Randall Blvd and Oil Well Rd
CORRIDOR STUDY

Draft Corridor Alternatives Analysis Report

Prepared for

Collier County

May 2019

D R A F T

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for the

Randall Boulevard and Oil Well Road Corridor Study

Prepared for

Collier County

April 25, 2019, Revised May 3, 2019

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Acronyms and Abbreviations

AADT	Annual average daily traffic
AUIR	Annual Update and Inventory Report
CR	County Road
F.A.C.	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FIRES	Florida's Integrated Report Exchange System
FLUCCS	Florida Land Use, Cover and Forms Classification System
FMSF	Florida Master Site File
FWC	Florida Fish Wildlife Conservation Commission
HOV	High Occupancy Vehicle
LOS	level of service
LRTP	Long Range Transportation Plan
MPO	Metropolitan Planning Organization
ROW	right of way
SFWMD	South Florida Water Management District
T&E	Threatened and Endangered
TSM&O	Transportation System Management and Operations
UMAM	Uniform Mitigation Assessment Method
USFWS	U.S. Fish and Wildlife Service
USACE	U.S. Army Corps of Engineers
V/C	Volume capacity ratio
vpd	vehicle per day

SECTION 1

Project Introduction

1.1 Project Overview

Collier County initiated the Randall Boulevard and Oil Well Road Corridor Study (Study) to evaluate potential roadway network improvements near Randall Boulevard and Oil Well Road in Collier County, Florida. The study is located in northern Collier County, east of I-75. **Figure 1-1** presents the Regional Location Map.

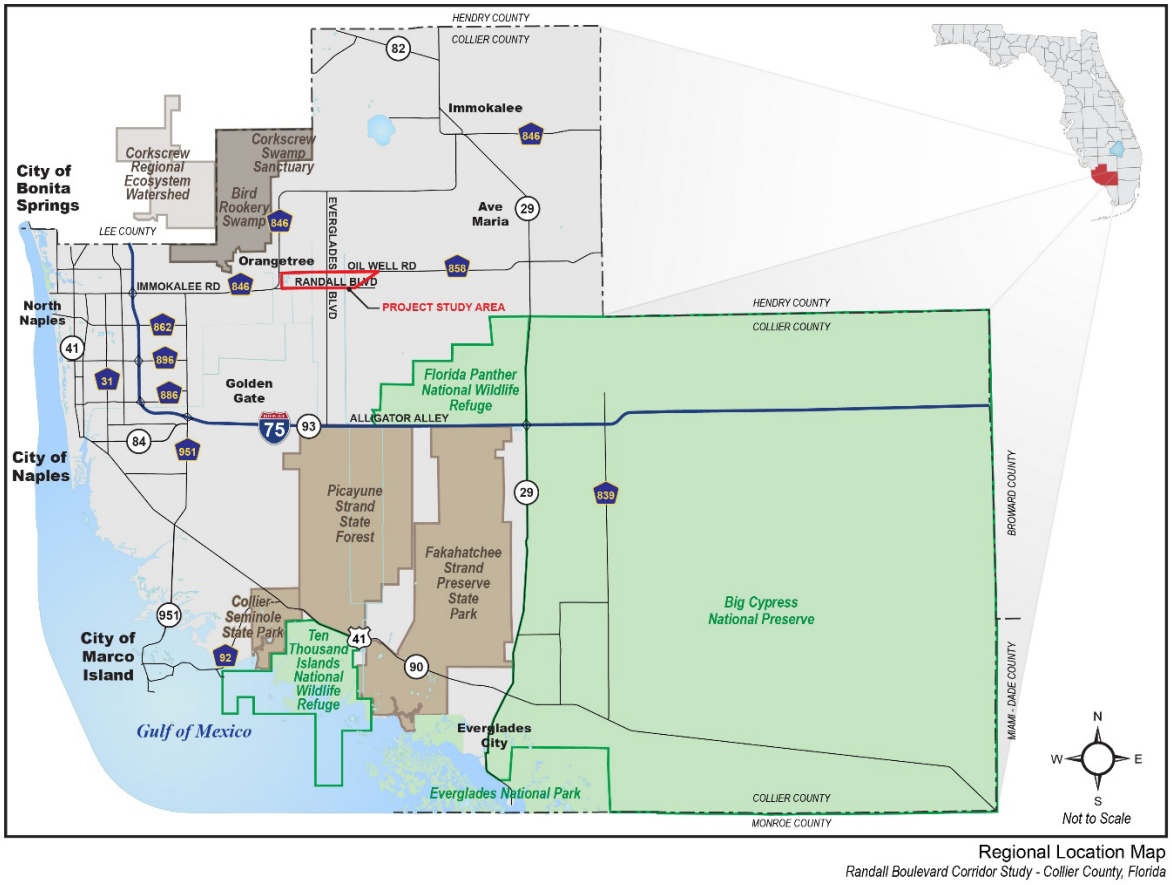


Figure 1-1. Regional Location Map

The Study involves the evaluation of potential improvements to existing Randall Boulevard, Oil Well Road, DeSoto Boulevard and Everglades Boulevard, as well as potential corridors on a new alignment. **Figure 1-2** presents the Project Location Map. The study process involves the development of alternatives, a comparative evaluation of the social and environmental effects and the overall cost of each option.

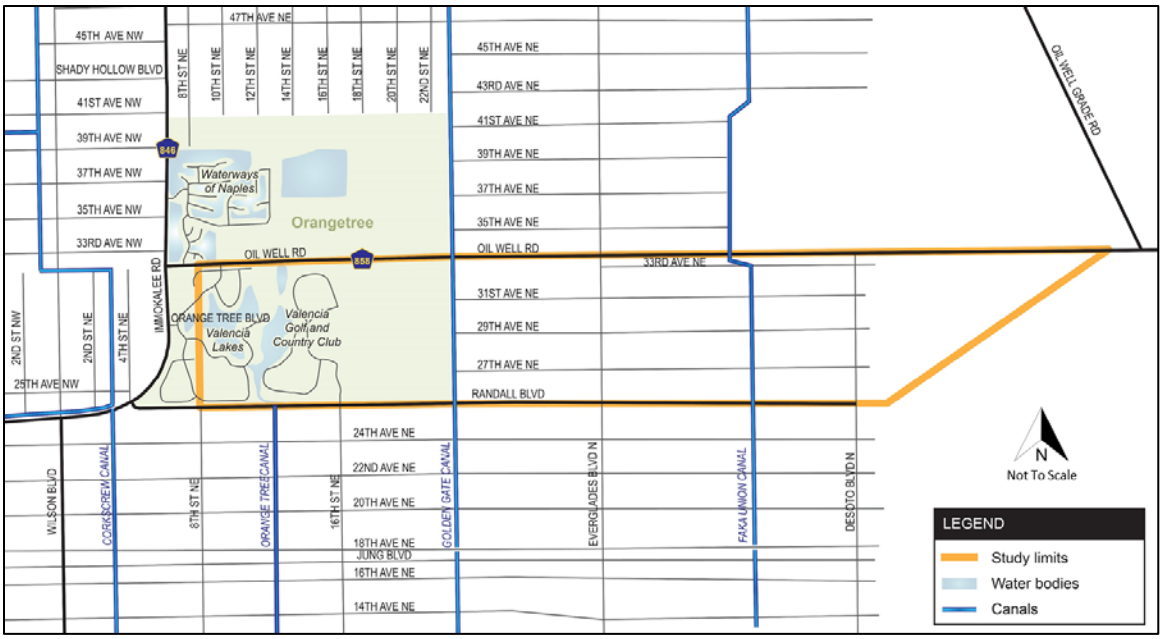


Figure 1-2. Project Location Map

1.2 Purpose of Corridor Study

The Collier Metropolitan Planning Organization (MPO) 2040 Long Range Transportation Plan (LRTP) approved in December 2015, identified the following facilities with a high degree of future congestion:

- Randall Boulevard east of Immokalee Road (CR 846)
- Oil Well Road between Everglades Boulevard and Oil Well Grade Road

Appendix A presents the Forecasted 2040 Highway Congestion map from the LRTP. During the development of the Needs Plan for the LRTP, this Study was identified to better define the most appropriate multi-lane improvements and/or new roadway within the study area. Two potential alignments were identified in the LRTP:

- *Widen Randall Boulevard to 6-lanes along the existing corridor from Immokalee Road to DeSoto Boulevard and then extends a new segment in a north-easterly direction to interconnect to Oil Well Road at or near Oil Well Grade Road intersection. Oil Well Road from Everglades Boulevard to Oil Well Grade Road would then be widened to 4-lanes to complete the network improvements.*
- *Widen Randall Boulevard to 6-lanes along the existing alignment from Immokalee Road for a distance of approximately two miles, and then establish a reverse curve alignment north to connect to Oil Well Road at a point west of Everglades Boulevard. From that point eastward, Everglades Boulevard would be 6-lanes to Oil Well Grade Road. In the future it would be necessary to widen Randall Boulevard to 4-lanes either to Everglades Boulevard or DeSoto Boulevard.*

This Study considers traffic operation improvements such as roundabouts, grade separated overpasses, frontage roadways, access management, and new traffic signal locations for the recommended alternative.

1.3 Project Needs

The purpose of the project is to develop an east-west corridor that will reduce congestion and improve traffic flow in the study area and accommodate future travel demand through 2045. Without the

proposed improvements, Oil Well Road and Randall Boulevard are projected to be highly congested before the year 2045.

Oil Well Road and Randall Boulevard are parallel east-west routes. They serve as a primary connection to Immokalee Road (CR 846) for the existing and future developments of Orangetree, northern Golden Gate Estates, rural residential areas, and future planned development. Immokalee Road (CR 846) is categorized as a Freight Distribution Route and a High Crash Corridor in the Collier 2040 LRTP[a] and is also a designated emergency evacuation route. The roadway is critical in facilitating movement of local and regional traffic (including truck traffic) in northern Collier County. Additionally, Immokalee Road (CR 846) is one of three east-west connections to I-75 in Collier County and is the only east-west connection from I-75 in northern Collier County that connects to northeastern Collier County.

The needs of the project are to:

- **Reduce congestion** for future traffic needs due to population and employment growth
- **Enhance regional mobility and access** between I-75 and eastern Collier County, as well as improve freight (truck), transit, bicycle and pedestrian access
- **Improve safety** by reducing vehicle, bicycle and pedestrian user conflicts
- **Improve emergency evacuation** by increasing the number of residents from eastern Collier County that can be evacuated **and access times** for emergency responders

1.3.1 Collier MPO 2040 LRTP Amendment (May 2018)

The Collier MPO LRTP was amended May 25, 2018 to consider transportation needs resulting from a reallocation of population and employment growth within the limits of the proposed Rural Lands West Stewardship Receiving Area. The development proposes approximately 4,000 acres of residential and nonresidential mixed-use development with a town center. **Figure 1-3** is an excerpt from the amended LRTP showing the Rural Lands West Stewardship Receiving Area in eastern Collier County.

The Rural Lands Stewardship Area Overlay (shown in **Appendix A**) is approximately 185,000 acres surrounding the Immokalee area and includes the proposed Rural Lands West development[b]. In 2002, Collier County developed Stewardship Receiving Areas and Stewardship Sending Areas within the Overlay to encourage development on lands that are less sensitive and better suited for development. The amended LRTP further states that through the evaluation of the transportation needs using the Florida Department of Transportation (FDOT) traffic model, District 1 Regional Planning Model, a list of additional transportation needs was identified in 2018. Based on the prioritization of all projects in the 2040 needs assessment (listed in the amended LRTP Appendix), a revised 2040 Cost Feasible Plan was developed that included the widening of Oil Well Road (Priority Number 25) and Randall Boulevard (Priority Numbers 16, 65, and 74), as well as extending Randall Boulevard (Priority Number 75) within the study area. The revised 2040 Needs Plan was developed to include the Big Cypress Parkway (new 4-lane). The Cost Feasible Plan from the amended Collier MPO 2040 LRTP is presented in **Appendix A**.

[a] Collier 2040 Long Range Transportation Plan Final Report. December 2015. Figure 4-5 & 4-6. Accessed on Dec. 13, 2018 from http://www.colliermpo.org/modules/showdocument.aspx?documentid=7725

[b] https://www.colliercountyfl.gov/your-government/divisions-s-z/zoning-division/community-planning-section/rural-lands-stewardship-area-restudy

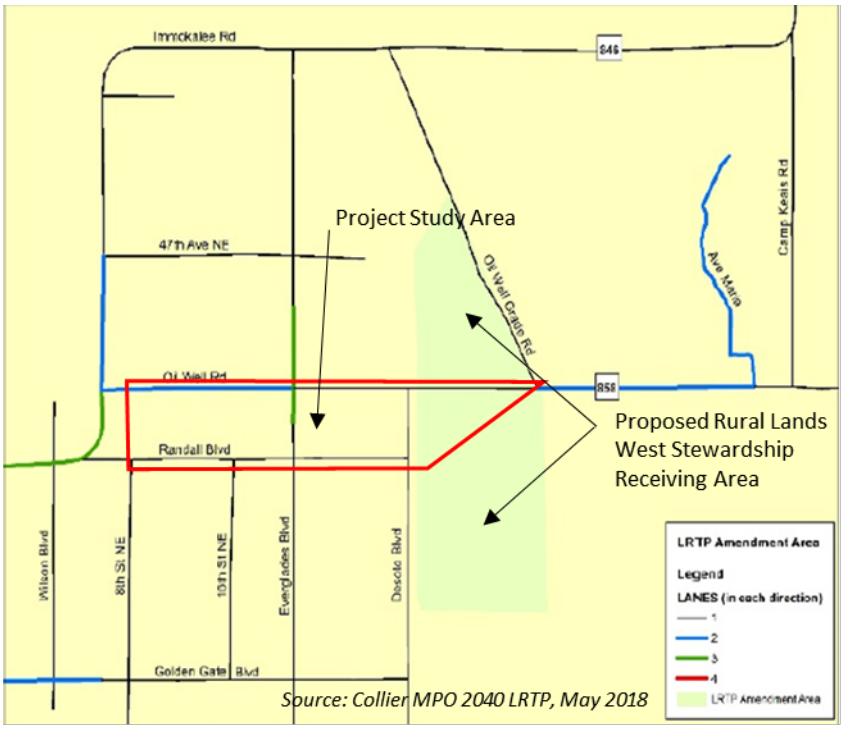


Figure 1-3. Rural Lands West Location Map

1.3.2 Growth and Existing Development

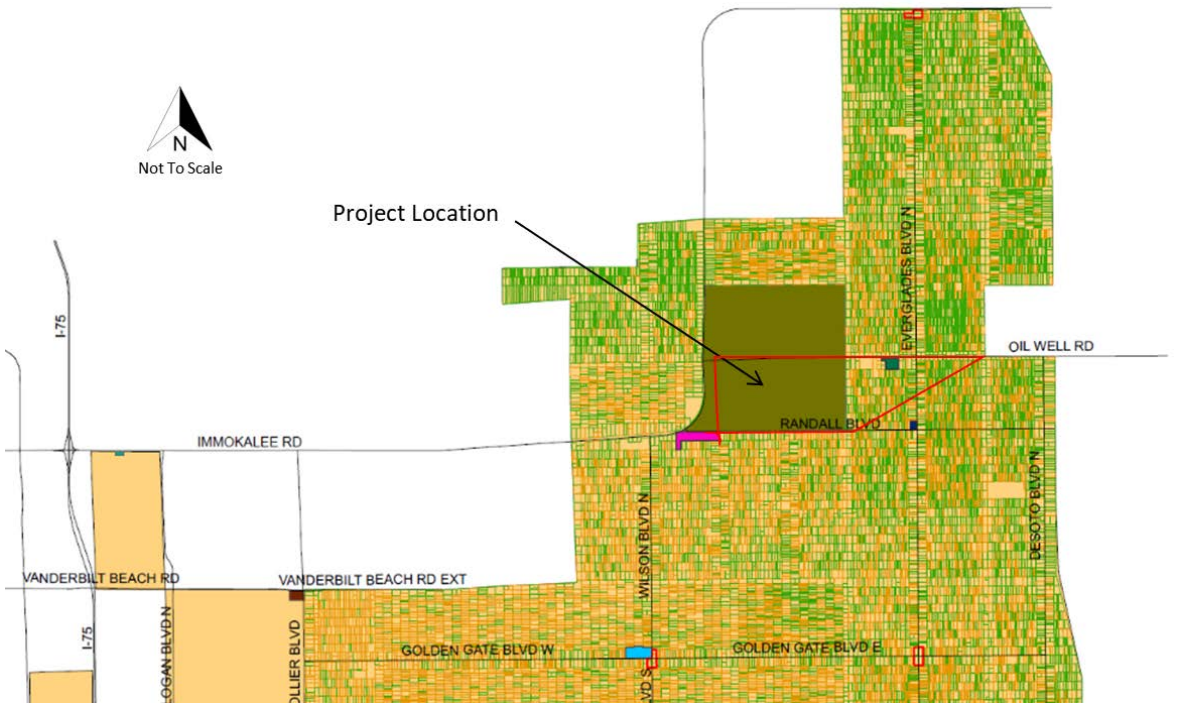
The need for additional operational capacity in the study area is based upon increased congestion and travel demand expected from population and employment growth within the project area and Collier County. Based on socioeconomic data[c] for Collier County:

- Population is projected to grow by 57% from approximately 316,000 in 2010 to 497,000 in 2040. (annual growth rate of 1.68% based on growth between 2010 to 2017).
- Employment is projected to grow by 41% from 170,000 in 2010 to 241,000 in 2040 (1.4% annual growth rate).

This growth may be attributed to the number of active and proposed Planned Unit Developments present in eastern Collier County. Additionally, there are a significant number of rural, vacant residential properties within and adjacent to the study area. Collier County's Golden Gate Area Master Plan Restudy White Paper[d] noted that of the 66,000 acres that make up Golden Gate Estates, over 95 percent is for residential use. The paper further noted that as of 2016, approximately half of the parcels have been developed. **Figure 1-4** is an excerpt from the paper which presents the distribution of developed residential areas within northern Golden Gate Rural Estates. The areas in green indicate undeveloped residential parcels, and that when developed/built-out, would further increase area congestion.

[c] Sources include: Collier Metropolitan Planning Organization, 2018. Bureau of Economic and Business Research, 2013. U.S. Census Bureau Quick Facts, 2018.

[d] Collier County Golden Gate Area Master Plan Restudy White Paper, Prepare by the Grown Management Department, Community Planning Section Staff, December 2017.



Source: Collier County Golden Gate Area Master Plan Restudy White Paper, 2017

Golden Gate Rural Estates Parcels with Structure

Golden Gate Rural Estates Parcels without Structure

Figure 1-4. Northern Golden Gate Rural Estates Parcels

1.3.3 Traffic Demand

Collier County's 2018 Annual Update and Inventory Report (AUIR) on Public Facilities reported existing and projected deficiencies for county roadways.

Randall Boulevard from Immokalee Road to Everglades Boulevard was reported to operate at LOS E, with a LOS target of D, and experienced a five (5) to 10 percent decrease in Peak Hour Directional Volume from 2017. This was a slight improvement in LOS from the previous 2017 AUIR that had Randall Boulevard at LOS F, though it remained below the LOS target and is projected to be LOS F by 2021.

Randall Boulevard from Everglades Boulevard to DeSoto Boulevard was reported to operate at LOS C with a LOS target of D.

Oil Well Road from Immokalee Road to Everglades Boulevard was reported to operate at LOS C, and experienced a greater than 20 percent increase in Peak Hour Directional Volume from 2017.

Everglades Boulevard and DeSoto also experienced an increase in Peak Hour Directional Volume from 2017, of 10 to 20 percent, but were found to be operating at a LOS C and B, respectively in 2018. A map from the AUIR showing the changes in Peak Hour Direction Volume from 2017 is presented in **Appendix B**. **Figure 1-5** presents the AUIR 2018 Peak Hour Direction Volume, Direction, and LOS for the existing study area network. The predominant direction for the study area in the peak hour is east, towards I-75. It is noted that Randall Boulevard from Immokalee Road to Everglades Boulevard is expected to be deficient by 2021.

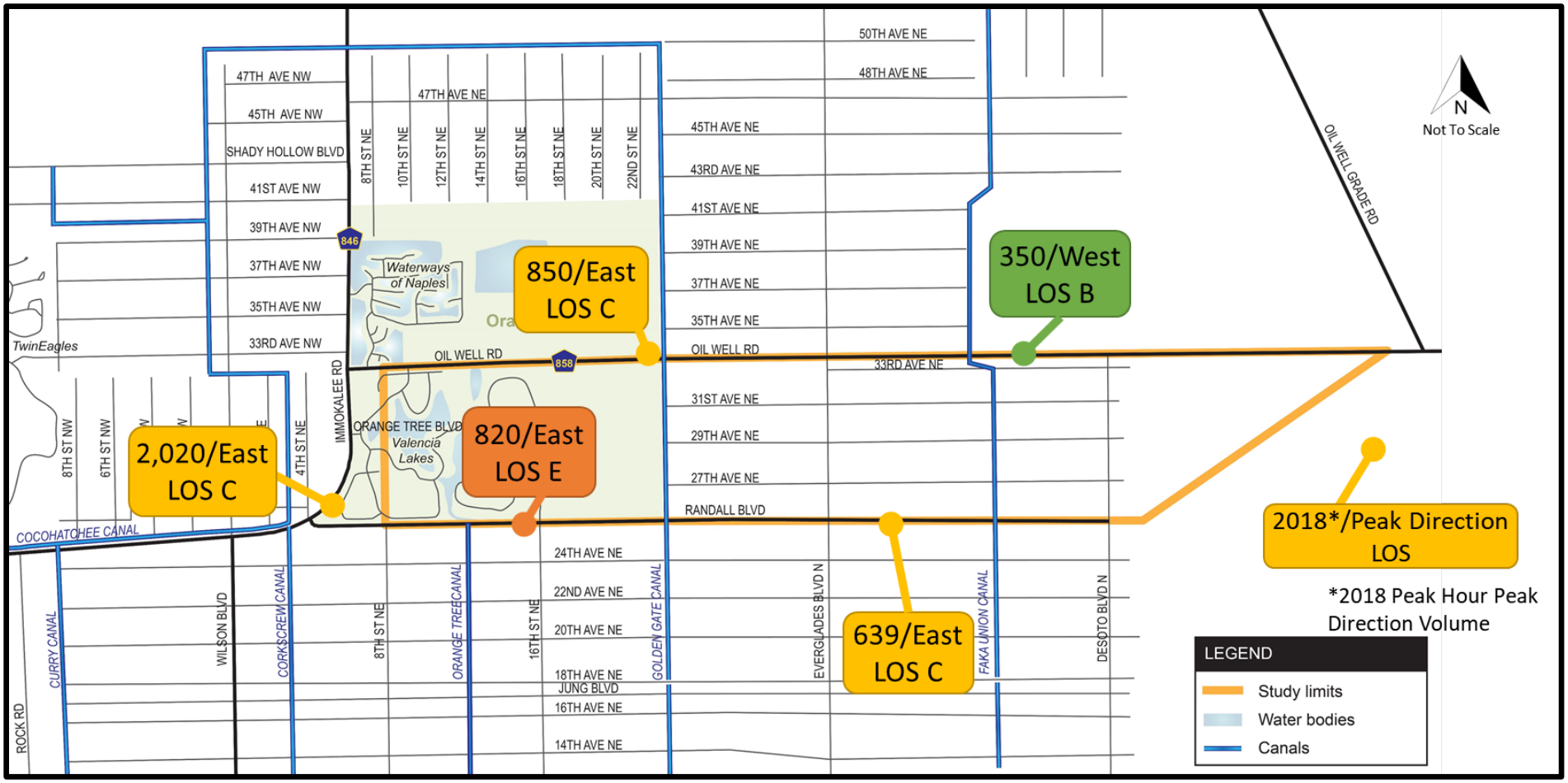


Figure 1-5. Study Area Existing Level of Service

1.3.4 Mobility

Immokalee Road is categorized as a Freight Distribution Route and a High Crash Corridor in the Collier 2040 Long Range Transportation Plan.[e] The western termini of Oil Well Road and Randall Boulevard is Immokalee Road. The roadway is critical in facilitating movement of local and regional traffic including truck traffic in northern Collier County as it connects to I-75, Oil Well Road, and SR 29 (other designated regional transportation network facilities).

1.3.4.1 Network Mobility

Mobility in northern Collier County is constrained by conservation lands in the northeastern and southeastern parts of the County (see Figure 1-1, Regional Location Map). The area is also constrained by a canal system (South Florida Water Management District [SFWMD] Golden Gate Canal Basin) created in Collier County during the 1960s to drain the lands for residential development. The residential lots are 1 to 5 acres in size and are connected by a coarse grid of roads with few connecting cross streets. The canal system traverses the residential grid, leaving roadways to dead end at the canals, reducing east-west mobility. **Figure 1-6** presents the road network in the study area; to emphasize the lack of network connectivity in the area, the canals are not shown. Figure 1-6 also shows currently programmed projects, the Collier MPO Amended 2040 Cost Feasible projects, as well as the Collier MPO Amended 2040 Needs projects in the study area:

- New and future bridge canal crossings (programmed)
- Widening of Randall Boulevard from Immokalee Road to 8th Street NE (cost feasible)
- Proposed improvements at the intersection of Immokalee Road and Randall Boulevard (cost feasible)
- Extension of Vanderbilt Beach Road to 16th Street NE (cost feasible)
- Future Big Cypress Parkway - by others (needs)
- Extension of Vanderbilt Beach Road from 16th Street NE to Big Cypress Parkway (needs)

While these projects improve access and mobility to and from the study area, they do not improve mobility within the study corridor. The proposed project is anticipated to improve east-west mobility in the corridor as well as regional mobility through its connection to the future improvements.

[e] Collier Metropolitan Planning Organization. 2015. Collier 2040 Long Range Transportation Plan Final Report. Figure 4-5 and 4-6. Accessed on December 13, 2018 from http://www.colliermpo.org/modules/showdocument.aspx?documentid=7725

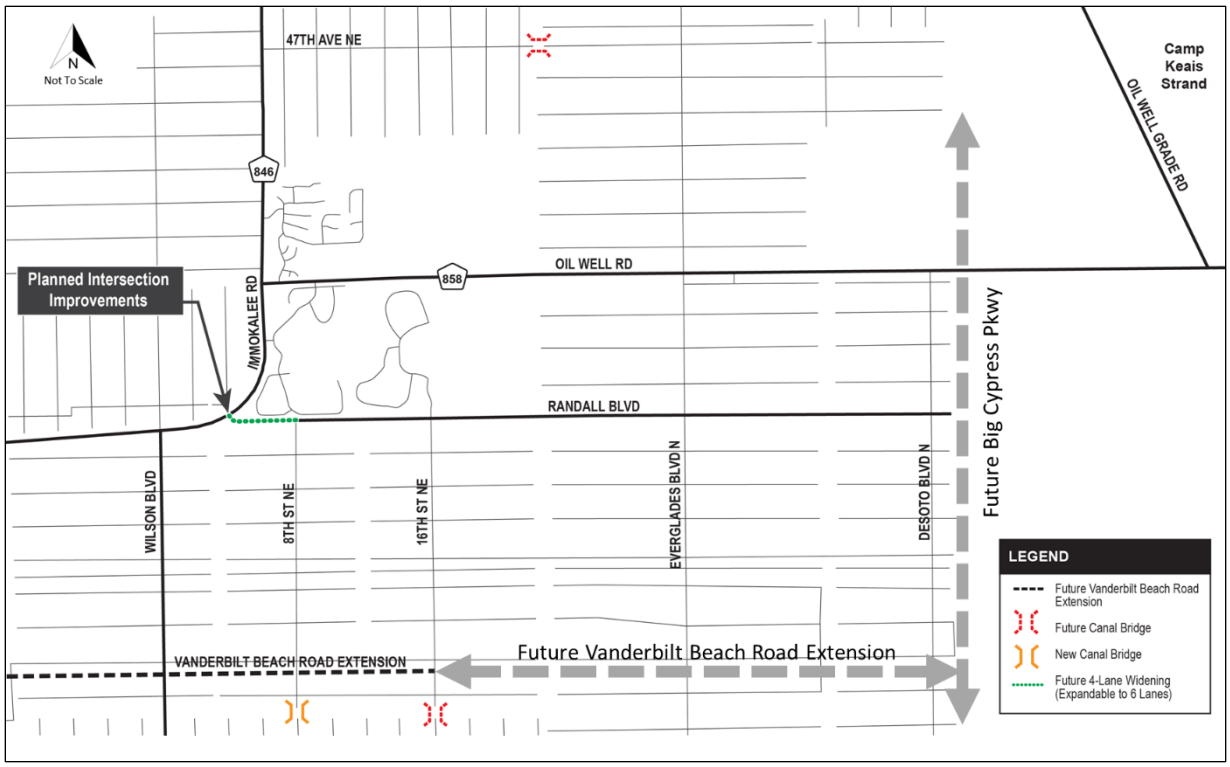


Figure 1-6. Study Area Road Network (without canals)

1.3.4.2 Freight Mobility

The Collier MPO 2040 LRTP defines the entire Immokalee Road (CR 846) corridor as a Freight Distribution Route. The Freight Activity Center and Freight Network map from the LRTP is presented in **Appendix A**. Immokalee Road (CR 846) connects two Primary Freight Activity Centers; the Old US 41 Industrial area and the Immokalee Regional Airport. The LRTP notes that the Old US 41 Industrial area has limited rail service but should be recognized as the only site in Collier County with the potential for intermodal rail activities where freight is transferred between modes (e.g., truck-to/from rail). The Immokalee Regional Airport area is primarily devoted to agricultural functions, but a 60-acre portion is designated as a Foreign Trade Zone. With convenient access to highway facilities recognized by the State as part of the Strategic Intermodal System, the Immokalee Regional Airport is well suited for intermodal air-cargo/truck activities.

