options for all residents. The plan includes policies for mixed-use, walkable developments near commuter parking and transit. The Transportation Element coordinates local transportation planning with the region's transportation plan to develop a multimodal and intermodal transportation system. It encourages planning for alternative modes of travel such as walking, bicycling and transit. The plan also encourages transit-oriented developments where appropriate within the urban areas of the County, and the accommodation of transit use through designated stops, bus bays, etc.

Adopted Evaluation and Appraisal Report (EAR) Amendments to the Clay County Comprehensive Plan

During development of the county's EAR, five major local issues were developed. The major transportation issue was the need for better connectivity, safety improvements and efficiency for auto, bicycle and pedestrian transportation networks. Specifically, the public commented on the need to address deteriorating roads, better street lighting, and signal synchronization; better road connectivity to offer more relief to SR 21/Blanding Boulevard traffic (Cheswick Oaks Drive, College Drive Extension connection at Loch Rane); and the need for bike lanes/paths and an interconnected system of pedestrian and bicycle trails that includes conservation areas.

The EAR concluded that the Transportation Element requires revisions to address a more multi-modal approach to deal with transportation issues in Clay County and that the five-year Capital Improvements Plan, 10-year Transportation Improvement Plan and several policies need amendments to reflect the County's commitment to generate additional transportation improvement funding. This commitment is demonstrated by the recently adopted second local option gas tax and reimplementation of transportation impact fees.

The EAR amendments encourage development of innovative methods to address and improve constrained facilities including, but not limited to, complete streets and context sensitive solutions as identified in FDOT's Complete Streets Handbook. The comprehensive plan supports redevelopment.

Town of Orange Park

Town of Orange Park Comprehensive Plan

The Comprehensive Plan was adopted in year 2010. The plan outlines goals that will help achieve standards described in the Land Development Regulations to make Orange Park a vibrant and successful place. The transportation element contains the data and analysis necessary to move toward a general conformity in goals, objectives and policies with those in the North Florida TPO's LRTP while providing the Town with the necessary policies to develop compact and connected developments. The goal of the Transportation Element is to encourage and promote the safe and efficient management, operation and development of surface transportation systems that will serve the mobility needs of people and freight, foster economic growth and development, and minimize transportation-related fuel consumption and air pollution.

Proposed Evaluation and Appraisal Report (EAR) based Amendments to the 2025 Orange Park Comprehensive Plan

During the Orange Park Traffic Circulation Study, the Town Council approved an EAR of the Comprehensive Plan. The plan is the Town's blueprint for existing and future development over the next 22 years. The EAR is a state-mandated assessment of the plan that provides an opportunity for a holistic review of the plan. The EAR focused on the following topics:

1. Increasing the quality/usefulness of public open spaces
2. Strategies for active recreational uses and nature-based recreational use
3. Developing important trail (non-auto) connections and
4. Strategies to create a small, walkable commercial district

Topic #3 focuses on providing safe and useful pedestrian and bicycle alternatives to the automobile. Topic #4 focuses on creating a walkable commercial district in the Town's core while complementing the Town's small-town character. The document mentions that an initial study of the area south of Kingsley Avenue and west of Smith Street would be appropriate.

The new planning horizon year will be 2040. The Future Land Use Element includes recommendations that encourage compact multi-modal development, encourage density that supports transit and multi-modal transportation, and improves the connectivity of bike lanes, sidewalks and public transit. The Transportation Element includes recommendations that expand the focus to create a safe environment for walking and biking, encourage the planting of shade trees in streetscapes, design for the pedestrian first, and seek funding to implement multi-modal transportation projects.

The most relevant new policies to the Orange Park Traffic Circulation Study are in the Future Land Use (FLUE) and Transportation (TE) Elements, summarized below and contained in Appendix D.

- FLUE Policy 1.1.10 – Investigate strategies to create a small, walkable commercial core.
- FLUE 1.4.7 – Establish deadline (2027) to develop master circulation plan to improve the connectivity of bike lanes, sidewalks and public transit.
- TE 2.2.4 – Design for the pedestrian first and develop a master circulation plan by 2027. This policy includes improving bicycle-pedestrian infrastructure within neighborhood streets, including sidewalk and bicycle facility needs and priorities in the transportation planning and capital programming process and creating a contiguous sidewalk and bicycle facility network to address future development and redevelopment needs.

Relevant existing plan policies include, but are not limited to, policies encouraging transportation demand management (TDM) programs and transportation management strategies. TDM programs are to be established by year 2025 to modify peak hour travel demand and reduce the number of vehicle miles traveled per capita. Transportation management strategies are to be established by 2025 to improve system efficiency and enhance safety. These policies are contained in Appendix D.

2014 Community Planning Technical Assistance Grant, Potential Expansion of Commercial Use: An Assessment of Impacts to Adjacent Residential Use

The study provides for the development of goals, objectives and policies, land development regulations and a Commercial Use Boundary for the Town's consideration. Prior to the study, the Town noticed that the intensity standards adopted in the 2025 Comp Plan and land development regulations applicable to non-residential uses may not be enough to address incompatibilities that may arise from commercial uses abutting residential uses. Although the study concludes that the Town does not need additional commercial use to service its residents, it states that some local and community trade area tenants along major arterials exceed their visibility needs and may if alternatives were made available. Therefore, the Town should consider how additional commercial uses will impact opportunities for local trade area businesses that serve the Town to relocate away from US 17/Park Avenue and SR 224/Kingsley Avenue.

The document describes the Town as "a linear community activity center for the residents of eastern Clay County and the Town." Small parcels with small-town scale, character and front yards are described as a characteristic of development should be preserved on local streets. The small-town character of local streets is "a major source of pride and identity for the Town and a major contributor to high property values for residential and non-residential uses not located on SR 224/Kingsley Avenue and US 17/Park Avenue." The local traffic character of local streets (i.e., limited through traffic) is described as a Town goal and the desire to limit the type of vehicles that can service or support commercial uses that receive access from local streets is described as an important characteristic. In addition to traffic, other important characteristics on local streets that may contribute to incompatibility with adjacent residential uses include physical attributes (such as the commercial structure, parking, signs and lighting) and operational attributes (such as hours of operation).

Table 5 | Policies, Plans and Studies Reviewed

Document	Date	Entity	Relevancy
Town of Orange Park Five Year Capital Improvement Plan (2017/2018 - 2021/2022)	May 2018	Orange Park	Transportation related projects include street reconstruction and resurfacing as part of a 10-yr. plan and sidewalk improvements throughout the Town.
Town of Orange Park Traffic Calming Policy (POL-GG-2018-1)	April 2018	Orange Park	Developed to address neighborhood traffic issues, the policy allows citizens to request the installation of traffic calming measures and establishes procedures for making and evaluating such requests.
Town of Orange Park Five Year Capital Improvement Plan (2017/2018 - 2021/2022)	Oct 2017	Orange Park	Includes replacing broken sidewalk and some sidewalk projects that were recommended in the TPO Bike/Ped Sub-Area Plan.
Town of Orange Park Business survey results	2013	Orange Park	20 survey respondents, 12 representing professional offices. Respondents would like the Town and Town's entrance from Duval County to be more positive and welcoming.
Town of Orange Park Strategic Goals and Visions for 2017 - 18	June 2017	Orange Park	Includes the Kingsley East Project (major improvements to Kingsley Road from Park Avenue east to the St. Johns River) and traffic calming on residential streets. The Orange Park Public Works Department is considering a traffic calming policy. The Town Council has received complaints from citizens on several streets over the last year about the volume and velocity of traffic on residential streets.
Town of Orange Park Land Development Regulation (LDR) (Code of Ordinances, Part III, Article 11, Section 2.06.01.03)	2016	Orange Park	Discourages through traffic from the major roadways (of Park Avenue, Kingsley Avenue and Wells Road) onto nearby neighborhood streets.
Town of Orange Park Potential Expansion of Commercial Use: An Assessment of Impacts to Adjacent Residential Use	May 2015	Orange Park	Describes desirable, "small-town" land use and traffic characteristics. Provides possible solutions to the issue of commercial development near residential properties; recommends comp plan goals, objectives and policies; recommends land development regulations; provides a commercial use boundary; may help shape future development patterns.
Town of Orange Park Comprehensive Plan and Proposed Evaluation and Appraisal Review based Amendments	January 2010; March 2018	Orange Park	The Town Council approved policy amendments to the Town's 2025 Comprehensive Plan that focus on improving non-automobile connectivity, creating a safe environment for walking and biking, and strategies to create a small, walkable commercial district.

Table 5 | Policies, Plans and Studies Reviewed - *continued*

Document	Date	Entity	Relevancy
Clay County Comprehensive Plan - Evaluation and Appraisal Report to the 2025 Comp Plan	Adopted October 2017	Clay County	Objectives within the plan's future land use and transportation elements promote a balanced transportation system consisting of both public and private transportation networks that are safe options for all residents.
JTA First Coast Flyer Southwest BRT (Purple Line) Station Area Concept Plans, Final	August 2017	Jacksonville Transportation Authority	This document describes 13 station areas along the planned 12.9-mile southwest corridor BRT line including a conceptual site plan with transit-oriented development for the Orange Park Mall. The mall is the BRT line's southernmost station.
Orange Park Bicycle and Pedestrian Sub-Area Plan	August 2016	North Florida TPO	Recommends strategies to improve walking and bicycling within the study area; and proposes a bike/ped network. At a Town Council meeting on March 21, 2017, the Town approved a list of five priority projects from the Sub-Area Plan.
2040 Long Range Transportation Plan (LRTP), Cost Feasible Plan	November 2014	North Florida TPO	An adopted 20-year plan of multimodal transportation strategies and projects for Clay, Duval, Nassau and St. Johns Counties. The plan is currently being updated and approval is expected in fall 2019.
Clay County Transit Study	December 2017	North Florida TPO	Assess existing public transit conditions and needs within Clay County and recommends transit enhancements. Recommendations include modifying route alignments to serve higher demand areas; customer friendly bus schedules; better marketing and service branding; and increasing service as resources are available.
Regional Multimodal Transportation Plan: Creating Regional Connections	2016	Northeast Florida RTC	Identifies regionally significant projects within Northeast Florida. Roadway projects are primarily from the 2040 LRTP.
Regional Transit Action Plan	2016	Northeast Florida RTC	Recommendations to enhance and integrate regional transit services.

