Florida Department of Transportation District Five

Central Avenue (SR 19) Corridor Planning

Existing Conditions Report

January 2017

Financial No: 439756-1

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Chapter One: Introduction

1.1 Report Purpose

In September 2016, the Florida Department of Transportation (FDOT) engaged the services of VHB to perform a Corridor Planning Study on State Road (SR) 19/Central Avenue from County Road (CR) 450A to Bulldog Way. As part of this effort, FDOT also requested VHB examine a secondary corridor, Umatilla Boulevard, from its southern terminus (intersection of SR 19 and Ocala Street) to its northern terminus (intersection of SR 19, just south of Lake Street). Collectively, these two streets constitute the efforts of the "SR 19 Corridor Planning Study".

A Corridor Planning Study is a high-level evaluation of safety, environmental, and geometric concerns along a transportation corridor where needs, possible improvement options, and planning level cost estimates are identified. The purpose of the study is to develop a multi-modal, design-driven vision, rather than a model-driven vision to determine how best to meet the needs of the current and future end users of the corridor, and to establish a long-term plan to guide evolution of the corridor. Multi-modal corridor projects are seen as essential to network efficiency, safety, and livability within the context of future transportation needs.

This process will combine planning and engineering efforts to develop a range of feasible improvement strategies. As part of the analysis, previous studies, improvement plans, as well as an inventory of existing traffic, pedestrian and bicycle, and transit conditions, and facilities will be evaluated. The purpose of this Existing Conditions Report is to document the existing facilities, conditions, and previous studies relevant to the SR 19 Corridor Planning Study.

1.2 Project Background and Purpose

This project has been requested by the City of Umatilla and the Lake-Sumter Metropolitan Planning Organization (MPO) to coordinate the development of a future vision for the SR 19 corridor which will assess the feasibility of improving multimodal safety and mobility using a "complete streets" approach. This study will involve a community-based evaluation to determine how best to meet the needs of current and future users, and to establish a long-term plan to guide evolution of the corridor, which appropriately correlates the balance between land use and transportation planning. This project will be coordinated with local and regional agency partners, such as the Lake-Sumter MPO, the City of Umatilla, and LakeXpress, to develop potential solutions to establish a more multimodal urban environment utilizing a context-sensitive approach.

This corridor study will also integrate the Healthy Community Design approach into the corridor study process. Healthy Community Design (HCD) is a planning approach which integrates public health, transportation, and community planning to recognize how the built environment affects the physical, social, and mental health of communities. Transportation is an important part of the built environment and significantly influences physical activity and well-being, safety, and the ability of community members to access destinations essential to a healthy lifestyle. By integrating this approach into the standard corridor study, the Project Team can identify physical improvements and policies which can result in better health outcomes for the communities served by state roads.

Figure 1 illustrates the Study Area.

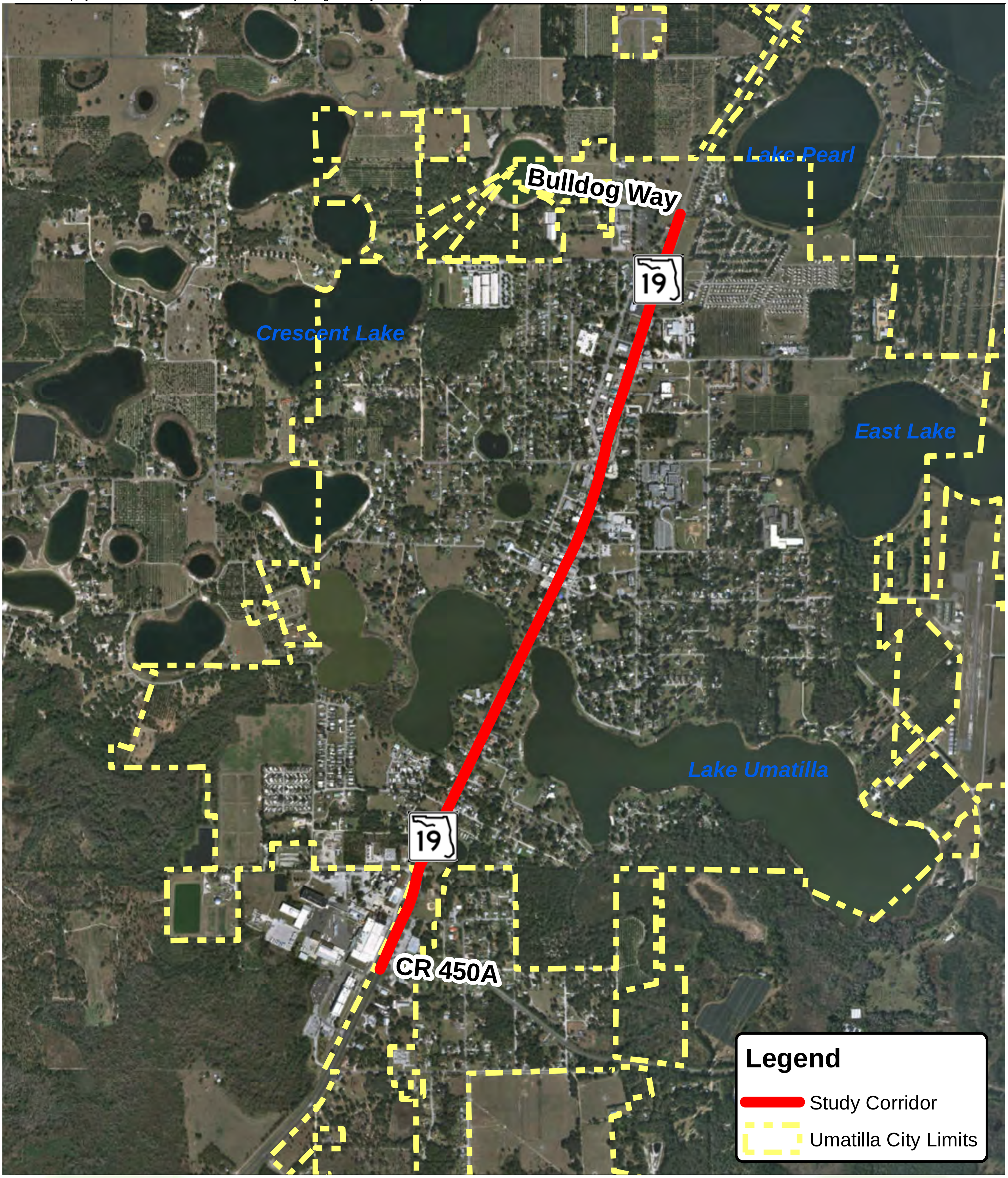

Figure 1
Study Area Map

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CORRIDOR STUDY

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Chapter Two: Existing Conditions

2.1 Introduction to the Corridor

The SR 19 Corridor Study consists of a 2.0-mile section of SR 19 (Central Avenue) which passes through the City of Umatilla in Lake County. This 2.0-mile section begins at County Road 450A to the south and ends at Bulldog Way to the north. This corridor study also includes the 0.5-mile-long Umatilla Boulevard, from its southern terminus (intersection of SR 19 and Ocala Street) to its northern terminus (intersection of SR 19, just south of Lake Street).

The Study Area is defined as a ½-mile buffer around these two roadways, unless otherwise noted.

The SR 19 Study Corridor is separated into three (3) section types. SR 19 from CR 450A to Golden Gem Drive is a four (4) lane divided arterial with a median and rural cross section (no curb and gutter). From north of Golden Gem Drive to Bulldog Lane/W. Ocala Street, SR 19 is a four (4) lane arterial with a curbed median with well-maintained landscaping and a closed drainage system with curb and gutter. North of W. Ocala Street, SR 19 is a three (3) lane arterial with a bi-directional center turn lane. In this segment, drainage is typically a closed system with grate/drainage pan and no curb and gutter.

The posted speed is 45 miles-per-hour (mph) along the southern portion. South of Golden Gem Drive, the posted speed changes to 40 mph for a small section, until it changes again to 35 mph south of Guerrant Street/Cassady Street.

The character of the corridor is urban and mostly developed with residential subdivisions within the surrounding area. In addition, there are three (3) public schools along this corridor. There are three (3) signalized intersections located at: SR 19 and Cassady Street/Guerrant Street; SR 19 and Bulldog Lane/W Ocala Street/Umatilla Boulevard; and SR 19 and E Collins Street.

The majority of SR 19 has sidewalks present on both sides of the road with occasional gaps along the corridor. Most side streets do not have any type of sidewalk connection to SR 19. When sidewalks are provided, it is generally on only one side of the road. There are no designated bicycle lanes along SR 19 or Umatilla Boulevard, except a 150-foot bicycle lane on SR 19 northbound south of the intersection of SR 19 and E Collins Street, and a 150-foot bicycle lane on SR 19 northbound starting south of the intersection of SR 19 and Palmetto Street.

Along most of SR 19, there are paved shoulders on both sides of the road to allow for on-street parking. In many cases, this parking is underutilized, making this parking area a de-facto bicycle lane due to the low utilization of on-street parking.

SR 19 is a primary north-south route between US 441 and SR 40, serving all users, including local traffic and truckers, while providing the City residents an evacuation route.

The remainder of this chapter summarizes the following topics:

- Summary of Transportation Plans
- Land Use
- Summary of Supporting Plans and Guidelines
- Population and Demographics
- Healthy Communities
- Existing Physical Features (Roadway, Bike/Pedestrian, Transit)
- Existing Travel Demand Characteristics
- Existing Corridor Operations Summary
- Safety and Crash Analysis
- Environmental Characteristics

2.2 Summary of Transportation Plans

A review of various transportation plans was performed to understand what improvements are planned throughout the Study Area. During this exercise, the following documents were reviewed:

- Lake-Sumter MPO 2040 Long Range Transportation Plan (LRTP)
- Lake-Sumter MPO Transportation Improvement Plan (TIP)
- Lake-Sumter MPO, Lake Xpress, and Sumter County Transit: 2014 – 2023 Transit Development Plan (TDP)
- FDOT Five Year Work Program
- FDOT's Resurfacing, Restoration, and Rehabilitation (3R) Scope for SR 19

Lake-Sumter MPO 2040 Long Range Transportation Plan (LRTP)
The Lake-Sumter MPO 2040 LRTP identifies a multi-modal range of improvements for both Lake and Sumter Counties through 2040. More information on planned roadway, bicycle/pedestrian, and transit improvements can be found in Sections 2.7.11, 2.7.12, and 2.7.13, respectively.

Lake-Sumter MPO Transportation Improvement Plan (TIP) Fiscal Year 2016 - 2020
The TIP is a priority list of federal and state funded projects which are scheduled for implementation by the Lake-Sumter MPO. The TIP includes financially feasible multi-modal projects previously adopted by state and local officials, and transportation agencies. The TIP includes projects funded through FY 2020. More information on applicable roadway, bicycle/pedestrian, and transit improvements can be found in Sections 2.7.11, 2.7.12, and 2.7.13, respectively.

LakeXpress, and Sumter County Transit 2014-2023 Transit Development Plan

The LakeXpress/Sumter County Transit 2014-2023 TDP documents future transit improvements throughout Lake and Sumter Counties over the next ten years. Transit improvements can include new routes, expanded hours of operation, or increased frequencies. More information about transit improvements within the Study Area are documented in Section 2.7.13: Transit Service and Infrastructure.

FDOT Five Year Work Program

Each year, FDOT develops the Five Year Work Program in accordance with Section 339.135, Florida Statutes. The Five Year Work Program is an ongoing process used to forecast the funds needed for upcoming transportation system improvements scheduled for the next five years. The development of this Work Program involves extensive coordination with local governments, including Metropolitan Planning Organizations (MPOs) and other city and county officials. More information on applicable roadway improvements can be found in Section 2.7.11.

FDOT 3R Scope for SR 19

FDOT is planning to perform a 3R project along a portion of the Study Area (SR 19 from Golden Gem Drive to 75 feet south of Palmetto Street). This 3R project will resurface the roadway, improve drainage, and include pedestrian, bicycle, and transit improvements. The scope of the 3R project was reviewed to identify applicable roadway, bicycle/pedestrian, and transit improvements, which are documented in Sections 2.7.11, 2.7.12, and 2.7.13, respectively.

2.3 Land Use

Existing and planned future land use patterns along the SR 19 corridor are important factors to consider during the investigation and evaluation of multi-modal transportation system improvements. As land uses change and population increases, demand for additional access and transportation infrastructure grows. In addition to shaping the transportation system from a supply-demand perspective, incompatible land uses can affect the feasibility of potential multi-modal transportation improvements.

This section documents the results of a desktop analysis of the land uses within and adjacent to the SR 19 Study Area. This analysis was performed using readily available statewide, and regional Geographic Information Systems (GIS) data including Lake County GIS data.

2.3.1 Existing Land Use

Existing land use data are summarized in Table 1 and illustrated in Figure 2. The predominant land uses in the Study Area are public/institutional and residential. Public/Institutional uses include Federal, State or City-owned land, as well as schools, hospitals, and places of worship. The residential uses in the study area are generally located on either side of SR 19, behind the commercial uses present along corridor.

While not located within the Study Area, it is important to note there is a large recreational complex located off E Collins Street (North Lake Community Park). This park draws many people and is the largest recreational complex in Lake County, featuring facilities for little league baseball, baseball, softball, soccer, basketball, and volleyball.

Table 1: Existing Land Uses

Land Use	Percentage (1/2-Mile Buffer)
Agricultural	10.4%
Commercial	10.6%
Industrial	5.5%
Mixed (Commercial/Residential)	0.2%
Non Agricultural Acreage	4.8%
Office	1.2%
Other/No DOR Code	0.2%
Public/Institutional	28.0%
Residential	25.6%
Vacant	13.5%

Source: Lake County Property Appraiser GIS

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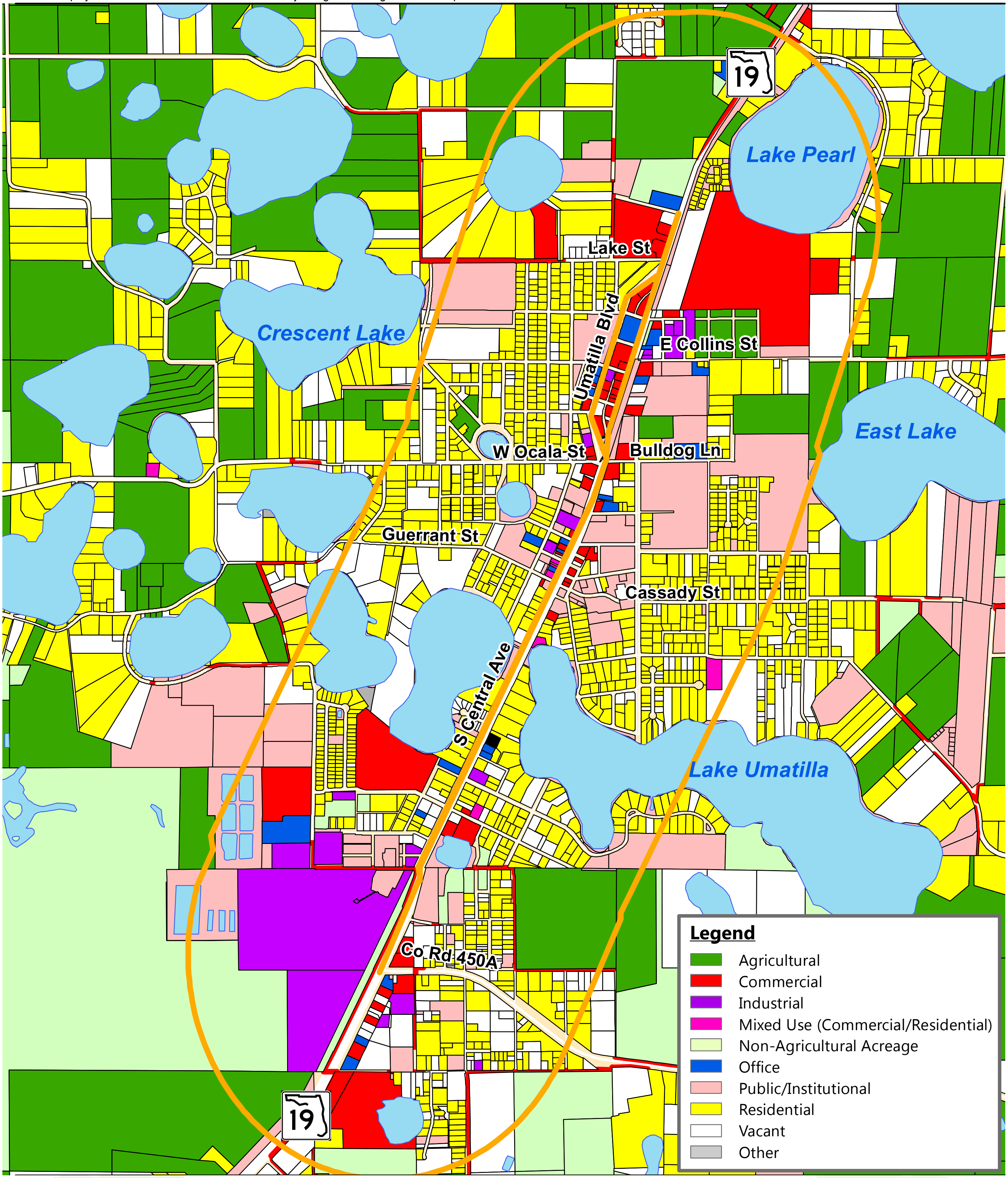

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CORRIDOR STUDY

Figure 2
Existing Land Use Map

Source: Lake County Property Appraiser GIS data

2.3.2 Future Land Use

The Future Land Uses (FLUs) adopted by the City of Umatilla and Lake County within the Study Area are shown on Figure 3. Table 2 provides the specific FLU designations for both the City and County. The designated FLUs are generally consistent with the existing land uses. Residential FLUs are the primary future land use type within one-half mile of the SR 19 corridor in the Study Area, accounting for over 42% of the land. The majority of the residential land uses are low density. Mixed Use/Urban is the second most common FLU category; however, it is important to note these may actually be residential. The Lake County Comprehensive Plan describes the “Urban” FLU categories are intended to provide “for a range of residential uses” and allow “for the conversion of existing residential units to residential professional office uses”. The Plan continues to describe the land use “should be located on or in proximity to collector or arterial roadways to minimize traffic on local streets and provide convenient access to transit facilities,” as well as the potential “this land use can serve effectively as a transitional use between more intense urban development and Low Density Residential uses.” The two “Urban” FLUs account for almost 27% of the total land in the Study Area and the City’s Downtown Mixed Use District accounts for 1.7% and is located along SR 19, generally between Cassady Street and CR 450 (East Collins Street).

Within the general area surrounding the corridor, typically the further away from the SR 19 corridor a property is located, the less intense the designated FLU will be.

Table 2: Future Land Use – City and County Specific

Jurisdiction	Future Land Use	Percent (1/2-Mile Buffer)
City of Umatilla	Agriculture	0.4%
	Commercial General	8.8%
	Commercial Tourist	0.8%
	Commercial Wholesale	0.3%
	Downtown Mixed Use	1.7%
	Industrial	3.7%
	Institutional	5.3%
	Lake	3.8%
	Recreation	2.2%
	Mobile Home HD	2.7%
	Residential Multi-Family Low Rise	5.9%
	Residential Single Family Low Density	8.4%
	Residential Single Family Medium Density	25.0%
	Transportation	0.5%
	Utility	1.0%
Lake County	Industrial	2.4%
	Rural Transition	0.3%
	Urban Low	14.2%
	Urban Medium	12.6%

Source: City of Umatilla and Lake County GIS data

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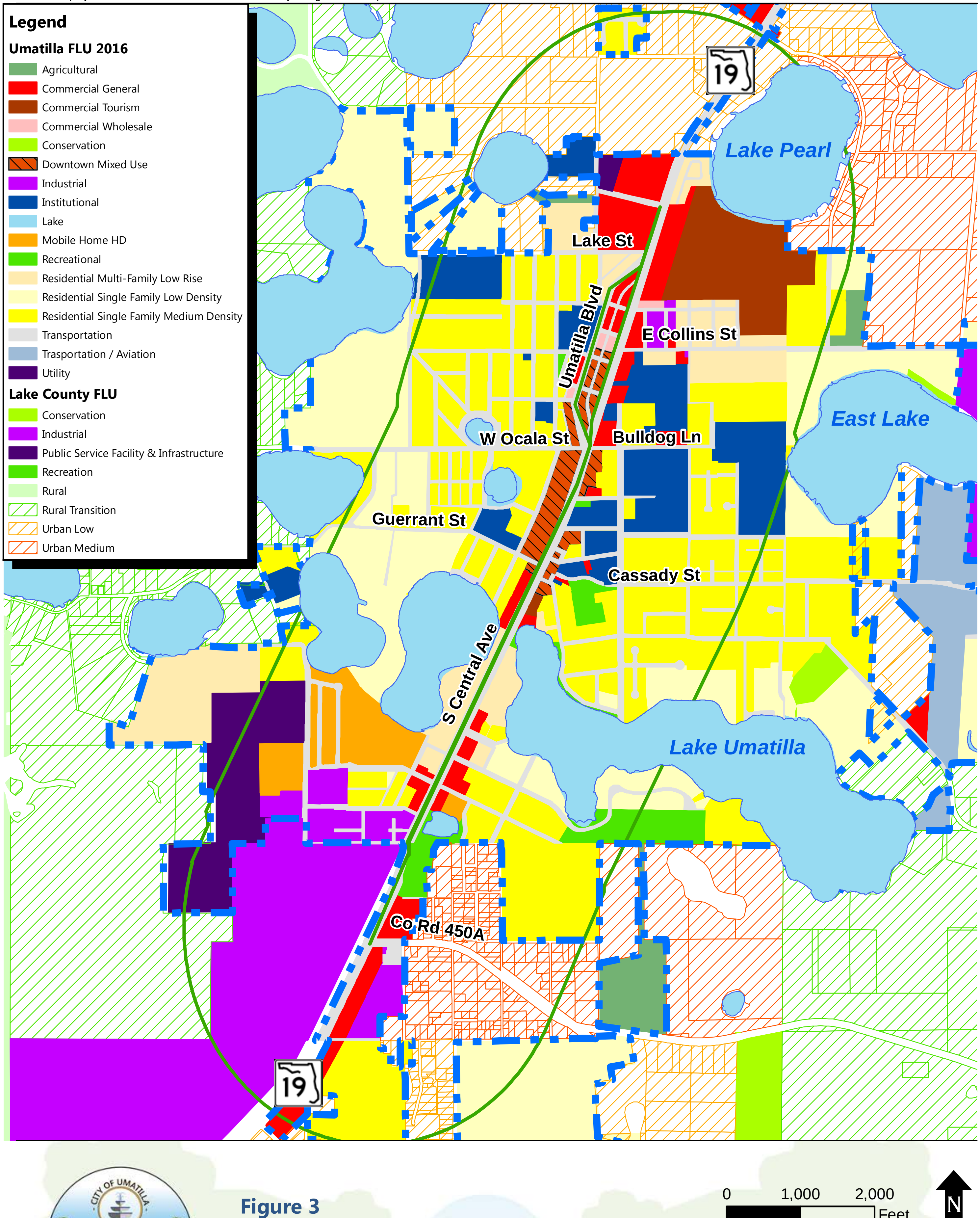

Figure 3
Future Land Use Map

Source: 2010 US Census

2.4 Summary of Supporting Plans and Guidelines

A review of State, transportation planning agency, City, and Local plans and guidelines was conducted to identify transportation and mobility plans, which must be considered during the development of Corridor Planning Study recommendations.

2.4.1 Comprehensive Plan Policies

The City of Umatilla's Comprehensive Plan was reviewed to determine if the municipality has adopted policies which influence multimodal mobility and complete streets within the Study Area. The Comprehensive Plan is the foundation for local land use, transportation, and economic development planning and decision-making, serving to advance a community's vision and priorities.

The City of Umatilla has adopted multiples Objectives and Policies in the Transportation Element of the Comprehensive Plan which focus on multimodal transportation improvements and providing safe and accessible multimodal options for users. The introduction to the Transportation Element states the purpose of the element is to "establish the desired and projected transportation system in the City of Umatilla and particularly to plan for future motorized and non-motorized traffic circulation systems."

The Existing Conditions section of the Transportation Element explains the existing bus service (LakeXpress) and bicycle and pedestrian facilities in the City. This section also notes when analyzing the system needs based on future land uses, the analysis "shall address the need for new facilities and expansions of alternative transportation modes to provide a safe and efficient transportation network and enhance mobility." This section also notes the lack of continuous sidewalks and bicycle lanes; however, continues to explain SR 19 through Umatilla was designated as a Multimodal Corridor by the Lake-Sumter MPO, and the MPO "defines this designation indicating prioritization of project improvements along select corridors to improve transit quality of service, operational strategies to improve traffic flow, select intersection improvements to enhance mobility and pedestrian safety, designated bike lanes or parallel bike routes, and multimodal infrastructure improvements in 'centers' located along these corridors to support urban design and land use patterns where walking, biking, and utilizing transit are encouraged as primary modes of transportation." At the time when the Comprehensive Plan was updated in 2013, the MPO identified several planned bicycle/pedestrian improvements along SR 19. These include the Lake Yale Loop, entering Umatilla from CR 450, the Lake-Volusia Trail, entering Umatilla from the east from CR 42, and the North Lake Trail II, along SR 19. This is mirrored in Policy 2-2-1.5, which states "the City shall continue to work with the MPO with regards to a planned bicycle and or pedestrian trail that is planned along the southern portion of SR 19."

Goal 2-1 of the Transportation Element is to "provide a safe, convenient, efficient multimodal transportation system for both motorized and non-motorized transportation modes." The first Objectives under this Goal (Objectives 2-1.1 and 2-1.1A) discuss establishing levels of service (LOS) for the multimodal system. For the alternative modes of transportation, the adopted LOS and descriptions from the Comprehensive Plan are indicated below:

Pedestrian Level of Service

LOS Std	Facility	Amenities	Conflicts	Maintenance
D	Sidewalks non-continuous on one side. Min. width 4'.	Intermittent shade trees and lighting.	Posted speed 45 mph or less. Limited crosswalks and signals.	Minor or infrequent problems.

Bicycle Level of Service

LOS Std	Facility	Connectivity	Conflicts	Maintenance
D	Areas where bicycles share the road with other modes of travel (hard shoulders).	Limited connection between residential areas, educational facilities, recreation areas, and retail and employment areas.	Posted speed 45 mph or less. Crosswalks and signals at major intersections.	Minor or infrequent problems.

Transit Level of Service

LOS Std	Availability	Frequency & Reliability	Safety & Comfort	Accessibility & Affordability
D	Weekday service and paratransit demand service available.	Less than one vehicle per hour or peak hour provision only. Information on routes, schedules, fares, connections, and available destinations available online and/or select locations. Reservations required for paratransit service.	Very limited facilities. Door to door service available with paratransit service.	Stops within walking or cycling distance of destinations.

Policies 2-1.1A.7-10 all discuss intergovernmental coordination for multimodal improvements, including those indicated in Lake County's ADA Transition Plan and Lake County's Transit Development Plan. Furthermore, Policy 2-1.4.1 identifies the need to "address the provision of efficient public transit services based upon existing and proposed major trip generators and attractors, safe convenient public transit terminals, land uses and accommodation of the special needs of the transportation disadvantaged."

2.4.2 Local Small Area Plans and Community Redevelopment Areas

The Community Redevelopment Agency (CRA) program was created in Florida in 1969 to help communities revitalize downtown areas. The Florida Legislature established criteria to allow and encourage CRA redevelopment and revitalization activities when certain conditions exist, including but not limited to, the presence of substandard or inadequate structures, higher crime rates than surrounding areas, inadequate infrastructure, insufficient roadways, deterioration of sites or other improvements, and inadequate parking.

The Study Area is located within the City of Umatilla CRA boundary, which is adjacent to SR 19 and includes primarily single family residential with commercial land uses along SR 19. The purpose of the CRA is "to identify and address blighting conditions and to enable the City to establish a mechanism to more efficiently finance redevelopment project." The Community Redevelopment Plan (CRA Plan) adopted in 2009 identifies existing conditions and issues, redevelopment goals and objectives, projects and programs, and a financial plan. Multiple recommendations from this plan influence the multimodal transportation system, including SR 19.

The 2009 CRA Plan includes issues and recommended redevelopment projects and programs affecting the SR 19 corridor.

Issues the 2009 CRA Plan identified along the SR 19 corridor include:

- The SR 19 corridor lacks a meaningful streetscape.
- There is a deficit off-street parking for commercial uses.
- Existing crosswalks on SR 19 are too dangerous to cross.
- The width of SR 19 visually splits the City into two halves.
- Traffic on local streets in residential areas conflict with truck traffic.
- Commercial properties have no clear definition between road, driveways, and parking areas.
- Streetscape and medians are in need of enhancements.

Needs identified in the 2009 CRA Plan which may affect SR 19 include:

- Provide usable crosswalks across SR 19.
- Develop a parking plan for existing community businesses.
- Enhance streetscapes and medians.

The 2009 CRA Plan also includes recommended projects and programs which affect the SR 19 corridor, such as:

- Streetscape – Implement a program to improve the appearance and function of streetscapes within commercial and residential areas. An objective of this program is to "improve safety and traffic conditions within the CRA by calming and slowing traffic.
- Sidewalks – Assist with the repair and/or installation of sidewalks within the CRA to promote pedestrian safety and access. An objective of this program is to "provide safe access to schools, parks, residential areas, commercial opportunities and recreational activities." It is also noted this program would provide alternative modes of transportation.
- Develop parking and pedestrian systems which are convenient, safe, and pleasant.

2.4.3 Developments of Regional Impact

Information on Developments of Regional Impact (DRIs) was collected from the Florida Department of Economic Opportunity (DEO), Regional Planning Councils, and county governments. A DRI is defined as any development which would have a substantial impact on the health, safety, or welfare of citizens in more than one county, as defined by Chapter 380.06, Florida Statutes. Typically, DRIs include a substantial program of development which has the potential to significantly impact land development patterns, traffic, and infrastructure.

In 2010, the Florida Legislature changed the DRI statue; however, a number of developers opted to retain their DRI status and associated development orders (i.e., development rights). In 2015, Florida passed Chapter 2015-30, eliminating the DRI process requirements. Any new projects which meets the DRI thresholds under Chapter 380.06, Florida Statutes, will be reviewed subject to the state coordinated comprehensive plan review process, Section 163.3184 (4), Florida Statutes.

There are no existing DRIs located in the Study Area, or within one mile of the Study Area.

2.5 Population and Demographics

Understanding the demographics of the Study Area is necessary to identify appropriate transportation improvements for the Study Area. This section provides an overview of transportation-related population and demographics, conducted with data collected from the US Census 2010 and 2014 American Community Survey (ACS) 5-Year Estimates. In the following sections, population characteristics and demographic features have been summarized in tabular format and illustrated on maps.

2.5.1 Population Characteristics

An overview of the corridor population characteristics is provided in Table 3 and illustrations of population characteristics in the Study Area are shown in Figure 4 through Figure 7. The population density is approximately 1.32 persons per acre and housing density is 0.53 households per acre, with most of this density occurring in the northern half of the corridor. Average household size in the abutting area is 2.47 persons per household and the median age is 42 years old. The majority of the population in the Study Area identifies as white (89.5 percent).

Table 3: Population Characteristics

Population	Study Area
Total Population	3,187
Population Density (Persons per Acre)	1.32
Total Households	1,290
Average Household Size	2.47
Household Density (Households per Acre)	0.53
Median Age	42
Population Over 65	19.9%
Male	48.9%
Female	51.1%
White	89.5%
Hispanic or Latino	11.6%
Not Hispanic or Latino	77.8%
Black or African American	9.3%
Asian	0.3%
Other	1.0%

Source: 2010 U.S. Census

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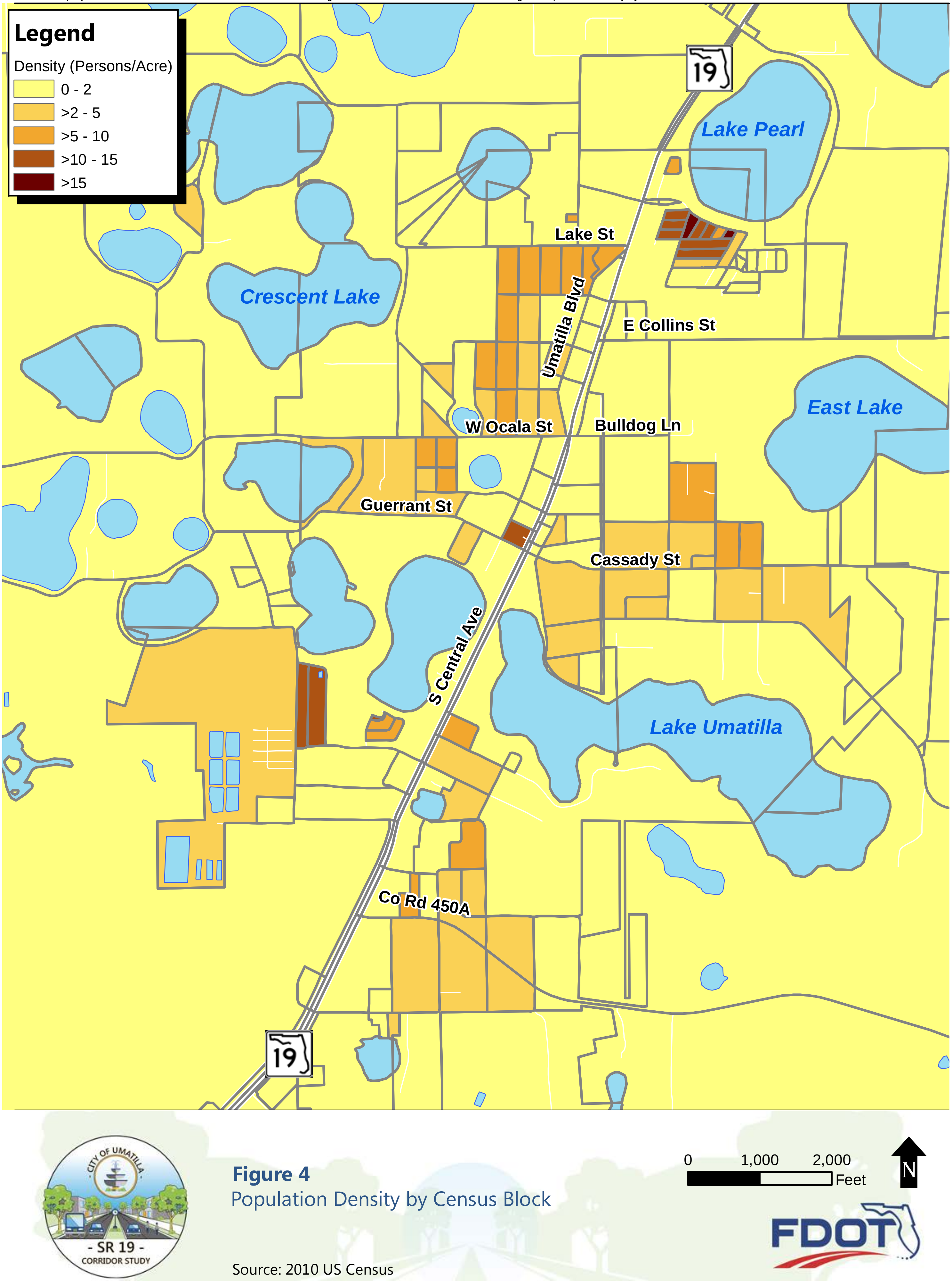

Figure 4

Population Density by Census Block

Source: 2010 US Census

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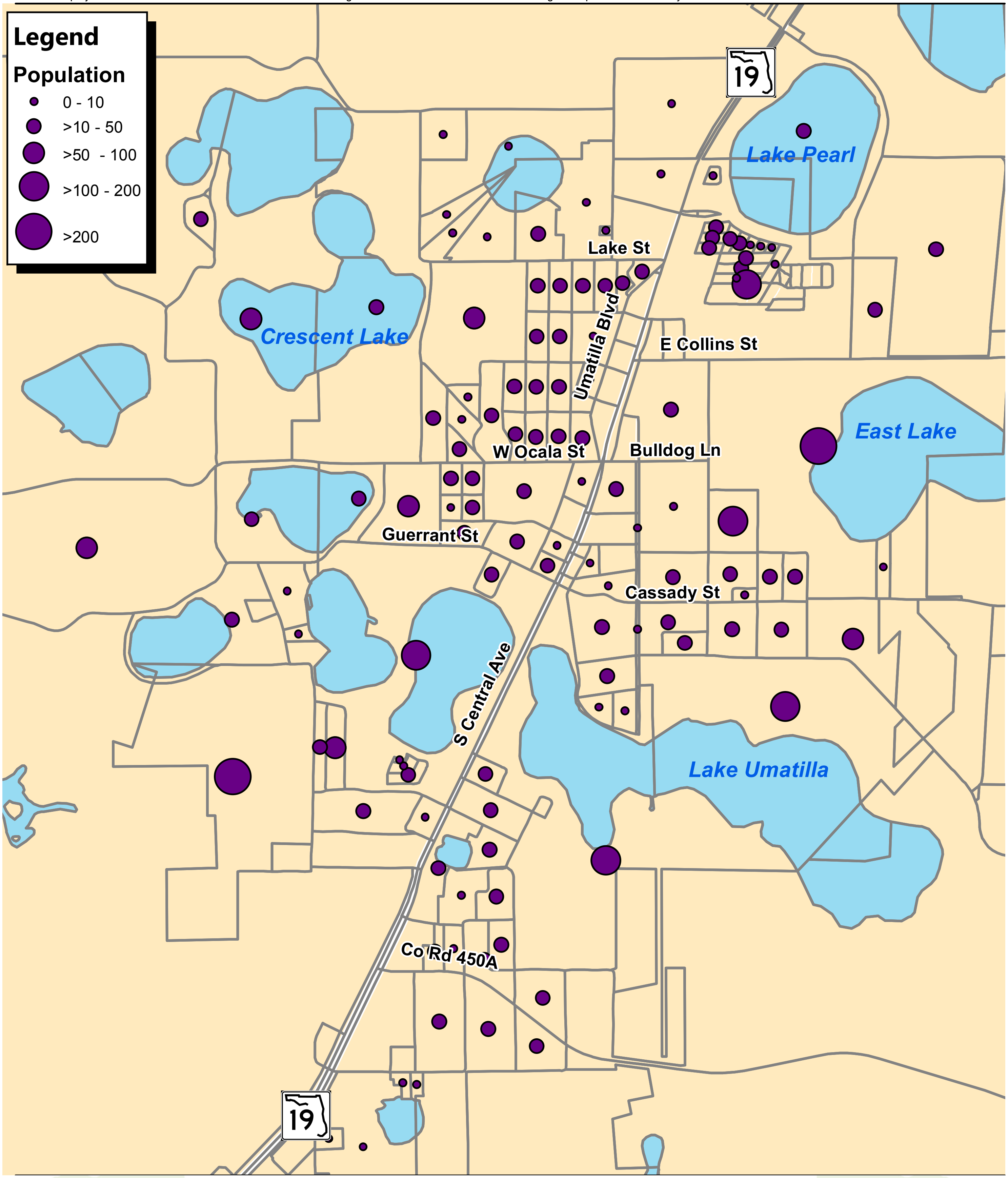

