

# County Road 561A

## *Corridor Conceptual Analysis Study*

Prepared By Lake County Department of Public Works  
Engineering Division

August 2009



LAKE COUNTY  
FLORIDA



*Final Report*  
*County Road 561A*  
*Corridor Conceptual Analysis Study*  
*August 2009*

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## **Executive Summary**

The Lake County Public Works Department has conducted a Corridor Conceptual Analysis for the improvements of County Road 561A (C.R. 561A) in Lake County from C.R. 455 to C.R. 561. Portions of this corridor are in the judicial jurisdictions of the City of Minneola and in the unincorporated Lake County area, which includes the Ferndale Community.

The objective of the corridor study is to study, analyze and document the environmental and engineering analyses to assist Lake County in reaching a decision on the type, location and conceptual design for the future improvements to C.R. 561A. The improvements are necessary to accommodate the future traffic demand, safely and efficiently, and to address other safety concerns within the corridor. Improvements to the corridor are considered long-term including widening and/or corridor geometry reconfiguration.

## **Key Issues**

The following are key issues addressed by the team during the study process:

- *Lake County needs to implement and document public involvement process in an effort to gain the public and citizens' support for any future improvement consideration for the CR 561A corridor.*
- *Lake County is committed to working continually with the property owners in the area, in order to complete an access management plan that meets the needs of the community, while satisfying the requirements of design.*
- *Four-foot bicycle lanes and five-foot sidewalks will be provided along C.R. 561A.*
- *The opportunity for potential pedestrian multi-use trail facilities will be considered along the corridor by Lake County, as an alternative to pedestrian activities on C.R. 561A.*
- *The corridor improvements and drainage system will be designed and constructed, with measures taken to minimize impact on existing utilities and wetland.*
- *Construction of the improvements will be performed in accordance with Lake County's standard construction practices, with emphasis on maintaining acceptable driving conditions through the construction zone, and maintaining access to all businesses and residences within the C.R. 561A corridor.*
- *If during construction activities, mitigation for contamination sites is found to be necessary, environmentally responsive actions will be taken in accordance with applicable Florida Department of Environmental Protection regulations.*
- *Consideration will be given to aesthetics during the design.*
- *Coordination with the City of Minneola and the Ferndale Community will continue to occur throughout the process. Consideration will be given to beautification and landscaping efforts.*
- *A public involvement program plan will be developed by Lake County and implemented during the design and construction phases of the project.*
- *Lake County will continue coordination with the St. John's River Water Management District and the Army Corps of Engineers prior to construction.*

## **Study Team Proposal**

Following are proposals made by the study team to Lake County Officials, City Officials, Participating Agency and Interested Parties for the C.R. 561A Corridor Conceptual Analysis for their consideration:

### **1. Two Lanes: Widen and Reconstruct Improvement Segments Consideration**

#### **C.R. 455 at C.R. 561A:**

- ❖ Provide a turn-lane to accommodate turning movement from C.R. 455 to C.R. 561A
- ❖ Add an additional left-turn lane and right-turn lane from C.R. 561A to C.R. 455
- ❖ Future signal installation when warranted

#### **C.R. 561A at C.R. 561 Realigned**

- ❖ Realigned C.R. 561A two lanes at C.R. 561 to U.S. 27
- ❖ Install a traffic signal
- ❖ Add an additional left-turn lane and right-turn lane

#### **Reconstruct C.R. 561A Corridor with bike lanes and sidewalks**

- ❖ This calls for reconstructing the existing two lanes to add a bike lane, sidewalk and multi-use trail according to the Lake County Master Plan.

### **2. Four Lanes: Widen and Reconstruct Improvement Segments Consideration**

#### **C.R. 561A with Proposed Hancock Road at Heritage Hills Blvd:**

- ❖ Install a traffic signal
- ❖ C.R. 561A four-lane roadway realignment from the proposed Hancock Road to Heritage Hills Blvd.
- ❖ Coordinate with the future Turnpike Interchange Ramp
- ❖ Add an additional left-turn lane and right-turn lane

## **1.0 Introduction**

This Corridor Conceptual Analysis Report documents the Lake County study for improvements to the C.R. 561A study area. The project area, as shown in Figure 1.1, is bound by C.R. 455 to C.R. 561/Turnpike Road, south of U.S. 27 and Turnpike on the east and is approximately 3-miles.

### **1.1 Purpose**

The purpose of this C.R. 561A Corridor Conceptual Analysis Report is to present the findings of the studies conducted for this project, describe the results of the evaluation, and document the justification for the recommended improvements. This document describes the determinations made regarding potential corridors, typical roadway cross sections, a summary of existing and future traffic conditions, and the comparative analysis of improvement alternatives that would satisfy existing and future transportation demands.

Based upon the engineering and environmental resource data collected, a review of the city and county goals, and the application of the current roadway design standards, potential alternatives were developed and evaluated based on impacts resulting from their alignment locations and configurations. Each alternative was assessed against the others using evaluation criteria developed for that purpose. From that comparative evaluation, the best potential location(s) and most appropriate design configurations were identified for those alternatives that warranted further review. This report has been prepared to assist the City and the County in identifying a recommended design concept alternative, and will serve as the document of record for support of subsequent engineering decisions for further evaluations and public hearings that follow.

The conceptual roadway alignment plans with right-of-way identification lines, included in Appendix 1, are an integral part of this document and should be reviewed in concert with this document. The plans reflect specific detail concerning each area of the project and will supplement information contained within this report.

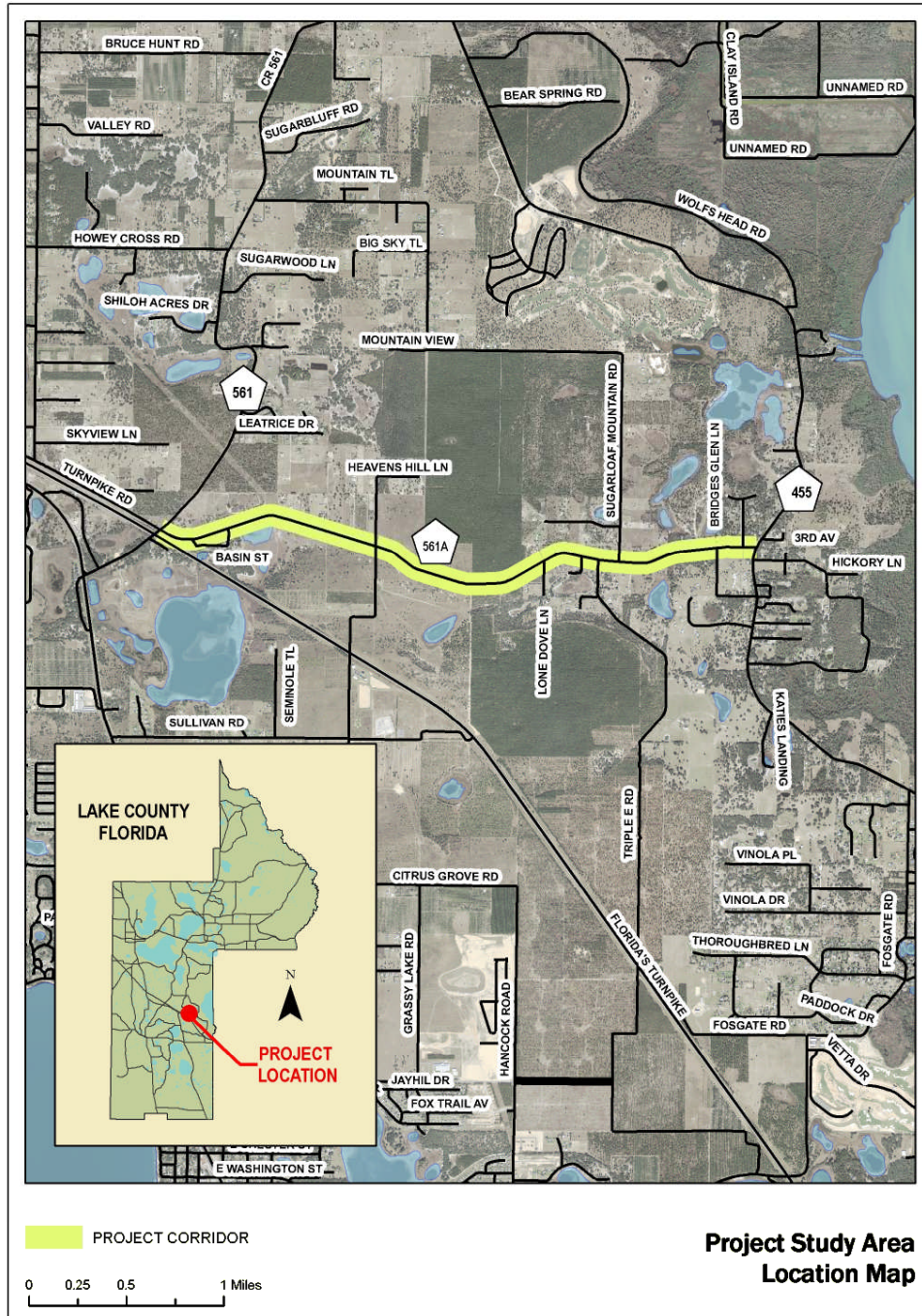
### **1.2 Project Description**

The proposed project involves the identification of improvements to the C.R. 561A corridor. The roadway is situated within the judicial jurisdictions of the City of Minneola, the County and also within un-incorporated Ferndale Community.

Proposed improvements are needed to accommodate the population increase and traffic growth in the project area. Planned Unit Developments (PUD) and numerous developments of regional impact have recently received approval within this area of the City. Due to these future developments, the County and interested parties pursued this project to identify an alignment for a roadway, to meet the growing needs of the community and to identify where additional requirements may be placed on developments not approved to date.



**Figure 1.1: Project Study Area Location Map**



## **2.0 Need for Improvement**

The need for improvements to C.R. 561A is based on several factors. First, the need to establish an alignment that Lake County can use to continue planning for the corridor with developers in the area. Secondly, the need to provide an alternative that provides connectivity for C.R. 455 and C.R. 561, with access and linkage to U.S. 27 and S.R. 50. Third, improvements are consistent with the goals, objectives and policies of the Lake County Comprehensive Policy Plan and the City of Minneola. This section of the report presents the findings relative to each of these areas and a review of the recommendations presented by the local comprehensive planning efforts.

## **3.0 System Linkage**

Currently, the main thoroughfares through the area are U.S. 27 - north and south, S.R. 50 - east and west, and Florida Turnpike S.R. 91. Both of these roadways are near or over capacity in the existing conditions. The intersection of U.S. 27 and S.R. 50 operates at LOS F today. With the future growth planned for the Clermont, Minneola, and Lake County area, this intersection will continue to fail into the near future. The C.R. 561A corridor and Minneola Collector Road improvements will continue to provide capacity for vehicles traveling through the area.

The future Florida Turnpike interchange, proposed by the Hills of Minneola developer, is in the direct vicinity of this project. The C.R. 561A project can provide system connectivity and needed linkage between the Turnpike, U.S. 27, S.R. 50 and the outlying areas of Lake County.

### **3.1 Modal Inter-relationships**

The Trails Master Plan was created by the Lake County Public Works Department. While there are pedestrian and bicycle facilities in the study area, C.R. 561A corridor provides connection to C.R. 455, a Green Mountain Byway corridor, that is one of the most popular cycling routes in Florida. The rolling hills and winding roadway draw cyclists from around the world for competition, training, and touring.

There are currently no sidewalks on C.R. 561A and no paved shoulders. Park and Ride service is available on S.R. 50 and U.S. 27 to Orlando with proposed future transit services within the study area.

### **3.2 Capacity**

The Minneola Ridge Area-Wide Traffic Study was conducted in 2005. Lake-Sumter MPO approved the 2025 Long Range Transportation Plan, identifying the growing need within the study area corridor, and the community for additional capacity on the roadway network. It indicated that the already failing roadways were not able to handle additional capacity and even with the widening of some of those roads, there was still a need to provide alternate travel ways. With the large number of developments in various stages of the approval process in the City of Minneola and Clermont, it is critical to have plans to address the necessary infrastructure. This project will allow Lake County and other community partners to be prepared well into the future, to address new development that is proposed for the surrounding area.

### **3.3 Safety**

The condition of the existing corridor is unsatisfactory and does not meet current design standards. Crashes have been recorded in the corridor, as well as, outside of the corridor due to the overcapacity of the roadway network. Additional capacity added through this project will alleviate the external network and will help to enhance safety on those roadways.

The existing alignment includes portions of paved and unpaved roadways. There are numerous vertical and horizontal curves that produce safety concerns, for those vehicles using the roadway. This project will serve to present a roadway that meets the standards for a 45-mile per hour roadway.

### **3.4 Consistency with Transportation Plans**

The improvements recommended for C.R. 561A are consistent with the goals, objectives and policies of the adopted 2020 Lake County Comprehensive Policy Plan and the 2025 Lake-Sumter Approved Long Range Transportation Plan and other recent studies completed within the area.

## **4.0 Existing Conditions**

The following sub-sections depict the conditions and characteristics of the existing C.R. 561A corridor.

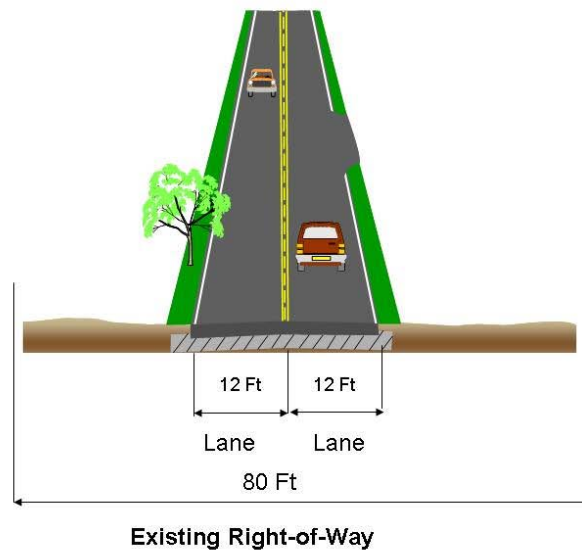
### **4.1 Functional Classification**

Functional classification is the process through which streets and highways are grouped into classes, or systems, according to the character of service they provide. In the latest update to the functional classification tables, C.R. 561A has been classified as a Rural Minor Collector facility and is situated in unincorporated Lake County (between Ferndale Community and the City of Minneola-see picture 1 on next page). The Rural Minor Collector facility system provides service for trips of moderate length at a lower level of mobility, and connect with principal arterial roads and rural collector routes. *Area City annexation and Minneola DRI will transition the corridor into a future urban collector.*

#### 4.1.1 Typical Cross Sections

The existing typical cross section of C.R. 561A, shown in figure 4.1 below, is generally described by two (2) undivided, 12-foot lanes. There are no shoulders provided along the roadway and an open swale is used as a drainage system. The posted speed limit along C.R. 561A is 55 mph.

**Figure 4.1 Existing Typical Section**



**Existing Picture (1) of C.R. 561A Corridor along Ferndale Community**

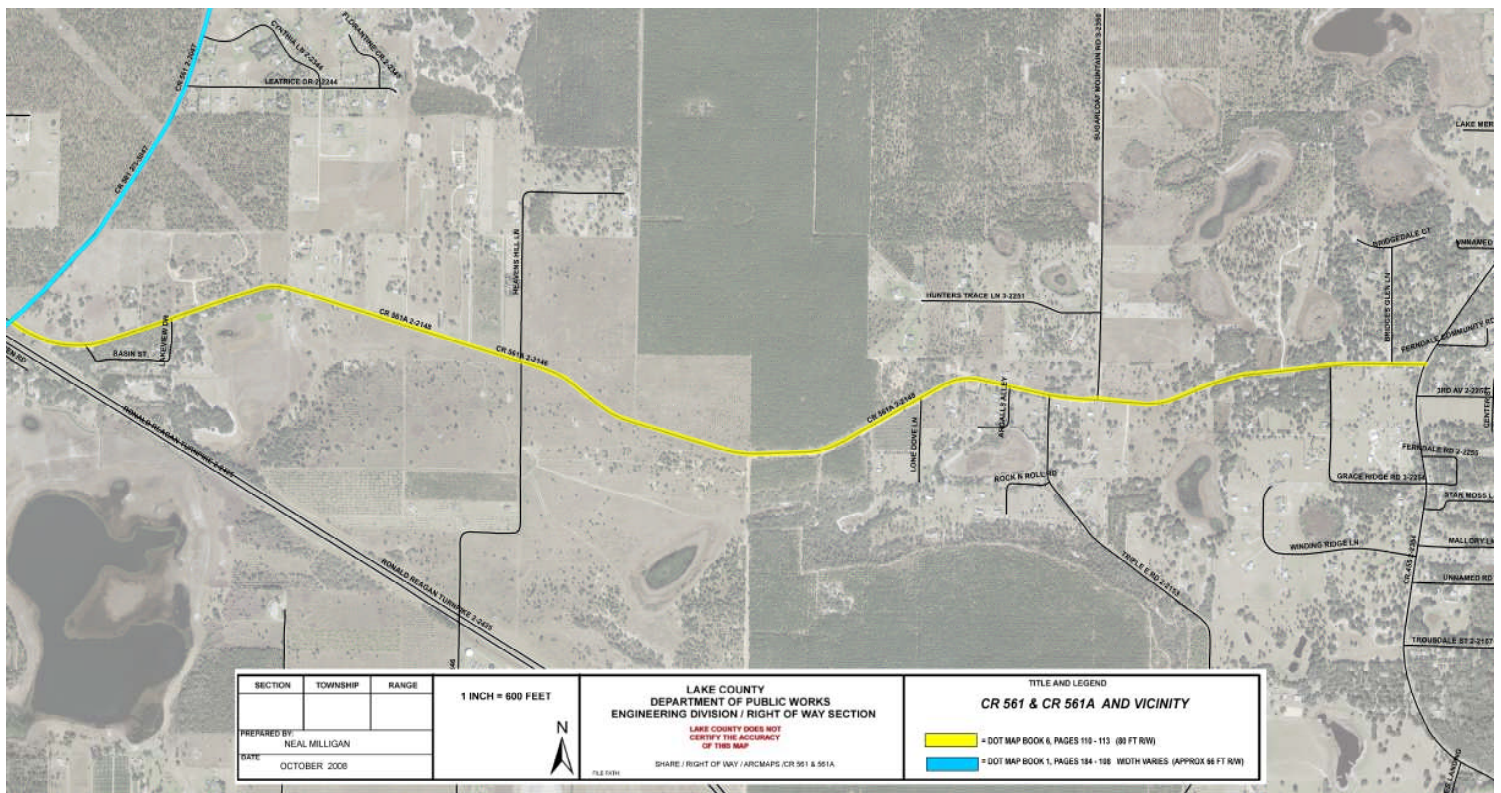
**4.2 Pedestrian and Bicycle Facilities**

Pedestrian or bicycle facilities are not provided along the existing C.R. 561A corridor. Pedestrians and bicyclists traverse the corridor in the travel lanes or through the various driveways. The area is used by bicyclists due to terrain and proximity to C.R. 455, a designated Green Mountain By-way corridor.

