# FINAL AIR QUALITY REPORT

For

US 301 (SR 43) Project Development and Environment (PD&E) Study From Falkenburg Road to Causeway Boulevard WPI SEG. NO.: 421140-6 Hillsborough County

August 2008

**Prepared for:** 

Hillsborough County



In Cooperation With

Florida Department of Transportation – District 7



Section

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#### 1.0 INTRODUCTION

Maintenance and/or improvement of the level of service (LOS) for US Highway 301 between Falkenburg Road and Causeway Boulevard is required by Hillsborough County, Florida as part of proposed developments. The project is located in an urbanized area of Hillsborough County and the existing roadway section currently operates at an unacceptable LOS along this stretch of US Highway 301. This roadway improvement will increase the capacity of US Highway 301 for the planned and approved developments in southern Hillsborough County. Additionally, the project will provide Hillsborough County with a consistent roadway cross section that will match the existing cross sections of US Highway 301 north of Causeway Boulevard and south of Falkenburg Road.

US Highway 301 is also considered a commercial truck route and the addition of the residential traffic would further decrease the existing LOS. The project will help alleviate some conflicts between truck traffic and new residential traffic by the addition of travel lanes.

A Project Location map is provided as Figure 1-1.

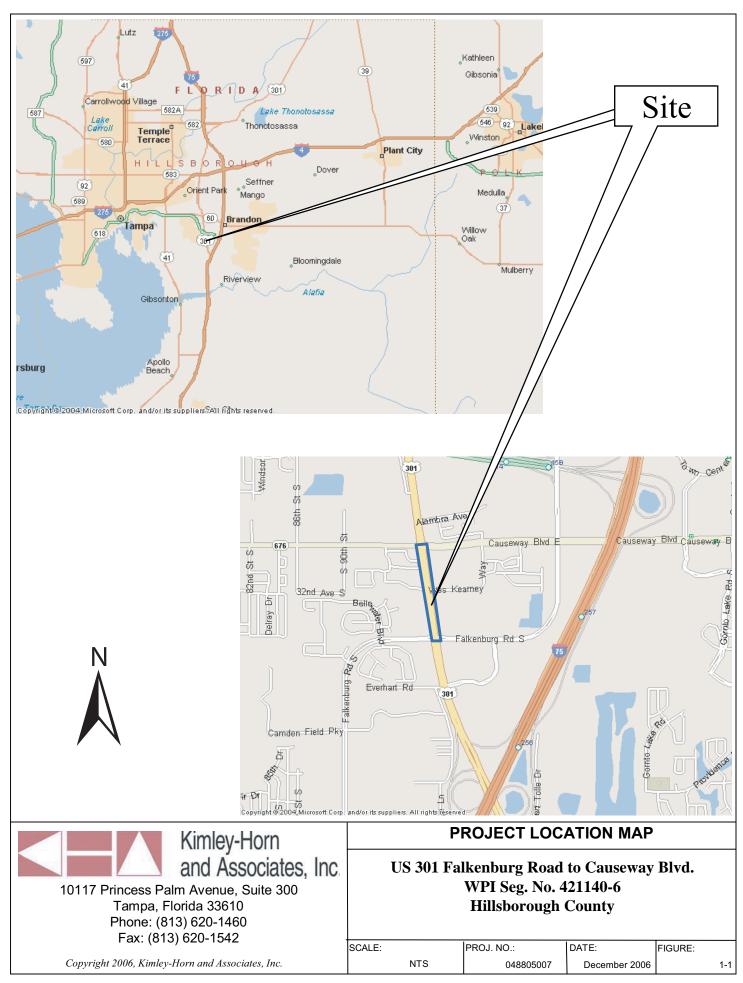
#### 1.1 Existing Facility

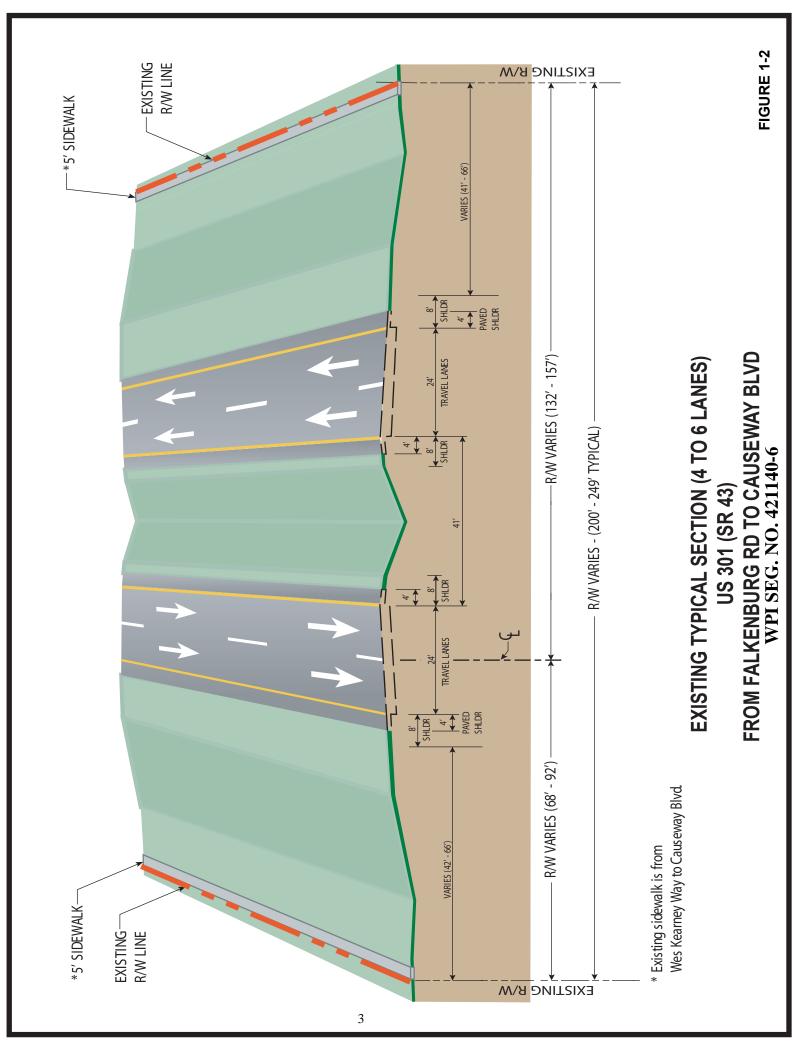
US Highway 301 is a principal arterial roadway that begins in Sarasota County, proceeds in a northeasterly direction, and exits the state of Florida northeast of the City of Jacksonville. Within the limits of the project study, US Highway 301 extends due north for approximately 3,850 feet from just south of the Falkenburg Road intersection and ends just north of the Causeway Boulevard intersection (see *Figures 1-2* and *1-3*). The right-of-way width varies from 200 to 249 feet.

