

# FINAL AIR QUALITY REPORT

## PROJECT DEVELOPMENT AND ENVIRONMENT STUDY US 19 (SR 55) FROM SOUTH OF US 98 TO CR 488 CITRUS COUNTY, FLORIDA

Work Program Item Segment No: 405822 1  
Federal-Aid Project No: 1852 007 P

The proposed project involves improving US 19 (SR 55) to a six-lane divided facility from US 98 to Turkey Oak Drive, and improvements to the CR 488 intersection in Citrus County. The total length of the project is approximately 18.8 miles.



Prepared for:

**Florida Department of Transportation  
District Seven  
11201 North McKinley Drive  
Tampa, Florida 33612-6456**

May 2004

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District Seven  
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Prepared by:



5300 West Cypress Street  
Suite 300  
Tampa, Florida 33607

May 2004

## EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) conducted a Project Development and Environment (PD&E) Study for improvement alternatives along US 19 (SR 55) from south of US 98 (milepost 1.730) to North Dunnellon Road (CR 488) (milepost 20.742) in Citrus County, Florida. The project is approximately 18.8 miles (mi) in length. The project location map (Figure 1) illustrates the location and limits of the PD&E Study.

In accordance with the National Environmental Policy Act and Part 2, Chapter 16 of the *PD&E Manual* (FDOT, 1999), an analysis was conducted to determine the effect proposed improvements would have on air quality. Based on FDOT's air quality screening test, COSCREEN98R2 (Revised September 2002), the project will not cause the National Ambient Air Quality Standards (NAAQS) for carbon monoxide to be exceeded. This project will not degrade air quality.

The project is in an area that has been designated by the Environmental Protection Agency as attainment for all the NAAQS. Therefore, the transportation conformity rule (40 CFR Part 93) does not apply.

# TABLE OF CONTENTS

<u>Section</u>	<u>Title</u>	<u>Page</u>
	EXECUTIVE SUMMARY .....	i
	TABLE OF CONTENTS.....	ii
	LIST OF TABLES.....	iii
	LIST OF FIGURES .....	iii
1	INTRODUCTION .....	1-1
	1.1 Purpose.....	1-1
	1.2 Project Description.....	1-3
	1.3 Need for Improvement.....	1-3
	1.3.1 Background.....	1-3
	1.3.2 Proposed Improvements.....	1-4
2	AIR QUALITY ANALYSIS .....	2-1
	2.1 Methodology .....	2-1
	2.1 Results.....	2-4
	2.2 Conformance with the State Implementation Plan .....	2-5
	2.3 Construction Impacts .....	2-5
3	REFERENCES .....	3-1
	APPENDIX	
	Appendix A: COSCREEN98R2 Output Sheets	

## LIST OF TABLES

<b><u>Table</u></b>	<b><u>Title</u></b>	<b><u>Page</u></b>
1	Traffic Data for the US 19/West Grover Cleveland Boulevard/West Halls River Road.....	2-2
2	Predicted Worst-Case CO Concentrations.....	2-4

## LIST OF FIGURES

<b><u>Figure</u></b>	<b><u>Title</u></b>	<b><u>Page</u></b>
1	Project Location Map.....	1-2
2	Air Quality Receptor Location Map .....	2-3

# SECTION 1

## INTRODUCTION

The FDOT conducted a PD&E Study for improvement alternatives along US 19 (SR 55) from south of US 98 (milepost 1.730) to North Dunnellon Road (CR 488) (milepost 20.742) in Citrus County, Florida. The project location map (Figure 1) illustrates the location and limits of the PD&E Study.

The purpose of the Air Quality Report is to analyze the effect that the proposed improvements would have on air quality. The basis of the analysis is to determine if the project will cause the National Ambient Air Quality Standard (NAAQS) for carbon monoxide (CO) to be exceeded.