**4.3 Right of Way**

The original right-of-way for C.R. 561A, owned by Lake County Public Works, was shown in 1966 right-of-way maps as 80-feet (see right-of-way map). 24-feet of the right-of-way are paved roads as depicted in Figure 4.3.1 and corridor picture 1.

**Figure 4.3.1 - Depicting 80-foot right of way along C.R. 561A Corridor**



#### **4.4 Horizontal Alignment**

The existing horizontal alignment for C.R. 561A corridor is an easterly direction from C.R. 561 to C.R. 455. The road traverses through a series of 2-curves to Grassy Lake Rd. After this, the road continues easterly then a series of 3-curves to Lone Dove Lane and continuing through the intersection of Lone Dove Lane. The C.R. 561A corridor continues on to Grace Ridge Road with a series of 5-curves and tangents to C.R. 455.

#### **4.5 Vertical Alignment**

The vertical alignment of the existing C.R. 561A alignment varies along the roadway between C.R. 561 and Grace Ridge Rd., with a predominately-rolling terrain. There are numerous sag and crest vertical curves with the largest grade of approximately 3.72% and lowest grade of 0.5%. The topography varies between 90-feet and 213-feet. Both extremes are well within the guidelines set by the Florida Department of Transportation (FDOT) Design and Criteria Process Manual.

#### **4.6 Drainage**

The C.R. 561A project lies within the jurisdictional boundaries of the St. Johns River Water Management District (SJRWMD). The project lies within the Ocklawaha River Basin, and is further characterized by being included within the Lake Apopka Drainage Basin with other (Lake Spencer Outlet and Lake Merritt Outlet) outlets as depicted in Drainage Basins Map Figure 4.6.1.

Throughout the project corridor there is a limited amount of drainage infrastructure. Generally, roadway and surface runoff is treated in roadside swales. There is no apparent outfall for the existing roadside swales. Therefore, runoff is assumed to collect and infiltrate into the ground. A stormwater management system would be constructed in accordance with the regulations of the St. Johns River Water Management District [Chapter 40C, Florida Administrative Code-F.A.C.]. The system will include the construction of surface water and stormwater treatment ponds in the design phase.

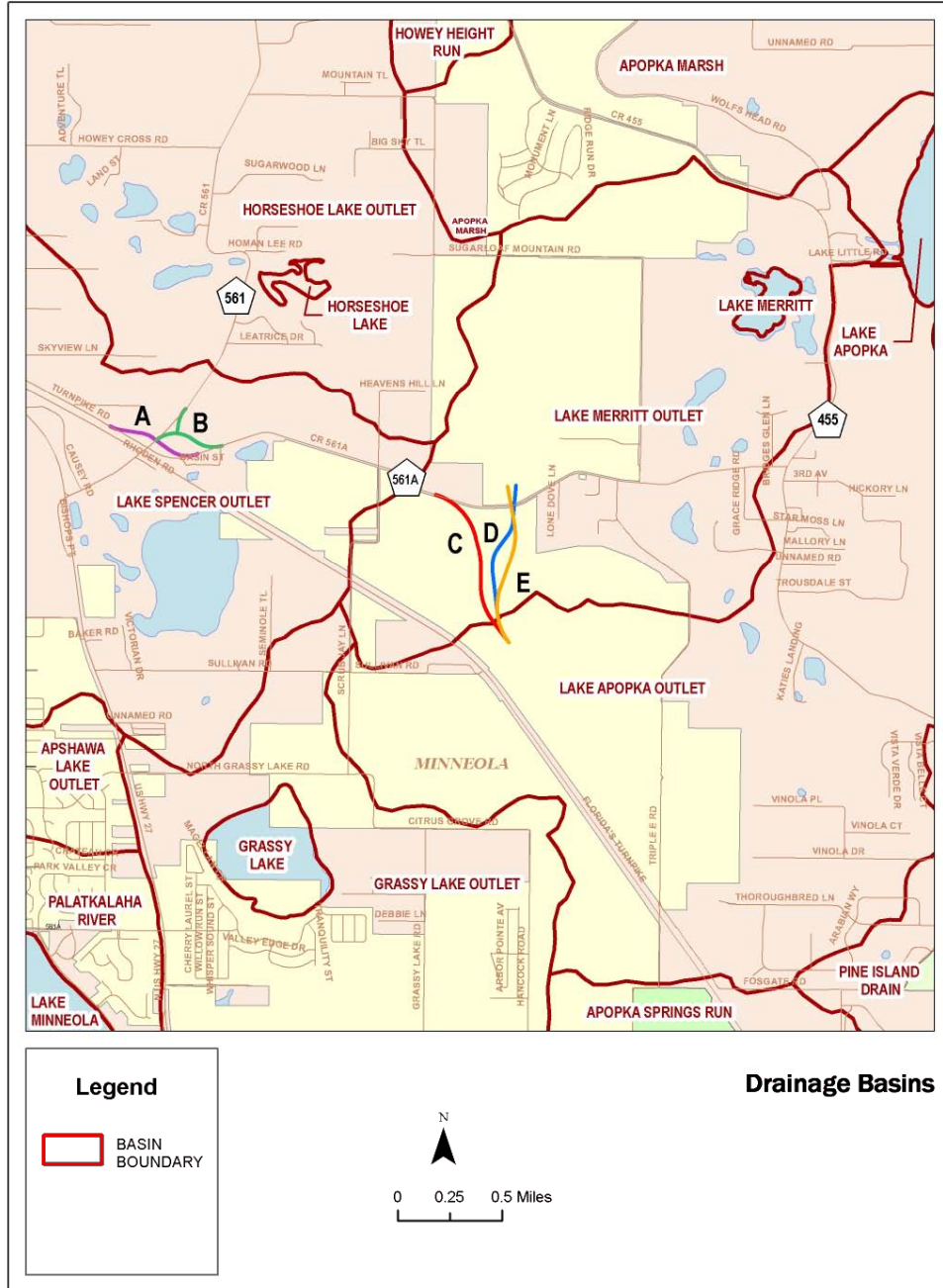
#### **4.7 Floodplains**

There is no floodplain from C.R. 561 to Sugarloaf Mountain Road and one floodplain from Sugarloaf Mountain Road to C.R. 455. The segment from Sugarloaf Mountain Road to C.R. 455 is a constrained facility, which will not be improved. However, future pond sites along the C.R. 561A corridor could affect the existing floodplain associated with a wetland connected to the road project. The FEMA Flood Insurance Rate Map No. 12069C0366D dated July 3, 2002, indicates that the wetland is in Zone A, where there is no flood base established. Based on existing contour elevations, the estimated 100-year elevation is approximately 71-feet. Floodplain area is shown on Floodplains Map Figure 4.7.1.

#### **4.8 Geotechnical Data**

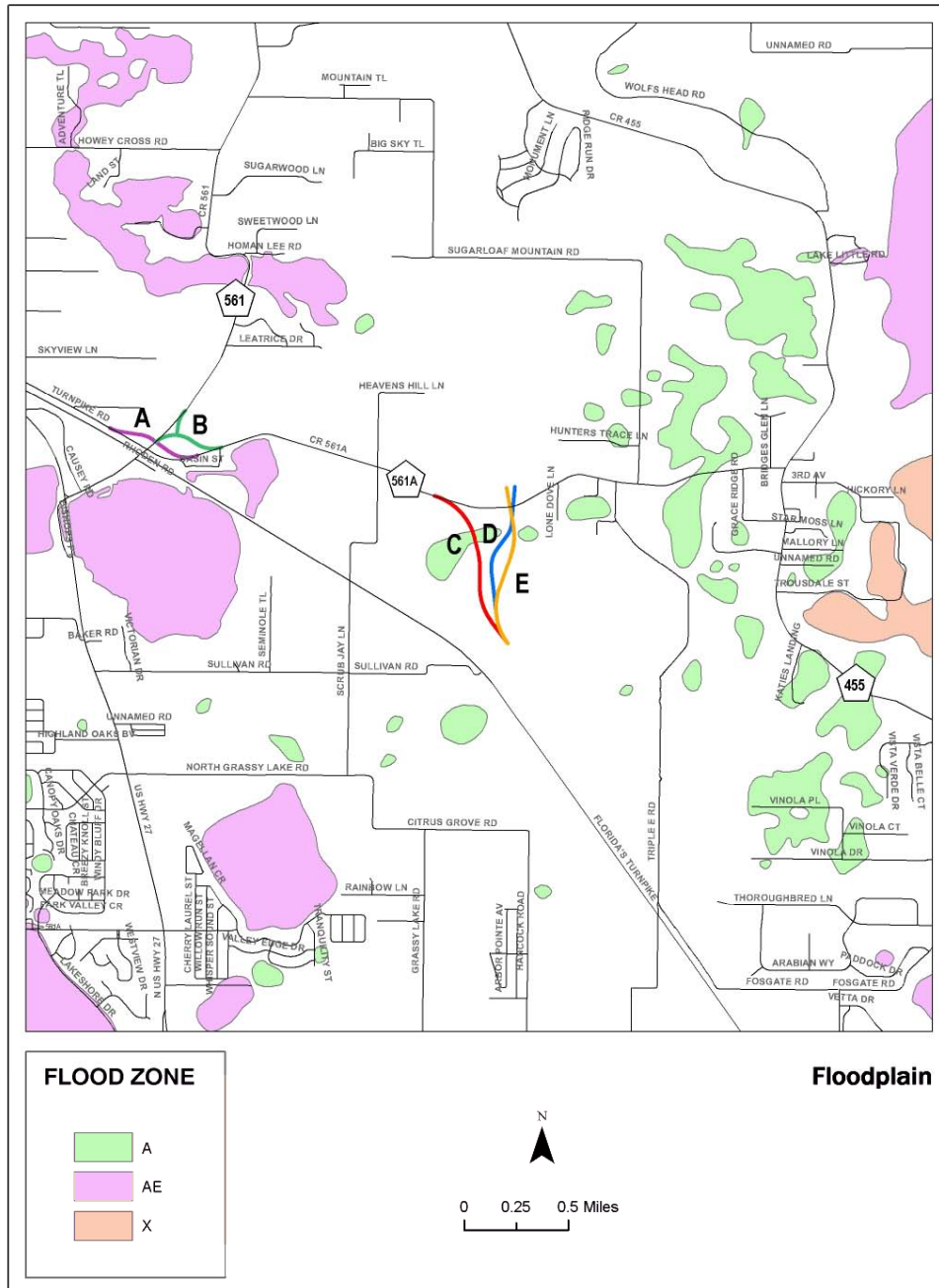
A preliminary windshield roadway and review of soil survey records was conducted by County staff along the project area, based on the preferred alternative (see soil composition map Figure 4.8.1). The study area and corridor alignment lies within Arents, Lake, Myakka, Placid and Pits soil composition types. The primary soil along the corridor is type A, a well-dried soil. The major geotechnical data and corridor roadway borings was not conducted in the study, and will be addressed in the design phase of C.R. 561A final corridor alignments.

**Figure 4.6.1 - Drainage Basins Map**

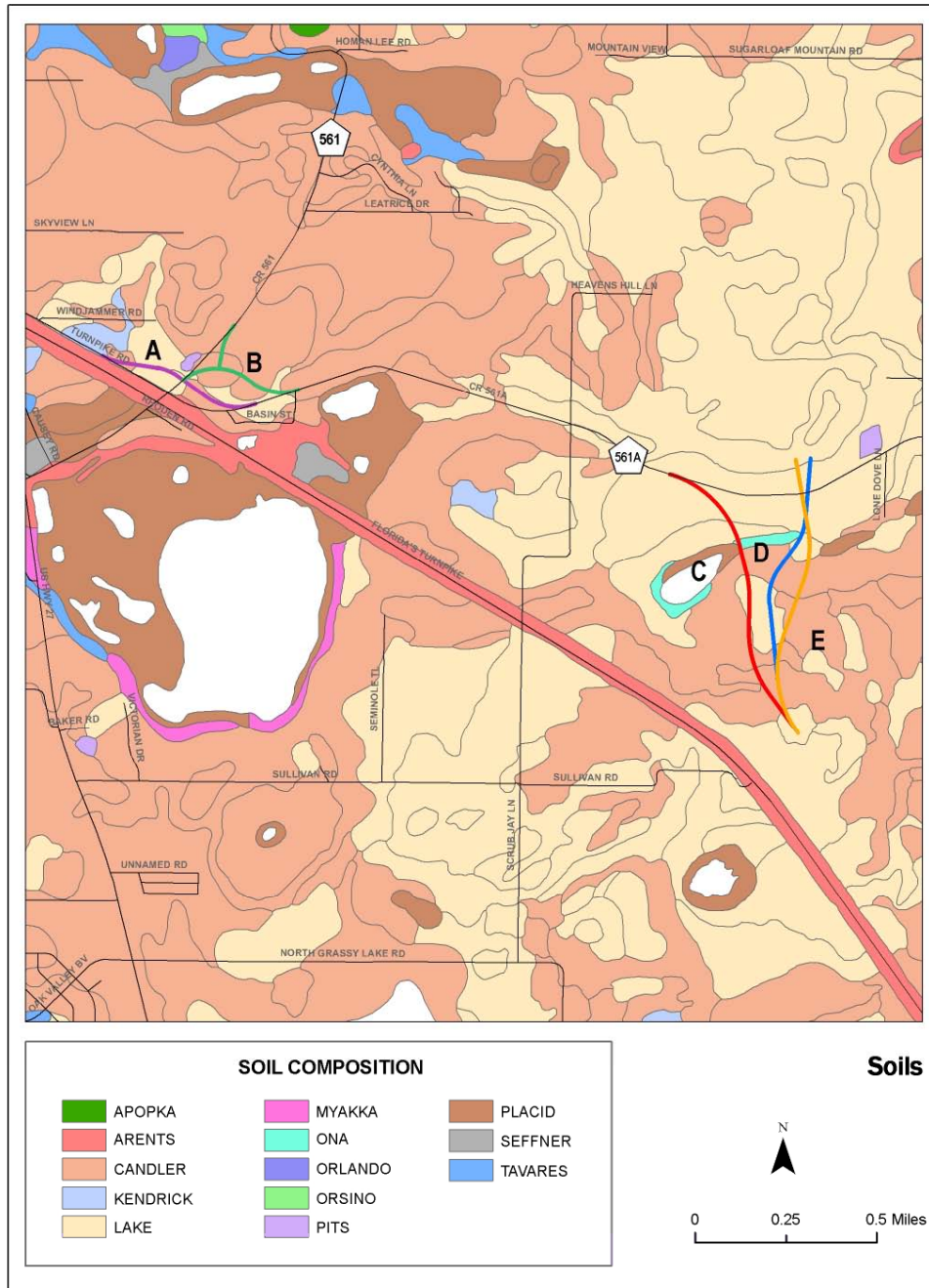




**Figure 4.7.1 - Floodplain Map**



**Figure: 4.8.1 - Soils Composition Map**



#### 4.9 Crash Data

Information relating to crash frequency within the study area, for the period between January 2003 and June 2008, was obtained from the Lake County Public Works Crash Data Base. The majority of the reported collisions occurred near the intersection of C.R. 561A and C.R. 561. During the 5-year period evaluated along the corridor, 13 of the 23 reported collisions occurred close to the intersection of C.R. 561A and C.R. 561. This resulted in a 2.6 crash rate per million vehicle miles at the intersection. No fatal crashes were reported during the 5-year crash history review for the corridor.

The next series of tables will show a summary of crash tables' distribution for the 5-years of information on the C.R. 561A corridor (see node summary table 4-1). Table 4-2 shows the crash type distribution and roadway condition types of crashes in table 4-3. The at fault types of vehicle crashes are shown on Table 4-4.

A review of this summary shows that the C.R. 561A corridor is a relative safe corridor based on a 4.6 crash rate per 100 million miles driven along the corridor out of 100%. The intersection of C.R. 561 and C.R. 561A warrant monitoring, due to the Turnpike (S.R. 91) overpass within the intersection area which appears to be a challenge to motorists. The realignment of the intersection will be part of the C.R. 561A corridor evaluation.