Table 5 | Policies, Plans and Studies Reviewed - *continued*

Document	Date	Entity	Relevancy
I-295 at US 17 Improvements	November 2017	FDOT	Construction scheduled for 2022. Widening and reconstruction of US 17/Park Avenue from Collins Road in Duval County to south of Wells Road in Clay County. Financial ID: 435575-1. The project adds an additional access point to northbound US 17/ Park Avenue at Eldridge Avenue and an additional right turn lane from northbound US 17/Park Avenue onto I-295 south. The project adds bike lanes and sidewalks, such as adds bike lanes on US 17, adds sidewalk on US 17 through the interchange, and adds bike lanes and sidewalks on Eldridge.
Kingsley Avenue Signalization Upgrades, Kingsley Avenue Traffic Signals Project Flier	2017	FDOT	Project began September 2017 with expected completion Summer 2018. Financial ID: 430758-1. Project consists of signalization upgrades to the following intersections along Kingsley Avenue in Orange Park: Orange Park High School, Orange Park Medical Center, Bellair Boulevard, Orange Avenue and Smith Street. Project also includes sidewalk reconstruction, installing signal loops, temporary signalization, traffic striping, installing conduit and conducting material, and performance turf installation.
SR 224/Kingsley Avenue at US 17/Park Avenue Study as part of Districtwide Traffic Ops Studies Project (Draft Report)	November 2015	FDOT	The study concludes that modifying the existing eastbound through lane to provide a shared left-through lane was expected to reduce delays, congestion and queue lengths at the study intersection.
SJRSC of Orange Park Master Plan Due Diligence Report	January 2017	St. Johns River State College	The study concludes that relocating the campus' access-south to the signalized intersection of Old Jennings Road and College Drive is feasible and can occur without detrimental impacts to the campus' proposed master plan.

(This page was intentionally left blank)

6

Summary of Mobility Conditions

6. Summary of Mobility Conditions

Existing conditions provide both opportunities and limitations to develop a well connected, safe and multimodal traffic circulation system. This section of the report draws information from the previous sections and describes traffic circulation conditions in terms of strengths, challenges, opportunities and threats. Strengths and challenges primarily describe conditions within the study area, while opportunities and threats primarily describe existing and potential external influences. Strengths and opportunities are qualities to build on and may help encourage a better pedestrian environment and town character.

Strengths

- The existing multimodal transportation system provides a good framework to build upon; including pedestrian and bicycle infrastructure such as trails,sidewalks and bike lanes.
- Comprehensive plan goals, objectives and strategies encourage pedestrian oriented, multimodal development within the study area.
- A relatively high concentration of residents and employees are located within the study area.
- Employers/Attractors - Medical Center, Orange Park Mall, large employers, SJRSC, Town Hall, US 17/Park Avenue Retail, NAS Jacksonville (nearby).
- The Orange Park Town Hall area is host to community activities such as the Orange Park Farmers Market and festivals.
- Natural features such as river access and trees attract residents and tourists to the area.

Weaknesses/Challenges

- Significant traffic backups within the area during peak travel periods
  - o Traffic concerns identified by survey respondents are primarily related to the major, state roadways of US 17/Park Avenue and Kingsley Avenue, particularly on US 17/Park Avenue near the I-295 intersection, the US 17/Park Avenue and Wells Road intersection, the SR 224/ Kingsley Avenue and US 17/Park Avenue intersection, and areas along SR 224/Kingsley Avenue.
  - o Additional concerns expressed by survey respondents include Wells Road and cut-through traffic along residential, neighborhood roadways.
- Gaps within the roadway network/poor roadway connectivity
  - o Minimal north-south roadway alternatives to US 17/Park Avenue
  - o Minimal east-west roadway alternatives to SR 224/Kingsley Avenue and Wells Road
- Gaps within the pedestrian/bicycle network – trail, bike and sidewalk gaps
- US 17/Park Avenue and the railroad currently split the community, hinder walkability and reduce community character
- The Clay County Council on Aging (COA) / Clay Transit is facing budget constraints and, as a result, may reduce flex route service.

- Many Orange Park and Clay County workers commute to Jacksonville, passing through the study area; significant single occupancy vehicle and cross county commuting.
- Several intersections with 30 or more crashes over a three-year period.
- Study area is essentially built out, so it is more challenging to redevelop existing land uses.
- Although the study area is built out, there is a real need for greater density to help promote better walkability and more multimodal options.
- The Town of Orange Park's population from 2010 through 2017 has only slightly increased, from 8,412 to 8,622 people.
- Population in Clay County's unincorporated Orange Park planning district, within and near the study area, is projected to decrease by four percent, between 2015 and 2040.
- Longtime residents may be resistant to change.

Opportunities

- Express bus use on the region's managed lanes or shoulders to improve travel time, particularly I-295 and I-95
- A JTA Southwest Bus Rapid Transit route with potential future TOD at/near the Orange Park Mall.
- County village centers to the south (If County village centers to the south grow there may be potential to decrease cross county commuting through the study area).
- First Coast Expressway (although appears to only very minimally reduce US 17/Park Avenue traffic – three percent reduction).
- Redevelopment opportunities that encourage multimodal transportation options.
- Community feedback from the Clay County Transit Study indicates support for public transportation and that an increase in service frequency could attract additional riders.
- There is potential for commuter rail along the CSX line from downtown Jacksonville to Green Cove Springs. The region's current LRTP includes rail capacity upgrade for commuter rail.
- Natural features such as river access and trees attract residents and tourists to the area.

Threats

- Significant through traffic due to proximity to I-295 and Jacksonville.
- US 17/Park Avenue splits the community, hinders walkability and reduces community character.
- Significant single occupancy vehicle and cross county commuting.
- Traffic using local and collector streets to cut through residential areas may increase potential conflicts on these roadways and decrease community character.
- The CSX Railroad splits the community and hinders connectivity.
- Transportation network companies or ride-hauling services, such as Uber or Lyft, could potentially reduce traditional public transit use.
- On-Going and emerging travel trends, such as autonomous vehicles, electric vehicles and shared mobility options could potentially increase traffic congestion on roadways.

(This page was intentionally left blank)

7 Recommendations

7. Recommendations

To help achieve this study's goals, several suggestions are described below. The suggestions are intended to resolve many of the traffic circulation concerns identified during the study. They include options from the Orange Park Bicycle and Pedestrian Sub-Area Plan, FDOT I-295/ US 17 improvements project, FDOT Kingsley/US 17 Study, JTA Southwest BRT Station Area Plan, local comprehensive plans, Clay County Transit Study, NEFRTC Regional Transit Action Plan and the region's LRTP. Collectively, the recommendations focus on enhancing mobility, safety and community character.

Mobility

A significant traffic circulation issue within the study area is congestion during peak commuting times. The primary focus of the following mobility solutions is to alleviate congestion by enhancing roadway operation and safety and reducing single occupancy vehicles use.

US 17and I-295 Interchange Area

Traffic circulation near US 17/Park Avenue and Wells Road, just south of I-295, is a major concern within the study area. The Florida Department of Transportation has programmed funds to widen and reconstruct US 17/Park Avenue (SR 15) from south of the Wells Road intersection to Birmingham Avenue, north of the Orange Park Traffic Circulation study area. This project is in response to excessive delay and heavy queuing at the intersections along US 17/Park Avenue during peak hours as well as at the on and off-ramps to I-295. FDOT is investigating alternatives to meet capacity needs, improve intersection operations and address safety. The project will include ramp and intersection modifications at US 17/Park Avenue and the I-295 off ramps, Eldridge Avenue, Old Orange Park Road and Wells Road. Construction is expected to begin in year 2022.

SR 224/Kingsley Avenue at US 17/Park Avenue Intersection Modification

At the SR 224/Kingsley Avenue and US 17/Park Avenue intersection consideration should be given to modifying the existing eastbound thru lane to provide a shared left-turn/thru lane, effectively allowing eastbound triple left turns. This improvement is expected to reduce delays, congestion and queue lengths at this location (especially for eastbound Kingsley Avenue). If an eastbound triple-left turn is implemented, revised pavement markings and replacing a three-section signal head with a five-section signal head will be required. The engineering and construction costs associated with these intersection enhancements are estimated to be approximately $50,000.

US 17/Park Avenue and Wells Road Crosswalk

Currently, at US 17/Park Avenue and Wells Road, there are times when both pedestrian signals are activated during a single cycle. This causes significant vehicular delays and increases the congestion on both US 17/Park Avenue and Wells Road (especially during the peak periods).[16] Consideration should be given to require that all pedestrian crossings occur on the southern crosswalk, essentially removing the northern crosswalk at the US 17/Park Avenue and Wells Road signal. Removing the northern crosswalk would eliminate the signal time currently needed to serve pedestrians crossing the north leg and would have minimal impact to the intersection as pedestrians would still be able to cross US 17/Park Avenue using the southern crosswalk. It is suggested this modification be accompanied with well-maintained high visibility crosswalks, signage to pedestrians and outreach efforts to nearby residents and employees. Perhaps this option can be revisited as FDOT's US 17 and I-295 interchange area modifications are constructed. The FDOT US 17 and I-295 interchange area project may change the location and/ or number of pedestrian crosswalks in the general area of US 17 /Park Avenue and Wells Road.