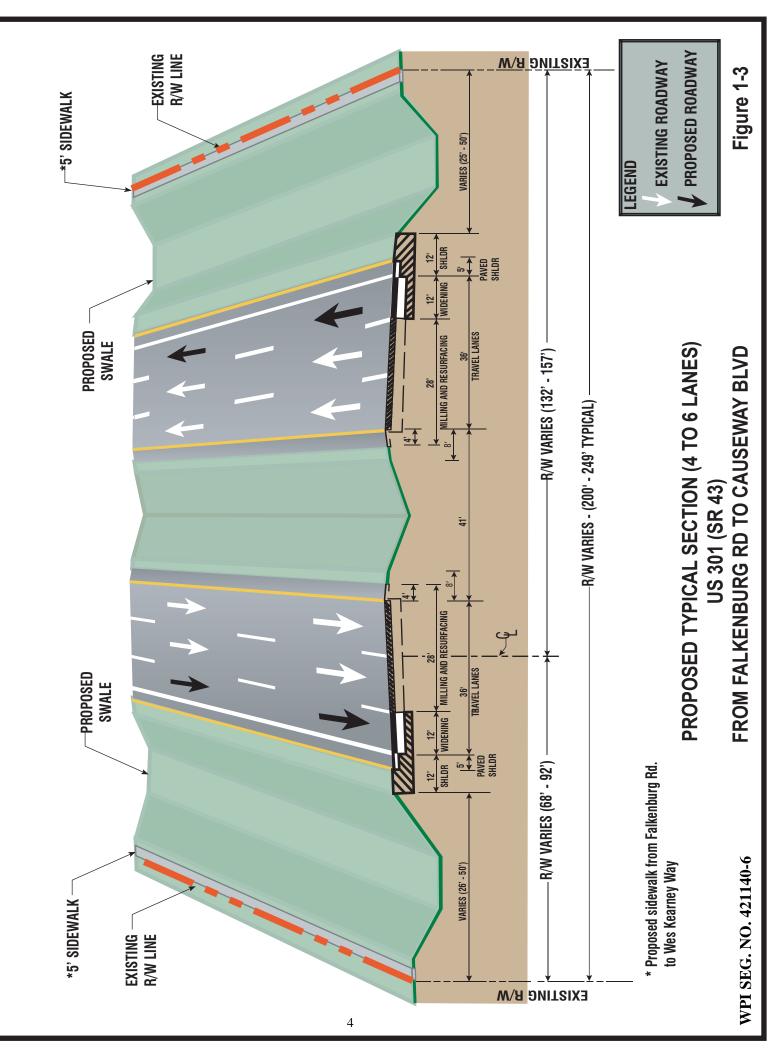
#### **1.2** Proposed Improvements

The recommended typical section for the Build Alternative consists of six 12-foot travel lanes, three lanes in each direction, a 41-foot grass median, 12-foot outside shoulders (5 feet of which is paved) and 5-foot sidewalks will be added near the right-of-way (R/W) line from Falkenburg Road to Wes Kearney Way, thereby making the sidewalks continuous on both sides of the road for the length of the project. The existing 8-foot wide inside shoulders, 4 feet of which are paved, will be retained. The existing roadside swales will be re-graded for stormwater. The R/W width varies from 200 to 249 feet.

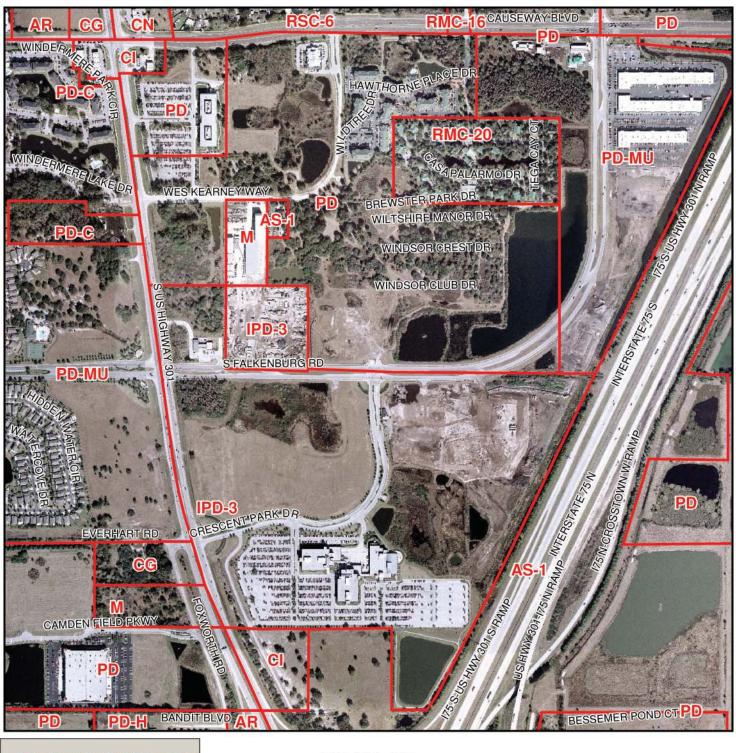
The current land use along the corridor consists of multi-family residential and commercial. The southern half of the corridor is flanked by undisturbed lands. The Hillsborough County Land Use map of the study area is displayed in *Figures 1-4* and *1-5*.