Figure 5
Population Dot Density

Source: 2010 US Census

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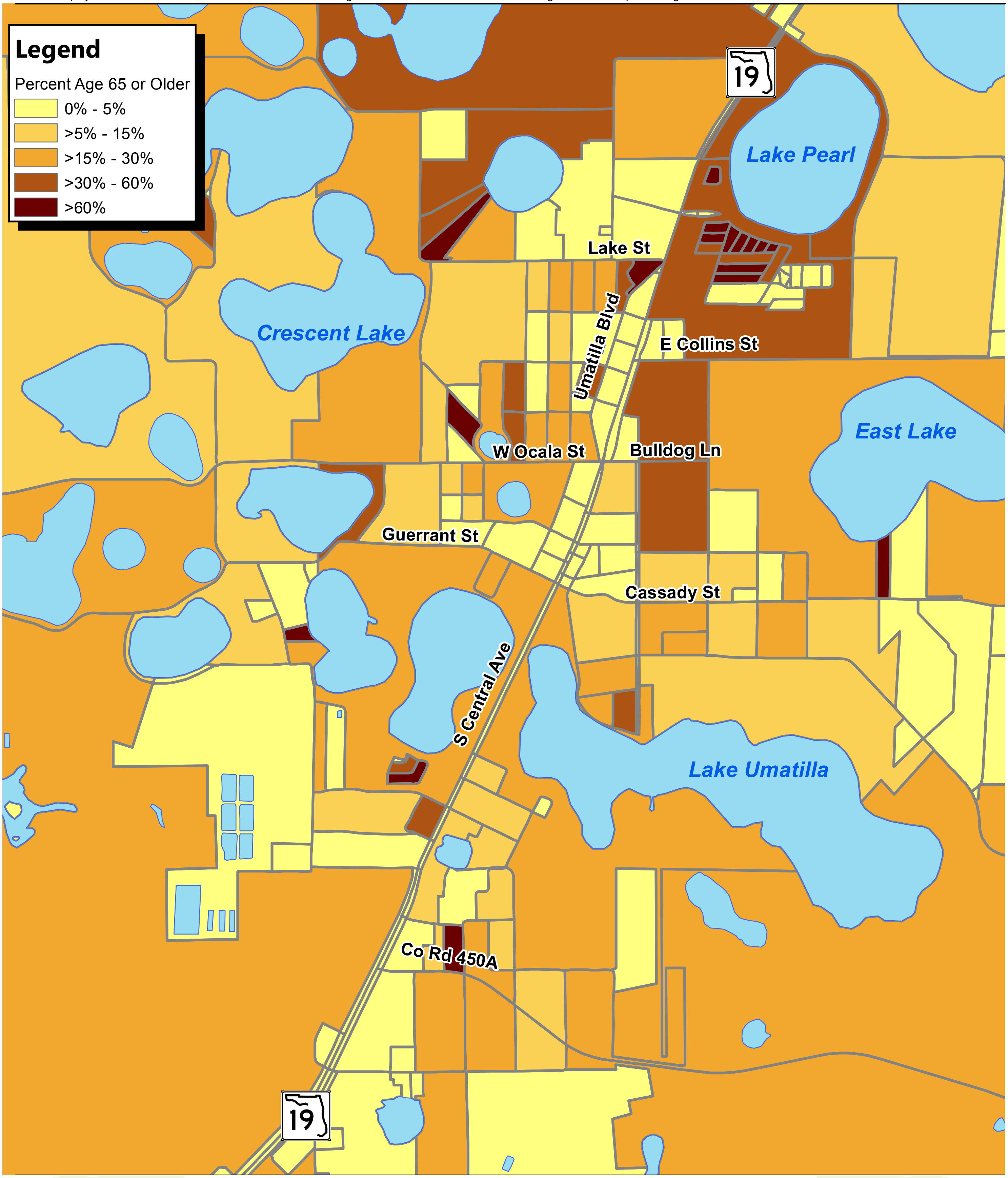

Figure 6
Percent Population Age 65 or Older

Source: 2010 US Census

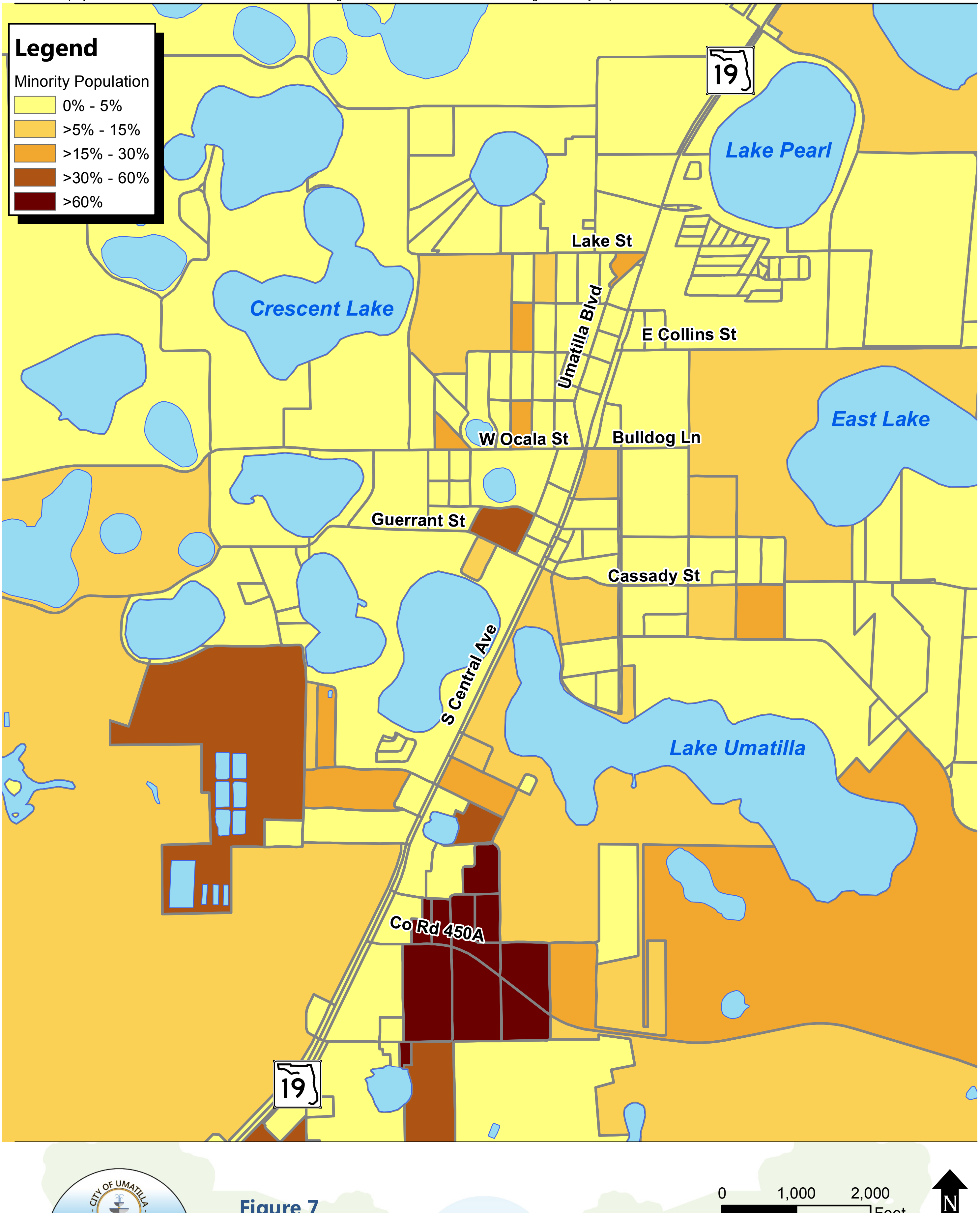

Figure 7
Minority Population

Source: 2010 US Census

2.5.2 Socioeconomic Data

Socioeconomic data was obtained from the 2010 US Census and the 2014 ACS 5-Year Estimates. Table 4 provides an overview of the socioeconomic characteristics. Figure 8 through Figure 11 graphically present these results, which generally depicts the eastern half of the corridor is more affluent than the western half. This may be indicative of greater transit and pedestrian/bicycle facility needs on the western half of the corridor due to reduced automobile use.

Table 4: Socioeconomic Characteristics

Population	Study Area
Median Household Income	$40,882
Households Below Poverty Level	16.4%
Total Housing Units	666
Owner-Occupied	63.3%
Renter-Occupied	22.3%
Vacant	14.4%
Households with No Vehicles	7.7%

Source: 2010 U.S. Census and 2014 ACS 5-Year Estimates

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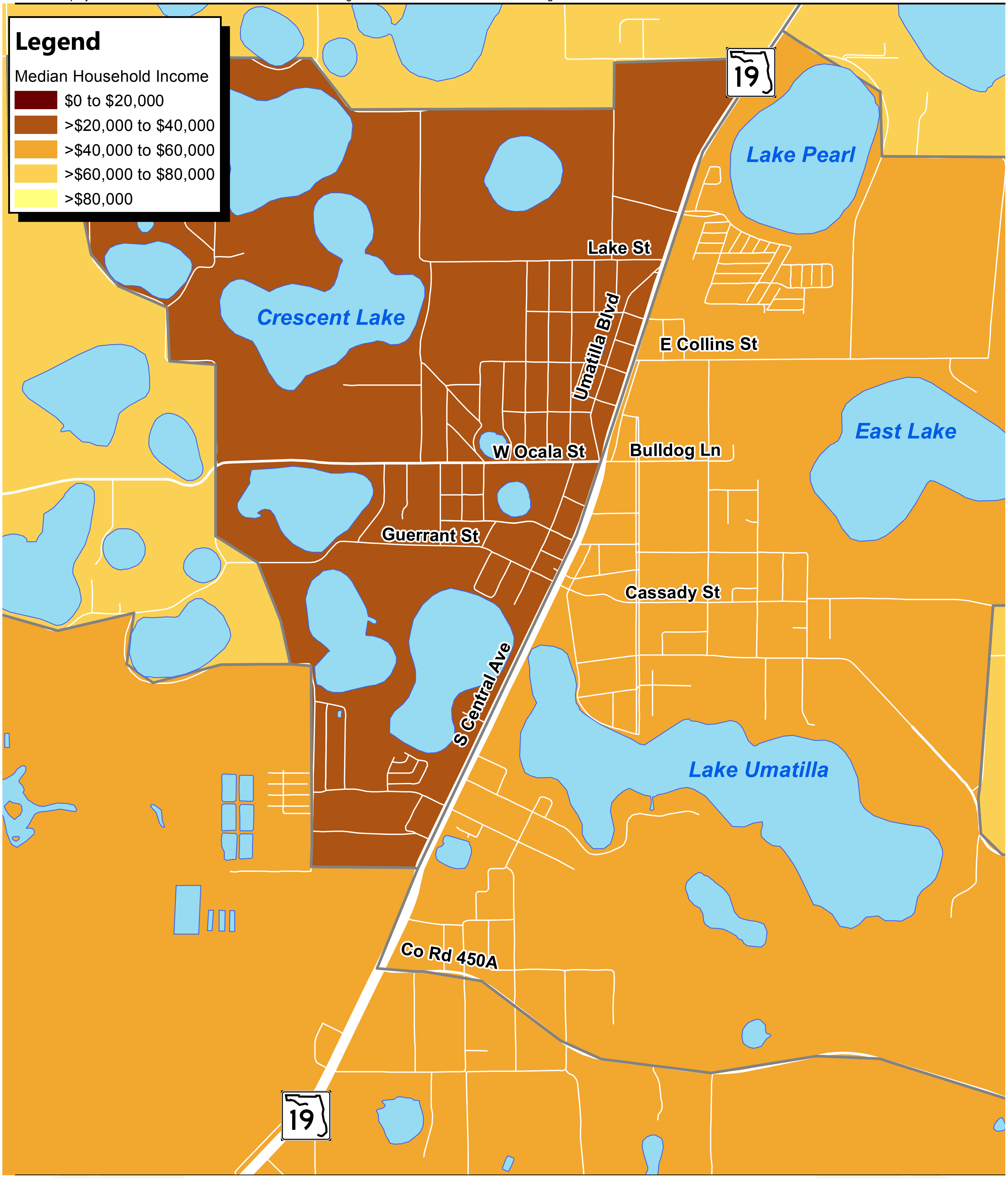

Figure 8
Median Household Income by Block Group

Source: US Census 2014 ACS 5-Yr Estimates

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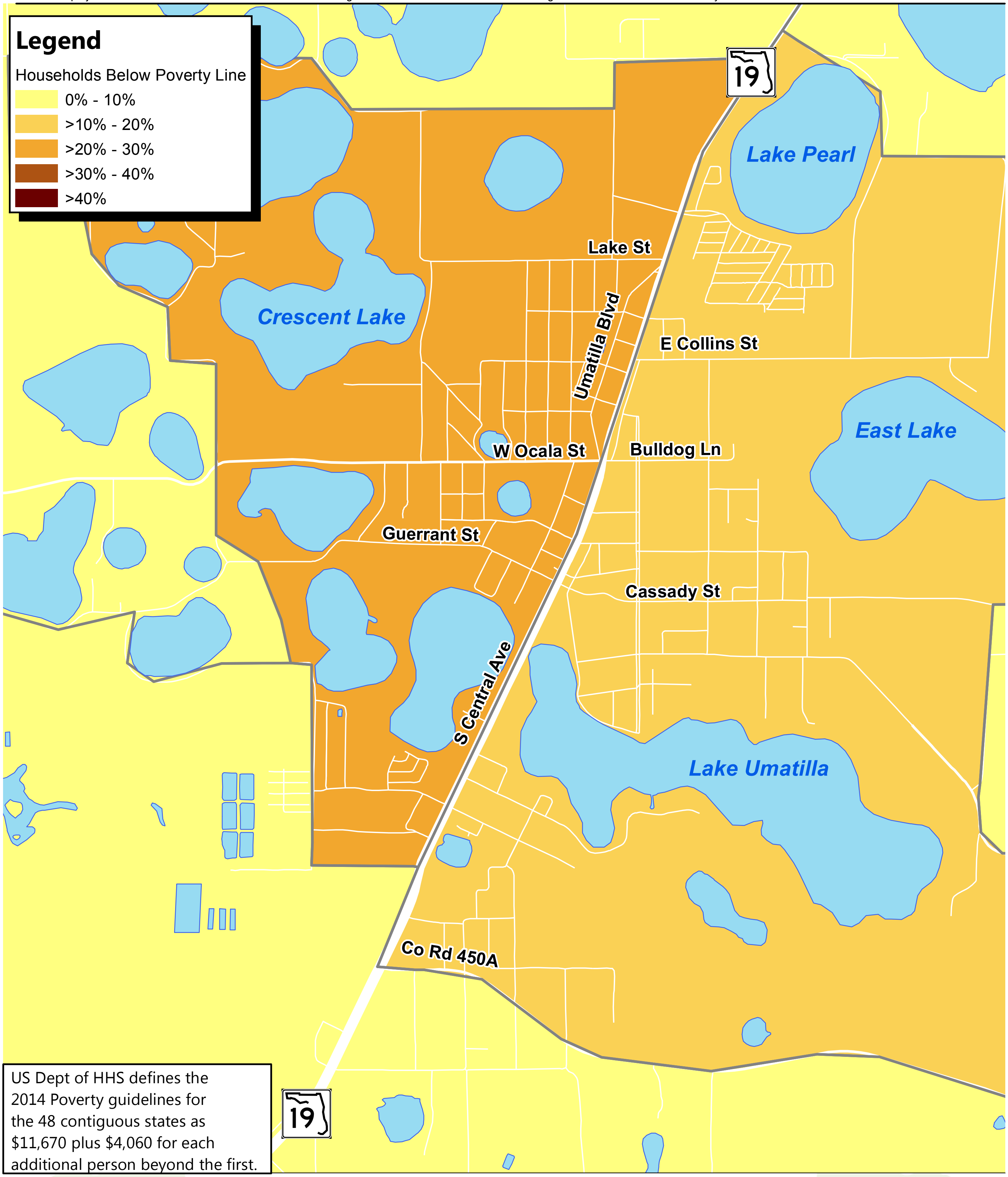

US Dept of HHS defines the 2014 Poverty guidelines for the 48 contiguous states as $11,670 plus $4,060 for each additional person beyond the first.

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Figure 9

Households Below Poverty Line by Block Group

Source: US Census 2014 ACS 5-Yr Estimates

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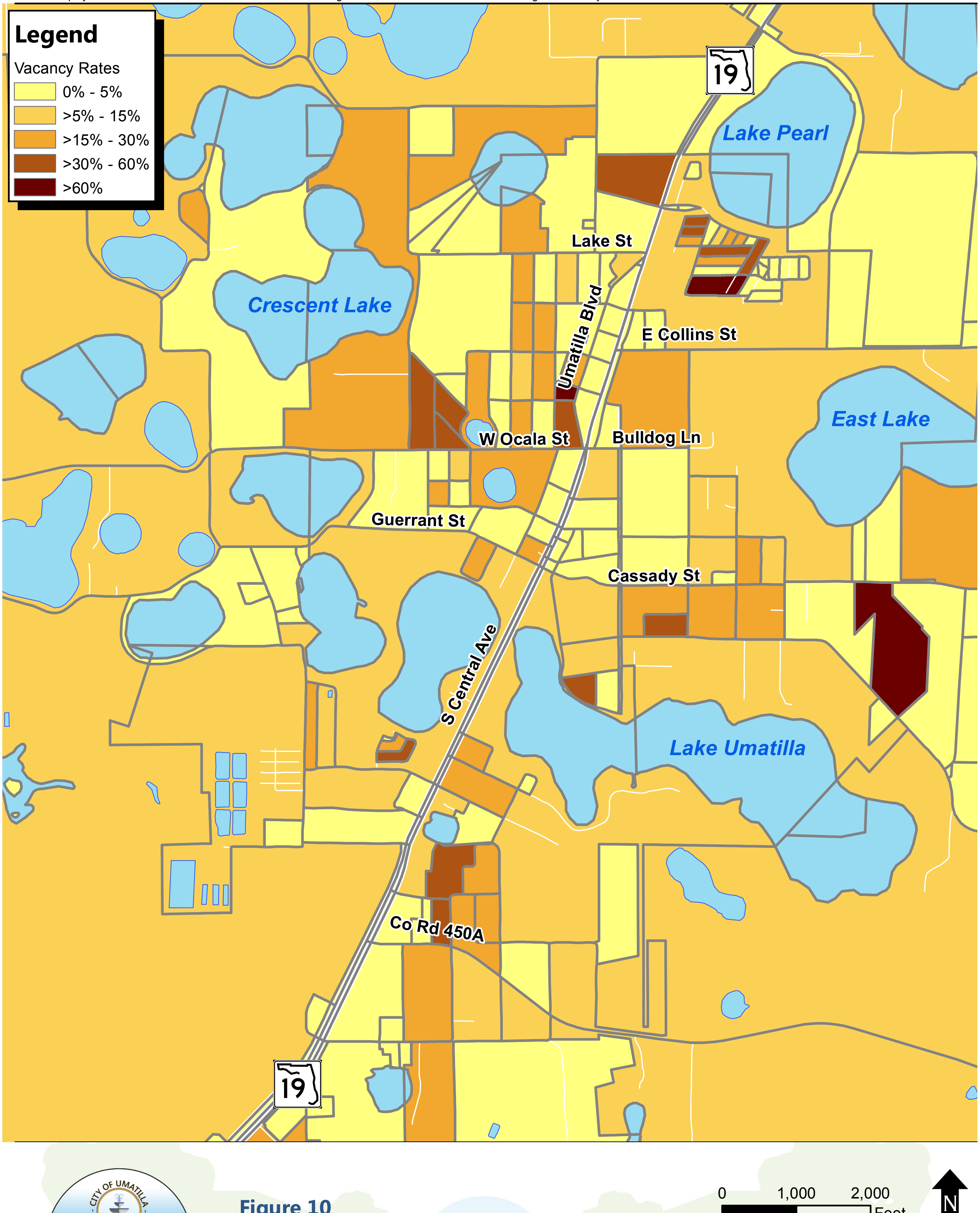

Figure 10
Vacancy Rates

Source: 2010 US Census

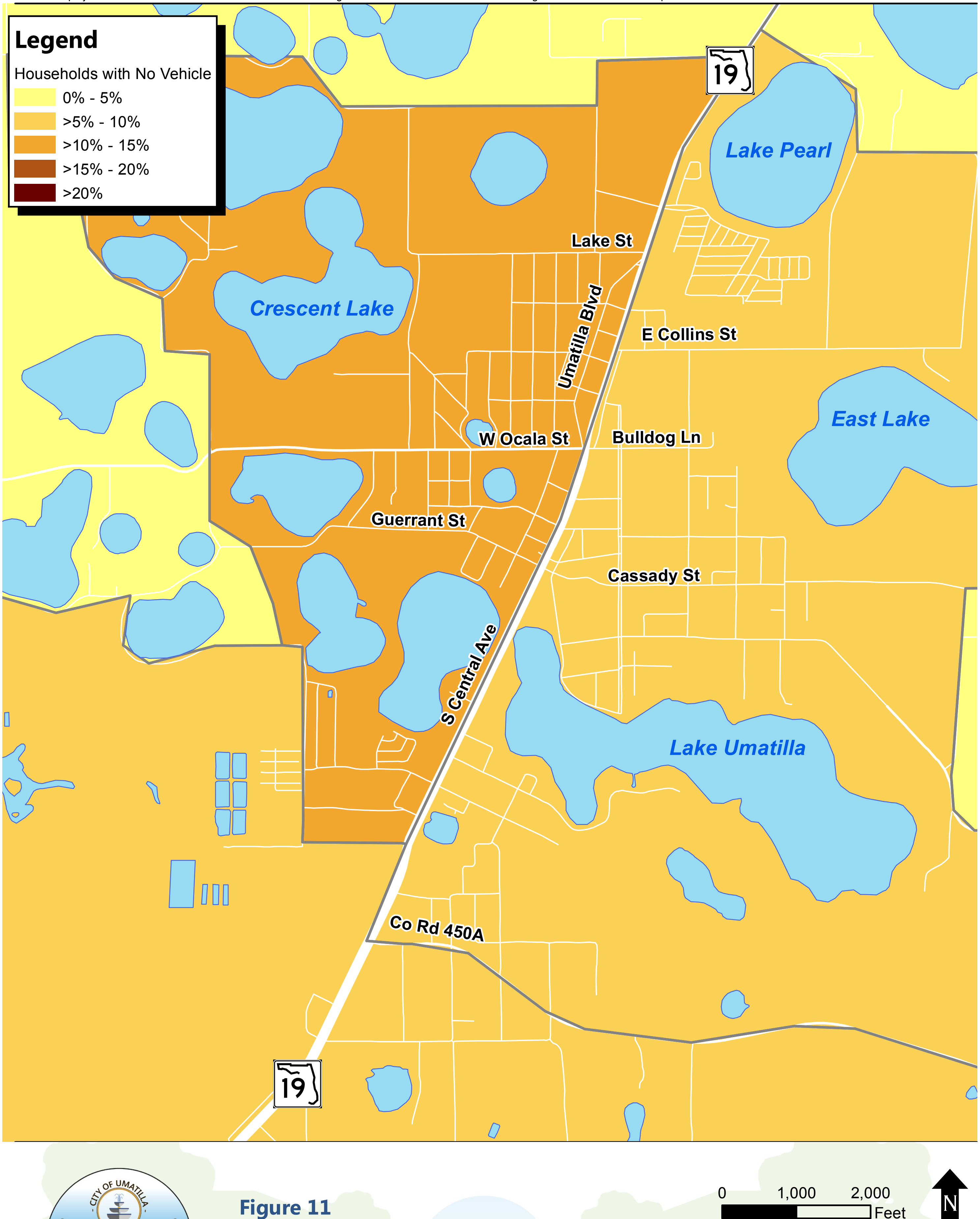

Figure 11
Household Vehicle Ownership

Source: US Census 2014 ACS 5-Yr Estimates

2.5.3 Major Employers and Activity Centers

Lake County Schools is the largest employer along the SR 19 corridor in the Study Area. Lake County Schools has approximately 320 employees at multiple schools along SR 19, including Umatilla Elementary School, Umatilla Middle School, and Umatilla High School. Other major employers along the SR 19 corridor include: Iron Horse Metal Deck; Florida's Natural Growers; the City of Umatilla, including various departments and locations; United Southern Bank; McDonald's; the Lake County Department of Health; and the Recovery Village. Figure 12 depicts the location of the major employers within the Study Area. Data for Major Employers was obtained through Esri's Business Analyst tool, and contains 2016 data from Infogroup and Esri.

Path: \\vhb\proj\Orlando\61872.23 SR 19 Umatilla\GIS\Project\Fig 12 - Major Employers.mxd

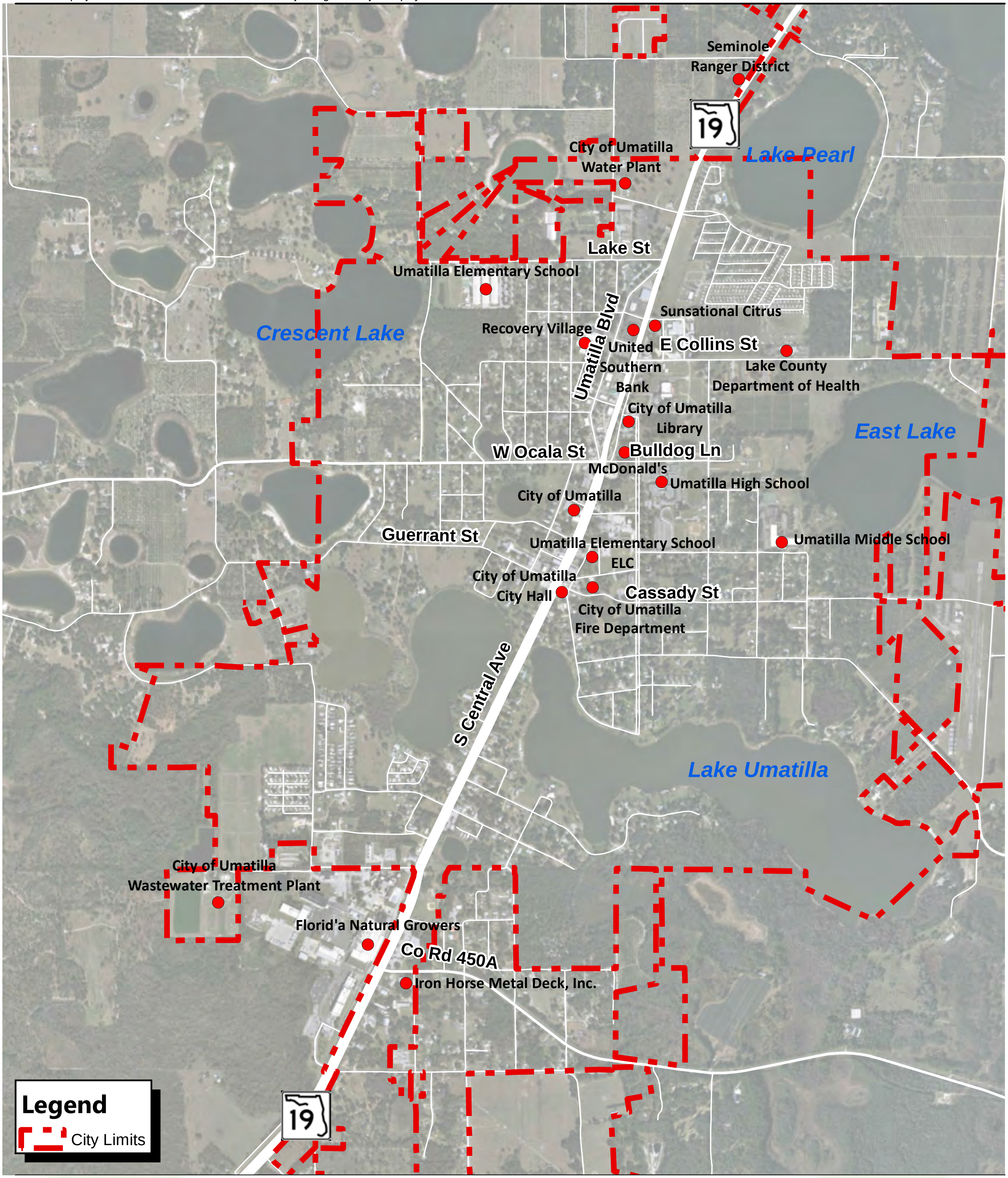

Figure 12
Major Employers

Source: Esri Business Analyst

2.5.4 Commuter Trips by Mode

Understanding how people commute to and from work within the Study Area is an important step in the evaluation of the transportation system needs and deficiencies. An evaluation of journey-to-work patterns using the US Census helps measure auto-dependency and mode choice, or lack thereof. Using the 2014 ACS 5-Year Estimates, block groups adjacent to the Study Corridor were identified and examined to determine how individuals commute to work. This data has been separated by block group (Figure 13) to identify differences between the areas. Table 5 summarizes the commuter trips by mode for people who live within the Census Blocks adjacent to the Study Corridor.

Similar to other communities in Florida, there is a strong reliance on the private vehicle. According to the Census Data, the commuter modes vary between the block groups; however, driving alone is still the primary method of travel of commuters in all block groups. Block Group 5 is located primarily south of the Study Area and is adjacent to the Study Corridor at the southern terminus; however, the majority of residents in this area live south of the Study Area as this Census Block Group extends south to the City of Eustis. In Block Group 2, which is located east of the Study Corridor, over 17.5% of people use a bicycle to commute to work. According to the data, public transit is not used by commuters in any of the three Census blocks analyzed.

Table 5: Percent Modes of Commute

Mode of Commute	Census Tract 301.05		
	Block Group 1	Block Group 2	Block Group 5
Drove Alone	86.6%	77.8%	94.0%
Carpooled	3.9%	4.6%	5.8%
Public Transit	0.0%	0.0%	0.0%
Bicycle	0.0%	17.6%	0.1%
Walking	4.8%	0.0%	4.8%
Worked at Home	4.8%	0.0%	0.1%

Source: US Census Bureau, 2014 ACS 5-Year Estimates

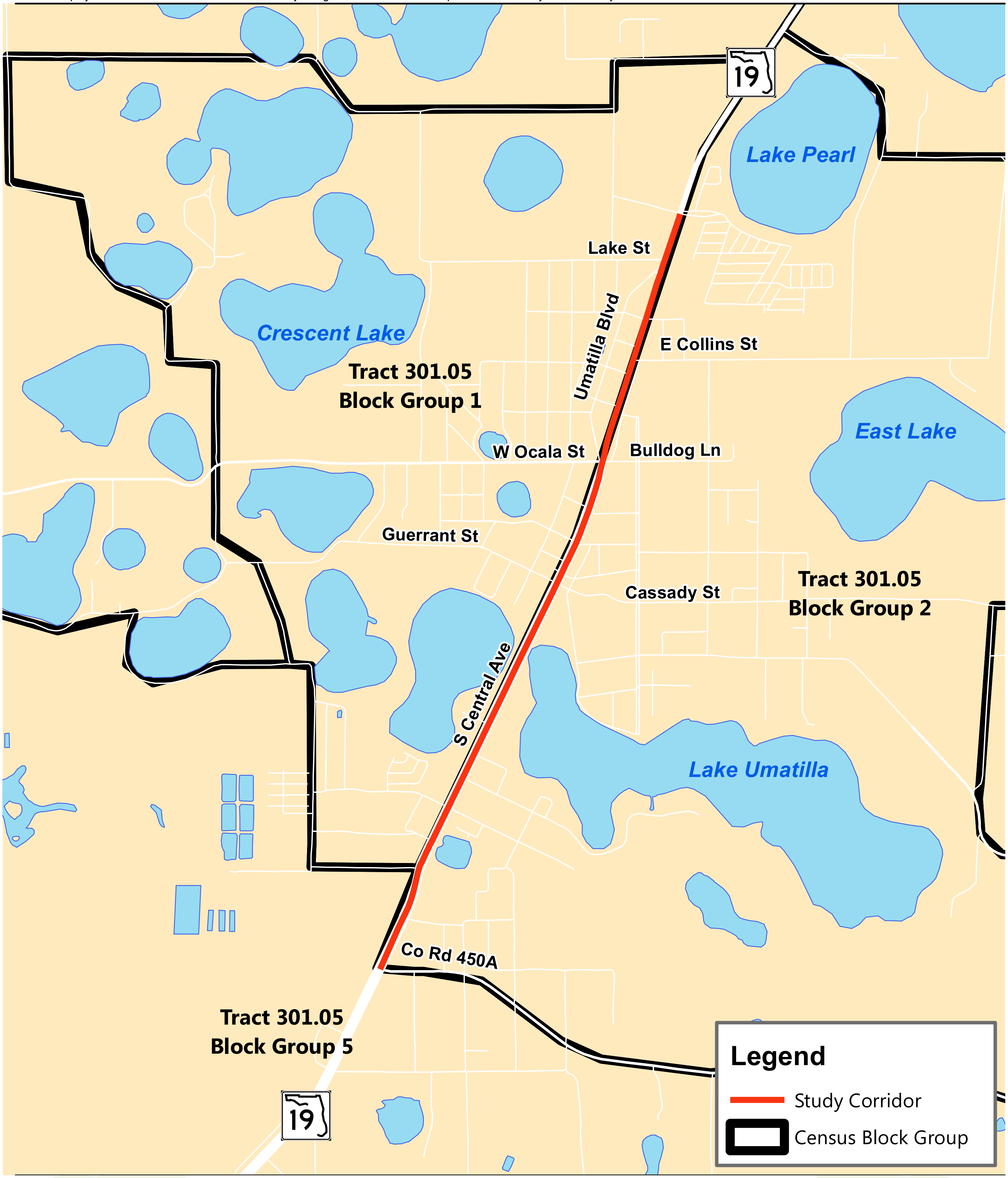

Figure 13
Census Block Groups Used for Journey-to-Work Analysis

Source: US Census

2.6 Healthy Community Design

Healthy Community Design (HCD) is a planning approach integrating public health, transportation, and community planning to recognize how the built environment affects the physical, social, and mental health of communities and encourages people to live healthy lives. Transportation is an important part of the built environment and significantly influences physical activity and well-being, safety, and the ability of community members to access destinations which are essential to a healthy lifestyle. This Corridor Study will use the HCD approach to identify physical improvements and policies which can result in better health outcomes for the residents and business community alongside SR 19.

Trends in health data can be used to observe how general health issues change over time. Table 6 identifies the health-related trends facing Lake County. The percent population with selected chronic diseases have seen increases in Lake County between 2007 and 2010. This increase in people who have chronic diseases is not unique to Lake County or Florida. This is a trend which has been witnessed throughout the country, leading to a renewed focus in how the built environment, including the transportation system, can influence a person's health.

Table 6: Lake County Health Trends

Indicator	Lake County (2007)	Lake County (2010)	Percent Change (2007 – 2010)	Florida (2010)
Adults with Asthma (Percent)	5.7%	6.2%	+8.8%	8.3%
Adults who have had a heart attack, angina, or coronary heart disease (Percent)	13.1%	16.1%	+22.9%	10.2%
Adults with High Blood Cholesterol (Percent)	39.7%	42.5%	+7.1%	38.6%
Adults Diagnosed with Diabetes (Percent)	12.9%	13.4%	+3.9%	10.4%
Adults Diagnosed with Hypertension (Percent)	36.1%	44.1%	+22.2%	34.3%
Adults who are Overweight (Percent)	38.9%	38.2%	-1.8%	37.8%
Adults who are Obese (Percent)	25.8%	29.8%	+15.5%	27.2%
Adults who are Overweight or Obese (Percent)	64.7%	67.9%	+4.9%	65.0%
Middle and High School Students who are Obese (Percent)*	10.99%**	13.86%	+26.1%	11.60%

Source: Florida Department of Health, Environmental Public Health Tracking and WellFlorida Council, *Mobilizing for Action through Planning and Partnerships (MAPP) Technical Appendix Report, Lake County,* Lake County.

* 2008 data.

When determining the health of a corridor, it is critical to review a variety of conditions. The health of a community should not be determined merely by the presence or absence of disease, but rather in a holistic manner, measuring the physical, mental, and social well-being of the community and its residents. Existing conditions based on the following ten Healthy Community Design Principles have been analyzed.

1) Maximize the Opportunity for All Residents to Get Physical Activity
2) Increase Housing Opportunities
3) Promote Social and Environmental Equity
4) Empower Champions for Healthy Communities
5) Encourage Mixed Use Development
6) Make Education the Cornerstone of Designing or Revitalizing the Community
7) Improve Access to Job Opportunities
8) Invest in Transportation Solutions
9) Promote Access to Healthy Food
10) Drive Economic Development by Creating a Unique Identity

Each of these principles will be described in the following sections and potential Healthy Community Design indicators will be presented. These potential indicators will be further evaluated and determined through the Study.

2.6.1 Maximize the Opportunity for All Residents to Get Physical Activity

Residents must be able to safely and conveniently access recreational destinations. Furthermore, if these destinations are accessible by multimodal options, this further enhances the recreational opportunities. The Study Area has sidewalks along the majority of the roads, but lacks significant bicycle infrastructure. Additional data regarding these facilities is provided in Section 2.7.12. There is a park with ball fields near the southern end of the corridor; however, the sidewalk along SR 19 does not continue to the park, and there are no bicycle facilities to access this park. Similarly, the North Lake Community Park, the largest recreational complex in Lake County, is located east of the Study Area on CR 450. Currently, there is no trail connection to this park. The existing multi-use path along SR 19, beginning at Bulldog Lane, currently terminates at CR 450.

The Department of Health Community Environmental Health Profile has measurements for percent of the population living within a ten-minute walk (1/2-mile) of a park or trail system. As shown in Table 7, the City has a higher rate of proximal accessibility than Lake County, but lower than the State for both of these measures.

Table 7: Access to Recreation Facilities

Indicator	Umatilla	Lake County	+/- (Percentage Points)	Florida	+/- (Percentage Points)
Percent Population living within a ten-minute walk (1/2 mile) of a park	34.73%	31.39%	+3.34	44.83%	-10.10
Percent Population living within a ten-minute walk (1/2 mile) of an off-street trail system	9.93%	4.45%	+5.48	10.64%	-0.71

Note: Data collected for zip code 32784 was used as the source for City of Umatilla data

Sources: Florida Department of Health, Community Environmental Health Profile Reports

Promoting physical activity is one way to help reduce the risk of chronic diseases. Available data indicates the City of Umatilla has a lower rate of asthma and heart attack hospitalizations than the State; however, the City does have a higher rate of diabetes related deaths than either Lake County or the State of Florida. Table 8 provides health indicators which relate Umatilla to Lake County and the State of Florida.

Table 8: Health Indicators

Indicator	Umatilla	Lake County	+/-	Florida	+/-
Asthma Hospitalizations (Rate per 10,000 Population)	14.11	12.88	+1.23	15.30	-1.19
Asthma Emergency Room Visits (Rate per 10,000 Population)	24.34	33.42	-9.08	48.11	-23.77
Heart Attack Hospitalizations (Rate per 10,000 Population)	22.40	32.18	-9.78	21.62	+0.78
Heart Disease related Deaths (Rate per 100,000 Population)	124.7	141.5	-16.80	155.0	-30.30
Stroke related Deaths (Rate per 100,000 Population)	35.7	31.7	+4.00	31.6	+4.10
Diabetes related Deaths (Rate per 100,000 Population)	25.1	19.4	+5.70	20.0	+5.10

Note: Data collected for zip code 32784 was used as the source for City of Umatilla data

Sources: Florida Department of Health, Community Environmental Health Profile Reports, 5-Year Crude Rates; WellFlorida Council, *Mobilizing for Action through Planning and Partnerships (MAPP) Technical Appendix Report, Lake County,* Lake County (Age-Adjusted Death Rates).

Enhancing the multimodal transportation system can provide additional recreation opportunities. Connecting destinations within the community and providing a safe, convenient bicycle and pedestrians facilities may encourage residents to bike and walk more than they do. Providing these facilities is an opportunity to encourage physical activity in everyday life, which encourages healthy lifestyles. Potential indicators for analyzing the future health of the community include:

A. Reduction in hospital visits for heart disease, heart attacks, and strokes
B. Reduction in rates of Chronic Diseases, including diabetes, obesity, hypertension, and asthma
C. Reduction in infant mortality rate
D. Improvement of multimodal access to recreational facilities, including number of facilities within 10-minute walk accessible by sidewalks and bike paths

2.6.2 Increase Housing Opportunities

Safe and affordable housing is critical to a healthy living conditions for the residents of a community. Table 9 compares the housing conditions along the corridor to Lake County and the State of Florida.

Table 9: Housing Indicators

Indicator	Study Area	Umatilla	Lake County	Florida
Vacant Housing Units (Percent)	14.4%	16.23%	19.01%	20.44%
Occupied housing units lacking complete plumbing (Percent)	N/A	3.18%	0.50%	0.44%

Source: Florida Department of Health, Community Environmental Health Profile Reports.

Section 2.5.2 noted the residential vacancy rates, according to the American Community Survey for the Census tracts along the Study Corridor is 14.4%, lower than the City, County, or State. Vacant units, within the area provide opportunities for infill development or redevelopment along the corridor, leading to more housing choices within the Study Area.

The percentage of housing units in the City lacking complete plumbing is over six times that of Lake County or the State. The Census Bureau considers units equipped with hot and cold running water, a functioning toilet, and a bathtub or shower, to have complete plumbing facilities. This measure may be influenced by the existence of mobile homes in the area which may not meet the definition of complete plumbing.

Table 10 indicates the median income and home values in Umatilla compared to Lake County, as well as the average percent of income spent of housing and transportation. The Location Affordability Index is a tool developed by the Department of Housing and Urban Development which calculates the average percent of income households will spend on housing and transportation costs in a given area. It uses data from the US Census, American Community Survey, National transit Database and Consumer Expenditure Survey in the analysis.

Table 10: Affordability Measures

Indicator	Umatilla	Lake County	Burden Level Threshold	Is percent a burden for the City?
Median Household Income	$38,461	$46,403		
Median Home Value	$167,000	$140,100		
Percent Income Spent of Housing	26%	28%	30% (according to HUD)	No
Percent Income Spent of Transportation	29%	28%	25% (according to FHWA)	Yes

Source: 2015 ACS 5-Year Estimates; US Department of Housing and Urban Development, Location Affordability Index

The Department of Housing and Urban Development considers households paying more than 30% of their income to housing as burdened by the costs of housing. The data indicates this is not the case in Umatilla; however, transportation costs do appear to be a burden. Transportation costs are typically the second-biggest budget item for families, aside from housing. In Umatilla, the percent of household income spent of transportation actually exceeds housing expenditures. The Federal Highway Authority (FHWA) identifies in an auto-dependent location, a household will spend an average of 25% of their income on transportation. This number is four percentage points higher in Umatilla. Though housing may be less of a burden in Umatilla, transportation is more of a cost. This may be explained by the rural areas in the City, and residents generally need to drive to employment and retail options. Transportation costs may cause a burden to families, a cost which is especially burdensome for low-income families.