**Figure 4.9.1 - Crash Node Location Map**



**Table 4.1 - Node Summary**

**Node Summary**

Ref	Node	On Street	Cross Street	Crashes	Fatalities	Injuries
1	11_3582	CR 561A	CR 561	13	0	8
2	11_3556	CR 561A	HEAVENS HILL LN	4	0	3
3	11_3555	CR 455	CR 561A	2	0	1
4	11_3554	CR 561 A	CR 455	1		
5	11_3546	CR 561A	TRIPLE E RD	1		
6	11_3543	CR 561A	LONE DOVE LN	1		
7	11_3542	CR 561A	SUGARLOAF MT RD	1		

**Table 4.2 - Crash Type Distribution**

**Crash Type Distribution**

<b>Harmful Event</b>	Crashes	Fatalities	Inj.	Peds	Bike	SHSP - Emphasis Areas			
						Aggressive Driving	At Intersection	Lane Departure	Vulnerable User
RAN IN DITCH/CULVERT	4	0	1	0	0	0	3	0	
OVERTURNED	3	0	2	0	0	2	2	1	
NONE	3	0	1	0	0	0	1	1	
SIDESWIPE	2	0	1	0	0	0	1	0	
LEFT-TURN	2	0	0	0	2	1	0	0	
ANGLE	2	0	1	0	0	1	0	0	
REAR-END	1	0	0	0	0	0	0	0	
OCCUPANT FELL FROM VEH	1	0	1	0	0	0	1	1	
HIT GUARDRAIL	1	0	1	0	0	0	0	0	
COLL. W/FIXED OBJECT ABOVE ROAD	1	0	0	0	0	0	0	0	
COLL. W/MV ON ROADWAY	1	0	0	0	0	0	0	0	
COLL. W/ BICYCLE	1	0	1	0	1	0	0	1	
ALL OTHER (EXPLAIN)	1	0	3	0	0	1	0	0	

<b>Site Location</b>	Crashes	Fatalities	Inj.	Peds	Bike	SHSP - Emphasis Areas			
						Aggressive Driving	At Intersection	Lane Departure	Vulnerable User
NOT AT INTERSECTION/RRXING/BRIDGE	12	0	5	0	0	2	8	3	
AT INTERSECTION	7	0	3	0	1	3	1	1	
INFLUENCED BY INTERSECTION	2	0	1	0	0	0	0	0	
PARKING LOT (PRIVT)	1	0	3	0	0	1	0	0	
NONE	1	0	0	0	0	0	0	0	

<b>Injury Severity</b>	Crashes	Fatalities	Inj.	Peds	Bike	SHSP - Emphasis Areas			
						Aggressive Driving	At Intersection	Lane Departure	Vulnerable User
NON-INCAP INJ	6	0	6	0	0	2	2	2	
INCAPACITATING INJ	4	0	6	0	1	2	1	2	
NONE	2	0	0	0	0	0	0	0	
POSSIBLE INJ	1	0	0	0	0	0	0	0	

**Table 4.3 - Roadway Conditions Crash Distribution**

**Roadway Conditions Crash Distribution**

<b>Road Condition</b>	Crashes	Fatalities	Inj.	Peds	Bike	SHSP - Emphasis Areas			
						Aggressive Driving	At Intersection	Lane Departure	Vulnerable User
NO DEFECTS	19	0	11	0	1	6	1	6	3
SHLDR-SOFT/LOW/HIGH	2		1	0	0	0	0	2	1
ALL OTHER (EXPLAIN)	1			0	0	0	0	0	0

<b>Road Surface Type</b>	Crashes	Fatalities	Inj.	Peds	Bike	SHSP - Emphasis Areas			
						Aggressive Driving	At Intersection	Lane Departure	Vulnerable User
BLACKTOP	20	0	12	0	1	6	1	7	4
CONCRETE	1			0	0	0	0	1	0
ALL OTHER	1			0	0	0	0	0	0
	1	0	0	0	0	0	0	0	0

<b>Road Surface Condition</b>	Crashes	Fatalities	Inj.	Peds	Bike	SHSP - Emphasis Areas			
						Aggressive Driving	At Intersection	Lane Departure	Vulnerable User
DRY	15	0	8	0	0	4	1	7	3
WET	6	0	4	0	1	2	0	1	1
ALL OTHER	1			0	0	0	0	0	0

<b>Traffic Control</b>	Crashes	Fatalities	Inj.	Peds	Bike	SHSP - Emphasis Areas			
						Aggressive Driving	At Intersection	Lane Departure	Vulnerable User
NO CONTROL	8	0	5	0	1	2	1	2	1
SPEED CONTROL SIGN	5		2	0	0	1	0	5	2
STOP SIGN	4	0	2	0	0	1	0	0	0
TRAFFIC SIGNAL	1			0	0	0	0	0	0
NO PASSING ZONE	1		1	0	0	1	0	0	0
ALL OTHER	1			0	0	1	0	0	0

<b>Alignment</b>	Crashes	Fatalities	Inj.	Peds	Bike	SHSP - Emphasis Areas			
						Aggressive Driving	At Intersection	Lane Departure	Vulnerable User
STRAIGHT-LEVEL			9		4	0	0	3	1
CURVE-UPGRADE/DOWNGRADE			4		1	0	0	1	0
CURVE-LEVEL			3		1	0	0	0	3
STRAIGHT-UPGRADE/DOWNGRADE			2	0	2	0	1	1	0

**Table 4.4 - At Fault Vehicle Crash Distribution**

**At Fault Vehicle Crash Distribution**

<b>Vehicle Type</b>	Crashes	Fatalities	Inj.	Peds	Bike	SHSP - Emphasis Areas			
						Aggressive Driving	At Intersection	Lane Departure	Vulnerable User
AUTOMOBILE	7	0	6	0	0	3	0	1	0
PICKUP/LIGHT TRUCK (2 REAR)	3	0	2	0	1	0	0	0	1
MOTORCYCLE	3		3	0	0	1	0	3	3
HEAVY TRUCK (2 OR MORE REA	1	0	1	0	0	0	0	0	0

<b>Vehicle Movement</b>	Crashes	Fatalities	Inj.	Peds	Bike	SHSP - Emphasis Areas			
						Aggressive Driving	At Intersection	Lane Departure	Vulnerable User
STRAIGHT AHEAD	20	0	12	0	1	4	0	8	4
MAKING LEFT TURN	2			0	0	2	1	0	0
NONE	1	0	0	0	0	0	0	0	0

#### **4.10 Intersection and Signalization**

There is no signalized intersection within the project limits.

#### **4.11 Lighting**

There is currently no street lighting on C.R. 561A.

#### **4.12 Pavement Conditions**

The Lake County Public Works Road Operation Division has a formal pavement management system, with a road rating system ranging from 1 to 10, with 10 being the highest rating in the County. The C.R. 561A corridor is rated 7 and 9 for the study area which is presently a good roadway.

#### **4.13 Environmental Characteristics**

#### **4.14 Land Use Data**

The County's existing land use within the project area, depicted in the Lake County Zoning Map Figure 4.14.1, consists primarily of residential developments, vacant parcels and agricultural uses. Several large-tracts are vacant or have a single-family owner situated on them. Figure 4.14.2 is the 2008 Zoning Map for the City of Minneola, indicating a similar situation in the areas within the City's jurisdiction. The agricultural uses are tree farming and citrus groves, both active and inactive.

Figure 4.14.3, Map of Subdivisions, shows a graphic depiction of the major approved and proposed subdivisions within the study area. This information indicates that the area will transition into sub-urban land uses in the future in addition to the approved Minneola DRI.

#### **4.15 Community Features**

Figure 4.15.1 map identifies community cultural features and services, which are areas that preserve and enhance the cultural nature of a community. These include parks and other recreation areas, schools, churches and other religious institutions, historic sites, archaeologically significant sites, and other neighborhood gathering places. Community services include facilities that provide necessary services such as fire stations, post office, police stations, public and private schools, hospitals, cemetery, public buildings, and civic facilities.

#### **Schools**

- ❖ **Grassy Lake Elementary School** – This school is located on Grassy Lake Road.
- ❖ **Future (BBB) High school** - This High School will be located on Hancock Road and Fosgate Road. The school is in the design phase and proposed to open in the 2010/2011 school year.

**Recreational Facilities/Areas**

- ❖ The Lake County Ferndale Preserve Park recreational facilities are located within the project vicinity.

**Churches/ Social Service Agencies/ Medical Facilities/ Community Centers**

- ❖ The Ferndale Community Church, Post Office and Community Center is located along C.R. 455 and C.R. 561A. Other social service agencies, medical facilities or community centers are located near Hancock Road and S.R. 50 (within the project vicinity).

**Fire Protection**

- ❖ Lake County Fire and Rescue Station 84 is located on C.R. 455 and C.R. 561A.
- ❖ Minneola Fire and Rescue



**Figure 4.14.1 - Lake County Zoning Map**

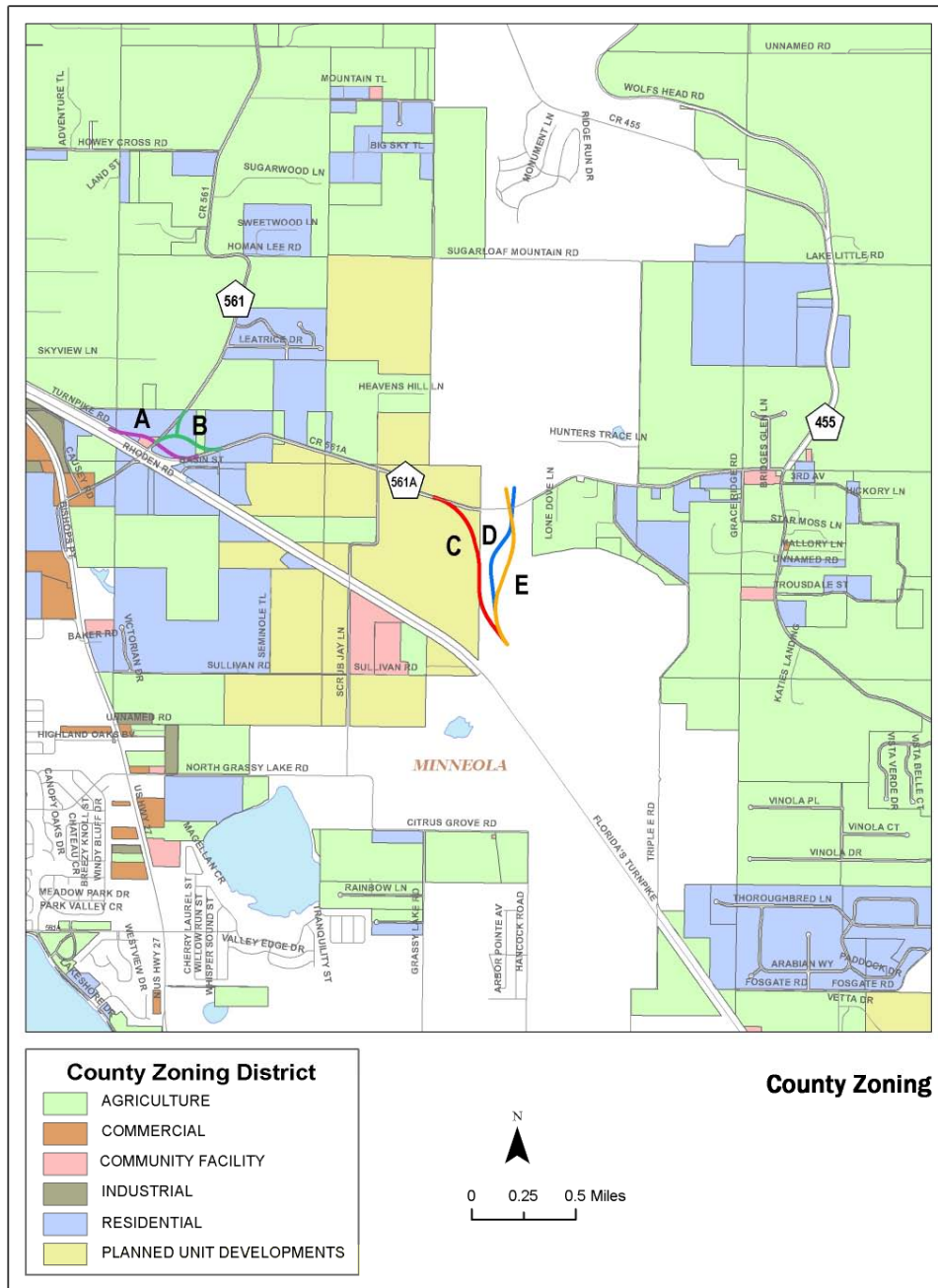


Figure 4.14.2 - 2008 City of Minneola Zoning Map

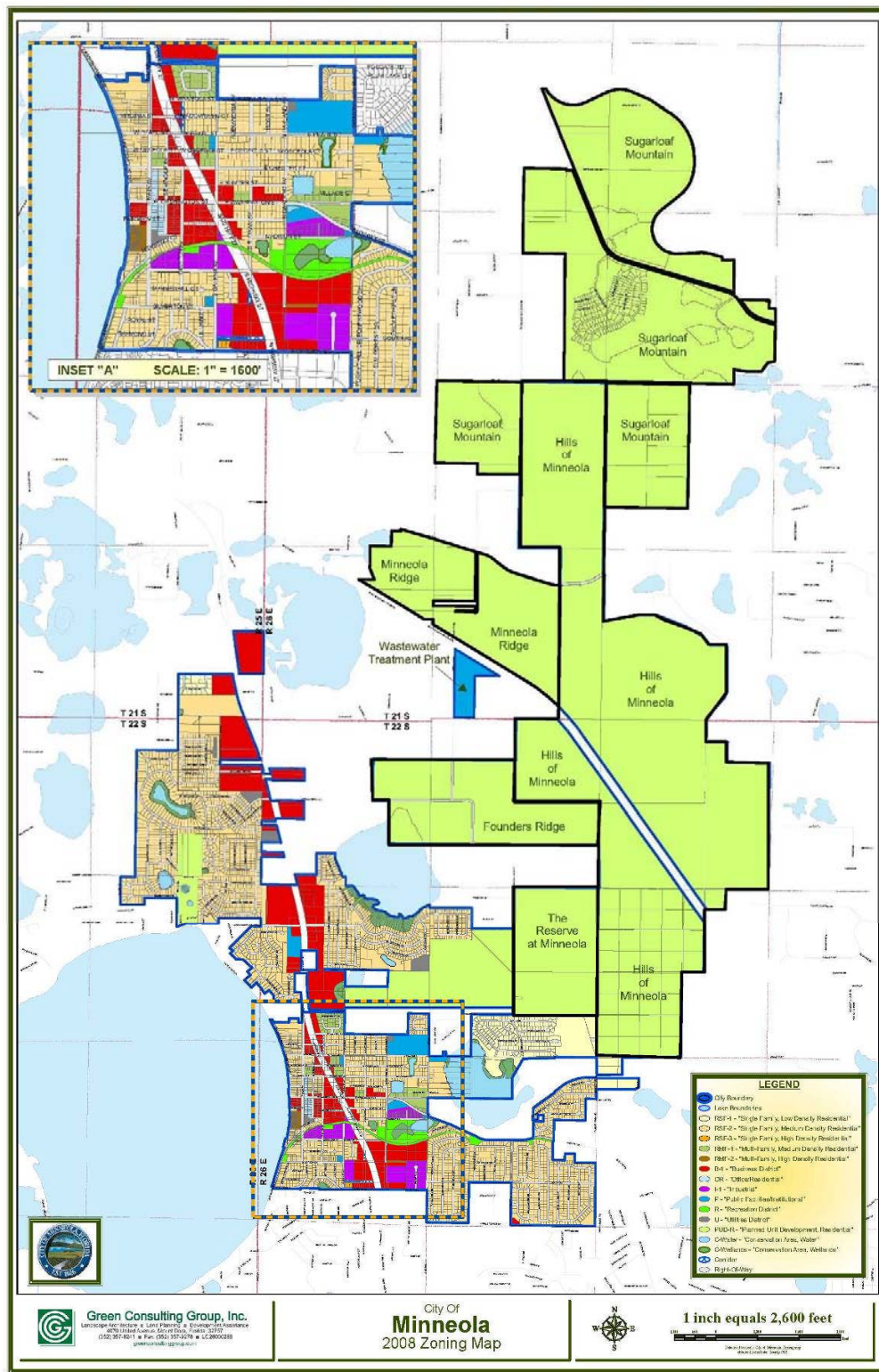
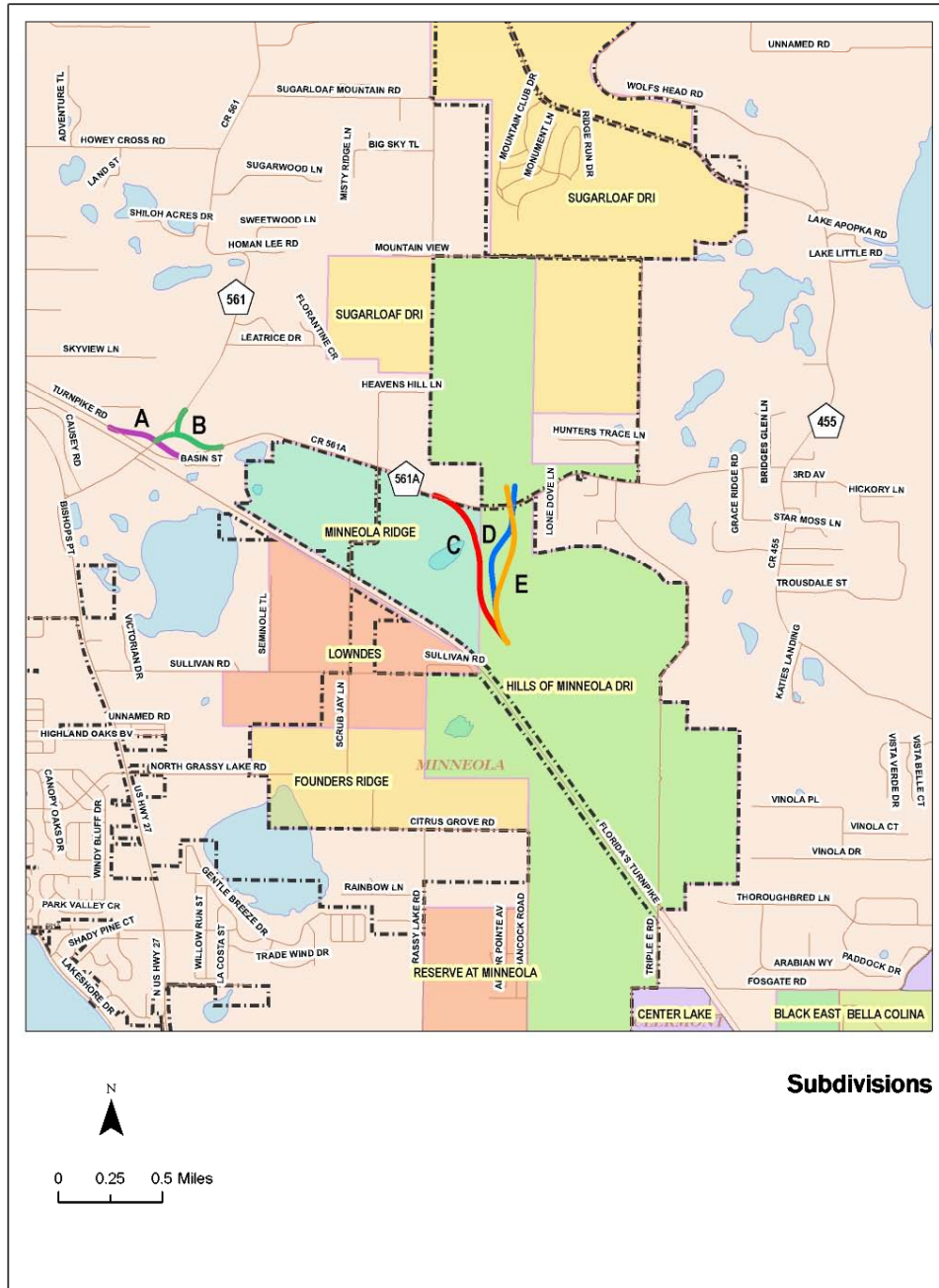
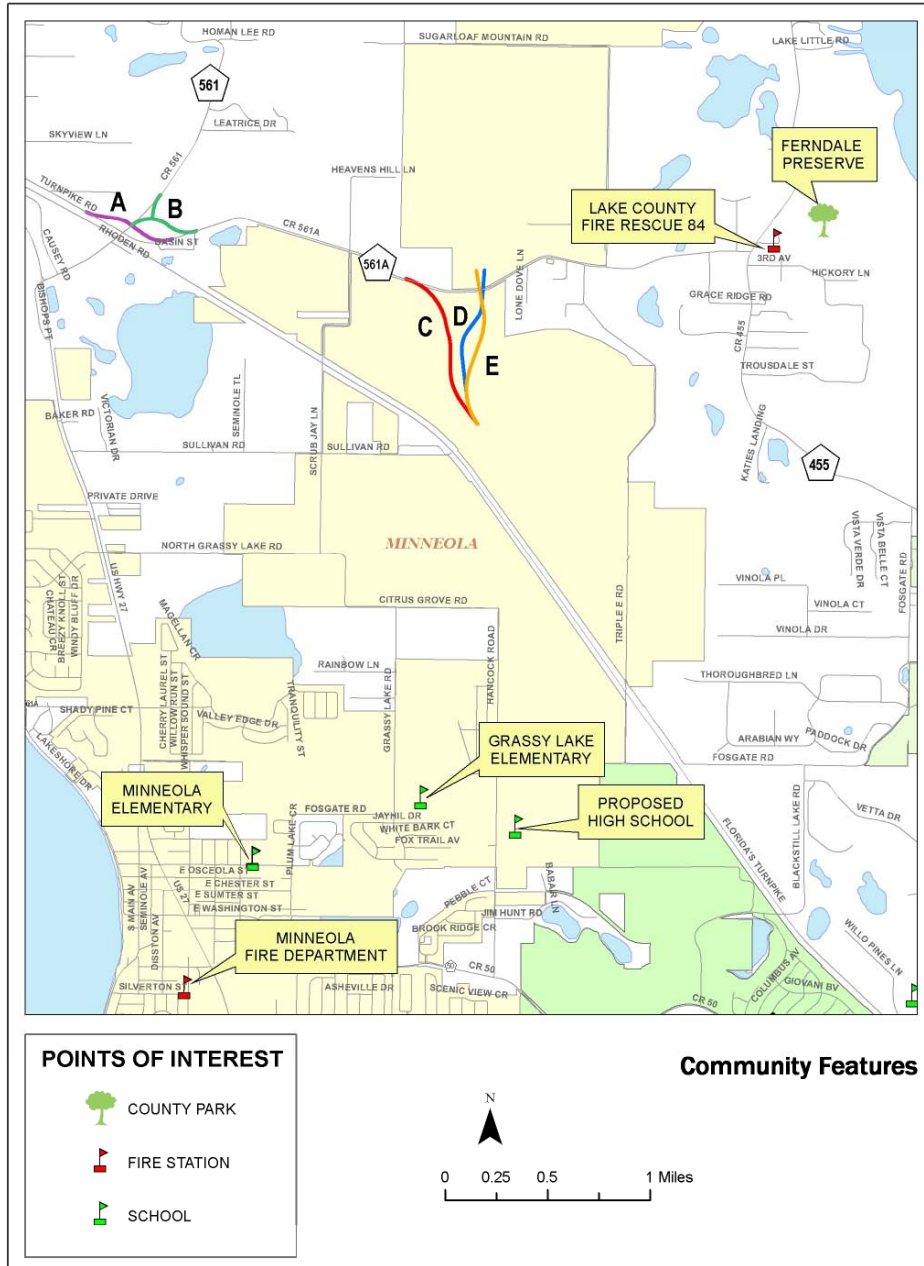