[16] When this occurs, both side-street splits are extended to cover the pedestrians. The eastbound and westbound movements are split-phased, meaning eastbound and westbound traffic both receive separate signal timings. Removing the northern crosswalk would eliminate the associated pedestrian phase for this movement, which is coordinated with westbound traffic.

High School Circulation Study

To address congestion concerns on the west end of SR 224/Kingsley Avenue, a Traffic Circulation Study is recommended at Orange Park High School (OPHS). There are five existing connections to SR 224/Kingsley Avenue from OPHS, two of which are signalized. There is only one connection from the OPHS to Blanding Boulevard. Closing some of the Kingsley Avenue connections and opening an additional connection to Blanding Boulevard may help alleviate some of the congestion. This may require reconfiguring the current traffic circulation plan at OPHS. Without knowing the turning-movement counts at each intersection, the specific traffic demands in this area are unknown. A detailed Traffic Circulation Study is estimated to cost approximately $25,000.

Travel Demand Management (TDM) Program

Within the study area, US 17/Park Avenue is constrained with few, if any, options for widening. The Town's comprehensive plan states that by January 2025 the Town shall establish transportation demand management programs to modify peak hour travel demand and reduce the number of vehicle miles traveled per capita within the Town and region. Both the Town and County's comp plans support potential components of a TDM program.

TDM strategies are designed to maximize the number of people that can move through a transportation network by increasing the number of persons in a vehicle or by influencing the time of travel or the need to travel. TDM strategies focus on identifying alternatives to single occupant vehicle (SOV) use during the peak commuting hours. Widening major roadways is not always feasible due to physical, economic and/or social constraints, so it is important to maximize the capacity of the existing infrastructure. TDM can be an important tool to extend and maximize the life of the major roadway system while managing demand. Combined with appropriate land use planning, congestion can be managed and potentially reduced using an integrated system of TDM strategies.

TDM strategies generally work best when part of a regional program or, at a minimum, when they include coordination with regional and state agency partners. For the Orange Park Traffic Circulation Study Area, these partners should include the North Florida TPO, JTA, NEFRTC and FDOT. A model TDM program for North Florida is Central Florida's reThink your commute program. Marketed to the Central Florida workforce, the program promotes TDM strategies and provides personalized assistance to help employees and employers participate.

TDM programs may include but are not limited to:

- Programs to encourage carpooling, vanpooling, bicycling and transit usage (non-SOV Transportation Modes)
- Promotion of flexible or staggered work hours
- Promotion of mixed-use and transit-oriented development

Below is a comprehensive listing of TDM strategies that have been used by other communities across the country. Some TDM strategies may provide a significant benefit to increasing capacity during the peak commuting hours, while further evaluation may determine that other TDM strategies are not appropriate for the study area or may not be well received.

Non-SOV Transportation Strategies

Ridesharing (Carpooling/Vanpooling)

Ridesharing is a strategy that has potential for the Orange Park area, especially if set up through the larger employers and a conveniently located Park and Ride lot is provided. Carpooling is traditionally one of the most widely considered TDM strategies. The idea is to consolidate drivers of SOVs into fewer vehicles, with the result being reduced in congestion. Studies have shown that carpooling is most effective for longer trips greater than ten miles in each direction. Another form of ridesharing, vanpooling, may also be an option. Vanpooling is a strategy that encourages employees to utilize a larger vehicle than the single occupancy vehicle to travel to work. The van is typically provided by the employer or a brokerage that provides the insurance. Other forms of ridesharing include ridesharing services provided by companies such as Uber and Lyft.

Although North Florida's rideshare program (called Cool to Pool) has not attracted significant and continuous participation perhaps an extensive public awareness campaign describing the benefits of a ridesharing program would help in selling it to major employers and employees. Also, the program may benefit from the availability of express lanes along I-295 and I-95. Soon to be operational on I-295 north of the study area, the I-295 Express Lanes are managed toll lanes, separated from the general use lanes. Using express lanes by high occupancy vehicles (HOV), with three or more carpoolers/vanpoolers and public transit vehicles, may help decrease HOV travel times and make HOV alternatives more attractive.

Bicycling

Bicycling can substitute directly for automobile trips. Communities that improve cycling conditions often experience significant increases in bicycle travel and related reductions in vehicle travel. Even a one percent shift in travel modes from vehicle trips to bicycle trips can be viewed as a positive step in the Orange Park area. Bicycling within the Town is primarily recreational in nature. By implementing the bicycle network improvements as described in the Orange Park Subarea Bicycle and Pedestrian Master Plan, a gradual shift to bicycling as a commuter mode of travel should be realized. Incentives to increase bicycle usage as a TDM strategy include the following: construction improvements to bike paths and bike lanes including shared lanes; developing a more connected bicycle network; correcting roadway hazards (potholes, cracks, narrow lanes, etc.); developing safety education, law enforcement and encouragement programs; and addressing bicycling security/ safety concerns. Specific suggestions to improve bicycling within the study area are described later in this report.

Walking

Walking as a TDM strategy has the potential to replace automobile trips for relatively shorter trips within the community. A relatively short non-motorized trip often substitutes for a longer car trip. For example, a shopper might choose between walking to a small local store versus driving a longer

distance to shop at a supermarket. Incentives to encourage walking in a community can include the following: improve sidewalks, crosswalks and paths by designing transportation systems that accommodate special needs, including people using wheelchairs, walkers, strollers and hand carts; providing covered walkways, loading and waiting areas; improving pedestrian accessibility by creating location-efficient, clustered, mixed land use patterns; and soliciting and addressing pedestrian security/safety concerns. Costs are generally associated with program expenses and facility improvements. Specific suggestions to improve walkability within the study area are described later in the report.

Public Transit Service

Express transit bus service as a TDM strategy can be used to change single occupancy driving characteristics. Express service is based on the idea that service between two points of travel can either be done faster or equal to the private automobile or traditional transit that is not express service. One challenge with express transit service is that travel time must be competitive with drive times to attract enough individuals who currently drive alone. Specific express bus and bus rapid transit services are described later in the report.

Traditional transit service is most effective in an urban environment. Several methods to increase transit usage within the community are to improve rider information and marketing programs, and the overall transit service by providing more service, faster service, more comfortable service and service that connects people where they want to go. The costs of providing transit depend on many factors, including the type of transit service, system hours or miles, traffic conditions and ridership. Potential transit enhancements that are specific to this study area are described later in the report.

Subsidized Transit by Employers

A subsidized transit program consists of the employer either reimbursing or paying for transit services in full as a benefit to the employee. This usually includes a monthly or annual transit pass. Studies show that once an employee receives a pass the tendency to use the system rises dramatically. This could be an effective benefit for large employment centers with existing transit service such as the Orange Park Mall, Orange Park Medical Center and downtown Jacksonville. The NEFRTC's Transit Action Plan recommends developing employer and employee transit incentive programs.

Flexible or Staggered Work Hours

Flextime

Flextime allows workers to adjust their commuting time away from the peak periods subject to participation by employers. This means that employees are allowed some flexibility in their daily work schedules. For example, rather than all employees working 8 a.m. to 4:30 p.m., some might work 7 a.m. to 3:30 p.m., and others 9:30 a.m. to 6:00 p.m.. This provides the workers flexibility for family activities and decreases the number of vehicles using the transportation system during peak times. This in turn can translate into reduced traffic congestion, support for ridesharing and public transit use, and benefits to employees. Flextime allows commuters to match their work schedules with transit and rideshare schedules, which can significantly increase the feasibility of using these modes. Costs to implement this type of TDM strategy can include increased administrative and management responsibilities for the employer, and more difficulty in evaluating an employee's productivity.

Alternate Work Schedule

A related but more expansive strategy is to provide an alternate work schedule for all employees. It would involve having the normal workday start at a time other than 8a.m. For example, starting the workday at 7 a.m. would allow all employees to reach the work site before the peak commute time. Additionally, since they will be leaving work at 3:30 p.m., they will be home before the typical peak commute time and have more time in the evening for other personal activities. This can be a very desirable side benefit for the employees. This has a similar effect on traffic as flextime but does not give individual employees as much control over their schedules.

Telecommuting

Telecommuting, also called telework, in the work place offers a good chance to reduce dependence on travel to work via car or bus. This is especially true in technical positions and some fields in the medical industry such as medical transcription. Additionally, opportunities for distance learning, shopping via computers, basic health care services and recreation also exist and can serve to reduce vehicular travel on the transportation system. Telecommuting is usually implemented in response to an employee request, more so than instigated by the employer. Since telecommuting reduces commute trips, it can significantly reduce congestion and parking costs. It is highly valued by many employees and tends to increase their productivity and job satisfaction. Costs associated with this TDM strategy include increased administrative and management responsibilities, and more difficult evaluation of employee productivity. Some employees find telecommuting difficult and isolating. Telecommuting also may reduce staff coverage and interaction and make meetings difficult to schedule.

Compressed Work Week

A compressed work week is different from flextime or an alternate work schedule in that the work week is reduced from the standard five-days-a-week work schedule. For example, employers may allow workers the opportunity to work four (4) ten-hour days a week. A compressed work week can reduce commute travel. It may not be feasible for some employers to offer a compressed work week due to the nature or demands of their employees' work. For some employers, implementing this type of TDM strategy could potentially result in reduced overall productivity.

Amenities, Incentives and/or Programs for Non-SOV Travel

Guaranteed Ride Home (GRH) Programs

Guaranteeing a ride home for transit and rideshare users is a wise choice for all transit systems, since it gives the users a measure of calm knowing that they can get home. A GRH program provides an occasional subsidized ride to commuters who use alternative modes, for example, if a bus rider must return home in an emergency or a car pooler must stay at work later than expected. This addresses a common objection to using alternative modes. GRH programs may use taxies, company vehicles or rental cars, for example. GRH trips may be free or require a modest co-payment. The cost of offering this service tends to be low because it is seldom actually used.