Similar to other HCD principles, including access to jobs and mixed-use development, providing housing units near multimodal transportation facilities which connect to local destinations, including schools, employment opportunities, and retail areas, may reduce the burden of transportation costs for the residents of Umatilla. Potential indicators for analyzing the future health of the community include:

A. Increase in median income and housing prices
B. Reduction of percent of income spent of housing
C. Owner-occupied vs. Renter-occupied percentages
D. Reduction in vacancy rate

2.6.3 Promote Social and Environmental Equity

Social and environmental justice is a part of building a safe community. In 1994, President Bill Clinton issued Executive Order (E.O.) 12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. The purpose of this Order was to address the disproportional environmental and health impacts on minority and low-income populations. Environmental justice in regards to Healthy Community Design seeks to achieve healthy environments in all communities.

Section 2.11 discusses Environmental Conditions and identifies contaminated sites within the Study Area, as shown in Table 11.

Table 11: Contaminated Sites

Analysis Type	Study Area
Brownfield Location Boundaries	3
Biomedical Waste	3
Hazardous Waste Facilities	10
Petroleum Contamination Monitoring Sites	16
Storage Tank Contamination Monitoring (STCM)	17
US EPA Resource Conservation and Recovery Act (RCRA) Regulated Facilities	10
Toxic Release Inventory Sites	3
Waste Cleanup Responsible Party Sites - Closed	1

Source: FDOH, FDEP

Potential indicators for analyzing the future health of the community include:

A. Reduction in noise level
B. Reduction in contaminated sites
C. Reduction in property crime

2.6.4 Empower Champions for Healthy Communities

Healthy Communities are open and welcoming. Typically, there are neighborhood organizations offering events and may act to empower the community. In Umatilla, there are seven churches located within the Study Area. These institutions may provide social gathering opportunities and can act as a voice for the community at events or meetings. In addition, the Project Visioning Team (PVT) for this corridor study is composed of local champions who promote community health through active participation in this study, engagement with the community during public workshops, and by providing recommendations for active transportation and complete streets. Florida Hospital Waterman produces a Community Health Needs Assessment. The hospital is involved in the PVT as well, and may serve to champion a Healthy Community. Potential indicators for analyzing the future health of the community include:

A. Increase in number of community events
B. Increase in Healthy Community Design related policies

2.6.5 Encourage Mixed Use Development

Based on available City and County GIS data, approximately 28.5% of the Study Area is currently designated as a Mixed Use/Urban Future Land Use. Based on information obtained from the Lake County Property Appraiser, only 0.2% of the Study Area is currently utilized as Mixed Use (Commercial/Residential). The existing land use pattern is generally retail and office along the SR 19 corridor with residential behind. The majority of the land identified as a Mixed Use FLU is unincorporated Lake County land designated "Urban Low" or "Urban Medium." The Lake County Comprehensive Plan describes the "Urban" FLU categories are intended to provide "for a range of residential uses" and allow "for the conversion of existing residential units to residential professional office uses.". Therefore, even though the land is generally used for residential purposes, there is an opportunity along the corridor to provide a mix of uses. The City of Umatilla does have a Downtown Mixed Use FLU designation. This area accounts for approximately 1.7% of the Study Area and is located north of Cassady Street, adjacent to SR 19. Table 12 identifies these FLUs and the applicable densities and intensities allowed.

Table 12: Mixed Use Future Land Uses

Jurisdiction	FLU	Acres	Percent of Study Area	Allowed Density	Allowed Intensity
Umatilla	Downtown Mixed Use	13.3	1.7%	12 DU/acre	100% I.S.R.
Lake County	Urban Low	109.5	14.2%	4 DU/acre	0.25 F.A.R.; Certain uses allowed up to 0.35 F.A.R.
Lake County	Urban Medium	97.3	12.6%	7 DU/acre	0.35 F.A.R.; Certain uses allowed up to 0.5 F.A.R.

Source: City of Umatilla Comprehensive Plan; Lake County Comprehensive Plan

The existing land use data is provided in section 2.3.1 and provides data to identify opportunities for economic development or mixed-use development within the study corridor. According to the Lake County Property Appraiser GIS data, the land uses within the Study Area are currently approximately 10.6% commercial, 5.5% industrial, 1.2% office, and 0.2% mixed use (commercial/residential).

According to the Lake County Property Appraiser, approximately 15.7% of the land identified as non-residential uses, is currently vacant. This offers an opportunity for economic development in the Study Area.

Esri's Business Analyst tool provides an analysis of retail markets either lacking or providing a surplus in the Study Area. The areas lacking retail options provide an opportunity for new businesses. The areas which currently provide a surplus may actually provide an opportunity for the community to take advantage of an existing market which draws buyers from throughout the region, providing an opportunity to use these strong markets to further drive economic development.

The industries will the highest leakage and surplus factors within the Study Area are identified in Table 13. In general, the type of retail with more demand than supply are typically large scale retailers not currently existing along the corridor, including automobile sales, electronics stores, and department stores. Specialty retailers with a large regional market are typically the markets with the highest surplus in the Study Area, including home furnishing stores, specialty food stores, and building materials dealers. PVT members identified the multiple restaurants along SR 19 as a positive economic impact for the City.

Table 13: Retail Markets

Leakage/Surplus	Industry Group	Demand	Supply	Retail Gap
Leakage	Automobile Dealers	$6,283,798	$914,745	$5,369,053
	Department Stores	$3,766,440	$1,187,329	$2,579,111
	Electronic & Appliance Stores	$1,283,916	$0	$1,283,916
	Other Motor Vehicle Dealers	$939,722	$0	$939,722
Surplus	Home Furnishing Stores	$404,364	$7,161,476	-$6,757,112
	Specialty Food Stores	$316,730	$4,684,093	-$4,367,363
	Building Material & Supplies Dealers	$1,867,243	$5,257,620	-$3,390,377
	Restaurants/Other Eating Places	$2,679,384	$5,219,594	-$2,540,210

Note: ESRI Business Analyst, Retail MarketPlace Profile, 2015

Potential indicators for analyzing the future health of the community include:

A. Increase in density/intensity of existing uses
B. Increase of percent of land used for mixed use developments
C. Improvement of multimodal access from residential units to non-residential facilities

2.6.6 Make Education the Cornerstone of Designing or Revitalizing the Community

There are no public schools with direct access to SR 19; however, the following three public schools in the Study Area are typically accessed by roads intersecting with SR 19:

- Umatilla Elementary School (access off Lake Street)
- Umatilla Middle School (access off E Lake Street)
- Umatilla High School (access off Bulldog Lane)

There are generally sidewalks along one side of Lake Street between the Elementary School and SR 19 and within the residential areas directly east of the school. The one exception along Lake Street is a 0.1-mile segment between SR 19 and Althea Way.

Cassady Street, East Lake Street, North Trowell Avenue, and Bulldog Lane are the primary streets used to access the Middle School and High School. These streets have sidewalks along one side. Streets within the residential areas surrounding the schools generally do not have sidewalks.

There are no trails or bike lanes available to access any of the schools along the corridor.

Lake County Schools generally uses a two-mile radius to determine the eligibility for a bussing area. Students within the radius are not transported by bus, and therefore walk, bicycle, or are dropped off by car. Providing safe and convenient pedestrian and bicycle facilities for these students is important to enhancing accessibility and improving the community health. Table 14 indicates the estimated student population within the two-mile radius and total student population for each school.

Table 14: Schools

School	Address	Estimated Student Population within Two-Mile Radius	Total Student Population
Umatilla Elementary School	401 Lake Street	313	626
Umatilla Middle School	305 East Lake Street	198	554
Umatilla High School	320 North Trowell Avenue	237	833

Source: Lake County Property Appraiser GIS data; Estimates based on student generation rates found in Policy IX-7.3.6 of the Lake County Comprehensive Plan; Lake County Schools Student Population, 1st 20 Days of School, September 7, 2016.

Enhancing the bicycle and pedestrian facilities to create a safe and convenient network for students to commute to school would improve accessibility for those students within the identified walk radius. This would also allow fewer vehicle trips to the schools, reducing potential congestion at arrival and dismissal times. Potential indicators for analyzing the future health of the community include:

A. Improvement of multimodal access to schools
B. Existence of a Safe Routes to School Program

2.6.7 Improve Access to Job Opportunities

Lake County Schools is the largest employer along the SR 19 corridor in the Study Area, employing approximately 320 employees at the three public schools within the Study Area. Other major employers along the SR 19 corridor include Iron Horse Metal Deck, Florida's Natural Growers, the City of Umatilla, and Recovery Village. Figure 12 identifies the locations of these employers.

A job-to-housing ratio is one of the measurements planners use when analyzing accessibility to employment, retail, and service opportunities. In his 1989 article "Jobs-housing balancing and regional mobility," published in the Journal of the American Planning Association, Robert Cervero determined "a jobs-to-housing ratio of between 0.75:1.00 and 1.50:1.00 is balanced to allow for a community which is self-contained, self-reliant one, within which people live, work, shop, and recreate." A smaller ratio is typical of a suburban neighborhood where there are limited business and service providers, and residents need to travel outside of the area for employment and services. A high ratio is typical of an area where people commute into work, but live elsewhere. A balanced ratio can reduce travel times and vehicle miles traveled, as well as providing the opportunity for multimodal commuting options.

The 2016 jobs-to-housing ratio within the Study Area is 1.34:1.00. This was calculated using ESRI's Business Analyst tools, which identified 1,393 employees and 1,037 households within the Study Area. This measurement can identify the overall balance, but does have certain limitations. For instance, it measures employees, not jobs. If there are job vacancies, the ratio could be higher. Another limitation is a one-half mile buffer from the SR 19 corridor was used. Typically, the employment uses are along the corridor and residential areas are further from the corridor. If a larger buffer is used, a lower ratio would be expected.

As indicated in Section 2.5.4 of this report, the primary mode of commuting within the Study Area is driving alone, which is indicative of a reliance on personal automobiles. In the northeast portion of the Study Area, Census Tract 301.05, Block Group 2, over 17.5% of workers commute by bicycle. No commuters utilize the public transit system as a mode of commuting to work within the Study Area. Table 15 summarizes the commuter trips by mode for residents living within the Census Blocks adjacent to the Study Corridor.

Table 15: Percent Modes of Commute

Mode of Commute	Census Tract 301.05		
	Block Group 1	Block Group 2	Block Group 5
Drove Alone	86.6%	77.8%	94.0%
Carpooled	3.9%	4.6%	5.8%
Public Transit	0.0%	0.0%	0.0%
Bicycle	0.0%	17.6%	0.1%
Walking	4.8%	0.0%	4.8%
Worked at Home	4.8%	0.0%	0.1%

Source: US Census Bureau, 2014 ACS 5-Year Estimates

The lack of transit options within the Study Area causes issues for any commuter likely to choose, or needing to utilize transit to get to work. There are residents who walk or bike to work, specifically in Block Group 2. Enhancing the pedestrian and bicycle facilities within the Study Area will create a safer environment for those who already walk or bike to work, while encouraging other residents living or working in the Study Area to begin utilizing alternative modes of transportation. Similarly, providing additional transit options to connect the Study Area to the region would increase accessibility to jobs outside of the Study Area. Potential indicators for analyzing the future health of the community include:

A. Reduction in commute times
B. Increase in percent of commuters who use multimodal options
C. Improvement of multimodal access to job opportunities facilities

2.6.8 Invest in Transportation Solutions

As described in this section, transportation is a critical component to a healthy community, as the transportation facilities can significantly influence physical activity and well-being, safety, and accessibility. Investing in transportation system improvements and policies can result in better health outcomes for the community.

Analyzing the existing multimodal transportation facilities and the safety statistics of the Study Corridor provides a base to evaluate potential transportation solutions.

Currently, there are no designated bicycle lanes along the corridor, with the exception of the following two locations:

- 150-foot bicycle lane on SR 19 northbound starting 150 feet before the intersection of SR 19 and E Collins Street
- 150-foot bicycle lane on SR 19 northbound starting at the intersection of SR 19 and Palmetto Street

Generally, there are sidewalks along both sides of SR 19. Exceptions exist at the following locations:

- No sidewalks on both sides of the road from CR 450A to Golden Gem Drive
- No sidewalk connecting west side of SR 19 with east side of Umatilla Boulevard at the intersection of SR 19 and W Ocala Street/Bulldog Lane
- No sidewalk on west side of SR 19 from 475 feet north of W Ocala Street/Bulldog Lane to 85 feet south of E Collins Street
- No sidewalk along east side of SR 19 from E Collins Street to Mary Street

Many side streets do not have sidewalks to provide for a separate pedestrian facility into the residential neighborhoods. There are sidewalks currently on side streets offering connectivity to the schools located off the corridor. Providing additional sidewalk or bicycle facilities will help to connect destinations within the community, such as schools, parks, retail, and employment opportunities to the residential areas. Creating a safe, convenient multimodal network to connect destinations within the community encourages residents to choose bicycling or walking as a primary mode of transportation for local trips.

There is currently one fixed-route service along SR 19 in the Study Area. Route 4 operates from 7:15 AM to 7:15 PM, Monday through Friday with 120-minute service. Service is not provided on Saturdays, Sundays, and major holidays. The minimal transit service may be problematic for the transit-dependent population, or may be discouraging residents from using transit for some trips. Enhancing the bus stops can improve the comfort of the user. Increasing the frequency of service, can enhance the regional connectivity and provide additional transit options for residents.

Sections 2.7.12 and 2.7.13 provide additional information and analysis of the multimodal transportation facilities.

Within the most recent five-year period, a total of 104 crashes, resulting in 40 injuries and no fatalities, have occurred along the SR 19 Study Corridor. The analysis conducted showed no roadway segments along the SR 19 Study Corridor experiences an average crash rate higher than the statewide average for similar facilities. The analysis did determine two intersections do experience an average crash rate higher than the statewide average for similar facilities. One such intersection is SR 19 at Guerrant Street/Cassady Street. The other is SR 19 at CR 450 (East Collins Street).

Within the study period, one pedestrian and one bicycle crash occurred along the SR 19 Study Corridor.

Section 2.10 provides additional information and analysis regarding the safety and crash data for the Study Corridor.

Potential indicators for analyzing the future health of the community include:

A. Reduction in crash rates
B. Reduction in crashes involving pedestrian or bicyclists
C. Increase in transit ridership
D. Elimination of sidewalk gaps
E. Connections from transit stops to sidewalks

2.6.9 Promote Access to Healthy Food

The percentage of the Umatilla residents who live within a ten-minute walk of a healthy food source is less than in either Lake County, or the State. The same is true for the population living within a ten-minute walk of a fast food restaurant. It is important to note the data for the City of Umatilla includes the entire 32784 zip code which extends outside of the City limits. This percentage is also lower due to the rural nature of the City and the area. Table 16 identifies the percent of the Umatilla population within walking distances from healthy food options and fast food restaurants.

Table 16: Access to Food Sources

Indicator	Umatilla	Lake County	+/- (Percentage Points)	Florida	+/- (Percentage Points)
Percent Population living within a ten-minute walk (1/2- mile) of a healthy food source	6.00%	13.21%	-7.21	31.81%	-25.81
Percent Population living within a ten-minute walk (1/2- mile) of a fast food restaurant	5.99%	14.45%	-8.46	33.54%	-27.55

Note: Data collected for zip code 32784 was used as the source for City of Umatilla data

Sources: Florida Department of Health, Community Environmental Health Profile Reports

A grocery store is located near the northern terminus of the Study Corridor, north of Lake Street. Enhancing the multimodal system described in previous sections can provide connectivity to this destination and increase the opportunities to walk/bike to this store. As described, SR 19 generally has sidewalks along both sides, and Lake Street typically as a sidewalk on one-side in this location, except for the 0.1-mile section between SR 19 and Althea Street.

The City allows food stores to be located in the commercial and mixed use FLUs along the Corridor. However, the population density may be a deterrent for additional grocery stores to locate in the area. The PVT discussed the existing McDonald's. Even though the percent population within walking distance from a fast food restaurant is low, the PVT explained to the team the McDonald's at the corner of SR 19 and Bulldog Lane is extremely busy, especially when the high school lets out. The location is less than 0.1 mile from Umatilla High School.

Potential indicators for analyzing the future health of the community include improvements in multimodal access to grocery stores/community gardens

2.6.10 Drive Economic Development by Creating a Unique Identity

The Study Area is uniquely positioned to take advantage of its location as the gateway to the Ocala National Forest. The City's logo includes the phrase "Nature's Hometown." This was a consensus from discussions with the PVT as well. The City is proud to be the gateway to the National Forest and has the opportunity to capitalize on the economic benefits. At the PVT kickoff meeting, adding bike trails through the City and into the forest was suggested as a potential amenity to further drive tourism in the Area.

Umatilla is already using its location as the gateway to drive economic development. The City is host to the annual Florida Black Bear Festival, now known as the Florida Wildlife Festival. Now in its 17th year, the festival provides a fun and educational experience, and seeks "to increase awareness and promote the safe coexistence of humans and wildlife by fostering community appreciation of the Florida black bear and other native wildlife species, as well as Florida's unique ecosystems which serve as wildlife habitat," according to the Festival's website. Guided hiking, paddling, horseback riding, and vehicle-based tours are available at the festivals, as well as educational programs, presentations, and children's activities. The black bear is also featured on the City's logo.

The City is already working to capitalize on its location as the gateway to the Ocala National Forest, while promoting wildlife and outdoor recreation. Further promotion and events related to this will increase the recognition of Umatilla as a unique community and is expected to drive economic development. Additionally, as discussed by the PVT, increasing trail connectivity from the City to the Ocala National Forest can increase tourism and economic opportunities for businesses in the City.

Potential indicators for analyzing the future health of the community include:

A. Increase of events related to City's identity as "Nature's Hometown" and the "Gateway to the Ocala National Forest"
B. Reduction in vacancy rates
C. Increase of land value

2.7 Existing Physical Features

This section includes an evaluation of the physical conditions of the Study Area. The existing physical features were collected through field inspection and design/construction plans obtained from the FDOT and the affected jurisdictions. This information is intended to identify current roadway design challenges, and ultimately aid in determining which Study Area roadway segments and intersections should be more closely examined as part of the development of future recommendations for the study. This section also documents transit, bicycle, and pedestrian mobility along the Study Area Corridor.

2.7.1 Roadway Classification, Jurisdiction, and Posted Speed

The SR 19 project corridor from CR 450A to Bulldog Way is classified as an "urban minor arterial," and is owned and maintained by the Florida Department of Transportation (FDOT).

The posted speed limit varies depending on the segment of the roadway. The following list denotes the posted speed limit by roadway segment:

- 45 mph: CR 450A to north of Ball Park Road
- 40 mph: North of Ball Park Road to south of Cassady Street/Guerrant Street
- 35 mph: South of Cassady Street/Guerrant Street to Bulldog Way

Umatilla Boulevard is a local road owned and maintained by the City of Umatilla.

2.7.2 Right-of-Way and Typical Cross Sections

Right-of-way (ROW) maps for SR 19 were provided by FDOT; however, they were out of date (some sections of the corridor had maps dated from May 1965) and lacked sufficient detail. As such, the ROW was inventoried using FDOT straight line diagram maps (see Table 17). ROW data is not available for Umatilla Boulevard. The ROW maps provided by FDOT are included in Appendix A.

Table 17: Right-of-Way Summary

Roadway	Roadway ID	From	To	ROW Width (Feet)
SR 19	11100000	CR 450A	Bulldog Lane/Ocala Street	103-111
SR 19	11100000	Bulldog Lane/Ocala Street	Bulldog Way	37-54

Source: FDOT Straight Line Diagram Maps

2.7.3 Typical Section

SR 19 is generally separated into three typical sections. From the southern end of the Study Area at CR 450A to Golden Gem Drive, SR 19 consists of four lanes and a grass median. Median openings are provided at intersecting streets. There are no sidewalks in this section.

From Golden Gem Drive to W Ocala Street and Bulldog Lane, SR 19 consists of four lanes, paved shoulders, and a landscaped median with curb and gutter. Median openings are provided in select locations to allow for U-turns and to provide access to side streets and driveways. At signalized intersections, left turn lanes are also provided. Sidewalks are provided on both sides of the street.

From W Ocala Street and Bulldog Lane north to Bulldog Way, SR 19 generally consists of two lanes and a center left-turn lane. Sidewalks are generally provided on one side of the street.

Typical sections for SR 19 are shown in Figure 14 through Figure 16.

For Umatilla Boulevard, there is one typical section. Most of the corridor, consists of two lanes, parallel parking in the northbound direction, and head-in angled parking in the southbound direction. Curb and gutter is provided and sidewalks are available on both sides of the street. The northern and southern ends of the corridor differ slightly with the angled parking replaced with parallel parking. The typical section for Umatilla Boulevard is shown in Figure 17.

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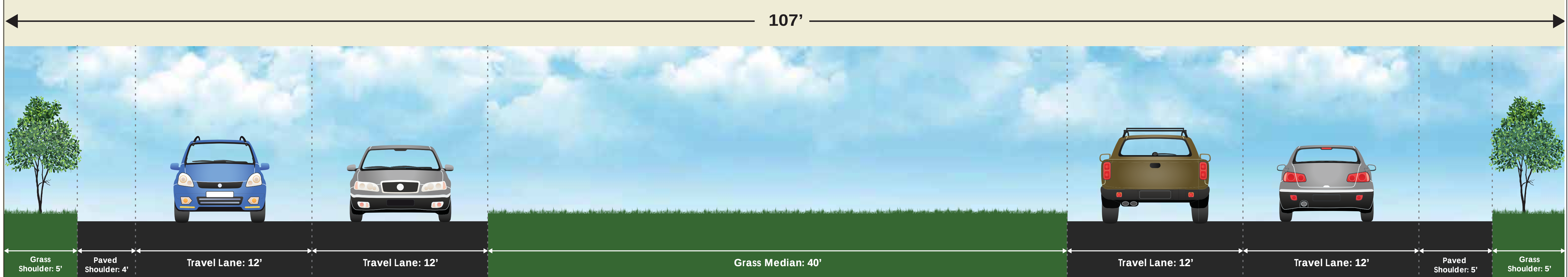


Figure 14
SR 19 Typical Section from
CR-450A to Golden Gem Drive

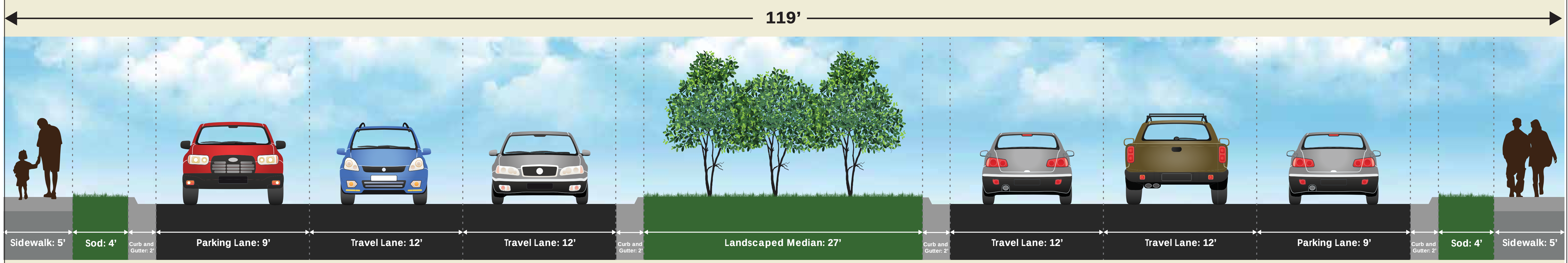


Figure 15
SR 19 Typical Section from
Golden Gem Drive to
West Ocala Street/Bulldog Lane

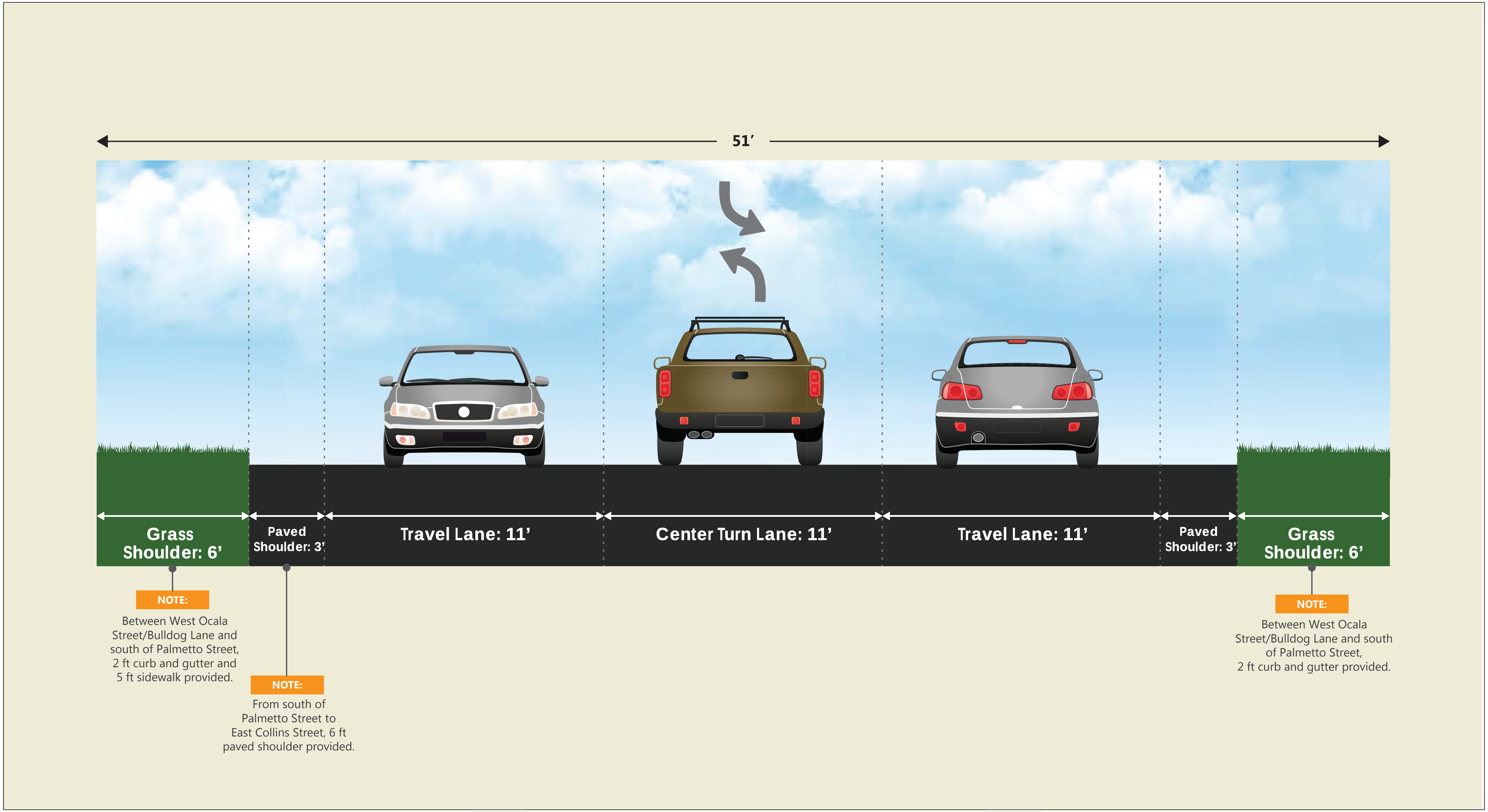


Figure 16
SR 19 Typical Section from Lane West Ocala Street/Bulldog to Bulldog Way/Ole Mill Stream Resort

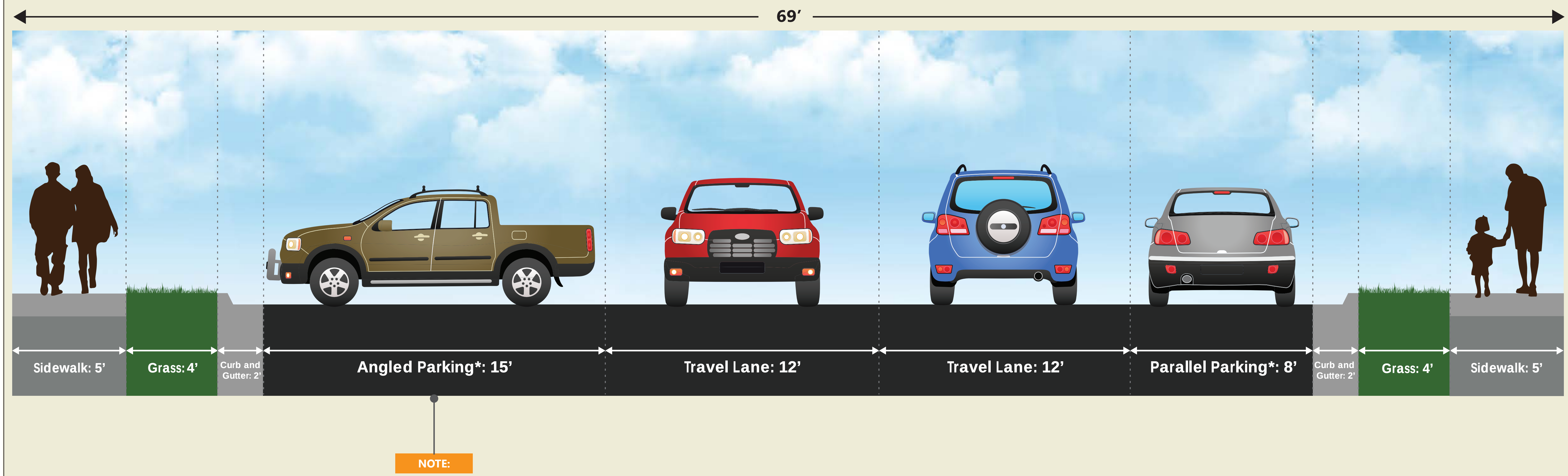


Figure 17
Umatilla Boulevard Typical Section

2.7.4 Access Management

The FDOT classifies access on state roadways using a seven-tier access management system established in Chapter 14-97, Administrative Rules of the Department of Transportation, State Highway System Access Management Classification System and Standards (Rule 14-97). The classification system ranges from Access Class 1, reserved for limited access freeways, to Access Class 7, assigned to lower priority state highways in areas already highly urbanized. This classification system assigns standards for driveway connections, spacing, median opening spacing, and signal spacing.

Table 18 shows the approximate limits for Access Class categories for SR 19 and Umatilla Boulevard in the Study Area and corresponding posted speed limits in miles per hour (MPH). The spacing standards for each Access Class, as per FDOT Access Management Standards, are shown in Table 19. These Access Classes and posted speeds dictate the allowable spacing of signalized intersections, pedestrian crossing opportunities, and local street connections for the Study Area. The most restrictive Access Class (1) is for limited access roadways and allows for no signalized intersections or driveways. The least restrictive Access Class (7) allows signalized intersections at 1,320 foot (1/4-mile) spacing.

While Umatilla Boulevard is not a state facility and not subjected to FDOT Access Management Standards, it can still be considered for access management improvements. For purposes of this evaluation, Umatilla Boulevard is presented in Table 18 with an Access Class of “4”.

Table 18: Roadway Access Management Classifications and Posted Speeds

Roadway	Limits	Access Class	Posted Speed (mph)
SR 19	CR 450A (MP 3.546) to S of Golden Gem Drive (MP 3.743)	3	45
SR 19	S of Golden Gem Drive (MP 3.743) to S of Cassady Street/Guerrant Street (MP 4.514)	3	40
SR 19	S of Cassady Street/Guerrant Street (MP 4.514) to S of Bulldog Lane/Ocala Street (MP 4.906)	3	35
SR 19	S of Bulldog Lane/Ocala Street (MP 4.906) to Bulldog Way (MP 5.567)	4	35
Umatilla Boulevard	W Ocala Street to SR 19	4*	25

*Note: Umatilla Boulevard is not a state facility; however, for purposes of this evaluation, it was evaluated with an Access Class of 4.
Source: FDOT Straight Line Diagram

Table 19: Access Class Spacing Standards

FDOT Access Management Class	Minimum Connection Spacing (feet)	Minimum Median Opening Spacing (feet)		Minimum Signal Spacing (feet)
		Directional	Full	
Class 3	660/440[1]	1,320	2,640	2,640
Class 4	660/440[1]	N/A	N/A	2,640

Source: Section 14-97.003, Florida Administrative Code
[1] Greater than 45 MPH / Less than or equal to 45 MPH

SR 19 serves many abutting residential and commercial land uses, as discussed previously in Section 2.3. The presence of closely spaced driveways along an arterial and ensuring entering and exiting vehicle movement creates potential conflict points along a roadway for vehicles, pedestrians, and bicyclists. While necessary to provide access to abutting land uses, there are instances where access management, or a consolidation of driveways to mitigate the conflict points, may be recommended to improve mobility and safety. For this reason, a survey of the driveway/connection, median opening, and signal spacing along the Study Area corridor was completed. Figure 18 through Figure 20 and Figure 21 present the results of the driveway spacing analysis for SR 19 and Umatilla Boulevard, respectively. Figure 22 through Figure 24 presents the results of the intersection and median spacing analysis for SR 19.

The results of this analysis indicate most of the driveways, median openings, and signal spacings along SR 19 do not meet current access management standards. While it will be impractical to bring the entire corridor up to standard, there is an opportunity to improve the conditions in select areas of the corridor by closing unutilized driveways and consolidating median openings.

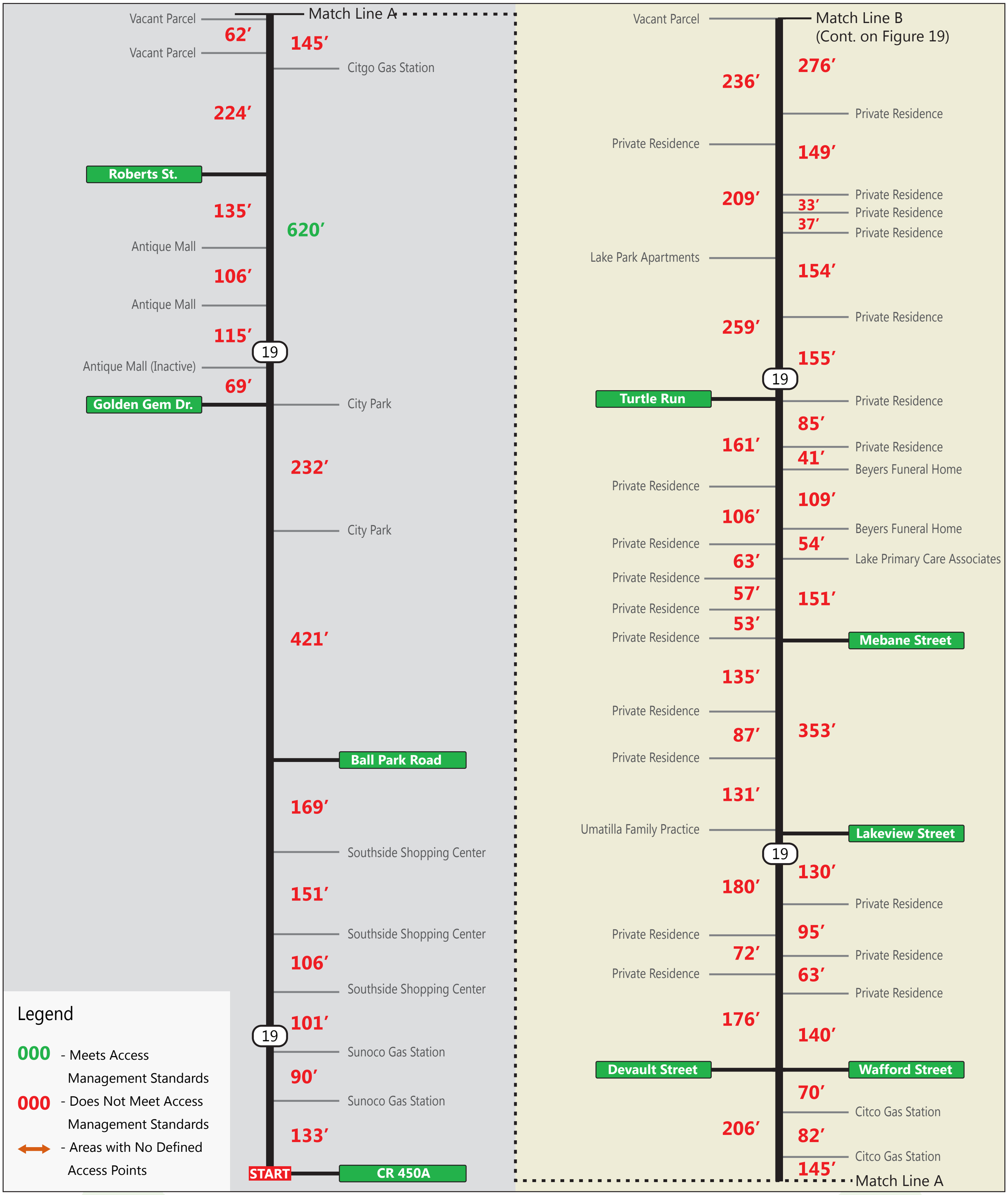


Figure 18
SR 19 Access Managment – Driveway Spacing (Part 1)

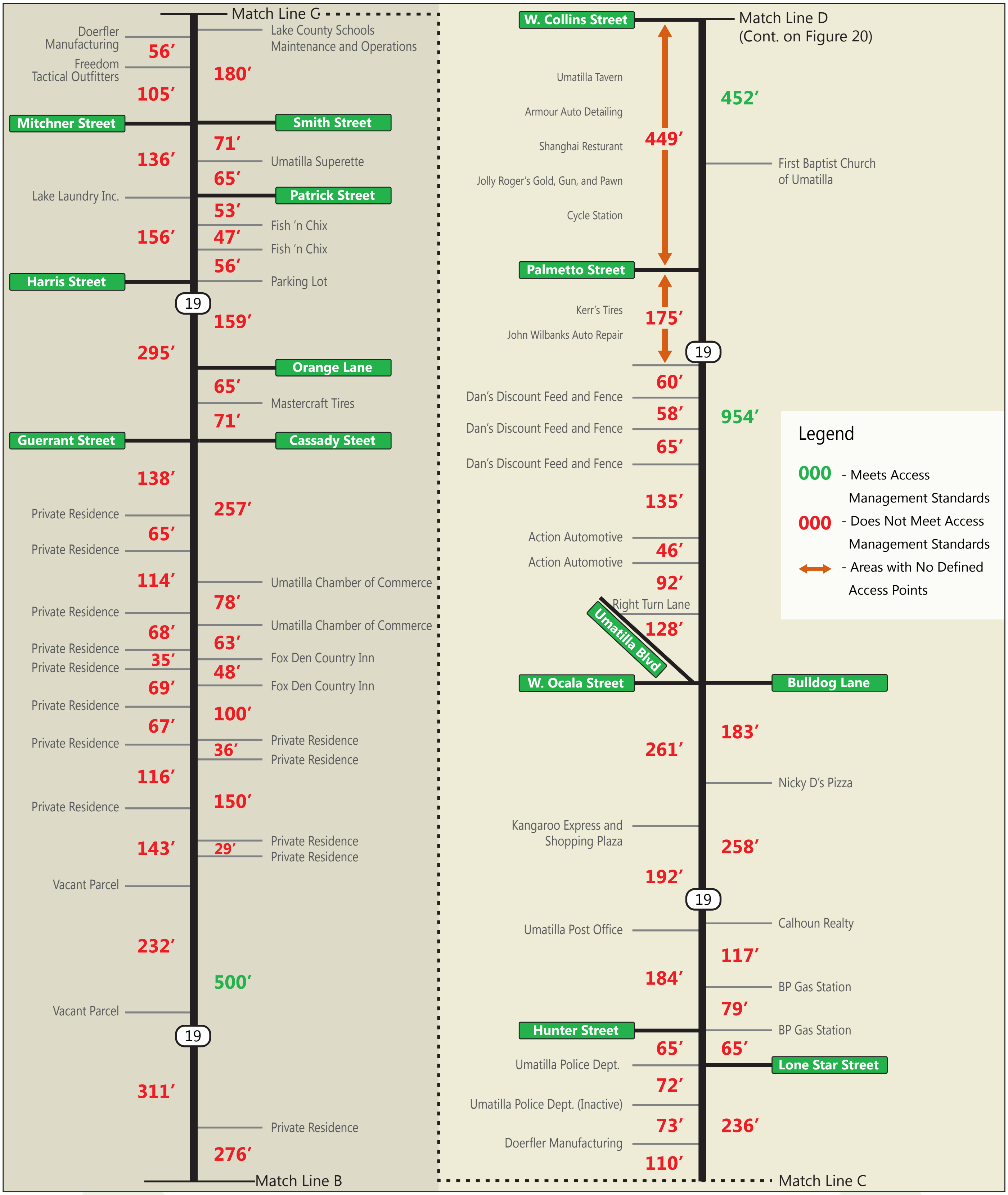


Figure 19
SR 19 Access Managment – Driveway Spacing (Part 2)