The proposed improvements are anticipated to:

- enhance east-west access and regional mobility between I-75 and areas slated for development in eastern Collier County;
- enhance freight mobility and access to Immokalee Road as it is classified as a regional freight connector in the Collier MPO 2040 LRTP, linking to other recognized freight corridors (I-75, Oil Well Road, and SR 29).

1.3.4.1 Travel Time Reliability

The project improvements will provide enhanced mobility of people and goods in the study area.

Review of the United Census Bureau, 2013-2017 American Community Survey 5-Year Estimates, Travel Time to Work, indicates that the study area block groups have a significantly greater travel time to work than the average of the County. Travel time to work refers to the total number of minutes that it usually took the person to get from home to work each day during the reference week. The elapsed time

includes time spent waiting for public transportation, picking up passengers in carpools, and time spent in other activities related to getting to work.

Table 1-1 presents the travel times to work for each block group in the study area, as well as Collier County. FDOT's Commuting Trends in Florida, notes that based on the 2016 American Community Survey data, the average one-way commute in Florida was 27.4 minutes, which is 0.8 minutes longer than the national average.[f] Considering that 25 to 29 minutes is the average travel time to work for the State of Florida and the nation, the percentages of travel times greater than 30 minutes are summed at the bottom of Table 1-1 to determine what percentage of the block groups are above average. Review of this data indicates that 69% to 76% of the working population near the study area (Block Groups 1, 2, and 3) spend more than 30 minutes commuting to work, as compared to 33% of the working population of Collier County as a whole. While the census data does not reflect destinations, it is assumed that the majority of the commuters near the study area are heading west towards Naples and major employment centers of the County.

Table 1-1. Travel Time to Work

Travel Time (minutes)	Block Group 1	Block Group 2	Block Group 3	Collier County
< 5	3%	1%	1%	2%
5 to 9	3%	3%	0%	10%
10 to 14	6%	4%	5%	14%
15 to 19	1%	4%	1%	17%
20 to 24	7%	8%	13%	16%
25 to 29	4%	11%	4%	7%
30 to 34	20%	33%	53%	15%
35 to 39	12%	8%	8%	3%
40 to 44	8%	19%	0%	4%
45 to 59	26%	7%	12%	6%
60 to 89	5%	2%	1%	3%
≥ 90	3%	0%	2%	2%
Total % Travel Times > 30 minutes	74%	69%	76%	33%

1.3.5 Safety

1.3.5.1 Emergency Facilities

There are two County emergency facilities near the project study area: Collier County Fire Station 10 and the Collier County Sherriff's Office/Emergency Management Services facility. The fire station is just west of the study area, and the EMS facility and sheriff's office is located northwest of the along Immokalee Road and 39th Avenue NE. The proposed project will improve east-west mobility and connectivity within the corridor, thereby enhancing access and reducing travel time for emergency responders.

[f] Commuting Trends in Florida, A Special Report from FDOT Forecasting and Trends Office, February 2018.

1.3.5.2 User Conflicts and Crash History

Minimal pedestrian and bicycle traffic were observed in the field; however, facilities accommodating pedestrians, bicyclists, and transit users exist in the area and activity is anticipated to increase with planned development. Collier Area Transit has multiple bus stops in and adjacent to the study corridor along Immokalee Road and Oil Well Road. Most of the study area existing sidewalks and bike lanes lack continuity and have poor network connectivity resulting in circuitous routes that make walking or cycling undesirable. There are no bicycle lanes or sidewalks along Everglades Boulevard and DeSoto Boulevard.

Crash data within the study area was evaluated over a 5-year period (2013 through 2017) and found that 24 crashes resulted in injuries and one crash resulting in a fatality along Randall Boulevard from 8th Street NE to DeSoto Boulevard. There were 22 crashes resulting in injuries to 34 individuals along Oil Well Boulevard from Immokalee Road to DeSoto Boulevard. Crashes were concentrated in front of the high school, west of Everglades Boulevard and at Everglades Boulevard. No fatalities were reported along Oil Well Road during the evaluation period. The access management that the proposed improvements provide, will improve safety by limiting median openings to safe locations that reduce conflict points.

The proposed improvements are anticipated to improve pedestrian/bicycle/transit access and circulation by modifying/limiting opportunities for conflicts between motorists, pedestrians, bicyclists, and transit users by:

- adding sidewalks and buffered bicycle lanes to reduce conflict points and provide a quality experience that promotes walking, cycling, and transit use.
- adding turn-lanes along the proposed widened facilities (Randall Boulevard, Oil Well Road, Everglades Boulevard, etc.) in the corridor to reduce motorist conflict points.
- diverting traffic off of Oil Well Road south to Randall Boulevard to minimize traffic volumes in front of the high school.

1.3.6 Enhance Emergency Evacuation

Due to Collier County's proximity to the Gulf of Mexico, western Collier County is vulnerable to storm surge during tropical storms and hurricanes, therefore a sound network of hurricane-related emergency evacuation routes is critical. There is an increasing number of residents in northeastern Collier County that are in a relatively isolated area of Collier County and have a limited network for emergency evacuations. **Figure 1-7** presents Collier County's Evacuation Zones and Routes[g]. The project area is between Zones E and F, which are the County's least vulnerable zones. Zones E and F act as a refuge for evacuees in the more vulnerable zones.

[g] https://www.colliercountyfl.gov/your-government/divisions-a-e/emergency-management/why-evacuate/-fsiteid-1

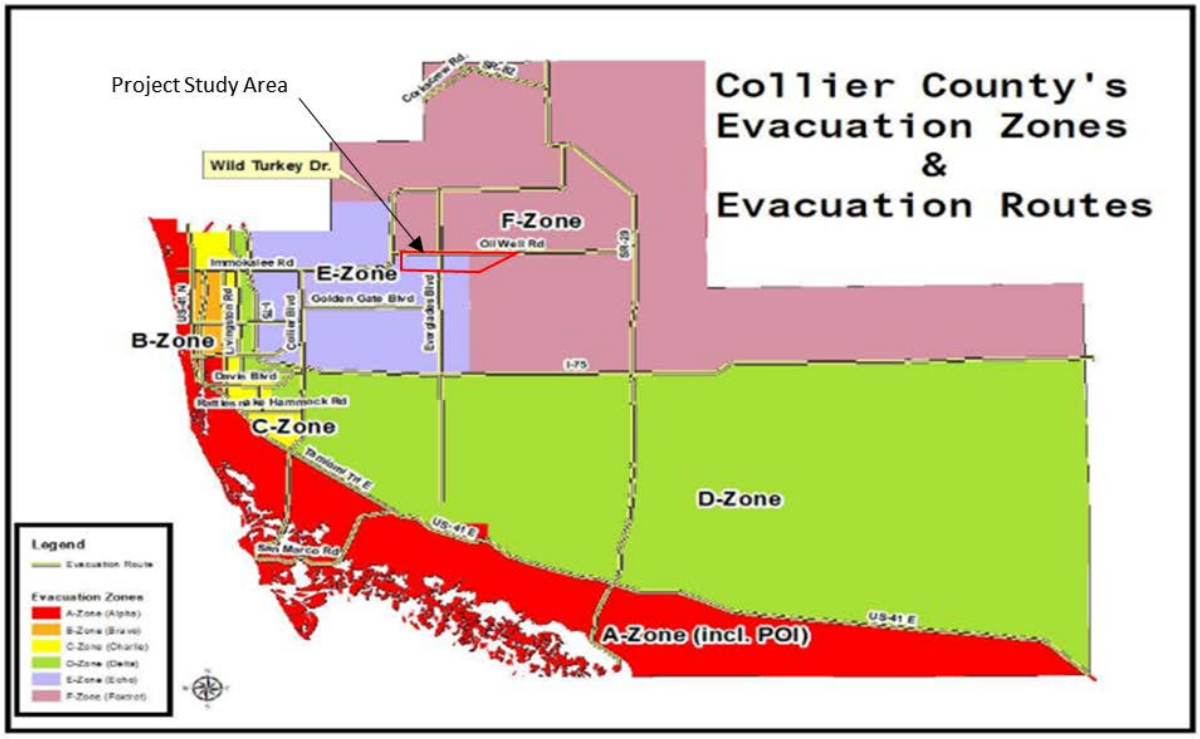


Figure 1-7. Collier County Evacuation Zones

1.4 Alternatives Development

Alternatives considered as part of this study include the No Build Alternative, four initial alternatives, and two viable alternatives. The initial alternatives were derived from the alternatives outlined in the Collier MPO 2040 LRTP (2015). These alternatives were refined based on a qualitative analysis that include cost and potential impacts, as well as public input. The initial alternatives were presented at the Initial Alternatives Public Meeting on May 24, 2018 for public review and comment. The viable alternatives were further refined based on a more detailed, quantitative analysis that include costs, potential impacts, and public input. The viable alternatives were presented at the Viable Alternatives Public Meeting on April 11, 2019 for public review and comment, including a Recommended Alternative. The No Build alternative serves as a baseline for comparison with the Recommended Alternative and remains an alternative throughout the study.

SECTION 2

Existing Conditions

Existing conditions are documented in this section in order to identify engineering and environmental conditions along the proposed corridors that may have a bearing on selection of a feasible corridor.

2.1 Existing Roadway and Traffic Conditions

This section summarizes the existing roads and associated traffic conditions within the study boundaries. The *Modeling Technical Memorandum* is presented in Appendix B.

2.1.1 Traffic Characteristics

Collier County's 2018 Annual Update and Inventory Report (AUIR) on Public Facilities reported existing and projected deficiencies for county roadways. Within the study area, Oil Well Road (from Immokalee Road to Everglades Boulevard) was reported to operate at LOS C, which has an acceptable LOS of D. From Everglades to DeSoto Boulevard, Oil Well Road was reported to operate at LOS B with an acceptable LOS of D.

Randall Boulevard (from Immokalee Road to Everglades Boulevard) was reported to operate at LOS E which has an acceptable LOS of D. This was a slight improvement in LOS from the previous report that had Randall Boulevard at LOS F, though it remained below the acceptable LOS and was projected to be LOS F by 2021. However, Randall Boulevard from Everglades Boulevard to DeSoto Boulevard was reported to operate at LOS C which has an acceptable LOS of D.

The existing traffic characteristics are presented in **Table 2-1**.

Table 2-1. Existing Traffic Characteristics

Road	From	To	Existing Posted Speed (mph)	Existing Number of Lanes	Peak Hour Directional Volume (vph)	Change in Directional Volume (2017 to 2018)	Acceptable LOS	2018 LOS	Year Expected Deficient
Oil Well Road	Immokalee Road	Everglades Boulevard	45	4	850	21.4%	D	C	
Oil Well Road	Everglades Boulevard	DeSoto Boulevard	45	2	850	25%	D	B	
Randall Boulevard	Immokalee Road	Everglades Boulevard	45	2	820	-5.7%	D	E	2021
Randall Boulevard	Everglades Boulevard	DeSoto Boulevard	45	2	639	2.02%	D	C	
Everglades Boulevard	Golden Gate Boulevard	Oil Well Road	45	2	310	10.7%	D	B	
DeSoto Boulevard	Golden Gate Boulevard	Oil Well Road	45	2	110	10	D	B	

Source: Collier County 2018 Annual Update and Inventory Report on Public Facilities; VPH=vehicles per hour

2.1.2 Roadway/Functional Classification

Within the project study limits, all roadways are owned and maintained by Collier County. **Table 2-2** lists the roadway classifications based on Collier County's current Growth Management Plan Transportation Element 3 (amended June 13, 2017). The County Growth Management Plan also notes (based on Transportation Element 7), that Everglades Boulevard is a Collier County Hurricane Evacuation Route. The Collier MPO 2040 LRTP notes that Oil Well Road between Immokalee Road and SR 29 is a Freight Distribution Route that connects to Oil Well Road (a Freight Distribution Route) to SR 29 (a Regional Freight Mobility Corridor).

Table 2-2. Existing Roadway Classifications

Road	Classification	Additional Characteristics
Oil Well Road	Minor Arterial	Freight Distribution Route
Randall Boulevard	Minor Collector	
Everglades Boulevard	Minor Collector	Hurricane Evacuation Route
DeSoto Boulevard	Local Road	

Source: Collier County Growth Management Plan Transportation Element 3 (amended June 13, 2017); Collier MPO 2040 LRTP

2.1.3 Typical Sections

2.1.3.1 Oil Well Road

Oil Well Road is a 4-lane divided minor arterial[h] from Immokalee Road to Everglades Boulevard and is constrained between Immokalee Road and the Golden Gate Main Canal. Based on record plans, the roadway right of way (ROW) varies between 100 and 200 feet, and includes 12-foot wide travel lanes, 4-foot bike lanes and 6-foot sidewalks adjacent to the outside travel lanes. The roadway includes a raised median that varies in width between 10 and 17 feet. Type F curb and gutter are adjacent to the inside and outside lanes. The existing posted speed limit is 45 mph. **Figure 2-1** presents the typical section 4-lane Oil Well Road Typical Section.

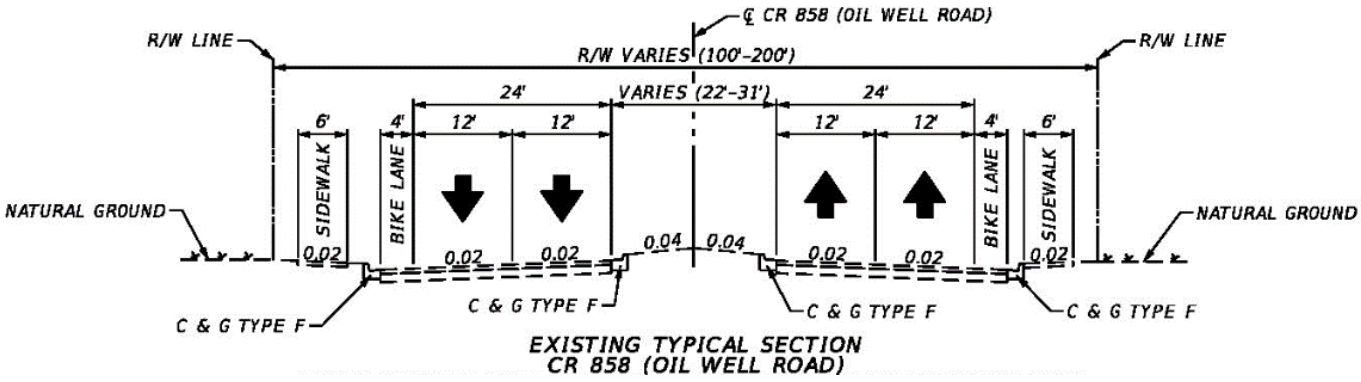
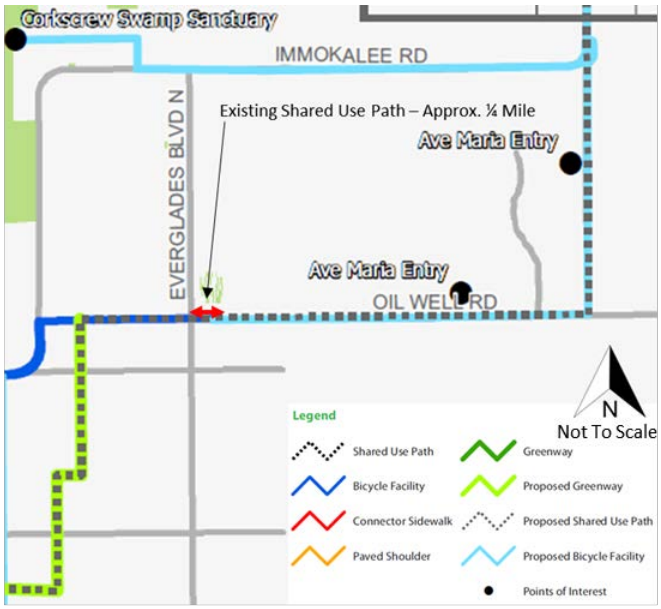


Figure 2-1. Existing 4-Lane Oil Well Road Typical Section

[h] Collier County Comprehensive Plan, Transportation Element Number 3, Amended June 13, 2017

East of Everglades Boulevard, Oil Well Road reduces to a 2-lane roadway that typically consists of two undivided 12-foot lanes (one in each direction) with varying 2-4 foot paved shoulders and an open drainage system (see **Figure 2-3)**. There are no bicycle lanes. The posted speed limit is 45 mph. There is a 12-foot shared use path along the north side of the road for approximately ¼ mile east of Everglades Boulevard where roadway transitions from four lanes to two lanes. This shared use path is part of the SunTrail Alignments, a high priority pathway network for regional connectivity between Collier, Lee, Sarasota, and Manatee counties[i]. The shared use path in the project study area (see **Figure 2-2**) is proposed along the ROW of the Golden Gate Main Canal and then along Oil Well Road east to the Faka Union Canal ROW north.



Source: Collier MPO Bicycle/Pedestrian Master Plan, March 8, 2019

Figure 2-2. Proposed SunTrail Alignments and Spine Pathway Corridors

2.1.3.2 Randall Boulevard

The existing Randall Boulevard typical section consists of two undivided 12-foot lanes with unpaved shoulders and open drainage system, within 50 feet of ROW. According to Collier County Plat Book 7, Page 11, an additional 50 feet of roadway easement exists for a total ROW of 100 feet (see **Figure 2-3)**. A paved sidewalk exists for approximately 1/3 of a mile from 8th Street NE on the north side of the road (outside of the existing ROW), at varying distances from the edge of travel. The existing posted speed limit is 45 mph.

2.1.3.3 Everglades Boulevard

The existing 2-lane section of Everglades Boulevard consists of two undivided 12-foot lanes with unpaved shoulders and open drainage, within 50 feet of existing ROW. An additional 50 feet of roadway easement is documented in the Collier County Plat Book 5, Page 90. **Figure 2-4** presents the 2-lane typical section.

Everglades Boulevard is a 6-lane roadway from 31st Avenue NE (south of Oil Well Road) to 35th Avenue NE (north of Oil Well Road) to allow for a widened intersection at Oil Well Road. The roadway includes 12-foot travel lanes, 4-foot bicycle lanes in each direction, and Type F curb and gutter on the outside lanes (**Figure 2-3**). The existing posted and design speed limit is 45 mph.

[i] Collier MPO Bicycle/Pedestrian Master Plan, March 8, 2019

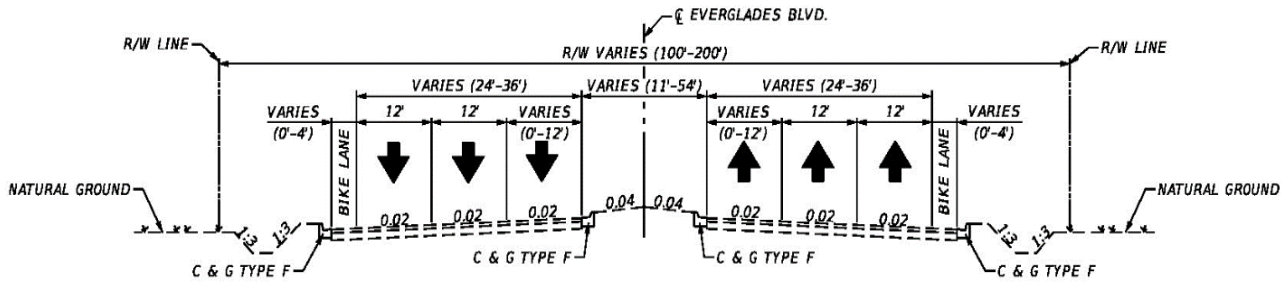


Figure 2-3. Existing Everglades 6-Lane Typical Section

2.1.3.4 DeSoto Boulevard

The existing DeSoto Boulevard typical section consists of two undivided 12-foot lanes with unpaved shoulders and open drainage (see **Figure 2-4**) within 100 feet of ROW (based on Collier County Plat Book 5, Page 89). The existing posted speed limit is 45 mph. There are no bicycle lanes or sidewalks along DeSoto Boulevard within the study area.

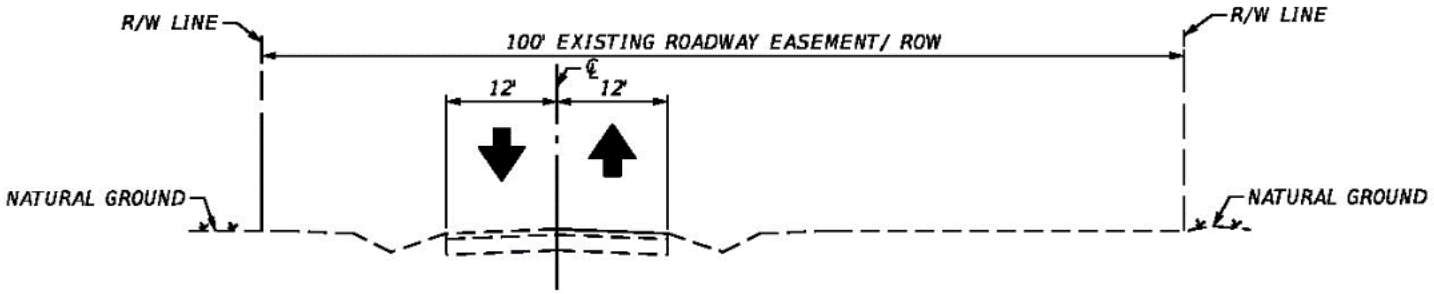


Figure 2-4. Existing 2-Lane Typical Section
(Oil Well Road)
(Randall Boulevard)
(Everglades Boulevard)
(DeSoto Boulevard)

2.1.4 Existing Area Transit

There are two Collier Area Transit (CAT) routes within/near the study area: Route 19 and Route 28. Both provide service between Immokalee and the Collier County Government Center. CAT Route 19 (**Figure 2-5**) is adjacent (to the west), along Immokalee Road and has bus stops adjacent to Fire Station 10 and the Shoppes of Orangetree shopping center near the Immokalee Road and Randall Boulevard intersection. The route is adjacent to the study area with five buses per day and makes connections at the Intermodal Transfer Facility and the Immokalee Health Department. CAT Route 28 (**Figure 2-6**) runs along Oil Well Road on the north side of the study area and has bus stops along Oil Well Road, in front of the middle and high schools and neighboring communities. The route serves the study area with three buses per day.

For residents living in the northern Golden Gates Estates area, pedestrian/bicycle access to the bus stops near Oil Well Road and Randall Boulevard, requires walking/riding on the side of the roads within most of the study area. Additionally, pedestrian and bicycle mobility and access to activity centers surrounding the study area is limited due to the lack of sidewalks and bike paths within the study area. Sidewalks and bike paths are limited to only Oil Well Road between Everglades Boulevard.

Figure 2-5. CAT Route 19

Figure 2-6. CAT Route 28

2.1.5 Horizontal and Vertical Alignment

There are no deficiencies in the existing horizontal or vertical geometry within the study limits. Collier County is generally very flat, with slight elevation changes, especially within the project study limits. All the roadways in the study area are generally straight and flat with no horizontal or vertical curve. The existing posted speed on all facilities is 45 mph, and the alignments are evaluated against present-day criteria for a design speed of 45 mph[j].

The existing Oil Well Road vertical alignment does not have any vertical curves. As a flat urban section, the roadway grade alternates between +0.30%/-0.30% grade minimum and +0.65%/-0.65% grade maximum. This is typical for a relatively flat urban section in order to promote proper drainage.

[j] FDOT 2016 Florida Greenbook (effective June 19, 2017)

Table 2-3 lists the available horizontal alignment information from the record plans for Oil Well Road. The record plans for Everglades Road indicate that there are no horizontal curves in the 6-lane section where it intersects Oil Well Road. Based on field observations, there are no horizontal curves in the other existing roadways in the study area.

Table 2-3. Existing Horizontal Alignment Data

	Existing					Horizontal Curve Length Criteria			
Road	PI Station	Design Speed	R (ft.)	Superelevation	L (ft.)	Desirable (ft.)	Min. (ft.)	Superelevation Criteria	Existing Variation or Exception
Oil Well Road	64+81.99 (Left)	45 MPH	13,039.00	Normal Crown	406.2	675	400	Normal Crown	None
Oil Well Road	64+81.99 (Right)	45 MPH	12,961.00	Normal Crown	403.79	675	400	Normal Crown	None
Oil Well Road	82+89.03	45 MPH	11,459.00	Normal Crown	400.00	675	400	Normal Crown	None
Oil Well Road	203+71.55 (Left)	45 MPH	23,020.00	Normal Crown	460.07	675	400	Normal Crown	None
Oil Well Road	203+71.55 (Right)	45 MPH	22,918.00	Normal Crown	458.03	675	400	Normal Crown	None

2.1.6 Drainage and Hydrology

The project study area is located within the jurisdiction of the SFWMD within the Big Cypress Basin. The surface hydrology within the Big Cypress Basin is shaped by a system of drainage canals and structures. The drainage system is separated into eight major basins. The study area is within the major basins of the Golden Gate Canal and Faka Union Canal. In the 1960s, both basins were created to drain the lands for residential development[k].

The Golden Gate Canal Basin is separated into the nine drainage sub-basins, two of which the project study area is located within: Orange Tree Canal and Main Golden Gate Canal Sub-basins. Water in the Orange Tree Canal Sub-basin flows south into the Cypress Canal. Existing drainage facilities in this sub-basin consist of approximately 3.4 miles of canal with one culvert structure providing conveyance of flows to the Cypress Canal system. The Main Golden Gate Canal Sub-basin is located in the southern and eastern portions of the Golden Gate Basin, and functions as the collector and discharge point for the Golden Gate Basin. Flow in the canal flow is generally to the southwest. Water control structures provide a step-down of the water level to prevent over-drainage of interior lands. There are seven SFWMD-operated water level control structures in this sub-basin.

The Faka Union Canal Basin is separated into four drainage sub-basins, two of which the project study area is located within: Faka Union Canal and Miller Canal Sub-basins. The Faka Union Canal is the primary drainage feature of this sub-basin. Flow is directed south through the center of Golden Gate Estates to the Faka Union Bay estuary via approximately 29.5 miles of primary canal and seven SFWMD operated weir structures. Existing drainage facilities also include several box culverts and bridges at various road crossings.

Existing drainage characteristics within the project study area were determined by reviewing available As-Built Drawings for Oil Well Road (CR 858) From E. Immokalee Road to E. Camp Keais Road, Collier County Board of Commissioners, Permit Modification No. 11-01745-P, Segment 2. The plans are

[k] Canals in South Florida: A Technical Support Document, SFWMD, Appendix C: Primary Water Management Features, April 28, 2010

available in the project files. The existing stormwater runoff along Oil Well Road and the 6-lane segment of Everglades Boulevard is conveyed to either the Golden Gate Canal, Faka Union Canal, or Orange Blossom Ranch master surface water management system (Permit No. 11-02432-P) via storm sewer pipes and ponds. Based on the as-built drawings, there are no cross drains in this segment**.**

Drainage along Randall Boulevard is accomplished via open roadside ditches and side drains along the north and south sides of the road. The stormwater ultimately outfalls to either the Orange Tree Canal, Golden Gate Canal, or the Faka Union Canal.

2.1.7 Geotechnical

A preliminary geotechnical investigation will be performed during the design phase to further assess the roadway and stormwater management constraints once the preferred alternative is selected.

2.1.8 Crash Data and Safety Analysis

Crash data was collected from Florida's Integrated Report Exchange System (FIRES) portal for the study area. The analysis includes five years of crash data from January 1, 2013 to December 31, 2017. Crash history for Randall Boulevard and Oil Well Road are shown in **Figures 2-7 and 2-8**, respectively.

The FIRES Summary Report for Randall Boulevard indicates there were 63 total crashes of which 24 resulted in injuries to 37 individuals. On October 24, 2014, a crash resulted in a fatality at the intersection of Randall Boulevard and DeSoto Boulevard.

The FIRES Summary Report for Oil Well Road indicates there were 45 total crashes of which 22 resulted in injuries to 34 individuals. No fatalities were reported during this time period.

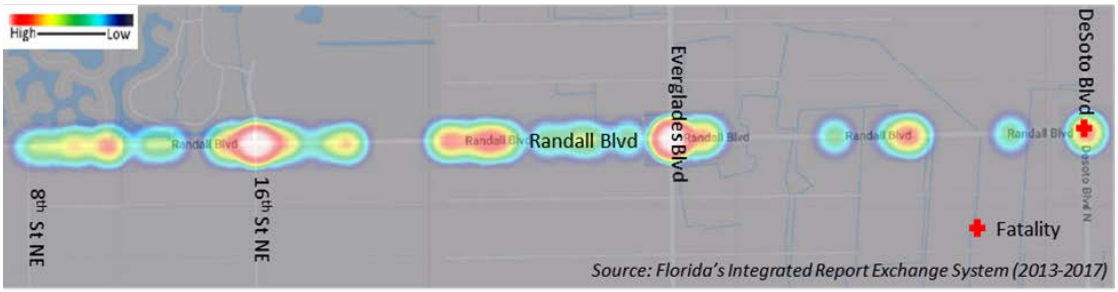


Figure 2-7. Randall Boulevard Crash Intensity

The highest crash locations along Randall Boulevard are at the intersections of 16th Street NE and Everglades Boulevard. No pedestrian or bicyle related crashes were documented.

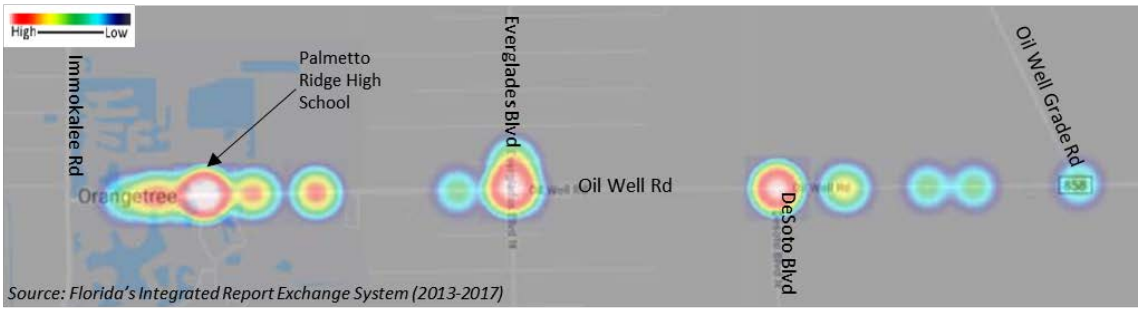


Figure 2-8. Oil Well Road Crash Intensity

The highest crash location along Oil Well Road is in front of Palmetto Ridge High School. The next highest crash locations are at Everglades Boulevard and DeSoto Boulevard. No pedestrian or bicyle related crashes were documented.