Park & Ride Lots

Park and Ride lots can be effective for communities such as Orange Park and surrounding areas with substantial suburb to downtown commute patterns, especially when combined with transit and ride share programs and incentives. Park and Ride consists of parking facilities at transit stations, bus stops and highway on ramps, particularly at the urban fringe, to facilitate transit and rideshare use. Parking is generally free or significantly less expensive than in urban centers. Costs are primarily associated with facility acquisition (if required), construction and operation. The TPO's interactive LRTP website identifies the following potential park and ride lot projects:

- US 17/Park Avenue and Wells Road at the Best Bet establishment/Kennel Club
- Wells Road, east of SR 21/Blanding Boulevard, in the Orange Park Mall area
- Along SR 21/Blanding Boulevard, the western study area boundary, between SR 224/Kingsley Avenue and Wells Road

Additional Park and Ride lots should also be considered, such as on Fleming Island near US17 and CR220 to reduce traffic through the study area.

Parking Costs for SOV (For Downtown Commuters)

Free parking provided by employers is an incentive for driving alone. If the SOV driver is not penalized in some form, there is no perceived reason not to drive to the workplace. One way to counter this reality is to charge a higher price for SOV parking.

Preferential Parking for Rideshare/Carpool/Vanpools (For Downtown Commuters)

This concept ties into the discussion above regarding parking of the SOV user. Preferential parking such as delineating spaces closer to an office for riders sharing their commute or reduced/free parking can be an effective TDM strategy.

Mixed-Use and Transit Oriented Development

Required Densification I Mixed Use Elements for New Developments

Requiring new development or redevelopment to be denser and contain mixed-use elements will ensure that these developments encourage walking and transit use. This will likely require a change in the County and Town's land development regulations to dictate more density and effective land use form to encourage "shared" trips and reduce impacts to the surrounding transportation system. A similar land use policy approach to this TDM measure is to ensure enough available supply of shovel ready sites for employment-based land use to help reverse or decrease the out of County commuting pattern that persists.

A related strategy, called linked trips, involves combining trips into a logical sequence that reduces the total miles driven on the surrounding transportation system. These trips are typically generated by facilities within a mixed-use development or within an area of the community where adjacent land uses are varied and offer services that would limit the need to travel large distances on the transportation system.

Transit Oriented Development (TOD)

Transit Oriented Development (TOD) refers to residential and commercial areas designed to maximize access by transit and non-motorized transportation, and with other features to encourage transit ridership. A TOD usually consists of a neighborhood with a rail or bus station, surrounded by relatively high-density development. Transit Oriented Development generally requires about seven residential units per acre in residential areas and 25 employees per acre in commercial centers to adequately justify transit ridership. Transit ridership is also affected by factors such as employment density and clustering, demographic mix, transit pricing and rider subsidies, and the quality of transit service. Students, seniors and lower-income people tend to be heavy traditional transit users. Commuters with access to SOVs who choose to ride transit can also help make TOD successful. This type development could be a long-range option as the Orange Park area redevelops and more attractive express bus or new commuter rail service becomes readily available. High density mixed-use town centers should be considered for strategic locations along transit routes in the study area.

Mandatory TDM Measures for Large Employers

Some communities encourage large employers,typically with at least 50 to 100 employees, to mandate TDM strategies for their employees. Typically, this has been required of larger mixed-use developments known as Developments of Regional Impact (DRI's); however, implementing Transportation Management Agencies has not been fully implemented. This is a control that can be required by local governments on developers, employers or building managers. The regulatory agencies often provide incentives for large employers to make TDM strategies more appealing, such as reduced transit fares, preferred parking, etc.

Installing/Increasing Intelligent Transportation Systems

Using ITS (Intelligent Transportation System) methods to alert motorists of disruptions to the transportation system is generally well received by transportation users. ITS tools are not only good for managing roadway operation, they are also highly effective for managing transportation demands. Variable message signs are effective in alerting users to traffic incidents and construction and allowing the user to make an alternative route or mode choice.

Safety

The primary focus of the following solutions is to promote safer traffic conditions and reduce traffic crashes.

Wells Road at DeBarry Avenue

Based on study analysis, the intersection of Wells Road and DeBarry Avenue has the highest crash rate (1.056) and the highest crash frequency (66 crashes). The intersection is served by a diagonal span-wire signal with protected/permitted left-turns for all approaches. See approach photos, *Figures 27 and 28*.

Figure 27 | Eastbound on Wells Road approaching DeBarry Avenue

Figure 28 | Westbound on Wells Road approaching DeBarry Avenue

Signal Upgrades

Almost half the incidents at this intersection were rear-end collisions. For this reason, consideration should be given to adding backplates to the signal heads. Additionally, the eastbound and westbound traffic at this location may have difficulty seeing the signal heads during sunrise and sunset. Backplates added to traffic signal heads improve the visibility of the signal by introducing a controlled-contrast background. The backplates and the signal age will likely require the signal to be replaced. Only two of the 10 left-turn or angle collisions occurred at the intersection of Wells Road/DeBarry Avenue. The other left-turn or angle collisions occurred at driveway connections to Wells Road within 500 feet of DeBarry Avenue. When the signal is replaced, consideration should be given to replacing the 5-section cluster signal heads with 4-section flashing yellow arrows (see Figure 29 for an illustration of each signal type). An additional signal head will be required when replacing the 5-section signal head (on each approach).

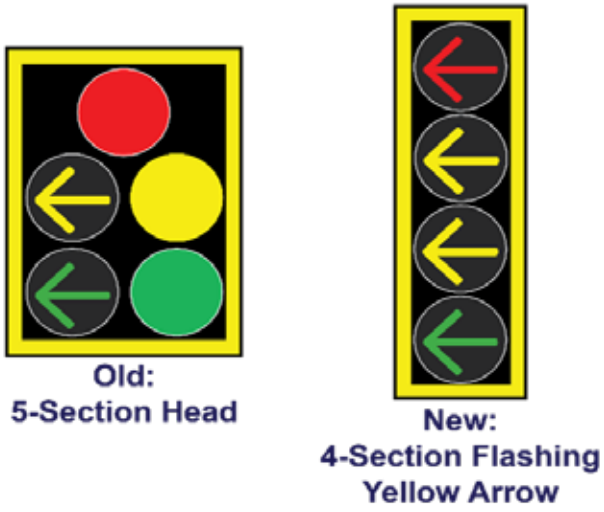


Figure 29 | Signal Head Replacement

Crosswalks/Pavement Marking

The pedestrian crosswalks should also be refurbished to satisfy current requirements. The FDOT Design Manual requires the use of special-emphasis crosswalk markings at signalized intersections and at roundabouts. Also, the third southbound right turn arrow on DeBarry Avenue is pointing into the exit lane for Arby's (shown in Figure 30). This right-turn arrow should be removed and replaced approximately 30 feet to the south (closer to the intersection).

Figure 30 | Approach Marking

The engineering and construction costs associated with replacing the traffic signal and completing the pavement-marking improvements are estimated to be approximately $500,000.

Lighting

There is only one light pole at the intersection (on the southwest corner) and it appears to be damaged. As a result, additional lighting is recommended as proper street lighting illuminates pedestrian crosswalks and reduces glare for motorists.

Traffic Calming for Residential Streets

Traffic calming is suggested to reduce cut-through traffic, speeding and drivers not following traffic laws (such as not stopping at stop signs) along residential streets within the study area. Generally, traffic calming refers to measures used to encourage people to drive more slowly and carefully, making streets safer. Some studies and traffic calming supporters link the resulting lower speeds and vehicle volumes to:

- Enhanced pedestrian and bicycle safety
- Improved neighborhood cohesion and livability
- Other community benefits, such as enhanced street appearance and improved property values

The Town of Orange Park approved a Traffic Calming Policy April 3, 2018 (POL-GG-2018-1). The policy allows citizens to request the installation of traffic calming measures and establishes procedures for making and evaluating such requests. As written in the policy, "the primary objective of traffic calming projects is to 'pedestrianize' a street by reducing some or all of the following: excessive vehicle speeds, excessive cut-through traffic, adding additional pedestrian crossing facilities as needed, reduce crashes or crash potential, while minimizing impacts to residents."

Below are examples of common physical/engineering related traffic calming measures to consider.

- Curb extension/bulbs-out – Areas of expanded curbing that extend across a parking lane and may narrow a travel lane. Add these at an intersection or corner(s) of an intersection. This measure increases standing space and visibility of pedestrians and decreases the crossing distance for pedestrians.
- Roundabout – Raised island in the center of an intersection that requires vehicles to travel counterclockwise around the circle. Roundabouts help to slow speeds at intersections. There are less conflict points with roundabouts compared to uncontrolled intersections. These conditions may result in less severe and fewer crashes. Generally, pedestrians only need to watch for vehicles approaching from one direction, however during peak periods roundabouts may increase delay for pedestrians waiting to cross the street.
- Speed hump/table – Raised areas in the roadway pavement surface extending across the roadway. To reduce speeds along an extended section of street, a series of humps spaced every few hundred feet may be needed. A speed hump may be round or flat-topped; the flat-topped design is sometimes called a speed table. Speed Humps are typically three inches high at the center. They should be marked clearly, distinguished clearly from crosswalks and visible at night.
- Raised crosswalk – Essentially, broad, flat-topped speed humps that occur with pedestrian crosswalks at intersections. These are generally elevated three to six inches above street grade at intersections or mid-block. In addition to slowing vehicles, raised crosswalks enhance the visibility of crosswalks and eliminate the need to step up or down curbs, making walking easier.
- Gateway – A neighborhood or street entrance treatment, typically using physical and textural changes, that provides identity to an area. Gateways used with other traffic calming measures help to slow down vehicles and reduce cut-through traffic.