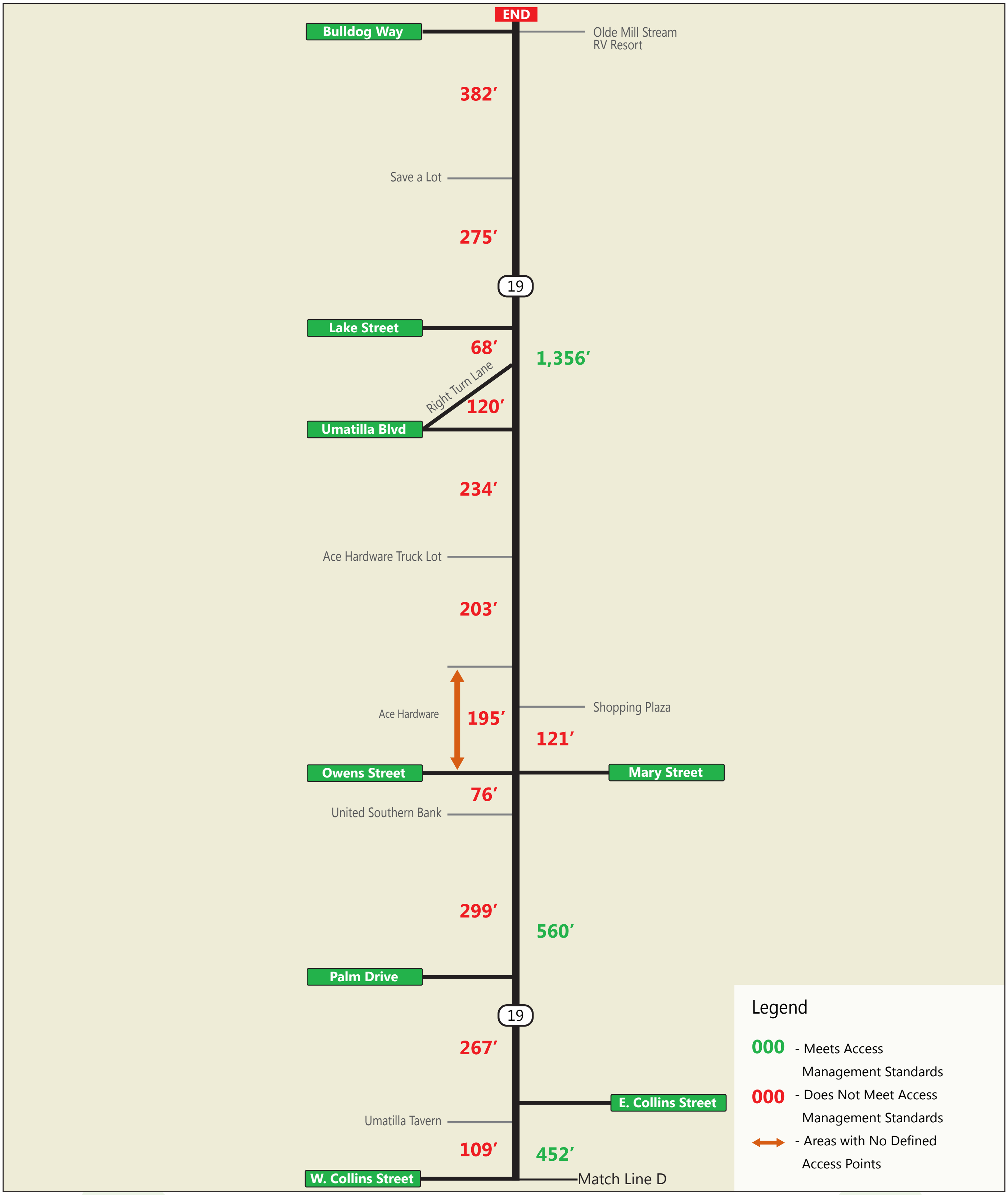
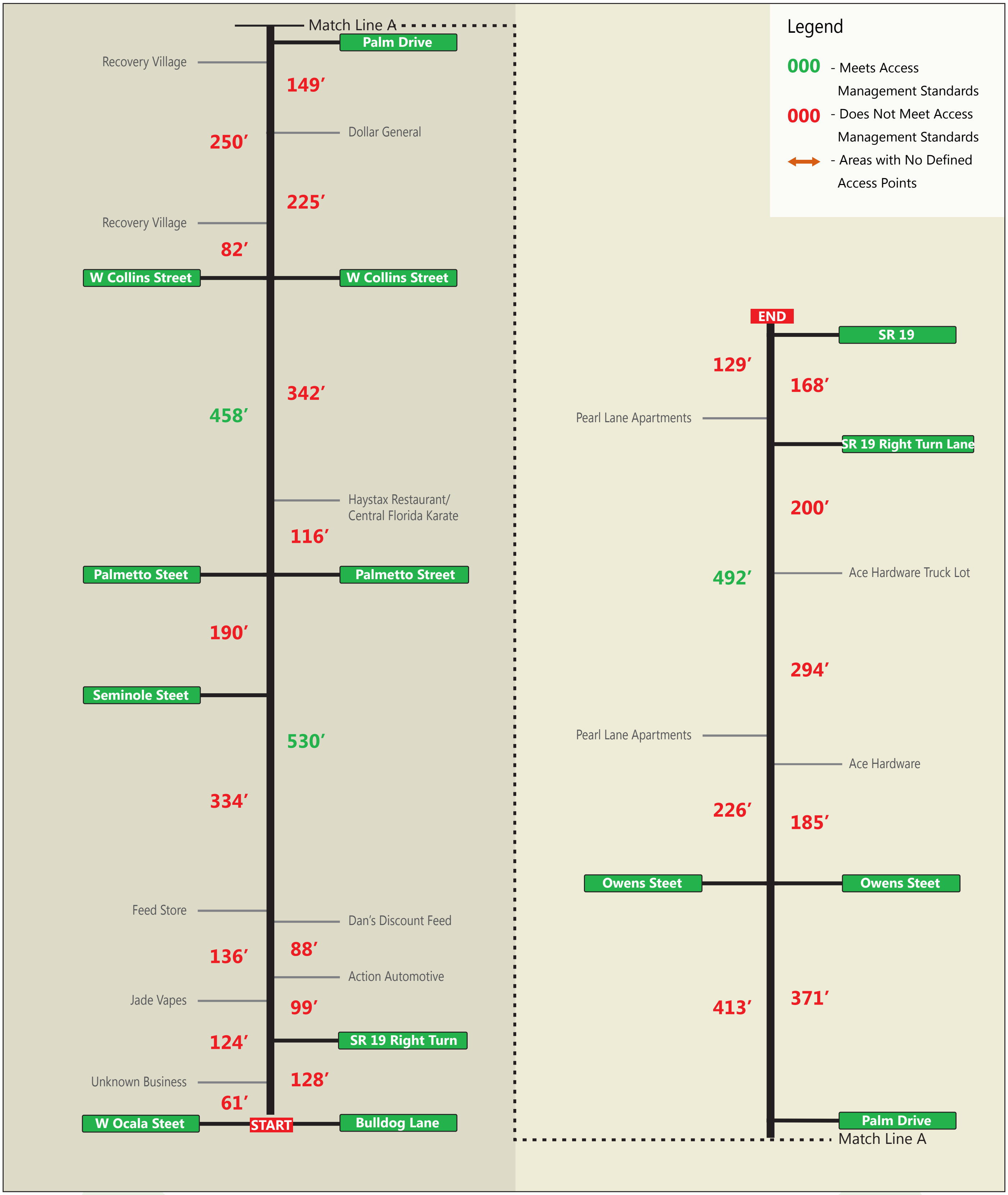


Figure 20
SR 19 Access Managment –
Driveway Spacing (Part 3)

CITY OF UMATILLA - SR 19 - CORRIDOR STUDY

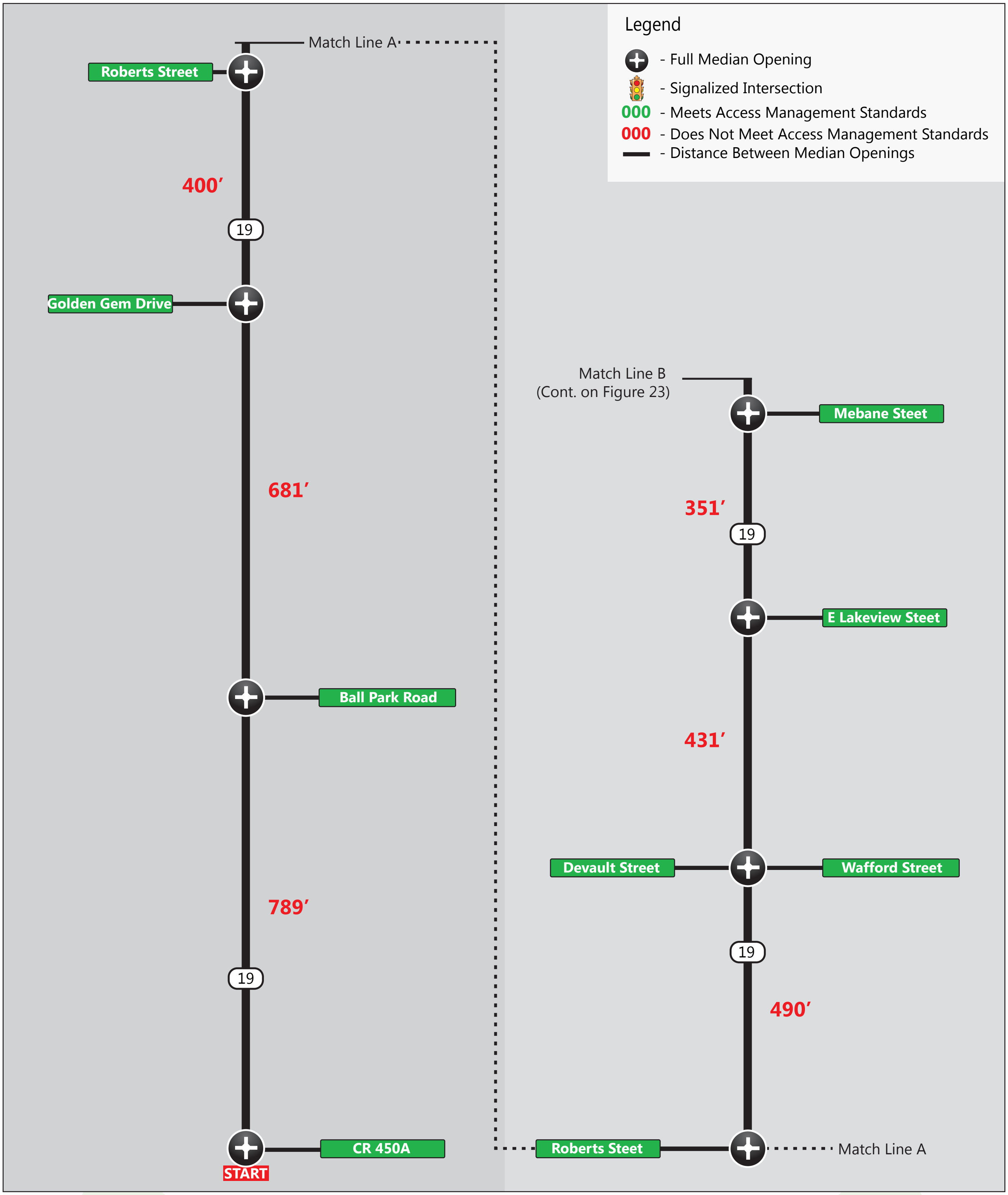
FDOT



CITY OF UMATILLA
- SR 19 -
CORRIDOR STUDY

Figure 21
Umatilla Blvd.
Access Management - Driveway Spacing

FDOT



CITY OF UMATILLA - SR 19 - CORRIDOR STUDY

Figure 22
SR 19 Access Management–
Signalized Intersection and
Median Spacing (Part 1)

FDOT

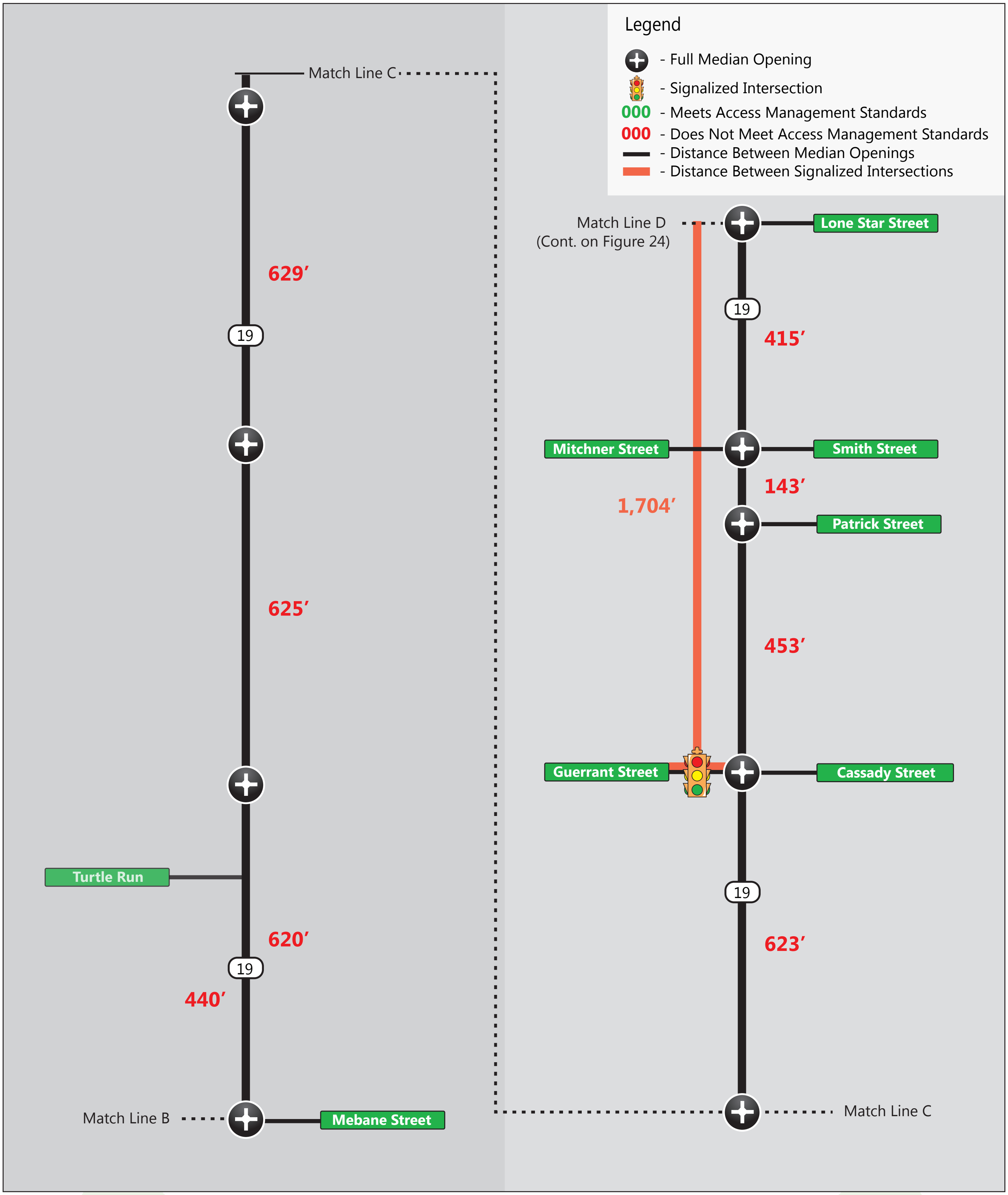
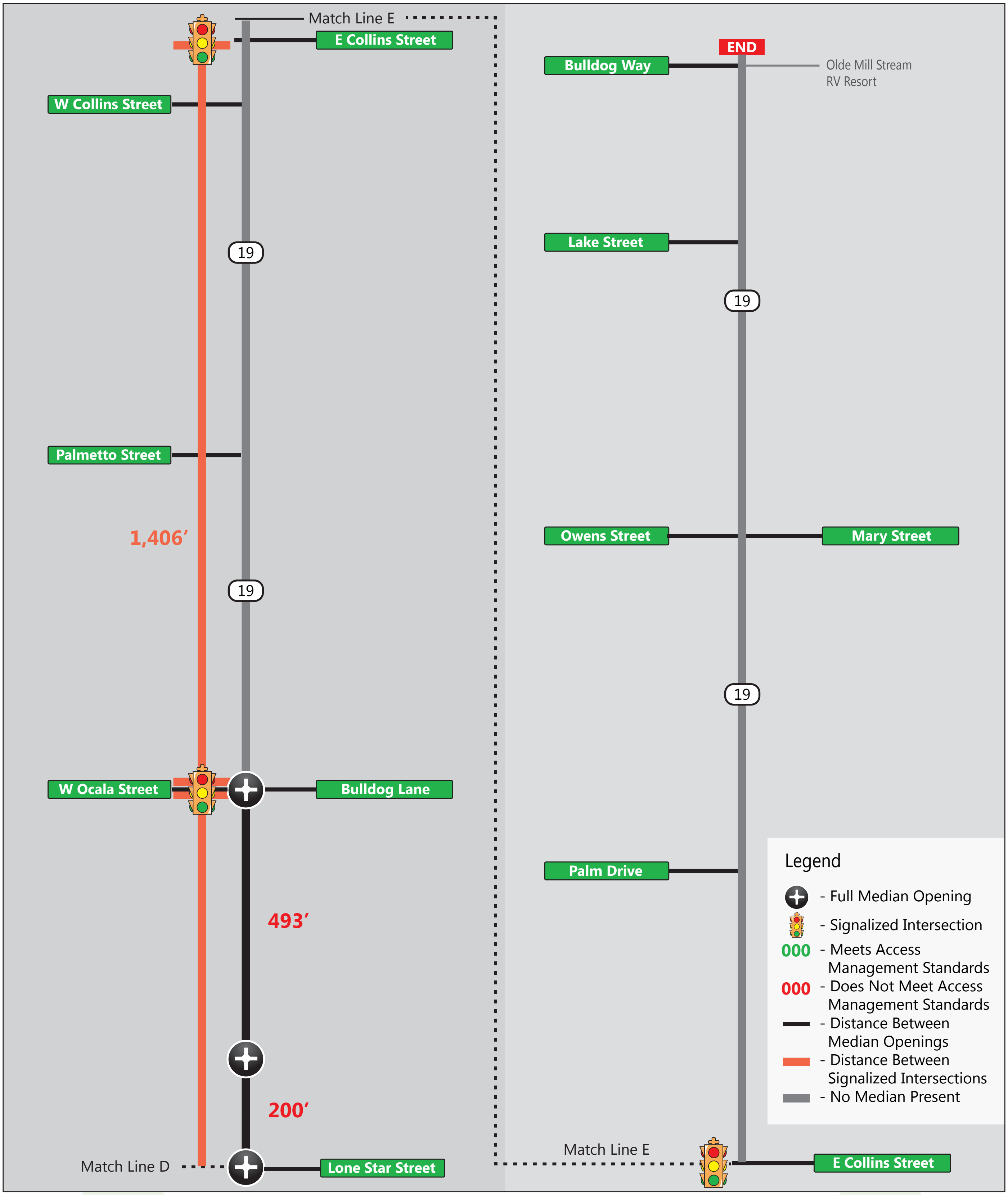


Figure 23
SR 19 Access Management–
Signalized Intersection and
Median Spacing (Part 2)



- SR 19 -
CORRIDOR STUDY

Figure 24
SR 19 Access Management–Signalized Intersection and Median Spacing (Part 3)

FDOT

2.7.5 Existing Intersection Geometry

Figure 25 provides the year 2016 intersection geometry for the following Study Area signalized intersections:

1. SR 19 at Cassady Street/Guerrant Street
2. SR 19 at Bulldog Lane/W Ocala Street/Umatilla Boulevard
3. SR 19 at E Collins Street

Left turn lanes are provided along SR 19 approaching each signalized intersection. Lake County is responsible for the operation and maintenance of the three traffic signals within the Study Area.

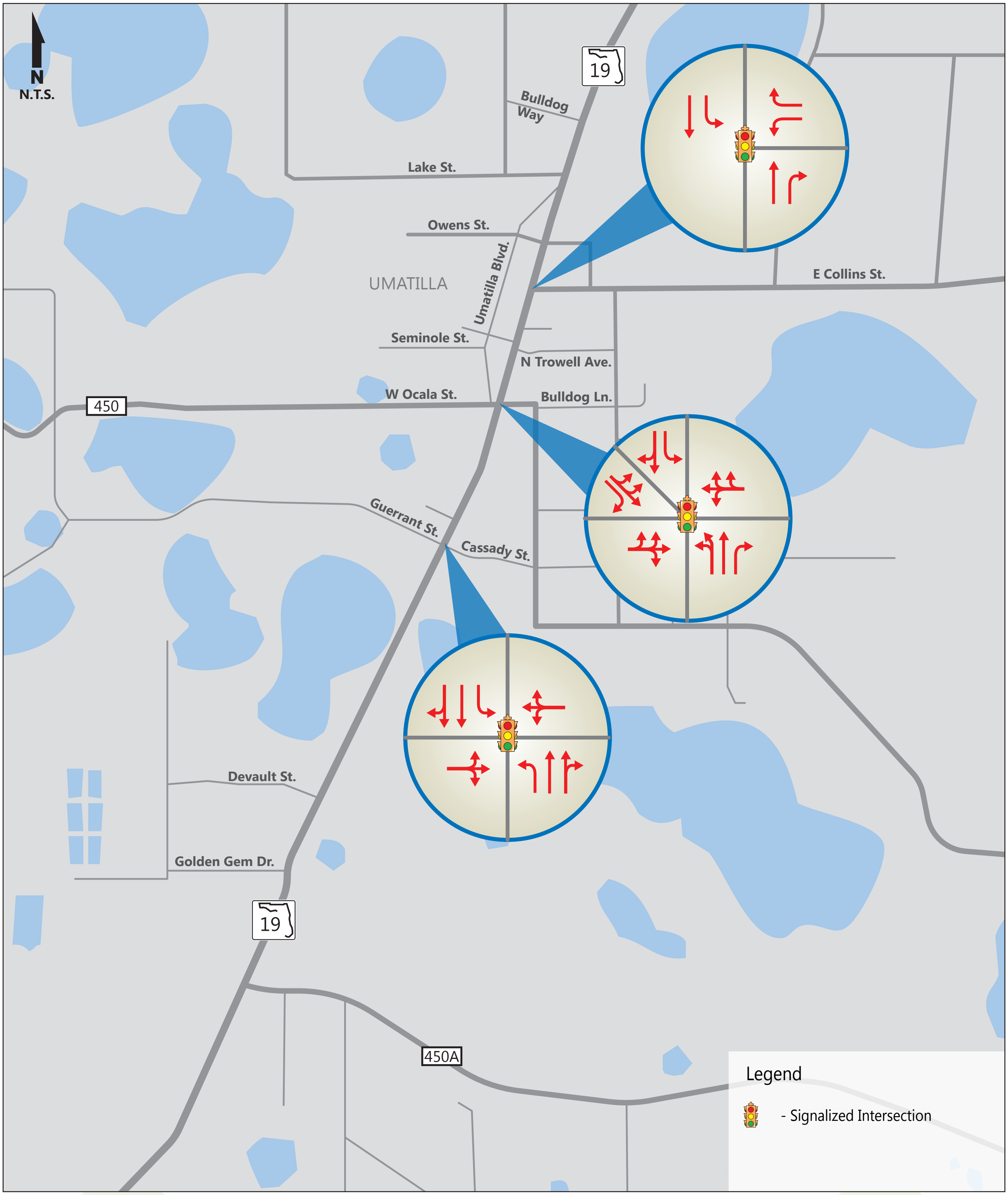


Figure 25
Existing Intersection Geometry

2.7.6 Intelligent Transportation Systems

There is currently no existing ITS infrastructure within the Study Area. Lake County currently operates and maintains the existing TS-2 Naztec controller signalized intersections at the following Study Area locations:

- SR 19 at Cassidy Street and Guerrant Street
- SR 19 at W Ocala Street and Bulldog Lane
- SR 19 at E Collins Street

2.7.7 Parking

A mixture of parallel and angled on-street parking is provided along both SR 19 and Umatilla Boulevard. The locations for parking are denoted graphically in Figure 26.

For SR 19, only unmarked parallel parking is provided. The locations are as follows:

- West side:
  - From Golden Gem Drive to approximately 350 feet south of W Ocala Street/Bulldog Lane
- East side:
  - From Golden Gem Drive to Cassady Street
  - From Orange Lane to approximately 250 feet south of W Ocala Street/Bulldog Lane

Along Umatilla Boulevard, a combination of parallel and angled parking (head-in) is provided. The locations and types of parking are as follows:

- West side:
  - Unmarked parallel parking from approximately 200 feet north of W Ocala Street/Bulldog Lane to 225 feet south of Seminole Street
  - Marked angled (head-in) parking from approximately 225 feet south of Seminole Street to Owens Street
  - Unmarked parallel parking from Owens Street to approximately 175 feet southwest of SR 19
- East side:
  - Unmarked parallel parking from approximately 200 feet north of W Ocala Street/Bulldog Lane to W Collins Street
  - Unmarked parallel parking from W Collins Street to approximately 350 feet southwest of SR 19

In general, most of the parking along SR 19 is underutilized, with the following exceptions:

- In the vicinity of Guerrant Street/Cassady Street due to retail shops/restaurants and the Umatilla City Hall
- On the east and west sides of the road adjacent to the small lakefront parks fronting Lake Umatilla (located approximately ¼ mile southwest of the intersection of SR 19 and Guerrant Street/Cassady Street

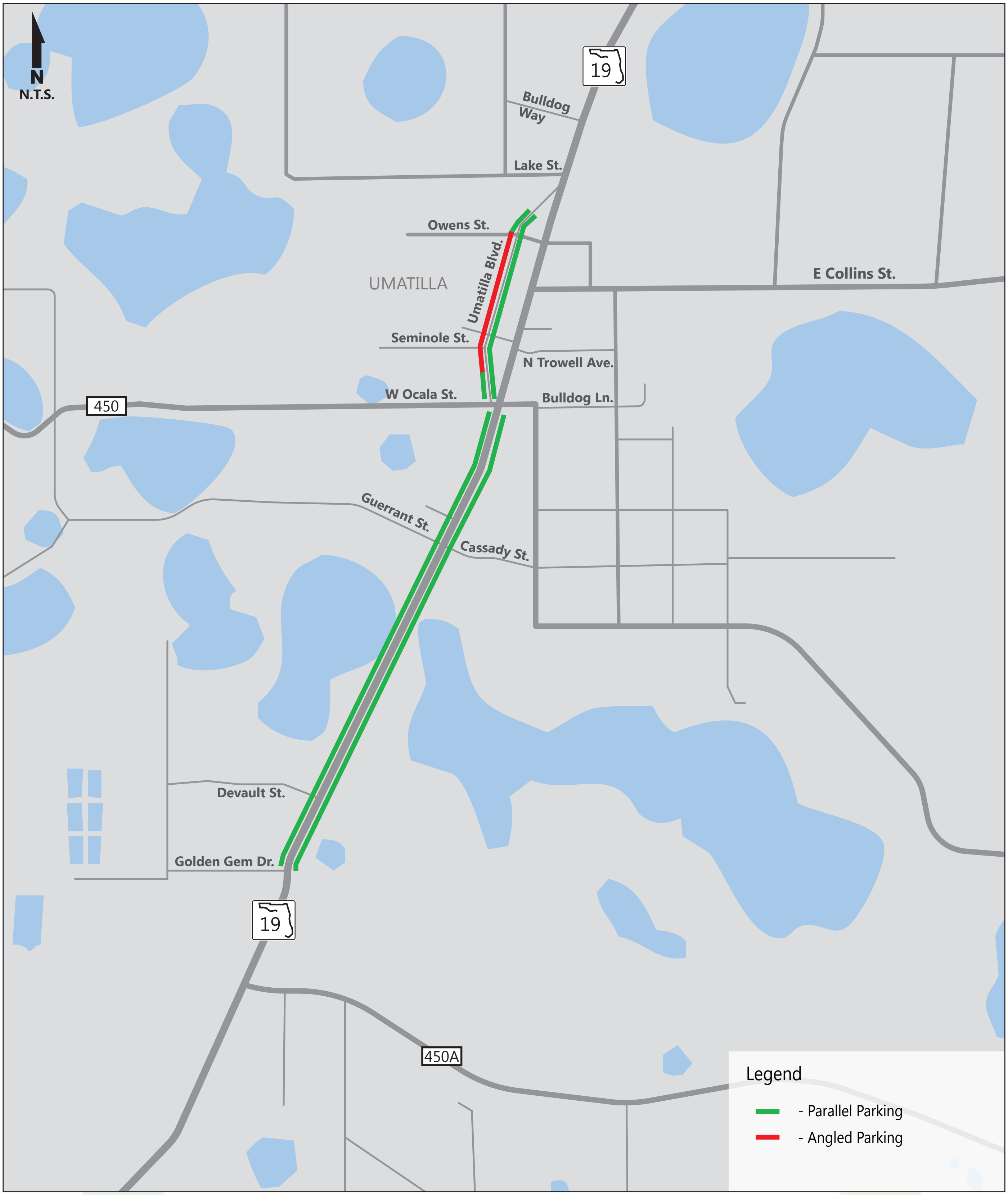


Figure 26
On-Street Parking Locations

- SR 19 -
CORRIDOR STUDY

2.7.8 Lighting

A desktop review using Google Street View was used to assess lighting within the Study Area. In general, the review indicated all roadway segments in the Study Area are lighted. A mix of utility mounted and freestanding light poles are used throughout the Study Area.

2.7.9 Utilities

A Sunshine One Call ticket was processed in October 2016 to identify a list of potential utility providers within the corridor. A 100-foot buffer around SR 19 and Umatilla Boulevard was used to identify the utility companies located adjacent to and within the corridor. Table 20 and Table 21 present the utility companies/agencies which may have facilities located within the Study Area on SR 19 and Umatilla Boulevard, respectively.

Table 20: Utility Agencies and Contact Information for SR 19

Utility/Agency	Type(s) of Utilities	Contact Person	Contact Number
City of Leesburg-Fiber	Fiber	Bob McCoy	352-728-9858
City of Umatilla	Water and Sewer	Duane Booth	352-343-8481
Florida Gas Transmission-Orlando	Gas Pipeline	Joseph E. Sanchez	407-838-7171
Florida's Natural Growers	Industrial Waste	Ron Knox	352-669-2101 x141 (Alt: 352-516-1367)
Duke Energy	Electric	Meisha Barnard	352-694-8521
Comcast Communications (Previously Lake County CBLV)	Unknown	Wade Mathews	352-516-3824
TECO People's Gas	Gas	Deborah Frazier	407-420-6609
TECO People's Gas-Eustis Transmission	Gas	Deborah Frazier	407-420-6609 (Alt: 321-228-2476)
CenturyLink-Ocala	Phone and Fiber Optic	Kirby Smith	352-326-1722

Source: Sunshine 811.

Table 21: Utility Agencies and Contact Information for Umatilla Boulevard

Utility/Agency	Type(s) of Utilities	Contact Person	Contact Number
City of Umatilla	Water and Sewer	Vaughan Nilson	352-502-9802
Duke Energy	Electric	USIC Dispatch	800-778-9140
Comcast Communications (Previously Lake County CBLV)	Unknown	USIC Dispatch	800-778-9140
TECO People's Gas-Eustis	Gas	Dee MacDonald	407-420-6650 (Alt: 407-466-7170)
CenturyLink-Ocala	Phone and Fiber Optic	Dispatch	855-742-6062

Source: Sunshine 811.

Listed facilities in the Sunshine One ticket does not indicate definite presence within the corridor. These utility companies will be contacted to verify the location and content of the facilities during the course of the study.

2.7.10 Drainage

The existing stormwater system serving SR 19 in Lake County is the Southern Ocklawaha River Hydrologic Basin. This basin is not impaired for nutrients. From a drainage perspective, the project is divided into three segments:

1. From CR 450A to Golden Gem Drive, the stormwater system consists of shallow drainage swales, including ditch-bottom inlets within the right-of-way which conveys stormwater to underground stormsewer. In the median, there are additional open swales.
2. From north of Golden Gem Drive to Bulldog Lane/W Ocala Street, there is a closed stormsewer drainage system draining the curb and gutter roadway.
3. From north of W Ocala Street/Bulldog Lane to Bulldog Way/Olde Millstream RV Park there are some locations where curb and gutter exists; however, the majority of the section includes a closed drainage system with a grate/draining pan and no curb/gutter.

The Study Area is made up of mostly flat terrain; elevations vary from 75 feet to 101 feet. The minimum elevation of 75 feet is located where the road passes between Lake Enola and Lake Umatilla. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) data, the Study Area is not within any flood zone (see Figure 44 in Section 2.11.4 for more information).

The United States Department of Agriculture (USDA) maps indicate the majority of the soils within the Study Area are Sparr sand, Candler sand, Arents, Myakka-Myakka, Lochloosa sand, Pompano sand, and Wauchula sand. All the soils, except for Candler sand, are considered poorly drained soils, with high groundwater tables.

Any improvements to SR 19 will be subject to the St. John’s River Water Management District (SJRWM) criteria current at the time of improvement. Based on the existing stormwater regulations of these agencies, any project other than resurfacing would require both stormwater quality treatment and attenuation of runoff rate and volume. The project would have to provide reasonable assurance the post-development peak rate of discharge will not exceed the existing peak rate of discharge generated by the 10-year and 25-year 24-hour storm events.

Any project other than resurfacing will need to also include some new drainage structures and some modifications to existing drainage structures. New spread analysis and pipe sizing calculations would be required for those areas. However, the goal would be to maintain the existing trunkline to the maximum extent.

2.7.11 Planned Roadway Improvements

The Lake-Sumter MPO 2040 LRTP, the Lake-Sumter MPO TIP, and the FDOT Five Year Work Program were reviewed to identify roadway improvement projects within the Study Area. The results of the review are included below.

LRTP

The Lake-Sumter MPO 2040 LRTP identified SR 19 (from CR 450A to Bulldog Way) as a constrained corridor with a maximum of 4-lanes and no planned future improvements.

TIP

A review of the Lake-Sumter MPO's TIP identified no proposed improvements within the Study Area.

FDOT Work Program

FDOT has no improvements identified along the SR 19 corridor in the Study Area.

FDOT 3R Scope for SR 19

The 3R scope identified resurfacing along SR 19 from Golden Gem Drive to 75 feet south of Palmetto Street. The scope also identifies various drainage improvements, and striping no parking zones to improve intersection sight distance. A 3D Design Survey will also be conducted.

2.7.12 Bicycle and Pedestrian Infrastructure

Bicycle and pedestrian connectivity plays an important role within the Study Area given the close proximity of a number of destinations, such as Umatilla City Hall, the Umatilla library, the North Lake Community Park (the large recreational complex located off E Collins Street), and various retail stores and restaurants. This section details the existing bicycle and pedestrian network in the Study Area.

Bicycle Lanes

A desktop inventory of bicycle lanes was completed for the Study Area utilizing the latest aerial photography and a field review. In general, there are no designated bicycle lanes along SR 19 or Umatilla Boulevard. The two exceptions are shown in Figure 27 and noted below:

- 150-foot bicycle lane on SR 19 northbound starting 150 feet before the intersection of SR 19 and E Collins Street
- 150-foot bicycle lane on SR 19 northbound starting at the intersection of SR 19 and Palmetto Street

As noted previously in section 2.7.7, along most of SR 19, there are paved shoulders on both sides of the road to allow for on-street parking. In many cases, this parking is underutilized making this parking area an unofficial bicycle lane.

Sidewalks and Curb Ramps

A desktop inventory of sidewalk facilities was completed for the Study Area utilizing the latest aerial photography and supplemented with Google Street View and a field review. This review examined the presence of sidewalks along both sides of SR 19 and Umatilla Boulevard.

The majority of SR 19 has sidewalks present on both sides of the road with the following exceptions (depicted graphically in Figure 27):

- No sidewalks on both sides of the road from CR 450A to Golden Gem Drive
- No sidewalk connecting west side of SR 19 with east side of Umatilla Boulevard at the intersection of SR 19 and W Ocala Street/Bulldog Lane
- No sidewalk on west side of SR 19 from 475 feet north of W Ocala Street/Bulldog Lane to 85 feet south of E Collins Street
- No sidewalk along east side of SR 19 from E Collins Street to Mary Street

Most side streets do not have any type of sidewalk connection to SR 19. When sidewalks are provided, it is generally on only one side of the road.

In general, where sidewalks are provided, curb ramps are also provided.

Trails

Trails are multi-use paths primarily used by runners, bicyclists and other non-motorized users. Existing and planned regional trails which cross through the Study Area were inventoried. Local recreational trails not providing regional connectivity were not inventoried.

Currently, there is a multi-use path along the east side of SR 19 from W Ocala Street/Bulldog Lane to E Collins Street (depicted in Figure 27).

Lake-Sumter MPO's 2040 LRTP highlights the SR 19 corridor as part of a regional multi-use trail network. Lake County's Trails Master Plan documents the "North Lake Trail" as running along SR 19. More information about this trail is provided in the Future Bicycle/Pedestrian Plans Subsection.

Crosswalks

Crosswalks were inventoried throughout the Study Area (see Figure 27). All marked crosswalks across of SR 19 are signalized.
The signalized crosswalk locations are as follows:

- SR 19 at Guerrant Street/Cassady Street
- SR 19 at Umatilla Boulevard and W Ocala Street/Bulldog Lane
- SR 19 at E Collins Street

- SR 19 -
CORRIDOR STUDY

Figure 27
Existing Bicycle and Pedestrian Network

School Bus Routes

There are no public schools with direct access to SR 19.

There are three public schools located adjacent to the Study Area:

- Umatilla Elementary School (access off Lake Street)
- Umatilla Middle School (access off E Lake Street)
- Umatilla High School (access off Bulldog Lane)

Lake County Schools generally calculates a two-mile walking radius within a School Attendance Boundary to determine the eligibility for a bussing area. Students within the radius are not transported by bus, and therefore walk, bicycle, or are dropped off by car.

Safe Routes to Schools

Safe Routes to Schools is a national program designed to increase walking and bicycling to/from schools. Funding is provided from the federal government and is used to construct new bicycle lanes and sidewalks, as well as to organize educational, promotional, and enforcement campaigns. Participation varies from school to school.

During later phases of this project, coordination with the public schools in the Study Area will be done to build on and enhance the work already being done with the Safe Routes to Schools program.

Parallel Bicycle and Pedestrian Routes

Parallel routes can provide an alternative for bicyclists and pedestrians traversing through the Study Area.

Based on a desktop review, Umatilla Boulevard can serve as a parallel bicycle and pedestrian route throughout its half mile length.

Future Bicycle/Pedestrian Plans

A review of Lake-Sumter MPO’s 2040 LRTP, the Lake-Sumter MPO’s FY 2016-2020 TIP, Lake County’s Trails Master Plan, and FDOT’s 3R Scope was performed to identify any future bicycle and pedestrian improvements within the Study Area. The results of the review are included below.

LRTP
No cost feasible improvements were identified within the Study Area.

TIP
No improvements were identified for the Study Area.

Lake County Trails Master Plan

The Trails Master Plan identifies a proposed trail running through the Study Area: the North Lake Trail-Phase 2. This trail is expected to begin north of Ferran Park in Eustis and terminate at Bulldog Way in Umatilla. While the plan indicates a desire to place the trail on the east side of SR 19, no planning has been performed to determine a final alignment for this trail, and no funding has been designated for design or construction. Conversations with Gallus Quigley, Recreation Coordinator for Trails in Lake County, indicated the extents and final location of the trail are flexible and can be modified to ensure future construction projects can complete portions of the planned trail.

Currently, Lake County is undertaking an update to their Trails Master Plan. The Project Team will coordinate with Lake County and the consultant performing this update to ensure recommendations developed as part of this project are consistent with the updated Master Plan.

FDOT 3R Scope for SR 19

The 3R scope identified bicycle and pedestrian improvements from Golden Gem Drive to 75 feet south of Palmetto Street. The bicycle improvements include new bike facilities throughout the length of the project with the introduction of buffered bike lanes, sharrows, and 4-foot bike lanes. Pedestrian improvements primarily include rebuilding curb ramps which do not meet ADA code, but also include minor improvements to widen or construct new sidewalk where existing facilities are too narrow.

2.7.13 Transit Service and Infrastructure

Existing transit services in the Study Area are operated by LakeXpress. Establishing the baseline transit service along the Study Area corridor is a critical initial step to help the Project Team identify system deficiencies, shortcomings, or needs which in turn aids in the development of transit-related recommendations. This sub-section discusses these services.