The proposed improvements may divert traffic south to Randall Boulevard, east of the high school, reducing traffic volume and thus conflicts along this section of Oil Well Road. The proposed access management along Oil Well Road and Randall Boulevard will improve safety by limiting median openings to safe locations that reduce conflict points.

2.1.9 Intersection Layout

There are four major intersections in the study area. The basic geometric layouts of the existing intersections within the project study area are described below.

2.1.9.1 Oil Well Road/Everglades Boulevard Intersection

The intersection of Oil Well Road and Everglades Boulevard forms a four-leg intersection with all movements controlled by a traffic signal. All legs of the intersection include two left-turn only lanes, one right-turn only lane, and three thru lanes (eastbound Oil Well Road has only two thru lanes). The traffic signal heads are positioned horizontally on steel mast arms and utilize video vehicle detection. There are marked crosswalks across the northern and western legs of the intersection, as shown in **Figure 2-9**.

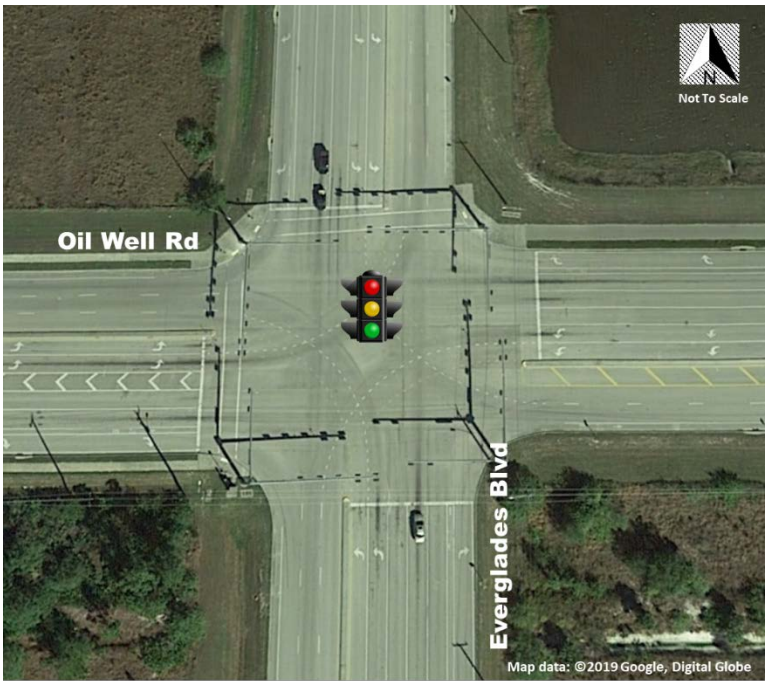


Figure 2-9. Oil Well Road and Everglades Boulevard Intersection

2.1.9.2 Oil Well Road/DeSoto Boulevard Intersection

The intersection of Oil Well Road and DeSoto Boulevard forms a three-leg unsignalized intersection with no marked crosswalks. The north end of DeSoto Boulevard is marked with a warning sign that drivers cannot go thru and must make a right or left turn, as shown in **Figure 2-10**.

Figure 2-10. Oil Well Road and DeSoto Boulevard Intersection

2.1.9.3 Randall Boulevard/16th Street NE Intersection

The intersection of Randall Boulevard and 16th Street NE forms a four-leg intersection with the Valencia Golf and Country Club entrance (Approach Boulevard). The northbound and southbound movements are controlled by stop signs. The Valencia Golf and Country Club entrance includes a divided roadway. There are no marked crosswalks, as shown in **Figure 2-11**.

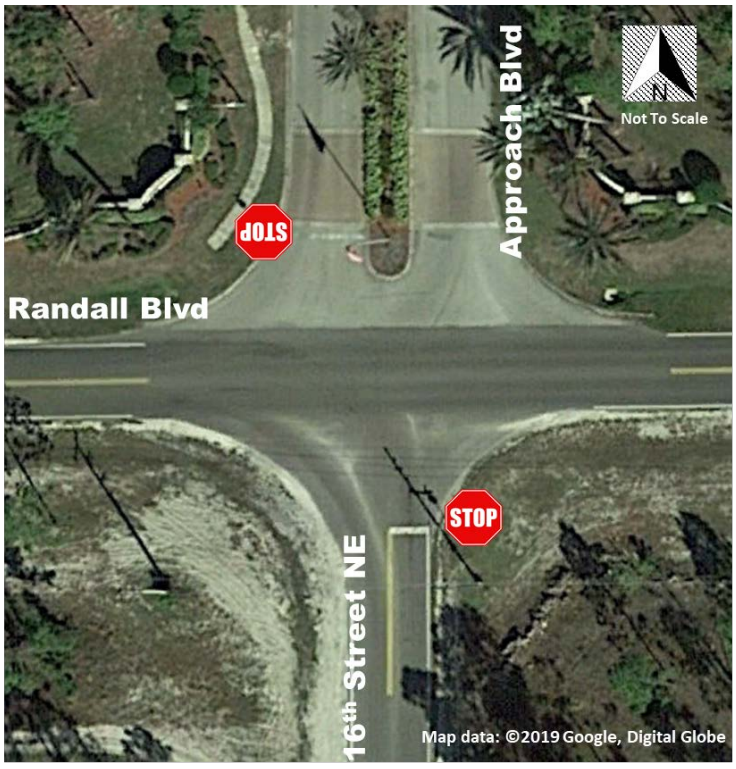


Figure 2-11. Randall Boulevard and 16th Street NE Intersection

2.1.9.4 Randall Boulevard/Everglades Boulevard Intersection

The intersection of Randall Boulevard and Everglades Boulevard forms a four-leg intersection with the thru and left-turn only movements controlled by a traffic signal. All legs of the intersection include one left-turn only lane, one right-turn only lane, and one thru lane. The traffic signal heads are positioned vertically along span wire and are activated by loop detection. There are no marked crosswalks across, as shown in **Figure 2-12**.

Figure 2-12. Randall Boulevard and Everglades Boulevard Intersection

2.1.9.5 Randall Boulevard/DeSoto Boulevard Intersection

The intersection of Randall Boulevard and DeSoto Boulevard forms a four-leg intersection with the unpaved segment of Randall Boulevard east of DeSoto Boulevard. The east and westbound movements are controlled by stop signs. Three legs of the intersection include one thru lane. There are no marked crosswalks across, as shown in **Figure 2-13**.

Figure 2-13. Randall Boulevard and DeSoto Boulevard Intersection

2.1.10 Lighting

Lighting was constructed along Oil Well Road as part of the roadway widening in 2012 and are spaced approximately every 280 feet on both sides of the street and connected via underground conduit. There is no lighting along Randall Boulevard, but there are some intersection lights near the Valencia Golf and Country Club entrance. There is no lighting along Everglades Boulevard, with the exception of the lighting at the intersection of Oil Well Road. There is no lighting along DeSoto Boulevard with the exception of a light fixture mounted to a power pole at the intersections of Oil Well Road.

2.1.11 Existing Structures

There are four major bridge structures within the study area that cross either the Golden Gate Canal or the Faka Union Canal.

2.1.11.1 Oil Well Road Structures

Along Oil Well Road west of Everglades Boulevard, Bridge No. 034137 crosses the Golden Gate Canal. The bridge was constructed in 2012 as part of the Oil Well Road widening project and is 150 feet long along Oil Well Road (centerline), 122 feet wide (cross-section view). According to the April 1, 2019 FDOT Florida Bridge Information Report, the last bridge inspection was on April 3, 2018. The inspection noted

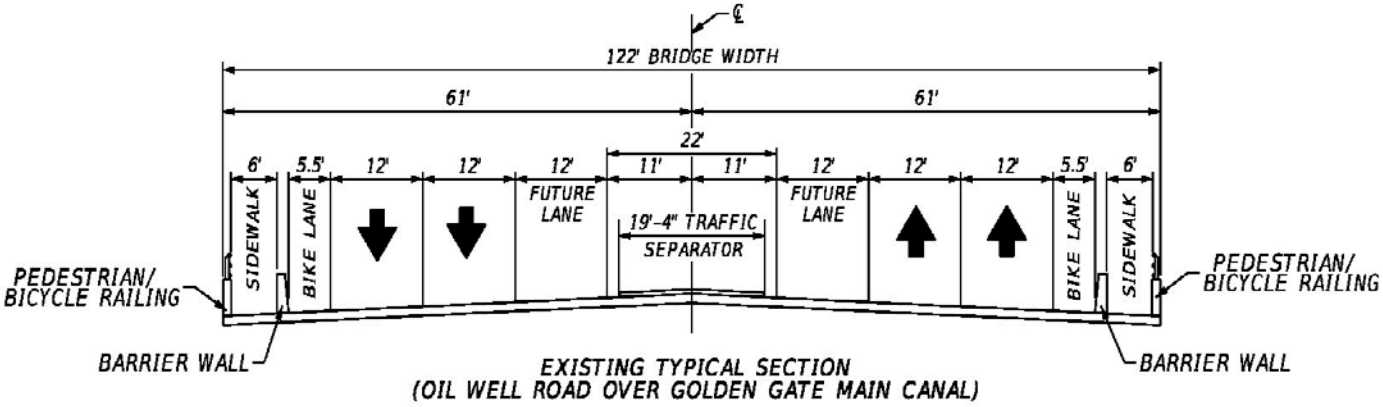


Figure 2-14. Existing Bridge Typical Section - Oil Well Road Over Golden Gate Canal

a Sufficiency Rating of 87.6. The AADT on the bridge is 24,844 vpd according to the report. **Figure 2-14** presents the existing bridge typical section.

Along Oil Well Road east of Everglades Boulevard, Bridge No. 030150 crosses the Faka Union Canal. The bridge was constructed in 1966 approximately 21.91 feet long along Oil Well Road (centerline), 166.3 feet wide (cross-section view). According to the April 1, 2019 FDOT Florida Bridge Information Report, the last bridge inspection was on March 28, 2017. The inspection noted a Sufficiency Rating of 73.6 and noted that the bridge was functionally obsolete. The report further noted the AADT over the bridge 2,880 vpd. **Figure 2-15** presents the existing bridge typical section.

2.1.11.2 Randall Boulevard Structures

Within the study area, there are two bridges along Randall Boulevard that have similar typical sections. West of Everglades Boulevard is Bridge No. 034048 that crosses the Golden Gate Canal. East of Everglades Boulevard is Bridge No. 034050 that crosses the Faka Union Canal. Both bridges were constructed in 1965. According to the April 1, 2019 FDOT Florida Bridge Information Report, the last bridge inspection for both bridges was on April 19, 2017. The inspection noted a Sufficiency Rating of 76 and 93.5 for the Golden Gate Canal and Faka Union Canal bridges, respectively. The inspection further noted that the bridge of Golden Gate Canal was functionally obsolete. While the report did not note that the Faka Union Canal bridge was functionally obsolete, the bridge does not meet current road design standards as the lane widths are narrower than the current standard. The report further noted the AADT over the Golden Gate Canal and Faka Union Canal bridges are 11,205 vpd and 125 vpd, respectively.

The bridges are approximately 20 feet wide (10-foot travel lanes) and are approximately 150 feet long over Golden Gate Canal and 100 feet long over Faka Union Canal. **Figure 2-15** present the typical section for the existing bridges.

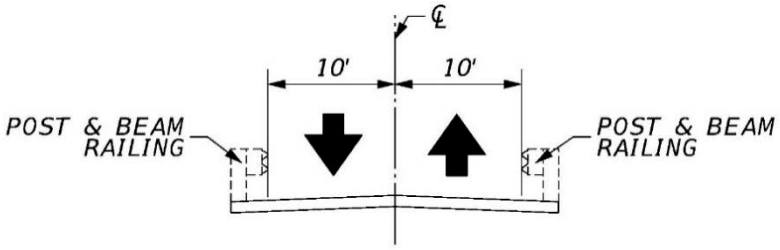


Figure 2-15. Existing 2-Lane Bridge Typical Section
(Oil Well Road Over Faka Union Canal)
(Randall Boulevard over Golden Gate Main Canal)
(Randall Boulevard over Faka Union Canal)

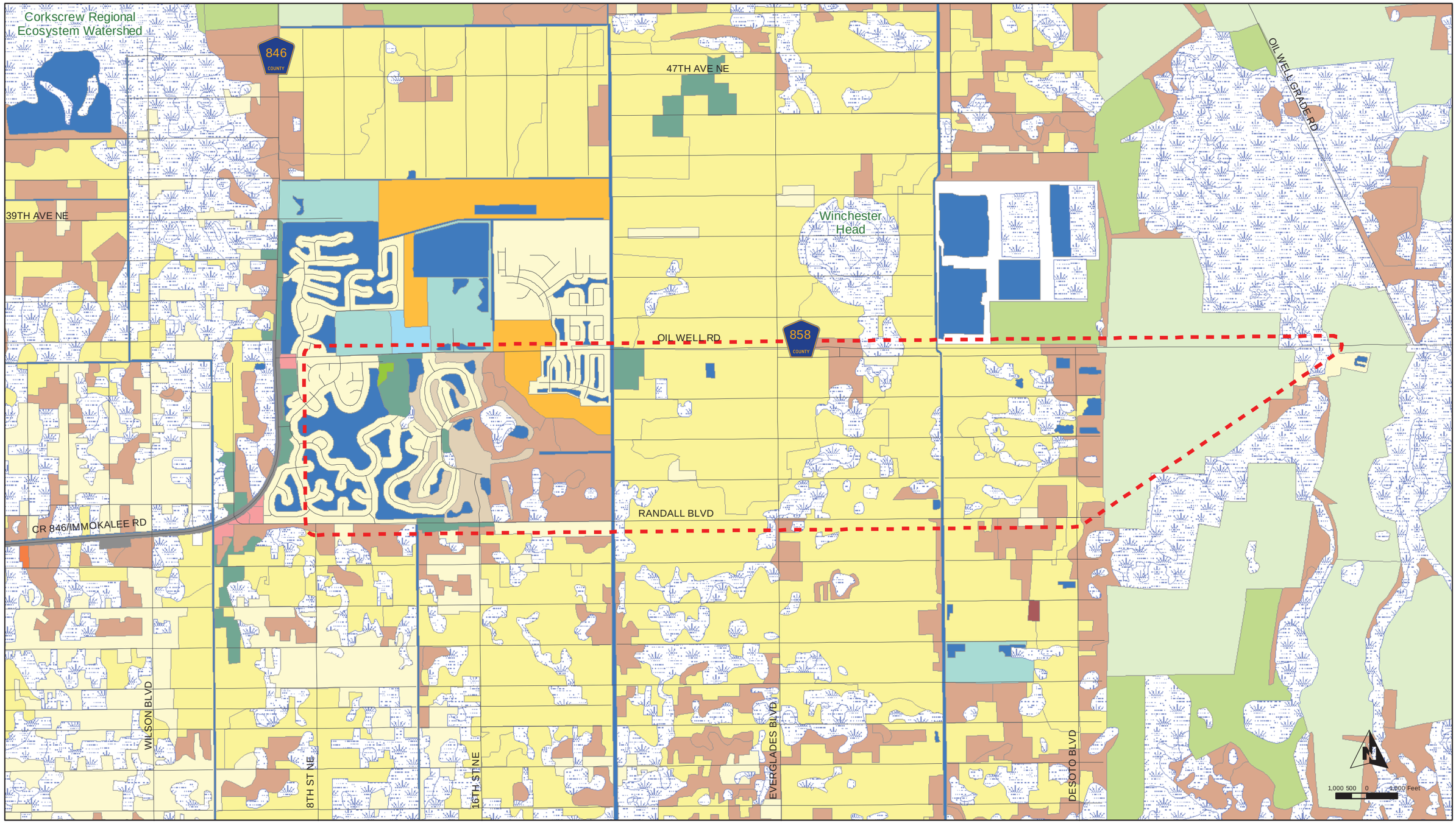
2.2 Environmental Conditions

2.2.1 Social Environment

The sociocultural environment includes the social (human) and cultural environment. Land use, community facilities, socio-economic characteristics, parks and recreation areas, archaeological and historical resources, and farmlands are included.

2.2.1.1 Land Use

The study area existing land use, presented as **Figure 2-16**, is a mix of low density residential, higher density residential, and commercia uses. Collier County's comprehensive plan, identified as the Growth Management Plan, identifies the future land use for this area, as shown in **Figure 2-17**.



Legend:

- Project Study Area
- Canals

Land Use Descriptions

- Residential
- Rural Residential
- Commercial and Services
- Institutional, Educational Facilities
- Golf Courses
- Community Recreation Facilities
- Open Land
- Pastures
- Row Crops, Cropland
- Citrus Groves
- Tree Nurseries and Ornamentals
- Uplands Forested/Non-Forested
- Channelized Waterway, Canals, Reservoirs
- Wetlands
- Roads
- Electrical Power Facilities
- Water Plants, Pumping Stations

Figure 2-16
Existing Land Use
Randall Boulevard and Oil Well Road Corridor Study
Contract # 16-6617/Collier County Project # 60065
Collier County, Florida

Last Updated:20190218
Randall_LU_SFWMD2014-2016
Source Data: FDOT APLUS 2017, FDOT GIS Roads,Florida Geographic Library, Google Earth, ESRI, Collier County,Growth Management Department of Collier County, Collier County Florida Geographic Information Interactive Mapping, FDEP

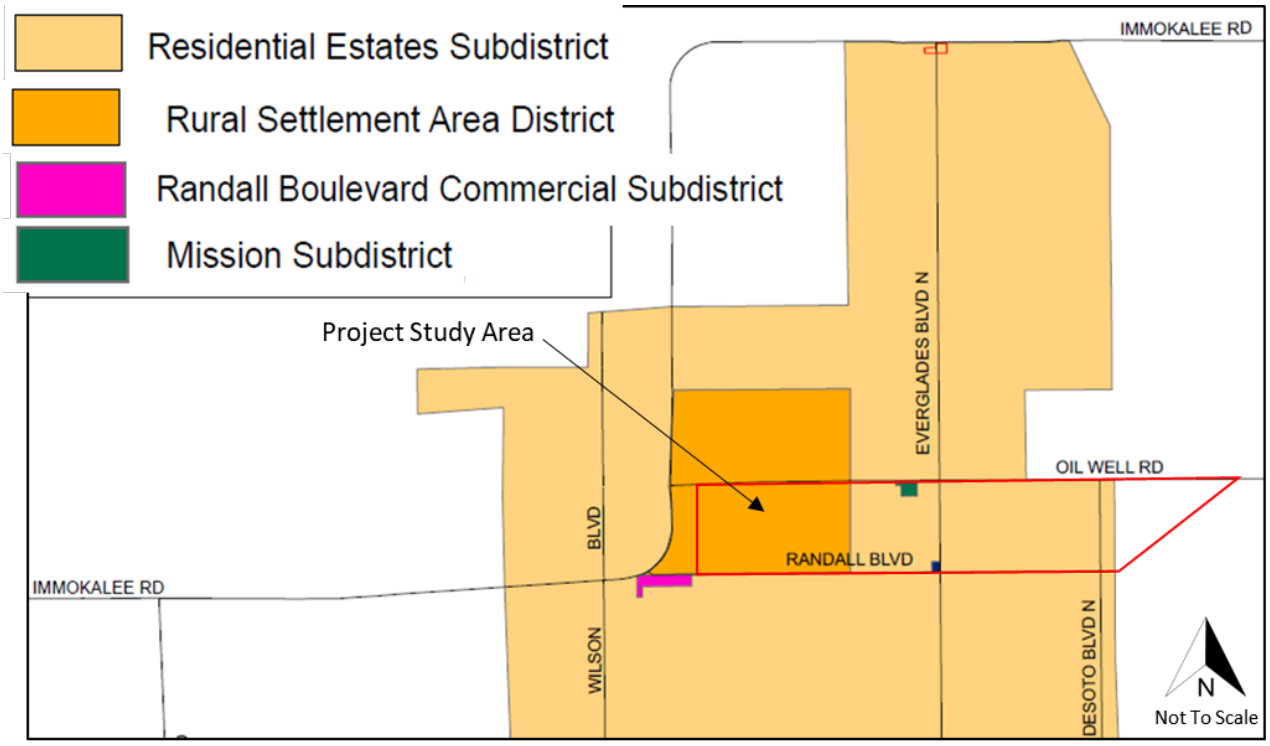


Figure 2-17. Golden Gate Area Future Land Use Map

The proposed project is expected to support the planned development near the study area and is consistent with Collier County's Growth Management Plan. Planned development data were obtained from the future land use elements of the Growth Management Plan along with information collected during Collier County coordination meetings. Neighborhoods in or near the study area are presented in **Table 2-4** and shown in **Figure 2-18**. **Table 2-5** lists planned developments within and near the project study area and presented in the Planned Development and Neighborhoods (Figure 2-16).

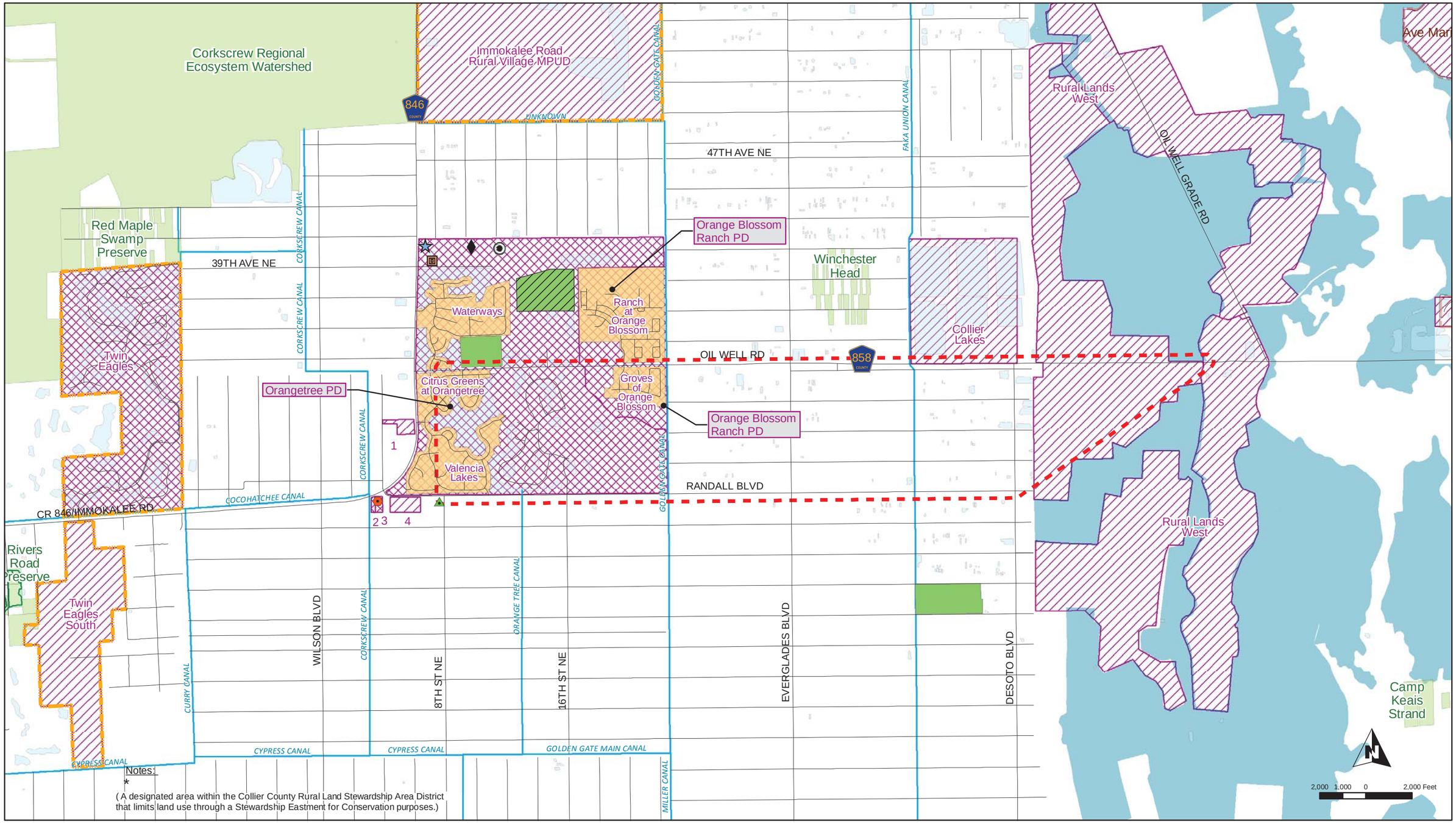
Table 2-4. Neighborhoods

Name	Location	Access to Study Area	Planned Development
Ranch at Orange Blossom	North of Oil Well Road, west of Golden Gate Canal	Access to Immokalee Road (CR 846) by Oil Well Road	Orange Blossom Ranch
Groves of Orange Blossom	South of Oil Well Road, west of the Golden Gate Canal	Access to Immokalee Road (CR 846) by Oil Well Road	Orange Blossom Ranch
Citrus Greens	Northeast corner of Immokalee Road (CR 846) and Oil Well Road	Direct access to Immokalee Road (CR 846) and indirect access by Oil Well Road	Orangetree
Valencia Lakes	Northeast corner of Immokalee Road (CR 846) and Oil Well Road	Direct access to Immokalee Road (CR 846) and indirect access by Oil Well Road	Orangetree
Waterways	Northeast corner of Immokalee Road (CR 846) and Oil Well Road	Direct access to Immokalee Road (CR 846) and indirect access by Oil Well Road	Orangetree
Twin Eagles	North of Immokalee Road (CR 846), west of Wilson Boulevard	Direct access to Immokalee Road (CR 846)	Rural Fringe Mixed Use District

Table 2-5. Planned Developments in Study Area

Development	Status*	Details
MIR-MAR PUD	Approved/Construction Complete	2.38-acre commercial subdistrict
Orange Blossom Ranch PUD	Approved/Construction Underway	1,600 residential units on 616 acres
Orangetree PD	Underway/Construction Complete	3,150 residential units with 10 acres for retail/commercial use
Randall Boulevard Commercial Center CPUD	Approved/Construction Complete	25.76-acre commercial center
Rural Lands West Overlay	Approved	196,000 acres of non-contiguous lands overlay defined into Sending Lands (environmentally sensitive lands), Receiving Lands (lands suitable for high density development), and Neutral Lands 4,000 acres of mixed used land uses including 10,000 dwelling units, 800,000 square feet of retail/service uses, 450,000 square feet of office uses, 100,000 square feet of medical offices and facilities, 250,000 square feet of light industrial uses, 211,000 square feet of civic uses, 220 hotel rooms and three public schools.
Rural Fringe Mixed Use District	Approved	77,000 acres of non-contiguous lands overlay defined into Sending Lands (environmentally sensitive lands), Receiving Lands (lands suitable for high density development, and Neutral Lands
• Twin Eagles	Approved/Construction Underway	1,114 acres – golf course and residential community
• Twin Eagles South	Phase 1 Approved	Residential community of up to 853 units

*Approved under Collier County Comprehensive Planning Section to begin development



Notes:
*
(A designated area within the Collier County Rural Land Stewardship Area District that limits land use through a Stewardship Eastment for Conservation purposes.)