- Right-in/right-out island – The use of raised islands to prevent left turns and through movements, to and from side streets, at intersections with major streets. This design treatment is used to reduce cut-through traffic. This traffic calming measure should only be used on local, non-collector streets.

Additional traffic calming measures and pedestrian enhancements include signs and pavement markings to help people find their way, signs restricting street use to residents/local use, flashing beacon signs or traffic signals, enforcement programs and encouragement/education programs. Traffic enforcement methods can help change unsafe behaviors and make walking more attractive to residents. Enforcement also helps reinforce new behaviors when physical/engineering related traffic calming has been implemented and sometimes is used to augment educational campaigns. Enforcement efforts require follow-up and periodically need to be repeated to maintain their effectiveness.

Passive enforcement options that do not require an officer to be present include the use of speed trailers or active speed monitor signs.

- Active speed monitor signs indicate the permanent, posted limit for a given street, but also use radar to detect the speeds of passing cars. A digital display shows the speed of passing cars and flashes to indicate to speeding drivers when to slow down.
- Speed trailers operate similarly to active speed monitor signs however they are generally used on a temporary basis.
- Additionally, some communities have implemented traffic complaint hotlines or neighborhood speed watch programs. These programs allow the public to report traffic problems directly to police, enabling police to quickly identify issues and the public to be engaged.

The town may also want to consider the use of speed cameras with community input.

Encouragement and education efforts are also recommended in coordination with community, regional and state stakeholders. These efforts generally involve targeted outreach activities, special events or programs to raise awareness or generate interest in critical safety issues, to enlist volunteer participation and to encourage safer travel behaviors. Examples include pace car programs and walking school bus programs.

- With pace car programs, residents sign a pledge committing to drive safely and place a sticker on their vehicles, thereby setting the "pace" for a higher standard of safety for themselves and for other drivers. When other drivers witness the slower, safer speeds of vehicles, they understand that the safer driving is intentional. Appropriate outreach and educational efforts to both residents and non-residents will help ensure the program changes attitudes toward safe motor vehicle use in a practical, non-threatening way.
- Walking school bus programs (or bicycle train programs) encourage walking and bicycling to and from school and, with significant participation, may help improve traffic congestion near schools. School children are chaperoned by at least two adults who walk or ride to school along a set route (like the way a school bus would drive a set route to school). Neighborhood captains, parents and children may walk/ride from separate departure points to the school, with one or more routes meeting in parking lots so families who live too far to walk/ride from home can participate.

Refurbish Crosswalks and Upgrade Signals

Refurbish crosswalk and update signals along the major roadways of US 17/Park Avenue, SR 224/ Kingsley Avenue and Wells Road. For example, some driveway and side-street connections to US 17 have deteriorated pavement markings. The pedestrian crosswalks should be refurbished to satisfy current requirements. The FDOT Design Manual requires the use of special-emphasis crosswalk markings at signalized intersections and at roundabouts. Although not required, the use of standard crosswalk markings for stop-or yield- controlled intersections may be beneficial. Ensuring that there are appropriate crosswalks is an effective, relatively low-cost approach to enhancing safety for people crossing busy streets.

Some driveway and side-street connections along SR 224/Kingsley Avenue have deteriorated pavement markings, including Orange Park Medical Center signal's crosswalk striping. FDOT currently has a project that consists of signalization upgrades to the following intersections along Kingsley Avenue: Orange Park High School, Orange Park Medical Center, Bellair Boulevard, Orange Avenue and Smith Street. The scope of this project also includes sidewalk reconstruction, installation of signal loops, and pavement markings. The pavement markings at the remaining pedestrian crosswalks at intersections that were not included should also be refurbished to satisfy current requirements. The intersections not included in the FDOT project appear to be: DeBarry Avenue, Railroad Avenue S., Plainfield Avenue and US 17/Park Avenue.

As a general note, it is recommended that when signal-reconstruction projects occur along US 17/ Park Avenue, SR 224/Kingsley Avenue and Wells Road, backplates should be provided with all new signal heads, and four-section, flashing-yellow-arrow signal heads should replace any existing five-section cluster signal heads (to service protected/permitted left turns).

Additional SR224/Kingsley Avenue Median

Generally, if additional raised medians were installed and directional openings were constructed on the roadway, the frequency of reported left-turn and angle collisions is expected to significantly decrease. Consideration should be given to connecting the access management plan from Orange Park High School to Bellair Boulevard and converting the two-way left-turn lane to a raised median. With a relatively long distance between some of the signalized intersections in the corridor, the median would also provide additional pedestrian refuge areas.

HAWK Beacons

To help facilitate easier crossings of busy streets, consider installing pedestrian activated, signalized mid-block crossings (HAWK beacons) on major roadways and in areas with high pedestrian activity. A HAWK beacon signal, officially known as a Pedestrian Hybrid Beacon signal, is used to stop road traffic and allow pedestrians to cross safely.

The Pedestrian and Bicycle Sub Area Plan suggests potential locations for HAWK beacons along US 17/Park Avenue and SR 224/Kingsley Avenue to create high visibility crosswalks where existing traffic signals are spaced far apart. These potential locations are listed below:

- US 17/Park Avenue - Near Moosehaven (between McIntosh and Stiles Avenues) and between Stiles and Loring Avenues.
- SR 224/Kingsley Avenue - Clarke Park (between Railroad Avenue and DeBarry Avenue).

Other HAWK beacon locations to consider are: the north end of US 17/Park Avenue, between I-295 and Wells Road, where there are several apartments and many pedestrians are crossing; and SR 224/Kingsley Avenue at Miller Street to assist pedestrians who have trouble crossing SR 224/Kingsley Avenue while walking to and from the Dollar General. Town of Orange Park staff mentioned these pedestrian crossing concerns during the study's steering committee meetings. A new mid-block crossing on US 17 /Park Avenue or SR 224/Kingsley Avenue would require a mid-block pedestrian crossing study.

Safety Campaign

Six of the eight US 17 pedestrian/bicycle crashes on US 17/Park Avenue during the crash analysis period involved vehicles turning right from side streets or driveways onto/from US 17 (Park Avenue). Four of the five right-turning crashes on SR 21/Kingsley Avenue involved bicyclists traveling the wrong way (against traffic). It is unknown if they were using the bike lane or not. Consideration should be given to partnering with the Community Traffic Safety Team and the local Police Department to distribute educational materials in the area that explain pedestrian hazards, the importance of obeying bicycle laws and riding in the same direction as traffic. FDOT's "Alert Today Alive Tomorrow" campaign has numerous readily available tip cards, in English and Spanish.

College Drive Study

A safety study is suggested along College Drive from approximately Peoria Road to Old Jennings Road. Of the 11 intersections with 30 or more crashes during the analysis period, College Drive at Old Jennings Road and at Peoria Road had the second and third highest crash rates (0.954 and 0.635, respectively). Additionally, to improve safety, St. Johns River State College representatives would like to move their southernmost access drive from its current location to the signalized intersection of Old Jennings Road.

Community Character

The primary focus of the following solutions is to promote community character and attractiveness through integrated land use, streetscape and complete street strategies. Collectively, these strategies encourage multiple and connected transportation modes, and an economically viable, healthy and livable community.

Town Center Concept

A highlight of this study's suggested improvements is a town center-main street redevelopment concept intended to be an attractive focal point for the Town, featuring multimodal connections and transit supportive development. The proposed location for this concept is SR 224/Kingsley Avenue generally between the railroad and US 17/Park Street. Transit activity may begin as a local multimodal hub featuring amenities such as bicycle parking, shade trees, benches, transit vehicle bays and parking spaces with pedestrian, bicycle and/or trolley-vehicle connections to the St. Johns River. In the longer term, transit activity may expand to include a commuter rail stop on a future southwest commuter rail line. The concept addresses the Town's desire for enhanced community character and walkable streets by integrating multimodal planning and design concepts with local land use planning. It is hoped that convenient access to transit and pedestrian facilities can be a key attraction that fosters a mixed land uses and increased density that ultimately will support more walking and transit use, less congestion and a more livable environment.

The town has discussed moving the Town Hall building further west on SR 224/Kingsley Avenue and converting the corner property to private property as part of an overall Town Center concept. Also consider incorporating more welcoming, visually appealing gateway features and landscaping located at the intersection of Town boundaries and major roadway corridors. These markers will alert travelers and visitors that they are entering a more pedestrian and transit friendly environment. In the mid to longer term, as redevelopment occurs, additional streetscape features may extend along the major corridors throughout the Town.

Both the Town and Clay County's Comprehensive Plans support a multimodal transportation network and mixed-use, walkable developments. The Town Council approved policy amendments to the Town's 2025 Comprehensive Plan that focus on improving non-automobile connectivity, creating a safe environment for walking and biking and creating a small, walkable commercial core. The Town's Comprehensive Plan encourages:

- Infill and redevelopment of parcels along major study area corridors (US 17/Park Avenue, SR 224/Kingsley Avenue and Wells Road) in accordance with mixed-use principles, to promote an efficient land use pattern;

- Efforts to create a contiguous sidewalk and bicycle facility network, as a priority, to address future development and redevelopment needs;
- Designing for the pedestrian first by balancing ease of vehicular traffic flow with walkability;
- Access management techniques such as shared access, interconnectivity and limited curb cuts for mixed-use developments, to promote better traffic flow on key roadways;
- Promoting mixed-use and TOD as part of a transportation demand management program;
- Land uses which promote public transportation in designated public transportation corridors and establishing design guidelines for development to assure the accessibility of new development to public transit, should such a corridor be identified within the Town; and
- Eliminating or reducing uses inconsistent with the Town's character.