Overview of LakeXpress

LakeXpress provides transit service within Lake County, featuring 7 local fixed bus routes. LakeXpress also provides paratransit service. The existing LakeXpress transit service types found within the Study Area are described below.

Fixed-route – Regular fixed-route local bus service provides frequent stops, typically spaced every few blocks. LakeXpress buses have bike racks on board vehicles.

Paratransit Service - The paratransit program provides service for eligible individuals who are not able to use the regular fixed-route bus service because of a disability or other limitations. Paratransit service is subsidized, depending on the type of trip, through the Americans with Disabilities Act (ADA) or the Transportation Disadvantaged (TD) programs.

LakeXpress Fixed-Route Service

LakeXpress currently operates one fixed-route with the SR 19 Study Area:

- *Route 4 (Altoona to Zellwood)* – This route operates along SR 19 within the Study Area. This service operates from 7:15 AM to 7:15 PM, Monday through Friday with 120-minute service. Service is not provided on Saturdays, Sundays, and major holidays.

Figure 28 shows the alignment of Route 4 and the bus stops located in the Study Area.

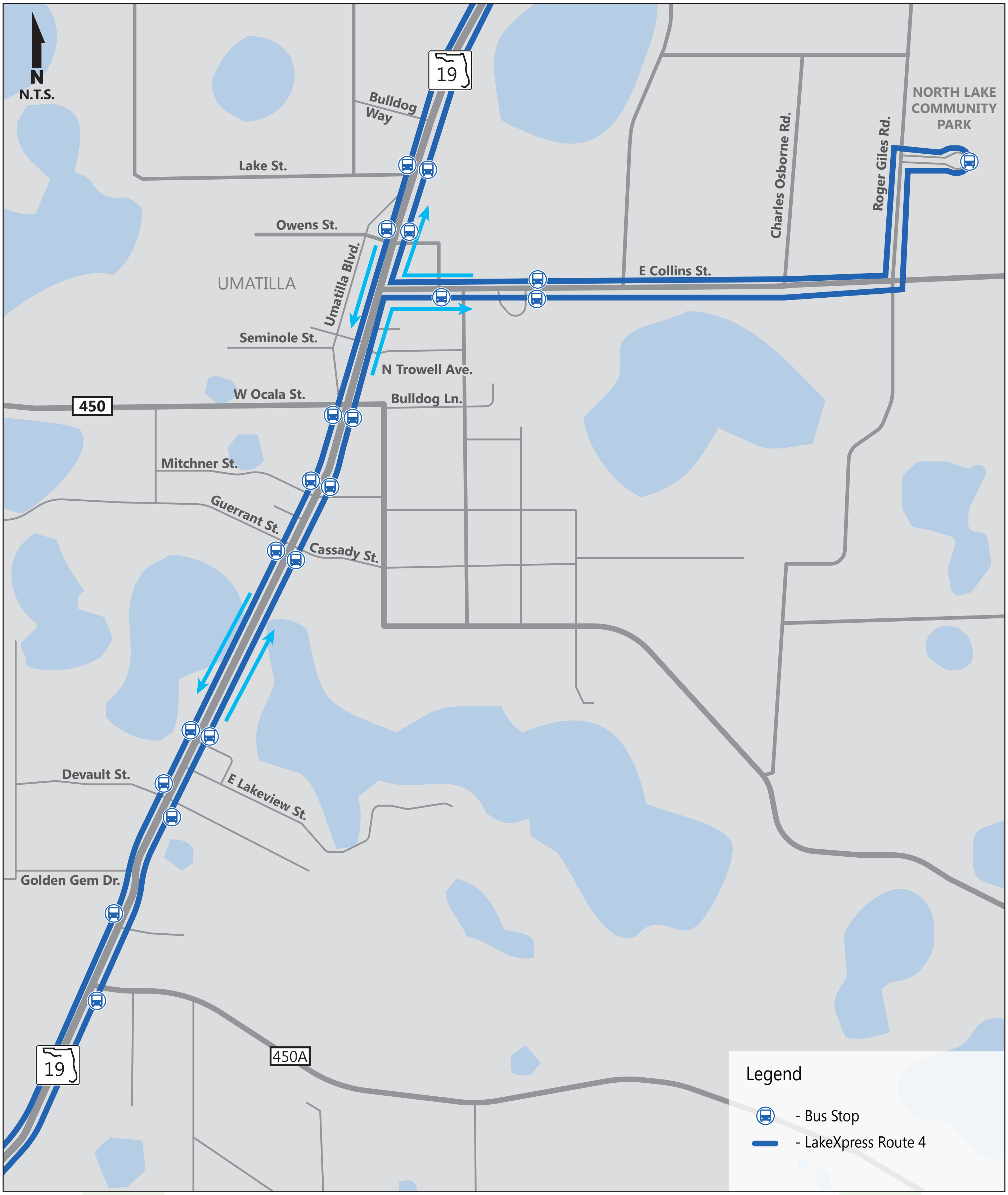


Figure 28
Transit Routes and Stops Map

Bus Stop Infrastructure

A desktop review using the latest aerial footage, supplemented with Google Street View and a field review was performed to assess the infrastructure present at bus stops within the Study Area.

Based on the review, the vast majority of bus stops in the Study Area are simply a bus stop sign. Typical bus stop conditions are shown in Figure 29 and Figure 30. One bus stop (located at SR 19 north of W Ocala Street/Bulldog Lane) was identified to have a shelter (see Figure 31).

As seen in the typical bus stop figures, these bus stops lack landing pads as well as benches for seating. Landing pads are helpful for wheelchair users and the elderly, who have difficulty navigating the grass buffer when entering and exiting the bus.

Specific recommendations on transit accessibility will be addressed in a later phase of this project.

Figure 29: Typical Bus Stop with Sidewalks

Source: VHB, SR 19 at United Southern Bank (Southbound)

Figure 30: Typical Bus Stop with no Sidewalks

Source: VHB, SR 19 at Save-A-Lot Shopping Plaza Driveway (Southbound)

Figure 31: Bus Stop with Shelter

Source: VHB, SR 19 north of W Ocala Street/Bulldog Lane

Future Transit Plans

A review of the LakeXpress 2014-2023 TDP, the Lake-Sumter MPO 2040 LRTP, the Lake-Sumter MPO's FY 2016-2020 TIP, and FDOT's 3R Scope was performed to identify any planned transit improvements within the Study Area. More information about these improvements is included below.

LakeXpress 2014-2023 TDP

The LakeXpress TDP identified three improvements to the route running through the Study Area (Route 4):

- **Year 2017:** New weekend service on all LakeXpress routes
- **Year 2019:** Evening service on all LakeXpress routes
- **Year 2023:** Double frequency on all LakeXpress routes

Lake-Sumter MPO 2040 LRTP

No cost feasible improvements were identified within the Study Area.

TIP

No cost feasible improvements were identified within the Study Area.

FDOT 3R Scope for SR 19

The 3R scope identified the construction of new landing pads for existing bus stops from Golden Gem Drive to 75 feet south of Palmetto Street.

2.8 Existing Travel Demand Characteristics

Daily and hourly traffic volume data were collected and reviewed to understand the travel demand characteristics along the Study Area corridor. This section quantifies the existing traffic volumes along the Study Area corridor.

2.8.1 Observed Traffic Volumes

Weekday daily and hourly traffic volumes along the Study Area roadway segments and intersections were collected from the FDOT Florida Transportation Information (FTI) database. These counts were also supplemented by 24-hour tube counts and 7-hour (7:00 – 9:00 AM, 1:00 – 4:00 PM, and 4:00 – 6:00 PM) manual turning movement counts conducted along the Study Area roadway segments and intersections in September and November 2016. Figure 32 summarizes the traffic data collection along the Study Area corridor.

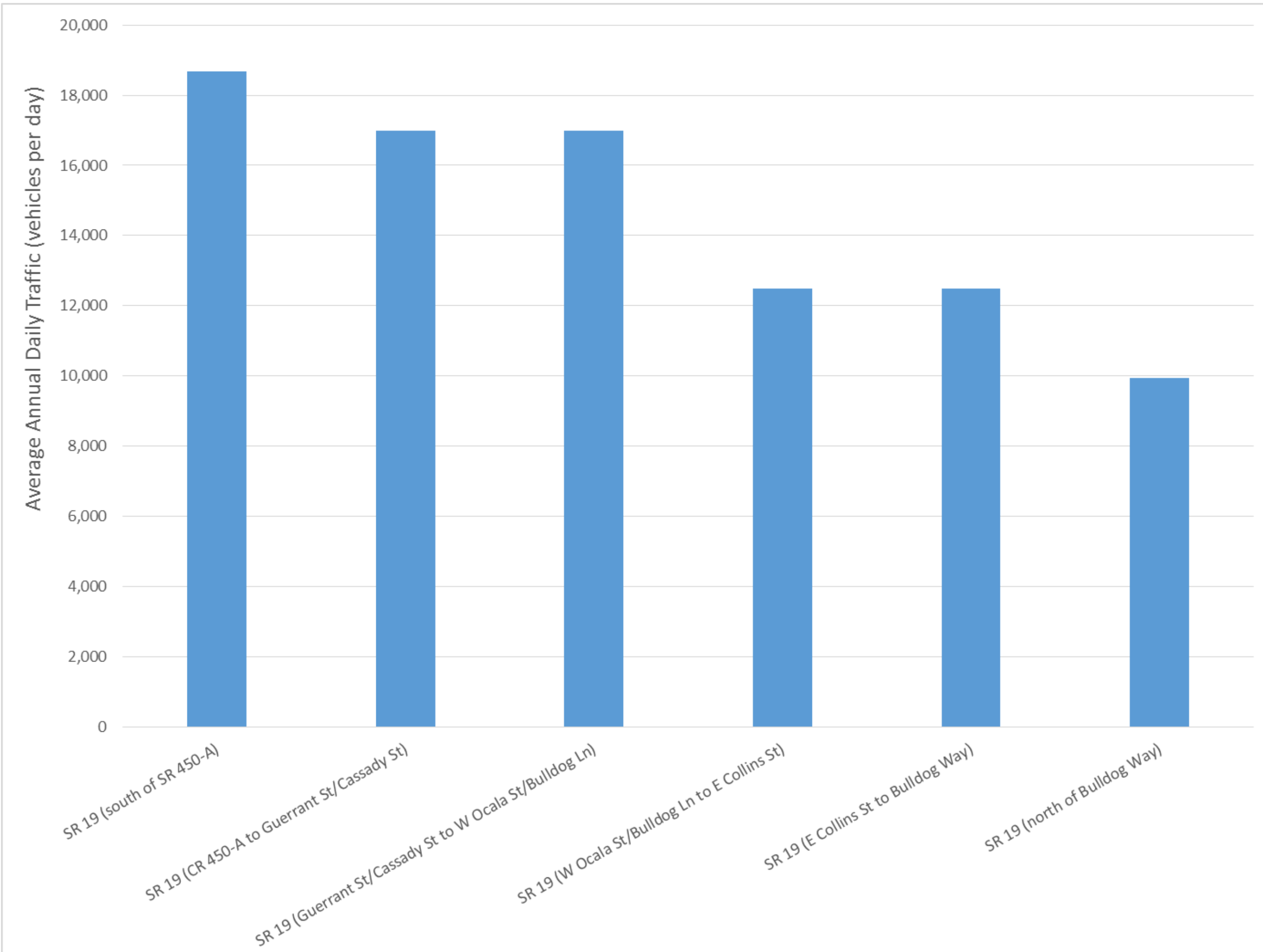
CITY OF UMATILLA - SR 19 - CORRIDOR STUDY

Figure 32
Data Collection Summary Map

FDOT

The average annual daily traffic volumes along the Study Area corridor are illustrated in Figure 33. The busiest roadway segment recorded along the corridor was south of CR 450A, which carries almost 19,000 vehicles per day. The lowest SR 19 roadway segment traffic volumes were observed north of Bulldog Way, which carries close to 10,000 vehicles per day.

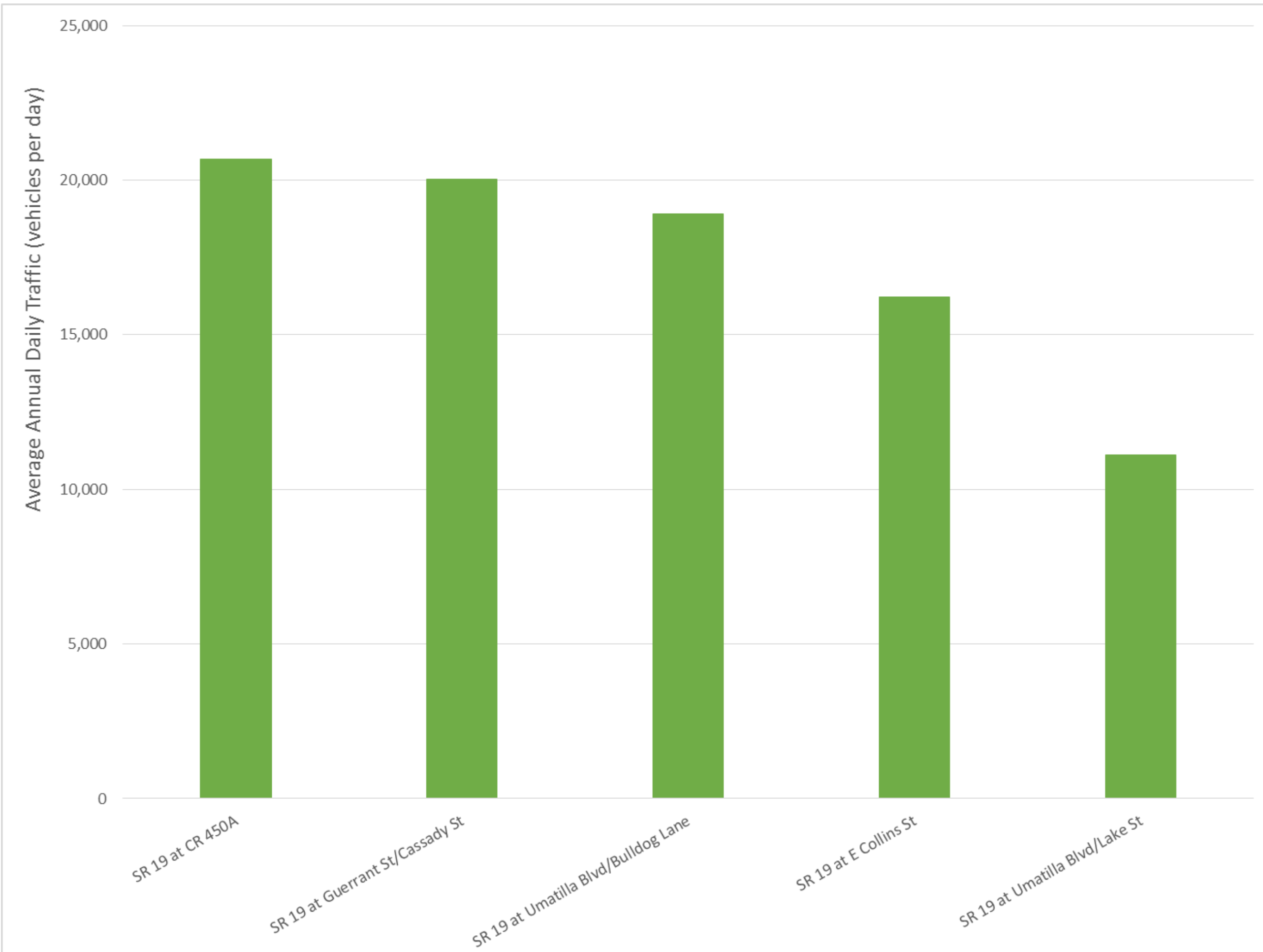
Figure 33: 2016 Average Annual Daily Traffic Volumes along Study Area Roadway Segments



Source: FDOT, supplemental counts by VHB

Figure 34 illustrates the average annual traffic volumes entering at the Study Area intersections. The busiest Study Area intersection traffic volumes were observed at the intersection of SR 19 and CR 450A, which carries over 20,000 vehicles per day. The lowest Study Area intersection traffic volumes were observed at the intersection of SR 19 and Umatilla Boulevard/Lake Street, which carries approximately 11,000 vehicles per day.

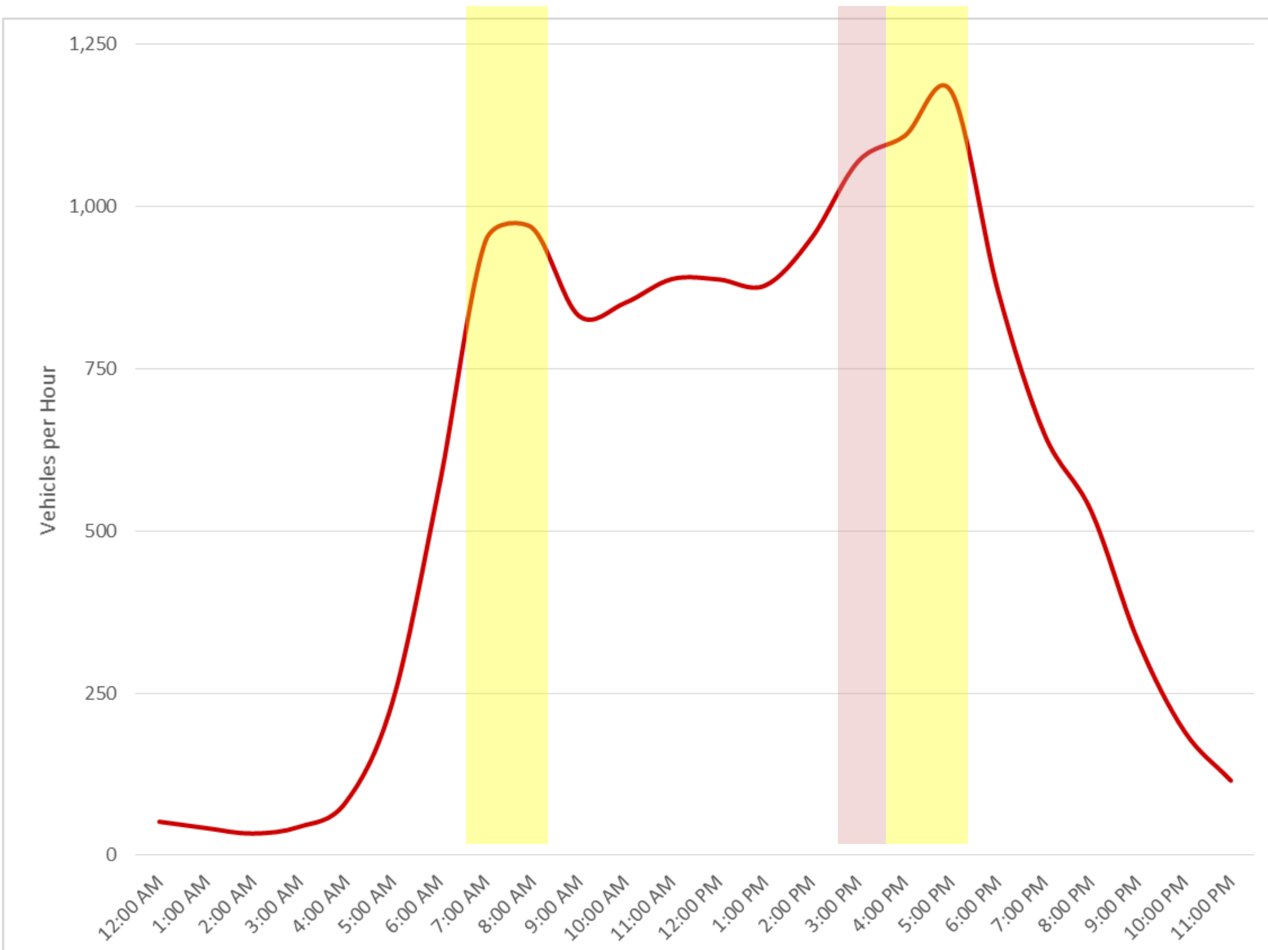
Figure 34: 2016 Average Annual Daily Traffic Volumes along Study Area Intersections



Source: FDOT, supplemental counts by VHB

Traffic demand along the Study Area corridor fluctuates over of course of the day, as illustrated in Figure 35. The average hourly volumes shown in the Figure were calculated from the hourly volumes collected from the 24-hour supplemental tube counts and the FDOT count station data. As illustrated, there are distinct surges in traffic during the morning and evening periods. Traffic is notably higher in the evening peak period compared to the morning. As shown in Figure 35, hourly volumes begin to increase and level off between 3:00-4:00 PM (highlighted in red), which corresponds to the elementary and middle school dismissal times. Volumes then spike between 5:00-6:00 PM for the evening peak hour.

Figure 35: Weekday Traffic Fluctuation along Study Area Corridor



Source: FDOT, supplemental counts by VHB

2.8.2 Historical Trends

Traffic data from a range of time periods from 2000 to 2015 were collected and reviewed. The latest data obtained from FDOT FTI needed to be adjusted to reflect existing 2016 conditions. A review of historical count data indicated there was little to no growth in traffic along SR 19. In fact, the count data showed a decrease in traffic volumes; therefore, a minimum growth rate of 1.0% was used to project the 2016 volumes. The historical count data can be found in Appendix B.

2.8.3 Existing Traffic Volumes

Utilizing the FDOT FTI database, existing traffic volumes collected in September 2016 were adjusted by applying the seasonal factor and axle factor (when needed) to reflect the average annual daily and peak hour traffic volumes. The resultant volumes were then applied to their respective segment or turning movement to determine the existing conditions on the study corridor. Figure 36 illustrates the adjusted 2016 existing turning movement traffic volumes.

2.8.4 Pedestrian and Bicycle Traffic Volumes

Pedestrian and bicycle volumes were collected as part of the supplemental traffic counts at the Study Area intersections during the morning, mid-day (school dismissal), and evening peak hour periods. As presented earlier, crosswalks are provided at the signalized intersections at Guerrant Street/Cassady Street, W Ocala Street/Bulldog Lane, and E Collins Street.

Table 22 summarizes pedestrian and bicycle traffic volumes within the Study Area. The highest pedestrian and bicycle volumes were concentrated at the intersection of Guerrant Street/Cassady Street and SR 19 during the mid-day and PM peak hours. This intersection is located approximately 0.70 miles from Umatilla Middle School. The relatively high pedestrian and bicycle volumes at this intersection is most likely due to students walking or biking after school.

Table 22: Summary of Pedestrian and Bicycle Traffic Volumes

	Pedestrian Volumes			Bicycle Volumes		
Intersection	**AM**	**Mid-Day**	**PM**	**AM**	**Mid-Day**	**PM**
SR 19 at CR 450A	0	N/A	0	0	N/A	0
SR 19 at Guerrant St/Cassady St	2	37	16	1	2	3
SR 19 at W Ocala St/Bulldog Lane	6	10	4	0	2	0
SR 19 at E. Collins St	1	N/A	1	0	N/A	3
SR 19 at Umatilla Blvd/Lake St	0	2	0	0	0	0

Source: Supplemental counts by VHB

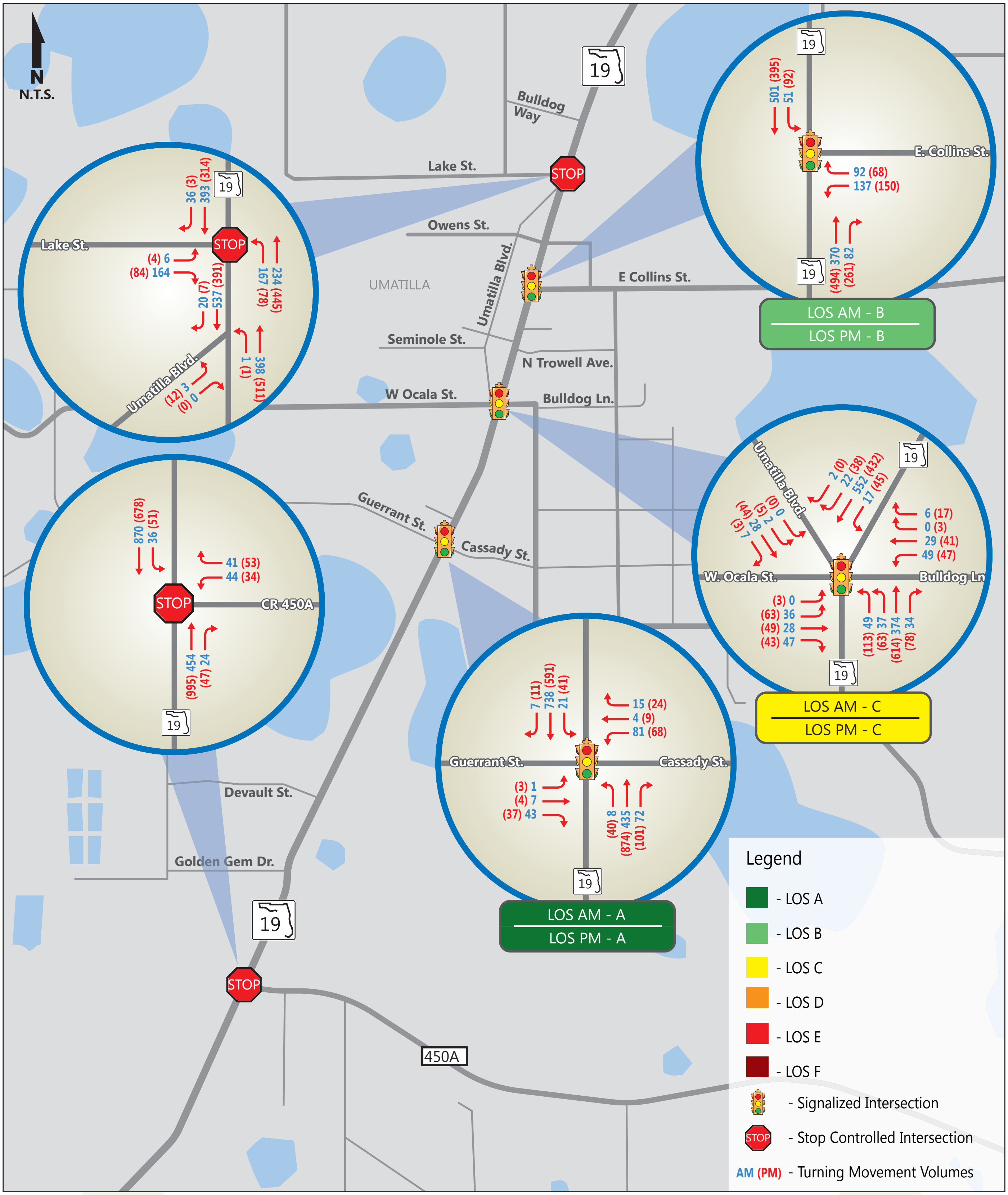


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Figure 36
Turning Movement Volumes
and Level of Service

FDOT

2.9 Existing Corridor Operations Summary

Understanding the relationship between the supply and demand on a roadway is a fundamental consideration in evaluating how well a transportation facility safely and efficiently accommodates the traveling public. This section summarizes the traffic operations assessment for key study area roadway segments and intersections.

The existing 2016 operational analysis was conducted to determine the Level of Service (LOS) for the roadway segments and the study area intersections. Peak hour peak direction volumes along the different segments were compared against the latest Generalized Peak Hour Directional Service Volumes Tables from the 2012 FDOT Quality/Level of Service Handbook to obtain the arterial LOS. The LOS for the study area intersections were determined using the procedures as outlined in the Transportation Research Board's (TRB) – Highway Capacity Manual (HCM) 2010 using Synchro Software (version 8.0). The traffic signal timings used for the analysis were provided by Lake County.

2.9.1 Arterial/Roadway Segment Level of Service Analysis

Policy VII-1.1.2 of the Lake County Comprehensive Plan Transportation Element adopts FDOT's LOS Standard of D on state roads within the urban area boundary, which includes SR 19.

As shown in Table 23 and depicted in Figure 37 through Figure 39, the SR 19 corridor currently operates at acceptable level of service conditions (LOS D or better) during the daily condition and the AM and PM peak hours.

Table 23: 2016 Existing Roadway Segment Level of Service

Roadway / Segment	No. of Lanes	Speed Limit (mph)	Adopted LOS	Maximum Service Volumes[1]		Daily			AM Peak Hour Directional Traffic				PM Peak Hour Directional Traffic			
				Daily	Peak	AADT	LOS	v/c	Volume	Dir	LOS	v/c	Volume	Dir	LOS	v/c
SR 19																
South of CR 450A	4D	45	D	39,800	2,000	18,690	C	0.47	853	SB	C	0.43	971	NB	C	0.49
CR 450A to Guerrant St/ Cassady St	4D	40	D	39,800	2,000	17,000	C	0.43	634	SB	C	0.32	791	NB	C	0.40
Guerrant St/Cassady St to W Ocala St/Bulldog Ln	4D	35	D	32,400	1,630	17,000	D	0.52	634	SB	C	0.39	791	NB	D	0.49
W Ocala St/Bulldog Ln to E. Collins St	2D	35	D	15,500	790	12,500	D	0.81	538	SB	D	0.68	659	NB	D	0.83
E. Collins St to Bulldog Way	2D	35	D	15,500	790	12,500	D	0.81	538	SB	D	0.68	659	NB	D	0.83
North of Bulldog Way	2D	45	D	18,600	920	9,948	C	0.53	428	SB	C	0.46	469	NB	C	0.51
CR 450A																
East of SR 19	2U	30	D	24,400	1,200	2,000	B	0.08	81	WB	B	0.07	94	EB	B	0.08
CR 450/W Ocala St																
West of SR 19	2U	35	D	24,200	1,190	3,364	B	0.14	125	WB	B	0.11	153	EB	B	0.13
CR 450/E. Collins St																
East of SR 19	2U	35	D	24,200	1,190	5,400	B	0.22	220	WB	B	0.18	339	EB	B	0.28
Umatilla Boulevard																
North of SR 19	2U	25	D	24,200	1,190	1,434	B	0.06	53	SB	B	0.04	88	SB	B	0.07

Source: FDOT FTI and supplemental daily and turning movement counts
1 - 2012 FDOT Quality/Level of Service Handbook

Figure 37
Daily Roadway LOS

Figure 38
AM Peak Hour Roadway LOS

Figure 39
PM Peak Hour Roadway LOS

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2.9.2 Intersection Level of Service Analysis

Turning movement counts were collected for the AM peak hour, mid-day (school dismissal times), and the PM peak hour time periods. The Year 2016 intersection LOS was obtained by applying the seasonally adjusted field turning movement counts to the existing intersection geometry and using the HCM 2010 methodology. A summary of the LOS analysis for the unsignalized study intersections is included in Table 24, and the signalized intersection analysis is shown in Table 25.

As seen in Table 24, all of the movements at the unsignalized intersections currently operate at LOS D or better during the AM, mid-day, and PM peak hours. The Synchro Summary Sheets are provided in Appendix C. Table 25 indicates all of the signalized intersections have an overall intersection level of service of C or better.

School dismissal times also impact the side road operations when compared to the normal AM and PM peak hour time periods. The mid-day peak hour at the Guerrant Street/Cassady Street and W Ocala Street/Bulldog Lane intersections was observed to be between 3:00-4:00 PM, which corresponds to the middle school dismissal time. At both intersections, the westbound approach (students leaving school) experiences its worst level of service scenario during this mid-day period.

Table 24: 2016 Existing Unsignalized Intersection Level of Service

Intersection	Movement	AM Peak			Mid-Day			PM Peak		
		v/c[1]	Delay[2]	LOS[3]	v/c[1]	Delay[2]	LOS[3]	v/c[1]	Delay[2]	LOS[3]
SR 19 at CR 450A	WBL	0.129	16.5	C	N/A	N/A	N/A	0.174	25.9	D
	WBR	0.057	10.0	B	N/A	N/A	N/A	0.114	13.2	B
	NBT	Note 1	Note 1	Note 1	N/A	N/A	N/A	Note 1	Note 1	Note 1
	NBR	Note 1	Note 1	Note 1	N/A	N/A	N/A	Note 1	Note 1	Note 1
	SBL	0.035	8.5	A	N/A	N/A	N/A	0.083	11.0	B
	SBT	Note 1	Note 1	Note 1	N/A	N/A	N/A	Note 1	Note 1	Note 1
SR 19 at Umatilla Blvd	NBL	0.001	8.8	A	N/A	N/A	N/A	0.001	8.2	A
	NBT	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
	SBT	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
	SBR	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
	EBL	0.010	15.0	C	0.022	14.1	B	0.032	14.2	B
	EBR	0	0	A	0	0	A	0	0	A
SR 19 at Lake St	NBL	0.190	9.3	A	0.096	8.4	A	0.070	8.2	A
	NBT	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
	SBT	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
	SBR	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
	EBL	0.024	17.3	C	0.012	15.0	C	0.012	14.8	B
	EBR	0.338	14.4	B	0.206	11.7	B	0.130	10.9	B

Note 1: Unopposed Movement
Source: VHB using HCM 2010 Methodology
1 Volume-to-capacity ratio
2 Average delay in seconds per vehicle
3 Level of service

Table 25: 2016 Existing Signalized Intersection Level of Service

Intersection	Movement	AM Peak			Mid-Day			PM Peak		
		v/c[1]	Delay[2]	LOS[3]	v/c[1]	Delay[2]	LOS[3]	v/c[1]	Delay[2]	LOS[3]
SR 19 at Guerrant St/ Cassady St	EBL/T/R	0.30	56.3	E	0.12	50.8	D	0.27	56.4	E
	WBL/T/R	0.58	60.3	E	0.68	58.8	E	0.59	60.7	E
	NBL	0.01	3.7	A	0.03	3.3	A	0.06	2.4	A
	NBT/R	0.18	2.8	A	0.27	4.2	A	0.34	3.2	A
	SBL	0.03	3.3	A	0.06	0.5	A	0.09	0.9	A
	SBT/R	0.26	3.3	A	0.24	0.4	A	0.22	0.3	A
	Total	**N/A**	**9.0**	**A**	**N/A**	**8.7**	**A**	**N/A**	**6.7**	**A**
SR 19 at W Ocala St/ Bulldog Lane	EBL/T/R	0.60	62.1	E	0.53	56.8	E	0.76	68.6	E
	WBL/T/R	0.07	53.1	D	0.70	66.8	E	0.58	56.4	E
	NBL	0.19	11.2	B	0.24	8.3	A	0.37	10.8	B
	NBT	0.33	13.4	B	0.45	15.0	B	0.61	21.9	C
	NBR	0.02	8.1	A	0.03	9.1	A	0.05	90.7	F
	SBL	0.03	7.2	A	0.03	17.1	B	0.14	19.8	B
	SBT/R	0.54	13.9	B	0.50	23.7	C	0.54	26.4	C
	SEL	0.46	66.6	E	0.45	65.6	E	0.50	63.6	E
	SER	0.00	59.6	E	0.00	59.6	E	0.00	56.9	E
	Total	**N/A**	**21.3**	**C**	**N/A**	**25.2**	**C**	**N/A**	**32.9**	**C**
SR 19 at E Collins St	WBL	0.82	64.9	E	N/A	N/A	N/A	0.83	65.6	E
	WBR	0.62	58.8	E	N/A	N/A	N/A	0.42	55.7	E
	NBT	0.34	7.0	A	N/A	N/A	N/A	0.40	7.6	A
	NBR	0.08	5.5	A	N/A	N/A	N/A	0.25	6.5	A
	SBL	0.09	4.5	A	N/A	N/A	N/A	0.19	5.2	A
	SBT	0.40	4.7	A	N/A	N/A	N/A	0.29	3.9	A
	Total	**N/A**	**16.2**	**B**	**N/A**	**N/A**	**N/A**	**N/A**	**14.4**	**B**

Source: VHB using HCM 2010 Methodology
1 Volume-to-capacity ratio
2 Average delay in seconds per vehicle
3 Level of service

Although the level of service analysis shows all of the intersections operating at level of service D or better, the public has concerns about the signal operations during certain peak periods of the day. It is important to note the capacity analyses evaluated the operation at the intersections only. Interruptions to vehicular traffic flow caused by standing vehicle queues at adjacent intersections can often occur between signalized intersections along the Study Area corridor. These interruptions can block traffic from getting to and/or through the Study Area intersections, resulting in additional delay and related congestion. In an effort to understand the impacts of the standing vehicle queues, the 95th percentile queues are summarized for each movement at the signalized intersections in Table 26.

.

Table 26: 2016 Existing Signalized Intersection 95th Percentile Queues

Intersection	Movement	AM Peak [feet]	Mid-Day [feet]	PM Peak [feet]
SR 19 at Guerrant St/ Cassady St	EBL/T/R	43	36	41
	WBL/T/R	134	185	136
	NBL	6	14	20
	NBT/R	82	146	176
	SBL	4	13	5
	SBT	53	115	29
SR 19 at W Ocala St/ Bulldog Lane	EBL/T/R	133	123	195
	WBL/T/R	22	152	142
	NBL	50	101	140
	NBT	234	505	695
	NBR	0	17	38
	SBL	9	16	41
	SBT/R	550	442	426
	SEL	59	56	84
	SER	0	0	0
SR 19 at E Collins St	WBL	184	N/A	198
	WBR	48	N/A	49
	NBT	132	N/A	515
	NBR	13	N/A	110
	SBL	24	N/A	38
	SBT	220	N/A	159

Source: VHB using HCM 2010 Methodology

The queue analysis indicates there are long queues along SR 19 in the southbound direction during the AM peak hour and in the northbound direction during the PM peak hour. The computed through queue lengths at the W Ocala Street/Bulldog Lane intersection are greater than 500 feet, which are long enough to block driveways and other connections leading up to the intersection. According to several of the crash reports, the queue lengths at this intersection were long enough to block the side streets and cause “good Samaritan” crashes, in which one lane stops for the side street vehicle to enter the main street, creating a blind spot to the other main street lane.

Due to the fact the capacity analysis does not entirely account for disruptions in traffic flow between intersections, the reported LOS can be understated if there is a substantial degree of disruption between intersections. For the purpose of this study, the capacity analysis software was treated as a tool to identify problem areas and to provide a comparison between existing and future conditions, rather than to quantify absolute operational performance measures for each analysis condition.

2.9.3 Bicycle Level of Service Analysis

In addition to the LOS for the general motorists, the LOS for bicyclists were also evaluated. The LOS for the bicycle mode is based on the number of vehicles traveling on the roadway and the coverage of available bicycle lanes or paved shoulders provided along the corridor. As shown in Table 27, bicyclists along SR 19 are experiencing LOS E on most of the segments; however, depending on the time period being considered, some of the segments are operating at LOS D. Along Umatilla Boulevard, bicyclists experience LOS C during all time periods.

Table 27: 2016 Existing Bicycle Mode Level of Service

Roadway/Segment	No. of Lanes[1]	Bike Lane Coverage[1]	Daily[2]		AM Peak Hour Directional Traffic[3]			PM Peak Hour Directional Traffic[3]		
			AADT	LOS	Volume	Dir	LOS	Volume	Dir	LOS
SR 19										
South of CR 450A	4D	50-84%	18,690	D	853	SB	D	971	NB	D
CR 450A to Guerrant St/ Cassady St	4D	0-49%	17,000	E	634	SB	D	791	NB	E
Guerrant St/Cassady St to W Ocala St/Bulldog Ln	4D	0-49%	17,000	E	634	SB	D	791	NB	E
W Ocala St/Bulldog Ln to E. Collins St	2D	0-49%	12,500	E	538	SB	E	659	NB	E
E. Collins St to Bulldog Way	2D	0-49%	12,500	E	538	SB	E	659	NB	E
North of Bulldog Way	2D	0-49%	9,948	E	428	SB	E	469	NB	E
Umatilla Boulevard										
North of SR 19	2U	0-49%	1,434	C	53	SB	C	88	SB	C

Source: Compiled by VHB.
1 FDOT Straight Line Diagrams (SLD)
2 FDOT FTI and supplemental daily counts
3 Turning movement counts within the roadway segment
Note: Level of service for the bicycle mode in this table is based on number of motorized vehicles, not number of bicyclists using the facility. Although there are no specific level of service standards established for bicyclists or other non-motorized vehicles, the maximum service volumes for LOS D are used for comparison purposes.

2.9.4 Pedestrian Level of Service Analysis

In addition to the vehicle and bicycle modes, the level of service for pedestrians was evaluated. The pedestrian level of service is based on the number of vehicles traveling on the roadway and the coverage of available sidewalks provided along the corridor. As shown in Table 28, pedestrians traveling along the corridor are experiencing LOS D or better between CR 450A and E Collins Street. Pedestrians are experiencing poor level of service at LOS E or LOS F south of CR 450A and north of E Collins Street, due to the sparse sidewalk coverage. Pedestrians are experiencing LOS D or better along Umatilla Boulevard, depending on the time period being considered.