Legend:

- Ava MariaTown Boundary
- Project Study Area
- Surface Waters
- Canals
- Stewardship Sending Areas
- Collier County Parks
- Collier County Future Parks
- Florida Managed Lands
- Neighborhoods
- Big Corkscrew Island Fire Station #10
- Florida Forestry Service (Collier)
- Collier County Sheriff's Office/EMS Services
- Collier County UF/IFAS Extension
- Collier County Fairgrounds
- Collier County Northeast Recycle Drop-Off Center
- Part of the Rural Fringe Mixed Use Development
- Planned Development (new)
- Planned Development (underway)
  1. Immokalee Road Estates CPUD
  2. MIR-MAR PUD (Built Out)
  3. Randall Blvd Center (Active)
  4. Proposed Randall Blvd Commercial Center CPUD

Figure 2-18
Planned Developments and Neighborhoods
Randall Boulevard and Oil Well Road Corridor Study
Contract # 16-6617/Collier County Project # 60065
Collier County, Florida

Last Updated:20190308
Randall_PlannedDev_Neighborhoods
Source Data: FDOT APLUS 2017, FDOT GIS Roads,Florida Geographic Library, Google Earth, ESRI, Collier County,Growth Management Department of Collier County, Collier County Florida Geographic Information Interactive Mapping, FDEP

2.2.1.2 Community Focal Points

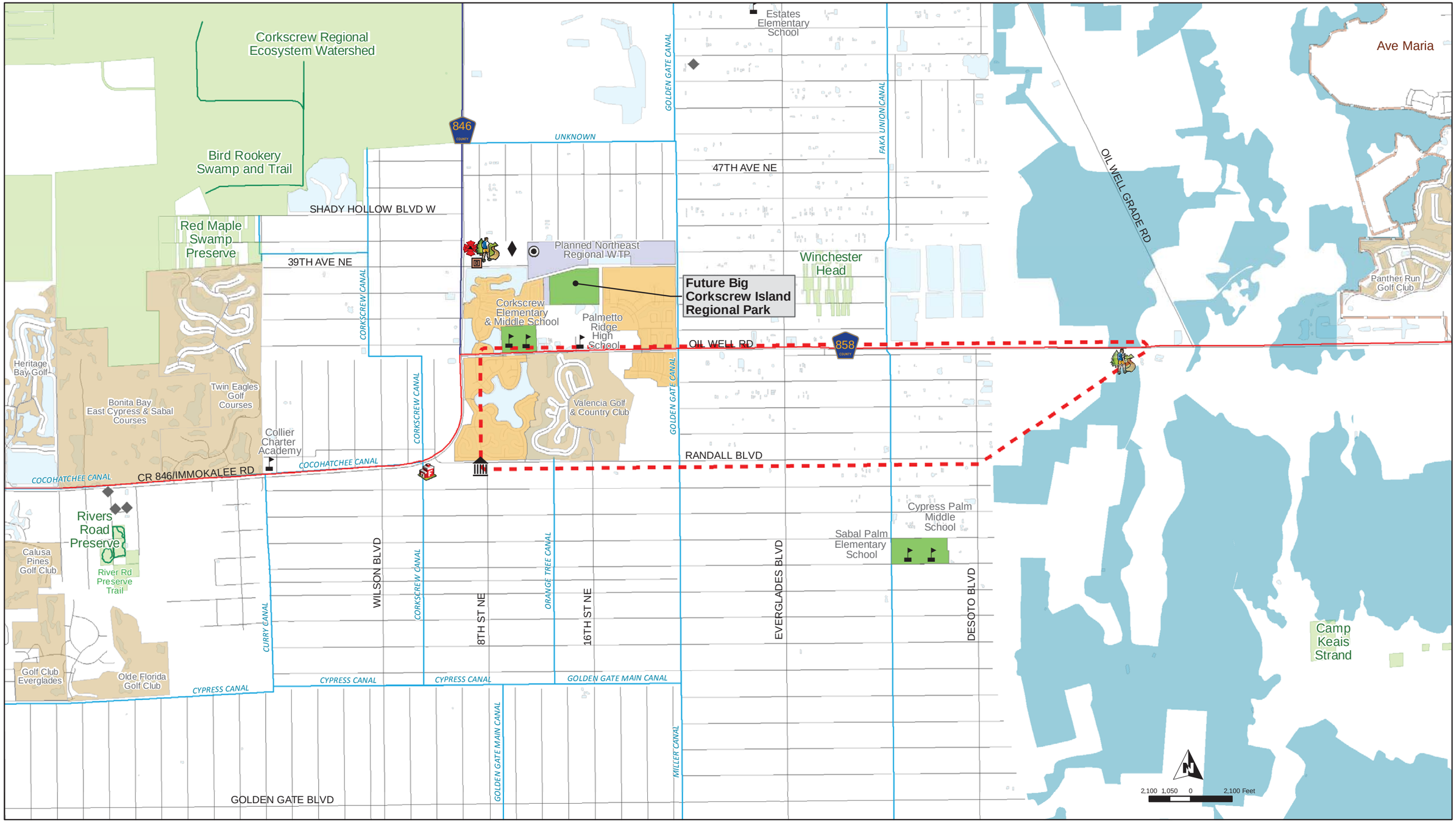
Social resources within two (2) miles of the project study area are presented in **Table 2-6** below and include Emergency Services, Public Schools, Recreational Areas and Parks, Grocery Stores, Transportation Resources, and other Community Resources. **Figure 2-19** presents Community Focal Points figure is attached. The project does not significantly impact existing community resources or isolate them from the community.

Table 2-6. Community Focal Points

Name	Location	Proximity to Study Area
Emergency Services		
North Collier Fire Rescue District Station #10	13240 Immokalee Road Naples FL 34120	Within the study area
Collier County Sheriff's Office Estates Substation District 4	14750 Immokalee Road Naples, FL 34120	2 miles north of the study area
Collier County Emergency Medical Services	14750 Immokalee Road Naples, FL 34120	2 miles north of the study area
Public Schools		
Collier Charter Academy	12101 Immokalee Road Naples, FL 34120	1.0 mile from western end of study area
Palmetto Ridge High School	1655 Victory Lane Naples, FL 34120	1.7 miles northeast of the study area
Corkscrew Elementary School	1065 CR 858 Naples, FL 34120	1.2 miles northeast
Corkscrew Middle School	1165 CR 858 Naples, FL 34120	1.2 miles northeast
Recreational Areas and Parks		
Future Big Corkscrew Island Regional Park (Collier County)	825 39th Avenue Northeast Naples, FL 34120	2.0 miles north
Corkscrew Elementary/Middle School Park	1065 CR 858 Naples, FL 34120	1.2 miles north
Valencia Golf and Country Club (Public Golf Course)	1725 Double Eagle Trail, Naples	1 mile east
Twin Eagles Golf (Private)	11530 Aerie Court, Naples	1 mile west
Grocery Stores		
Publix Super Market at Neighborhood Shoppes of Orangetree	13550 Immokalee Road, Naples	Signalized access to Immokalee Road (CR 846) by Randall Boulevard, and direct unsignalized access to Immokalee Road (CR 846)
Transportation Resources		
Route 19/28 Bus Stop (North/East-Bound)	Southeast corner of intersection – Orangetree Neighborhood Shoppes	Accessible by sidewalk, in study area
Route 19/28 Bus Stop (South/West-Bound)	Northwest corner of intersection – westbound turning lane to 4th Street NE	No sidewalks, in study area

Table 2-6. Community Focal Points

Name	Location	Proximity to Study Area
Other Community Resources		
Collier County UF/IFAS Extension	14700 Immokalee Road, Naples	Access to Immokalee Road (CR 846) by 39th Avenue, 2 miles northeast
Collier County Fair and Exhibition	751 39th Avenue NE, Naples	Access to Immokalee Road (CR 846) by 39th Avenue, 2 miles northeast
Collier County Northeast Recycle Drop-Off Center	825 39th Avenue NE, Naples	Access to Immokalee Road (CR 846) by 39th Avenue, 2 miles northeast



Legend:

- Canals
- Preferred Proposed Trail
- ExistingTrail
- Proposed Trail Heads
- Collier County Parks
- Golf Courses
- Neighborhoods
- Stewardship Sending Areas
- Florida Managed Lands
- Planned Northeast Regional Water Treatment Plant
- Lake/Pond
- Big Corkscrew Island Fire Station #10
- Florida Agriculture and Consumer Services
- Collier County Sheriff's Substation District 4
  North Collier Fire Control and Rescue EMS Station
- Collier County UF/IFAS Extension
- Collier County Fair and Exhibition
- Collier County Northeast Recycle Drop-Off Center
- Place of Worship
- School

Figure 2-19
Social/Environment Focal Points Map
Randall Boulevard and Oil Well Road Corridor Study
Contract # 16-6617/Collier County Project # 60065
Collier County, Florida

Last Updated:20190308
Randall_FocalPoints
Source Data: FDOT APLUS 2017, FDOT GIS Roads,Florida Geographic Library, Google Earth, ESRI, Collier County,Growth Management Department of Collier County, Collier County Florida Geographic Information Interactive Mapping, FDEP

2.2.1.3 Socioeconomic Characteristics

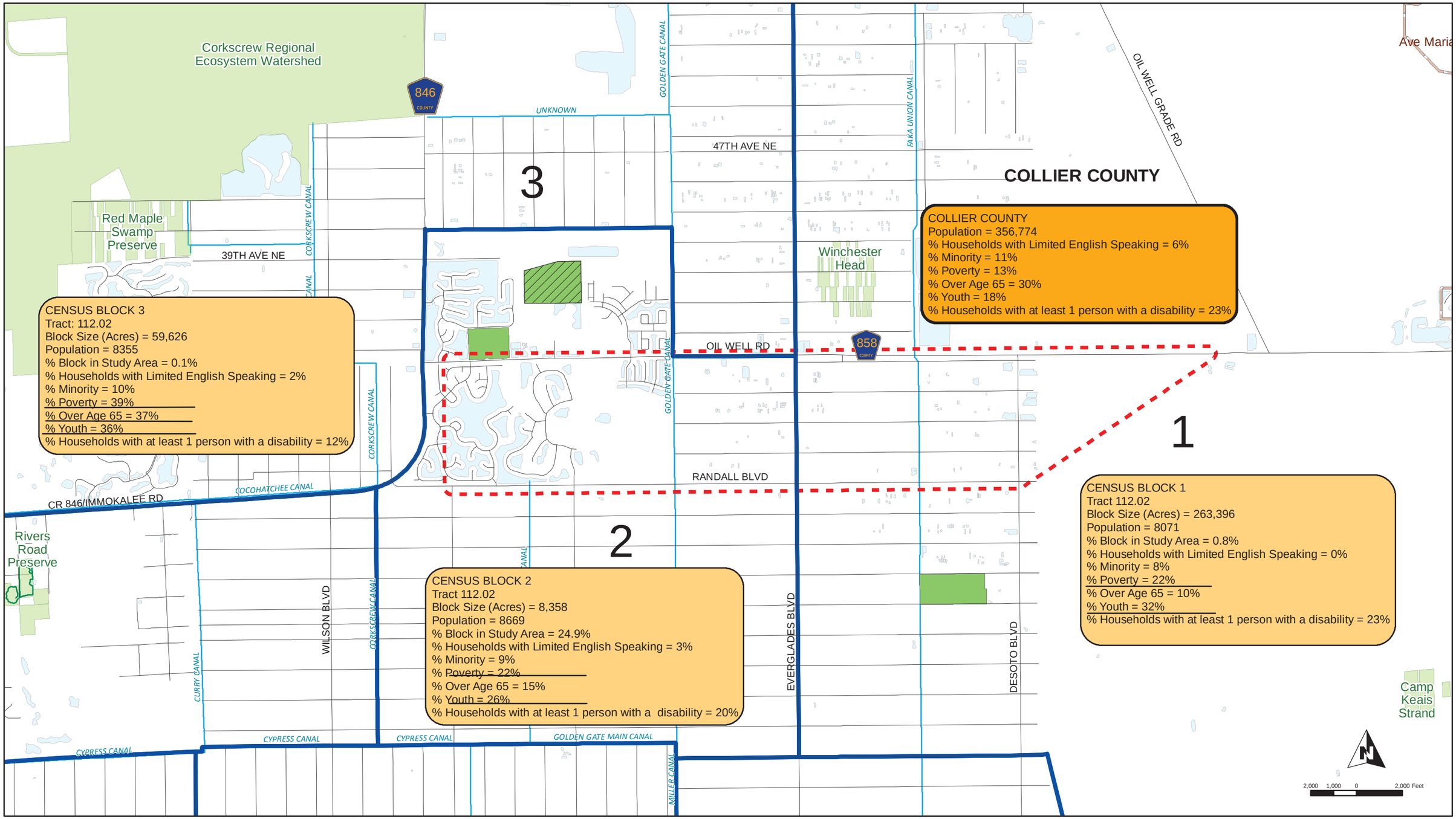
Demographic information was obtained from the United Census Bureau, 2013-2017 American Community Survey 5-Year Estimates. Three block groups are within or near the project study area. **Figure 2-20** presents the Block Group boundaries and associated demographic data is attached. **Table 2-7** summarizes the study area demographics and compares them to the overall demographics of the County. Demographic information indicates that both block groups have populations with a determined poverty status (22 to 39 percent) higher than the Collier County average of 13 percent.

Based on demographic census data, populations with limited transportation mobility options may exist in the study area, reinforcing the need for bicycle, pedestrian, and transit mobility improvements. The higher percentage of households with a determined poverty status, indicates that the study area may serve a greater number of transit-dependent individuals. The proposed improvements include addition of bicycle and pedestrian facilities which are anticipated to provide an enhanced experience that increases walking, cycling, and transit use in the area.

Table 2-7. Study Area Block Groups 2017 Census Data

Block Group	Population	Block Area in acres	% of Block in Study Area	% Limited English	% Minority	% Poverty	% Over Age 65	% Youth	% Disability
1	8,071	263,396	0.8	0	8	*22*	10	*32*	32
2	8,669	8,358	24.9	3	9	*22*	15	*26*	20
3	8,335	59,626	0.1	2	10	*39*	*37*	*36*	12
County	356,774	1.48 M		6	11	13	30	18	23

Limited English refers to the percentage of households with Limited English Speaking status
Minority refers to the percentage of population that is non-white
Poverty refers to the percentage of population of whom poverty status is determined
Over Age 65 refers to the population that is 65 years and over
Youth refers to the percentage of population under 18 years in households
Disability refers to the percentage of households with at least one
22: Indicates where the block demographic percentage is considerably higher than that of Collier County
M: Million



Legend:

- Ava MariaTown Boundary
- Project Study Area
- Surface Waters
- Canals
- Collier County Parks
- Collier County Future Parks
- Florida Managed Lands
- % Minority — Underline indicates above Collier County percentage

Source: 2013-2017 American Community Survey 5-Year Estimates

Figure 2-20
Census Demographics
Randall Boulevard and Oil Well Road Corridor Study
Contract # 16-6617/Collier County Project # 60065
Collier County, Florida

Last Updated:20190307
Randall_CensusDemographics
Source Data: FDOT APLUS 2017, FDOT GIS Roads,Florida Geographic Library, Google Earth, ESRI, Collier County,Growth Management Department of Collier County, Collier County Florida Geographic Information Interactive Mapping, FDEP

2.2.1.4 Historic and Archaeological Resources

A Desktop Cultural Resource Assessment and Windshield Survey (**Appendix C**) was conducted in February 2019 to identify known and potential cultural resources within the study area. The study area was surveyed to locate and assess any potential sites of archaeological and/or historical significance. The assessment was not implemented to meet agency guidelines for a Phase 1 assessment. **Figure 2-21** presents a map of potential archaeological and historical resources in the study area.

Prior to conducting fieldwork in the project parcel, relevant archives and literature were reviewed, including but not limited to studying previous archaeological reports for sites in Collier County, reviewing information from the Florida Master Site File (FMSF), and examining US Geological Survey maps of the project area. Black and white as well as color aerial photographs of the project area were interpreted to potentially aid in revealing anthropogenic changes to the topography and floral communities.

Review of the Florida Division of Historic Resources revealed one previously recorded historical resource in the project area. The Enterprise Tram Linear Resource, 8CR00965, is a historic trail occurring to the east of the corridor. While most of the trail appears to retain its integrity, the portion of the trail extending into the project corridor has been obscured and destroyed by modern clearing, improvements, and development. This segment of the trail should be documented and the FMSF form (8CR00965) updated, if a Cultural Resources Assessment Survey (CRAS) is performed. **Table 2-8** presents the historic resources within the study area and their eligibility for inclusion in the National Register of Historic Places (NRHP).

Four bridges were identified crossing the two north-south canals. These bridges are common types, three of which were built between 1965 and 1966, and therefore, by being 50 years old or older, are considered historic, and will require documentation for the FMSF if a CRAS is conducted. **Table 2-9** presents the archaeological resources within the study area and their eligibility for inclusion in the NRHP.

Table 2-8. Historic Resources Within Project Area

FMSF ID	Site Name	Style	Built	NRHP Eligibility
8CR00965	Collier Enterprises Tram	Farm Road and Trestle/Linear resource	1950	Unlikely
n/a	Bridge No. 030148	Concrete - Crosses over Golden Gate Main Canal On Randall Boulevard	1965	Unlikely
n/a	Bridge No. 030150	Concrete – Crosses over Faka Union Canal on Oil Well Road	1966	Unlikely
n/a	Bridge No. 034050	Concrete – Crosses over Faka Union Canal on Randall Boulevard	1965	Unlikely

Archival reviews determined that historically the area was flat and relatively featureless with seasonal marsh ponds. Much of the pine flatwoods are hydric in nature with seasonal flooding in the summer months. Based on the overall lack of observed uplands, the project corridor is considered to have a low probability for archaeological sites. Only one remnant hammock, with some larger established oak trees was identified. This hammock is considered to have a low to medium probability for having archaeological sites and shovel testing is recommended to determine if cultural materials occur in this area.

Table 2-9. Archaeological Resources Within Project Area

FMSF ID	Site Name	Style	Built	NRHP Eligibility
n/a	Remnant Hammock	Oak Hammock	n/a	Unlikely

Figure 10. 2017 aerial photograoh of the Randall Blvd / Oil Well Road corridor showing previously recorded and potential cultural resources.

Figure 2-21. Cultural Resources Map

Randall Boulevard and Oil Well Road Corridor Study

Contract # 16-6617/Collier County Project # 60065

Collier County, Florida

2.2.3 Natural Environment

The natural environment includes wetlands, floodplains, water quality, and listed species and their habitat. Considering the project's initial alternatives included a combination of the same roadways to complete a network in the corridor, the study area was broken into segments for ease in evaluating impacts for any network combination. Natural resources were evaluated along each segment approximately 250 feet from the existing edge of pavement on each side of the roadway to evaluate the most conservative project footprint along that segment. The project's *Natural Resources Technical Memorandum* is presented in **Appendix D**.

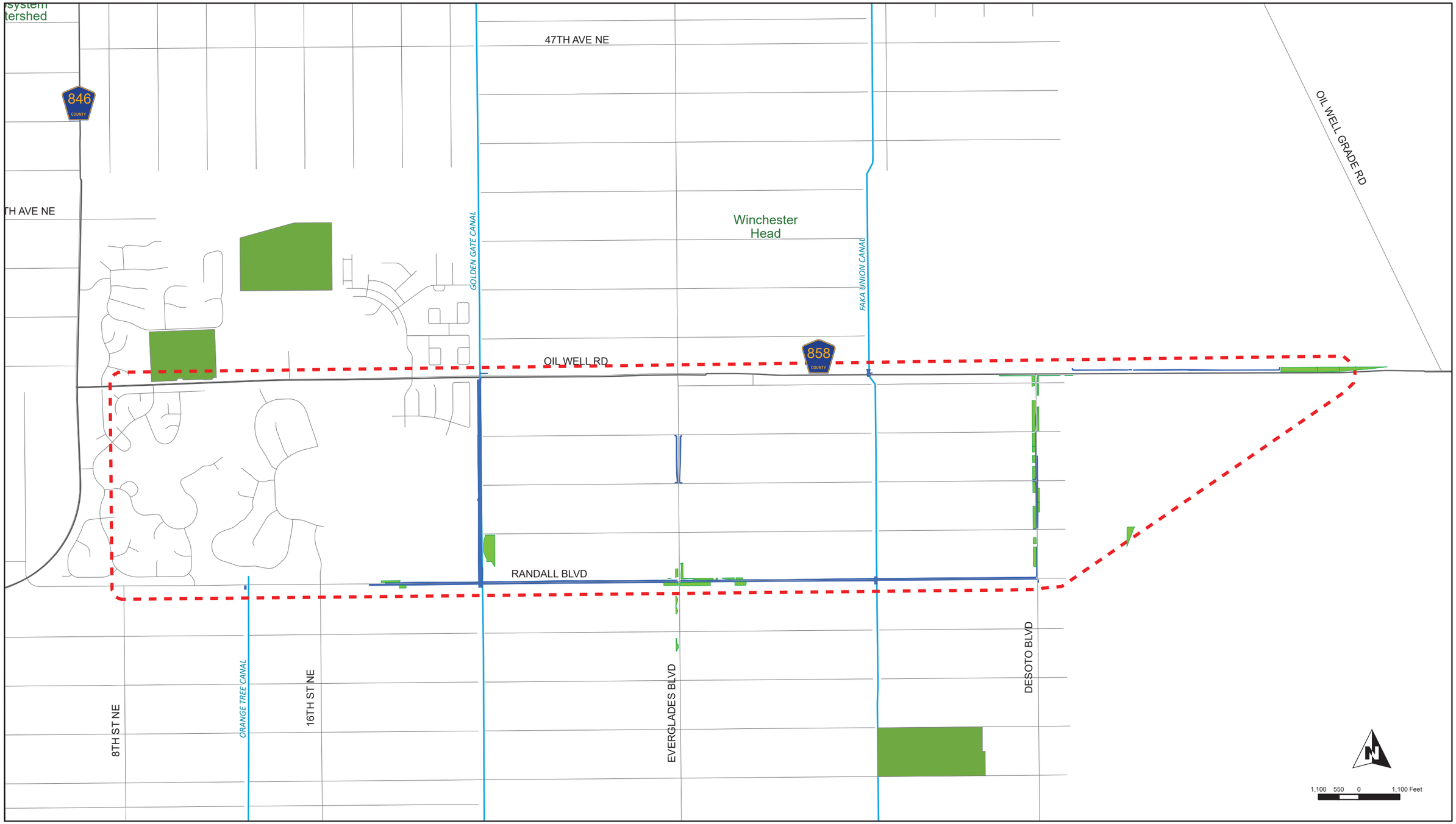
2.2.3.1 Soils

The soils surveys of Collier County, Florida, published by the United States Department of Agriculture Natural Resource Conservation Service were reviewed for the project study area. According to the Soil Survey of Collier County (2018) only 40% of the soils in the study area are classified as state hydric. The most prevalent soils in the natural resources project boundary are Immokalee Fine Sand (Map ID 7), Malabar Fine Sand (Map ID 3), Basinger Fine Sand (Map ID 17), Oldsmar Fine Sand (Map ID 16), and Boca Fine Sand (Map ID 21). Of these soils, Bassinger Fine Sand and Malabar Fine Sand are the soils classified as state hydric. The project study area soil maps and soil types are described in more detail in **Appendix D**.

2.2.3.2 Wetlands and Other Surface Waters

Wetlands were identified through the review of available literature, Geographic Information System data, and field verification. Following the review of all available materials, field assessments were conducted on November 8-10, 2017 to identify the presence of wetland vegetation, evidence of hydrology, and hydric soil indicators. The jurisdictional limits of the wetlands were estimated using the criteria stated in the U.S. Army Corps of Engineers (USACE) Final Regional Supplement to the Corps of Engineers Wetland Delineations Manual: Atlantic and Gulf Coastal Plain Region (October 2010), and Florida statewide unified wetland delineation methodology as adopted by the Florida Department of Environmental Protection (FDEP) and the Water Management Districts per Chapter 62-340 of the Florida Administrative Code (F.A.C.) and described in The Florida Wetlands Delineation Manual.

Habitat and land use mapping (upland and wetland) was done in accordance with the methodology set forth in the Florida Land Use, Cover and Forms Classification System (FLUCCS) (FDOT, 1999). **Figure 2-22** presents the type and location of jurisdictional wetlands documented within the natural resources project boundary. The most prevalent jurisdictional wetlands in the boundary are wetland shrub (FLUCCS 6318 and 6319), hydric pine flatwoods (FLUCCS 625 and 6259), and mixed wetland hardwoods (FLUCCS 617). Surface waters were also present in the project boundary including streams and waterways (FLUCCS 510), major canals (FLUCCS 512), and ditches (FLUCCS 514). Per Chapter 62.600(D) F.A.C., boundaries of surface waters with slopes of 4 to 1 (horizontal to vertical) or steeper are estimated using the top of bank. The canals in the area which drain the surrounding residential communities include the Golden Gate Main Canal and the Faka Union Canal. During the field visit, water was present in ditches along Randall Boulevard, and some ditches along Everglades Boulevard, however these ditches are typically dry during the dry season. The project's *Natural Resources Technical Memorandum* is presented in Appendix D and includes further discussion on delineated wetlands in the project area.



Legend:

- Project Study Area
- Surface Waters
- Canals
- Collier County Parks

Field Verified by Johnson Engineering 2017

- Surface Water
- Wetlands

Figure 2-22
Wetlands

Randall Boulevard and Oil Well Road Corridor Study

Contract # 16-6617/Collier County Project # 60065
Collier County, Florida

Last Updated:20190417
Randall_Wetlands
Source Data: FDOT APLUS 2017, FDOT GIS Roads,Florida Geographic Library, Google Earth, ESRI, Collier County,Growth Management Department of Collier County, Collier County Florida Geographic Information Interactive Mapping, FDEP, Johnson Eng, SWFWMD

2.2.3.3 Water Quality

Water quality (treatment) and water quantity (attenuation) criteria are based on SFWMD and FDOT stormwater regulations. The project study area is located within the jurisdiction of the SFWMD and within the Big Cypress Basin. The surface hydrology within the Big Cypress Basin is shaped by a system of drainage canals and structures. The drainage system is separated into eight major basins. The project study area is within the Golden Gate Canal Basin. The FDEP identifies the Golden Gate Canal Basin as Water Body Identification number (WBID) 3278S, which is impaired for dissolved oxygen and iron. There is no Basin Management Action Plan for this basin. The WBID number for the Faka Union Canal Basin is 3278H; this basin has no impairments.

2.2.3.4 Floodplains and Regulatory Floodways

The Federal Emergency Management Agency's (FEMA's) Flood Insurance Rate Map (FIRM) for Collier County, Community Panel Numbers 12021C0240H, 12021C0254H, and 12021C0265H (all dated May 16, 2012), indicates that the study area lies within the 100-year floodplain areas Zone AH and Zone AE. Within the study area, the 100-year floodplain is identified by FEMA as being in the following zone types:

- Zone AH: Areas with a 1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.
- Zone AE: Base floodplain where base flood elevations are provided.

Most of the project area east of the Golden Gate Main Canal is within the 100-year floodplain. Within the 100-year floodplain area of the study area, the base flood elevation (BFE) ranges from less than elevation 15 feet along the southern end (Randall Boulevard) to 17 feet at the northern end (Oil Well Road). Based on review of the FEMA Firm Maps, there are no designated regulatory floodways within the study area. Therefore, there will be no floodplain involvement with federally defined floodplains. **Appendix D** presents the FEMA floodplain map and FEMA FIRM maps.

2.2.3.5 Protected Species and Habitat

This project was evaluated for impacts to wildlife and habitat resources, including protected species, in accordance with 50 CFR Part 402 of the Endangered Species Act (ESA) of 1973, as amended, the Florida Endangered and Threatened Species Act, Section 379.2291, Florida Statutes (FS), and Part 2, Chapter 16 of the FDOT PD&E Manual titled Protected Species and Habitat.

Literature reviews, agency database searches, and field reviews of potential habitat were conducted to identify state and federally protected species occurring or potentially occurring within the project area. The Collier County Soil Survey, recent aerial imagery (2018), and SFWMD land use/land cover mapping was reviewed to determine habitat types occurring within and adjacent to the project corridor. Land use/land cover mapping was updated to reflect the current field conditions.

The project area does not fall within U.S. Fish and Wildlife (USFWS)-designated Critical Habitat for any species. The project falls entirely within the USFWS Consultation Areas and Focal Area of the Florida bonneted bat (Eumops floridanus). The project falls within the Core Foraging Areas of wood stork colonies 619041, 619310, Corkscrew, and North Catherine Island II. The western portion of the project area falls within the consultation area for the red-cockaded woodpecker (Picoides borealis). The project is within the Florida panther primary and secondary zones. A Florida panther road kill was documented on April 15, 2016, on Randall Boulevard and 16th Street NE. The Florida Fish Wildlife Conservation Commission (FWC) notes a Bald eagle's nest north of the study area but was last active in 2016. **Figure 2-23** presents a map of the documented occurrences of listed species. **Table 2-10** presents the potentially occurring and observed listed wildlife species in the study area. Field reviews consisted of vehicular surveys and pedestrian surveys through natural areas and altered habitats with the potential

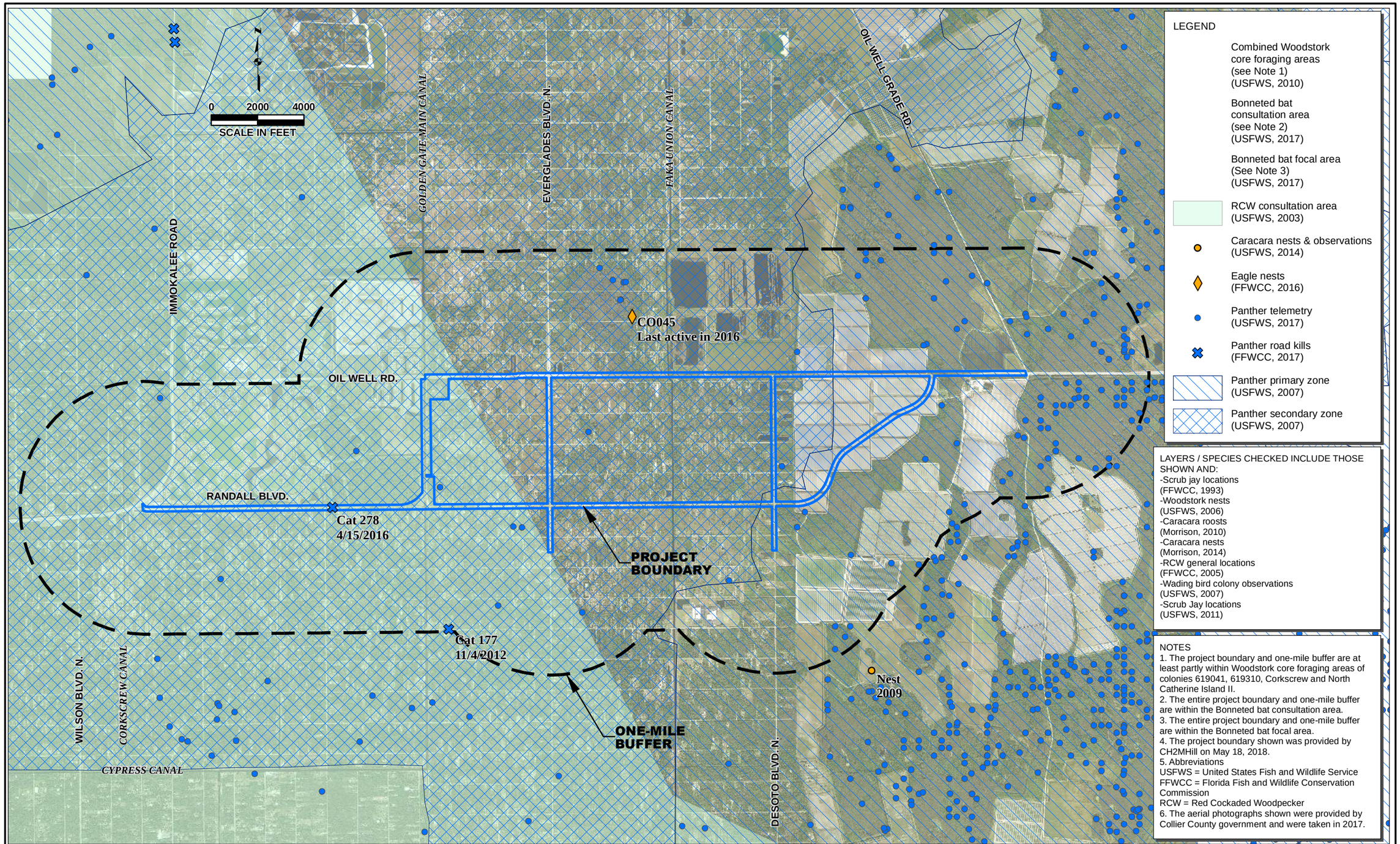
to support protected species. In the absence of physical evidence of a protected species, evaluation of the appropriate habitat was conducted to determine the likelihood of a species being present. Project scientists conducted initial general surveys on November 13-14, 2017.