### 1.1 PURPOSE

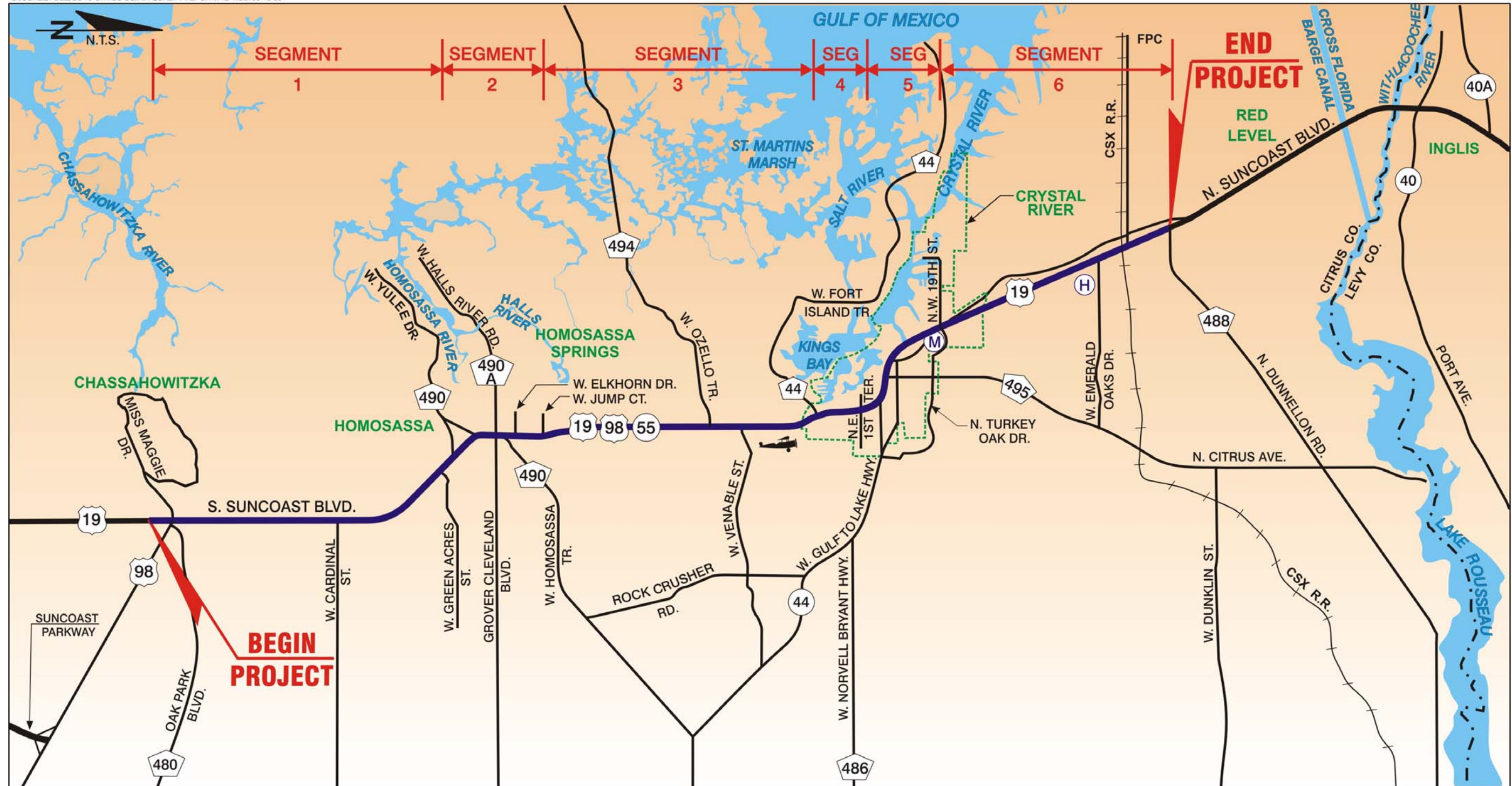
The purpose of the PD&E Study was to provide documented environmental and engineering analyses to assist the FDOT and the Federal Highway Administration (FHWA) in reaching a decision on the type, location and conceptual design of the necessary improvements, in order to accommodate future traffic demand in a safe and efficient manner. The PD&E Study also satisfied the requirements of the National Environmental Policy Act (NEPA) and other Federal requirements in order to qualify the project for federal-aid funding of future development phases of the project.