Table 28: 2016 Existing Pedestrian Mode Level of Service

Roadway/Segment	No. of Lanes[1]	Sidewalk Coverage[1]	Daily[2] AADT	Daily[2] LOS	AM Peak Hour Directional Traffic[3] Volume	AM Dir	AM LOS	PM Peak Hour Directional Traffic[3] Volume	PM Dir	PM LOS
SR 19										
South of CR 450A	4D	0-49%	18,690	E	853	SB	E	971	NB	F
CR 450A to Guerrant St/ Cassady St	4D	50-84%	17,000	D	634	SB	D	791	NB	D
Guerrant St/Cassady St to W Ocala St/Bulldog Ln	4D	85-100%	17,000	C	634	SB	C	791	NB	C
W Ocala St/Bulldog Ln to E. Collins St	2D	85-100%	12,500	D	538	SB	C	659	NB	D
E. Collins St to Bulldog Way	2D	0-49%	12,500	F	538	SB	F	659	NB	F
North of Bulldog Way	2D	0-49%	9,948	F	428	SB	E	469	NB	E
Umatilla Boulevard										
North of SR 19	2U	50-84%	1,434	C	53	SB	C	88	SB	D

Source: Compiled by VHB.
1 FDOT Straight Line Diagrams (SLD)
2 FDOT FTI and supplemental daily counts
3 Turning movement counts within the roadway segment
Note: Level of service for the pedestrian mode in this table is based on number of motorized vehicles, not number of pedestrians using the facility. Although there are no specific level of service standards established for pedestrians or other non-motorized vehicles, the maximum service volumes for LOS D are used for comparison purposes.

2.9.5 Transit Level of Service Analysis

Transit level of service was also examined. Presently, Route 4 provides service along the corridor every two hours. Based on the 2012 FDOT Quality/Level of Service Handbook, this equates to LOS F.

2.10 Safety and Crash Analysis

A multi-modal safety analysis was completed for the SR 19 Study Area roadways and intersections to determine if the traffic demands combined with geometric conditions pose potential safety concerns. To identify crash patterns along the corridor, crash data was obtained from the Signal Four Analytics database for the previous five years (October 01, 2012 to September 30, 2016) along SR 19 from CR 450A to Bulldog Way.

2.10.1 Total Crashes

A total of 104 crashes resulted in 40 injuries and no fatalities. The crashes were reported over the five-year period along SR 19 within the Study Area, as illustrated by Table 29. The data indicates a steady increase in total crashes from 2012 through 2015 with a reduction in crashes in 2016. The increase over the years indicates a need for safety improvements in the Study Area, especially considering traffic volumes have been relatively flat during the last five years.

Table 29: Crash Data Summary by Year

Year	Total Number of Crashes	Number of Injury Crashes	Total Number of Injuries	Number of Fatal Crashes	Total Number of Fatalities	Number of Night Crashes	Number of Wet Weather Crashes
			Roadway: SR 19 Roadway ID: 11100000				
2012	4	1	1	0	0	1	2
2013	15	4	4	0	0	3	2
2014	27	8	12	0	0	6	6
2015	36	10	14	0	0	7	4
2016	22	6	9	0	0	5	0
2012-2016	104	29	40	0	0	22	14
Average	20.8	5.8	8.0	0.0	0.0	4.4	2.8
Percent	-	27.9%	-	0.0%	-	21.2%	13.5%

Source: Signal Four Analytics

Table 30 summarizes the number of crashes by harmful event along the SR 19 corridor. The predominant crash types were rear end crashes (39.4%), left turn crashes (22.1%), and off road crashes (10.6%). Safety improvements will be identified based on further review of the crashes which occurred within the Study Area.

Table 30: Crash Data Summary by Harmful Event

Crash Type	2012	2013	2014	2015	2016	2012-2016	Average per Year	Percent
Roadway: SR 19 Roadway ID: 11100000								
Rear End	2	4	12	13	10	**41**	**8.2**	**39.4%**
Left Turn	2	3	7	9	2	**23**	**4.6**	**22.1%**
Angle	0	2	3	2	3	**10**	**2.0**	**9.6%**
Sideswipe	0	1	2	3	2	**8**	**1.6**	**7.7%**
Off Road	0	2	1	6	2	**11**	**2.2**	**10.6%**
Pedestrian	0	1	0	0	0	**1**	**0.2**	**1.0%**
Bicycle	0	1	0	0	0	**1**	**0.2**	**1.0%**
Head On	0	0	0	0	1	**1**	**0.2**	**1.0%**
Right Turn	0	0	1	0	1	**2**	**0.4**	**1.9%**
Rollover	0	0	0	0	1	**1**	**0.2**	**1.0%**
All Other	0	1	1	3	0	**5**	**1.0**	**4.8%**
Total	***4***	***15***	***27***	***36***	***22***	***104***	**-**	***100.0%***

Source: Signal Four Analytics

Segment and intersection crash rates, in crashes per million vehicle-miles traveled, were calculated for the SR 19 corridor in order to compare the actual crash rates along the corridor to the statewide average crash rate for similar facilities during the study period. The FDOT statewide average crash rate were extracted from the Signal Four Analytics database.

As seen in Table 31, none of the segments along SR 19 experience an average crash rate higher than the average crash rate for similar facilities, according to the statewide average obtained from Signal Four Analytics.

Table 32 shows two of the five Study Area roadway intersections (SR 19 at Guerrant Street/ Cassady Street; and SR 19 at E Collins Street) experience an average crash rate higher than the statewide average crash rate for similar facilities, according to the statewide average. This indicates the need for further study and evaluation for safety improvements in the next phase of this project.

Figure 40 illustrates the total crashes by location.

Table 31: Summary of Roadway Segment Crash Rates (number of crashes per million vehicle miles)

From/To	Number [1] of Crashes	Length (miles)	AADT (2016)	ACR[2]	Crash Rate Category	AVG[3]	High Crash Segment?
			Roadway: SR 19 Roadway ID: 11100000				
CR 450A to Guerrant St/Cassady St	21	1.06	16,900	0.64	Urban 4-5 Lane 2-way Divided Raised	2.848	NO
Guerrant St/Cassady St to W Ocala St/ Bulldog Ln	11	0.32	16,900	1.11	Urban 4-5 Lane 2-way Divided Raised	2.848	NO
W Ocala St/ Bulldog Ln to E Collins St	12	0.26	12,500	2.02	Urban 2-3 Lane 2-way Divided Paved	4.165	NO
E Collins St to Lake St	2	0.26	12,500	0.34	Urban 2-3 Lane 2-way Divided Paved	4.165	NO
Lake St to Bulldog Way	3	0.12	12,500	1.10	Urban 2-3 Lane 2-way Divided Paved	4.165	NO

Source: Signal Four Analytics for State-wide Average Crash Rate

Notes:
1) Number of crashes from October 1, 2012 to September 30, 2016.
2) Average Crash Rate = (N*1,000,000)/(365*Y*AADT*L), where N = number of crashes, Y = number of years, AADT = Annual Average Daily Traffic, and L = Length of the segment in miles.
3) AVG = District-wide Average Crash Rate for Corresponding Category.

Table 32: Summary of Roadway Intersection Crash Rates (number of crashes per million vehicle miles)

Intersection	Total Crashes[1]	AADT (2016)	ACR[2]	Crash Rate Category	AVG[3]	High Crash Intersection?
SR 19 at CR 450A	2	20,700	0.05	Urban 4-5 Lane 2-way Divided Raised (4 legs)	0.483	NO
SR 19 at Guerrant St/ Cassady St	20	20,100	0.55	Urban 4-5 Lane 2-way Divided Raised (4 legs)	0.483	YES
SR 19 at W Ocala St/Bulldog Ln	17	18,900	0.49	Urban 2-3 Lane 2-way Divided Paved (5 legs)	1.311	NO
SR 19 at E Collins St	15	16,300	0.50	Urban 2-3 Lane 2-way Divided Paved (3 legs)	0.299	YES
SR 19 at Lake St	1	11,200	0.05	Urban 2-3 Lane 2-way Divided Paved (5 legs)	1.311	NO

Source: Signal Four Analytics for State-wide Average Crash Rate

Notes:
1) Number of crashes from October 1, 2012 to September 30, 2016.
2) Average Crash Rate = (N*1,000,000)/(365*Y*AADT*L), where N = number of crashes, Y = number of years, AADT = Annual Average Daily Traffic, and L = Length of the segment in miles.
3) AVG = District-wide Average Crash Rate for Corresponding Category.

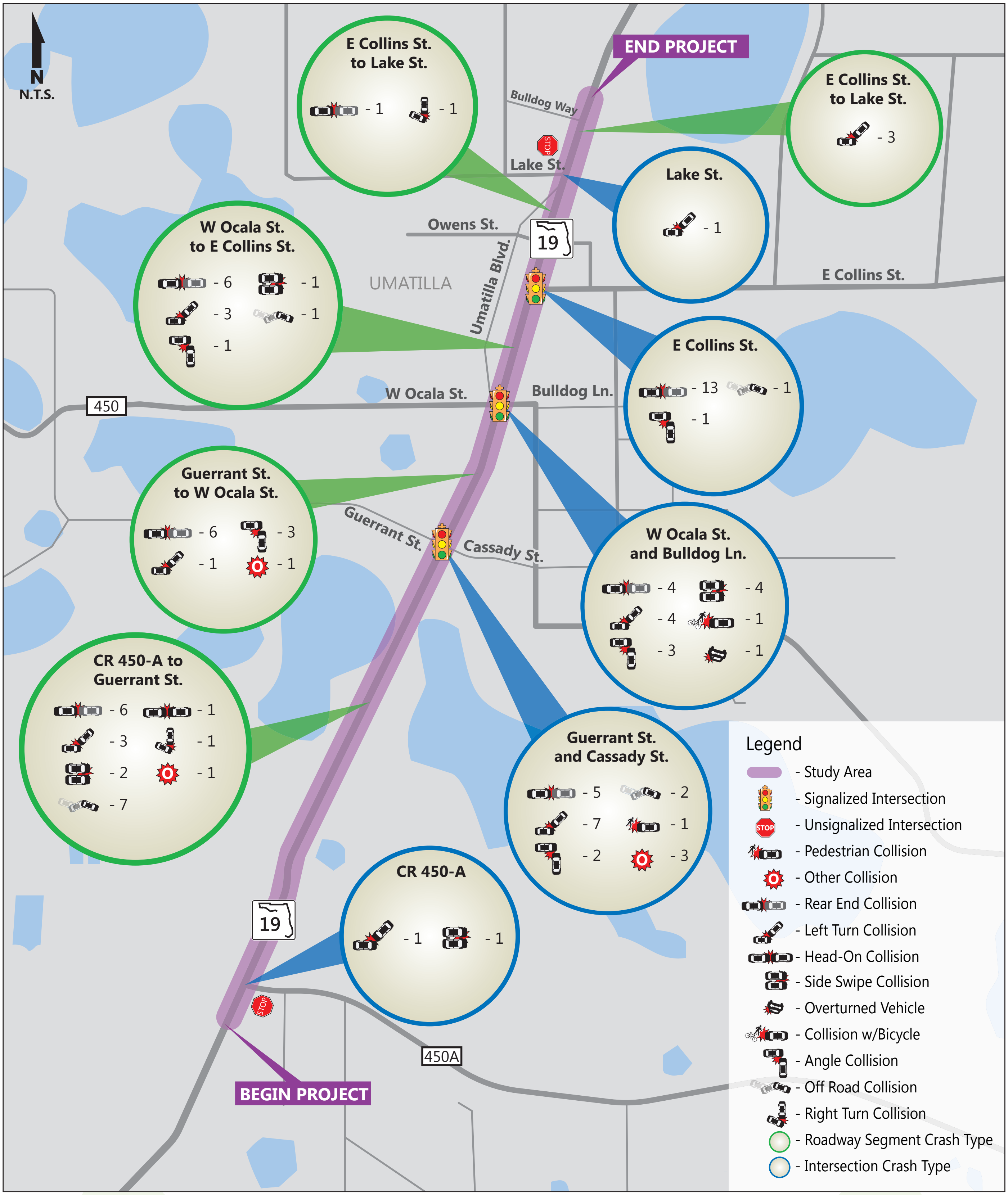


Figure 40
Crash Summary

2.10.2 Bicycle and Pedestrian Crashes

Crashes in the Study Area involving bicyclists or pedestrians were also reviewed and are shown in Figure 40. A total of one pedestrian and one bicycle crash occurred on SR 19 within the Study Area from 2012 to 2016.

2.11 Environmental Characteristics

Existing environmental information for the Study Area was compiled from GIS data maintained by the Florida Geographic Data Library (FGDL). The data is summarized below and displayed in Figure 41 through Figure 47, utilizing a 500-foot buffer and covers the following resources:

- Historical Resources
- Social and Cultural Resources
- Wetlands
- Floodplains
- Contamination
- Soils
- Threatened and Endangered Species

2.11.1 Historical Resources

Section 106 of the National Historic Preservation Act (NHPA) provides a general process for cultural resource assessments and requires historic and archaeological resources be considered in project planning for federally funded or permitted projects. Cultural resources or "historic properties" include any "prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the *National Register of Historic Places (NRHP)."*

Any archaeological sites or historic resources determined eligible, or considered potentially eligible for listing in the NRHP, have been mapped in Figure 41 and listed in Table 33.

According to the State Historic Preservation Office (SHPO), there is one structure listed on the NRHP within the Study Area, the South Methodist Episcopal Church at Umatilla. This structure has a site ID of LA02242 and was initially listed on the NRHP in 2000. Furthermore, there is one linear resource, the Seaboard Coastline RR Grade (Site ID LA02957) eligible for listing on the NRHP.

Table 33: Summary of Cultural Resources

Cultural Resources	Within Study Area
NRHP Listed Structure	1
NRHP Potential Resource Listing	1
SHPO Structures	24 (1 listed, 21 ineligible for listing, 2 not evaluated)
SHPO Bridges	0
SHPO Surveys	3

Source: FGDL, GIS data

Path: \\vhb\proj\Orlando\61872.23 SR 19 Umatilla\GIS\Project\Fig 41 - Historical Resources.mxd

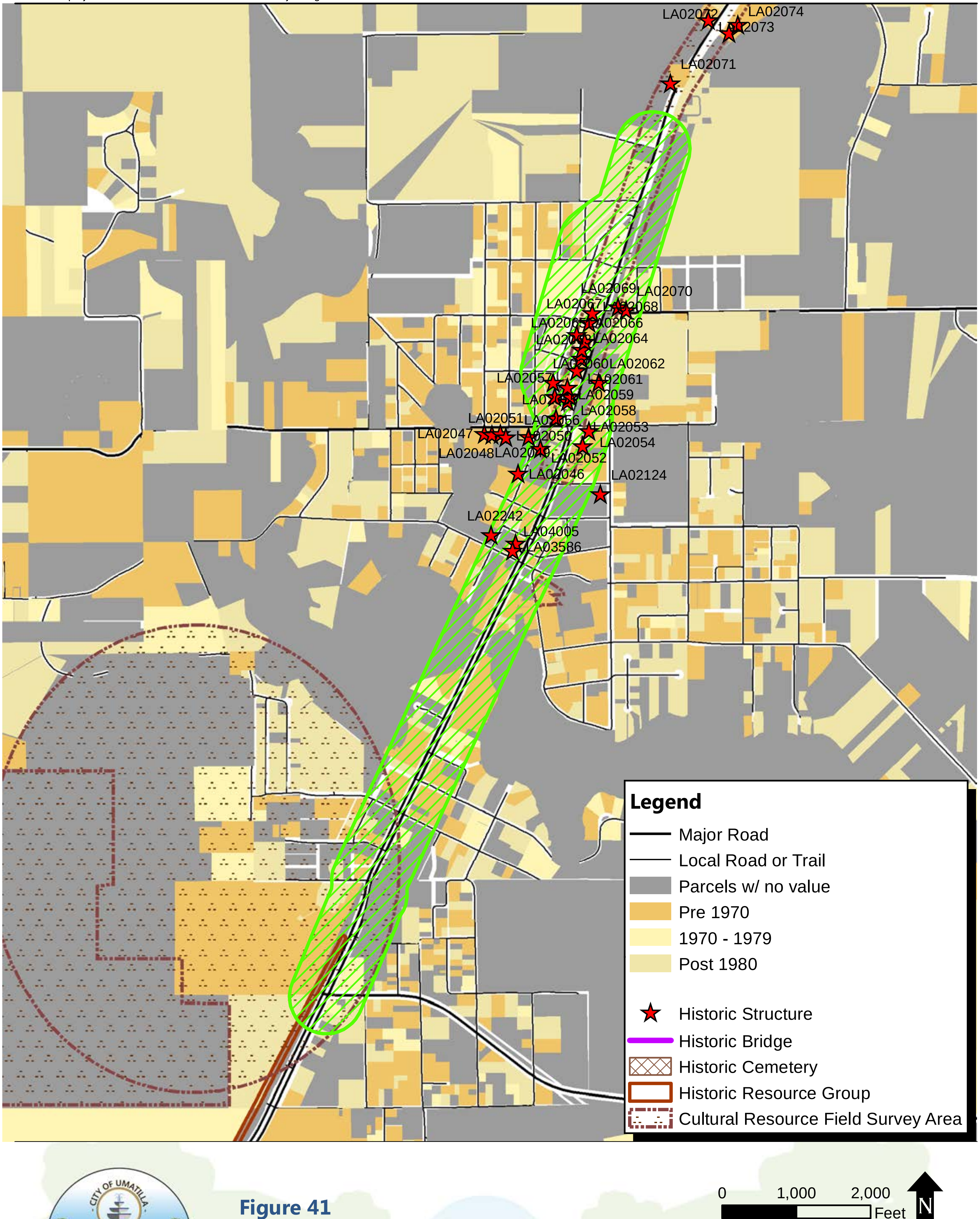


Figure 41

Historical Resources

Source: FL Department of Transportation; FL Division of Historical Resources.
Note: Excludes archaeological site locations, which, pursuant to Chapter 267.135, Florida Statues, may be exempt from public record (Chapter 119.07, Florida Statutes). Absence of features on the map does not necessarily indicate an absence of resources in the project vicinity.

2.11.2 Social and Cultural Resources

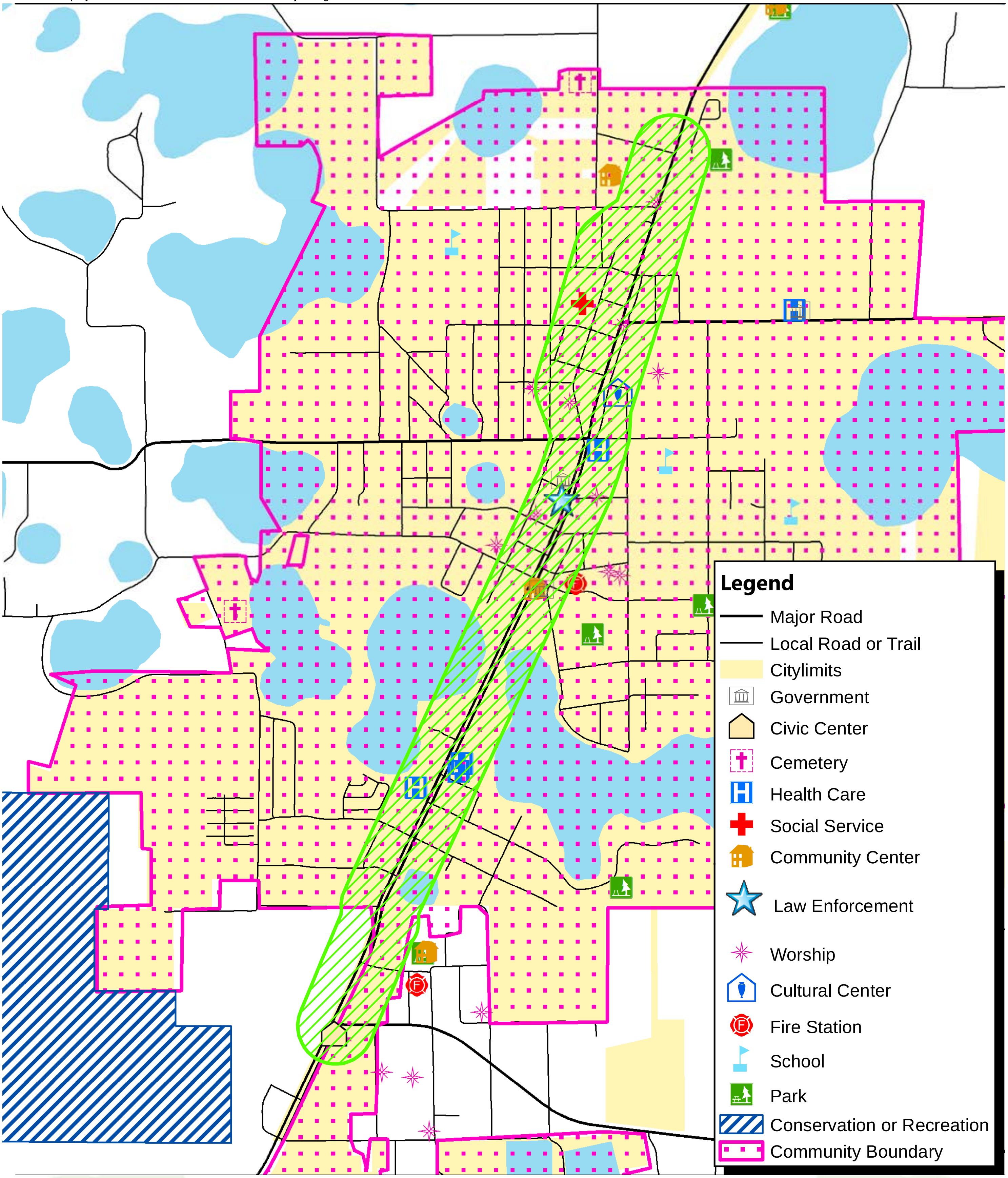
Any public or private social and cultural resources considered relevant to the Study Area were tabulated and mapped. Table 34 below summarizes the social resource evaluation for the Study Area. Figure 42 graphically displays the results of the social resource evaluation.

Table 34: Summary of Social Resources

Social Resources	Within Study Area
Florida Marine Facilities	0
Cemeteries	0
Community Centers	1
Cultural Centers	1
Civic Centers	1
Fire Stations	1
Government Buildings	2
Health Care Facilities	5
Homeowner Associations	0
Parks	3
Law Enforcement Buildings	1
Religious Centers	6
Schools	0
Social Service Facilities	1
Veteran Facilities	0

Source: FGDL, GIS data

Path: \\vhb\proj\Orlando\61872.23 SR 19 Umatilla\GIS\Project\Fig 42 - Social and Cultural Resources.mxd



0 1,000 2,000
Feet
N

Figure 42
Social and Cultural Resources

Source: FL Department of Transportation; FL Natural Resource Conservation Service; University of Fl GeoPlan Center; Data Transfer Solutions; FL Natural Areas Inventory; Florida Department of Revenue; FL Property Appraisers.

2.11.3 Wetlands

The wetlands analysis used GIS data made available from the SJRWMD, dated 2009. The types of wetlands found include “other surface waters” or lakes. There are no other wetland systems located within the Study Area. Figure 43 illustrates the lake system locations (other surface waters) around the SR 19 Study Area. There are no significant connected wetland systems within the buffered area; however, lakes, which are considered other surface waters, should be avoided otherwise environmental resource permitting will become necessary.

2.11.4 Floodplains

The floodplains were identified using the latest FEMA FIRMs and the 100-year flood plain localities. Figure 44 illustrates the floodplains map. There are floodplains (Zone AE) associated with the two lake systems and one small isolated drainage basin south of the lakes which is considered floodplain (Zone A).

2.11.5 Contamination

Contaminated sites within the Study Area were identified using data made available by the Florida Department of Health (FDOH) and the Florida Department of Environmental Protection (FDEP). Table 35 summarizes the contamination sites. Figure 45 illustrates the location of these contamination sites.

Table 35: Summary of Contamination Analysis

Analysis Type	Within Study Area
Brownfield Location Boundaries	3
Biomedical Waste	3
Hazardous Waste Facilities	10
Petroleum Contamination Monitoring Sites	16
Storage Tank Contamination Monitoring (STCM)	17
US EPA Resource Conservation and Recovery Act (RCA) Regulated Facilities	10
Toxic Release Inventory Sites	3
Waste Cleanup Responsible Party Sites - Closed	1

Source: FDOH, FDEP

As shown in the figure, the Study Area contains potential hazards and risk sites, though no significant contamination or remediation areas are located within the Study Area. All sites being monitored are within regulation and there were only two petroleum stations with offsite contamination issues; one was 1 foot beyond their property, and the other, which received two FDEP notices, had contaminated soils reaching 2 feet from the property boundary. No hazardous contamination sites were found.

2.11.6 Soils

Soil conditions were inventoried within the Study Area using data provided by the National Resources Conservation Service. Figure 46 presents the Study Area soils map.

2.11.7 Threatened and Endangered Species

Reviews of the Florida Natural Areas Inventory (FNAI) and the GIS data from the US Fish and Wildlife Service (USFWS) identified critical habitat and/or consultation areas for threatened or endangered species. Consultation areas, identified by USFWS, encompass all areas where populations are known to exist. These threatened and endangered species consultation areas and/or critical habitats are summarized in Table 36 and shown in Figure 47. It must be noted the entire corridor is located within low quality habitat due to the developed nature of the area.

Table 36: Summary of Wildlife and Habitat

Wildlife and Habitat	Abutting Buffer	One-Mile Buffer	Study Area
Florida Sand Skink and Blue-tailed Mole Skink Consultation Area	Yes	Yes	Yes

Source: USFWS, 2011; FNAI, 2009.

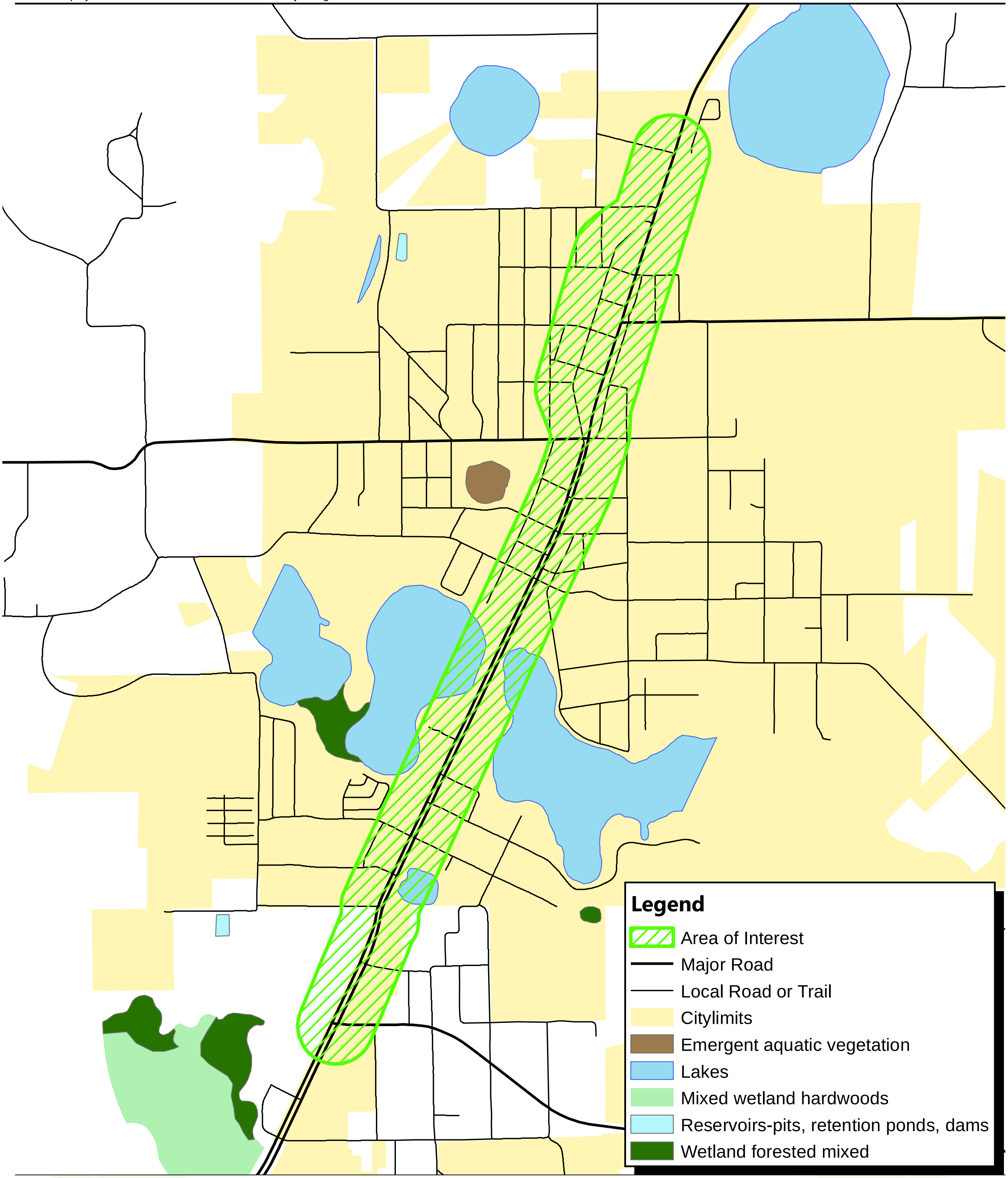
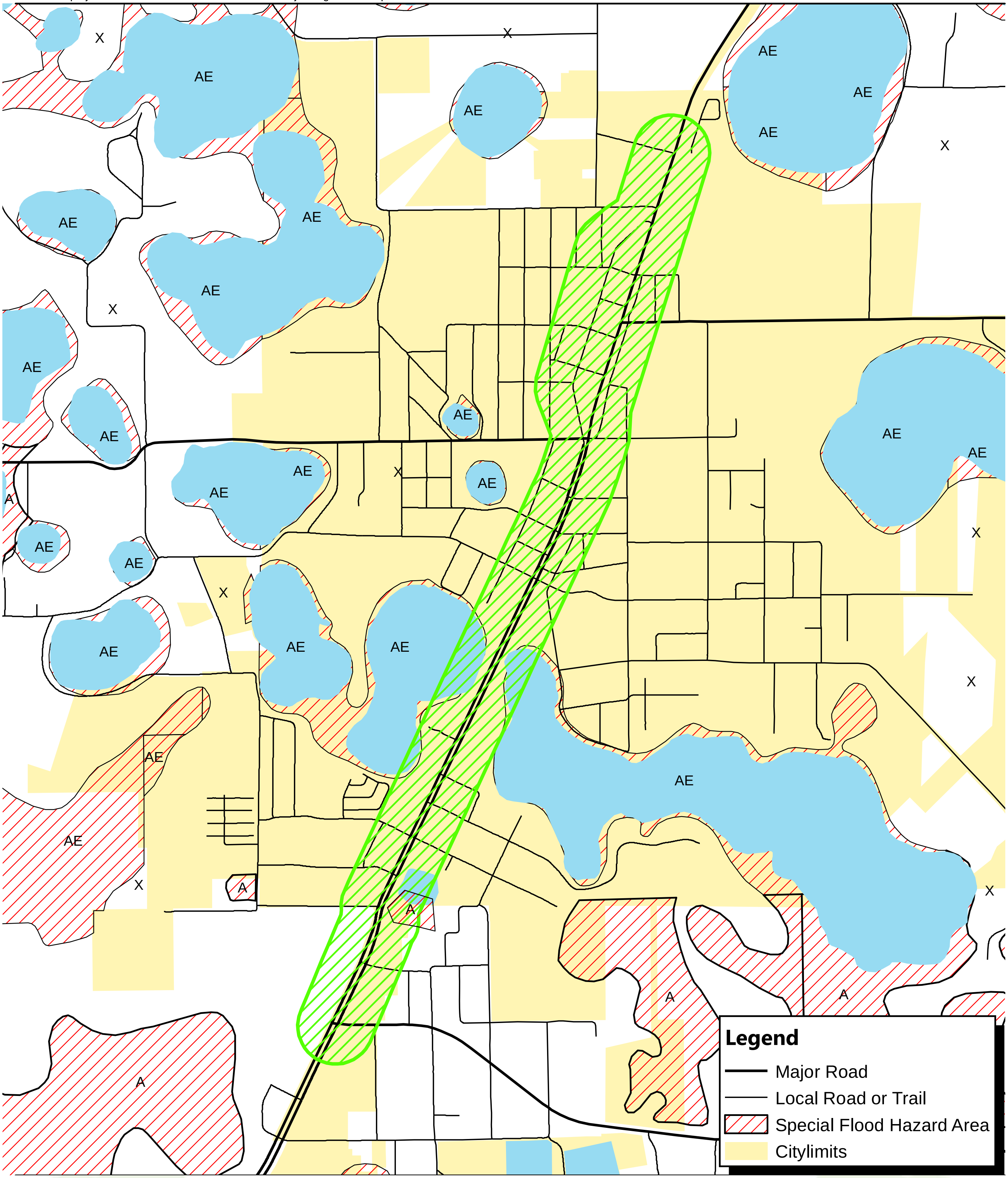


Figure 43
Wetlands and Surface Waters

Source: FL Department of Transportation; FEMA

Path: \\vhb\proj\Orlando\61872.23 SR 19 Umatilla\GIS\Project\Fig 44 - Floodplains.mxd



0 1,000 2,000 Feet

N

CITY OF UMATILLA
- SR 19 -
CORRIDOR STUDY

Figure 44
Floodplains

FDOT

Source: FL Department of Transportation; FL Natural Resource Conservation Service; Flood Hazard Areas estimated from ETDM Environmental Screening Tool.

Path: \\vhb\proj\Orlando\61872.23 SR 19 Umatilla\GIS\Project\Fig 45 - Contamination.mxd

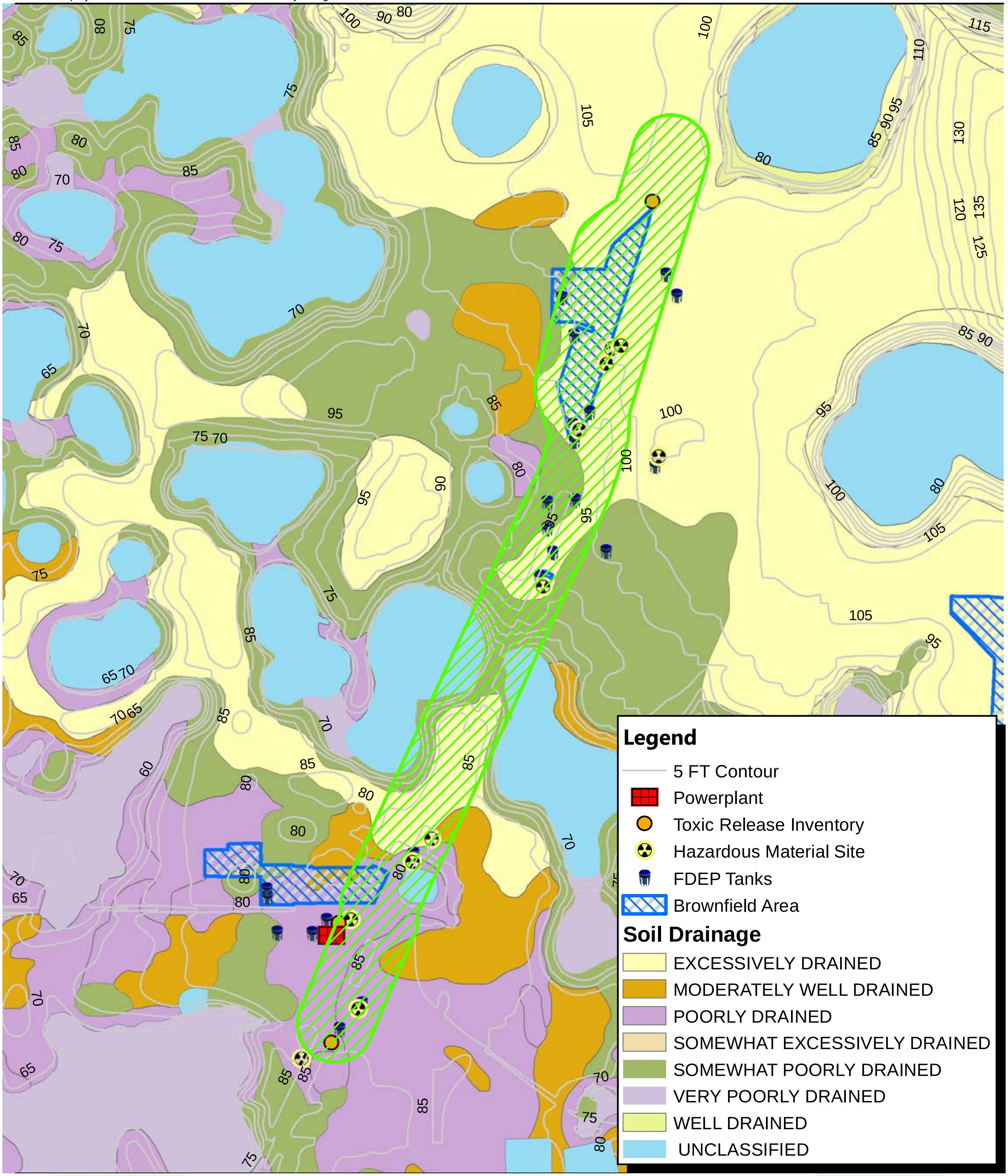


Figure 45
Contamination

Source: US Geological Survey; FL Dept of Transportation; FL Water Management District; Natural Resource Conservation Service; FL Dept of Environmental Protection; Containment areas estimated from ETDM Environmental Screening Tool.