Figure 4.14.3 - Map of Subdivisions



Subdivisions

**Figure 4.15.1 - Map of Community Features**



#### **4.16 Cultural Features and Wildlife Habitat**

The study team requested database research from Florida Natural Area Inventory (FNAI) and the Florida Fish and Wildlife Conservation Commission (FWC) on the potential of any endangered species habitation along C.R. 561A corridor study (see the FNAI and FWC report in Appendix 3). The following are a few major habitat samples from the two (2) reports:

##### **4.16.1 Sand Skink**

The Florida Fish and Wildlife Conservation Commission's database indicates that SHCA's for the Sand Skink occur within or adjacent to the property indicated by the corridor map Lake County provided to FWC for research. Figure 4.6.1 Map indicating the location of SHCA's, species occurrence, and 2003 land cover are provided. **However, this is not an indication that Sand Skink is within 300-feet of the C.R. 561A corridor, and further investigation during the design phase will address if the Sand Skink is present or not.**

The Sand Skink, (*Neoseps reynoldsi*), exists in areas dominated by xeric vegetation such as oak dominated scrub, turkey oak barrens, high pine, and xeric hammocks. Skinks typically occur in open sandy patches within these habitat types. The species usually remain underground and burrows 5 to 10 centimeters (2 to 4 inches) beneath the soil to find its food. The Sand Skink is listed as a threatened species by both the USFWS and the FFWCC.

##### **4.16.2 Bald Eagle**

The Bald Eagle, (*Haliaeetus leucocephalus*), is listed as threatened by both the USFWS and the FFWCC. The Bald Eagle prefers riparian habitat associated with coastal areas, lakeshores or riverbanks. It nests near bodies of water that provide a dependable source of food. The locations of Eagle nests throughout the state are closely monitored by the FFWCC. Current Eagle nest data was obtained from the FFWCC indicating that two (2) documented Eagle nests occurs within one-mile of the project site.

##### **4.16.3 Eastern Indigo Snake**

The Eastern Indigo Snake (*Drymarchon corais couperi*) is listed as a threatened species by the USFWS and the FFWCC due to loss or degradation of habitat and human intervention. This species may be found in a variety of habitats including swamps, wet prairies, xeric pinelands, and scrub areas. It commonly utilizes gopher tortoise burrows for shelter during the winter and to escape heat during the summer. Gopher tortoise burrows were observed within the project area and occur within the undeveloped natural communities found along the project study area.

#### 4.16.4 Wood Stork

The Wood Stork (*Mycteria americana*) is listed as endangered by both the USFWS and the FFWCC. This wading bird species is opportunistic, utilizing various open hydric pine-cypress habitats and man-made wetlands. A specialized method of feeding (groping) limits the Wood Stork to shallow water with high concentrations of small fish. No Wood Storks were observed during field reviews. Based on information provided by the FFWCC, the project area is not within the core foraging area for any documented Wood Stork nesting colonies. The closest of these nesting sites is located approximately 21-miles to the west of the project study area.

#### 4.16.5 Florida Scrub-Jay

The Florida Scrub-Jay (*Aphelocoma caerulescens*) is listed as threatened by both the USFWS and the FFWCC. No Scrub Jays were observed during field reviews. Potential habitat for this species will be investigated and addressed during further study for the corridor improvement.

#### 4.16.6 Gopher Tortoise and Commensals

The Gopher Tortoise (*Gopherus polyphemus*) requires well-drained and loose sandy soils for burrowing, and low-growing herbs and grasses for food. These habitat conditions are best provided in the sandhill (longleaf pine-xeric oak) community, although Tortoises are known to use many other habitats, including sand pine scrub, xeric oak hammocks, dry prairies, pine flatwoods, and ruderal sites. The Gopher Tortoise burrows harbor and protect a number of commensal species, including a number of state listed species of special concern such as the Florida Mouse (*Podomys floridanus*) and the Gopher Frog (*Rana capito*). A Florida Mouse was documented in 1991 within one-mile of the project study area. The marsh wetland adjacent to the study area may provide suitable breeding habitat for the Gopher Frog. The Gopher Tortoise, Florida Mouse, and Gopher Frog are all listed as a species of special concern by the FFWCC.

#### **4.16.7 Conclusions**

It is likely that the proposed alternatives would affect Gopher Tortoises and potentially their commensal species, if present, where the footprints cross through occupied habitat. It is unlikely that the proposed action alternative would affect any other threatened or endangered species, based on the review of existing state and federal wildlife databases and field survey described in this report. These conclusions do not exclude the possibility that listed species may occasionally forage on-site or may move onto the site later. For this reason, pre-construction surveys for Gopher Tortoise burrows and new Bald Eagle nests are recommended. In addition, the use of standard protection measures for the Eastern Indigo Snake is recommended to be employed as a matter of precaution.

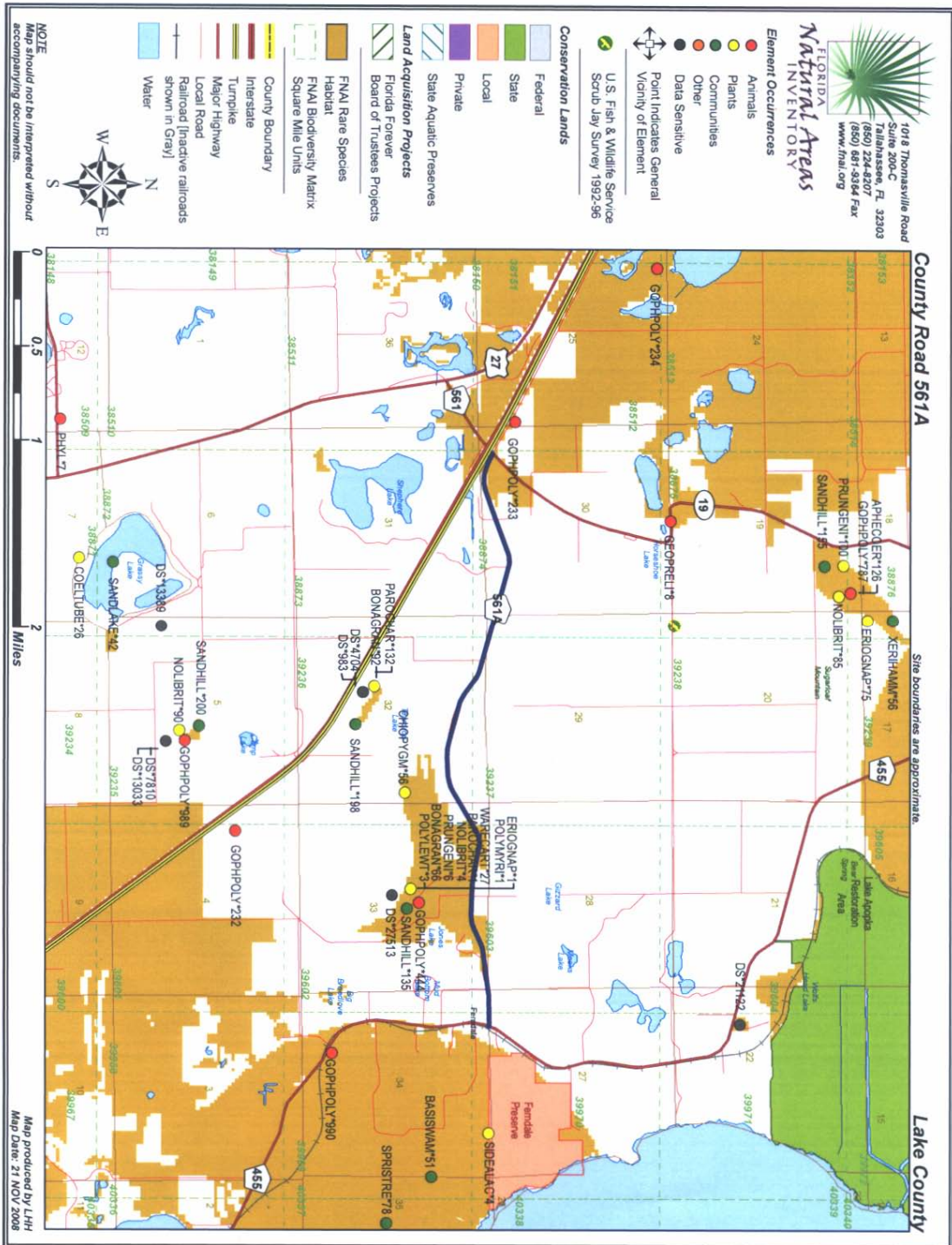
The maps in Figure 4.16.7.1, Figure 4.16.7.2, and Figure 4.16.7.3 are an effort to show areas of habitat within the C.R. 561A corridor study area. All other information provided from the agency database is in Appendix 4 for this report.

#### **4.16.8 Potential Contamination Site**

Based on visual observations by Lake County staff of the C.R. 561A corridor and other research for Contamination Site Screening in the area, evidence of soil and/or groundwater contamination impacts at known contamination sites may have occurred within or near the C.R. 561A alignment sites. This site warrants further intrusive investigation prior to construction (see figure 4.5.13). The site in question may be an old abandon Industrial site with some potential contamination activities on the land Parcel ID 33-21-26-000200000801 and lack of detailed contamination records for reported sites at the County or Florida Department of Environmental Protection (FDEP) offices, or suspected sites based on visual observation only, of which no County or FDEP files were found.

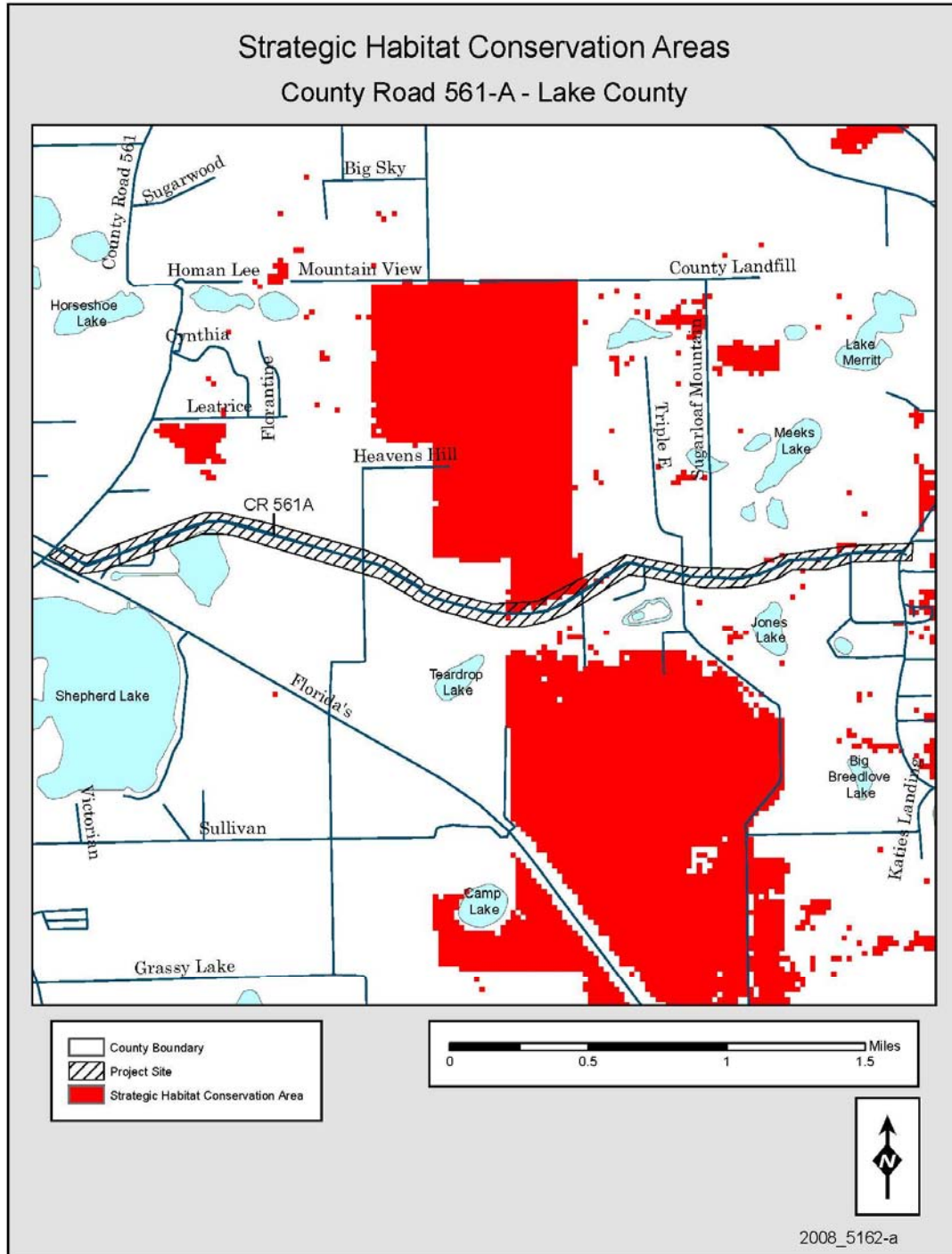
Generally, development along the corridor consists of borrow pits, former citrus groves, pastureland, high-tension electrical transmission lines, residential subdivisions, rural residential properties and undeveloped land. During the field observations, no evidence of chemical storage areas, pump sheds, drums, above-ground or below-ground fuel storage tanks or other obvious signs of potential sources of contamination were observed along or immediately adjacent to the proposed subject corridors.