This Study documents the need for the improvements, and presents the procedures utilized to develop and evaluate various improvement alternatives. Information relating to the engineering and environmental characteristics essential for alternatives and analytical decisions were collected. Design criteria have been established and preliminary alternatives have been developed. The comparison of alternatives was based on a variety of parameters utilizing a matrix format. This process identified the alternative that would have minimal impacts, while providing the necessary improvements. **The design year for the analysis is 2025.**



Figure 1  
Project Location Map

G:\COREL\PD&E\US 19 CITRUS CO\AIR QUALITY REPORT\FIG 1.CDR\8-13-03



**LEGEND**

-  US 19 Project Limits
-  Crystal River Airport
-  Crystal River City Limits
-  Seven Rivers Community Hospital
-  Crystal River Mall



**US 19 (SR 55)  
PD&E STUDY**  
From South of US 98 to CR 488  
Citrus County, Florida

**PROJECT LOCATION MAP**



WPI SEG NO: 405822 1  
FAP: 1852 007 P

FIGURE 1

## **1.2 PROJECT DESCRIPTION**

The PD&E Study limits encompass the portion of US 19 from south of US 98 to North Dunnellon Road (CR 488) in western Citrus County (Sections 1, 12, 13, 24, and 25 of Township 20 South, Range 17 East; Sections 3, 10, 15, 22, 26, 27, 34, and 35 of Township 19 South, Range 17 East; Sections 5, 6, 8, 17, 20, 21, 22, 27, 28, and 34 of Township 18 South, Range 17 East; Sections 30 and 31 of Township 17 South, Range 17 East; and Section 25 of Township 17 South, Range 16 East). The total length of the Study is approximately 18.8 miles (mi). US 19 is primarily a north/south rural principal arterial which follows the West Coast of Florida. Within the project limits, US 19 is part of the National Highway System (NHS) and the Florida Intrastate Highway System (FIHS). The facility serves as a major evacuation route for residents in Citrus County.

For the purposes of evaluating improvement alternatives, the project was divided into six segments based on the existing and future land use, projected traffic volumes for the design year 2025, existing typical sections and available existing ROW. The project segments are as follows:

Segment 1: South of US 98 to West Green Acres Street; 4.86 mi

Segment 2: West Green Acres Street to West Jump Court; 2.07 mi

Segment 3: West Jump Court to West Fort Island Trail (CR 44); 4.65 mi

Segment 4: West Fort Island Trail (CR 44) to NE 1st Terrace; 0.86 mi

Segment 5: NE 1st Terrace to Turkey Oak Drive; 2.05 mi

Segment 6: Turkey Oak Drive to North Dunnellon Road (CR 488); 4.31 mi

## **1.3 NEED FOR IMPROVEMENT**

### **1.3.1 Background**

The need for improvement along the proposed project was established based on the evaluation of the following:



- Current quality of traffic operations in the study area;
- The expected future quality of traffic operations along US 19 under the No-Build Alternative;
- Traffic safety statistics for the period between 1995 and 1999;
- Consistency with local government comprehensive plans; and
- The projected socioeconomic growth within the study corridor.

### **1.3.2 Proposed Improvements**

The US 19 Study corridor is functionally classified as a rural principal arterial from south of US 98 to North Dunnellon Road (CR 488). Improvements considered as part of this PD&E Study included widening US 19 from a 4, 5, and 7-lane roadway to a 6-lane divided roadway along the majority of the corridor to improve capacity, meet level of service standards, and improve safety. The roadway is currently and will remain a controlled access facility. However, the level of access control will be improved in Homosassa and Crystal River to incorporate a raised restricted median where none exists today. All signalized intersections along with CR 488 will be improved.

## SECTION 2

### AIR QUALITY ANALYSIS

#### 2.1 METHODOLOGY

An air quality evaluation, specifically an analysis of CO concentrations, was performed in accordance with FDOT's *PD&E Manual*<sup>1</sup>. The computerized screening test, COSCREEN98R2 (Revised September 2002) was used. Applying worst-case assumptions for meteorological, traffic and site conditions, COSCREEN98R2 predicts CO concentrations at established receptor locations. The results can be directly compared to the NAAQS to identify the potential for the CO standard to be exceeded. The NAAQS for CO are 35 parts per million and 9 parts per million for 1-hour and 8-hour averaging times, respectively.