CITY OF UMATILLA - SR 19 - CORRIDOR STUDY

FDOT

Path: \\vhb\proj\Orlando\61872.23 SR 19 Umatilla\GIS\Project\Fig 46 - Soils.mxd

1	SPARR SAND, 0 TO 5 PERCENT SLOPES
2	SPARR SAND, 5 TO 12 PERCENT SLOPES
8	CANDLER SAND, 0 TO 5 PERCENT SLOPES
17	ARENTS
20	IMMOKALEE SAND
28	MYAKKA SAND
41	POMELLO SAND, 0 TO 5 PERCENT SLOPES
42	POMPANO SAND
45	TAVARES SAND, 0 TO 5 PERCENT SLOPES
49	WAUCHULA SAND
99	WATER

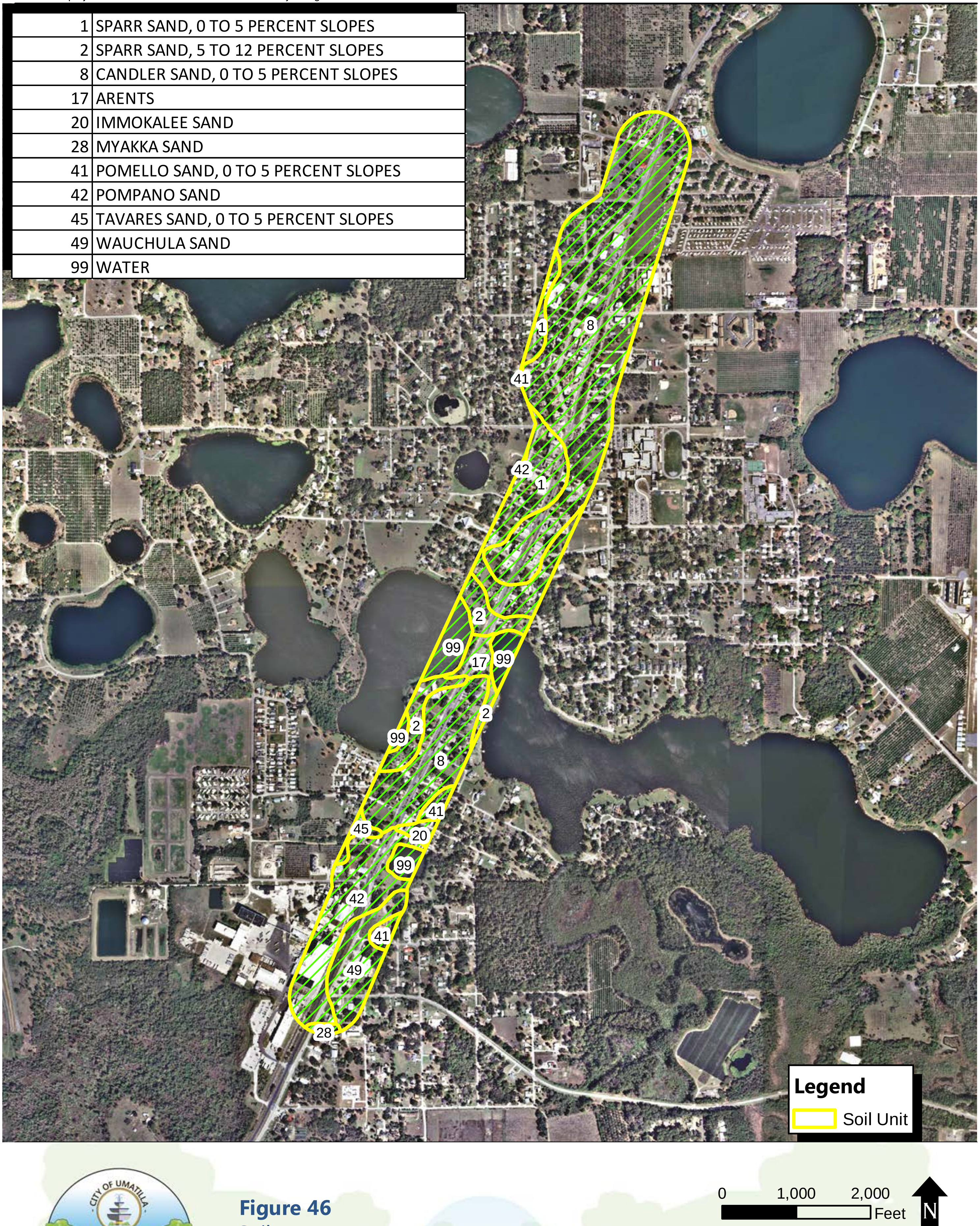
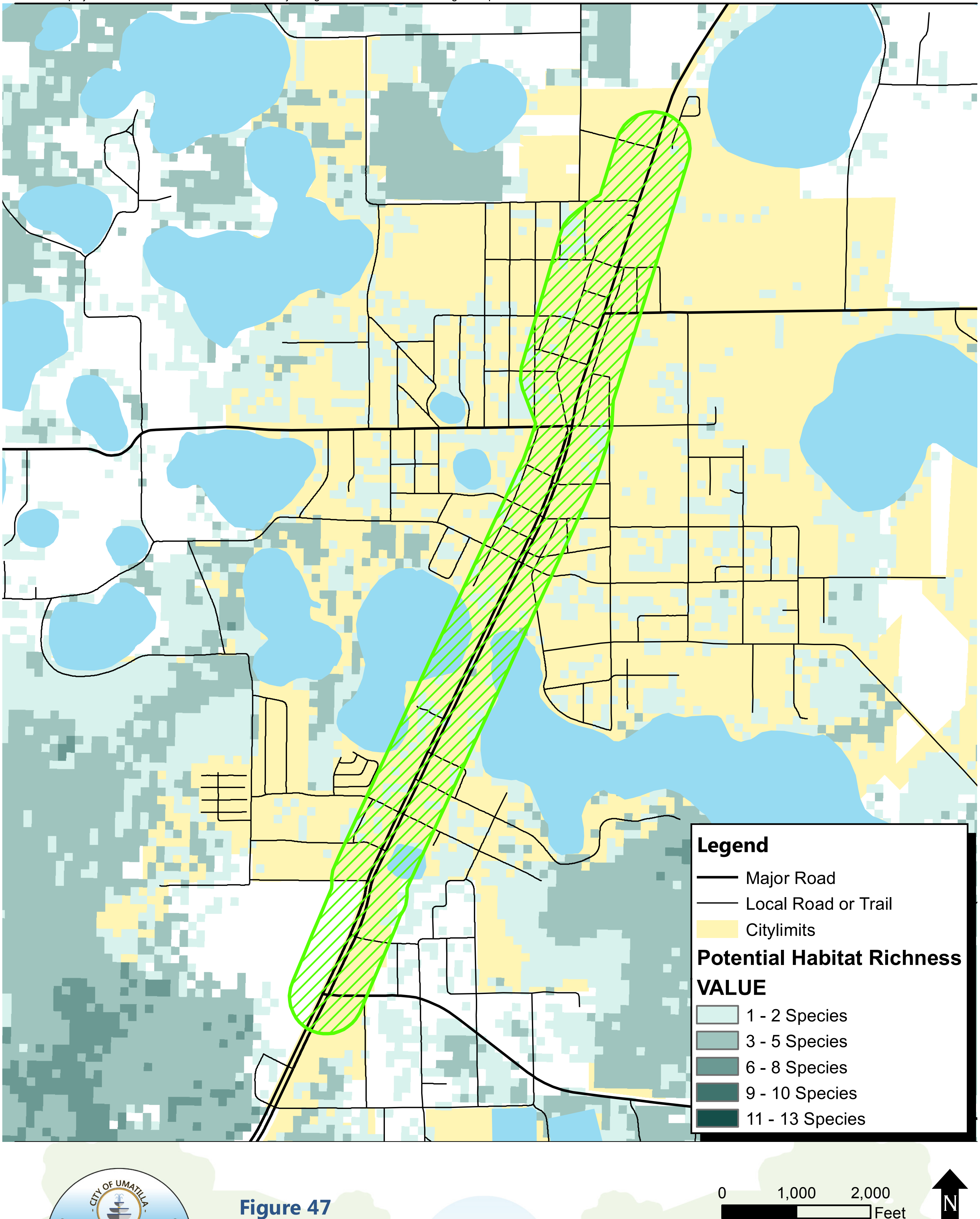


Figure 46
Soils

Source: Natural Resources Conservation Service; Lake County GIS data.



CITY OF UMATILLA - SR 19 - CORRIDOR STUDY

Figure 47
Threatened and Endangered Species

Source: FL Department of Transportation;
FL Fish & Wildlife Conservation Commission; US Geological Survey.

FDOT

3

Chapter Three: Issues and Opportunities

3.1 Summary of Existing Conditions Work

The assessment of existing conditions along SR 19 and Umatilla Boulevard was undertaken to provide a comprehensive understanding of the Study Area, and to provide a foundation to support the next phases of the planning process. Analyzing the existing conditions also allows for an opportunity for the Project Team to gain a comprehensive understanding of the community, its socio-cultural characteristics, natural features, and other unique attributes.

3.2 Potential Improvements

This section documents potential challenges, or issues, and opportunities for improvement along the corridor. These issues and opportunities are broken down into subsections by topic area.

3.2.1 Existing Traffic Conditions

An analysis of existing traffic volumes and LOS revealed the Study Area roadway segments currently operate at an acceptable LOS D or better during the daily, AM peak hour, and PM peak hour.

The unsignalized intersection analysis indicated all movements at all the intersections currently operate at LOS D or better during the AM, mid-day, and PM peak hours. The signalized intersections currently have an overall intersection level of service of C or better.

Although the level of service analysis shows all the intersections operate at LOS D or better, the public has concerns about the signal operations during certain peak periods of the day. A queuing analysis was performed in response to this and it was found there are areas where queues are so long they disrupt the traffic flow between the intersections, which are not taken into account in the capacity analysis. As such, this indicates an opportunity to optimize signal timings throughout the corridor to reflect the changes in peak direction during the AM, mid-day, and PM peak hours.

3.2.2 Access Management

As documented in Section 2.7.4, most of the driveways, median openings, and signal spacings along SR 19 do not meet current access management standards. In select parts of the corridor, there is an opportunity to improve the conditions by closing unutilized driveways and consolidating median openings. More specifics on these improvements will need to be identified in an upcoming phase of this project.

3.2.3 Bicycle and Pedestrian Facilities

As discussed in Section 2.7.12, there are several sidewalk gaps along SR 19 and Umatilla Boulevard, predominantly in the northern part of the Study Area. Filling in these gaps has the potential to create a continuous sidewalk network, which will improve pedestrian connectivity and encourage pedestrian travel between residential properties, the schools, and retail services along the corridor.

Based on discussions at the first Project Visioning Team (PVT) meeting, there is also a strong desire by the community to have more trails in Umatilla.

With this project, there is an opportunity to construct a portion of the North Lake Trail (documented in the Lake-Sumter MPO 2040 LRTP and the Lake County Trails Master Plan). Potentially, the trail can be accommodated by removing parking along SR 19 between CR 450A and Cassady Street/Guerrant Street.

In addition, while outside of the Study Area, there is the potential for this project to allow for future accommodation of a trail connection to the North Lake Community Park, located off E Collins Street (CR 450). This park is the largest recreational complex in Lake County and features facilities for little league baseball, baseball, softball, soccer, basketball, and volleyball.

3.2.4 Crash Analysis and Safety

The crash analysis indicated over the past five years, there were a total of 104 crashes, which resulted in 40 injuries and no fatalities along the Study Area corridor. The crash data also showed a steady increase in crashes between 2012 and 2015. As noted in Section 2.10, the predominant crash types were rear end crashes (39.4%), left turn crashes (22.1%), and off road crashes (10.6%).

Section 2.10 also identified the following intersections of having a crash rate above the statewide average for the same roadway type:

- SR 19 at Guerrant St/Cassady St
- SR 19 at E Collins St

The crash analysis indicated there is potential for safety improvements along the Study Area corridor due to the steady increase in crashes, even though the traffic volumes have been relatively flat. New signals have been installed within the last five years, which aid in reducing certain types of crashes, but also result in increases in rear-end crashes. Safety measures such as warning signs and protected left turn signals could potentially reduce the rear end and left turn crashes prevalent along SR 19. Safety improvements will be identified in greater detail in an upcoming phase of this project.

3.3 Next Steps

The issues and opportunities identified in this section will be the framework for proposing improvements throughout the Study Area. Future conditions will be projected for the corridor, building upon the existing conditions analysis (the baseline to be measured for all improvements). The next step in the project will be to develop a Purpose and Need, as well as Goals and Objectives to ultimately guide the identification/prioritization of improvements.

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Appendix A:

Right-of-Way Maps Provided by FDOT

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Set 1: Overview Map

Set 1: Detailed Map

Set 2: Overview Map

Set 2: Detailed Maps

FED. ROAD DIV. No. 3 | STATE FLA. | PROJECT No. 11100-2503 | FISCAL YEAR 64 | SHEET No. 3
C.A. Vaughan Sub. Plat Book 2 Page 27
CITRUS
WAFFORD ST.
ADD. TO UMATILLA P.B. 1 Pg. 56
EXIST. R/W Line by plat
ORIGINAL R.R. R/W Line
New R.R. R/W Line
A.C.L. R.R.
Deeded by A.C.L. RR to City of Umatilla; by City of State
CITY OF UMATILLA OR 728 PG 275 4-22-81
(FROM ROBERT ST. TO N. LINE OCALA ST.)
P.I. Sta. 215+00.0 Δ=0°22'30" Rt.
CENTRAL AVE.
#1 DB 87, PG 107 TOWN OF UMATILLA
R.B.S.T. PAV'T.
EXIST. R/W Line by plat
F.C. SMITH SUB. P.B. 2 Pg. 9
ADD. TO UMATILLA P.B. A Pg. 50
SEC. 13 T-18-S R-26-E
SHORT ST. (Existing)
SHORT ST. (Closed)
ADD. TO UMATILLA P.B. 1 Page 56
Deeded by A.C.L. RR to City of Umatilla; by City to State
A.C.L.R.R. CITY OF UMATILLA OR 728 PG 275 4-22-81
(FROM ROBERTS ST. TO N. LINE OCALA ST)
CENTRAL AVE.
S.R. No 19
#1 DB 87 PG 107 TOWN OF UMATILLA
E. LAKEVIEW ST.
E. MEBANE ST.
EXIST. R/W Line by plat
ADD. TO UMATILLA P.B. 1 Page 56
CITRUS
SEC. 13 T-18-S R-26-E
STATE OF FLORIDA
STATE ROAD DEPARTMENT
RIGHT OF WAY MAP
STATE ROAD No. 19 LAKE COUNTY
Traced Radson 7-6-64
Approved By 5-7-65 District Engineer
6-11-65 Engineer of Rights of Way
State Highway Engineer
SECTION. 11100-2503 SHEET 3 OF 10
JUN 22 1983

FED. ROAD DIV. No. 3
STATE FLA.
PROJECT No. 11100-2503
FISCAL YEAR 64
SHEET No. 4
ADD. TO UMATILLA
P.B. 1 Page 56
CITRUS
SCALE: 1" = 20'
EXIST. R/W Line by plat
ORIGINAL R.R. R/W Line
5' Conc. S.W.
SHELL Dr.
METAL GARAGE
Deeded by A.C.L. RR to City of Umatilla & by City to State
R.B.S.T. Pav't.
New R.R. R/W Line
A.C.L. R.R.
CITY OF UMATILLA OR 728 PG 275
4-22-81 (FROM ROBERTS ST. TO N.LINE OCALA ST.)
CENTRAL AVE.
S.R. No 19
N.25°20'24"E.
#1 DB 87 PG 107 TOWN OF UMATILLA
370.94'
392.24'
Conc. Walk
15' Clay Dr.
Diet Dr.
Buena Vista Sub. Plat Book 5 Page 35
SEC. 13 T-18-S R-26-E
ADDITION TO UMATILLA
Plat Book 1 Page 56
Lot 1
LAKE ENOLA
SCALE: 1" = 20'
#3 TOWN OF UMATILLA DB 87, PG 107 7-30-20
ORIG. R.R. R/W Line
APPROXIMATE LOCATION OF EAST LINE OF W.1/2 of W1/2 of Sec. 13
192.59' (SRD)
6' Conc. Walk
MYER St. (CLOSED)
Buena Vista Sub. Plat Book 5 Page 35
SEC. 13 T-18-S R-26-E
Paved Dr.
EDGEWATER AVE.
STATE OF FLORIDA
STATE ROAD DEPARTMENT
RIGHT OF WAY MAP
STATE ROAD No. 19 LAKE COUNTY
TRACED Radson 7-6-64
DATE 5-7-65
DISTRICT ENGINEER
5-11-65
ENGINEER OF RIGHTS OF WAY
STATE HIGHWAY ENGINEER
ADD INFO. ON RR W.A.L. 6-18-93
REVISION BY DATE
SECTION. 11100-2503 SHEET 4 OF 10

FED. ROAD DIV. No. 3 | STATE FLA. | PROJECT No. 11100-2503 | FISCAL YEAR 64 | SHEET No. 5
LAKE ENOLA
SCALE: 1"=20'
B.C. Yancey Sub. P.B. 1 Pg 30
2-Sty. Stucco Res.
1-Sty. Fr. Res.
EXIST. R/W LINE by plat
5' Conc. S.W.
R.B.S.T. Pav't.
DB 87 PG. 107 #3 TOWN OF UMATILLA 7-30-20
ORIGINAL R.R. R/W Line
NEW R.R. R/W Line
DEEDED BY A.C.L.R.R. TO CITY OF UMATILLA & THEN BY CITY TO STATE ON 9/18/64. SEE O.R.B 286, PG. 951.
CITY OF UMATILLA O.R. 728 PG. 275
4-22-81 (FROM ROBERTS ST. TO N. LINE OCALA ST.)
A.C.L. R.R.
8" W.M.
CENTRAL AVE
S.R. Nº 19
N.25°20'24"E.
2" G.M.
BT (200 PR)
4' S.W.
EDGEWATER AVE.
30' DED.
LAKE UMATILLA
SEC. 13 T-18-S R-26-E
SINK'S SUB. P.B. 4 Pg. 53
1 Sty. Conc. Blk.
1 Sty. Fr. Res.
2-Sty. Fr. Res.
1½-Sty Fr. Res.
1-Sty. Stucco Res.
1-Sty. Stucco
2-Sty. Brick
3-Sty. Brick
Overhang
LEASE #12-11-03
GUERRANT ST.
#1 TOWN OF UMATILLA DB 87 PG 107
60' X-CUT IN CONC.
City Property
2 Sty. Stucco Res.
1 Sty. Conc. Blk. Motel
Conc. Blk. Bldg.
1 Sty. C.B. Bldg.
RICE ST.
Add Par. 102 | J.D.S. | 3-28-14
Add Info On R.R. | W.A.L. | 6-21-93
REVISION | BY | DATE
MAR 24 2014
STATE OF FLORIDA
STATE ROAD DEPARTMENT
RIGHT OF WAY MAP
STATE ROAD No. 19 LAKE COUNTY
DRAWN
TRACED Radson 4-9-65
CHECKED
COMPARED
INDEXED
APPROVED BY DATE 5-7-65
DISTRICT ENGINEER
ENGINEER OF RIGHTS OF WAY
STATE HIGHWAY ENGINEER
SECTION 11100-2503 SHEET 5 OF 10

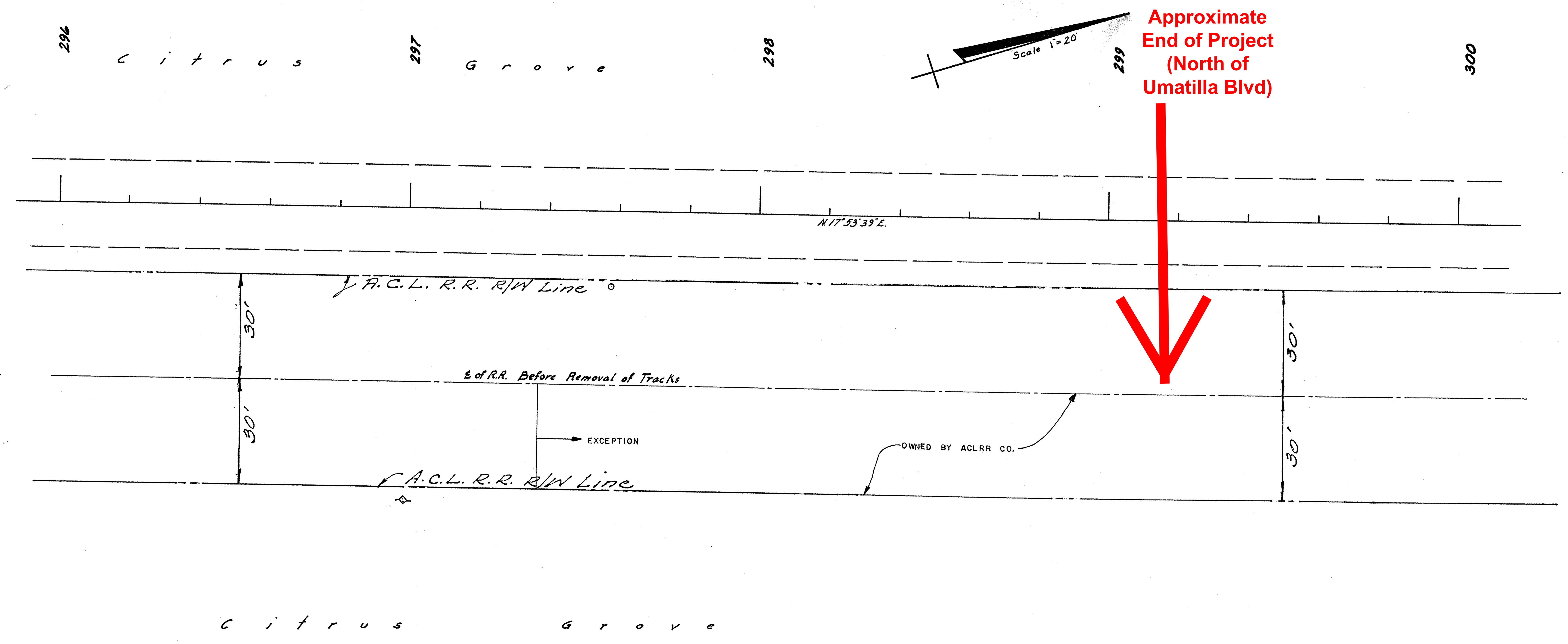

FED. ROAD DIV. No. 3 | STATE FLA. | PROJECT No. 11100-2503 | FISCAL YEAR 64 | SHEET No. 6
SEC.13 T-18-S R-26-E
NOTE: CROSS-HATCHED AREA SUBJECT TO LEASE #12-11-03, A 50 YEAR LEASE, EXECUTED ON NOVEMBER 20, 2012 WITH THE CITY OF UMATILLA.
LEASE # 12-11-03
PARCEL 110 (HATCHED AREA) RELEASED TO R. & L. RACICOT VIA QUITCLAIM DEED DATED NOVEMBER 20, 1998 AND RECORDED IN O.R.B. 1667, PG. 1024.
3-Sty. Brick
1-Sty. Brick Bldg
2-Sty. Brick Bldg. (Bank)
2-Sty. C.B. Bldg.
1-Sty Brick Bldg.
2-Sty. Brick Bldg. (Apt. House)
2-Sty Brick Bldg. (Post Office)
1-Sty. Brick
B.C. Vancey Sub. P.B. 1 Pg 30
1-Sty. Stucco Dentist Office
1Sty. Brick & Conc. Blk.
Overhang
EXIST. R/W LINE BY Plat
ORIGINAL R.R. R/W Line
NEW R.R. R/W Line
A.C.L.R.R.
HARRIS ST.
MITCHNER ST.
CLAY ROAD
8' Conc. S.W.
R.B.S.T. PAV'T.
DEEDED BY A.C.L.R.R. TO CITY OF UMATILLA & THEN BY CITY TO STATE ON 9-18-64 SEE O.R.B. 286, PG. 951
CITY OF UMATILLA OR728, PG275 4-22-81 (FROM ROBERTS ST. TO N. LINE OCALA ST.)
TOWN OF UMATILLA
CENTRAL AVE
S.R. 19
N.J. Trowell's Sub. P.B. 4 Pg 6
1 Sty. Stucco Gulf Oil Sta
1 Sty Brick Bldg (Stores)
1 Sty. Brick Gulf Serv. Sta.
1 Sty Brick Bldg J.S. Allen Groves
E. Fink St.
Patrick St.
Smith St.
P.I. Sta. 254+48.12 Δ = 7°54' Lt. D = 1°00' T = 395.63' L = 790.00' R = 5729.65'
1Sty Conc. Blk Honey Fact.
Closed Street
1-Sty. Conc. Blk City Police Dept. & Jail
1-Sty. Stucco Office Fire Dept.
1-Sty. Corr. Metal Packing House
1 Sty. Fr. Res
Dist. De.
Clay De.
HUNTER ST.
Loading Platform
R.R.M.P. S.C. 820 (F.M.S.)
Exist. R/W Line by plat
Exist. R/W Line by occupation
E. Lone Star St.
Bridge Spike
2x2 Hub
1 Sty. Conc. Blk. Serv. Sta.
4.5 Conc. S.W.
SEC.13 T-18-S R-26-E
ADD PAR. 102 | S.Johnson | 11-07-12
ADD PAR. 110 | S. WALKER | 11-05-98
ADD INFO. ON R.R. | W.A.L. | 6-21-93
REVISION | BY | DATE
STATE OF FLORIDA
STATE ROAD DEPARTMENT
RIGHT OF WAY MAP
STATE ROAD No. 19 LAKE COUNTY
TRACED Radson 7-6-64
SECTION 11100-2503 SHEET 6 OF 10
MAR 24 2014

STATE OF FLORIDA
STATE ROAD DEPARTMENT
RIGHT OF WAY MAP
STATE ROAD No. 19 LAKE COUNTY
SECTION. 11100-2503 SHEET 7 OF 10
FED. ROAD DIV. No. 3 STATE FLA. PROJECT No. 11100-2503 FISCAL YEAR 64 SHEET No. 7
Traced Rodson 7-6-'64
Approved By Date 5-7-65
DISTRICT ENGINEER
ENGINEER OF RIGHTS OF WAY
STATE HIGHWAY ENGINEER
Add info on R.R. W.A.L. 6-21-93
Add Donation SHL-MB 5-29-88
REVISION BY DATE
MAY 01 2013
T-18-S R-26-E
SEC.12 T-18-S R-26-E
B.C. Vancey Sub. P.B. 1 Pg. 30
HUNTER ST.
1 Sty. Fr. Res.
1 Sty Metal Storage
1 - Sty. Corr. Metal Packing House
Loading Platform
SCALE: 1" = 20'
Southerly R/W Line of Ocala St.
SEE NOTE BELOW
N. UMATILLA BLVD.
E. OCALA ST.
ORIG. R.R. R/W Line
NEW R.R. R/W Line
EXIST. R/W LINE by plat
A.C.L.R.R. (SPUR)
A.C.L.R.R. (MAIN TRACK)
CENTRAL AVE.
S.R. No. 19
R.B.S.T. Pav't.
6' S.W.
DEEDED BY A.C.L.R.R. TO THE CITY OF UMATILLA AND THEN BY THE CITY TO THE STATE ON 9/18/64 SEE O.R.B. 286 PG. 931
CITY OF UMATILLA 6/22/81
O.R. 728 PG. 275 (FROM ROBERTS ST. TO N. LINE OCALA ST.
N.17°26'26"E.
1 Sty. Conc. Blk. Real Estate Office
1-Sty. Fr. R.R. Depot
Platform
184.81'(D) WEST LINE OF THE S.E. 1/4 OF SECTION 12
R.R. Spike in Pavt. S.E. Cor. of S.W. 1/4 Sec. 12 T-18-S R-26-E
P.I. Sta. 263+94.0 Δ = 78°53'45" Lt.
NOTE: Data for R/W Donation Taken From Deed Recorded in O.R. Book 961, Pg. 809, Lake Co. Public Records. This Deed was Provided By Property Owner And Prepared Without A Current Field Survey. Copy of Deed in Reports & Records
(Don) = Donation By Deed
North Umatilla Sub. P.B. Pg.
1 Sty. Conc. Blk. Bldg.
2 Sty. Conc. Blk. Stores
LINE ESTABLISHED BY DB 16, PG 51
ORIGINAL R.R. R/W Line
PROP. S.R.D. R/W Line
WEST LINE OF LANDS DESCRIBED IN O.R.B. 4092 PGS. 947-955
958.68'(D)
546.07'(D)
DEEDED BY A.C.L.R.R. TO THE CITY OF UMATILLA AND THEN BY THE CITY TO THE STATE ON 9/18/64 SEE O.R.B. 286, PG. 931
ACL RR
A.C.L. R.R.
(SPUR)
DB 16, PG 51 5-16-1879 AJ LANE, TR.
DB 70, PG 200 8-31-14 ACL RR
EXIST. R.R. R/W Line
Pavt.
N.17°27'26"E.
Nail & Cap


FED. ROAD DIV. No.
STATE
PROJECT No.
FISCAL YEAR
SHEET No.
3
FLA.
11100-2503
64
8
North Umatilla Sub.
P.B. 8 Pg. 75
W. PALMETTO ST.
W. COLLINS ST.
R.B.S.T.
3/4" Pipe
Exist. R/W Line by plat
LINE ESTABLISHED BY DB 16 PG 51
ORIG. R.R. R/W Line
NEW R.R. R/W Line
prop. S.R.D. R/W Line
DEEDED BY A.C.L.R.R. TO THE CITY OF UMATILLA & THEN BY CITY TO THE STATE ON 9/18/64. SEE O.R.B. 286, PG. 951
WEST LINE OF PROPERTY DESCRIBED IN O.R.B. 4092 PGs. 947-955
PERPETUAL EASEMENT PER O.R.B. 4218 PG. 1131 RECORDED 9/26/2012
ACL RR
A.C.L. R.R. MAIN TRACK
R.R. SPUR
A.C.L. R.R.
PERPETUAL EASEMENT PER O.R.B. 4218, PG. 1134 RECORDED 9/26/2012
PERPETUAL EASEMENT PER O.R.B. 4218, PG. 1131 RECORDED 9/26/2012
120' R/W DB 16, PG51, AJ LANE, TR. 5-16-1879 (RAILROAD MAP INDICATES RR OWNS THIS STRIP—LESS PACE 102)
Pavement
Exist. R.R. R/W Line
Cleared
Citrus Trees
1-Sty. Fr. Res.
SEC. 12 T-18-S R-26-E
North Umatilla Sub.
P.B. 8 Pg. 75
4' S.W.
2"W.M.
DEEDED BY A.C.L.R.R. TO THE CITY OF UMATILLA & THEN BY CITY TO THE STATE ON 9-18-64. SEE O.R.B. 286, PG. 951
SOLD TO STEPHEN B. JOHNSON ET. UX. QCD 3-14-86
NO RECORDING INFO. AVAILABLE SOLD TO NORMAN BUZARD 3-11-87
NO RECORDING INFO. AVAILABLE SOLD TO BARNETT BANK OF LAKE CO. QCD 3-31-86
S.R. No. 450
EXIST. R.R. R/W Line
Pav't.
1½-Sty. Fr. & Tin Warehouse
Fertilizer Storage
1-Sty. Sheet Tin Warehouse
5' C.B. Wall
End Spur
1-Sty. Corr. Tin Utility Bldg.
1-Sty. Stucco Office
H.L. Collins Sub.
P.B. 4 Pg. 22
Platform
1-Sty. Fr. & Sheet Tin Packing House
SEC. 12 T-18-S R-26-E
Added Perp. Esmts.
J. Shepherd
4/8/13
REVISION
BY
DATE
STATE OF FLORIDA
STATE ROAD DEPARTMENT
RIGHT OF WAY MAP
STATE ROAD No. 19
LAKE
COUNTY
DRAWN
TRACED
Radson
7-6-64
CHECKED
COMPARED
INDEXED
DISTRICT ENGINEER
ENGINEER OF RIGHTS OF WAY
STATE HIGHWAY ENGINEER
SECTION 11100-2503
SHEET 8 OF 10


FED. ROAD DIV. No. 3
STATE FLA.
PROJECT No. 11100-2503
FISCAL YEAR 64
SHEET No. 9
North Umatilla Sub.
P.B. 6 Pg. 36
EXIST. R/W LINE by plat
8" W.M.
2" W.M.
ORIGINAL R.R. R/W Line
NEW R.R. R/W Line
Prop. S.R.D. R/W Line
EXIST. R.R. R/W Line
A.C.L. R.R.
Dirt Rd.
NO RECORDING DATA AVAILABLE
ROY AND DELANES C. CARTER
7-17-85 QCD
OWNED BY ACL RR N/K/A CSX TRANSPORTATION
Citrus Grove
H.L.Collins Sub.
P.B. 4 Pg. 22
1-Sty. Fr & Sheet Tin Packing House
MARY ST.
SEC.12 T-18-S R-26-E
N. UMATILLA BLVD.
1" I.P. N.W. Cor. S.W 1/4 SEC. 12
NE. Cor. S.W. 1/4 Sec. 12
P.I. STA. 292+61.31
Δ = 0°26'15" Rt.
END SURVEY
STA. 292+61.31
℄ of R.R. before removal of tracks
End R.R.
NORTH CITY LIMITS OF UMATILLA
T-18-S; R-26-E
T-18-S; R-27-E
6"x6" Conc. Mon. - NE Cor. - S.E 1/4 Sec. 12
T-18-S ; R-26-E
JUN 22 1993
STATE OF FLORIDA
STATE ROAD DEPARTMENT
RIGHT OF WAY MAP
STATE ROAD No. 19
LAKE COUNTY
DRAWN
TRACED Radson 7-6-64
CHECKED
COMPARED
INDEXED
APPROVED BY
DATE 5-7-65
DISTRICT ENGINEER
ENGINEER OF RIGHTS OF WAY
STATE HIGHWAY ENGINEER
add 2 Hls on R.R. W.A.L. 6-22-93
REVISION BY DATE
SECTION. 11100-2503 SHEET 9 OF 10

FED. ROAD DIV. No.	STATE	PROJECT No.	FISCAL YEAR	SHEET No.
3	FLA.	11100-2503	64	10



SEC. 12 T-18-S R-26-E

SUMMARY OF EXISTING TELEPHONE & POWER POLES

STATION	LT.	RT.	TYPE	OWNER
200+78		40.6'	Pow.	F.P.C.
201+26.5	45.6'		Telegraph	W.U
201+29	39.4'		Tele.	F.T.C.
201+96.5		35.6'	Tele. Ser.	"
203+10.5	38.4'		Telegraph	W.U.
203+29	31.8'		Tele.	F.T.C.
203+38.5		39.9'	Pow.	F.P.C.
204+89	31'		Telegraph	W.U.
205+14	26.1'		Tele.	F.T.C.
205+32	87.7'		Pow.	F.P.C.
205+70		18.8'	"	"
206+09	65'		Tele.	F.T.C.
206+66	26.5'		"	"
207+66	64.7'		"	"
208+58	26.5'		"	"
208+64		18'	Pow.	F.P.C.
209+13	52.6'		Tele.	F.T.C.
210+24.5	25.5'		"	"
210+80	62.5'		"	"
211+49		16'	Pow.	F.P.C.
212+07	26'		Tele.	F.T.C.
212+38	61.3'		"	"
213+89	27'		"	"
214+01	24'		Pow.	F.P.C.
214+09	58.5'		"	"
214+48		15.3'	"	"
214+52	58.7'		"	"
215+24		16'	Tele.	F.T.C.
215+68	25.7'		Telegraph	W.U.
215+86		12.8'	Pow.	F.P.C.
216+47		13'	"	"
216+48	58.3'		Tele.	F.T.C.
216+87	58.5'		Pow.	F.P.C.
217+45		13'	Tele.	F.T.C.
218+35.5		16'	Pow.	F.P.C.
218+36	58'		"	"
219+36	26'		Tele.	F.T.C.
220+35		13.6'	Pow.	F.P.C.
221+02	69.5'		"	"
221+11	26'		Tele.	F.T.C.
221+32	57'		"	"

STATION	LT.	RT.	TYPE	OWNER
222+36		13.2'	Comb. Pow.	F.P.C.
222+76	26'		Tele.	F.T.C.
222+79	59'		Comb. Pow.	F.P.C.
223+28	58'		Pow.	"
224+69	26'		Tele.	F.T.C.
225+08	61.5'		Pow.	F.P.C.
225+11		11'	"	"
225+77	148'		"	"
226+41	25.5'		Tele.	F.T.C.
226+90	59.5'		Pow.	F.P.C.
227+37		13'	Tele.	F.T.C.
227+81		13'	Pow.	F.P.C.
227+87	60'		Tele.	F.T.C.
228+24	26'		"	"
229+10.5	60'		"	"
229+78	89'		Comb. Pow.	F.P.C.
229+81		12.5'	" "	"
230+07	25.8'		Telegraph	W.U.
231+96	26'		Tele.	F.T.C.
233+09		13.4'	Comb. Pow.	F.P.C.
233+53	26.5'		Tele.	F.T.C.
236+29		14'	Pow.	F.P.C.
237+13	25.8'		Telegraph	W.U.
238+87		13.5'	Comb. Pow.	F.P.C.
238+89	25.7'		Telegraph	W.U.
240+68	25.6'		"	"
241+34	86.2		Tele.	F.T.C.
241+51		13'	Comb. Pow.	F.P.C.
242+59	25.8'		Telegraph	W.U.
243+51		14'	Pow.	F.P.C.
244+34	25.7'		Telegraph	W.U.
244+39	84.3		Tele.	F.T.C.
244+87		13'	Pow.	F.P.C.
245+85		13.2'	"	"
245+92	26.2'		Telegraph	W.U.
246+75		12.8'	Pow.	F.P.C.
246+84	84.5'		"	"
247+47	25.8'		Telegraph	W.U.
248+08	21.8'		Pow.	F.P.C.
248+80		14'	"	"
248+80	21.8'		Guy Pole	"

STATION	LT.	RT.	TYPE	OWNER
249+16	25.8'		Telegraph	W.U.
250+92	26'		"	"
252+48	24.8'		"	"
253+26.5	85.2'		Tele.	F.T.C.
254+17	24.7'		Telegraph	W.U.
255+13	87.7'		Tele Ser.	F.T.C.
255+45		16'	Pow.	F.P.C.
255+82	25.2'		Telegraph	W.U.
257+44		14.2'	Pow.	F.P.C.
257+63	26.1'		Telegraph	W.U.
259+13		12.8'	Comb. Pow.	F.P.C.
259+32.5	26.5'		Telegraph	W.U.
260+75		12.8'	Comb. Pow.	F.P.C.
261+13.5	26.3'		Telegraph	W.U.
262+04		14'	Pow.	F.P.C.
262+87.5	23.7'		Telegraph	W.U.
263+94		13'	Pow.	F.P.C.
264+11		62.3'	Telegraph	W.U.
265+33		83.5'	"	"
267+10.5		85.4'	"	"
268+72		86.8'	"	"
270+18		83.2'	"	"
272+53	24'		Pow.	F.P.C.
273+76		82'	Telegraph	W.U.
275+29		79.8'	"	"
275+70	22'		Pow.	F.P.C.
276+55		78.2'	Telegraph	W.U.
278+43.5		74.9	"	"
278+74	21.6'		Pow.	F.P.C.
281+07.5		73'	Telegraph	W.U.
281+38	22'		Pow.	F.P.C.
284+13	24.7'		"	"
284+52.5		94'	"	"
286+99		85.8'	"	"
287+28	24.6'		"	"
289+88		85.9'	"	"
290+38	21.6'		"	"
290+80		20.4'	Tele.	F.T.C.
292+52		16'	Pow.	F.P.C.
292+76.5		87'	"	"
293+04		23'	Tele	F.T.C.
295+26		22'	"	"
296+99		86'	Pow.	F.P.C.
297+57		24'	Tele.	F.T.C.