Figure 4.16.7.1 - Map of Florida Natural Areas Inventory

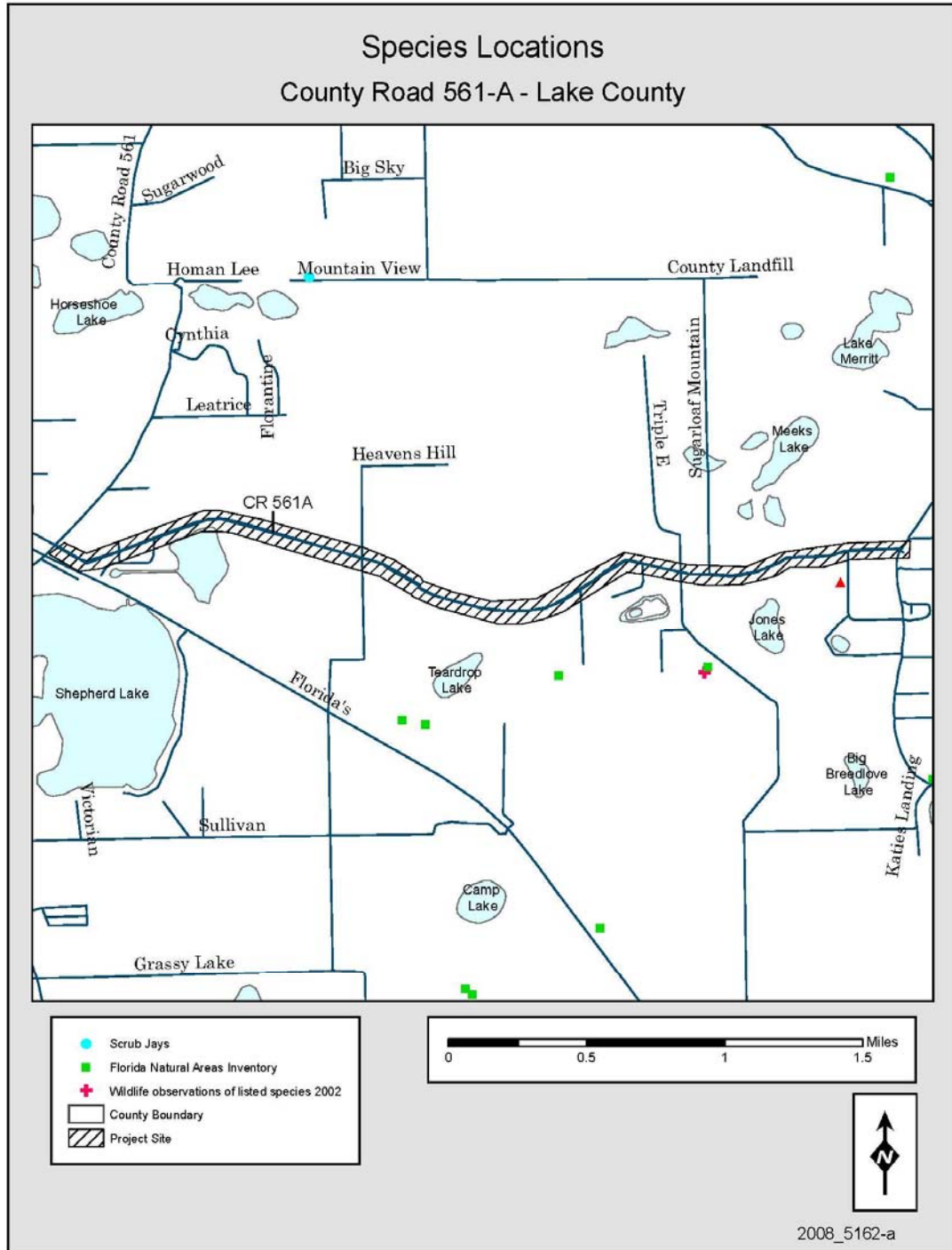




**Figure 4.16.7.2 - Map of Strategic Habitat Conservation Areas**



**Figure 4.16.7.3 - Map of Species Locations**



**Figure 4.16.8.1 – Potential Contamination Site on C.R. 561A Corridor**



#### 4.16.9 Noise

If C.R. 561A is widened to provide additional capacity along the C.R. 561A corridor, according to the study team proposal a noise study will not be warranted.

This new improvement to C.R. 561A would consist of a 120-foot right-of-way with two (2) 12-foot travel lanes in each direction and proposed stormwater management sites. The proposed alignment generally follows exiting alignment. The proposed design speed will be 45-MPH and posted speed will be 40-MPH.

There are no noise sensitive sites, which could experience elevated noise levels currently along the proposed corridor improvement, which are currently vacant lands.

Noise barrier analysis is warranted according to the Florida Department of Transportation (FDOT) guidelines, if predicted noise levels along the existing roadway equal or exceed 66-dBAs or are 15-dBAs over ambient noise levels on the A-weighted scale. The majority of the area within the C.R. 561A corridor is vacant land and undeveloped which is not measurable for ambient noise level. Once again, most of the corridor is currently rural. A future developer would need to address noise impact within the development approval process requirement.

The Lake County Comprehensive Plan Policy 1.2.4: Policy 1.2.4 Analysis of Traffic Noise Impacts and Abatement Measures “Lake County intends to prevent noise on future road widening and/or existing traffic from negatively impacting adjacent land use. Land development regulations shall establish standards requiring noise mitigation on collector and arterial roadways. The applicant shall determine and analyze expected traffic noise impacts on the proposed development and alternative noise abatement measure to mitigate these impacts, giving weight to the benefits and cost of abatement, and to the overall social, economic, and environmental effects”.

Staff from Lake County and the City of Minneola will work with landowners during development approval process of landscaping buffer or noise, when warranted for future development along the corridor.

**5.0 Design Criteria**

Design and construction criteria for the proposed C.R. 561A Corridor Conceptual Analysis Study must adhere to FDOT and Lake County standards for the design of such roadways, and must comply with recommended standard practices as set forth in the following documents:

- ❖ **Manual on Uniform Minimum Standards for Design, Construction, and Maintenance for Streets and Highways, FDOT (2007)**
- ❖ **A Policy on Geometric Design of Highways and Streets (Green Book), AASHTO, 5th Edition (2004)**
- ❖ **Plans Preparation Manual (PPM), FDOT (2008) when applicable**
- ❖ **Drainage Manual, and Supplements, FDOT**
- ❖ **Manual on Uniform Traffic Control Devices (MUTCD), Federal Highway Administration (2003)**
- ❖ **Highway Capacity Manual (HCM), Transportation Research Board (2000)**
- ❖ **Lake County Design Standards/LDR**

The design criteria listed in Table 5-1 is current. This table shows the design criteria for the typical sections used for this project. Some criteria vary as a function of traffic volume and FDOT has established ranges for low, medium and high volumes. The year 2025 projected traffic volumes indicated that the design criteria should be based on a moderately high volume roadway. All criteria are subject to change and only current criteria will be used during the final design.

**Table 5.1- Design Criteria**

Design Element	CR 561A Recommended Design	Source
Design Speed	45 mph	
Posted Speed	40mph	
Thru Lane Widths	12 feet	Table 2.1.1 <sup>1</sup>
Bike Lanes	4 feet	Table 2.1.2 <sup>1</sup>
Horizontal Clearance (with curb and	4 feet	Index 700, Table C1
Median Width (Typical/Minimum)	22 / 15.5 feet	Table 2.2.1
Cross Slope	0.02	Figure 2.1.1 <sup>1</sup>
Outside Curb and Gutter	Type F	
Sidewalk	5 feet	Section 8.3.1 <sup>1</sup>
When adjacent to curb and gutter	6 feet	Section 8.3.1 <sup>1</sup>
Border width	10 feet	Table 2.5.2 <sup>1</sup>
Vertical Grade	0.3% minimum	Table 2.6.4 <sup>1</sup>
	8.0% maximum	Table 2.6.1 <sup>1</sup>
	0.80 change without curve	Table 2.6.2 <sup>1</sup>
Base Clearance	1 foot	Table 2.6.3 <sup>1</sup>
Minimum Length of Vertical Curve	K = 136	Table 2.8.5 <sup>1</sup>
	K = 96 sag	Table 2.8.6 <sup>1</sup>

**References:**

1. *2008 FDOT Plans Preparation Manual, Volume 1*
2. *2008 FDOT Design Standard for Design, Construction, Maintenance and Utility Operations on State Highway System*
3. *2004 AASHTO Green Book*

The multi-use trail provided in the proposed improvements on the west side of the proposed roadway followed the design criteria listed in Table 5-2.

**Table 5.2 - Multi-Use Trail Design Criteria**

Design Element	Multi-Use Trail Recommended Design	Source
Design Speed	20 mph	Section 8.6.7 <sup>1</sup>
Horizontal Clearance	4 ft.	Section 8.6.5 <sup>1</sup>
Minimum Vertical Clearance	8 ft.	Section 8.6.6 <sup>1</sup>
Cross Slope	0.02	Section 8.6.3 <sup>1</sup>
Max. Grade	0.05 <sup>&gt;</sup> *	Section 8.6.4 <sup>1</sup>

2006 FDOT Plans Preparation Manual, Volume 1<sup>1</sup>

0.05<sup>></sup> to accommodate ADA requirement where applicable

## **6.0 Traffic**

### **6.1. Existing Traffic Condition and Roadway Network**

This section describes the analysis of traffic flow conditions for the year 2008 along the C.R. 561A corridor.

In analyzing the year 2008 operating conditions of the roadway segments, historical traffic counts from Lake County Public Works records for 2008 (see Table 6-1) were used along with the existing roadway and intersection geometry. The generalized LOS Table 4-9 from the Florida Department of Transportation (FDOT) LOS Manual was used for the roadway segment LOS along C.R. 561A for the study process.

The existing roadway network and historical AADT Traffic Counts map within the project area of influence is shown in Figure 6.1. The project influence area includes a road network consisting of two (2) arterials and several collector roadways that play a major impact in trips and goods movement within the C.R. 561A corridor study area.

The two (2) arterial facilities are U.S. 27, a four-lane divided north-south roadway and S.R. 91 north-south four-lane divided roadway, in which C.R. 561 and C.R. 561A underpass to S.R. 91. During the time of the traffic counts, the roadway was a four-lane roadway. The collector roads within the study area that follow a north-south route are C.R. 561, C.R. 455, North Hancock Road, Hancock Road, Grand Highway, Citrus Tower Boulevard and Blackstill Lake Road. Other collector roads following an east-west route are C.R. 561A, C.R. 50 and Citrus Grove Road (see Figure 6-1 Map of historical traffic counts for existing roadway network).

**6.2. Multi-modal Transportation System Considerations**

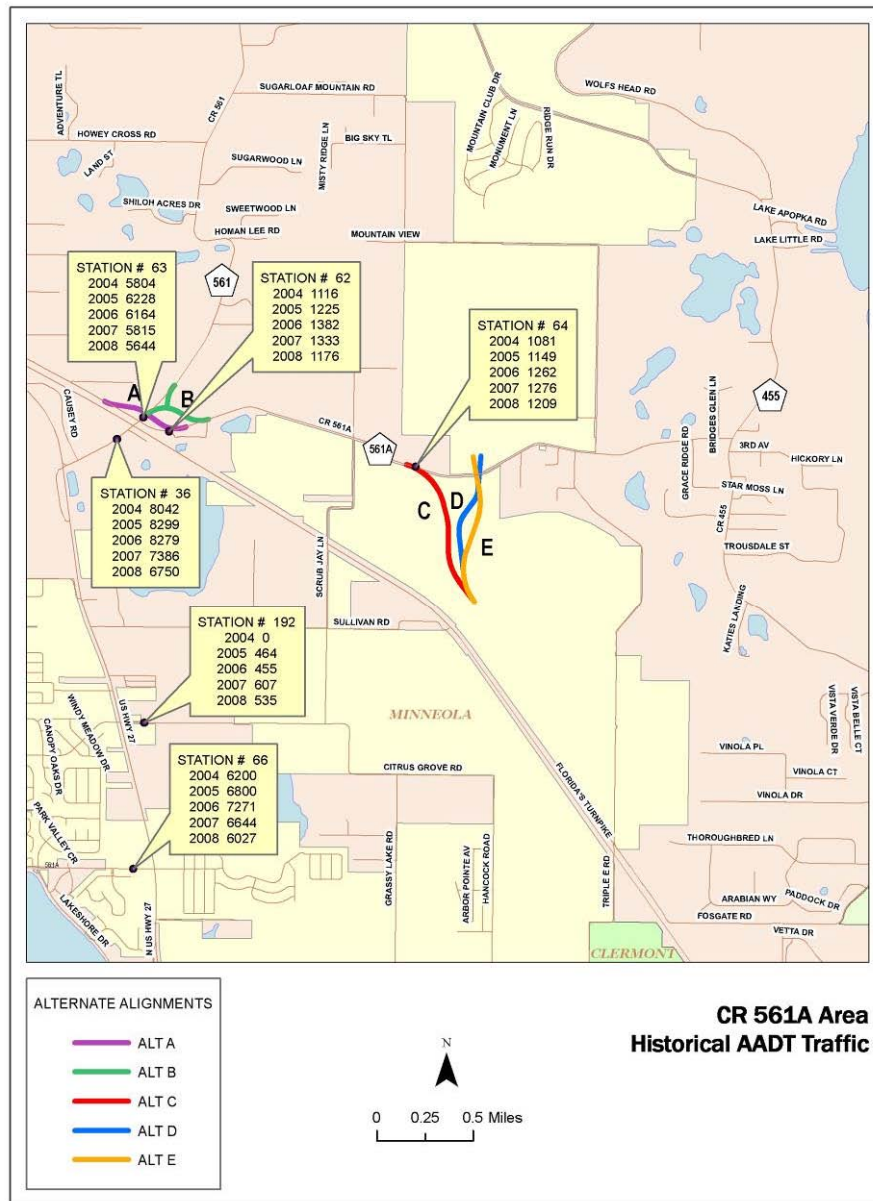
The project is located within a largely rural area and bordered by old industrial uses and by older residential development, with proposed major Development of Regional Impact (DRI) and some Planned Units Development (PUD). A new park and ride facility is located within the area on U.S. 27 and S.R. 50 as another transportation option for local residents. Travel through the area is largely by personal automobile or large cargo transportation vehicles.

Bus service is not provided within the corridor. There are no existing sidewalks or bicycle lanes that provide pedestrian facilities; however, pedestrians and bicyclists have been observed sporadically within the study corridor due to C.R. 455 as a Scenic By-way for bicyclists. Please note that the Ferndale Community also includes about a quarter-mile on C.R. 561A from C.R. 455. The Ferndale Community may consider a segment of C.R. 561A as a Scenic By-way that may prevent a 4-lane improvement within the community.

**Table 6.1 - Historical Traffic Counts**

MAP STATION #	ROAD NAME	LOCATION	ANNUAL ADJUSTED DAILY TRAFFIC (AADT)				
			2004	2005	2006	2007	2008
62	C.R. 561A	0.18 Mi E OF C.R. 561	1,116	1,225	1,382	1,333	1,176
64	C.R. 561A	0.35 Mi E OF Scrub-Jay Lane	1,081	1,149	1,262	1,276	1,209

**Figure 6.1 - Historical AADT Traffic Counts**





### 6.3. Traffic Analysis Assumptions

The methodology used for the development of C.R. 561A corridor traffic analysis assumption includes the following:

- ❖ **Collect available traffic count information from the County's historical traffic count records and from field count data collection activities. Review previous studies, traffic characteristics and other relevant data related approved and proposed developments within the study corridor to estimate travel impact (see Subdivisions Map in Figure 6-2).**
- ❖ **Data and recommendations from the recent approved Minneola Collector Road PD&E Study, completed by HNTB, were used as part of the C.R. 561A evaluation. The proposed Hills of Minneola Interchange location (that will be connecting C.R. 561A and the New Minneola Collector Road - proposed Hancock Road) will have significant traffic impact on C.R. 561A corridor in trips distribution and trip generation within the area.**
- ❖ **Lake County staff also considered the principle of interchange spacing evaluation standard, in terms of trip attractiveness to the interchange and from the interchange within area on the Florida Turnpike corridor.**
- ❖ **Evaluate the existing traffic volumes based on the available capacity, to determine if the roadway is currently operating under constrained or unconstrained conditions.**
- ❖ **Based on the data collected, estimate the roadway travel characteristics of the corridor. These characteristics include Design Hour Volume factor (K30), Directional Design Hour Volume factor (D30), and Daily Truck factor (T).**
- ❖ **Develop future yearly traffic volume forecasts for the corridor, based on trends analysis of historical traffic counts, population estimates for Lake County, and/or travel demand models [Florida State Urban Transportation Model Structure (FSUTMS)].**
- ❖ **The use of opening yearly and design yearly analysis along the study corridor for the build scenario.**
- ❖ **Based on the level of service analysis, staff provides recommendations for improvements to accommodate the anticipated future travel demand along the C.R. 561A corridor.**

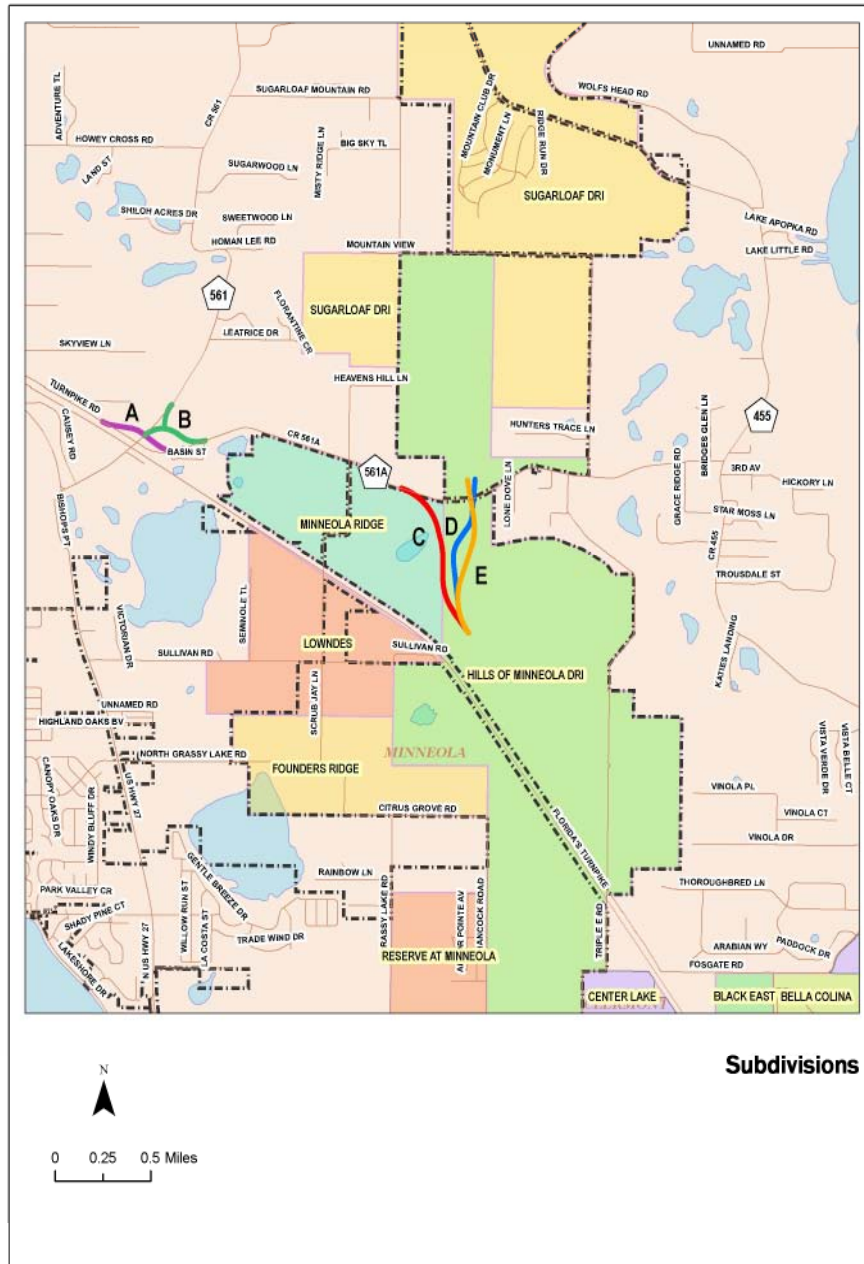
### 6.3.1. Design Assumptions

Based on Information collected by County staff, the following periods were used to provide traffic forecasts for the C.R. 561A road corridor:

- Existing Year - 2008/2009
- Opening Year - 2015
- Mid-Design Year - 2025
- Design Year - 2030

Several documents, including the 2009-2013 Lake County Transportation Construction Program, the Lake-Sumter 2025 Long Range Transportation Program, the adopted FDOT Work Programs, the FDOT 2025 Cost Feasible Florida Intrastate Highway System Plan and the FDOT Strategic intermodal Systems projects selected for funding in 2005, were reviewed to determine planned and programmed improvements that would impact the traffic projections. The planned long-term improvements within the study area are identified by the Lake Sumter MPO in Table 6-2 and Table 6-3.