Clay County's Plan also encourages alternative modes of travel such as walking, bicycling and transit as well as TOD around transit stops. In addition to local comprehensive plans, JTA's First Coast Flyer Southwest BRT (Purple Line) Station Area Concept Plan supports pedestrian and transit friendly development. The plan describes 13 station areas along the planned 12.9-mile Southwest corridor BRT line including a conceptual site plan with transit-oriented development for the Orange Park Mall, the BRT line's southernmost station.

Pedestrian/Bicycle Network

Figures 31 – 32 illustrate potential sidewalk and bicycle infrastructure improvements, respectively, and *Figure 33* graphically depicts an overall pedestrian and bicycle network for the area. These recommendations come from the Orange Park Bicycle and Pedestrian Sub-area Plan. Reducing trail, sidewalk and bicycle lane gaps, and providing linkages to major land use destinations and bus stops will increase the quality and continuity of the pedestrian and bicycle network.

These suggested improvements will help create a network of community greenways and family friendly streets that are safer and calmer. They will improve access to transit by making it easier to walk and bicycle to bus stops. They will also improve connections to parks, schools, neighborhoods, business districts and the existing Doctors Lake and Black Creek Trails.

Key projects from the plan are described below.

Connect Doctors Lake Trail to Black Creek Trail

As mentioned in the existing conditions section of the report, there are two gaps in the buffered bike lanes on either end of SR 224/Kingsley Avenue. On the east end of Kingsley Avenue, the Pedestrian and Bicycle Subarea Plan recommends extending the existing Doctors Lake Trail to Kingsley Avenue; constructing a multi-use path on Kingsley Avenue from Doctors Lake Trail to Park Avenue, which includes reducing the width of travel lanes; and extending the trail south along Park Avenue to connect with the Black Creek Trail at Smith Street. Consideration should also be given to eliminating existing gaps in the bike lanes on the westside of Kingsley Avenue near SR 21/Blanding Boulevard when future roadway improvements are implemented.

Path to Wells Road (Orange Park Mall)

Construct a multi-use trail from Sigsbee Road north to Wells Road, on the eastside of Walter Odum Park to the Orange Park Mall.

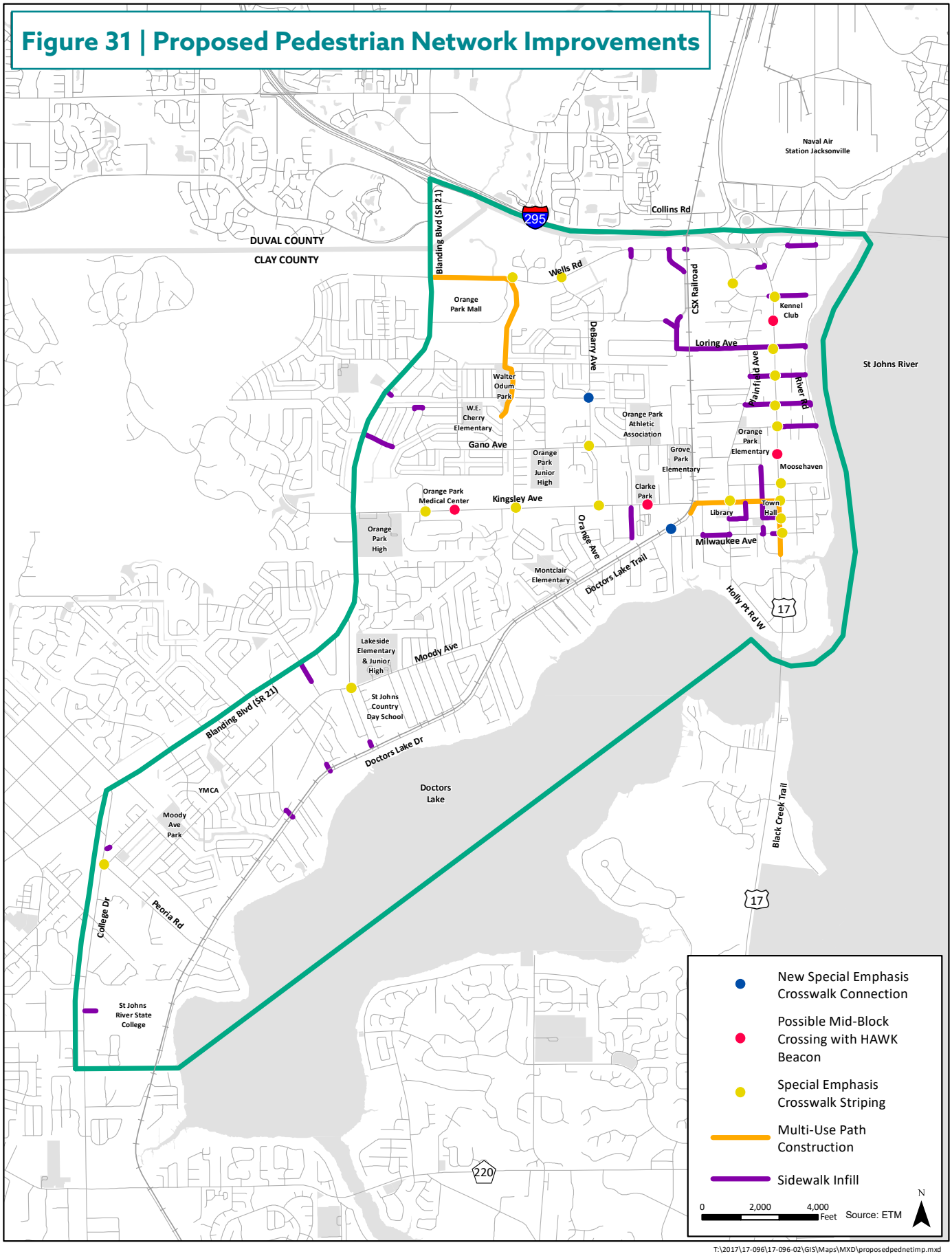
Path along Railroad North to Naval Air Station Jacksonville

US 17/Park Avenue has no bicycle lanes and is constrained through most of the study area. To improve pedestrian/bicycle network connectivity, study the potential to develop a multi-use trail from Doctors Lake Trail along the railroad tracks north into Duval County and then to the naval base.

Milwaukee Avenue Sidewalk/Boardwalk

Construct a boardwalk and sidewalk on Milwaukee Avenue from Carnes Street to Plainfield Avenue to connect with existing sidewalks on either side, next to Johnson Slough.