F.P.C. Florida Power Corp.
F.T.C. Florida. Telephone Co.
W.U. Western Union

JUN 22 199_

STATE OF FLORIDA
STATE ROAD DEPARTMENT

RIGHT OF WAY MAP

STATE ROAD No. 19 LAKE COUNTY

	BY	DATE
DRAWN		
TRACED		
CHECKED		
COMPARED		
INDEXED		

APPROVED BY: DATE 5-7-65
DISTRICT ENGINEER 5-11-65
ENGINEER OF RIGHTS OF WAY
STATE HIGHWAY ENGINEER

REVISION	BY	DATE
add INfo on R.R.	W.A.L.	6-22-93

SECTION. 11100-2503 SHEET 10 OF 10

Appendix B:
Historical Count Data

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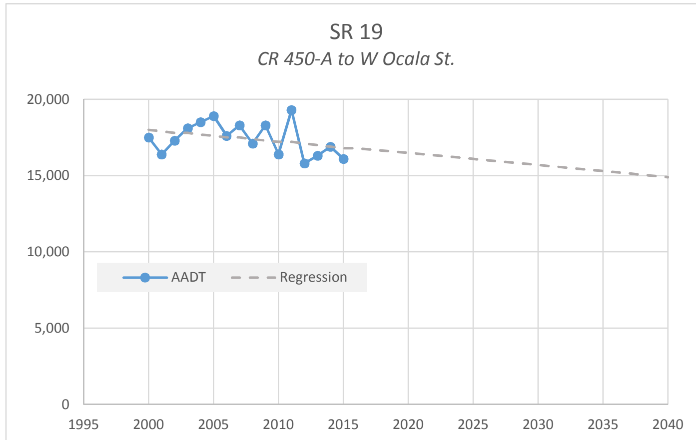
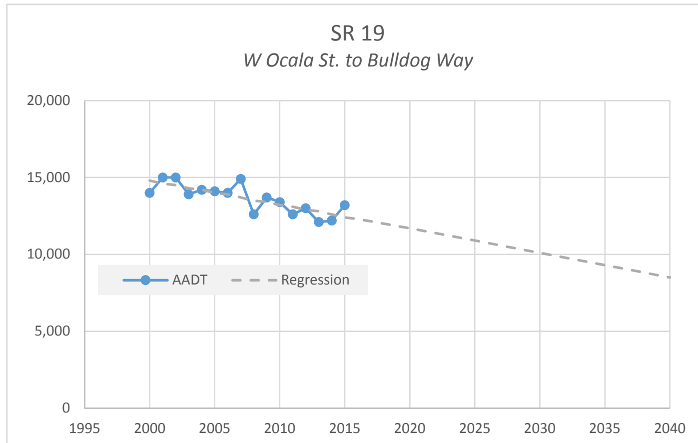
Roadway: SR 19
Segment: CR 450-A to W Ocala Street

Year	AADT	Annual Percentage Change	Regression Equation Prediction
2000	17,500		18,000
2001	16,400	-6.29%	17,900
2002	17,300	5.49%	17,800
2003	18,100	4.62%	17,800
2004	18,500	2.21%	17,700
2005	18,900	2.16%	17,600
2006	17,600	-6.88%	17,500
2007	18,300	3.98%	17,500
2008	17,100	-6.56%	17,400
2009	18,300	7.02%	17,300
2010	16,400	-10.38%	17,200
2011	19,300	17.68%	17,200
2012	15,800	-18.13%	17,100
2013	16,300	3.16%	17,000
2014	16,900	3.68%	16,900
2015	16,100	-4.73%	16,800
2016			16,800
2020			16,500
2040			14,900
Trend Annual Growth Rate (2000-2016):			-0.42%
Trend Growth Rate (2016-2040):			-0.47%



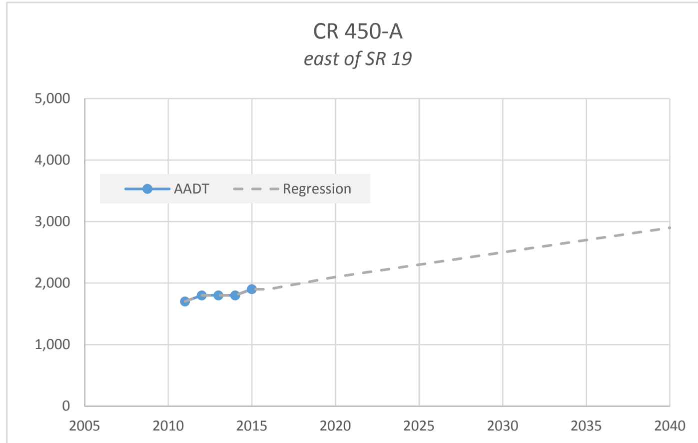
Roadway: SR 19
Segment: W Ocala Street to Bulldog Way

Year	AADT	Annual Percentage Change	Regression Equation Prediction
2000	14,000		14,800
2001	15,000	7.14%	14,600
2002	15,000	0.00%	14,500
2003	13,900	-7.33%	14,300
2004	14,200	2.16%	14,200
2005	14,100	-0.70%	14,000
2006	14,000	-0.71%	13,900
2007	14,900	6.43%	13,700
2008	12,600	-15.44%	13,500
2009	13,700	8.73%	13,400
2010	13,400	-2.19%	13,200
2011	12,600	-5.97%	13,100
2012	13,000	3.17%	12,900
2013	12,100	-6.92%	12,800
2014	12,200	0.83%	12,600
2015	13,200	8.20%	12,400
2016			12,300
2020			11,700
2040			8,500
Trend Annual Growth Rate (2000-2016):			-1.06%
Trend Growth Rate (2016-2040):			-1.29%



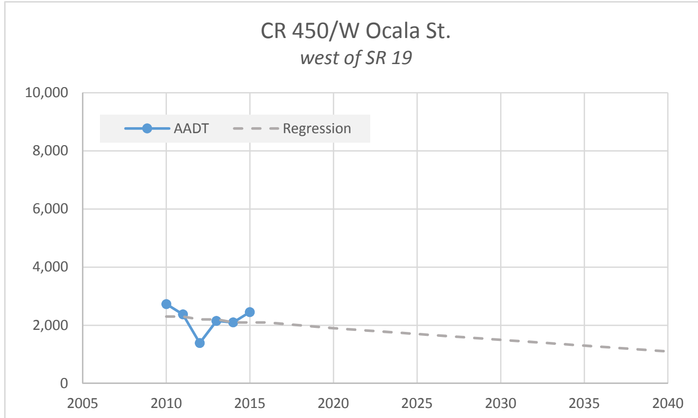
Roadway: CR 450-A
Segment: east of SR 19

Year	AADT	Annual Percentage Change	Regression Equation Prediction
2011	1,700		1,700
2012	1,800	5.88%	1,800
2013	1,800	0.00%	1,800
2014	1,800	0.00%	1,800
2015	1,900	5.56%	1,900
2016			1,900
2020			2,100
2040			2,900
Trend Annual Growth Rate (2011-2016):			2.35%
Trend Growth Rate (2016-2040):			2.19%



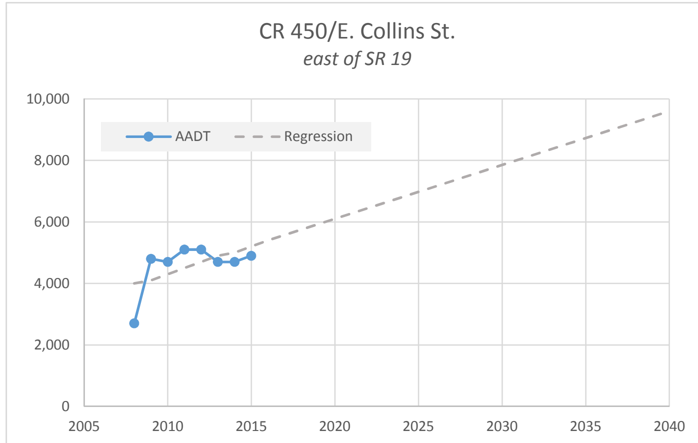
Roadway: CR 450
Segment: west of SR 19

Year	AADT	Annual Percentage Change	Regression Equation Prediction
2010	2,730		2,300
2011	2,375	-13.00%	2,300
2012	1,390	-41.47%	2,200
2013	2,151	54.75%	2,200
2014	2,098	-2.46%	2,100
2015	2,454	16.97%	2,100
2016			2,100
2020			1,900
2040			1,100
Trend Annual Growth Rate (2010-2016):			-1.45%
Trend Growth Rate (2016-2040):			-1.98%



Roadway: CR 450
Segment: east of SR 19

Year	AADT	Annual Percentage Change	Regression Equation Prediction
2008	2,700		4,000
2009	4,800	77.78%	4,100
2010	4,700	-2.08%	4,300
2011	5,100	8.51%	4,500
2012	5,100	0.00%	4,700
2013	4,700	-7.84%	4,900
2014	4,700	0.00%	5,000
2015	4,900	4.26%	5,200
2016			5,400
2020			6,100
2040			9,600
Trend Annual Growth Rate (2008-2016):			4.38%
Trend Growth Rate (2016-2040):			3.24%



Historical Growth Rates	
Site	**Trend Annual Historic Growth Rate**
SR 19 from CR 450-A to W Ocala St/Bulldog Lane	-0.42%
SR 19 from W Ocala St/Bulldog Lane to Bulldog Way	-1.06%
CR 450-A east of SR 19	2.35%
W Ocala Street west of SR 19	-1.45%
CR 450/E Collins St east of SR 19	4.38%
Average	**0.76%**

Appendix C:
Synchro Output Sheets

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Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	44	41	454	24	36	870
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	20	-	240	200	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	3	7	13	3	4
Mvmt Flow	46	43	478	25	38	916

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1012	239	0	0	478	0
Stage 1	478	-	-	-	-	-
Stage 2	534	-	-	-	-	-
Critical Hdwy	6.84	6.96	-	-	4.16	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.33	-	-	2.23	-
Pot Cap-1 Maneuver	236	759	-	-	1074	-
Stage 1	590	-	-	-	-	-
Stage 2	552	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	228	759	-	-	1074	-
Mov Cap-2 Maneuver	359	-	-	-	-	-
Stage 1	590	-	-	-	-	-
Stage 2	532	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.4	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	359	759	1074	-
HCM Lane V/C Ratio	-	-	0.129	0.057	0.035	-
HCM Control Delay (s)	-	-	16.5	10	8.5	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0.2	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	7	43	81	4	15	8	435	72	21	738	7
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1725	1900	1937	1869	1976	1937	1917	1976
Adj Flow Rate, veh/h	1	7	45	84	4	16	8	453	75	22	769	7
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	25	25	25	2	6	6	2	3	3
Cap, veh/h	29	22	128	154	6	20	604	2477	408	761	3000	27
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	0.81	0.81	0.81	0.81	0.81	0.81
Sat Flow, veh/h	8	237	1380	1120	69	216	720	3054	503	906	3698	34
Grp Volume(v), veh/h	53	0	0	104	0	0	8	262	266	22	379	397
Grp Sat Flow(s),veh/h/ln	1625	0	0	1405	0	0	720	1776	1780	906	1821	1911
Q Serve(g_s), s	0.0	0.0	0.0	5.2	0.0	0.0	0.3	4.3	4.3	0.7	6.4	6.4
Cycle Q Clear(g_c), s	4.0	0.0	0.0	9.2	0.0	0.0	6.8	4.3	4.3	5.0	6.4	6.4
Prop In Lane	0.02		0.85	0.81		0.15	1.00		0.28	1.00		0.02
Lane Grp Cap(c), veh/h	179	0	0	180	0	0	604	1441	1445	761	1477	1550
V/C Ratio(X)	0.30	0.00	0.00	0.58	0.00	0.00	0.01	0.18	0.18	0.03	0.26	0.26
Avail Cap(c_a), veh/h	469	0	0	413	0	0	604	1441	1445	761	1477	1550
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.3	0.0	0.0	57.4	0.0	0.0	3.7	2.7	2.7	3.3	2.9	2.9
Incr Delay (d2), s/veh	0.9	0.0	0.0	2.9	0.0	0.0	0.0	0.1	0.1	0.1	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	0.0	3.8	0.0	0.0	0.1	2.1	2.1	0.2	3.3	3.5
LnGrp Delay(d),s/veh	56.3	0.0	0.0	60.3	0.0	0.0	3.7	2.8	2.8	3.3	3.3	3.3
LnGrp LOS	E			E			A	A	A	A	A	A
Approach Vol, veh/h		53			104			536			798	
Approach Delay, s/veh		56.3			60.3			2.8			3.3	
Approach LOS		E			E			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		111.5		18.5		111.5		18.5
Change Period (Y+Rc), s		6.0		6.5		6.0		6.5
Max Green Setting (Gmax), s		82.0		35.5		82.0		35.5
Max Q Clear Time (g_c+I1), s		8.4		11.2		8.8		6.0
Green Ext Time (p_c), s		11.0		0.9		11.0		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	9.0
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	36	28	47	49	29	6	49	37	374	34	17	552
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	13	13	13	12	12
Total Lost time (s)		6.2			6.2			6.3	6.0	6.0	6.0	6.0
Lane Util. Factor		1.00			1.00			1.00	1.00	1.00	1.00	1.00
Frt		0.94			0.99			1.00	1.00	0.85	1.00	0.99
Flt Protected		0.98			0.97			0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1728			1793			1808	1818	1620	1770	1840
Flt Permitted		0.86			0.66			0.31	1.00	1.00	0.52	1.00
Satd. Flow (perm)		1509			1215			586	1818	1620	968	1840
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	38	29	49	52	31	6	52	39	394	36	18	581
RTOR Reduction (vph)	0	24	0	0	80	0	0	0	0	13	0	0
Lane Group Flow (vph)	0	92	0	0	9	0	0	91	394	23	18	604
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	2%	8%	3%	2%	2%
Turn Type	Perm	NA		custom	NA		pm+pt	pm+pt	NA	Perm	pm+pt	NA
Protected Phases		8					1	1	6		5	2
Permitted Phases	8			4	4		6	6		6	2	
Actuated Green, G (s)		13.2			13.2			92.2	84.6	84.6	81.9	79.3
Effective Green, g (s)		13.2			13.2			92.2	84.6	84.6	81.9	79.3
Actuated g/C Ratio		0.10			0.10			0.71	0.65	0.65	0.63	0.61
Clearance Time (s)		6.2			6.2			6.3	6.0	6.0	6.0	6.0
Vehicle Extension (s)		3.0			3.0			3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		153			123			487	1183	1054	625	1122
v/s Ratio Prot								c0.01	c0.22		0.00	c0.33
v/s Ratio Perm		c0.06			0.01			0.12		0.01	0.02	
v/c Ratio		0.60			0.07			0.19	0.33	0.02	0.03	0.54
Uniform Delay, d1		55.9			52.9			8.5	10.1	8.0	9.0	14.7
Progression Factor		1.00			1.00			1.30	1.25	1.00	0.80	0.82
Incremental Delay, d2		6.2			0.3			0.2	0.8	0.0	0.0	1.7
Delay (s)		62.1			53.1			11.2	13.4	8.1	7.2	13.9
Level of Service		E			D			B	B	A	A	B
Approach Delay (s)		62.1			53.1				12.7			13.6
Approach LOS		E			D				B			B

Intersection Summary			
HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	24.3
Intersection Capacity Utilization	67.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR	SBR2	SEL	SER	SER2
Lane Configurations					
Volume (vph)	22	2	2	28	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12
Total Lost time (s)		6.0	5.8		5.8
Lane Util. Factor		1.00	1.00		1.00
Frt		0.85	0.86		0.85
Flt Protected		1.00	1.00		1.00
Satd. Flow (prot)		1583	1596		1583
Flt Permitted		1.00	1.00		1.00
Satd. Flow (perm)		1583	1596		1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	23	2	2	29	7
RTOR Reduction (vph)	0	0	0	0	7
Lane Group Flow (vph)	0	2	31	0	0
Heavy Vehicles (%)	19%	2%	2%	2%	2%
Turn Type		Prot	Perm		Perm
Protected Phases		2			
Permitted Phases		Free	7		7
Actuated Green, G (s)		130.0	5.6		5.6
Effective Green, g (s)		130.0	5.6		5.6
Actuated g/C Ratio		1.00	0.04		0.04
Clearance Time (s)		6.0	5.8		5.8
Vehicle Extension (s)		3.0	3.0		3.0
Lane Grp Cap (vph)		1583	68		68
v/s Ratio Prot		0.00			
v/s Ratio Perm		0.00	c0.02		0.00
v/c Ratio		0.00	0.46		0.00
Uniform Delay, d1		0.0	60.7		59.5
Progression Factor		1.00	1.02		1.00
Incremental Delay, d2		0.0	4.8		0.0
Delay (s)		0.0	66.6		59.6
Level of Service		A	E		E
Approach Delay (s)			65.3		
Approach LOS			E		

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	137	92	370	82	51	501
Number	7	14	6	16	5	2
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1776	1863	1863	1845
Adj Flow Rate, veh/h	161	108	435	96	60	589
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	1	1	7	2	2	3
Cap, veh/h	196	175	1275	1137	660	1472
Arrive On Green	0.11	0.11	0.72	0.72	0.03	0.80
Sat Flow, veh/h	1792	1599	1776	1583	1774	1845
Grp Volume(v), veh/h	161	108	435	96	60	589
Grp Sat Flow(s),veh/h/ln	1792	1599	1776	1583	1774	1845
Q Serve(g_s), s	11.4	8.4	11.9	2.4	1.1	12.3
Cycle Q Clear(g_c), s	11.4	8.4	11.9	2.4	1.1	12.3
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	196	175	1275	1137	660	1472
V/C Ratio(X)	0.82	0.62	0.34	0.08	0.09	0.40
Avail Cap(c_a), veh/h	551	492	1275	1137	764	1472
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.6	55.3	6.8	5.5	4.4	3.9
Incr Delay (d2), s/veh	8.2	3.5	0.2	0.0	0.1	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	7.5	5.9	1.0	0.5	6.5
LnGrp Delay(d),s/veh	64.9	58.8	7.0	5.5	4.5	4.7
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	269		531			649
Approach Delay, s/veh	62.4		6.7			4.7
Approach LOS	E		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		109.8		20.2	10.4	99.3		
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0		
Max Green Setting (Gmax), s		78.0		40.0	12.0	60.0		
Max Q Clear Time (g_c+I1), s		14.3		13.4	3.1	13.9		
Green Ext Time (p_c), s		8.7		0.8	0.1	8.5		

Intersection Summary		
HCM 2010 Ctrl Delay		16.2
HCM 2010 LOS		B

Intersection	
Int Delay, s/veh	0

Movement	NBL	NBT	SBT	SBR	NEL	NER
Vol, veh/h	1	398	537	20	3	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	Free	-	Stop
Storage Length	120	-	-	-	0	200
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	6	4	2	2	2
Mvmt Flow	1	474	639	24	4	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	639	0	-	0	1115	639
Stage 1	-	-	-	-	639	-
Stage 2	-	-	-	-	476	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	945	-	-	0	230	476
Stage 1	-	-	-	0	526	-
Stage 2	-	-	-	0	625	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	945	-	-	-	230	476
Mov Cap-2 Maneuver	-	-	-	-	364	-
Stage 1	-	-	-	-	526	-
Stage 2	-	-	-	-	624	-

Approach	NB	SB	NE
HCM Control Delay, s	0	0	15
HCM LOS			C

Minor Lane/Major Mvmt	NELn1	NELn2	NBL	NBT	SBT
Capacity (veh/h)	364	-	945	-	-
HCM Lane V/C Ratio	0.01	-	0.001	-	-
HCM Control Delay (s)	15	0	8.8	-	-
HCM Lane LOS	C	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	6	164	167	234	393	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	75	0	70	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	3	4	6	4	3
Mvmt Flow	7	195	199	279	468	43

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1165	489	511	0	-	0
Stage 1	489	-	-	-	-	-
Stage 2	676	-	-	-	-	-
Critical Hdwy	6.42	6.23	4.14	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.327	2.236	-	-	-
Pot Cap-1 Maneuver	215	577	1044	-	-	-
Stage 1	616	-	-	-	-	-
Stage 2	505	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	174	577	1044	-	-	-
Mov Cap-2 Maneuver	299	-	-	-	-	-
Stage 1	616	-	-	-	-	-
Stage 2	409	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.5	3.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1044	-	299	577	-	-
HCM Lane V/C Ratio	0.19	-	0.024	0.338	-	-
HCM Control Delay (s)	9.3	-	17.3	14.4	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.7	-	0.1	1.5	-	-

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	53	104	8	528	22	776
v/c Ratio	0.22	0.63	0.02	0.19	0.03	0.27
Control Delay	18.7	65.8	4.4	4.0	2.4	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.7	65.8	4.4	4.0	2.4	3.0
Queue Length 50th (ft)	6	79	1	47	2	31
Queue Length 95th (ft)	43	134	6	82	m4	53
Internal Link Dist (ft)	307	306		4095		528
Turn Bay Length (ft)			200		220	
Base Capacity (vph)	480	369	528	2713	687	2832
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.28	0.02	0.19	0.03	0.27

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR2	SEL	SER2
Lane Group Flow (vph)	116	89	91	394	36	18	604	2	31	7
v/c Ratio	0.66	0.38	0.18	0.31	0.03	0.03	0.52	0.00	0.32	0.03
Control Delay	59.4	7.8	7.7	11.3	0.1	6.4	15.2	0.0	67.0	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.4	7.8	7.7	11.3	0.1	6.4	15.2	0.0	67.0	0.3
Queue Length 50th (ft)	73	0	21	111	0	3	264	0	25	0
Queue Length 95th (ft)	133	22	50	234	0	m9	550	m0	59	m0
Internal Link Dist (ft)	310	363		598			300		574	
Turn Bay Length (ft)					125	100				350
Base Capacity (vph)	412	407	516	1265	1166	717	1155	1583	127	243
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.22	0.18	0.31	0.03	0.03	0.52	0.00	0.24	0.03

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	161	108	435	96	60	589
v/c Ratio	0.69	0.36	0.35	0.09	0.09	0.41
Control Delay	68.2	13.5	7.4	2.0	4.4	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.2	13.5	7.4	2.0	4.4	6.3
Queue Length 50th (ft)	131	5	70	1	10	139
Queue Length 95th (ft)	184	48	132	13	24	220
Internal Link Dist (ft)	494		951			1192
Turn Bay Length (ft)		70		150	140	
Base Capacity (vph)	549	562	1237	1127	724	1431
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.19	0.35	0.09	0.08	0.41

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	9	16	98	16	38	21	678	62	30	615	8
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1773	1900	1900	1849	1900	1937	1903	1976	1847	1814	1976
Adj Flow Rate, veh/h	3	9	17	102	17	40	22	706	65	31	641	8
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	11	11	11	2	2	2	2	4	4	7	9	9
Cap, veh/h	39	77	120	164	23	47	686	2605	240	551	2713	34
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.78	0.78	0.78	1.00	1.00	1.00
Sat Flow, veh/h	64	609	954	939	183	377	810	3349	308	690	3487	44
Grp Volume(v), veh/h	29	0	0	159	0	0	22	381	390	31	317	332
Grp Sat Flow(s),veh/h/ln	1627	0	0	1499	0	0	810	1808	1849	690	1724	1807
Q Serve(g_s), s	0.0	0.0	0.0	11.3	0.0	0.0	0.8	7.7	7.7	0.5	0.0	0.0
Cycle Q Clear(g_c), s	2.1	0.0	0.0	13.4	0.0	0.0	0.8	7.7	7.7	8.2	0.0	0.0
Prop In Lane	0.10		0.59	0.64		0.25	1.00		0.17	1.00		0.02
Lane Grp Cap(c), veh/h	235	0	0	234	0	0	686	1407	1438	551	1341	1406
V/C Ratio(X)	0.12	0.00	0.00	0.68	0.00	0.00	0.03	0.27	0.27	0.06	0.24	0.24
Avail Cap(c_a), veh/h	464	0	0	449	0	0	686	1407	1438	551	1341	1406
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.6	0.0	0.0	55.3	0.0	0.0	3.3	4.1	4.1	0.3	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.0	3.4	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0	5.8	0.0	0.0	0.2	3.8	3.9	0.1	0.2	0.2
LnGrp Delay(d),s/veh	50.8	0.0	0.0	58.8	0.0	0.0	3.3	4.2	4.2	0.5	0.4	0.4
LnGrp LOS	D			E			A	A	A	A	A	A
Approach Vol, veh/h		29			159			793			680	
Approach Delay, s/veh		50.8			58.8			4.1			0.4	
Approach LOS		D			E			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		107.1		22.9		107.1		22.9
Change Period (Y+Rc), s		6.0		6.5		6.0		6.5
Max Green Setting (Gmax), s		82.0		35.5		82.0		35.5
Max Q Clear Time (g_c+I1), s		10.2		15.4		9.7		4.1
Green Ext Time (p_c), s		13.0		1.0		13.0		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	8.7
HCM 2010 LOS	A

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	2	43	22	24	65	29	3	10	89	30	485	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	13	13	13
Total Lost time (s)			6.2			6.2				6.3	6.0	6.0
Lane Util. Factor			1.00			1.00				1.00	1.00	1.00
Frt			0.96			0.98				1.00	1.00	0.85
Flt Protected			0.98			0.97				0.95	1.00	1.00
Satd. Flow (prot)			1672			1738				1740	1870	1636
Flt Permitted			0.78			0.74				0.36	1.00	1.00
Satd. Flow (perm)			1339			1329				656	1870	1636
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	47	24	26	71	32	3	11	97	33	527	54
RTOR Reduction (vph)	0	0	11	0	0	4	0	0	0	0	0	20
Lane Group Flow (vph)	0	0	88	0	0	113	0	0	0	130	527	34
Heavy Vehicles (%)	2%	7%	5%	9%	5%	4%	2%	2%	9%	2%	5%	2%
Turn Type	Perm	Perm	NA		custom	NA			pm+pt	pm+pt	NA	Perm
Protected Phases			8						1	1	6	
Permitted Phases	8	8			4	4			6	6		6
Actuated Green, G (s)			16.0			16.0				90.5	82.0	82.0
Effective Green, g (s)			16.0			16.0				90.5	82.0	82.0
Actuated g/C Ratio			0.12			0.12				0.70	0.63	0.63
Clearance Time (s)			6.2			6.2				6.3	6.0	6.0
Vehicle Extension (s)			3.0			3.0				3.0	3.0	3.0
Lane Grp Cap (vph)			164			163				531	1179	1031
v/s Ratio Prot										c0.02	c0.28	
v/s Ratio Perm			0.07			c0.09				0.15		0.02
v/c Ratio			0.53			0.70				0.24	0.45	0.03
Uniform Delay, d1			53.5			54.7				8.5	12.3	9.1
Progression Factor			1.00			1.00				0.95	1.12	1.00
Incremental Delay, d2			3.3			12.2				0.2	1.2	0.1
Delay (s)			56.8			66.8				8.3	15.0	9.1
Level of Service			E			E				A	B	A
Approach Delay (s)			56.8			66.8					13.3	
Approach LOS			E			E					B	

Intersection Summary			
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	24.3
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL	SBT	SBR	SBR2	SEL2	SEL	SER	SER2
Lane Configurations								
Volume (vph)	13	440	15	2	4	5	18	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12
Total Lost time (s)	6.0	6.0		6.0		5.8		5.8
Lane Util. Factor	1.00	1.00		1.00		1.00		1.00
Frt	1.00	1.00		0.85		0.90		0.85
Flt Protected	0.95	1.00		1.00		0.98		1.00
Satd. Flow (prot)	1770	1705		1583		1540		1583
Flt Permitted	0.42	1.00		1.00		0.98		1.00
Satd. Flow (perm)	790	1705		1583		1540		1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	478	16	2	4	5	20	5
RTOR Reduction (vph)	0	0	0	0	0	0	0	5
Lane Group Flow (vph)	14	494	0	2	0	29	0	0
Heavy Vehicles (%)	2%	11%	7%	2%	2%	2%	12%	2%
Turn Type	pm+pt	NA		Prot	Perm	Perm		Perm
Protected Phases	5	2		2				
Permitted Phases	2			Free	7	7		7
Actuated Green, G (s)	77.7	75.2		130.0		5.5		5.5
Effective Green, g (s)	77.7	75.2		130.0		5.5		5.5
Actuated g/C Ratio	0.60	0.58		1.00		0.04		0.04
Clearance Time (s)	6.0	6.0		6.0		5.8		5.8
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0
Lane Grp Cap (vph)	491	986		1583		65		66
v/s Ratio Prot	0.00	c0.29		0.00				
v/s Ratio Perm	0.02			0.00		c0.02		0.00
v/c Ratio	0.03	0.50		0.00		0.45		0.00
Uniform Delay, d1	10.8	16.3		0.0		60.8		59.6
Progression Factor	1.59	1.35		1.00		1.00		1.00
Incremental Delay, d2	0.0	1.7		0.0		4.8		0.0
Delay (s)	17.1	23.7		0.0		65.6		59.6
Level of Service	B	C		A		E		E
Approach Delay (s)		23.4				64.7		
Approach LOS		C				E		

Intersection Summary

Intersection	
Int Delay, s/veh	0.1

Movement	NBL	NBT	SBT	SBR	NEL	NER
Vol, veh/h	0	468	427	15	8	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	Free	-	Stop
Storage Length	120	-	-	-	0	200
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	7	8	7	2	2
Mvmt Flow	0	514	469	16	9	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	469	0	-	0	983	469
Stage 1	-	-	-	-	469	-
Stage 2	-	-	-	-	514	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1093	-	-	0	276	594
Stage 1	-	-	-	0	630	-
Stage 2	-	-	-	0	600	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1093	-	-	-	276	594
Mov Cap-2 Maneuver	-	-	-	-	406	-
Stage 1	-	-	-	-	630	-
Stage 2	-	-	-	-	600	-

Approach	NB	SB	NE
HCM Control Delay, s	0	0	14.1
HCM LOS			B

Minor Lane/Major Mvmt	NELn1	NELn2	NBL	NBT	SBT
Capacity (veh/h)	406	-	1093	-	-
HCM Lane V/C Ratio	0.022	-	-	-	-
HCM Control Delay (s)	14.1	0	0	-	-
HCM Lane LOS	B	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0	-	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	4	127	102	374	315	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	75	0	70	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	6	7	7	8	2
Mvmt Flow	4	140	112	411	346	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	992	357	368	0	-	0
Stage 1	357	-	-	-	-	-
Stage 2	635	-	-	-	-	-
Critical Hdwy	6.42	6.26	4.17	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.354	2.263	-	-	-
Pot Cap-1 Maneuver	272	678	1163	-	-	-
Stage 1	708	-	-	-	-	-
Stage 2	528	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	246	678	1163	-	-	-
Mov Cap-2 Maneuver	365	-	-	-	-	-
Stage 1	708	-	-	-	-	-
Stage 2	477	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.8	1.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1163	-	365	678	-	-
HCM Lane V/C Ratio	0.096	-	0.012	0.206	-	-
HCM Control Delay (s)	8.4	-	15	11.7	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.3	-	0	0.8	-	-

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	29	159	22	771	31	649
v/c Ratio	0.12	0.74	0.04	0.29	0.06	0.25
Control Delay	26.1	67.5	5.3	5.6	5.9	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.1	67.5	5.3	5.6	5.9	7.0
Queue Length 50th (ft)	9	119	4	90	13	162
Queue Length 95th (ft)	36	185	14	146	m13	115
Internal Link Dist (ft)	307	306		4095		528
Turn Bay Length (ft)			200		220	
Base Capacity (vph)	445	393	583	2691	484	2591
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.40	0.04	0.29	0.06	0.25

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR2	SEL	SER2
Lane Group Flow (vph)	99	117	130	527	54	14	494	2	29	5
v/c Ratio	0.57	0.70	0.24	0.42	0.05	0.03	0.49	0.00	0.31	0.02
Control Delay	57.9	73.9	8.7	16.0	4.5	14.7	26.8	0.0	66.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.9	73.9	8.7	16.0	4.5	14.7	26.8	0.0	66.1	0.2
Queue Length 50th (ft)	69	93	43	220	2	5	273	0	24	0
Queue Length 95th (ft)	123	152	101	505	17	m16	442	m0	56	0
Internal Link Dist (ft)	310	363		598			300		574	
Turn Bay Length (ft)					125	100				350
Base Capacity (vph)	357	348	581	1264	1146	593	1016	1583	113	234
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.34	0.22	0.42	0.05	0.02	0.49	0.00	0.26	0.02

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Intersection	
Int Delay, s/veh	1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	34	53	995	47	51	678
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	20	-	240	200	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	6	2	1	2	2	4
Mvmt Flow	36	56	1059	50	54	721

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1528	529	0	0	1059	0
Stage 1	1059	-	-	-	-	-
Stage 2	469	-	-	-	-	-
Critical Hdwy	6.92	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.92	-	-	-	-	-
Critical Hdwy Stg 2	5.92	-	-	-	-	-
Follow-up Hdwy	3.56	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	104	494	-	-	653	-
Stage 1	286	-	-	-	-	-
Stage 2	584	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	95	494	-	-	653	-
Mov Cap-2 Maneuver	208	-	-	-	-	-
Stage 1	286	-	-	-	-	-
Stage 2	536	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.2	0	0.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	208	494	653	-
HCM Lane V/C Ratio	-	-	0.174	0.114	0.083	-
HCM Control Delay (s)	-	-	25.9	13.2	11	-
HCM Lane LOS	-	-	D	B	B	-
HCM 95th %tile Q(veh)	-	-	0.6	0.4	0.3	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	4	37	68	9	24	40	874	101	41	591	11
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1937	1954	1976	1937	1883	1976
Adj Flow Rate, veh/h	3	4	40	73	10	26	43	940	109	44	635	12
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	1	1	2	5	5
Cap, veh/h	33	18	124	135	16	33	717	2733	317	469	2927	55
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	0.81	0.81	0.81	1.00	1.00	1.00
Sat Flow, veh/h	39	205	1396	1000	181	370	812	3354	389	557	3592	68
Grp Volume(v), veh/h	47	0	0	109	0	0	43	520	529	44	316	331
Grp Sat Flow(s),veh/h/ln	1640	0	0	1552	0	0	812	1857	1886	557	1789	1871
Q Serve(g_s), s	0.0	0.0	0.0	5.2	0.0	0.0	1.3	9.4	9.4	1.0	0.0	0.0
Cycle Q Clear(g_c), s	3.5	0.0	0.0	8.7	0.0	0.0	1.3	9.4	9.4	10.4	0.0	0.0
Prop In Lane	0.06		0.85	0.67		0.24	1.00		0.21	1.00		0.04
Lane Grp Cap(c), veh/h	175	0	0	184	0	0	717	1513	1537	469	1458	1525
V/C Ratio(X)	0.27	0.00	0.00	0.59	0.00	0.00	0.06	0.34	0.34	0.09	0.22	0.22
Avail Cap(c_a), veh/h	468	0	0	450	0	0	717	1513	1537	469	1458	1525
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.6	0.0	0.0	57.7	0.0	0.0	2.4	3.1	3.1	0.5	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.0	0.0	3.0	0.0	0.0	0.0	0.1	0.1	0.4	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	0.0	4.0	0.0	0.0	0.3	4.8	4.9	0.2	0.1	0.1
LnGrp Delay(d),s/veh	56.4	0.0	0.0	60.7	0.0	0.0	2.4	3.2	3.2	0.9	0.3	0.3
LnGrp LOS	E			E			A	A	A	A	A	A
Approach Vol, veh/h		47			109			1092			691	
Approach Delay, s/veh		56.4			60.7			3.2			0.4	
Approach LOS		E			E			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		111.9		18.1		111.9		18.1
Change Period (Y+Rc), s		6.0		6.5		6.0		6.5
Max Green Setting (Gmax), s		82.0		35.5		82.0		35.5
Max Q Clear Time (g_c+I1), s		12.4		10.7		11.4		5.5
Green Ext Time (p_c), s		18.8		0.9		18.9		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	6.7
HCM 2010 LOS	A

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	3	63	49	43	47	41	3	17	113	63	614	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	13	13	13
Total Lost time (s)			6.2			6.2				6.3	6.0	6.0
Lane Util. Factor			1.00			1.00				1.00	1.00	1.00
Frt			0.96			0.98				1.00	1.00	0.85
Flt Protected			0.98			0.98				0.95	1.00	1.00
Satd. Flow (prot)			1757			1772				1829	1925	1636
Flt Permitted			0.78			0.71				0.32	1.00	1.00
Satd. Flow (perm)			1407			1283				619	1925	1636
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	3	67	52	46	50	44	3	18	120	67	653	83
RTOR Reduction (vph)	0	0	12	0	0	6	0	0	0	0	0	37
Lane Group Flow (vph)	0	0	156	0	0	109	0	0	0	187	653	46
Heavy Vehicles (%)	2%	2%	2%	2%	2%	3%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	Perm	NA		custom	NA			pm+pt	pm+pt	NA	Perm
Protected Phases			8						1	1	6	
Permitted Phases	8	8			4	4			6	6		6
Actuated Green, G (s)			19.0			19.0				84.1	72.8	72.8
Effective Green, g (s)			19.0			19.0				84.1	72.8	72.8
Actuated g/C Ratio			0.15			0.15				0.65	0.56	0.56
Clearance Time (s)			6.2			6.2				6.3	6.0	6.0
Vehicle Extension (s)			3.0			3.0				3.0	3.0	3.0
Lane Grp Cap (vph)			205			187				505	1078	916
v/s Ratio Prot										c0.03	c0.34	
v/s Ratio Perm			c0.11			0.08				0.21		0.03
v/c Ratio			0.76			0.58				0.37	0.61	0.05
Uniform Delay, d1			53.3			51.8				11.8	19.0	13.0
Progression Factor			1.00			1.00				0.88	1.03	7.00
Incremental Delay, d2			15.3			4.6				0.4	2.4	0.1
Delay (s)			68.6			56.4				10.8	21.9	90.7
Level of Service			E			E				B	C	F
Approach Delay (s)			68.6			56.4					25.9	
Approach LOS			E			E					C	

Intersection Summary			
HCM 2000 Control Delay	32.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	24.3
Intersection Capacity Utilization	71.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL	SBT	SBR	SBR2	SEL	SER	SER2
Lane Configurations							
Volume (vph)	45	432	38	0	5	44	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12
Total Lost time (s)	6.0	6.0			5.8		5.8
Lane Util. Factor	1.00	1.00			1.00		1.00
Frt	1.00	0.99			0.86		0.85
Flt Protected	0.95	1.00			1.00		1.00
Satd. Flow (prot)	1770	1806			1602		1583
Flt Permitted	0.29	1.00			1.00		1.00
Satd. Flow (perm)	536	1806			1602		1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	48	460	40	0	5	47	3
RTOR Reduction (vph)	0	0	0	0	0	0	3
Lane Group Flow (vph)	48	500	0	0	52	0	0
Heavy Vehicles (%)	2%	4%	3%	2%	2%	2%	2%
Turn Type	pm+pt	NA		Prot	Perm		Perm
Protected Phases	5	2		2			
Permitted Phases	2			Free	7		7
Actuated Green, G (s)	72.8	67.0			8.4		8.4
Effective Green, g (s)	72.8	67.0			8.4		8.4
Actuated g/C Ratio	0.56	0.52			0.06		0.06
Clearance Time (s)	6.0	6.0			5.8		5.8
Vehicle Extension (s)	3.0	3.0			3.0		3.0
Lane Grp Cap (vph)	355	930			103		102
v/s Ratio Prot	0.01	0.28					
v/s Ratio Perm	0.07				c0.03		0.00
v/c Ratio	0.14	0.54			0.50		0.00
Uniform Delay, d1	14.7	21.1			58.8		56.9
Progression Factor	1.34	1.15			1.01		1.00
Incremental Delay, d2	0.2	2.2			3.9		0.0
Delay (s)	19.8	26.4			63.3		56.9
Level of Service	B	C			E		E
Approach Delay (s)		25.8			62.9		
Approach LOS		C			E		

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Volume (veh/h)	150	68	494	261	92	395		
Number	7	14	6	16	5	2		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1827		
Adj Flow Rate, veh/h	161	73	531	281	99	425		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93		
Percent Heavy Veh, %	2	2	2	2	2	4		
Cap, veh/h	194	173	1332	1132	524	1459		
Arrive On Green	0.11	0.11	0.71	0.71	0.04	0.80		
Sat Flow, veh/h	1774	1583	1863	1583	1774	1827		
Grp Volume(v), veh/h	161	73	531	281	99	425		
Grp Sat Flow(s),veh/h/ln	1774	1583	1863	1583	1774	1827		
Q Serve(g_s), s	11.6	5.6	14.8	8.0	1.8	7.9		
Cycle Q Clear(g_c), s	11.6	5.6	14.8	8.0	1.8	7.9		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	194	173	1332	1132	524	1459		
V/C Ratio(X)	0.83	0.42	0.40	0.25	0.19	0.29		
Avail Cap(c_a), veh/h	464	414	1332	1132	622	1459		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	56.7	54.1	7.4	6.4	5.0	3.4		
Incr Delay (d2), s/veh	8.8	1.6	0.2	0.1	0.2	0.5		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	6.2	5.0	7.6	3.5	0.9	4.1		
LnGrp Delay(d),s/veh	65.6	55.7	7.6	6.5	5.2	3.9		
LnGrp LOS	E	E	A	A	A	A		
Approach Vol, veh/h	234		812			524		
Approach Delay, s/veh	62.5		7.2			4.2		
Approach LOS	E		A			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		109.8		20.2	10.9	98.9		
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0		
Max Green Setting (Gmax), s		84.0		34.0	12.0	66.0		
Max Q Clear Time (g_c+I1), s		9.9		13.6	3.8	16.8		
Green Ext Time (p_c), s		8.9		0.6	0.1	8.8		
Intersection Summary								
HCM 2010 Ctrl Delay			14.4					
HCM 2010 LOS			B					

Intersection	
Int Delay, s/veh	0.2

Movement	NBL	NBT	SBT	SBR	NEL	NER
Vol, veh/h	1	511	391	7	12	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	Free	-	Stop
Storage Length	120	-	-	-	0	200
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	3	5	2	2	2
Mvmt Flow	1	555	425	8	13	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	425	0	-	0	983	425
Stage 1	-	-	-	-	425	-
Stage 2	-	-	-	-	558	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1134	-	-	0	276	629
Stage 1	-	-	-	0	659	-
Stage 2	-	-	-	0	573	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1134	-	-	-	276	629
Mov Cap-2 Maneuver	-	-	-	-	404	-
Stage 1	-	-	-	-	659	-
Stage 2	-	-	-	-	572	-

Approach	NB	SB	NE
HCM Control Delay, s	0	0	14.2
HCM LOS			B

Minor Lane/Major Mvmt	NELn1	NELn2	NBL	NBT	SBT
Capacity (veh/h)	404	-	1134	-	-
HCM Lane V/C Ratio	0.032	-	0.001	-	-
HCM Control Delay (s)	14.2	0	8.2	-	-
HCM Lane LOS	B	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0	-	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	4	84	78	445	314	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	75	0	70	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	3	3	5	33
Mvmt Flow	4	91	85	484	341	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	996	343	345	0	-	0
Stage 1	343	-	-	-	-	-
Stage 2	653	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.13	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.227	-	-	-
Pot Cap-1 Maneuver	271	700	1208	-	-	-
Stage 1	719	-	-	-	-	-
Stage 2	518	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	252	700	1208	-	-	-
Mov Cap-2 Maneuver	371	-	-	-	-	-
Stage 1	719	-	-	-	-	-
Stage 2	482	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.1	1.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1208	-	371	700	-	-
HCM Lane V/C Ratio	0.07	-	0.012	0.13	-	-
HCM Control Delay (s)	8.2	-	14.8	10.9	-	-
HCM Lane LOS	A	-	B	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0	0.4	-	-

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	47	109	43	1049	44	647
v/c Ratio	0.22	0.66	0.07	0.36	0.11	0.23
Control Delay	20.0	66.6	4.1	4.6	3.7	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.0	66.6	4.1	4.6	3.7	4.1
Queue Length 50th (ft)	5	80	7	110	17	147
Queue Length 95th (ft)	41	136	20	176	m5	29
Internal Link Dist (ft)	307	306		4095		528
Turn Bay Length (ft)			200		220	
Base Capacity (vph)	471	389	618	2880	392	2808
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.28	0.07	0.36	0.11	0.23

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
6: SR 19 & W Ocala St/Bulldog Ln & Umatilla Blvd

PM Peak

Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SEL	SER2
Lane Group Flow (vph)	168	115	187	653	83	48	500	52	3
v/c Ratio	0.77	0.60	0.37	0.59	0.08	0.13	0.53	0.44	0.01
Control Delay	71.1	60.2	11.9	25.5	6.7	16.1	30.2	69.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.1	60.2	11.9	25.5	6.7	16.1	30.2	69.0	0.0
Queue Length 50th (ft)	127	86	67	399	6	17	272	43	0
Queue Length 95th (ft)	195	142	140	695	38	41	426	84	m0
Internal Link Dist (ft)	310	363		598			300	574	
Turn Bay Length (ft)					125	100			350
Base Capacity (vph)	375	338	538	1112	998	403	946	129	245
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.34	0.35	0.59	0.08	0.12	0.53	0.40	0.01

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	161	73	531	281	99	425
v/c Ratio	0.69	0.28	0.42	0.25	0.16	0.30
Control Delay	68.5	16.1	16.0	6.5	4.7	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.5	16.1	16.0	6.5	4.7	5.4
Queue Length 50th (ft)	131	6	367	118	17	89
Queue Length 95th (ft)	198	49	515	110	38	159
Internal Link Dist (ft)	494		951			1192
Turn Bay Length (ft)		70		150	140	
Base Capacity (vph)	462	462	1253	1133	644	1417
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.16	0.42	0.25	0.15	0.30

Intersection Summary