A worst-case approach is used when evaluating air quality. The premise of this approach is that if the NAAQS are not exceeded under worst-case conditions, then there will not be air quality impacts due to the project at any location. Motor vehicle emissions are typically worst at signalized intersections where vehicles incur delay. A review of the signalized intersections within the project limits showed the intersection of US 19 and West Grover Cleveland Boulevard/West Halls River Road had the highest traffic volume, longest vehicle delay times and nearby reasonable receptors. Therefore, the US 19/West Grover Cleveland Boulevard/West Halls River Road intersection was evaluated as a worst-case.

Traffic data used in the analysis is documented in the *Final Draft Traffic Report: Volume 1 – Existing Conditions*<sup>2</sup>, April 2002 and *Final Draft Traffic Report: Volume 2 – Future Conditions*<sup>3</sup>, June 2003 and summarized in Table 1. The analysis was performed for opening year (2005) and design year (2025) for the No-Build and Build conditions. A limitation in the COSCREEN98R2 model requires that all years analyzed beyond 2020 use emission factors developed for year 2020. As such, the predicted CO concentrations

for the 2025 design year are conservatively high since emission factors decrease as the years increase due to a cleaner motor vehicle fleet.

**Table 1**  
**Traffic Data for the US 19/West Grover Cleveland**  
**Boulevard/West Halls River Road**

Scenario	Peak Hour Traffic Volume <sup>1</sup>	Free Flow Approach Speed
2005 No-Build	1794	40 mph
2025 No-Build	2422	40 mph
2005 Build	1794	40 mph
2025 Build	2422	40 mph