Using vehicular and pedestrian survey methods during daylight hours, appropriate habitat along the natural resources project boundary segments, was visually scanned for evidence of listed species as well as general wildlife. All natural areas were considered as appropriate wildlife habitat and protected floral species habitat. All occurrences of wildlife in the study area were recorded and observation locations were depicted on project aerials. These occurrence records could include observations of the actual species, or signs of their presence including tracks, burrows, dens, scat, nests, or calls. Special attention was given to identifying signs of listed species.

To further summarize the results of desktop and field data collection efforts, each potential occurring species was assigned a likelihood for occurrence of “none”, “low”, “moderate”, or “high” within habitats found on the project corridor and an indicator of suitable habitat proximity to the project area of “distant”, “near”, or “contiguous”. The *Natural Resources Technical Memorandum* is presented in **Appendix D**.

2.2.3.6 Conservation Lands

There are no conservation lands within the study area. However, northeast and southeast of the study area, are multiple conservation lands as shown in the Regional Location Map (Figure 1-1).



\\ftms01\drawings\2017\20170252-000\Environmental\arcgis\protected species.mxd Date: 5/22/2018 Time: 3:59:21 PM User: pml

Randall Boulevard Corridor Study
Collier County, Florida

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Fig 2-23
Documented Occurrences of Listed Species

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
May 2018	20170252-000	--	As Shown	4

Table 2-10. Potentially Occurring and Observed Listed Wildlife Species in the Study Area

Species	Common Name	FWC	USFWS	Habitat	Habitat Occurrence Relative to Project Footprint	Probability of Species Occurrence
				REPTILES		
Drymarchon corais couperi	Eastern indigo snake	FT	T	Gopher tortoise burrows, canal banks, hydric hammock, palustrine, sandhill scrub, upland pine forest, mangrove swamp	Contiguous	High
Gopherus polyphemus	Gopher tortoise	T	C	Old field, sandhill, scrub, xeric hammock, ruderal, dry prairie, pine flatwood	Contiguous	Moderate
				BIRDS		
Antigone canadensis pratensis	Florida sandhill crane	T	-	Basin marsh, depression marsh, dry prairies, marl prairie, pastures, human-altered suburban landscapes	Contiguous	High
Aphelocoma coerulescens	Florida scrub-jay	FT	T	Relict dune ecosystems or scrub on well drained to excessively well drained sandy soils	Near	Low
Athene cunicularia floridana	Florida burrowing owl	T	-	Native prairies and cleared areas with short groundcover	Near	Low
Calidris canutus rufa	Red knot	FT	T	Coastal marine and estuarine areas with large areas of exposed intertidal sediment	Distant	Low
Caracara cheriway	Crested caracara	FT	T	Wet and dry prairies, rangeland, citrus groves; nests primarily in cabbage palms and live oaks in Florida	Contiguous	Moderate
Charadrius melodus	Piping plover	FT	T	Sandy upper beaches, sparsely vegetated shores of shallow lakes, ponds, rivers, and impoundments	Distant	Low
Charadrius nivosus	Snowy plover	T	-	Beaches, dry mud or salt flats, sandy shores of rivers, lakes, and ponds	Distant	Low
Egretta caerulea	Little blue heron	T	-	Estuarine, lacustrine, riverine, tidal marsh, tidal swamp	Contiguous	High
Egretta rufescens	Reddish egret	T	-	Estuarine, lacustrine, riverine, tidal marsh, tidal swamp	Contiguous	Low
Egretta tricolor	Tricolored heron	T	-	Estuarine, lacustrine, riverine, tidal marsh, tidal swamp	Contiguous	High
Falco sparverius paulus	Southeastern American kestrel	T	-	Sandhill, mesic flatwoods, ruderal, dry prairie	Contiguous	Moderate
Haliaeetus leucocephalus	Bald eagle	-	*	Forests, estuarine, lacustrine, riverine, tidal marsh, tidal swamp	Contiguous	Moderate

Table 2-10. Potentially Occurring and Observed Listed Wildlife Species in the Study Area

Species	Common Name	FWC	USFWS	Habitat	Habitat Occurrence Relative to Project Footprint	Probability of Species Occurrence
Mycteria americana	Wood stork	FT	T	Estuarine tidal swamps/marshes, lacustrine, seepage stream, ditches, ruderal	Contiguous	High/Observed
Picoides borealis	Red-cockaded woodpecker	FE	E	Mature pine forests containing living longleaf pine trees	Distant	Low
Platalea ajaja	Roseate spoonbill	T	-	Estuarine, lacustrine, riverine, tidal marsh, tidal swamp	Contiguous	High
Rostrhamus sociabilis plumbeus	Everglade snail kite	FE	E	Lowland freshwater marshes and littoral shelves of lakes	Near	Moderate
Rynchops niger	Black skimmer	T	-	Open sand on beaches, sandbars, and dredge material islands	Distant	None
Sterna dougallii	Roseate tern	FT	T	Shell-sand beaches, exposed limestone, rock and marl fill, dredge material, rooftops, forage over open water, coasts, tidal channels	Distant	None
Sternula antillarum	Least tern	T	-	Coastal beaches, estuaries, and bays, occasional use of rooftops	Distant	Low
				MAMMALS		
Eumops floridanus	Florida bonneted bat	FE	E	Roosts in palms, snags, cavity trees, buildings, bridges. Forages above natural and human-altered landscapes	Contiguous	High Occurrence of Foraging
Puma concolor coryi	Florida Panther	FE	E	Extensive blocks of forests, large wetlands, can use human-altered landscapes	Contiguous	High
Trichechus manatus	West Indian Manatee	FT	T	Coastal waters, bays, rivers, estuaries sometimes lakes and canals	Distant	Low
Ursus americanus floridanus	Florida black bear	**	-	Forests and forested wetlands, bayheads	Contiguous	High

Sources:

USFWS – USFWS status, Official lists of Threatened and Endangered species, 50 CFR 17.11

FWC – FWC, Florida's Imperiled Species Management Plan 2016-2026, Updated November 16, 2016

FWC - Florida's Endangered and Threatened Species, Updated December 2018.

USFWS ECOS – Environmental Conservation Online System, accessed November 10, 2017

FNAI – Florida Natural Areas Inventory Tracking List, accessed November 10, 2017

Notes:

*The Bald Eagle is afforded federal protection through the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA).

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

Key: E – endangered, T – threatened, C – candidate for listing, FE – federally endangered, FT – federally threatened

2.2.3.7 Special Designations

There are no designated Outstanding Florida Waters as defined in Chapter 62-302 of the Florida Administrative Code (F.A.C) in the study area. According to the State of Florida, F.A.C, Chapter 62-302.400 (August 5, 2010), all other waters within the study area have been designated as Class III waters. Because these canals do not provide breeding or nursery area for marine fish species, no essential fish habitat occurs in the study area.

2.2.4 Physical Environment

The physical environment includes potential contamination sites, navigable waterways, noise sensitive sites, utilities, and railroads. There are no navigable waterways or railroads within the project study area.

2.2.4.1 Contamination

A desktop review of the FDEP Contamination Locator Map along with FDEP resources on the Florida Geographic Data Locator map, indicate that no active contamination sites exist in the project study area. The Valencia Golf Course is registered as a hazardous waste facility as it stores chemicals considered hazardous waste on its property for golf course maintenance.

On the basis of the electronic database search and available public references, there are no sites identified within the vicinity of the study area expected to have adverse impacts on the project. However, a Phase I Environmental Site Assessment including an area reconnaissance should be conducted during the design phase, to confirm the results of the desktop review and to further identify any potential contamination sites.

2.2.4.2 Utilities

Existing utilities along the study corridor were approximated by field observations and desktop analysis. Major utilities are limited to Oil Well Road between Immokalee Road and Everglades Boulevard. **Appendix E** presents a map of the utilities within the study corridor. Utility locations and coordination will be done during the project's design phase.

2.2.4.3 Noise Sensitive Sites

A noise analysis was conducted as part of this study and is documented in the Noise Study Technical Memorandum (**Appendix F**). A review of noise sensitive sites (performed in February 2019) in the study areas, included residential areas, a recreational use (golf course at Valencia Golf and Country Club) located on the north side of Randall Boulevard (near 16th Street NE), and a place of worship (Church of Jesus Christ of Latter-Day Saints) in the northwest corner of Randall Boulevard and Everglades Boulevard.

Based on the noise sensitive land uses identified in the project area, noise contours were prepared to estimate the distance to an approach (within one dB(A) of the Noise Abatement Criteria (NAC)), or 65 dB(A)) for Activity Category B (residential) and Activity Category C (recreation) land uses. Since the place of worship does not have a frequent exterior use area (playground, etc.), it was evaluated as Activity Category D of the NAC, which considers interior traffic noise levels. As the building is of masonry construction, a reduction of 25 dB(A) can be expected, consistent with guidance found in the Federal Highway Administration (FHWA) document *Highway Traffic Noise: Analysis and Abatement Guidance 4.*

The existing noise levels were based on the LOS C traffic data for the study area and consider the sound level contributions from Randall Boulevard, Oil Well Road, and Everglades Boulevard. The noise levels predicted at the four locations were averaged, resulting in a level of 46.025 dB(A).

SECTION 3

Corridor Alternatives Development

The reasonable alternatives for this project are identified and evaluated in a multistep process to allow opportunities for public and agency input throughout the study. The process for identifying alternatives to be evaluated is called alternatives development. Initial alternatives are screened to a limited number of viable alternatives that are further screened and result in a final recommendation (called a Preferred Alternative). All alternatives are compared against the no-build alternative which serves as a baseline for Development and Screening of Alternatives.

3.1 Evaluation Analysis and Criteria

The evaluation of alternate corridors began with the documentation of existing conditions within the study area. Full color uncontrolled aerial mapping was used for land use suitability, preliminary alignment/corridor location and display boards used at public information meetings. Available documentation included as-built drawings, County tax maps, and local government comprehensive plans. Information was also collected based on input received from public agencies through the public involvement outreach.

Evaluation of ROW and ROW use, cultural resources (i.e., historic, archaeological, agriculture, government/public), geotechnical features, community/special land use facilities (i.e., schools, hospitals, churches, neighborhoods, parks/recreation) and environmental features (i.e., wetlands, threatened/endangered species, contamination sites) were identified to determine the location of potential impacts associated with the proposed improvements.

3.2 Design Criteria

The design criteria and standards are based on design parameters in accordance with the *FDOT 2016 Florida Greenbook* (effective June 19, 2017), and *FDOT Design Manual* (effective January 1, 2019). The design criteria for the project will be refined further after reasonable alternatives are identified because the geometric criteria depend upon the facility type of the alignments recommended for further analysis. The corridors were developed using consistent design criteria to ensure a reasonable comparison. **Table 3-1** presents the design criteria applicable to the corridor development.

Table 3-1. Design Criteria

Design Element			Randall Boulevard	Oil Well Road (CR 858)	Everglades Boulevard	DeSoto Boulevard	Source
General	Functional Classification		Minor Collector	Minor Collector	Minor Collector	Minor Collector	Map 1 - Federal Functional Classification - Collier County
	Access Management		7*	3 *	4*	6*	Resolution 13-257 Table 3 *proposed
	Design Speed		45 MPH	45 MPH	45 MPH	45 MPH	FGB Table 3-1
	Posted Speed		45 MPH	45 MPH	45 MPH	45 MPH	
Typical Section	No. Lanes (Ultimate)		4 (6)	4 (6)	4	4	
	Lane Width		11'	11'	11'	11'	FGB Table 3-8
	Bike Lane Width		-	4' (min.)	4' (min.)	4' (min.)	FGB Figure 9-1
	Sidewalk Width		6'	6'	6'	6'	CCULDC 6.06.02, FGB 3. C.7.d
	Shoulder Width	Inside Full (Paved)	-	-	-	-	FGB Table 3-11
		Outside Full (Paved)	-	-	-	-	FGB Table 3-11
		Inside Bridge	-	-	-	-	FGB Table 3-11
		Outside Bridge	-	-	-	-	FGB Table 3-11
	Median Width		22' (15.5' min.)	22' (15.5' min.)	22' (15.5' min.)	22' (15.5' min.)	FGB Table 3-14
	Border Width		12'	12'	12'	12'	FDM Table 210.7.1
	Clear Zone		4'	4'	4'	4'	FGB Table 3-15
	ROW Width		180' (204')	204'	180'	180'	Record plans, CCULDC 6.06.01. N
Horizontal	Min. Stopping Sight Distance		360'	360'	360'	360'	FGB Table 3-3
	Max. Deflection w/o Curve		1° 00'	1° 00'	1° 00'	1° 00'	FDM 210.8.1
	Length of Curve		675' (400' min.)	675' (400' min.)	675' (400' min.)	675' (400' min.)	FDM Table 210.8.1, FGB 3. C.4.a
	Max. Curvature (Min. Radius)		8°15' (680')	8°15' (680')	8°15' (680')	8°15' (680')	FGB Table 3-5
	Max. Superelevation		0.05	0.05	0.05	0.05	FGB 3. C.4.b
Vertical	Max. Grade		8%	8%	8%	8%	FGB Table 3-7
	Max. Change in Grade w/o VC		0.7	0.7	0.7	0.7	FGB Table 3-8
	Base Clearance above BCWE		3'	3'	3'	3'	FDM 210.10.3. (2)
	Crest Curve K		61	61	61	61	FGB Table 3-9
	Sag Curve K		79	80	81	82	FGB Table 3-9
	Vertical Clearance		16.5'	16.5'	16.5'	16.5'	FGB 3. C.7. j.4. (b)

FGB – 2016 FDOT Florida Green Book; FDM – 2018 FDOT Design Manual

3.3 Typical Sections

3.3.1 Four-Lane Cross-Section

Under this alternative, the typical section for the roadway includes a 22-foot center median, two 11-foot travel lanes in each direction, 7-foot bike lanes with curb and gutter, a grassed separator and 6-foot concrete sidewalks or 12-foot shared-use pathway (on one side). The typical section also includes a closed drainage system. The required ROW width for this typical section is 180 feet. This typical section alternative was considered for the S-Connector, Randall Boulevard, Everglades Boulevard, and DeSoto Boulevard alternatives.

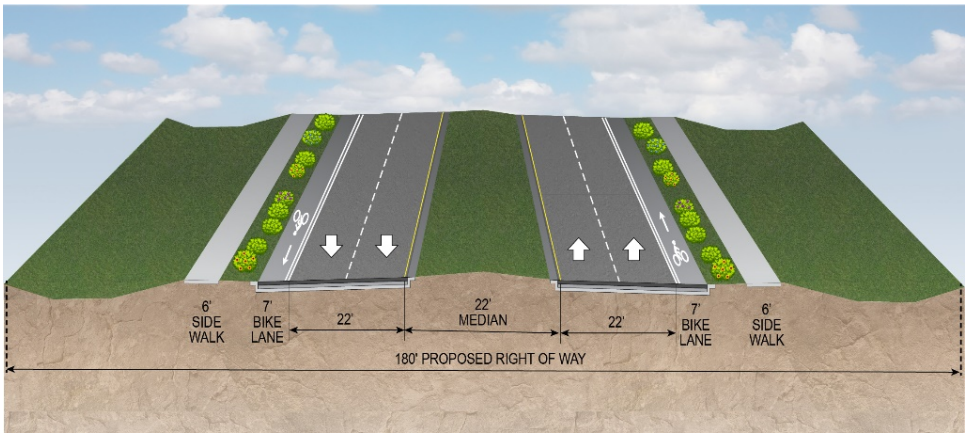


Figure 3-1. Proposed 4-Lane Typical Section (Urban with Curb & Gutter)

3.3.2 Four-Lane Cross-Section (expandable to Six-Lane)

This alternative provides for a four-lane typical section with the ability to provide one additional lane in each direction in the future by widening to the inside with a 44-foot center median. This typical section alternative was considered for Randall Boulevard, Oil Well Road, Everglades Boulevard, and DeSoto Boulevard alternatives. In order to accommodate the existing portion of the SunTrail alignment, a shared use path is proposed on the north side of Oil Well Road in both the 4-lane and 6-lane alternatives.

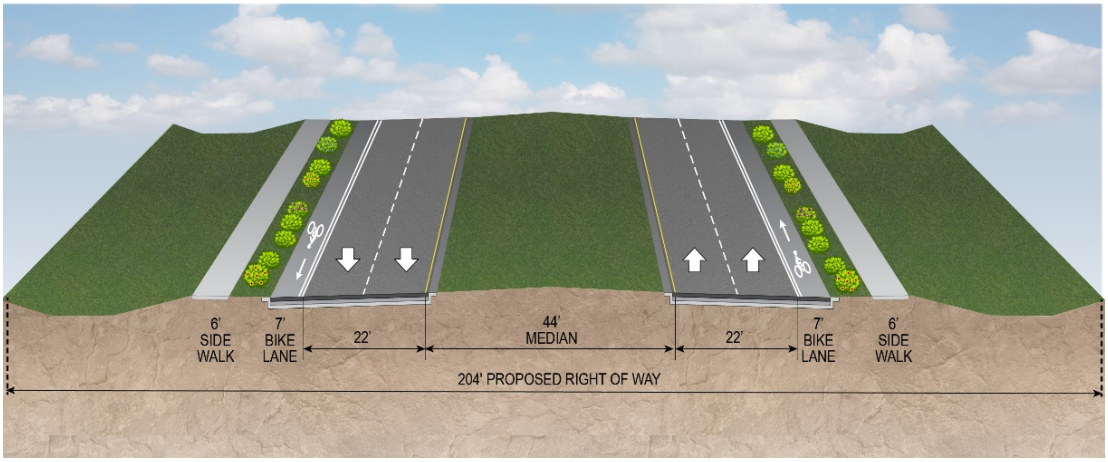


Figure 3-2. Proposed 4-Lane Typical Section – Expandable 6-Lanes (Urban with Curb & Gutter)

3.3.3 Six-Lane Cross-Section

This alternative includes a 22-foot center median, three 11-foot travel lanes in each direction, 7-foot bike lanes with curb and gutter, a grassed separator and 6-foot concrete sidewalks or 12-foot pathways. The typical section also includes a closed drainage system. The required ROW width for this typical section is 204 feet. This alternative would provide the capacity to accommodate the existing and future traffic demand and provide future needed channelization in the median to improve safety by allowing left-turning vehicles to be removed from the flow of thru traffic. This typical section alternative is proposed for Randall Boulevard (**Figure 3-3**).

Figure 3-3. Proposed 6-Lanes Typical Section (Urban with Curb & Gutter)

3.3.4 Bridges

There are four existing bridges in the study area that cross over either the Golden Gate Main Canal or the Faka Union Canal. Three of the bridges (2-lane bridges) are considered functionally obsolete. The proposed typical sections for the bridges include either a 4-lane, or 6-lane typical section, depending on the location. The bridges will be widened or replaced in accordance with current requirements of the SFWMD. The bridges will be designed to maintain the capacity of the canals without any constrictions. It is noted that the existing bridge along Oil Well Road over the Golden Gate Main Canal is already configured to expand to 6-lanes. The typical sections are detailed in **Figure 3-4**.

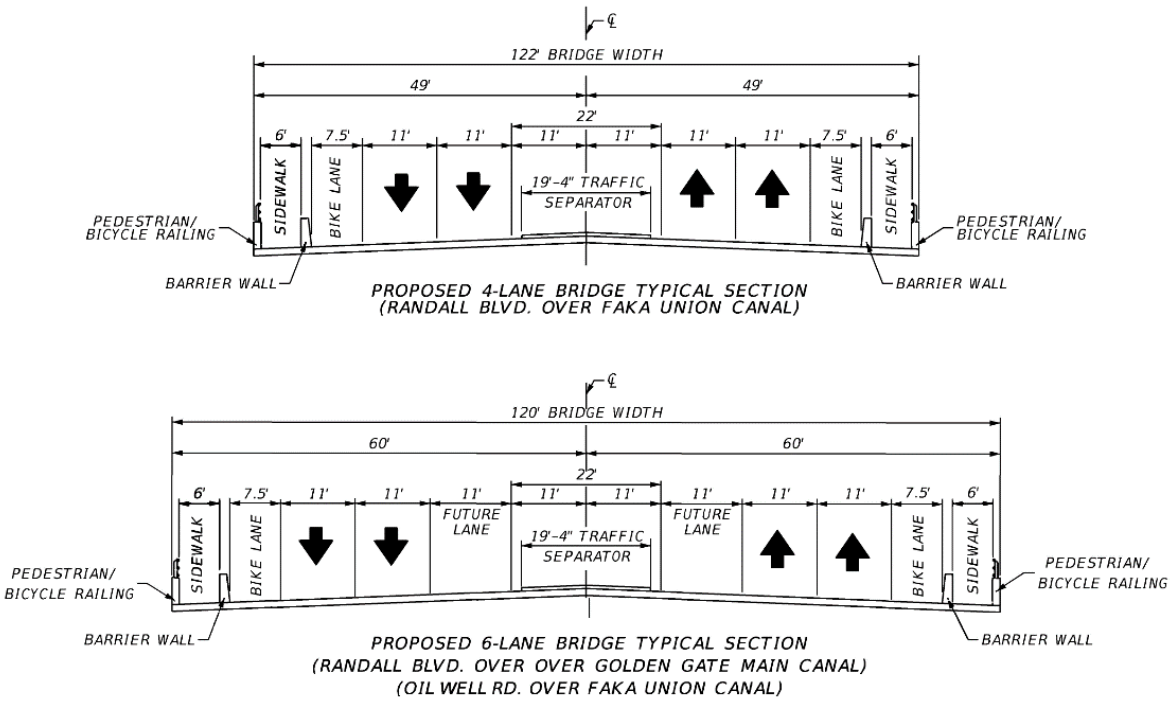


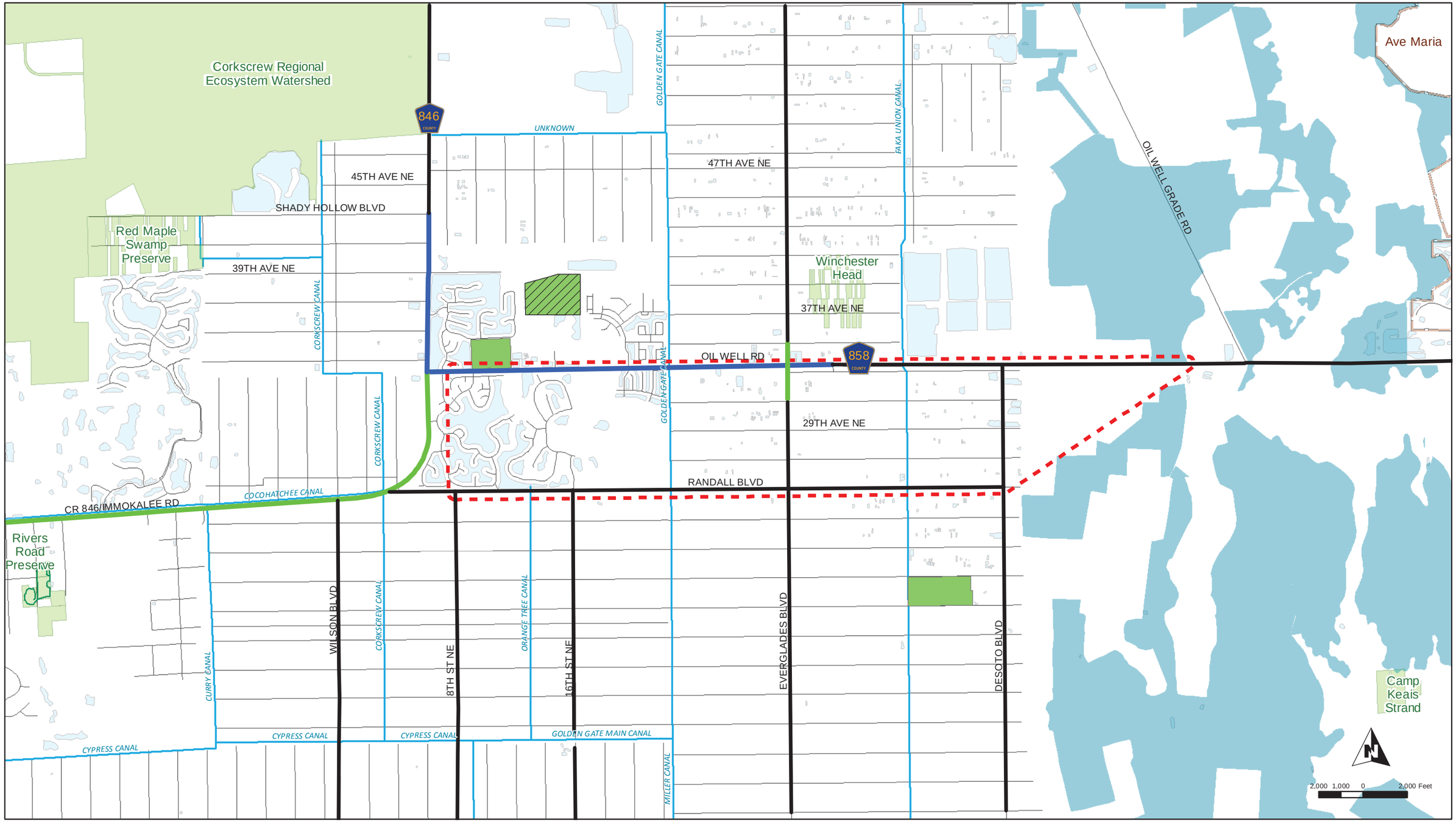
Figure 3-4. Proposed Bridge Typical Sections

3.4 Traffic Circulation Plan

Within the project study limits, all roadways are owned and maintained by Collier County. Table 2-2 in Section 2 lists the roadway classifications based on Collier County's current Growth Management Plan which also notes that Everglades Boulevard is a Collier County Hurricane Evacuation Route. The Collier MPO 2040 LRTP notes that Oil Well Road between Immokalee Road and SR 29 is a Freight Distribution Route.

The specific purpose of the project is to enhance mobility and develop a traffic circulation plan for the local system connection to the primary facilities of Randall Boulevard, Oil Well Road, Everglades Boulevard, DeSoto Boulevard that promotes safe local traffic, bicycle and pedestrian movements. **Figure 3-5** shows the existing roadway network east of I-75 and the current number of lanes. This figure illustrates that the only major east-west routes east of Collier Boulevard (CR 951) are Immokalee Road, Golden Gate Boulevard and Oil Well Road.

The proposed improvements to this corridor, combined with the surrounding area planned improvements including the Vanderbilt Beach Road Extension and the future Big Cypress Parkway (by others), will provide adequate transportation capacity to meet future traffic development and planned growth as approved in the Collier County Growth Management Plan. The network of improvements will provide additional capacity in the east-west direction to meet the travel demands of the growing Golden Gate Estates community and developing communities to the east.



Legend:

- Ava MariaTown Boundary
- Project Study Area
- Surface Waters
- Canals
- Collier County Parks
- Collier County Future Parks
- Florida Managed Lands
- Stewardship Sending Areas

Lanes

- 2 Lane
- 4 Lane
- 6 Lane

Figure 3-5
Existing Roadway Network
Randall Boulevard and Oil Well Road Corridor Study
Contract # 16-6617/Collier County Project # 60065
Collier County, Florida

Last Updated:20190227
Randall_ExistingRds
Source Data: FDOT APLUS 2017, FDOT GIS Roads,Florida Geographic Library, Google Earth, ESRI, Collier County,Growth Management Department of Collier County, Collier County Florida Geographic Information Interactive Mapping, FDEP

SECTION 4

Initial Alternatives

The corridors were developed to evaluate an east-west corridor that will reduce congestion and improve traffic flow in the study area and accommodate future travel demand through 2045. The development of potential corridors to be studied as part of this project was carried out in stages. Initially, the project was broken into segments defined as follows:

- New Alignment "S-Connector" – connecting Randall Boulevard to Oil Well Road
- Randall Boulevard - from Immokalee Road to Everglades Boulevard (or the S-Connector proposed intersection)
- Randall Boulevard - from Everglades Boulevard (or the S-Connector proposed intersection) to DeSoto Boulevard
- Randall Boulevard - from DeSoto Boulevard to Oil Well Road (new alignment)
- Oil Well Road – from Everglades Boulevard (or the S-Connector proposed intersection) to Oil Well Grade Road
- Everglades Boulevard – from Randall Boulevard to Oil Well Road
- DeSoto Boulevard – from Randall Boulevard to Oil Well Road

Initial alternatives were developed based on the Collier MPO 2040 LRTP as stated in Section 1.2. All alternatives proposed a new extension of Randall Boulevard east of DeSoto Boulevard N to Oil Well Road just west of Oil Well Grade Road. Four alternatives were developed and presented at the Initial Alternatives Public Meeting on May 24, 2018.

4.1 Alternative 1 – New Alignment "S-Connector"

Alternative 1 (**Figure 4-1**) proposes a new alignment along the Golden Gate Main Canal that would include a reverse curve (S-Connector) alignment north to connect to Oil Well Road at a point west of Everglades Boulevard. The new alignment is proposed as free-flow movements from/to Oil Well Road and Randall Boulevard.