Figure 31 | Proposed Pedestrian Network Improvements



T:\2017\17-096\17-096-02\GIS\Maps\MXD\proposedpednetimp.mxd

Figure 32 | Proposed Bicycle Network Improvements

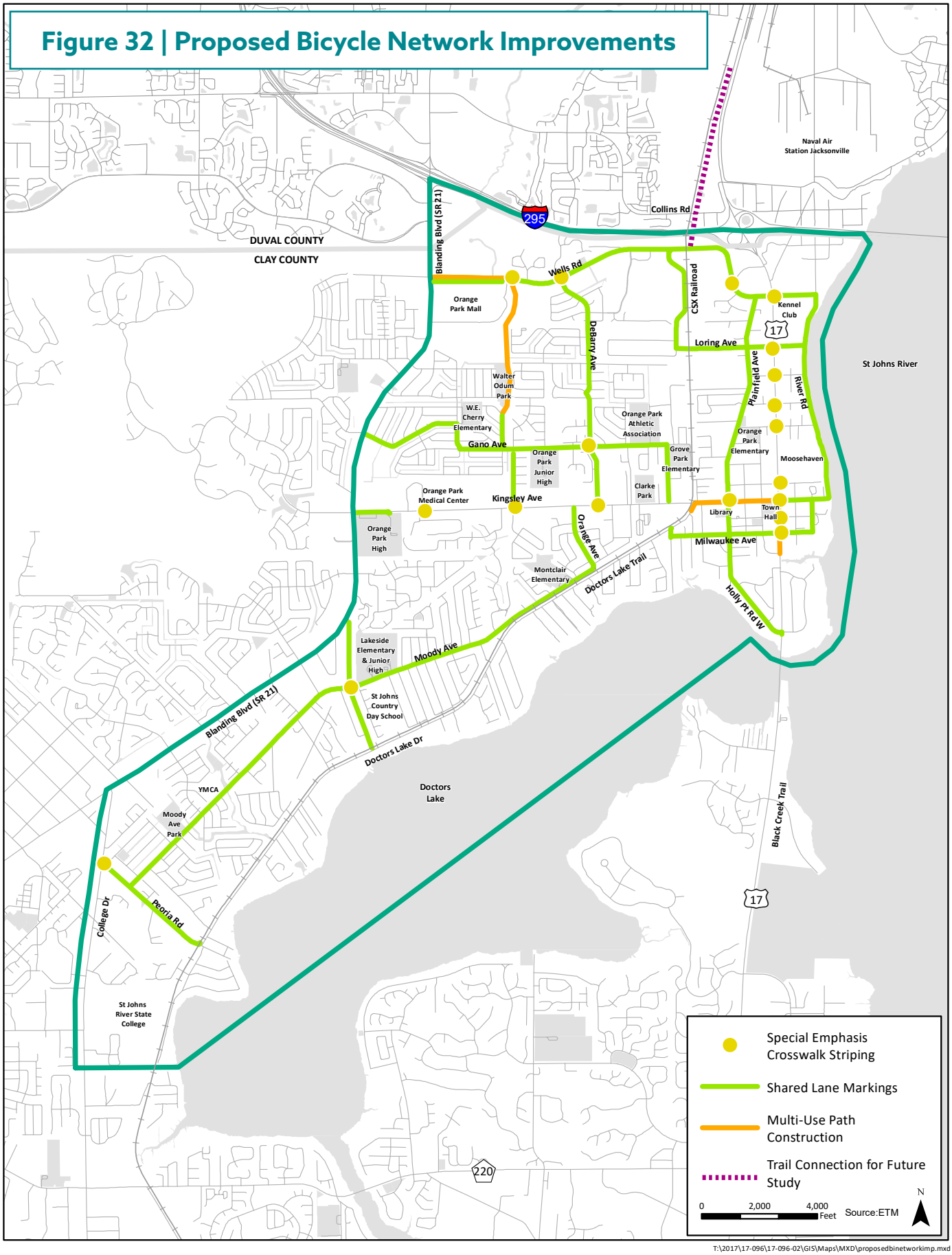
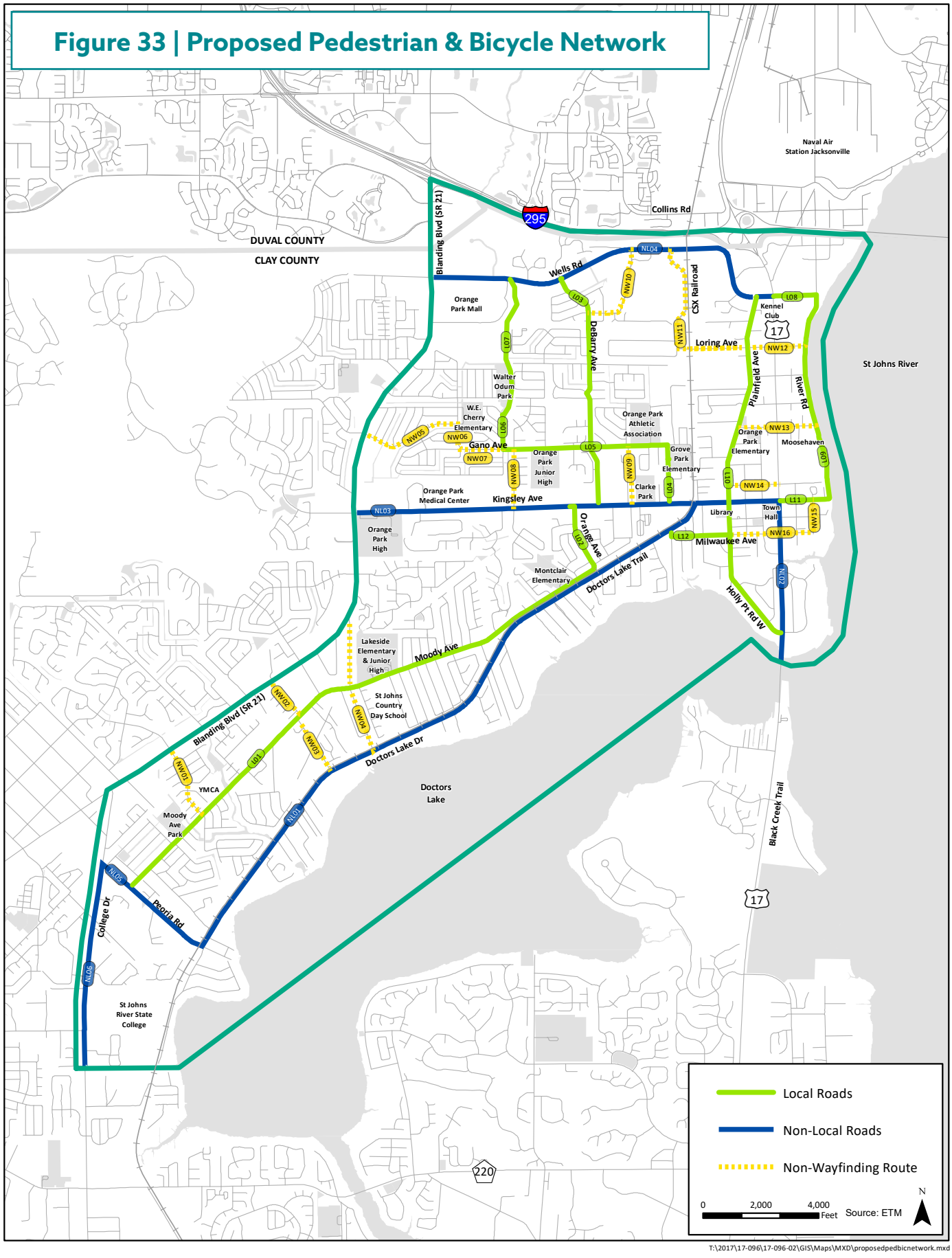


Figure 33 | Proposed Pedestrian & Bicycle Network



T:\2017\17-096\17-096-02\GIS\Maps\MXD\proposedpedbicnetwork.mxd

Public Transit Network

Increasing transit service levels, access and information will enhance service quality, reliability and should encourage additional use of the transit system.

Regional Corridors Connecting the Study Area with Jacksonville

Market Existing Express Service to Black Creek PNR Lot

Based on an analysis of estimated commuters to downtown Jacksonville, the Clay County Transit Study found that the existing Black Creek Park and Ride Lot (in the Fleming Island area) could potentially serve more riders than it is currently serving. If two percent of the lot's estimated commuter rider market (2,600 commuters) decided to use the service, then the lot could serve approximately 52 riders a day, about 40 additional riders. And, if five percent decided to use the service, then the lot could serve over 115 additional riders a day. Consideration should be given to a survey and marketing/promotional program that would outreach to employers and potential riders and encourage them to use the service.

Southwest BRT Service

JTA is planning premium bus service, the First Coast Flyer Southwest BRT (Purple Line), along SR 21/Blanding Boulevard from the Jacksonville Regional Transportation Center in downtown Jacksonville to the Orange Park Mall. BRT (bus rapid transit) refers to high quality bus service designed to provide frequent service, with buses running every 10 to 15 minutes, in specially branded vehicles. This project is programmed in the region's Fiscal Year 2018/19 through 2022/23 Transportation Improvement Program.

Additionally, the current LRTP includes an extension of this BRT along SR 21/Blanding Boulevard, from Wells Rd to CR 218 in Middleburg. In addition to connecting more workers to Jacksonville, this extension may increase mobility for county residents who work in the study area.

Express Service to/from Orange Park Mall

To attract additional choice riders, alleviate traffic backups within the study area, and increase overall mobility, consider an express, limited-stop bus service between the Orange Park Mall and Downtown Jacksonville. This express service would operate during the morning and evening peak periods, perhaps along I-295 Express Lanes or as part of the First Coast Flyer Southwest service. The Clay County Transit Study estimated the Orange Park Mall's choice commuter rider market at approximately 4,800 choice riders. If two percent of the mall's estimated commuter rider market decided to use the service, then the lot could serve approximately 100 riders a day. And, if five percent decided to use the service, then the lot could serve over 240 riders a day.

Park and Ride Lots

Promote and coordinate the use of current bus stops with parking lots as Park and Ride locations. Bus stop locations to consider are the Kennel Club (corner of US 17/Park Avenue and Wells Road) and the Orange Park Mall (corner of SR 21/Blanding Boulevard and Wells Road). Stakeholders may also want to consider Park and Ride locations closer to SR 224/Kingsley Avenue such as the Winn Dixie parking lot (corner of US 17/Park Avenue and SR224/Kingsley Avenue); and Park and Ride locations south of the study area, along US 17, to reduce traffic through the study area. Consider a Park and Ride location on Flemming Island near US 17 and CR 220.

Commuter Rail

When survey participants were asked to select the transportation options they would consider using, a commuter rail connecting Clay County and Jacksonville was selected most often (28 percent of the responses) out of six options. A Southwest Commuter Rail along the CSX Line from downtown Jacksonville to Green Cove Springs is part of the current LRTP. A JTA study identified the southwest commuter rail line as one of three potential commuter rail lines in the region. This option should be considered in the long term, coupled with TOD or transit supportive development in the study area.

Waterborne Transportation

During one of the steering committee meetings, waterborne transportation along the St. Johns River from the study area to Jacksonville was suggested as an alternative way to commute between the study area/Clay County and downtown Jacksonville. Survey participants were asked to select the transportation options they would consider using. Out of six options, waterborne transportation received 26 percent of total responses. This option was last studied by JTA and regional stakeholders in 2008 and prior to that in the 1990's. The most recent study generally found that ridership would not be enough to offset the costs. Unless there is an overwhelming reason to revisit this study, such as a major change to an assumption in the previous study, or no success with trying other less costly transportation options, it may not be beneficial to revisit this option.

Local Transit Service

Increase Frequency and Span - Based on online survey results of the Orange Park Traffic Circulation Study and the Clay County Transit Study, study stakeholders should consider coordinating with Clay Transit to increase frequency and span of local Clay Transit service within the study area. As described in the 2017 Clay County Transit Study, increasing the Orange Line frequency to every 60 to 90 minutes between 6 a.m. and 7:30 p.m. would add approximately four additional trips to the existing service of six daily trips and expand service to operate in the early morning and early evening. The Orange Line circulates the major roadways within the study area and is a productive route that potentially warrants additional service. Between years 2014 and 2016 the number of annual riders on the Orange Line increased 23 percent. Additional frequency and span of service may help increase ridership further.

Improve Information and Route Alignments - Additional Clay County Transit Study suggestions to consider include simplifying bus schedules to make them easier to understand, better educating the community about how to ride the transit services and combining and rebranding the Green and Blue bus lines to eliminate duplicate route alignments and provide more riders direct access to NAS Jacksonville.

(This page was intentionally left blank)

8

Implementation

8. Implementation

This section provides additional guidance and information to plan for implementing the recommendations. Table 6 summarizes the major recommendations contained in this study, indicating responsible agencies, estimated timeframe to implement and estimated cost. A description of potential funding sources follows the table.