<sup>1</sup>Highest approach volume

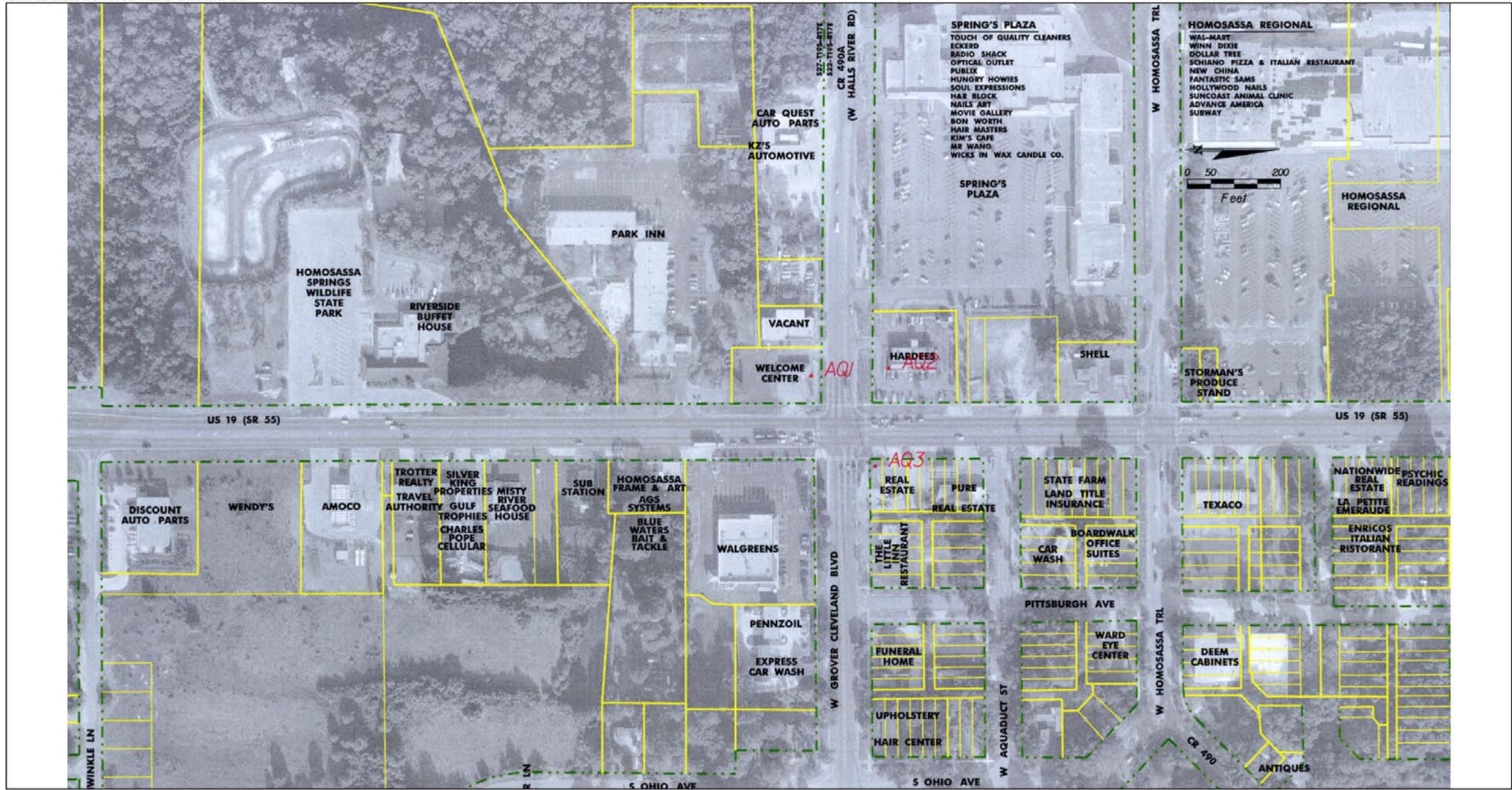
CO levels were highest near travel lanes where pollutants were emitted with concentrations decreasing as the distance from the roadway increased. As a worst-case scenario, CO concentrations were predicted at reasonable receptor sites in closest proximity to the US 19/West Grover Cleveland Boulevard/West Halls River Road. A reasonable receptor site is an area where people can be expected to spend a period of time comparable to the 1-hour and 8-hour averaging times used in establishing the NAAQS for CO. The receptors in closest proximity to US 19/West Grover Cleveland Boulevard/West Halls River Road were commercial buildings (one in the southwest quadrant, one in the northwest quadrant and one in the northeast quadrant of the intersection). Employees at the Greater Nature Coast Welcome Center, Hardees Restaurant and the real estate business probably spent time at these locations that is consistent with the one and eight-hour averaging times for CO.

The modeled receptor locations are identified as AQ1, AQ2 and AQ3 on Figure 2. Receptor AQ1 (Greater Nature Coast Welcome Center) is located approximately 85 ft west and 40 ft south of the US 19/West Grover Cleveland Boulevard/West Halls River Road intersection for the No-Build condition and approximately 50 ft west and 35 ft south of the US 19/West Grover Cleveland Boulevard/West Halls River Road



Figure 2  
Air Quality Receptor Location Map

G:\COREL\PD&E\US 19 CITRUS CO\AIR QUALITY\FIG 2.CDR\8-15-03



**LEGEND**

- Air Quality Receptor Location



**US 19 (SR 55)  
PD&E STUDY**  
From South of US 98 to CR 488  
Citrus County, Florida

**AIR QUALITY RECEPTOR LOCATION MAP**

WPI SEG NO: 405822 1  
FAP: 1852 007 P

STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION

FIGURE 2



intersection for the Build condition. Receptor AQ2 (Hardees Restaurant) is located approximately 95 ft west and 60 ft north of the US 19/West Grover Cleveland Boulevard/West Halls River Road intersection for the No-Build condition and approximately 55 ft west and 55 ft north of the US 19/West Grover Cleveland Boulevard/West Halls River Road intersection for the Build condition. Receptor AQ3 (real estate business) is located approximately 40 ft east and 35 ft north of the US 19/West Grover Cleveland Boulevard/West Halls River Road intersection for the No-Build condition and 30 ft east and 25 ft north of the US 19/West Grover Cleveland Boulevard/West Halls River Road intersection for the Build condition.