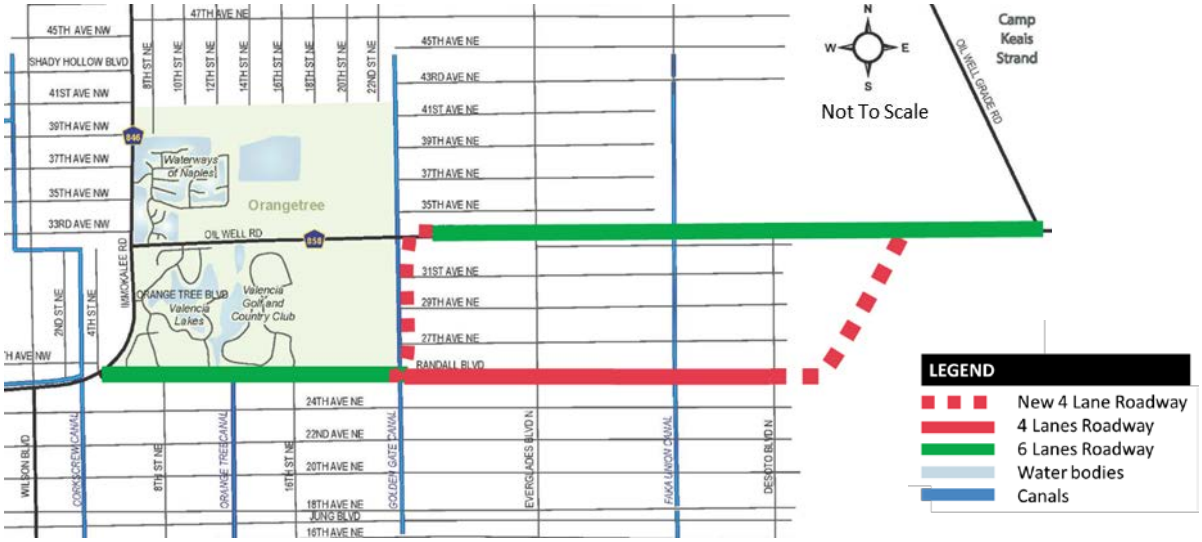


Figure 4-1. Alternative 1

Randall Boulevard would be 4-lanes east of the Golden Gate Main Canal. Traffic would be able to bypass the existing north-south connections of Everglades Boulevard and DeSoto Boulevard, thus allowing potential roundabouts or improved intersections at those locations with a 4-lane Randall Boulevard. **Table 4-1** presents the benefits and limitations of Alternative 1.

Table 4-1. Alternative 1 – Benefits & Limitations

New Alignment Benefits	New Alignment Limitations
• Diverts away from neighborhood / avoids school zones along Oil Well Road • Free flow of traffic operations (at peak hours) • Uses existing ROW on Oil Well Road for 6 Lane expansion • Improves travel time and emergency response time	• Proposed S-Connector requires additional new ROW • Does not make use of existing 6-lane infrastructure on Everglades Boulevard • Introduces driveway access impacts to homes along Randall Boulevard by restricting left-turn movements • Requires new canal bridges

As part of the new alignment, access to existing roads (27th Avenue NE, 29th Avenue NE and 31st Avenue NE) were considered and were shown at the Alternative Public Information Meeting held in 2018. As shown in **Figure 4-2**, three options were presented: (1) three Connection Points with all three streets connected, (2) one Connection Point with all three streets connected via a frontage road, and (3) no streets connected. The benefit of the options with connections is that they provide for improved local traffic circulation by providing direct access to the proposed S-Connector, thereby reducing travel time and emergency response time. Based on public comment received at the Alternative Public Information Meeting, the option with no connections was recommend for further analysis due to the concerns of increased traffic (local cut thru) due to the new access.

Figure 4-2. Alternative 1 New Alignment Access Options

4.2 Alternative 2 – 6-Lane Randall Boulevard plus 4-Lane Everglades Boulevard

Alternative 2 (**Figure 4-3**) proposes widening Everglades Boulevard and eliminating the S-Curve. It also proposes widening Randall Boulevard to six (6) lanes instead of four (4). Alternatives 2 through 4 are variations of the "conventional" response to a congestion issue, that is to widen the existing roadways rather than construct a new roadway. In Alternative 2, traffic would have the option to use an expanded 4 Lane Everglades Boulevard as a bypass to reach an expanded 6 Lane Randall Boulevard. The intersections with Everglades Road would require a traffic signal, causing some delays. Roundabouts are not viable on this roadway in a 6-lane configuration. **Table 4-2** presents the benefits and limitations of Alternative 2.

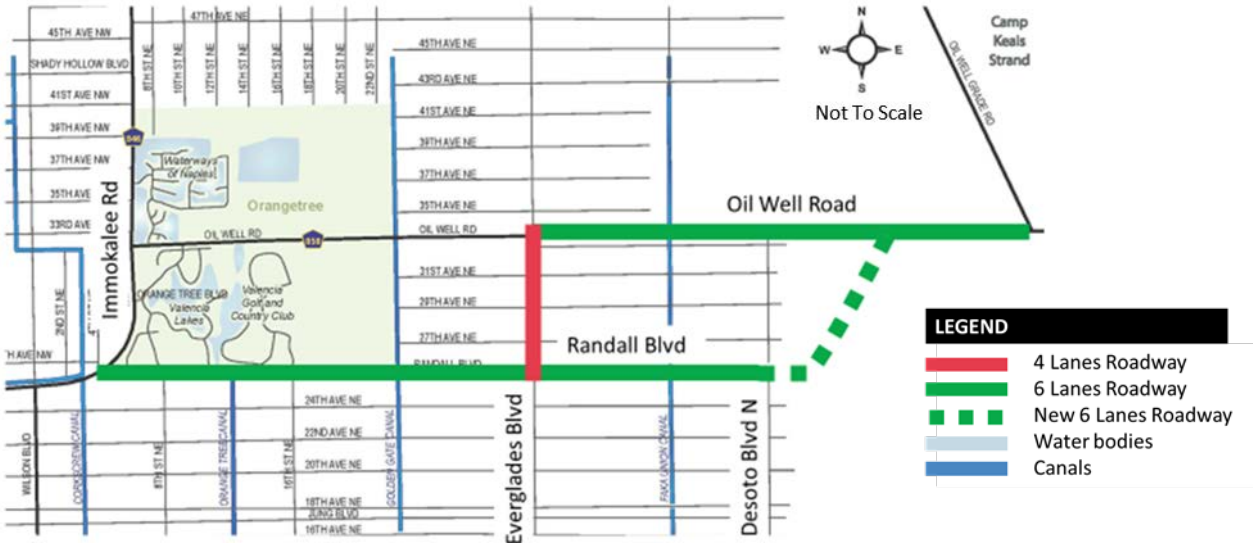


Figure 4-3. Alternative 2

Table 4-2. Alternative 2 – Benefits & Limitations

Benefits	Limitations
• Widening of existing network • Widening of Everglades is consistent with Collier MPO LRTP needs and evacuation routes • Diverts away from neighborhood / avoids school zones • Uses existing ROW on Oil Well Road for 6 Lane expansion • Does not require new bridges	• Increases commute time compared to Alternative 1 • Greater delays at intersections • Potential impacts associated with Everglades Boulevard expansion to 4 lanes (expandable to 6 lanes) • Requires more ROW on Randall Boulevard for 6-lane expansion

4.3 Alternative 3 – 6-Lane Randall Boulevard plus 4-Lane Everglades Boulevard and 4-Lane DeSoto Boulevard

Alternative 3 (**Figure 4-4**) is another variation of conventional widening to the existing roadways within the study area. Alternative 3 is the same as Alternative 2 with the 4-lane Everglades Boulevard

connection, but it also adds another 4-lane bypass at DeSoto Boulevard to distribute some of the traffic. **Table 4-3** presents the benefits and limitations of Alternative 3.

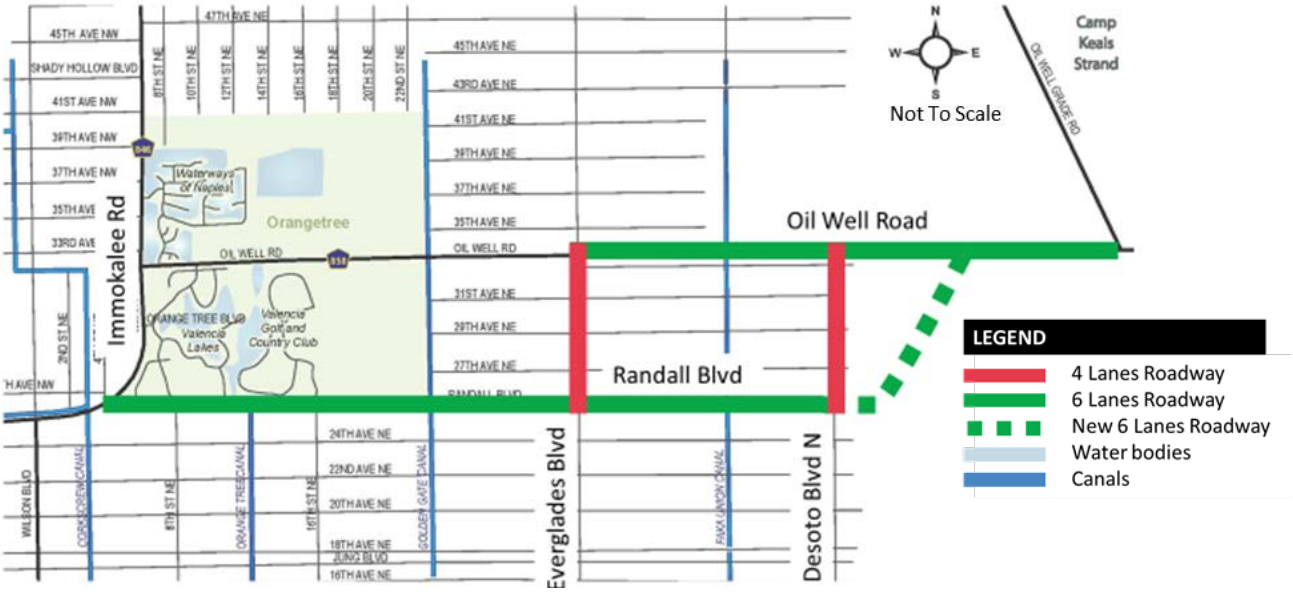


Figure 4-4. Alternative 3

Table 4-3. Alternative 3 – Benefits & Limitations

Benefits	Limitations
• Same benefits as Alternative 2 • Adds a second 4-Lane option for north-south travel with use of both Everglades Boulevard and DeSoto Boulevard • May reduce delays at intersections with two options for users	• Same limitations as Alternative 2 • Potential impacts associated with DeSoto Boulevard expansion to 4 lanes

4.4 Alternative 4 – 6-Lane Randall Boulevard plus 6-Lane Everglades Boulevard

Alternative 4 (**Figure 4-5**) is like Alternative 2 but proposes widening Everglades Boulevard to six (6) lanes and eliminate widening DeSoto Boulevard. **Table 4-4** presents the benefits and limitations of Alternative 4.

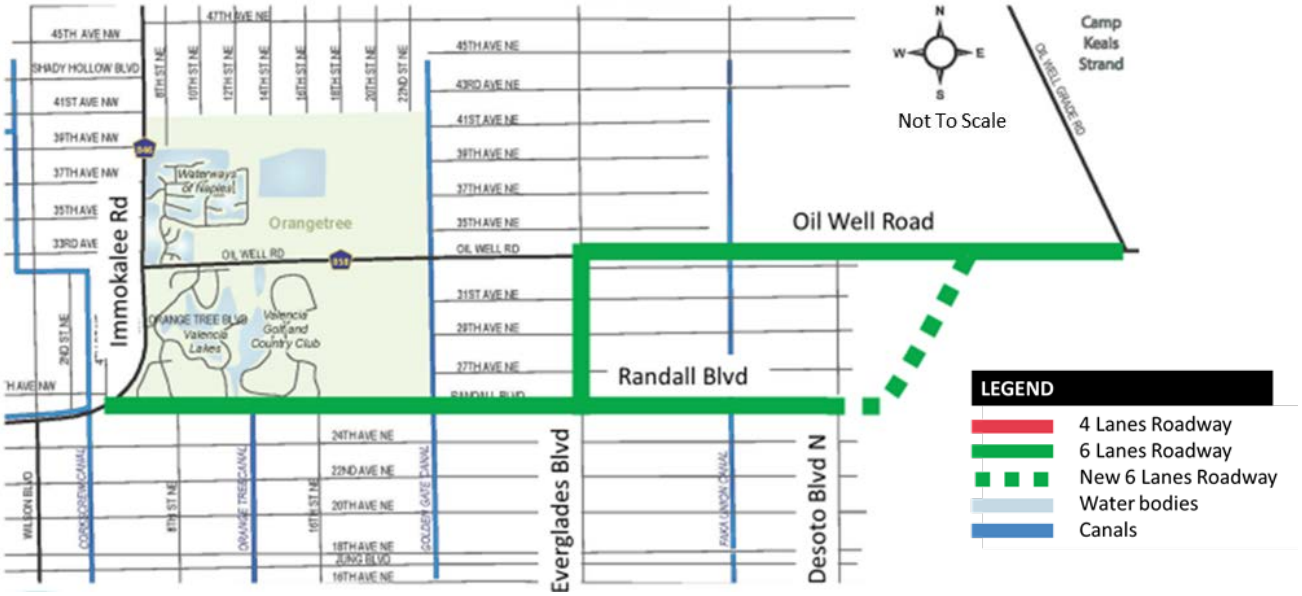


Figure 4-5. Alternative 4

Table 4-4. Alternative 4 – Benefits & Limitations

Benefits	Limitations
• Same benefits as Alternative 2 • Expanded Everglades Boulevard to 6 lanes would further reduce congestion and meet traffic demand	• Same limitations as Alternative 2 • Potential impacts associated with Everglades Boulevard expansion to 6 lanes

4.5 No Build Alternative

The No Action (No Build) Alternative includes highway facilities that are likely to exist in 2040. This includes the existing highway network, which is part of all alternatives in addition to the highway improvements that are identified in the *Collier County MPO 2040 Long Range Transportation Plan* and the *FDOT's Transportation Improvement Program Projects.* The No Build Alternative includes those projects that provide for an increase in capacity, such as new roadway construction, widening projects, and major interchanges. The No Build Alternative provides a baseline for comparing the travel benefits of other alternatives.

The No Build Alternative would avoid ROW and construction costs associated with the proposed improvements, eliminate the short-term disruption that would occur along the existing roadways during construction activities, and prevent business or residential impacts or impacts to other undeveloped lands or wetlands. However, the No Build Alternative does not fulfill the purpose and need of the project. The disadvantage of the No Build Alternative is that there would be no provision to accommodate the anticipated growth in traffic volumes. Without mobility improvements within the study area, operating conditions of Immokalee Road, Randall Boulevard, Everglades Boulevard and DeSoto Boulevard would deteriorate at an accelerated rate. The increased traffic congestion on these roadways would delay motorists and increase the potential for crashes. Specifically, the No Build Alternative will offer no benefits to the existing or future traffic congestion within the area. **Table 4-5** presents the distinct benefits and limitations associated with the No Build alternative.

Table 4-5. No Build Alternative – Benefits & Limitations

Benefits	Limitations
• No impedance to traffic flow during construction • No expenditure of funds for ROW acquisition, engineering, design or construction • No impact to the adjacent natural, physical, and human environments • No disruption to existing land uses due to construction-related activities	• Increase in traffic congestion and road user costs, unacceptable LOS, and an increase in accidents associated with an increase in travel times and traffic volumes due to excessive delays • Increase in carbon monoxide levels and other air pollutants caused by an increase in traffic congestion • Increase in maintenance costs due to roadway and structure deterioration • Increase in emergency service response time in addition to an increase in evacuation time during weather emergencies because of heavy congestion • Increase in safety-related accidents due to heavy congestion • Potential increase in safety-related accidents due to less than desirable levels of service and access management

The No Build Alternative shall remain a viable alternative through the public involvement process. The final selection of an alternative will not be made until all impacts are considered and responses to the public comments have been evaluated.

4.6 Evaluation Matrix of Initial Alternatives

An analysis was initiated to reduce and refine the initial alternative roadway networks down to a specific improvement program, thereby eliminating from consideration infeasible or non-viable alternatives.

Following this qualitative analysis, a quantitative evaluation matrix was developed to compare the initial alternative roadway networks. For each of the initial alternatives, seven criteria were further evaluated. These criteria included overall ROW impacts, business impacts, residential impacts, community facility impacts, special land use impacts, cultural and historical impacts, and natural environment and physical impacts. **Table 4-6** presents the results of the evaluation in matrix format.

Additionally, a traffic analysis was performed for each initial alternative and is presented in **Figure 4-6**. The *Modeling Technical Memorandum* is located in **Appendix B**. The traffic analysis backup (presented in Appendix B) shows the Average Annual Daily Traffic (AADT) and volume to capacity (V/C) by 2045 for facilities within the study area for each initial alternative. Based on the FDOT Urban Area 1-Mile Buffer Hendry & Collier Counties[I] map, the urban areas are defined (U) as everything west of Everglades. It is noted that a V/C greater than one (1) indicates facility deficiency.

[I] Urban Area 1-Mile Buffer Hendry & Collier Counties, FDOT, February 26, 2015

Table 4-6. Initial Alternatives Comparative Matrix

Evaluation Criteria	Alternative 1 with New Alignment "S-Connector"	Alternative 2	Alternative 3	Alternative 4
ROW Impact	MEDIUM	LOW	MEDIUM	MEDIUM
Total Parcels Impacted	LOW	MEDIUM	HIGH	MEDIUM
Vacant Residential Parcels Impacted	LOW	MEDIUM	HIGH	MEDIUM
Residential Parcels Impacted	LOW	MEDIUM	MEDIUM	MEDIUM
Non-Residential Parcels Impacted	LOW	MEDIUM	MEDIUM	MEDIUM
Potential Residential Displacements (No.)	1	0	1	0
Potential Business Displacements (No.)	0	0	0	0
Community Use Parcel Impacts (No.)	0	0	0	0
Wetland Impacts (acres)	16	13	21	13
T&E Species Habitat Potential Effects	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Canal crossings (No. of bridges)	4	2	2	2
Estimated Preliminary Project Cost (in 2018 $ Millions)	LOW	LOW	HIGH	MEDIUM

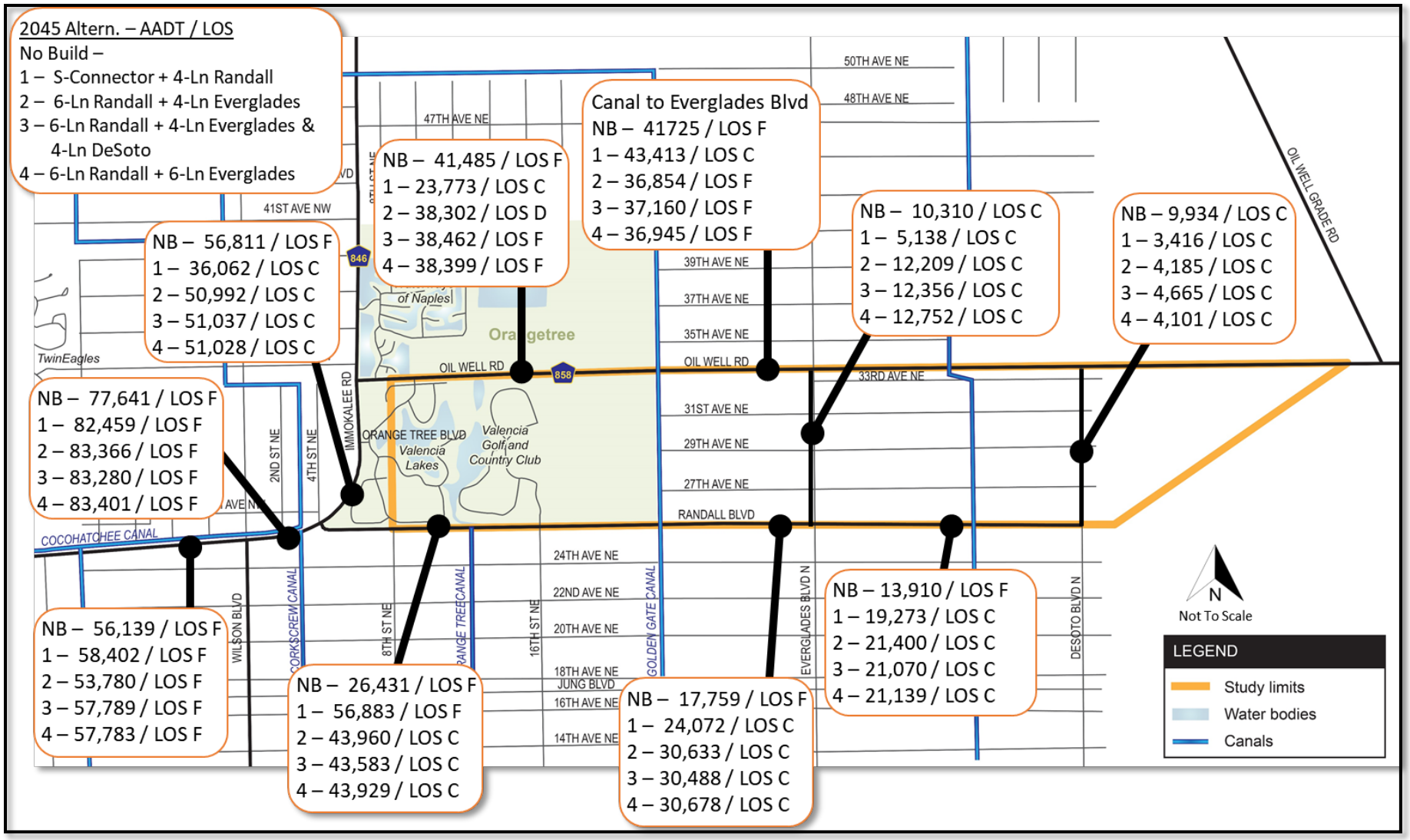


Figure 4-6. Initial Alternatives 2045 Traffic Analysis

4.7 Selection of Viable Alternatives

Based on public comment, traffic analysis, the comparative evaluation (as presented in Table 4-6) and careful consideration, a consensus was reached to eliminate Initial Alternatives 3 and 4 from further consideration. Alternatives 3 and 4 were eliminated since they provided no additional benefit over Alternatives 1 and 2 for the following reasons:

Purpose and Need: All Initial Alternatives satisfy the purpose and need of the project by increasing capacity on the network and enhancing access, safety and mobility.

Natural Environment: Overall, Alternative 1 on a new alignment has higher natural environmental impacts. Wetland impacts range from 6 to 15 acres approximately. Alternatives 1 and 3 have higher wetland impacts compared to Alternatives 2 and 4. Alternative 1 also has the potential for higher surface water impacts and threatened and endangered (T&E) species habitat impacts. Alternative 3 has the highest impacts associated with Florida panther primary zone habitat. The study area is located within the Florida Bonneted Bat Focal Area, and the entire project footprint was identified for potential effects.

Social Impacts: Overall, Alternative 1 has the least social impacts and least impacts related to community cohesion. With most buildings sitting toward the front of their lots, acquiring ROW along the existing streets would diminish the front offsets to the buildings and result in the buildings being closer to the roadway. As a result, Alternatives 2 and 3 which included the six-lane widening of Randall Boulevard (from Everglades Boulevard to DeSoto Boulevard) had significantly more impacts to the residential parcels property, driveways and access than Alternatives 1. There are no displacement of homes or businesses associated with the Build Alternatives. No impacts to community services or parks are anticipated.

Access Management Impacts: By reconstructing the existing roadways as part of this project, the existing driveways would be reconnected to the widened road. This would create access/conflict points along a major portion of the project between the thru vehicles and vehicles entering and exiting driveways. Multiple U-turn points would be required to allow the local traffic to access both directions of the roadway, creating additional conflict points and further degrading the LOS of the roadway. Due the continuous flow movement of the S-Connector, Alternative 1 presents access impacts to residential parcels at the intersection with Randall Boulevard.

Traffic Demand: The existing 2-lane Randall Boulevard (west of Everglades Boulevard) is expected to fail by 2021. Review of Figure 4-6 indicates that all Build Alternative traffic volumes on Randall Boulevard (west of Everglades Boulevard) support the need for 6 lanes. In the No Build condition, Randall Boulevard (east of Everglades Boulevard) will be near failing by 2045 (LOS D); however, the traffic volumes for all Build Alternatives indicates that Randall Boulevard (east of Everglades Boulevard) only requires widening to 4 lanes and that 6 lanes are not necessary within the design year horizon. Additionally, the traffic volumes for all 2045 Build Alternatives along Everglades Boulevard, indicates that only 4 lanes are needed along this facility, which would also minimize impacts to community cohesion. In comparing the No Build and Build Alternatives, Initial Alternative 1 seems to operate with the lowest traffic volumes along the constrained portion of Oil Well Road.

Conclusion: Based on the traffic analysis of the network initial alternatives, there was no improvement or benefit in the LOS on the roadways analyzed (Randall Boulevard, Oil Well Road, Everglades Boulevard, DeSoto Boulevard, and the proposed S-Connector) between Alternatives 2, 3 and 4.

Therefore, Initial Alternatives 3 and 4 were eliminated from further evaluation for the following reasons:

- higher parcel impacts
- higher costs
- higher social impacts to community cohesion along Randall Boulevard
- higher environmental impacts
- no significant improvement in meeting the future traffic demand

Alternatives 1 and 2 were recommended for further evaluation with the following considerations:

- Traffic analysis supports the need for 6-lane widening along Randall Boulevard (west of Everglades Boulevard).
- Traffic analysis supports the need for 4-lane widening along Randall Boulevard (east of Everglades Boulevard).
- Access impacts associated with the S-Connector at the intersection of Randall Boulevard should be further evaluated.
- Regional mobility and the future corridor network needs should be considered in the next update of the Collier MPO LRTP.

SECTION 5

Viable Corridor Alternatives Evaluation

Initial Alternatives 1 and 2 were carried forward in the study for further evaluation as Viable Alternatives 1 and 2. Both viable alternatives were refined based on public and agency comments, future traffic demand, planning consistency and the minimization and/or avoidance of environmental impacts and costs. As a result, the proposed Randall Boulevard extension from east of DeSoto Blvd to Oil Well Road was eliminated and networks with the future Big Cypress Parkway (by others) were considered to be consistent with the Collier MPO 2040 LRTP Needs Plan. The viable alternatives were further refined and presented at the Viable Alternatives Public Information Meeting on April 11, 2019. The No Build Alternative shall remain a viable alternative through the public involvement process.

5.1 Transportation System Management & Operations

Transportation System Management and Operations (TSM&O) Alternatives are defined as low capital cost transportation improvements designed to maximize the utilization and efficiency of the existing transportation system through improved system management. The various forms of TSM&O activities include:

- Traffic signal improvements
- Intersection/interchange improvements
- Widening of parallel arterials
- Ridesharing programs
- High Occupancy Vehicular (HOV) lanes
- Reversible flow roadway systems
- Transit
- Intelligent Transportation System
- Ramp-to-ramp auxiliary lanes

Although the implementation of TSM&O strategies would certainly aid in localized operations of the existing roadway network, the projected traffic volumes for the design year 2045 require additional capacity in excess to any improvements possible through TSM&O measures to maintain or improve the existing levels of service. Therefore, the TSM&O Alternative is not considered a viable alternative and no further evaluation of the TSM&O Alternative will be conducted during this study. The improvements contained in the TSM&O and Build Alternatives are improvements that could be made in addition to those contained in the No Build Alternative.

5.2 Viable Alternative 1 – New Alignment "S-Connector"

Viable Alternative 1 is similar to Initial Alternative 1 with no connections to 27th Avenue NE, 29th Avenue NE and 31st Avenue NE. Viable Alternative 1 (**Figure 5-1**) proposes a new alignment, S-Connector, along the Golden Gate Main Canal between Randall Boulevard and Oil Well Road at a point west of Everglades Boulevard. The proposed S-Connector includes free-flow movements from/to Oil Well Road and Randall Boulevard. **Table 5-1** presents the distinct benefits and limitations associated with Viable Alternative 1 when compared to Viable Alternative 2.

Table 5-1. Viable Alternative 1 – Benefits & Limitations When Compared to Viable Alternative 2

Benefits	Limitations
• Provides the best traffic operations for the road network and relieves congestion along constrained portion of Oil Well Road east of Immokalee Road to Everglades Boulevard • Has less impacts on residential parcels and as a result affects less property owners • Predicted to operate at an acceptable LOS by moving the traffic westbound faster and more efficiently	• Requires significantly more ROW than Viable Alternative 2 • More impacts to the natural environment, including wetland and T&E species habitat • Higher costs • By moving the traffic westbound faster and more efficiently, intersections along Immokalee Road at Oil Well Road, Randall Boulevard, and Wilson Boulevard are likely to fail sooner in the planning horizon • No potential future connection to Vanderbilt Beach Road

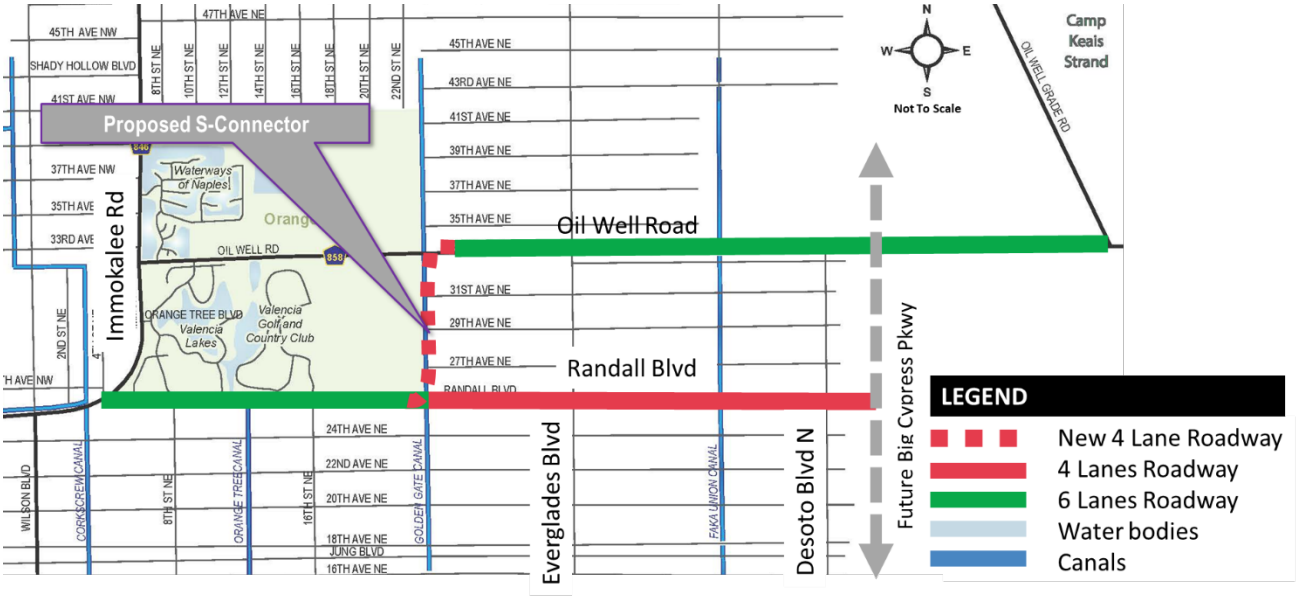


Figure 5-1. Viable Alternative 1 New Alignment

5.3 Viable Alternative 2 – 4-Lane Everglades Boulevard

Viable Alternative 2 (**Figure 5-2**) is similar to Initial Alternative 2 as it proposes widening Everglades Boulevard without the S-Connector and widening Randall Boulevard to four (4) lanes instead of six (6) lanes east of Everglades Boulevard, to minimize impacts to the environment and community cohesion.