Based on the recommendations described in the previous section of this report, the items listed in Table 6 have been assigned one of three timeframes:

- **Short term projects and studies** are envisioned within the 5-year horizon (one to five years)
- **Midterm projects** are envisioned within the 10-year horizon (five to ten years)
- **Future long term programs/concepts** may have multiple phases and projects and are envisioned within or beyond the 20-year horizon
- **As needed projects** are envisioned to depend on conditions and needs. These projects and efforts may vary in scope and occur as needed.

The cost estimates provided for projects in Table 6 represent planning-level construction cost estimates. Right of way acquisition is not included and costs have been based on cost data from multiple sources. Costs are provided in 2018 dollars.

Table 6 | Summary of Recommendations

Improvement Name	Proposed Improvement	Responsible Agency	Estimated Timeframe	Estimated Cost
Specific Recommendations				
Intersection of US 17/Park Avenue and SR 224/Kingsley Avenue	Modify EB thru lane to a shared left-turn/ thru lane (revise pavement markings, replace signal head) to reduce delays and congestion	FDOT	1 - 5 years	$50,000
Wells Road at DeBarry Avenue (Safety modifications)	Replace signal heads with a 4-section flashing yellow arrow with backplates	County	1 - 5 years	$600,000
	Refurbish pedestrian crosswalks			
	Replace southbound right-turn arrow			
	Additional Lighting			
US 17/Park Avenue Crosswalk at Wells Road	Remove northern crosswalk to improve traffic flow	FDOT	1 - 5 years	5,000
SR 224/Kingsley Avenue	Median with directional openings between Orange Park High School and Bellair Boulevard	FDOT	5 - 10 years	$2,000,000

Table 6 | Summary of Recommendations - *continued*

Additional Recommendations (Studies, Maintenance/Upgrades, and Long-Term Initiatives)	Responsible Agency	Estimated Timeframe	Estimated Cost
Orange Park High School Circulation Study	County School District & FDOT	1 - 5 years	$25,000
College Drive Safety Study (approx. Peoria Rd. to Old Jennings Rd)	Clay County	1 - 5 years	$75,000
Refurbish Crosswalks and Upgrade Signals on major roadways to satisfy current requirements	FDOT, County	As needed	Varies by project
Traffic Calming Studies for Residential Streets, as needed and/or requested, per policy	Orange Park	As needed	Varies by project
Mid-block crossing studies along US 17/Park Avenue and SR 224/Kingsley Avenue	FDOT	As needed	Varies by project
Safety campaigns for major corridors	FDOT, County	As needed	Varies
Travel Demand Management Programs including multimodal transportation options and flexible or staggered work hours (includes multiple efforts)	Orange Park & Multiple Partners	5 - 20 years and beyond	Varies by project
Town Center Concept - multimodal connections, gateway features, landscaping and transit supportive development along SR 224/Kingsley Avenue in the Town of Orange Park (multiple projects)	Orange Park & Multiple Partners	5 - 20 years and beyond	Varies by project
Other Programmed, Planned and/or Recommended Improvements	**Responsible Agency**	**Estimated Timeframe**	
I-295 at US 17 Improvements. Widening and reconstruction of US-17/Park Avenue from Collins Road in Duval County to South of Wells Road in Clay County. Financial ID: 435575-1. Construction scheduled for 2022.The project adds an additional access point to NB US 17/Park Avenue at Eldridge Avenue and an additional lane on the ramp from northbound US 17/Park Avenue onto I-295 south. The project adds bike lanes and sidewalks, such as adds bike lanes on US 17, adds sidewalk on US-17 through the interchange, and adds bike lanes and sidewalks on Eldridge.	FDOT	1 - 5 years	
Bicycle and Pedestrian Sub-Are Plan (2016). Recommends several improvements, including 5.5 miles of sidewalk and 18 miles of shared lane markings, to develop a proposed pedestrian/bicycle network	Varies by project (Orange Park, County, FDOT)	Varies by project	
First Coast Flyer - SW BRT (Purple Line). Approximately 13 miles of premium, high frequency bus rapid transit service from downtown Jacksonville to the Orange Park Mall.	JTA	1 - 5 years	
Long Range Transportation Plan (2014). 20-year plan of multimodal projects across the region, including park and ride lots and southwest commuter rail.	Varies by project	Varies by project	
Clay County Transit Study (2017). Recommends improved frequency/span of transit service, information/marketing and streamlined route alignments	Depends on project scope and/or governance (Clay Transit, JTA or other entity)	1 - 5 years	

Potential Funding Sources

Safety Program Funds

- Highway Safety Improvement Program (HSIP) – The HSIP's safety focus is on the reduction of fatal and serious injury crashes on all public roads, and on emphasis area(s) of the Strategic Highway Safety Plan (SHSP). HSIP is a core Federal-aid program and requires a data-driven, strategic approach to improving highway safety on all public roads (including non-State-owned roads and roads on tribal land) with a focus on performance. Use Signal Four Analytics, five years of crash data. HSIP-funded projects are not intended to address capacity enhancement, economic development, maintenance (annual), railroad quiet zone, beautification, drainage and bridge needs.

- Safe Routes to School (SRTS) – This program's safety focus is on planning, design and construction of infrastructure related projects that will substantially improve the ability of students to walk and bicycle to school. Projects should directly support increased safety and convenience for school children in grades k-12 to bicycle and/or walk to school.

- Highway Safety Plan (HSP) – The HSP's safety focus is on behavior enforcement and education. The HSP is Florida's action plan for distributing National Highway Traffic Safety Administration (NHTSA) highway safety funds. The FDOT State Safety Office awards subgrants as seed money to assist in the development and implementation of programs in traffic safety priority areas. Many types of organizations are eligible to receive traffic safety subgrant funding such as government agencies, political subdivisions of state, local, city and county government agencies, law enforcement agencies and other entities.

FDOT Local Programs

- FDOT Local Agency Program (LAP) - A delivery method for Federal-Aid funded projects that reimburses local agencies for planning, design and construction of transportation facilities. Types of projects eligible for LAP include safety projects, resurfacing projects, bicycle and pedestrian facilities, traffic calming projects, bridges and tunnels and infrastructure-based intelligent transportation system projects. The program is funded with a variety of Federal Highway Administration (FHWA) Federal-Aid Highway Program fund sources such as the National Highway Performance Program, Surface Transportation Block Grant Program (STBG), HSIP, Congestion Mitigation and Air Quality (CMAQ) Program, National Highway Freight Program, Transportation Alternatives Program, Metropolitan Planning, Grade Crossings and Recreation Trails Program.

- Transportation Alternatives Program (TAP) – for example, TAP is a FHWA reimbursement program administered by FDOT through the district offices. Local governments (Cities and Counties) and various other entities are eligible. Eligible projects include, but are not limited to, construction, planning and design of on and off-road facilities for bicyclists, pedestrians, and other forms of non-motorized transportation (pedestrian and bicycle facilities); construction, planning and design of infrastructure-related projects/systems to provide safe routes for non-drivers including children, older adults, individuals with disabilities (safe routes for non-drivers); conversion and use of abandoned railroad corridors for non-motorized use; and Safe Routes to School.

- FDOT Locally Administered State Funded Grant Programs provide funds for priority transportation projects, funding bridge rehabilitations, roadway drainage improvements, roadway resurfacing and reconstruction and multimodal enhancements such as bike paths and trails. Two sample state funded grant programs are described below.

  - County Incentive Grant Program (CIGP) – Provides grants to counties to improve a transportation facility, including transit, located on the State Highway System (SHS) or which relieves traffic congestion on the State Highway System.

  - Transportation Regional Incentive Program (TRIP) – Provides funding to improve regionally significant transportation facilities in regional transportation areas defined by Florida Statute.

Additional FDOT locally administered state funded grant programs such as Small County Outreach Program (SCOP), SCOP-Municipalities and Small County Road Assistance Program (SCRAP) are for small or rural counties and/or municipalities.

FDOT Public Transportation

In addition to Federal Transit Administration (FTA) funding [such as Urbanized Area Formula Grants (FTA 5307), Formula Grants for Rural Areas (FTA 5311) and Enhanced Mobility of Seniors & Individuals with Disabilities FTA 5310)], two FDOT public transit grants are described below:

- Public Transit Service Development Grant Program – provides initial funding for special projects involving new or innovative ways to increase service to the riding public, such as new technologies, services, routes or vehicle frequencies. This is a short-term funding source and recipients must be able to continue the funding when the grant ends.
- Commuter Assistance Program (CAP) – Designed to increase vehicle occupancy, particularly during peak travel time periods. Established to encourage public/private partnerships to provide brokerage services to employers and individuals for carpools, vanpools, bus pools, express bus service, subscription transit service, group taxi services, heavy and light rail and other systems.

Other Funding

- America Walks Community Change Grant - This program awards $1,500 in stipends for projects that create healthy, active, engaged communities. Year 2018 applications were due November 2, 2018. Funded projects will increase walking and benefits of walkability in communities, work to grow the walking movement by engaging people and organizations new to the efforts and take steps towards creating a culture of inclusive health.
- Doppelt Family Trail Development Fund – Launched in 2015 to support organizations and local governments that are implementing projects to build and improve multi-use trails. Trails must serve multiple user types and be considered a trail, greenway, multi-use trail or shared-use path. Projects on rail-trails and rails with trails will be given preference, although rail-trail designation is not a requirement. Applications for 2019 grants open December 1, 2018.

ETM

England-Thims & Miller, Inc.

VISION • EXPERIENCE • RESULTS

14775 Old St. Augustine RD.
Jacksonville, Florida 32258
(904) 642-8990
www.etminc.com