Figure 6.2 - Subdivision Map



**Table 6.2 - Programmed Roadway Improvements (2008-2012)**

**5-Year LSMPO TIP**

Roadway	From	TO	Improvement	Status
U.S. 27	Lake Louisa Road	S.R. 50	Widen to 6 lanes	Construction FY 2012
S.R. 50	Bloxam Avenue	Hancock Road	Widen to 6 lanes	Construction FY 2011
S.R. 50	Hancock Road	Orange County Line	Widen to 6 lanes	Construction FY '09
C.R. 561	Intersection with U.S. 27		Construct right and dual left-turn Lanes	Design FY '10

LSMPO TIP = Lake-Sumter MPO Transportation Improvement Program

**Table 6.3 - Planned Roadway Improvements (2012-2025)**

**Lake-Sumter MPO 2025 Long Range Transportation Plan**

Roadway	From	To	Improvement
U.S. 27	C.R. 561A	O'Brien Road	Widen to 6 lanes
C.R. 561	U.S. 27	S.R.19	Widen to 4 lanes
C.R. 561A	C.R. 561	Fosgate Road	Widen to 4 lanes
Fosgate Road	Turnpike interchange	C.R. 455	New 4-lane road
Hancock Road	Lake Louisa Road	S.R. 50	Widen to 4 lanes
Citrus Grove Road	U.S. 27	Hancock Road Extension	Widen to 4 lanes
Hancock Road Extension	C.R. 50	Citrus Grove Road	Widen to 4 lanes
Citrus Tower Boulevard	U.S. 27	Mohawk Road	Widen to 4 lanes

**6.3.2 Analysis Scenarios**

Five scenarios, or alternatives, were evaluated in the development of the design traffic forecasts and for the operational analysis of the C.R. 561A study corridor. These scenarios include the widening of U.S. 27 (from Sullivan Road south to S.R. 50) to six-lanes, the widening on S.R. 50 (from U.S. 27 east to Hancock Road) to six-lanes and other changes to the network as presented in Table 6-2 and Table 6-3. Figure 6-2 shows the five (5) scenarios evaluated for the corridor.

The A, B, C, D, and BC scenarios include the Improvements for the No-Build Scenario as well as other improvements to the C.R. 561A corridor. The BC scenarios include the following:

1. Realign and reconstruct C.R. 561A with C.R. 561
2. Four-lane C.R. 561A from the proposed Hancock Road to the Heritage Hills Blvd, with the understanding that the proposed Hancock Road is a four-lane to C.R. 561A (from HNTB Minneola Collector Corridor Study).
3. The BC alternative also provides a connection between Heritage Hills Blvd., Hancock Road and a new Florida Turnpike Interchange. The proposed build scenario geometry for BC, respectively, for the year 2030 as shown in Figure 6-3.

### 6.3.3. Design Characteristics

Information from the 2007 Florida Traffic Information CD was used to determine project traffic characteristics for the arterial facilities in the project area. These traffic characteristics include the 30<sup>th</sup> Analysis Hour Factor-K<sub>30</sub>, the Directional Distribution Factor-D<sub>30</sub>, and the Daily Truck Factor-T daily. The K<sub>30</sub> factor is the proportion of the AADT occurring during the 30<sup>th</sup> highest hour of the design year. The D<sub>30</sub> factor is the proportion of the 30<sup>th</sup> highest hour traffic that is traveling in the peak direction. The application of the K<sub>30</sub> and D<sub>30</sub> factors to the AADT volume produces the Directional Design Hourly Volume, which is the traffic volume for which a facility should be designed. The T daily factor is the estimated percentage of the AADT that is truck traffic. The established K<sub>30</sub>, D<sub>30</sub> and T daily factors for the arterial facilities are an average of the K's, D's and T's from the similar roadway segments within the project area. All traffic characteristics information included in the FDOT CD is shown in Table 6-4.

**Table 6.4 - Roadway Traffic Factors**

Roadway	Description	K30	D30	T
U.S. 27	North of C.R. 561A	10.23%	59.48%	13.62%
	South of C.R.-561/561A (North of C.R.	10.23%	59.48%	13.62%
	1.556 mi. N of S.R.-50	10.23%	59.48%	11.92%
	0.897 mi. N of S.R.-50	10.23%	59.48%	13.62%
	Average	10.23%	59.48%	13.20%
S.R. 50	West of U.S. 27	10.23%	59.48%	11.80%
	West of Hancock Road	10.23%	59.48%	6.34%
	East of Hancock Road	10.23%	59.48%	8.00%
	Average	10.23%	59.48%	8.71%

Reference: FDOT Traffic Information D

K and D factors for the side streets were considered separately. Existing travel characteristics and data from the traffic counts were used to develop traffic characteristics for the side streets within the project area. Based on 24-hour volume counts, K<sub>measured</sub> and D<sub>measured</sub> was determined. Using measured peak-to-daily ratios, an estimated value for K<sub>30</sub> was developed based on the ratios of the median seasonal factor for the highest 13-weeks and the median seasonal factor for the lowest 13-weeks. For this study, an adjustment factor of 1.13 was used for side streets in Lake County. The average estimated K<sub>30</sub> from the calculations is 10.65 percent. The average D<sub>measured</sub> based on the 24-hour volume counts on the side streets is 62.28 percent. A truck percentage of 2-percent was used on the minor side streets.

The recommended traffic characteristics provided in Table 6-5 represent the current travel patterns throughout the project area and provide the best indication of travel patterns for the future conditions. The recommended K<sub>30</sub> and D<sub>30</sub> shown for the various facility types are within the acceptable ranges as shown in the FDOT Project Traffic Forecasting Handbook and agreed upon by the project study team.

**Table 6.5 - Recommended Traffic Factors**

Roadway		K30	D30	T
Arterials	U.S. 27 <sup>1</sup>	10.23	59.48	13.20
	S.R. 50 <sup>1</sup>	10.23	59.48	8.71
	Average	10.23	59.48	10.95
Side Streets		K(Measured)	K30(Estimated)	D(Measured)
		9.43	10.65	62.28

(1) 2007 FDOT Florida Traffic Information CD

**6.4 Existing Traffic Volumes**

The AADTs shown in Table 6.6, as well as the recommended design characteristics in Table 6-5, were used to develop the directional design hour volumes (DDHVs) for the C.R. 561A corridor. The DDHVs were used to determine the roadway segments LOS that is summarized in Table 6-7. The roadway characteristics information also used to determine the segment LOS, for future projection.

**Table 6.6 - Existing Historical Traffic Counts (AADT) Volumes**

MAP STATION #	ROAD NAME	LOCATION	ANNUAL ADJUSTED DAILY TRAFFIC (AADT)				
			2004	2005	2006	2007	2008
62	C.R. 561A	0.18 Mi E OF C.R. 561	1,116	1,225	1,382	1,333	1,176
64	C.R. 561A	0.35 Mi E OF Scrub Jay Lane	1,081	1,149	1,262	1,276	1,209

**Table 6.7 - Existing Conditions Segment Level of Service**

Roadway CR 561A From	To	LOS
CR 561	Scrub Jay Lane	C
Scrub Jay Lane	CR 455	C

**6.5. Future Traffic Projections**

The development of traffic projections for the C.R. 561A Corridor Study requires the examination of historical traffic growth, the most current transportation model, proposed development within the corridor vicinity, and a basic understanding of the traffic circulation patterns and characteristics of the corridor. This effort includes future population growth associated with the South Lake regional population and new subdivision (see subdivision map in Figure 6.2) within the C.R. 561A corridor study area that will have traffic impact on trips projections.

**6.5.1. Traffic Trends Analysis**

**Table 6-8: Traffic Trends / Transp. Plan Forecast Trend**

Traffic Trends R2 =17.3%			
	Growth		Factor
CR 561A	2008	2015	2025
W of Scrub Jay Lane	1,209	1,600	2,000
E of CR 561	1,176	1,500	1,800

FSUTMS/Tran Plan Model			
Forecast/Trends	Growth		Factor
CR 561A	2008	2010	2025
W of Scrub Jay Lane	1,209	2,600	13,615
E of CR 561	1,176	3,300	17,056

Florida Standard Urban Transportation Model Structure (FSUTMS).

Based on the historical traffic count information, a Trends Analyses was performed to evaluate future traffic growth in the project corridor based on use of the Florida Department of Transportation’s *Traffic Trends Spreadsheet Analysis Tool*, on the count stations identified in the above Table 6-8. The trend from the historical traffic count assumed a conservative constant growth without future development within the area.

The CFPRMv45\* Model Forecast for 2025, with refined model and with future development, added to impacted TAZ area of the C.R. 561A corridor. The Tran Plan Model forecast approach compared to the traffic counts trend and provides reasonable result for the future traffic demand on the C.R. 561A corridor.

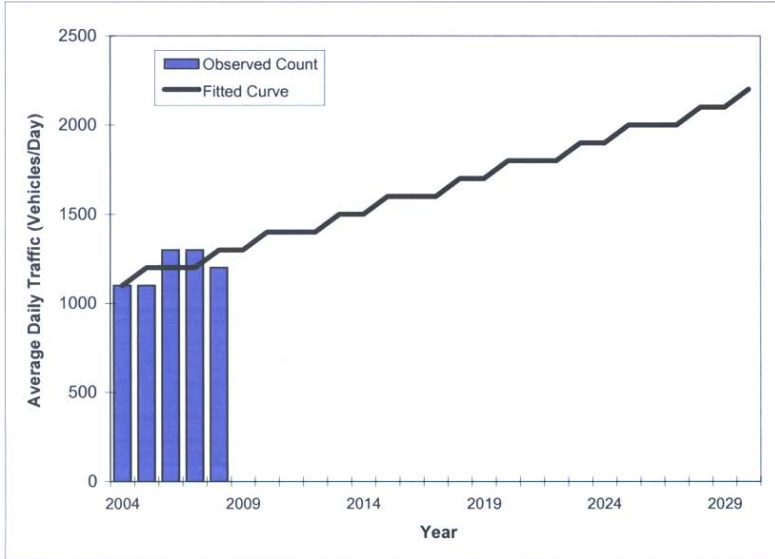
The graph for each of the C.R. 561A corridor segment trends are depicted below.

CFPRMv45\*: Central Florida Regional Planning Model version 4.5

**Graph 1 – Traffic Trends of C.R. 561A Corridor – West of Scrub-Jay Lane**

**TRAFFIC TRENDS**  
CR 561A Corridor -- West of Scrub Jay Lane

County:	Lake
Station #:	64
Highway:	CR 561A Corridor



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2004	1100	1100
2005	1100	1200
2006	1300	1200
2007	1300	1200
2008	1200	1300
2015 Opening Year Trend		
2015	N/A	1600
2025 Mid-Year Trend		
2025	N/A	2000
2030 Design Year Trend		
2030	N/A	2200
TRANPLAN Forecasts/Trends		

** Annual Trend Increase:	40
Trend R-squared:	40.0%
Trend Annual Historic Growth Rate:	4.55%
Trend Growth Rate (2008 to Design Year):	3.15%
Printed:	24-Feb-09
<b>Straight Line Growth Option</b>	

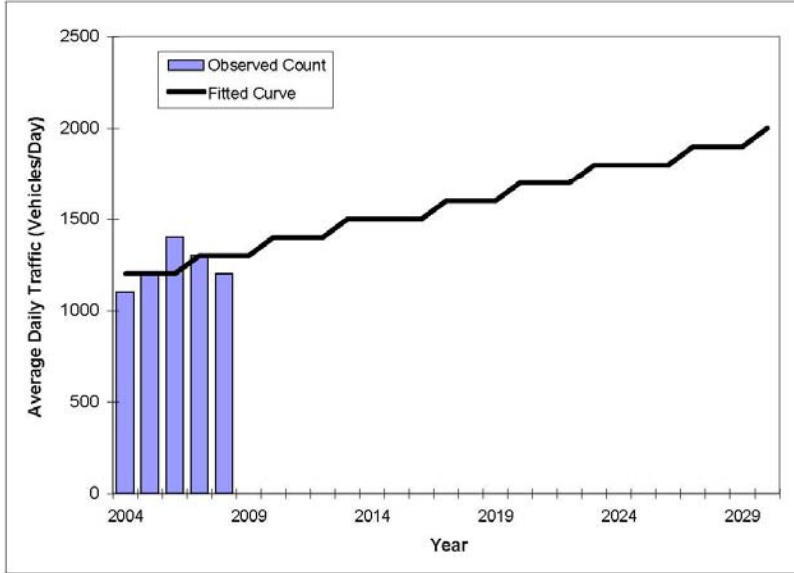
\*Axle-Adjusted



**Graph 2 – Traffic Trends of C.R. 561A Corridor – West of C.R. 455**

**TRAFFIC TRENDS**  
CR 561A Corridor – West of CR 455

County:	Lake
Station #:	62
Highway:	CR 561A Corridor



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2004	1100	1200
2005	1200	1200
2006	1400	1200
2007	1300	1300
2008	1200	1300

** Annual Trend Increase:	30
Trend R-squared:	17.3%
Trend Annual Historic Growth Rate:	2.08%
Trend Growth Rate (2008 to Design Year):	2.45%
Printed:	15-May-09
<b>Straight Line Growth Option</b>	

2015 Opening Year Trend		
2015	N/A	1500
2025 Mid-Year Trend		
2025	N/A	1800
2030 Design Year Trend		
2030	N/A	2000
TRANPLAN Forecasts/Trends		

\*Axle-Adjusted

**Table 6.8 - The Summary of Daily and PM Peak Hour Volumes on New Interchange Ramp****Summary of PM Peak-Hour Volumes**

Location	2011	2021	2026	2031
NB Off-ramp	1,260	2,480	2,930	3,690
SB On-ramp	1,010	1,990	2,380	2,960
SB Off-ramp	340	530	600	710
NB On-ramp	420	650	730	880
Turnpike mainline, south of the interchange	5,220	9,010	13,960	12,810
Turnpike mainline, north of the interchange	3,710	5,720	9,980	7,750
Hancock Road, south of the interchange	1,830	3,540	4,210	5,280
Hancock Road, north of the interchange	2,200	5,430	6,750	8,680

**Summary of Daily Volumes**

Location	2011	2021	2026	2031
NB Off-ramp	10,250	20,110	25,040	29,970
SB On-ramp	10,250	20,110	25,040	29,970
SB Off-ramp	3,410	5,280	6,220	7,150
NB On-ramp	3,410	5,280	6,220	7,150
Turnpike mainline, south of the interchange	47,000	81,240	131,780	115,480
Turnpike mainline, north of the interchange	33,320	51,580	94,140	69,820
Hancock Road, south of the interchange	16,940	32,660	40,500	48,320
Hancock Road, north of the interchange	20,380	49,720	64,380	79,040