Table 5-2 presents the distinct benefits and limitations associated with Viable Alternative 2 as compared to Viable Alternative 1.

Table 5-2. Viable Alternative 2 – Benefits & Limitations When Compared to Viable Alternative 1

Benefits	Limitations
• Requires less ROW than Viable Alternative 1 • Has less impacts to the natural environment including wetland and T&E species habitat • Lower costs • Most compatible with the future roadway network (see Section 1.3.4.1) • Predicted to operate at an acceptable LOS by moving the traffic westbound faster and more efficiently • Enhances an existing Collier County Evacuation Route, Everglades Boulevard, with potential future connection to Vanderbilt Beach Road	• More impacts to residential parcels and property owners • Does not divert as much traffic to Randall Boulevard and, therefore, does not provide as much relief to traffic operations along the constrained portion of Oil Well Road west of Everglades Boulevard compared to Alternative 1 • Similar to Viable Alternative 1, by moving the traffic westbound faster and more efficiently, intersections along Immokalee Road at Oil Well Road, Randall Boulevard, and Wilson Boulevard are likely to fail sooner in the planning horizon

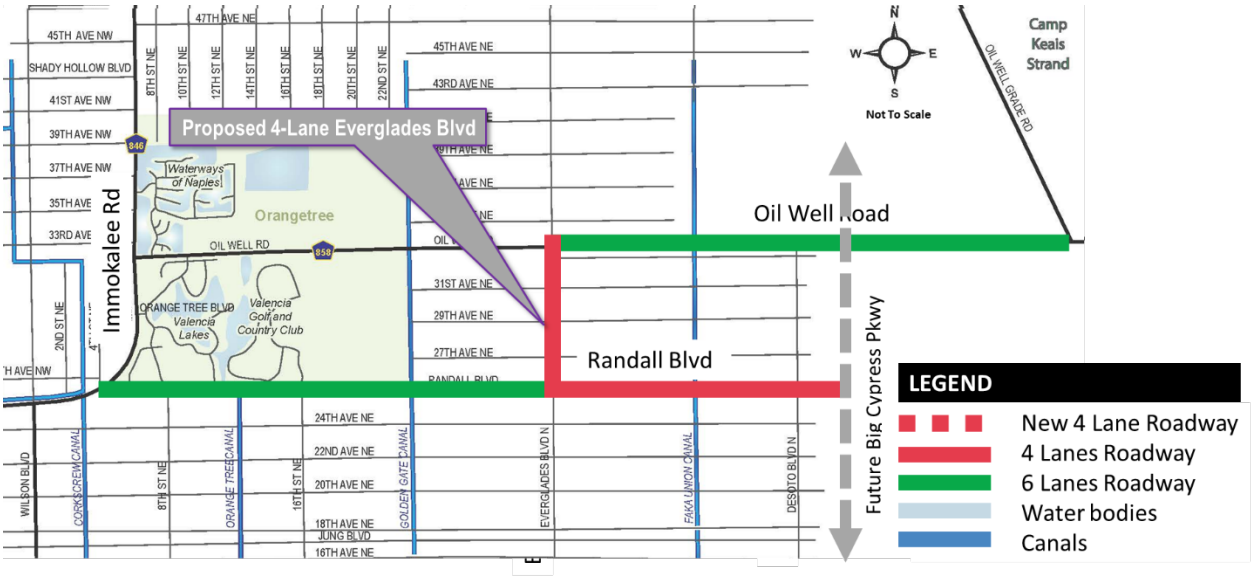


Figure 5-2. Viable Alternative 2

5.4 Evaluation Matrix of Viable Alternatives

A quantitative evaluation matrix was developed to compare the viable build alternatives and the No Build alternative. The objective of this effort was to further refine the alternative roadway segments and carry forward the most viable alternative for a more detailed analysis during the design phase. **Table 5-4** presents the results of the evaluation in matrix format. This information was presented at the April 2019 public meeting. The cost estimate applicable to viable alternatives are summarized in **Appendix G**.

Table 5-4. Viable Alternatives Comparative Matrix

	Evaluation Criteria	No Build Alternative "Do Nothing"	Viable Alternative 1 with New Alignment "S-Connector"	Viable Alternative 2 with Widened Everglades Blvd
BENEFITS	Reduce Congestion	Randall Blvd LOS F Oil Well Rd LOS F	Randall Blvd LOS C Oil Well Rd LOS C	Randall Blvd LOS C Oil Well Rd LOS F
	Enhance Mobility	No Improvement	New North-South Connection	Best Enhances Road Network
	Improve Safety	No Improvement	Improves Corridor Safety but Adds Conflicts at New Intersections	Improves Corridor and Intersection Safety
	Enhance Emergency/Evacuation	No Improvement	Some Benefit	Everglades Blvd is Evacuation Route
IMPACTS	Existing Roadway R/W or Easement (Acres)	102.8	83.6	77.8
	Right-of-Way Impact (Acres)	0	99.4	59.7
	Total Parcels Impacted (No.)	0	343	395
	Residential Parcels Impacted (No.)	0	161	187
	Vacant Residential Parcels Impacted (No.)	0	182	205
	Non-Residential Parcels Impacted (No.)	0	0	3
	Cultural/Historic Parcel Impacts (No.)	0	0	0
	Potential Residential Displacements (No.)	0	0	0
	Potential Business Displacements (No.)	0	0	0
	Project Footprint (Total Acres)	0	183	137.5
	Wetland Impacts (Acres)	0	9.8	5.0
	Other Surface Water Impacts (Acres)	0	1.6	1.1
	Potential T&E Species Habitat Impact (Acres)			
	* USFWS Panther Primary Zone	0	6.6	6.6
	* USFWS Panther Secondary Zone	0	176.4	130.9
	* USFWS Florida Bonneted Bat Focal Area	0	183	137.5
	Floodplain encroachment (acres)	0	110.6	137.5
	Potential Contamination Impacts (No. of sites)	0	0	0
COST	Estimated Total Project Cost (in 2018 $ Millions)	$0	$97.7 M	$80.8 M

NOTE: Cost does not include utilities/relocation, landscaping, Noise barriers are not anticipated.

5.5 Viable Alternative 2 Plus Future Network

Considering programmed and planned projects near the study area (discussed in Section 1.3.4.1), each viable alternative was analyzed for compatibility and enhancement with the future network. The planned extensions of Vanderbilt Beach Road present an opportunity for this facility to act as a parallel reliever to Randall Boulevard. Therefore, connections between Vanderbilt Beach Road and Randall Boulevard would improve the future regional network mobility. Analysis of each viable alternative with the future network indicates the following.

- Viable Alternative 1 (with S-Connector) provides a connection only between Oil Well Road and Randall Boulevard. Due to the area constraints, there are no future plans to extend Vanderbilt Beach Road south of Randall Boulevard.
- Viable Alternative 2 (via Everglades Boulevard) has the potential to connect to the planned Vanderbilt Beach Road extension. Vanderbilt Beach Road as a parallel reliever to Randall Boulevard allows traffic to bypass the congested intersections along Immokalee Road between Oil Well Road and Wilson Boulevard.

Therefore, Viable Alternative 2 provides a better long-term regional benefit than Viable Alternative 1 when combined with the future network (see **Figure 5-3**).

"Viable Alternative 2 Plus" the future network (Figure 5-3) was presented at the Viable Alternatives Public Information Meeting on April 11, 2019.

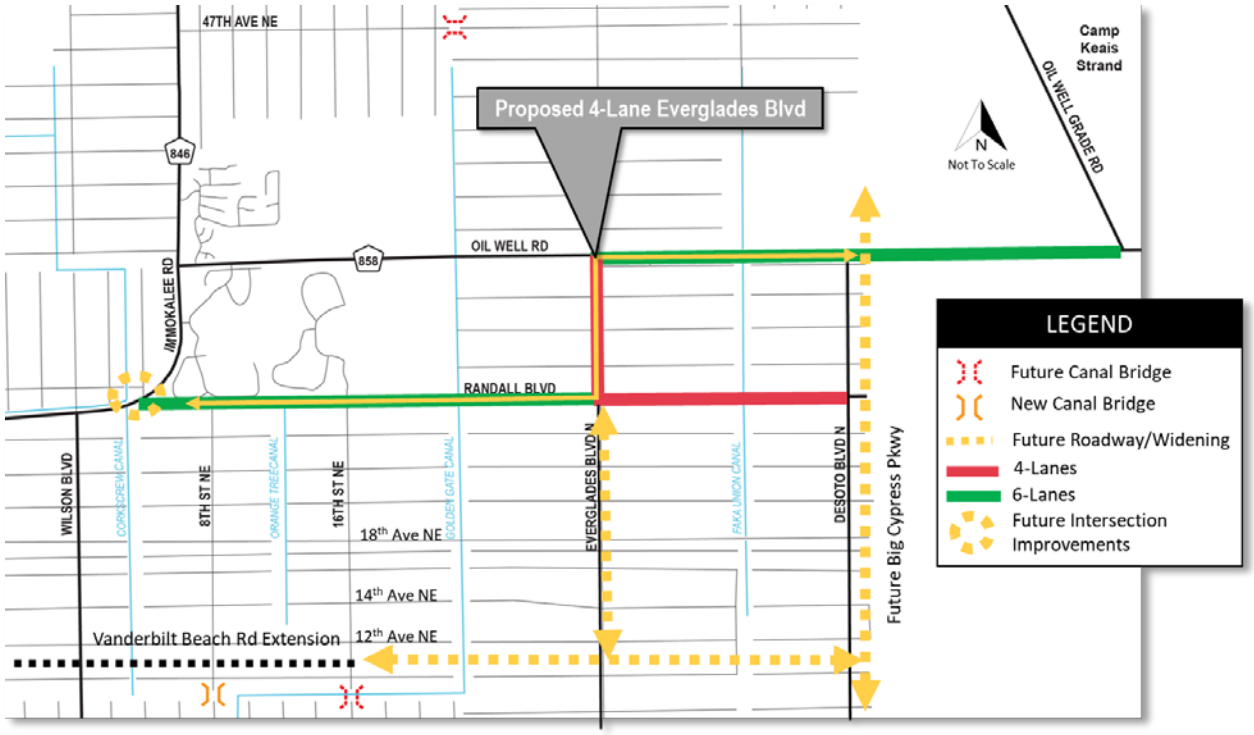


Figure 5-3. Viable Alternative 2 Plus Future Roadway Network

5.6 Traffic Evaluation

Traffic analysis was performed on the viable future roadway networks including: the future No Build network, Viable Alternatives 1 and 2 without the future network, and "Viable Alternative 2 Plus" the future network as described in **Figure 5-4**. The following is observed for the segments in the study area comparing the build alternatives to the no build alternative.

- Immokalee Road:
    - From west of Wilson Boulevard to Randall Boulevard, all alternatives indicate these segments fails; however, Viable Alternative 2 Plus the future network, decreases traffic volumes to well below the No Build volumes for the segment between Wilson Boulevard and Randall Boulevard; Viable Alternative 2 decreases traffic volumes to below the No Build volumes west of Wilson Boulevard.
    - Between Randall Boulevard and Immokalee Road, all build alternatives indicate this segment operates at a LOS C; however, traffic volumes decrease significantly with Viable Alternative 1.
- Oil Well Road:
    - Between Immokalee Road to the Golden Gate Main Canal (constrained portion of Oil Well Road), all build alternatives indicate an improvement from the No Build; however, Viable Alternative 1 improves the traffic volumes significantly.
    - Between Golden Gate Main Canal and Everglades Boulevard, only Viable Alternative 1 and Viable Alternative 2 Plus the future network improve the traffic operations; however, Viable Alternative 2 Plus the future network improves this segment the best.

- Randall Boulevard:
    - From 8th Street NE to 16th Street NE, only Viable Alternative 2 and Viable Alternative 2 Plus the future network improve traffic operations, with the future network providing the greatest congestion relief.
    - From 16th Street NE to the Golden Gate Main Canal, all viable build alternatives improve the No-Build Condition from LOS F to LOS C; however, the future network provides the greatest congestion relief.
    - All viable build alternatives allow this segment to operate as LOS C; however, Viable Alternative 2 Plus the future network, provides the greatest congestion relief.
- Everglades Boulevard:
    - All alternatives allow this segment to operate as LOS C; however, Viable Alternative 1 has the lowest traffic volumes.
- DeSoto Boulevard:
    - All alternatives allow this segment to operate as LOS C; however, Viable Alternative 2 Plus the future network has significantly lower traffic volumes.

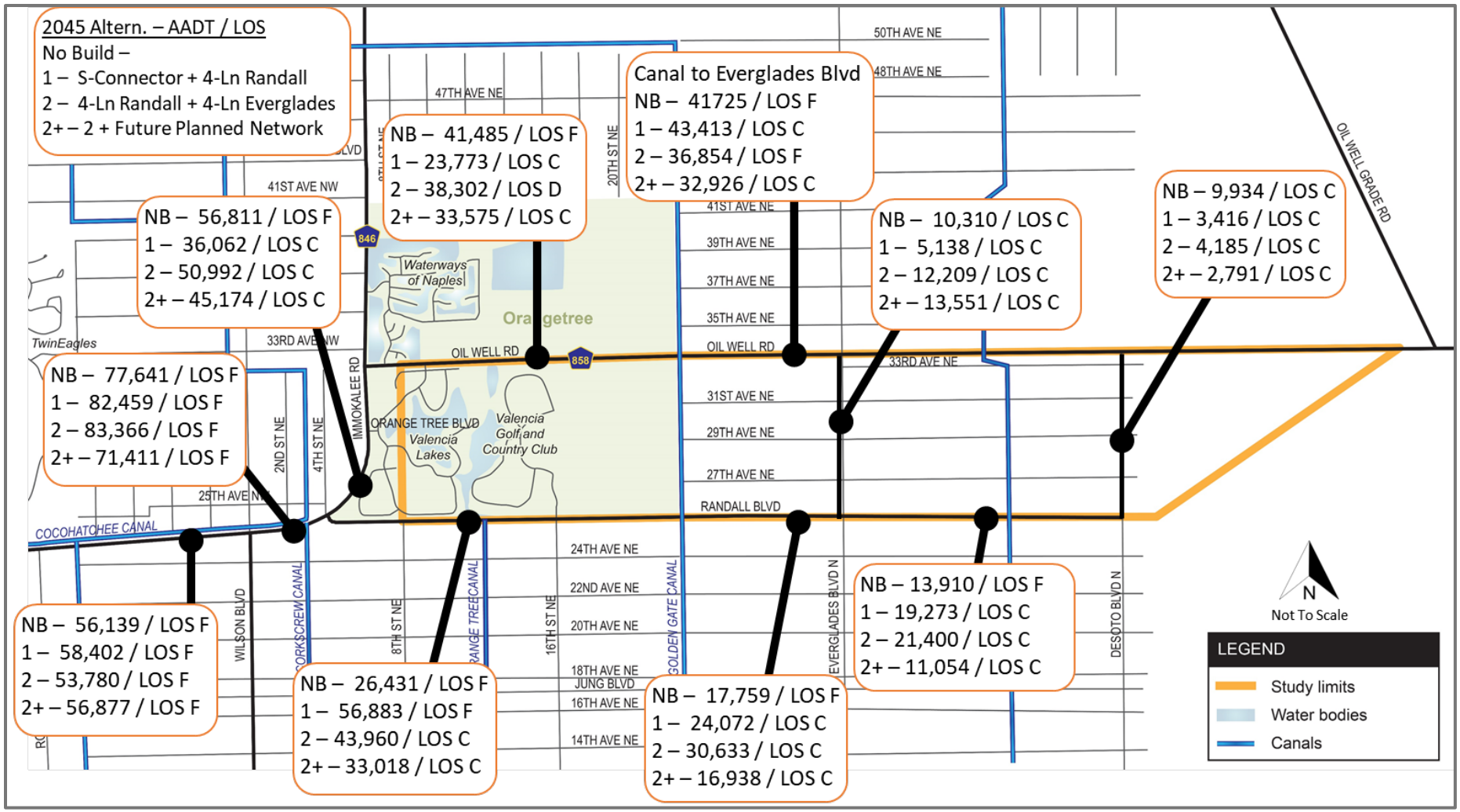


Figure 5-4. Traffic Analysis 2045 Viable Alternatives

5.7 Purpose and Need Evaluation

Further evaluation of viable build alternatives was performed to determine which viable alternative satisfies the primary objectives of the project Purpose and Need.

- **Reduce congestion for future traffic needs due to population and employment growth**: While Viable Alternative 1 seems to relieve congestion the best along the constrained portion of Oil Well Road, it causes the segment of Randall Boulevard between 8th Street NE and 16th Street NE to fail. Viable Alternative 2 does reduce traffic volumes along the constrained portion of Oil Well Road, but not as well as Viable Alternative 1. Due to Everglades Boulevard potentially connecting with the Vanderbilt Beach Road extensions in the future, traffic can bypass the congested intersections along Immokalee Road. *Oil Well Road congestion improves with Viable Alternative 2 Plus the future network.*
- **Enhance regional mobility and access between I-75 and eastern Collier County, as well as improve freight (truck), transit, bicycle and pedestrian access**: While Viable Alternative 1 relieves congestion along Oil Well Road, it does not enhance regional mobility, nor does it improve traffic volumes along Immokalee Road near the intersections of Wilson Boulevard and Randall Boulevard. Transit will be enhanced along Oil Well Road, but not along Immokalee Road due to congestion. Given that Viable Alternative 2 connects to the future network via Everglades Boulevard, it enhances regional mobility. Further review of traffic data indicates that Viable Alternative 2 Plus the future network, provides an acceptable LOS along the Vanderbilt Beach Road extension to the Collier Boulevard and Immokalee Road intersection (west of the study area), allowing drivers to bypass the congested Immokalee Road and Wilson Boulevard/Randall Boulevard intersections for greater mobility options in the region. *Viable Alternative 2 Plus the future network provides enhanced regional mobility, enhances pedestrian and bicycle access by allowing bicyclists/pedestrians to travel further south towards Vanderbilt Beach Road, and enhances travel reliability for transit users due to reduced wait times along Randall Boulevard and Oil Well Road.*
- **Improve safety by reducing vehicle, bicycle and pedestrian user conflicts**: Viable Alternative 1 improves congestion along the constrained portion of Oil Well Road and, therefore, is anticipated to reduce the number of crashes in front of the neighborhoods and schools. Immokalee Road is considered a High Crash Corridor in the Collier MPO 2040 LRTP. Because Viable Alternative 1 does not reduce traffic volumes along Immokalee Road (at the intersections), it does not improve safety along this corridor. Viable Alternative 2 allows traffic to bypass the congested intersections of Immokalee Road. *Viable Alternative 2 Plus provides motorists options to use Everglades Boulevard or future Big Cypress Parkway to connect to Vanderbilt Beach Road, avoiding the constrained portion of Oil Well Road and, therefore, potentially reducing the number of crashes in front of the schools and neighborhoods.*
- **Improve emergency evacuation by increasing the number of residents from eastern Collier County that can be evacuated and access times for emergency responders**: The two emergency facilities near the study area are along Immokalee Road, and Everglades Boulevard is a Collier County Emergency Evacuation Route. Viable Alternative 1 does not reduce traffic volumes at the intersections along Immokalee Road, potentially increasing emergency response times and evacuation time for residents in eastern Collier County. The two emergency facilities along Immokalee Road, are anticipated to experience improved response times with Viable Alternative 2 Plus because of its connection to the region. *Viable Alternative 2 Plus improves the existing Everglades Boulevard, allowing higher through traffic volumes, and connects to Vanderbilt Beach Road which gives residents in eastern Collier County additional mobility options during evacuations.*

Table 5-3 presents summary analysis of each of the viable alternatives and their individual satisfaction of the objectives of the Purpose and Need.

Table 5-3. Purpose and Need Evaluation

	Purpose and Need Objectives				Project Purpose and Need Satisfaction
Viable Alternative	**Reduce congestion**	**Enhance regional mobility and access**	**Improve safety**	**Improve emergency evacuation and access times**	**Does the alternative satisfy all objectives?**
No Build	No	No	No	No	No
1	No	No	Yes	No	No
2	Yes	Yes	Yes	Yes	Yes
2 Plus	Yes	Yes	Yes	Yes	Yes

SECTION 6

Recommended Alternative

Based on public comment, the evaluation matrix (as presented in Table 5-4), purpose and need evaluations including the traffic analysis, and the regional long-range plan, a consensus was reached to eliminate Viable Alternative 1 with the S-Connector from further consideration and recommend Viable Alternative 2 Plus the future network for the following reasons:

Purpose and Need: Viable Alternative 2 Plus satisfies the purpose and need of the project significantly better than Viable Alternative 1.

Natural Environment: Overall, Viable Alternative 1 on a new alignment has higher natural environment impacts. Viable Alternative 1 has higher wetland/surface water impacts and T&E species habitat impacts compared to Viable Alternative 2 Plus.

Social Impacts: Overall, Viable Alternative 1 has the least social impacts and least impacts related to community cohesion because of the new alignment. However, impacts to residential parcels along Randall Boulevard east Everglades Boulevard, as well as Everglades Boulevard (Viable Alternative 2 Plus), were minimized with the selection of the 4-lane typical section (in a 4-lane footprint). Neither of the viable alternatives are anticipated to involve residential or business displacements, nor impact community focal points.

Access Management Impacts: Viable Alternative 1 presents access impacts to residential parcels at the intersection with Randall Boulevard. Viable Alternative 2 Plus has the least amount of access impacts.

Traffic Demand: In comparison to the No Build and Build Alternatives, Viable Alternative 1 operates with the best LOS and relieves congestion along the constrained portion of Oil Well Road east of Immokalee Road to Everglades Boulevard. However, Viable Alternative 1 appears to cause Randall Boulevard to fail between 8th Street NE and 16th Street NE. Traffic analysis of Viable Alternative 2 Plus, indicates that it also improves the mobility along the constrained segment of Oil Well Road. Further, Viable Alternative 2 Plus allows for Vanderbilt Beach Road to act as a parallel reliever to Randall Boulevard. While none of the alternatives improve traffic operations at the intersections of Immokalee Road and Wilson/Randall Boulevard, Viable Alternative 2 Plus reduces those traffic volumes and also allows an option for drivers to completely bypass those intersections via Vanderbilt Beach Road to Collier Boulevard to Immokalee Road.

Emergency Evacuation: Viable Alternative 2 Plus improves the existing Everglades Boulevard, a designated Collier County Evacuation Route, allowing higher thru traffic volumes. It will also connect to the future Vanderbilt Beach Road extension, giving residents in eastern Collier County additional mobility options during evacuations.

Costs: Viable Alternative 2 provides a greater economic benefit since it is roughly 17 million dollars less than Viable Alternative 1 and provides greater results for the region.

Public Input: A live survey took place during the meeting that asked the public if they supported Viable Alternative 1 or Viable Alternative 2 Plus. An overwhelming majority supported the Viable Alternative 2 Plus.

Typical Sections: The typical sections for the Recommended Alternative include:

- Randall Boulevard – west of Everglades Boulevard: 6 Lanes; see Figures 3-3 and 3-4 (bridge)
- Randall Boulevard – east of Everglades Boulevard: 4 Lanes; see Figures 3-1 and 3-4 (bridge)
- Everglades Boulevard – Oil Well Road to Randall Boulevard: 4 Lanes; see Figure 3-1

- Oil Well Road – east of Everglades Boulevard: 4 Lanes expandable to 6 Lanes; see Figure 3-2 and Figure 3-4 (bridge)

6.1 Recommended Alternative Potential Impacts

The Recommended Alternative is not anticipated to have significant natural, social, cultural, or physical impacts. Below is a summary of the impacts anticipated.

6.1.1 Social Resources

The Recommended Alternative includes the widening of existing roadways. No displacements are anticipated with ROW acquisition. Approximately 78 acres of ROW easement and 60 acres of additional ROW is needed for the proposed improvements.

6.1.1.1 Community Cohesion

The Recommended Alternative is not anticipated to adversely impact elderly persons, disabled persons, minorities, or transit-dependent individuals. The proposed improvements include addition of bicycle and pedestrian facilities which are anticipated to provide an enhanced experience that increases walking, cycling, and transit use in the area.

The proposed improvements include widening along existing roadways within the residential area of Golden Gates Estates, which include individual lots of 1 to 5 acres in size. The widening of roadways with areas of existing higher residential properties, is limited to 4 lanes, to minimize impacts to community cohesion. Additionally, the proposed improvements will not significantly impact the existing community focal points/resources or isolate them from the community.

6.1.1.2 Economic

The improvements are anticipated to provide a positive economic effect for regional freight mobility and are consistent with the economic goals of the County. The project supports the County's plans for a transportation network that connects workforce residences with concentrated areas of economic activity. In that way, the proposed improvements will facilitate commuting to economic centers. In addition, improving regional mobility in the area and reducing travel delay may attract new businesses.

6.1.1.3 Land Use Changes

The proposed project is expected to support the planned development near the study area and is consistent with Collier County's Growth Management Plan. Potential drainage pond locations are anticipated to use currently vacant, undeveloped land.

6.1.1.4 Mobility

The Recommended Alternative will the enhance mobility of the area. Additionally, regional mobility is enhanced between I-75 and eastern Collier County for both vehicles and freight. Regional mobility is further enhanced as the Recommended Alternative provides greater connectivity to the future regional network of future Big Cypress Parkway (by others), the planned Vanderbilt Beach Road extension, canal bridges, and intersection improvements at Immokalee Road and Randall Boulevard, just west of the study area.

The Recommended Alternative includes the addition of 6-foot sidewalks and 7-foot (buffered) bicycle lanes adjacent to the outside travel lanes in both directions of the improved roadways; as well as a shared use path proposed along the north side of Oil Well Road (east of Everglades Boulevard) for connection to the future SunTrail alignments. These improvements create a safer mode of travel for pedestrians and bicyclists by reducing conflicts between all modes of travel. Improvements to bicycle and pedestrian facilities within the study area will provide a quality experience that increases walking, bicycling, and transit use, thereby increasing mobility for all modes of travel.

6.1.2 Cultural Resources

Limited reviews of cultural resources indicate that no significant impacts are anticipated. A CRAS may be necessary during the design phase to further confirm any historic resources that may be impacted by the proposed project. Based on the overall lack of observed uplands, the project corridor is considered to have a low probability for archaeological sites. One remnant hammock, with some larger established oak trees was identified and is considered to have a low to medium probability for having archaeological sites eligible for inclusion in the NRHP. Shovel testing is recommended during the design phase to determine if cultural materials occur in this area.

6.1.3 Natural Resources

6.1.3.1 Wetlands and Surface Waters

Impacts to wetlands and surface waters are minimal. Approximately 5.0 acres of wetlands and 1.1 acres of surface waters are anticipated to be impacted by the Recommended Alternative. Impacts to wetlands include Mixed Wetland Hardwoods (FLUCCS 6170), Cypress (FLUCCS 6210), Cypress-Pine-Cabbage Palm, disturbed (FLUCCS 6249), Hydric Pine Flatwoods (FLUCCS 6250 and 6259), Wetland Forested Mixed (FLUCCS 6309), and Wetland Shrub (FLUCCS 6318 and 6319). Impacts to surface waters include Streams and Waterways (FLUCCS 5100), Major Canals (FLUCCS 5120) and Ditches (FLUCCS 5140).

The potentially affected wetland/surface water areas were evaluated using the Uniform Mitigation Assessment Method (UMAM) to assess their ecological functions and determine the amount of mitigation necessary to offset the loss. The UMAM assessment of the USACE and SFWMD-jurisdictional wetlands and surface waters for the Recommended Alternative is estimated at 2.58 federal mitigation UMAM credits (does not include potential ponds). The *Natural Resource Report* includes the UMAM assessments.

Indirect and secondary effects are those impacts that are reasonably certain to occur later in time as a result of the proposed project. They may occur outside of the area directly affected by the proposed project. Cumulative effects include the effects of future state, local, or private actions that are reasonably certain to occur in the project area. Indirect impacts are anticipated to be minor as a result of the Recommended Alternative. Because the direct jurisdictional wetland and surface water impacts are restricted to those adjacent to the existing roadway and have been minimized to only the amount required to achieve the project purpose, secondary impacts are anticipated to be minimal. Due to the developed nature of the surrounding area and the project's minor surface water and wetland impacts, no cumulative impacts are anticipated to occur.