## 2.2 RESULTS

The predicted CO concentrations for the No-Build and Build conditions during the projects opening year (2005) and design year (2025) are provided in Table 2. Output sheets from the COSCREEN98R2 model are provided in Appendix A.

**Table 2  
Predicted Worst-Case CO Concentrations**

Year	Alternative	CO Concentration (parts per million)		
		Receptor	1-Hour Averaging Time	8-Hour Averaging Time
2005	No-Build	AQ1	9.4	5.7
		AQ2	8.8	5.3
		AQ3	10.9	6.6
	Build	AQ1	10.6	6.4
		AQ2	9.7	5.8
		AQ3	11.8	7.1
2025	No-Build	AQ1	9.8	5.9
		AQ2	9.0	5.4
		AQ3	11.2	6.7
	Build	AQ1	11.1	6.7
		AQ2	10.1	6.1
		AQ3	12.3	7.4

All predicted CO concentrations for the No-Build and Build conditions in the opening and design years were below the 1-hour NAAQS of 35 parts per million and the 8-hour standard of 9 parts per million. The predicted 1-hour and 8-hour concentrations included a background CO level of 3.3 and 2.0 parts per million, respectively.

Predicted CO concentrations for the Build condition were slightly higher than the No-Build condition. This is caused by the decreased distance between a receptor and the nearest roadway edge for the Build condition.

### **2.3 CONFORMANCE WITH THE STATE IMPLEMENTATION PLAN**

The project is in an area that has been designated by the Environmental Protection Agency as attainment for all the NAAQS. Therefore, the transportation conformity rule (40 CFR Part 93) does not apply.

### **2.4 CONSTRUCTION IMPACTS**

Construction activities may cause minor short-term air quality impacts in form of dust from earthwork and unpaved roads and smoke from open burning. These impacts will be minimized by adherence to all State and local regulations and to the latest edition of the FDOT *Standard Specification for Road and Bridge Construction*<sup>4</sup>.

## **SECTION 3**

### **REFERENCES**

1. *Project Development and Environment Manual, Part 2, Chapter 16*; Florida Department of Transportation, Tallahassee, Florida; August 1999.
2. *Final Draft Traffic Report: Volume 1 – Existing Conditions*; PBS&J, Tampa, Florida, May 2004.
3. *Final Draft Traffic Report: Volume 2 – Future Conditions*; PBS&J, Tampa, Florida, May 2004.
4. *Standard Specifications for Road and Bridge Construction*; Florida Department of Transportation; Tallahassee, Florida; 2003.



**Appendix A**

**COSCREEN98R2 Output Sheets**

08-05-2003

COSCREEN98  
(revised August 2000 to remove I/M options)

US 19 Citrus PD&E Study Opening Year 2005 No Build  
US 19 at W. Grover Cleveland Blvd/W. Halls River Rd.

Analyst:

MOBILE5 Emission Factors Based On:

User-supplied Data:  
 Region: 3: Central Florida  
 Year: 2005  
 Speed: 40  
 Default Data:  
 Ambient Temperature: 60  
 Maximum Temperature: 70  
 Minimum Temperature: 48

Facility Data:

Max Approach Traffic Volume: 1794 veh/hour  
 Environment: Suburban  
 Background Concentration: 1-hr = 3.3 ppm  
 8-hr = 2.0 ppm

Receptor Data:

Receptor Name	East-West Distance from Intersection	North-South Distance from Intersection	Receptor Height
AQ1 - SW Quad	85	40	5.6
AQ2 - NW Quad	95	60	5.6
AQ3 - NE Quad	40	35	5.6

All distances are in feet

\*\*\*\*\*  
 RESULTS

Receptor Name	Max 1-Hr Conc (ppm)	Max 8-Hr Conc (ppm)
AQ1 - SW Quad	9.4	5.7
AQ2 - NW Quad	8.8	5.3
AQ3 - NE Quad	10.9	6.6

Maximum concentrations include background CO

\*\*\*\*\*

08-05-2003

COSCREEN98  
(revised August 2000 to remove I/M options)

US 19 Citrus PD&E Study Opening Year 2005 Build  
US 19 at W. Grover Cleveland Blvd/W. Halls River Rd.