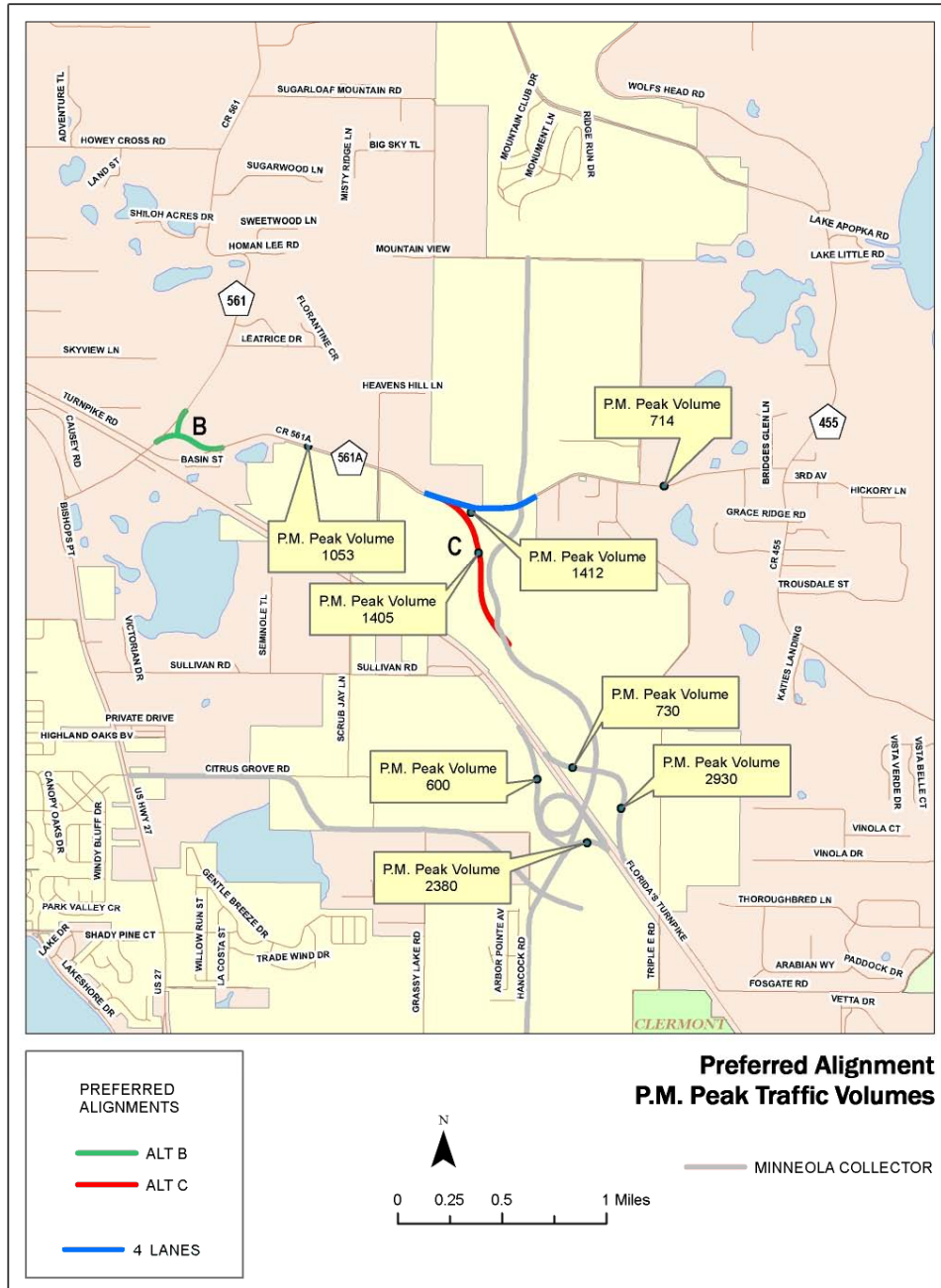
Source: by Glatting Jackson

Future growth trends were established by a least square linear regression of historic counts. Based on this analysis, a resulting annual simple growth rate (average of all count stations within the corridor) of approximately 5.1 percent per year (simple compounding) was estimated, using projected trends between the years 2004 to 2008 (depending on the location) and 2025.

It should be noted that future travel demands estimated from trends analyses are based on historical traffic, driven by past economic and development growth in the C.R. 561A corridor study area, under the existing roadway system. The future travel demand projections based on the trends analysis are not reflective of a no-build or build condition, but on the ability of the area to sustain economic growth and the available roadway capacity through the roadway facilities.

Included in this section of the project is traffic projection for the new proposed interchange ramp P.M. Peak hour traffic that will have impact on the C.R. 561A corridor and the Heritage Hills Blvd. Alignment (see Table 6-9 on summary for daily and PM hour traffic volumes).

**Figure 6.3 - Alternative Scenarios and PM Peak Future Projection**



## **6.6 Transportation Models**

In addition to the historical count based trends analysis, the most current Year 2025 CFRPM v4.50 FSUTMS model was also used in assessing future demand for the corridors in the project area.

The CFRPM v4.50 modeling effort was representative of the 2025 Cost Feasible Plan network and contains all updated model input information, which was available at the time of the preparation of this report. The 2025 Cost Feasible Plan network is also reflective of all adopted improvements as indicated in the Lake-Sumter MPO LRTPs. Based on these modeling efforts, forecasts for travel demand were developed using the anticipated future roadway network as indicated in the adopted Long Range Transportation Plan and MPO adopted socio-economic data for the area. Initial 2025 AADT volumes were derived by applying the appropriate Model Output Conversion Factor to the model output.

Several model alternative runs were evaluated with what if scenario with changes to Traffic Analysis zones (TAZ), network coding and to network alignment. These alternatives are A, B, C, D, and combination for BC, BC2 and B&C. The study team evaluated the result of each alternative forecasted model output for two-lane and four-lane options. The alternative B&C was the only option that provided a desire result for the CR 561A Corridor Study in terms of volume to capacity ratio (V/C), that will address efficient travel needed within the area in the future (Volume PM Peak Table-6-9 and Figure 6-3: Map of PM Peak Future Projection - see Appendix 2: Technical Notes and all associated tables and model runs for each alternative and Traffic Trends Analysis graph).

## **6.7 Design Traffic Forecasts for Design Hour**

Due to the specific conditions associated with any roadway, it is necessary to utilize the various methods in projecting future traffic forecasts as a basis for comparison. In addition, actual road characteristics such as access, existing and anticipated operational conditions, proposed future roadway network improvements, specific land use developments, traffic patterns/mix and driver perception must be assessed and analyzed in developing future traffic forecasts.

Most of the above considerations are based on engineering judgment, field observations and knowledge of the operations of the existing facility. Before accepting the model results as appropriate for use in the design traffic, the results of the transportation model for this area were reviewed closely to determine the validity of the traffic forecasts. This information is used with the existing traffic volumes to develop future forecasts of travel demand (design traffic forecasts), which would be representative of traffic volume increases expected in the future.

The results of the FSUTMS model runs were adjusted from peak season to AADTs by applying a MOCF factor of 0.94. The growth rates for each of the roadway segments were derived by comparison of the known 2007 and 2008 AADT volumes to the initial 2025 AADT volumes. The design year 2030 AADT forecasts were then developed by projecting up the initial 2025 AADTs using the annual growth rate for each roadway segment. The known 2007 and 2008 AADT volumes derived from count data and the design year 2030 forecasts for the project were the basis for interpolating the 2015 and 2030 AADTs along the roadways within the study area.

### **6.8 Build Alternatives “B” & “C” Scenario Geometry**

The suggested proposed Build Alternatives B & C Scenario by the study team for the C.R. 561A Corridor for 2025 is listed below. In addition to the roadway improvements included in the No-Build Scenario, the four-lane Heritage Hills Blvd Corridor is included in the HNTB study and the Turnpike Interchange. To improve the operations of the existing intersections along C.R. 561A Corridor, the proposed improvements for the intersections are noted below:

#### **C.R. 455 at C.R. 561A:**

- ❖ Provide a turn-lane to accommodate turning movement from C.R. 455 to C.R. 561A
- ❖ Add an additional left-turn lane and right-turn lane from C.R. 561A to C.R. 455
- ❖ Future signal installation when warranted

#### **C.R. 561A with Proposed Hancock Road at Heritage Hills Blvd:**

- ❖ Install a traffic signal
- ❖ C.R. 561A four-lane roadway realignment from the proposed Hancock Road to Heritage Hills Blvd.
- ❖ Coordinate with the future Turnpike Interchange Ramp
- ❖ Add an additional left-turn lane and right-turn lane

#### **C.R. 561A at C.R. 561 Realigned**

- ❖ Realigned C.R. 561A at C.R. 561 to address safety issues at the intersection
- ❖ Install a traffic signal
- ❖ Add an additional left-turn lane and right-turn lane

#### **Reconstruct C.R. 561A Corridor with bike lanes and sidewalks**

- ❖ This calls for reconstructing the existing two-lanes to add bike lanes, sidewalk and multi-use trail according to the Lake County Trail Master Plan - (see suggested Alignment Concept Plan in Appendix 1).

**Table 6.9 – Future PM Peak Volumes Projection Four-Lane / Two-Lane Option**

LAKE COUNTY CR 561A CONCEPTUAL ANALYSIS

Streets	From	To	Generalized Peak Hour Two-Way	Adopted LOS	Level of Service "C"		Level of Service "D"		Alternate "BC 2"		Alternate "B" & "C" Final Decision	
					Rural Undeveloped Table 4 - 6	Two Lanes	Four Lanes	Two Lanes	Four Lanes	Two Lanes	Four Lanes	Two Lanes
C.R. 455	SR 19	CR 561	Uninterrupted Flow Highway	C	1480	4060			680		678	
C.R. 455	CR 561	Wolfs Head Rd	Uninterrupted Flow Highway	C	1480	4060			637		657	
C.R. 455	Wolfs Head Rd	CR 561A	Uninterrupted Flow Highway	C	1480	4060			637		657	
C.R. 455	CR 561A	3 <sup>rd</sup> Ave	Uninterrupted Flow Highway	C	1480	4060			1027		1030	
C.R. 455	3 <sup>rd</sup> Ave	Ridgwood Ave	Uninterrupted Flow Highway	C	1480	4060			769		777	
C.R. 561	CR 455	Howey Cross Rd	Uninterrupted Flow Highway	C	1480	4060			1115		1125	
C.R. 561	Howey Cross Rd	Cynthia Ln	Uninterrupted Flow Highway	C	1480	4060			1115		1125	
C.R. 561	Cynthia Ln	Tumpike RD / CR 561A	Uninterrupted Flow Highway	C	1480	4060			1115		1125	
C.R. 561	US 27	Tumpike RD / CR 561A	Interrupted Flow Arterials	D			1350	2850		1121	1127	
C.R. 561/C.R. 561A	Tumpike RD / CR 561A	Scrub Jay Ln	Interrupted Flow Arterials	D			1350	2850		1108	1053	
C.R. 561A	Scrub Jay Ln	Proposed Hancock Rd	Interrupted Flow Arterials	D			1350	2850		1249	1194	
C.R. 561A	Proposed Hancock Rd	Proposed Hills of Minneola Dr	Interrupted Flow Arterials	D			1350	2850		1402		1412
C.R. 561A	Proposed Hills of Minneola Dr	CR 455	Interrupted Flow Arterials	D			1350	2850	703		714	
Proposed Hills of Minneola Dr	Mountain View Rd	CR 561A	Interrupted Flow Arterials	D			1350	2850		980	980	
Proposed Hancock Rd	CR 561A	Tumpike /Citrus Grove Rd	Interrupted Flow Arterials	D			1350	2850		1443		1405
Proposed Hancock Rd	Tumpike /Citrus Grove Rd	Proposed Fosgate Rd	Interrupted Flow Arterials	D			1350	2850	263		267	

Four Laning Volumes

Page 1 of 1



## 7.0 Corridor Analysis

The objective of the corridor analysis process is to select a viable corridor in which to provide technically and environmentally sound alignment alternatives that are cost affective and acceptable to the community.

The C.R. 561A Corridor Analysis Study began initially by identifying potential corridors within the study area. This effort includes the connectivity of the C.R. 561A corridor with the Minneola Collector Road and the Turnpike Interchange that was approved with the Hills of Minneola Development of Regional Impact (DRI). The existing right-of-way and future right-of-way need was also evaluated during the corridor analysis that would meet the needs identified during the study alternative process.

The BC alternative was suggested for the C.R. 561A corridor and was evaluated by the study team as the most viable alternative as documented in the C.R. 561A Corridor Report.

## 8.0 Alternative Alignment Analysis

The sections following describe the various improvement alternatives that have been considered by the Lake County staff study team during this study process.

### **8.1. No Project (No Build) Alternative**

The No-Build Alternative involves maintaining the existing corridor characteristics. The implications of this No-Build Alternative include acceptance of decreasing LOS on C.R. 561A corridor links through the study area, as traffic volumes continue to increase with the growth in populations and new subdivisions in the area (see Subdivisions Map Figure 6-2).

There are advantages and disadvantages that are typical when considering a No-Build Alternative. The advantages include the following:

- ❖ **No costs for roadway design plans preparation, right-of-way acquisition, roadway construction and utility relocations**
- ❖ **No business damages or residential relocations**
- ❖ **No environmental impacts**
- ❖ **No inconvenience caused by roadway construction**



The disadvantages include the following:

- ❖ **Facilities will not be able to serve the projected traffic volumes, levels of service will be low**
- ❖ **Other area roadways may become congested due to the reduced level of service on this roadway and no completed roadway network**
- ❖ **Motorists will experience significant delay**
- ❖ **Crash rates will likely increase as capacity decreases**
- ❖ **Deficiencies in pedestrian and bicycle facilities will not be improved**
- ❖ **Roadway design and safety standards will continue to not be met.**

### **Transportation Systems Management**

The Transportation Systems Management (TSM) alternative includes those types of activities designed to maximize the use of the existing transportation system. A TSM project is a limited construction alternate that would use minor improvements to enhance capacity to the existing C.R. 561A alignment. These strategies include intersection widening, improved signalization, increased mass transit usage, and provisions for bicycles and pedestrians. The advantage of this alternative would be the limited expenditure of funds to relieve existing/future congestion problems, while some increased efficiency might be realized at individual locations through minor improvements and the overall capacity along the corridor. The TSM approach may help the corridor for some time before major capacity improvement is warranted.

### **Build Alternatives**

Several build alternative scenarios were developed for the C.R. 561A corridor evaluation presented in the previous section. The viable alternatives have been identified as Alternative “B” and “C”. Each of the segments are identified and discussed in greater detail in the following sections. The remaining of the C.R. 561A corridor, not identified with any of the above alternatives, will be the existing two-lane improvements with bike lane/pave shoulder, sidewalk and multi-use trails according to the Lake County Trail Master Plan.

## **8.2. Typical Section Analysis**

At the outset of this project, the study team considered four typical cross sections for the C.R. 561A corridor improvement. These included urban typical sections ranging from improved widen two lanes to five-lane widening with each of these alternatives evaluated by the study team. Based on several developments with the project impact area need and on the right-of-way impacts required by the five-lane section, only the two, three and four lane typical sections were considered viable and further analyzed during the remainder of the study process. During the review of the design traffic projections, the three-lane section was ruled out. Improved two lanes and four lanes were needed to accommodate more traffic on the roadway network resulting from the expected growth in the project area.

### **8.3. Alternative Alignment Analysis**

The objective of the C.R. 561A alternative segments analysis is to provide the technical and environmental finding that meets the need of the corridor evaluation, based on traffic projection and other data information in the existing condition section of this report. The two (2) suggested alternative alignments is discussed the next section of the report.

#### **8.3.1 C.R. 561A East End Alternatives**

The study team also recommends realigning the east section of the intersection of C.R. 561 and C.R. 561A with Alternative B. This was an effort to address traffic safety issues in the existing conditions crash data of this report (see preferred Alternative Concept Plans in Appendix 1 and Map Figure 8.1).

#### **8.3.2 C.R. 561A Center Alternatives Alignments with Interchanges Ramp "C"..**

The study team suggested alternative alignments C as follows:

- ❖ **Install a traffic signal**
- ❖ **C.R. 561A four-lane roadway realignment from the proposed Hancock Road to Heritage Hills Blvd.**
- ❖ **Coordinate with the future Turnpike Interchange Ramp**
- ❖ **Add an additional left-turn lane and right-turn lane**
- ❖ **Sidewalk and multi-use trail**
- ❖ **Add bike lane**

*(see Map figure.8.1 and Typical Section Figure 9.2).*

### **8.4 Comparative Analysis for the Suggested CR 561A Corridor Improvement**

Each of the viable alternatives was evaluated based on costs, right-of-way impacts, environmental impacts and social impacts. Each impact is described as follows:

- ❖ **Commercial Parcel Impact: No commercial impact within 300-feet along the corridor alignment.**
- ❖ **Residential Parcel Impact: No residential parcel impact.**
- ❖ **Residential Relocation: No residential impact or relocation required.**
- ❖ **Vacant Parcel Impact: This value totals the number of properties that are currently undeveloped, as best as can be told from the field and aerial photography reviews, where additional right-of-way is required.**

- ❖ **Cultural Features:** This value totals the impacts to any cultural features whether historic, archeological or otherwise significant within the project corridor. Cultural features identified, but ineligible for listing on the NHRP, are not considered impacted.
- ❖ **Wetlands:** No wetland impact along the corridor.
- ❖ **Wildlife and Habitat:** Wildlife and habitats occurring within the project corridor have been identified in previous sections of this report. This value denotes the level of impact that each alternative has on the wildlife and habitat in the corridor.
- ❖ **Contamination:** This study has summarized contamination sites in previous sections of this report. The value for contamination impact denotes the level of impact that each alternative has on contamination sites within the project corridor.

**Table 8.1 - Evaluation Matrix**

Evaluation Factors	Alternative	
	No Build	Alt 1 "B" & "C"
<b>Alignment Used</b>		
<b>Right-of-Way Impacts</b>		
# of Commercial Parcels Impacted	None	None
# of Residential Parcels Impacted	0	0
# of Residential Impacts Considered Relocations	0	0
# of Vacant Parcels Impacted*	0	5
# of Parcels Impacted	0	10
Area of Right of Way to be Acquired for Roadway (acres)	0	5
Area of Right of Way to be Acquired for Pond Sites (acres)	0	5
<b>Environmental Impacts</b>		
Cultural Site Impacted	0	0
Wetland Impacts (acres)	0	0
Potential to Impact Wildlife	0	Medium
Contamination Impacts (acres)	0	5
<b>Estimated Project Cost</b>		
Engineering Design Cost (12%)	\$0	\$.91 million
Construction Cost with 20% Contingency	\$0	\$6.6 million
Construction Engineering & Inspection Cost (12%)	\$0	\$.91 million
<b>Total Cost *</b>	<b>\$0</b>	<b>\$8.42 Million</b>

\*The Hills of Minneola property is, as of the date of this report, listed as individual parcels with the property appraiser's office. Each parcel is counted in this total as a single vacant parcel. There are eight (8) vacant parcels that are part of the Hills of Minneola DRI.