It is anticipated that mitigation of surface water and wetland impacts would be required by both the SFWMD and USACE. Mitigation credits would be purchased from one of the federally approved mitigation banks whose service area covers the project study area, such as: Panther Island Mitigation Bank, Panther Island Expansion Mitigation Bank, Big Cypress Mitigation Bank, and Corkscrew Regional Mitigation Bank. All UMAM scores, UMAM calculations, preliminary surface water boundaries, and determinations discussed are subject to revisions and approval by regulatory agencies during the permitting process. The exact type of mitigation to offset impacts will be coordinated with the USACE and the SFWMD during the permitting phase(s) of this project. To demonstrate no net loss of wetland function within the project's drainage basin, mitigation that may be required for the wetland/surface water impacts will either be provided in the same drainage basin or it will be demonstrated through a cumulative impact analysis at time of permitting that out of basin mitigation will not result in a cumulative impact.

6.1.3.2 Floodplains

Most of the eastern portion of the study area is within the 100-year floodplain, and therefore impacts are anticipated to several FEMA mapped floodplains. Preliminary evaluation indicates that

approximately 138 acres of floodplain encroachment are anticipated as a result of the proposed improvements. As required by the SFWMD, floodplain compensation measures will be provided to minimize potential impacts. The overall floodplain encroachment and floodplain compensation will be further analyzed during the design phase.

6.1.3.3 Water Quality

Pond options for water quality treatment and attenuation were not explored for this study. However, a stormwater facility design will include, at a minimum, the water quantity requirements for water quality impacts as required by SFWMD in Chapter 40E-4.091(1)(a) and Rule 62-330.010, F.A.C. The FDEP identifies the Golden Gate Canal Basin (WBID 3278S), as impaired for dissolved oxygen and iron. There are no nutrient or pollutant impairments that require additional water quality treatment, therefore, no further mitigation for water quality impacts is anticipated. All other basins in the study area are not impaired.

6.1.3.4 Protected Species and Habitat

Based on the review of available information from the FWC and USFWS in relation to the potential habitat impacts that may be associated with the proposed project, an effect determination was established for each federal and state-listed/protected species (including protected nonlisted wildlife species) that may occur in the project vicinity.

Considering mitigation measures (compensatory mitigation for the potential loss of listed species habitat and standard protection measures) that will be implemented prior to project construction, the following preliminary effect determinations are provided:

The Recommended Alternative is anticipated to have **no effect on the following federally protected species**:

Shorebirds: The roseate tern (*Sterna dougallii*), piping plover (*Charadrius melodus*), and red knot (*Calidris canutus rufa*) are all coastal nesting and foraging birds with federal Endangered species status. Piping plover do not nest in Florida but instead are winter migratory visitors, preferring to roost and forage on beaches, mudflats, sandflats, and barrier islands. The roseate tern is a colonial-nesting marine bird known to breed between Marathon and the Dry Tortugas in the Florida Keys. It is strictly a coastal species, foraging along shorelines, and in winter is primarily pelagic. The red knot also does not breed in Florida but used to winter on Florida's Gulf Coast in large numbers. They are primarily marine shorebirds where they feed on coastal invertebrates. The project site contains neither nesting or foraging habitat for these three coastal species and therefore, the project is expected to have no effect on these shorebird species.

Florida scrub-jay (*Aphelocoma coelurescens*): The project site is located within the USFWS Consultation Area for this federally Threatened species. However, no appropriate scrub habitat for this species occurs within the project limits or on immediately adjacent properties. No Florida scrub-jay nests or individuals were observed during the initial listed species surveys. According to the FWC database, the closest documented Florida scrub-jay occurrence was in 1993, approximately 10.1 miles to the northeast of the project site. Given the distance and age of the nearest observation and that optimal habitat for the Florida scrub-jay is not available within the project limits, the project is anticipated to have no effect on the Florida scrub jay.

Everglades snail kite (*Rostrhamus sociabillis plumbeus*): The project site is located within the USFWS Consultation Area for this federally Endangered species. However, the project site is not located in or near designated critical habitat or a priority management zone for this species. Snail kite foraging habitat consists of relatively shallow wetland vegetation, either within extensive marsh systems, or in lake littoral zones. Emergent vegetation, including spike rushes, maidencane, and bulrushes are important components of habitat because they allow apple snails to occupy the area. Dense, thick

vegetation is not optimal for snail kite foraging because kites cannot readily see apple snails to capture them. The snail kite typically nests over open water in areas with good foraging habitat nearby, and most foraging occurs in marshes immediately surrounding the nest. No large, marsh systems or lake littoral zones occur on the project site, which reduces the adequacy of the habitat for snail kites. The surface waters that occur adjacent to the project site (man-made canals) do not provide preferred water depth or clarity for foraging opportunities for the snail kite. No snail kite nests or individuals were observed within the site boundary during initial protected species surveys. The nearest documented observation is approximately 18 miles to the southeast of the project limits and occurred in 1992. The nearest documented nesting site is approximately 25 miles to the northwest of the project area and occurred in 2010. Given that no evidence of the species was observed, documented occurrences are far from the project area, and mitigation will be provided for permanent impacts to surface waters, it is expected that the project will have no effect on the Everglade snail kite.

Red-cockaded woodpecker (*Picoides borealis*): The western portion of the project is located within the USFWS Consultation Area for this federally Endangered species. Nesting habitat for this species consists of open old-growth pine forests >60-80 years old, comprised largely of longleaf pine (*Pinus palustris*) and/or loblolly pine (*Pinus taeda*). Red-cockaded woodpeckers excavate cavities in the live wood of these trees for nesting. Stands of mature pine (>50 years of age) comprise preferred foraging habitat, and red-cockaded woodpeckers usually forage within 0.5 mile of cavity trees. There were no suitable nesting habitat/live cavity trees identified in the project corridor. The project site could potentially be adjacent to mature pine trees, but no red-cockaded woodpecker cavity trees or individuals were observed during initial protected species surveys. The closest documented occurrence was located approximately 8.95 miles west of the site in 2006. The potential for red-cockaded woodpeckers to nest or forage on-site is considered low because the site does not support suitable habitat for this species, but Collier County will implement best management practices during construction to ensure no live cavity trees are disturbed or removed. Therefore, the Recommended Alternative is anticipated to have no effect on the red-cockaded woodpecker.

West Indian manatee (*Trichechus manatus*): The manatee is a federally endangered mammal that can be found in Florida year-round. They prefer marine and freshwater systems near the shore with abundant underwater vegetation like seagrass or eelgrass for foraging. Manatees can occasionally be found a far distance from the coast when they follow rivers or man-made canals inland. The project site overlaps or is adjacent to man-made canals that have some connectivity with coastal waters, though at least one control structure is located along that path. It is unlikely that a manatee could navigate the canals to within distance of the project area, but Collier County will ensure that all construction over or adjacent to the canals will be temporary in nature and observe *FDOT's Standard Specifications for Road and Bridge Construction* for the West Indian Manatee. Therefore, the project is anticipated to have no effect on the West Indian manatee.

Bald eagle *(Haliaeetus leucocephalus*): Although the Bald eagle is no longer listed under the Endangered Species Act, it receives federal protection under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA). There are currently no active nests within 660 feet of the project (federal protection standards) that would be impacted by project construction; therefore, the project is anticipated to have no effect on the bald eagle.

No adverse effects are anticipated to the following state-listed species as a result of the Recommended Build Alternative:

Florida burrowing owl (*Athene cunicularia*): The Florida burrowing owl is the state's smallest and only diurnal owl and is listed as State Threatened by the FWC. Their primary preferred habitat consists of open prairies with very little understory vegetation and can include human-influenced areas like golf courses, pastures, and vacant lots. Small tracts of suitable dry prairie habitat are present within the project limits, and suboptimal habitat is available in the surrounding area. However, no burrows were

observed during field reviews and the habitat is fragmented. Therefore, the project is anticipated to have no adverse impacts on the Florida burrowing owl.

Shorebirds and wading birds: The snowy plover (*Charadrius nivosus*), least tern (*Sternula antillarum*), and black skimmer (*Rynchops niger*) are shorebirds with a state designation of Threatened. The snowy plover is a resident of Florida and breeds along the Gulf Coast, though in greater numbers in the Panhandle. They require open, sandy beaches for nesting and the closest confirmed nest, recorded in 2002, is 20.45 miles to the east. The least tern nests along the coast and forages in nearby waters for fish. The black skimmer is a colony- and beach-nesting bird and sometimes does so in association with least terns, though there have been a few rare confirmed inland nests of skimmers on rooftops or agricultural fields. Black skimmers need open surface water in order to forage for fish. The tricolored heron (*Egretta tricolor*), little blue heron (*Egretta caerulea*), reddish egret (*Egretta rufescens*), and roseate spoonbill (*Platalea ajaja*) are wading birds with the state designation of Threatened. The reddish egret is almost entirely restricted to the coast where it forages in shallow waters for fish and most nesting in Florida occurs in the Keys. The tricolored heron is most numerous in saltwater or brackish water but can be observed foraging inland. They are colony nesters with other herons and ibis using trees or bushes over standing water. Roseate spoonbills nest in Tampa Bay, Merritt Island, and Florida Bay and are uncommon, local visitors to coastal and slightly inland areas of Peninsular Florida for foraging. The little blue heron is the only bird listed here with a preference for freshwater habitats and it can be observed foraging in canals. There is not adequate nesting habitat within or adjacent to the project corridor for either of the three shorebirds or four wading birds listed here. The man-made canals that are within or adjacent to the project area could provide foraging habitat for the little blue heron but since these birds travel long distances to forage, the temporary impacts to these canals from construction is not excepted to impact these species. Therefore, the project is anticipated to have no adverse effects on snowy plover, least tern, black skimmer, tricolored heron, little blue heron, reddish egret, or roseate spoonbill.

Southeastern American kestrel (*Falco sparverius Paulus*): A non-migratory subspecies of kestrel, this species is listed as Threatened by the state. Their preferred habitats include open woodlands, prairie, and pastures. High-quality kestrel habitat must provide both suitable nesting and adequate foraging. Kestrels nest in cavities of large, dead trees previously hollowed by woodpeckers but will also use human-provided nest boxes. Kestrels readily perch along roadsides to hunt for small vertebrates and invertebrates. The project site may contain some foraging habitat for kestrels, but nesting habitat was not identified during survey. For these reasons, there is no adverse effect anticipated on the southeastern American kestrel.

It is anticipated the Recommended Build Alternative **may affect but is not likely to adversely affect the following federally-listed species:**

Eastern indigo snake (*Drymarchon corais couperi*): This species is listed as Threatened by the USFWS, primarily due to habitat loss. Indigo snakes are found in a variety of habitats, including pine flatwoods, dry prairie, edges of freshwater marshes, agricultural fields, dunes, and human-altered habitats, including along man-made ditches and canals. They have been known to utilize gopher tortoise burrows. Based on available data from the FWC, there was a sighting of an Eastern indigo snake in 1980 near the current intersection of Everglades Parkway and Randall Boulevard, but no individuals were observed during the initial protected species survey. Collier County will adhere to the most recent version of the USFWS Standard Protection Measures for the Eastern Indigo Snake during land clearing activities and construction to minimize potential impacts to indigo snakes. Given this commitment, it is anticipated that the project may affect but is not likely to adversely affect the Eastern indigo snake.

Wood stork (*Mycteria Americana*): The wood stork is listed as federally Threatened. The species is known to use freshwater marshes, swamps, lagoons, ponds, flooded fields, depressional areas, open pine-cypress wetlands, and manmade wetlands (i.e., ditches, canals, and stormwater retention ponds)

for foraging. Wood storks are typically colonial nesters and construct their nests in medium to tall trees located within wetlands or on islands. The USFWS has defined the Core Foraging Area (CFA) for a wood stork colony as the area within an 18.6-mile radius from the colony location. The project site is located within the CFA of wood stork colonies 619041 (Corkscrew) and 619310 (North Catherine Island II), with the North Catherine Island colony being located approximately 5.08 miles southeast of the project area. Although no wood stork nests or individuals were observed within the site boundary during initial protected species surveys, the surface waters and wetlands within the project corridor would be considered suitable foraging habitat. Coordination with the USFWS will be initiated during the design phase for the wood stork, and mitigation for surface water impacts will likely exceed what is required to offset impacts to wood stork suitable foraging habitat. Therefore, the project may affect but is not likely to adversely affect the wood stork.

Crested caracara (*Caracara cheriway*): The project site is not located within the USFWS Consultation Area for this federally Threatened species, although there was a confirmed nest located 1.69 miles to the southeast of the project site in 2009. Dry prairies with scattered cabbage palms are areas which constitute the typical habitat, although it also occurs in improved pasture lands and even in relatively wooded areas with more limited stretches of open grasslands. Caracara tend to nest in cabbage palm and live oak, but have also been found nesting in pine, cypress, cedar, and even man-made structures such as a billboard. The majority of the project corridor does not contain suitable nesting habitat for this species, but the eastern end of the Recommended Alternative does cross into agricultural lands that may provide some habitat value. No caracara nests or individuals were observed during initial protected species surveys, but due to the presence of some potential for caracara nesting habitat within the 1,500-meters (4,920 ft) buffer required by USFWS, additional caracara-specific surveys may be advised around suitable habitat prior to construction. As such, a determination that the project may affect but is not likely to adversely affect the crested caracara is being suggested instead of a no effect determination that may normally be associated with a project outside the consultation area.

Florida bonneted bat (*Eumops floridanus*): The project is located within the USFWS Consultation Area for the Florida bonneted bat and occurs within one of the USFWS designated Focal Areas for this federally Endangered species. The nearest documented Florida bonneted bat observation is 5.8 miles to the northwest. This was an acoustic observation that occurred in March 2016. Relatively little is known regarding the habitat requirements and range of the Florida bonneted bat. Most documented roosts occur in manmade structures such as bat houses and residential homes. To minimize adverse impacts to the Florida bonneted bat, Section 7 consultation with the USFWS will be initiated during the design and permitting phase of the project. Due to the project size and location, both acoustic and roost surveys for the Florida bonneted bat will likely be required during the consultation process. Thus, the project may affect but is not likely to adversely affect the Florida bonneted bat.

Florida panther (*Puma concolor coryi*): The Florida panther is a federally Endangered species found primarily in south Florida. The project area is located within the USFWS Florida panther primary and secondary zones. Approximately 6.6 acres of panther primary zone and 131 acres of panther secondary zone are anticipated. According to FWC mortality data collected through 2018, the nearest Florida panther vehicle-caused mortality to this project occurred in 2016 and was documented in the project study area along Randall Boulevard at 16th Street NE. The value of impacted habitats to the Florida panther is preliminarily calculated using the USFWS Panther Tool. This tool assigns a habitat suitability value for each type of panther habitat impacted, and a landscape multiplier based on the habitat's location in either the USFWS primary zone/dispersal zone, secondary zone, or other zone. The tool also includes a base ratio multiplier of 1.98 that accounts for estimated panther habitat lost per year, loss of habitat due to single-family residential developments, and increased potential traffic due to proposed development projects in panther habitat. Using this tool, 313.7 panther habitat unit (PHU) credits are expected to be sufficient mitigation for the Recommended Alternative and therefore the project may affect but is not likely to adversely affect the Florida panther.

It is anticipated the Recommended Build Alternative **may affect but is not likely to adversely affect the following state-listed species:**

Gopher tortoise (*Gopherus polyphemus*): The gopher tortoise is listed as state Threatened and is protected under Florida law, Chapter 68A-27, Florida Administrative Code (FAC). Tortoise utilize upland habitats containing well-drained sandy soils found in pine flatwoods, scrub, dray prairies, and coastal dunes. A gopher tortoise relocation permit is required before disturbing burrows and conducting construction activities, including any type of work within 25 feet of a burrow. No tortoises or burrows were observed during initial protected species surveys, but potential gopher tortoise habitat does occur within the project area and adjacent to the site. If at any point prior to or during construction gopher tortoises or burrows are located, Collier County will ensure all proper permitting and relocations are implemented by an FWC Authorized Gopher Tortoise Agent. Therefore, this project may affect but is not likely to adversely affect the gopher tortoise.

Florida sandhill crane (*Antigone canadensis pratensis*): The Florida sandhill crane is a year-round resident and protected as Threatened by the state. They primarily inhabit freshwater marshes, prairies, and pastures but are commonly seen foraging in and near human landscapes like golf courses, neighborhoods, and roadsides. There is no sandhill crane nesting habitat within the project area, but foraging habitat does occur within the project boundary and in adjacent areas. Impacts to roadside ROW where cranes might forage is temporary, as after construction the new ROW will consist of the same vegetation, therefore this project may affect but is not likely to adversely affect the Florida sandhill crane.

Big Cypress fox squirrel (*Sciurus niger avicennia*): The Big Cypress fox squirrel has been listed as state Threatened since 1990. They prefer habitats of pine flatwoods, cypress swamp, and mixed hardwood-pine forest, but will forage in a much wider range of habitats including golf courses, pastures with scattered trees, and rural residential areas. Slash pine is a primary food source which is found within and adjacent to the project site. No Big Cypress fox squirrels or nests were observed during initial surveys, but pre-construction surveys for nests may be recommended based on available habitat adjacent to the project corridor. Collier County will employ best management practices during construction to ensure no individuals or nests are disturbed. Thus, the project may affect but is not likely to adversely affect the Big Cypress fox squirrel.

Florida black bear (*Ursus americanus floridanus*): The Florida black bear is no longer listed as a threatened species by the FWC. While it was removed from the state list of protected species in August 2012, it is still protected through the F.A.C. 68A-4.009 Florida Black Bear Conservation. The project area occurs within the primary range of the Big Cypress population, and the FWC bear mapping unit indicates this area has abundant black bears. Because the Recommended Alternative includes improvements to existing paved roadways to which bears have acclimated, the Recommended Alternative may affect but is not likely to adversely affect the Florida black bear.

6.1.4 Physical Impacts

6.1.4.1 Contamination

Desktop review indicates that there are no sites identified within the vicinity of the study area expected to have adverse impacts on the project. However, a Phase I Environmental Site Assessment including an area reconnaissance should be conducted during the design phase, to confirm the results of the desktop review and to further identify any potential contamination sites.

6.1.4.2 Utilities

Utility locations and coordination will be done during the project design phase. Preliminary impacts to major utilities include overhead electric, water main, and sanitary force main/sewer lines.

6.1.4.3 Noise

Results of the noise analysis indicates that the noise contour for Activity Category D land uses will not extend outside the ROW for either the four or six-lane typical sections. As such, no impacts to the single Activity Category D land use (Church of Jesus Christ of Latter-Day Saints) are anticipated. **Table 6-1** presents the results of the noise analysis conducted for the initial alternatives.

Table 6-1. Potential Traffic Noise Impacts by Alternative

Initial Alternative	Activity Category B (Residential)	Activity Category C (Recreation)	Activity Category D (Place of Worship – Interior)	Total Potential Impacts
Alternative 1	83	1[1]	0	84
Alternative 2	141	1[1]	0	142
Alternative 3	145	1[1]	0	146
Alternative 4	157	1[1]	0	148

[1] Includes portions of three golf course holes at Valencia Golf and Country Club on the north side of Randall Boulevard (the entire golf course is considered one noise sensitive land use)

As presented in Table 6-1, the number of potential traffic noise impacts to recreational facilities is the same for all alternatives, in that portions of three golf course holes at the Valencia Golf and Country Club may be impacted (the entire golf course is considered a single noise sensitive land use). As also shown, the number of potentially impacted residences varies with each alternative, ranging from 83 under Alternative 1 to up to 157 with Alternative 3. The difference in the number of potentially impacted residences is directly attributable to the different typical sections (four-lane vs. six-lane) for each of the roadways with each alternative. Considering that the Recommended Alternative (Viable Alternative 2) will have a reduced footprint as compared to Initial Alternative 2, the Recommended Alternative total potential impacts are anticipated to be less than 142. Noise abatement is not anticipated as a result of the proposed improvements.

SECTION 7

Public Involvement

Public involvement is integral during the initial stages of the project to provide awareness of community values and concerns and to gain insight on existing constraints and issues that may affect the development and evaluation of corridor alternatives.

7.1 Public and Agency Outreach

Multiple public meetings were held to gain public input throughout the study. Representatives from Collier County and key project study team members were in attendance at each public meeting to answer questions and discuss the project with meeting attendees. In preparation for each meeting, several notification techniques were utilized including notification letters, emails, a newsletter, a press release, and newspaper advertisements. Notifications of the meetings were distributed to all individuals on the project mailing list including local officials, agencies, stakeholders, special interest groups and property owners within the study area. **Table 7-1** summarizes the public meetings conducted. The *Comments and Coordination Rep*ort presents a detailed summary of each public meeting.

Table 7-1. Public Meetings Summary

Item	Description	Date	Location
Kickoff Public Information Meeting #1	Informal open house format to provide the public the opportunity to review and comment on the purpose and need for the project, project schedule, and initial data collection, typical sections, and study area.	Wednesday March 22, 2017 6:00 PM to 8:00 PM	UF/IFAS Extension Office – 14700 Immokalee Road, Naples FL 34120
Initial Alternatives Public Meeting #2	Informal open house format to provide the public the opportunity to review and comment on the initial alternatives, typical sections, updated project schedule and comparative evaluation. A formal presentation was given at 6 PM which included an interactive survey to gain specific public input.	Thursday May 24, 2018 5:30 PM to 7:30 PM	Peace Lutheran Church (Fellowship Hall) – 9850 Immokalee Road, Naples FL 34120
Viable Alternatives Public Meeting #3	Informal open house format to provide the public the opportunity to review and comment on the viable alternatives, recommended alternative to move forward to the next phase of project development, and potential impacts and costs. A formal presentation was given at 6 PM which included an interactive survey to gain specific public input.	Thursday April 11, 2019 5:30 PM to 7:30 PM	Peace Lutheran Church (Fellowship Hall) – 9850 Immokalee Road, Naples FL 34120

Continuous public outreach throughout the study was used to engage stakeholders to identify community values and concerns that may have affected corridor development and evaluation. Elected Officials, Appointed Officials, Agencies (including FDOT District One, and consistent with FDOT District One Environmental Technical Advisory Team members), and other interested parties were notified by email and/or letter for each of the public information meetings (see summary presented in **Table 7-2)**. Property Owners within 300 feet minimum of proposed improvements were notified with a newsletter distribution by mail.

Table 7-2. Summary of Public and Agency Opportunity

Meeting	Meeting Format	Date	Meeting Notification Format			Number of Invitations Mailed	Attendees (excluding project team members)	Number of Comments Received
			Invitation Letters / Emails	Posted on Project Web Site	Other			
Kickoff Public Information Meeting #1	Informal Open House-Displays for Review	3/22/2017	Elected Officials Appointed Officials, Agency; Special Interest. Property Owners within 300 feet min. of proposed improvements.	✓	Newspaper ads; Press Release	3,364	106	60
Initial Alternatives Public Meeting #2	Presentation -Displays for Review	5/24/2018	Elected Officials Appointed Officials, Agency; Special Interest. Property Owners within 300 feet min. of proposed improvements.	✓	Newspaper ads; Press Release	1,240	82	69
Viable Alternatives Public Meeting #3	Presentation -Displays for Review	4/11/2019	Elected Officials Appointed Officials, Agency; Special Interest. Property Owners within 300 feet min. of proposed improvements.	✓	Newspaper ads; Press Release	1,121	65	65

7.1.1 Project Website

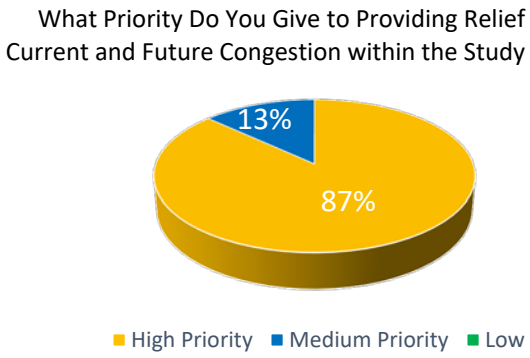
A project website (www.colliergov.net/randalloilwell) was created for this project by Collier County. The website includes meeting information, displays (which are available for viewing and downloading), and a public comment form (available for download with instructions to return to County project manager). The website is updated as needed prior to and following significant project milestones.

7.2 Summary of Public and Agency Input

For more detailed information on the public meetings and information provided, a summary of the display, handouts, notifications, attendees, and an overview of the input received (including written comments) is provided in the *Comments and Coordination Report*.

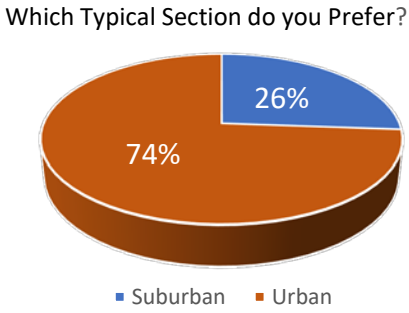
7.2.1 Kickoff Public Meeting #1 (March 22, 2017)

A Public Kickoff Meeting was held on March 22, 2017. The purpose of the meeting was to introduce the Study, review the purpose of and need for the improvements, and present the project corridors and study area. The meeting was informal open house format to provide an opportunity for interested persons to give input, ask questions, and discuss the project. Comment forms were available at the meeting and on the project website and included a survey. In order to gather information on public support for the purpose and need of the project, a survey question asked participants to indicate what priority the County should give to "Providing relief for current and future congestion within the Corridor Study Area." Based on the responses received, 87% of the participants highly supported the project purpose and need.



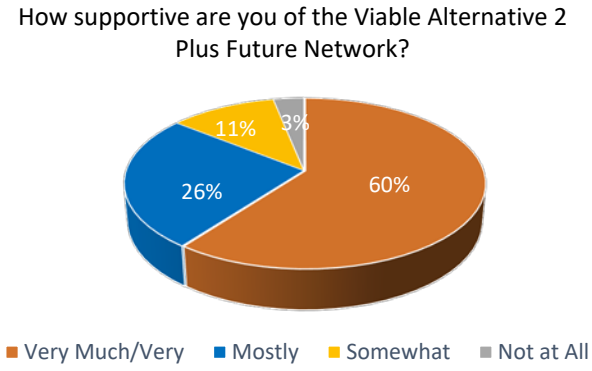
7.2.2 Initial Alternatives Public Meeting #2 (May 24, 2018)

An Initial Alternatives Public Meeting on May 24, 2018. The purpose of the meeting was to present the project corridor initial alternatives and comparative analysis of impacts and costs. The meeting also provided an opportunity for interested persons to give input, ask questions and discuss the project. Comment forms were available at the meeting and on the project website, and a live survey took place during the meeting. Typical section options were on display, and participants were asked if they preferred suburban or urban typical sections. Based on all responses received, 74% supported the urban typical section with curb and gutter.



7.2.3 Viable Alternatives Public Meeting #3 (April 11, 2019)

A Viable Alternatives Public Meeting was held on April 11, 2019. The purpose of this meetings was to present the viable alternatives, a comparative analysis of impacts and costs, as well as the survey results from the previous meetings. Comment forms were available at the meeting and on the project website, and a live survey took place during the meeting. The Recommended Alternative was on display and participants were asked how much they supported the Viable Alternative 2 Plus. Based on responses received, 60% supported the Recommended Alternative.



SECTION 8

Next Steps

As Collier County continues to identify economic development opportunities that result in increased growth and use of transportation facilities, the transportation needs, and priorities will be reevaluated on a regular basis. Following references are provided to ensure future updates of the LRTP reflect the evolving needs of Collier County.

- Roadway Priority Plan. Transportation Needs are categorized into the following focus areas: design deficiencies, pavement deficiencies, safety concerns, access needs, community and economic development transportation needs, scenic byways and tourism, intermodal transportation, other transportation needs, and cultural and environmental considerations. Short term needs are evaluated based on safety concerns, degree of need, number of users, economic development implications, and public and agency input. The needs are reviewed, and financial and time estimations are assigned to each project individually. The following projects were identified as part of this study to be included in the roadway priority plan to ensure future updates of the Collier MPO LRTP reflect the evolving needs of Collier County:
    - Randall Boulevard Widening from 8th Street NE to Everglades Boulevard (6-lane)
    - Randall Boulevard Widening from Everglades Boulevard to Big Cypress Parkway (4-lane)
    - Access Management / Safety along Oil Well Road from Immokalee Road to Everglades Boulevard
    - Intersection Analysis Studies for any intersections that require special evaluation (for example: Immokalee Road at Wilson Boulevard)
    - Everglades Boulevard Widening from Oil Well Road to Randall Boulevard (4-lane)
    - Everglades Boulevard Widening from Randall Boulevard to Vanderbilt Beach Road (4-lane)
    - Vanderbilt Beach Road Extension from 16th Street NE to Everglades Boulevard
    - Vanderbilt Beach Road Extension from Everglades Boulevard to Big Cypress Parkway
    - New corridor alignment of Big Cypress Parkway from Golden Gates Parkway to Vanderbilt Beach Road (extension)
    - New corridor alignment of Big Cypress Parkway from Vanderbilt Beach Road (extension) to Randall Boulevard
    - New corridor alignment of Big Cypress Parkway from Randall Boulevard to Oil Well Road
    - New corridor alignment of Big Cypress Parkway from Oil Well Road to Oil Well Grade Road
    - Future paving of Oil Well Grade Road
- Procedures for Site Development. New roads and improvements to existing roads are often developed as a result of site development on a specific residential property or commercial development, or new development. Individuals or businesses (i.e. developers) who plan to construct new developments are required to conduct a traffic impact study to determine any impact to surrounding roads or identify any planned roads or improvements needed to support the development. As part of the site development approval process, transportation funding allocations could be secured from developers to support future transportation projects. Policies and guidelines for developers exist that ensure proper planning, design, construction, and maintenance of County facilities. The congestion along Immokalee Road is problematic because most of the Activity Centers (major settings for commerce, employment, housing, and entertainment, centered on the convergence of regional infrastructure)[m] are along Immokalee Road east of Wilson Boulevard.

[m] Towards Better Places, The Community Character Plan for Collier County, Florida, April 2001