Analyst:

MOBILE5 Emission Factors Based On:

User-supplied Data:  
 Region: 3: Central Florida  
 Year: 2005  
 Speed: 40  
 Default Data:  
 Ambient Temperature: 60  
 Maximum Temperature: 70  
 Minimum Temperature: 48

Facility Data:

Max Approach Traffic Volume: 1794 veh/hour  
 Environment: Suburban  
 Background Concentration: 1-hr = 3.3 ppm  
 8-hr = 2.0 ppm

Receptor Data:

Receptor Name	East-West Distance from Intersection	North-South Distance from Intersection	Receptor Height
AQ1 - SW Quad	50	35	5.6
AQ2 - NW Quad	55	55	5.6
AQ3 - NE Quad	30	25	5.6

All distances are in feet

\*\*\*\*\*

RESULTS

Receptor Name	Max 1-Hr Conc (ppm)	Max 8-Hr Conc (ppm)
AQ1 - SW Quad	10.6	6.4
AQ2 - NW Quad	9.7	5.8
AQ3 - NE Quad	11.8	7.1

Maximum concentrations include background CO

\*\*\*\*\*

08-05-2003

COSCREEN98  
(revised August 2000 to remove I/M options)

US 19 Citrus PD&E Study Design Year 2025 No Build  
US 19 at W. Grover Cleveland Blvd/W. Halls River Rd

Analyst:

MOBILE5 Emission Factors Based On:

User-supplied Data:

Region: 3: Central Florida  
Year: 2020  
Speed: 40

Default Data:

Ambient Temperature: 60  
Maximum Temperature: 70  
Minimum Temperature: 48

Facility Data:

Max Approach Traffic Volume: 2422 veh/hour  
Environment: Suburban  
Background Concentration: 1-hr = 3.3 ppm  
8-hr = 2.0 ppm

Receptor Data:

Receptor Name	East-West Distance from Intersection	North-South Distance from Intersection	Receptor Height
AQ1 - SW Quadrant	85	40	5.6
AQ2 - NW Quadrant	95	60	5.6
AQ3 - NE Quadrant	40	35	5.6

All distances are in feet

\*\*\*\*\*

RESULTS

Receptor Name	Max 1-Hr Conc (ppm)	Max 8-Hr Conc (ppm)
AQ1 - SW Quadrant	9.8	5.9
AQ2 - NW Quadrant	9.0	5.4
AQ3 - NE Quadrant	11.2	6.7

Maximum concentrations include background CO

\*\*\*\*\*

08-05-2003

COSCREEN98  
(revised August 2000 to remove I/M options)

US 19 Citrus PD&E Study Design Year 2025 Build  
US 19 at W. Grover Cleveland Blvd/W. Halls River Rd

Analyst:

MOBILE5 Emission Factors Based On:

User-supplied Data:

Region: 3: Central Florida  
Year: 2020  
Speed: 40

Default Data:

Ambient Temperature: 60  
Maximum Temperature: 70  
Minimum Temperature: 48

Facility Data:

Max Approach Traffic Volume: 2422 veh/hour  
Environment: Suburban  
Background Concentration: 1-hr = 3.3 ppm  
8-hr = 2.0 ppm

Receptor Data:

Receptor Name	East-West Distance from Intersection	North-South Distance from Intersection	Receptor Height
AQ1 - SW Quadrant	50	35	5.6
AQ2 - NW Quadrant	55	55	5.6
AQ3 - NE Quadrant	30	25	5.6

All distances are in feet

\*\*\*\*\*  
RESULTS

Receptor Name	Max 1-Hr Conc (ppm)	Max 8-Hr Conc (ppm)
AQ1 - SW Quadrant	11.1	6.7
AQ2 - NW Quadrant	10.1	6.1
AQ3 - NE Quadrant	12.3	7.4

Maximum concentrations include background CO

\*\*\*\*\*