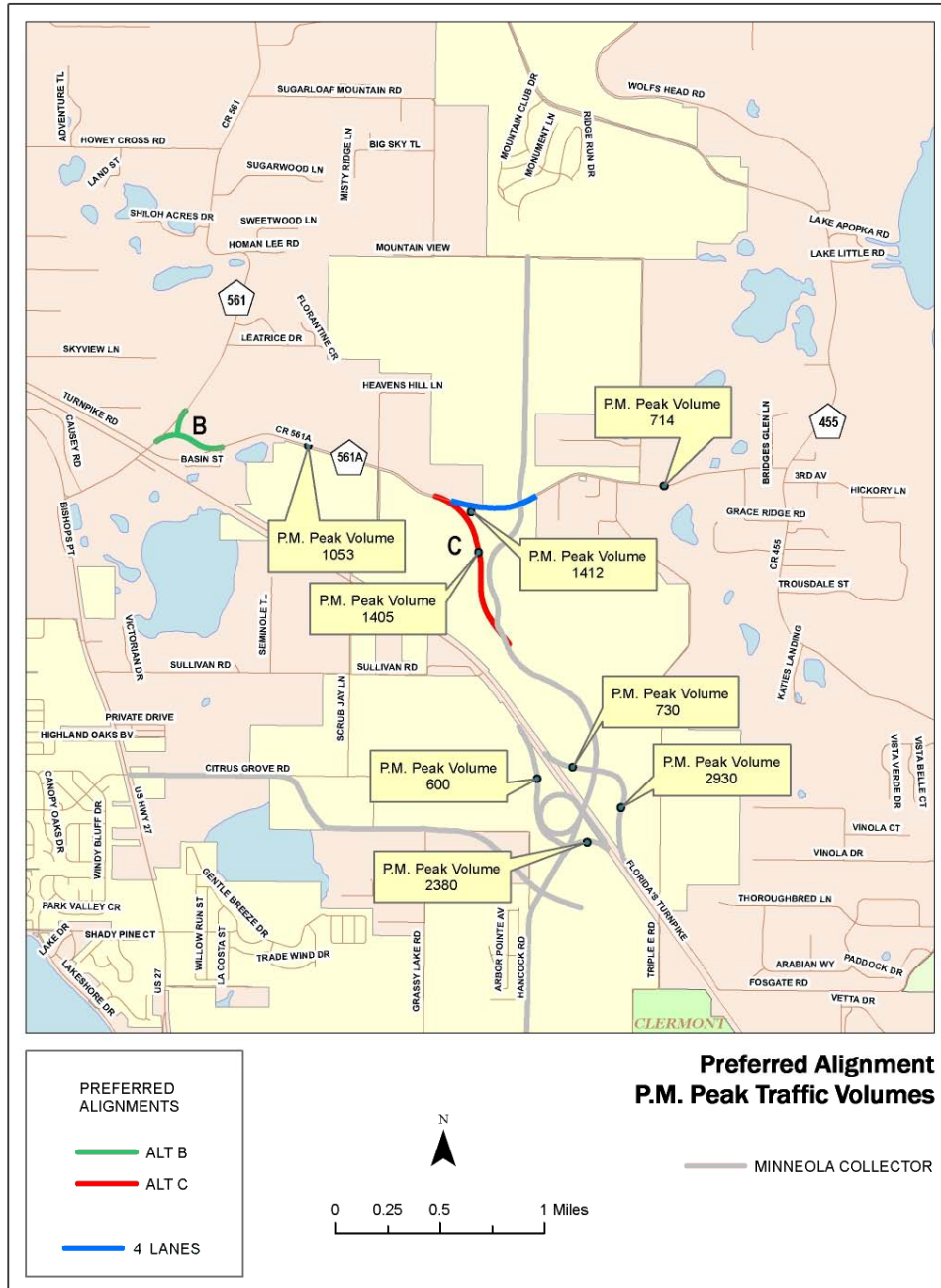
**8.5 Preferred Alternative**

Based upon the results of the engineering and environmental, travel demand forecasting analysis, and the study team, Alternative "B" & "C" has been identified as the preferred alternative for further detailed study. The segment of the C.R. 561A (from C.R. 455 to Heritage Hill Boulevard) will remain two-lanes with future bike lane, sidewalk and multi-trail when applicable.

The C.R. 561A segment (Alternative "C") from Heritage Hill Boulevard and proposed Hancock Road, and 500-ft. beyond proposed Hancock Road, will be four-lanes (please see Appendix 1 for the Preferred Alignment Concept Plans).

Alternative "B" realignment of intersection C.R. 561 and C.R. 561A is depicted in map Figure 8.1 (please see Appendix 1 for the Preferred Alignment Concept Plans).

**Figure 8.1 - Map of Preferred Alternative (“B” & “C”) Alignment and PM Peak Future Traffic Volumes Projection**



**9.0 Preliminary Design Analysis**

The following sections describe the results of the preliminary design analysis conducted for the preferred alternative discussed in Section 8.5. The concept plans for this alternative can be found in Appendix I.

**9.1. Design Traffic Volumes**

Information in this section is from the C.R. 561A corridor study section presented in Section 6 developed for this project, documenting the existing traffic conditions and the analysis of the Build and No-Build scenarios. The traffic information is summarized in Section 6 of this report. Based on the information contained in the document, the recommended traffic factors were applied to the analysis and design of the improvements recommended.

The recommended traffic characteristics provided in Table 9-1 represent the current travel patterns throughout the project area, and provide the best indication of travel patterns for the future conditions. The recommended K30 and D30 shown for the various facility types are within the acceptable ranges as shown in the FDOT Project Traffic Forecasting Handbook and agreed upon by the project study team.

**Table 9.1 - Recommended Traffic Factors**

Roadway		K30	D30	T
Arterials	U.S. 27 <sup>1</sup>	10.23	59.48	13.20
	S.R. 50 <sup>1</sup>	10.23	59.48	8.71
	Average	10.23	59.48	10.95
Side Streets		<b>K(Measured)</b>	<b>K30(Estimated)</b>	<b>D(Measured)</b>
		9.43	10.65	62.28

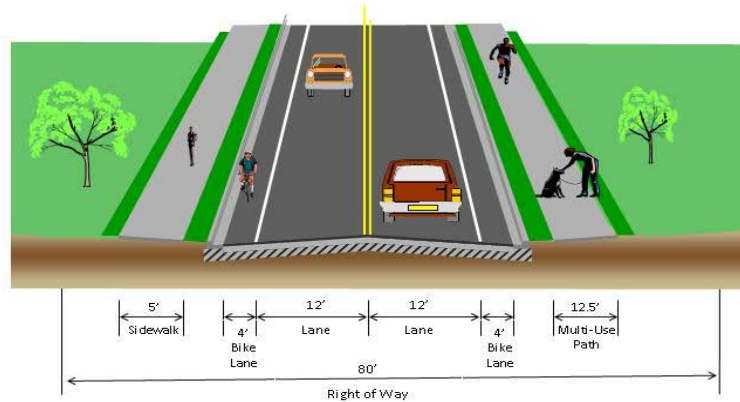
Source: 1. from 2007 FDOT Florida Traffic Information CD

The 2030 projected DDHVs are provided in Section 6 of this report. The congestion delays within the study area for the preferred alternative are significantly lower as compared to the No-Build condition. The alternative results are in improved mobility and traffic conditions within the project study area. The project significantly reduces traffic congestion on U.S. 27 between S.R. 50 and Citrus Grove Road, due to the diversion of through traffic onto the proposed Hancock Road /Heritage Hills Boulevard and C.R. 561A. This project also relieves traffic congestion on other parallel collector roadways in Lake County including Grand Highway, Blackstill Lake Road and portions of U.S. 27, C.R. 561, C.R. 50, C.R. 455 and Citrus Tower Boulevard.

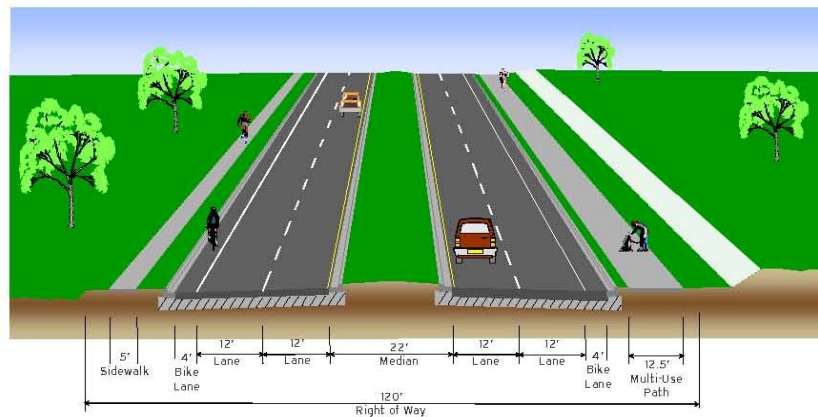
**9.2. Typical Section**

The recommended alternative consists of two (2) single typical sections for the project corridor. The two lane section includes two (2) twelve-foot through lanes, four-foot bike lanes, five-foot sidewalk on the west and multi-use asphalt path on the south side of the roadway. The four-lane section includes a twenty-two foot median, two (2) twelve-foot through lanes, four-foot bike lanes, a five-foot sidewalk on the west and south side of the roadway, and a twelve-and-a-half foot multi-use asphalt path on the east and north side of the road. The typical section is graphically depicted in Figure 9.1., and 9.2.

**Figure 9.1 - Preferred 2 Lanes Typical Section**



**Figure 9.2 - Preferred 4 Lanes Typical Section**



**9.3. Intersection Improvements**

The major intersection improvements, as part of this project are:

- ❖ The Turnpike Interchange Ramp, (as depicted in the C.R. 561A Future Alignment with proposed Hancock Road Map, Figure 8.1 Alternative C) will have left and right-turn lanes provided for eastbound and northbound vehicles. Other movements within the intersection will be coordinated by the Hills of Minneola DRI and the Florida Turnpike.

- ❖ The intersection at C.R. 455 and C.R. 561 will add additional left and right-turn lanes to accommodate turning movement traffic in both directions with future evaluation for a signal.
- ❖ The intersection of C.R. 561 and C.R. 561A requires realignment and the addition of left and right-turn lanes in both directions with a signal.
- ❖ Left-turn and right-turn lanes will be required on Scrub Jay lane and C.R. 561A.

**9.4. Alignment and Right-of-Way Needs**

The existing 80-foot right-of-way is not sufficient to accommodate the four lanes for the alignment in Alternative “C”. Right-of-way will also be required for the construction of stormwater retention ponds along the corridor. The estimated right-of-way need is about 12-acres of land for road widening and retention ponds.

**9.5. Relocation**

The alignment can be within the existing 80-foot right-of-way for the alignment in Alternative “B” (see Appendix 1 for Preferred Alignment Concepts Plans).

**9.6. Project Cost Estimates**

**9.6.1. Construction Costs**

The estimated construction cost for the preferred alignment was developed using historical pricing information for past FDOT roadway construction projects. The estimated construction cost is \$6.6 million. Construction costs do not include any utility relocation costs, but do include a 10-percent contingency and assume completion of certain roadway portions by developer agreements.

**9.6.2. Engineering Design Costs**

The estimated engineering design costs for the preferred alignment is about \$910,000.00. The engineering design costs are based on 10-percent of the estimated construction costs.

**9.6.3. Total Project Costs**

The estimated total project costs are summarized as listed below:

Design	\$ 910,000.00
Construction	\$6,600,000.00
Right of Way	\$650,000.00
Construction Engineering and Inspection	\$910,000.00
<b>Total Estimate Project Cost</b>	<b>\$9,070,000.00</b>



### **9.7. Recycling of Salvageable Material**

The opportunity to recycle any salvageable materials by the contractor is encouraged by Lake County. Such materials may include old asphaltic concrete pavement, base material and drainage structures. The existing pavement may be milled for recycling during the construction of the project. Any other salvageable materials will be identified during the design of the project. If these materials should be removed from the construction site, it is to be done as specified in the current FDOT Standard Specifications for Road and Bridge Construction. The opportunity to utilize existing pavement will also be identified during the design of the project.

### **9.8. User Benefits**

Highway user costs are defined by AASHTO's, *A Manual on User Benefit Analysis of Highway and Bus-Transit Improvements*, 1977, as the sum of (1) motor vehicle running cost, (2) the value of the vehicle user travel time and (3) traffic accident cost. User benefits are the cost reductions and other advantages that occur to highway motor vehicle users, through the use of a particular transportation facility as compared with the use of another. Benefits are generally measured in terms of a decrease in user costs. The preferred alternative provides user benefits to the extent that it reduces user costs as compared to the "No Build". The improvement will provide regional connectivity with the area. In addition, the improved horizontal geometry and access management provided with the project should reduce the occurrence rate of many collision types on the roadway. The roadway is also not designed to current design standards and presents safety risks. This project will deliver the added benefit of a safely designed roadway.

### **9.9. Pedestrian and Bicycle Facilities**

A four-foot bicycle lane will be provided in both directions along the outside travel lane. Additionally, a five-foot sidewalk will be provided on the west and south sides of the roadway and a 12.5-foot multi-use asphalt path will be provided on the east and north sides of the roadway. Pedestrian features, including curb cut ramps, crosswalks and pedestrian signals, will be provided at each signalized intersection.

### **9.10. Safety**

Safety is a major aspect in development of the project, including the realignment of C.R. 561A and C.R. 561 intersection. Improved pavement conditions, adequate drainage systems, sight distances, roadway geometry, signalization improvements, access management, clear recovery areas and pedestrian and bicycle features are all proposed to improve the safety of this roadway. In addition, the raised median that is proposed along most of the project will provide a refuge area for pedestrians.

### **9.11. Economic and Community Development**

A variety of existing land uses can be found within the study area. These include Ferndale Communities' future commercial, residential and agricultural, as well as vacant land that are expected to be developed in the future. The project will not adversely impact any proposed community development or redevelopment activities. It will, in fact, enhance the economic viability of the corridor providing appropriate roadway networks to develop the corridor to its fullest potential. It will also serve to reduce congestion and delay throughout other parts of the area surrounding the project.

### **9.12. Environmental Impacts**

A detailed database data studies and evaluations were conducted to determine the potential for adverse impacts that may result from the proposed project. Baseline data, evaluation procedures and analysis of the results are contained in the project files and in Appendix 3 of the reports prepared for this project. The potential for environmental impacts is low within the existing right-of-way and the selection of a preferred alternative was not influenced by these factors.

#### **9.12.1. Cultural Resources**

Based on the results of the Cultural Resource Assessment Survey, it is the opinion of the Lake County Staff investigator that proposed construction within the C.R. 561A Corridor study area will have no effect on historic properties eligible or potentially eligible for listing on the NRHP. No further work is recommended.

#### **9.12.2. Wetlands**

Based on SJRWMD and ACOE criteria outlined in their respective regulatory manuals, the project corridor contains one habitat that may be jurisdictional to both agencies. Grassy Lake and associated wetland vegetation is located within the northern section of the project area. No impacts are currently proposed to this wetland. If impacts identified during further design, then coordination and permitting with SJRWMD and ACOE will be required prior to construction.

#### **9.12.3. Water Quality**

The project is not located within an area that has been determined to be a sole source Aquifer under the Safe Drinking Water Act, Section 1424(e).

**9.12.4. Wildlife and Habitat**

Three protected wildlife species, the Florida Scrub-Jay, Gopher Tortoise and Osprey, were identified in the database records within the project corridor, or have been observed by others. During final design, additional surveying for the presence of Scrub Jays and Gopher Tortoises will be necessary. If any disturbance is to occur within 25-feet of a Gopher Tortoise burrow, agency coordination and a relocation permit will be necessary.

If an Osprey nest is found to be within the construction zone, nest avoidance measures and agency coordination will be necessary. Due to the large amount of agricultural habitat, a formal survey for the Southeastern American Kestrel is recommended. Due to the current and past agricultural use of the area, low development density, and close proximity to the Scrub-Jay, there is a moderate chance that other protected species could occur within the project corridor or associated stormwater pond sites. Coordination with the USFWS and FFWCC is recommended prior to development for concurrence of these findings.

**9.12.5. Noise**

For the preferred alternative, there will be no noise impact because noise level anticipated on the C.R. 561A corridor, due to design and posted speed, will be less than 55 MPH. Secondly, the Lake County Comprehensive Plan Policy will require noise mitigation during land development approval process along the collector road.

**9.12.6. Contamination**

Based on visual observations and other research contained in the Contamination Screening by County staff, evidence of soil and/or groundwater contamination impacts at known contamination sites may have occurred within or near the C.R. 561A Corridor Study recommended alignment (see the existing condition section 4.7 of this report, which may warrant further intrusive investigation prior to construction).

**9.13. Utility Impacts**

The final design of this project will be coordinated with the existing utility owners in such a way as to minimize adjustments and disruption of service. Utility owners in the project corridor have been identified by Sunshine One Call in July 2008. The utility companies shown as having utilities within the project corridor are shown in Table 9-3. The utility contact name and utility type is also provided in the table. Any design plans should be coordinated with the utility companies in the project area to determine impacts and requirements for relocations.

**Table 9.3 - Utility Owners within the Project Corridor**

Utility Owner	Contact Information	Utility Type
City of Minneola	Mark Odell P.O. Box 678 Minneola, Florida 34755	Water
Bright House Networks, LLC	Larry Henderson 211 St. Joe Plaza Palm Coast, Florida 32164	Cable Television
Progress Energy	Customer Service Center	Electric
Level 3 Communications, LLC	Network Relocations Department 1025 Eldorado Boulevard, Bldg 13C04 Broomfield, Colorado 80021	Fiber Optic
Lake Apopka Natural Gas District	Alex Wosgien 1320 Winter Garden-Vineland Road Winter Garden, Florida 34787	Natural Gas Lines
Comcast Cablevision	Bill Graham 8130 C.R. 44, Leg A Leesburg, Florida 34788	Unknown
Embarq – Winter Garden	Jeff Griffin 33 N. Main Street Winter Garden, Florida 34787	Fiber Optic

#### **9.14. Drainage**

##### **9.15.1. Drainage Basins and Pond Alternatives**

This will be addressed in the design phase.

#### **9.15. Access Management**

The conceptual design encompassed access management standards, which generally conform to County Land Development Regulation (LDR) criteria and recommended by the study team.

#### **9.16. Landscaping and Aesthetics**

The Lake County Department of Public Works and the City of Minneola will provide guidance on aesthetic considerations such as landscaping buffer and irrigation during the final design phase of this project. The typical section for the improvements provides a border area and median, which may be used for landscaping. All landscaping improvements will be developed in conformance with the design criteria for maintaining a clear zone and unobstructed line of clear sight for an urban arterial.