# HILLSBOROUGH COUNTY ZONING



 PD
 Zoning District Designation

 Zoning District
 Designated Historic Resource

 District
 District Resource

 Significant Wildlife Habitat
 Surface Water Protection Areas

 Wellhead Protection Areas
 Zone 1

 Zone 2
 Potable Water Well Buffer

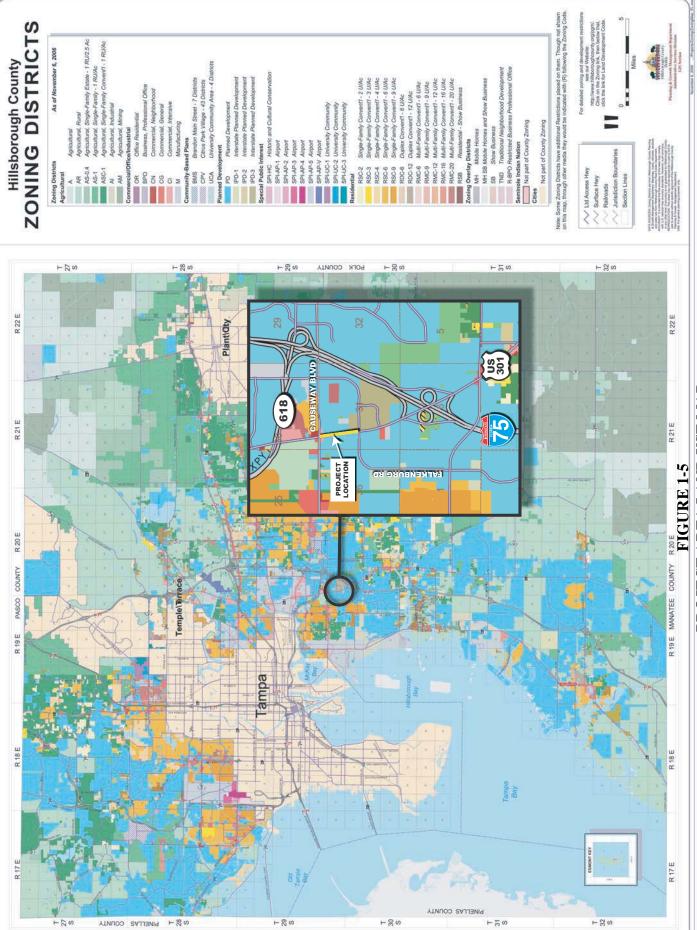
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FIGURE 1-4 HILLSBOROUGH COUNTY LAND USE MAP US 301 FALKENBURG ROAD TO CAUSEWAY BLVD. WPI SEG. NO. 421140-6



Planning & Growth Management Department Administrative Services Division N. T. S.

Zoning: February 24, 2006 Aerial Photography: January, 2004



# PROJECT AREA LAND USE MAP US 301 FALKENBURG ROAD TO CAUSEWAY BLVD. WPI SEG. NO. 421140-6

#### 2.0 METHODOLOGY

#### 2.1 Pollutants of Concern

The project has the potential to alter traffic conditions and influence the air quality within the project study area. The pollutants of primary concern with roadway traffic are ozone (O3), oxides of nitrogen (NOx), hydrocarbons (HC), small particulate matter (PM10) and carbon monoxide (CO). Ozone, NOx, HC and PM10 are not analyzed at the program level unless specific review of an individual project is requested by appropriate reviewing agencies in concurrence with the Federal Highway Administration (FHWA). Because CO is a localized pollutant that is emitted directly into the atmosphere by vehicles, it is analyzed for individual roadway projects where substantial changes to the traffic conditions are anticipated. The National Ambient Air Quality Standard (NAAQS) for CO is 35 parts per million for one-hour periods and 9 parts per million for eight-hour periods.

#### 2.2 Carbon Monoxide Screening Analysis

Based on traffic projections, the worst-case intersection within the project limits of the 2008 Build and 2030 Design year is the US Highway 301 and Causeway Boulevard intersection. This intersection was analyzed using the FHWA-approved CO Florida 2004 v.2.0.5, which is the most current version of the FDOT Intersection Air Quality (CO) Screening Model. The CO Florida 2004 model is a PC-based CO screening model, which is used to assess the potential for air quality impacts caused by roadway traffic. A project alternative that passes the CO Florida 2004 model is not expected to result in any violations of the NAAQS for CO and is not likely to have any impact on the air quality of the surrounding area. However, because the very conservative data assumptions built into the screening model, failing the screening analysis does not automatically result in a violation of the NAAQS for CO; rather, failure of a project Build alternative with the screening analysis dictates that a more detailed air quality analysis must be performed using the MOBILE6 and CAL3QHC models.

Traffic-generated air quality impacts are primarily a concern near signalized intersections, where during peak periods numerous vehicles are often stopped and idling during the traffic signals' red phase. The CO Florida 2004 model incorporates results developed from the MOBILE6 and CAL3QHC traffic air quality models, which include several worst-case assumptions for traffic characteristics, meteorology and terrain. User inputs to the screening model include project alternative, land use type, analysis year, the volume and speed of peak-hour traffic approaching the intersection on the worst-case link, and distance between receptors and the intersection. Output from the CO Florida 2004 model is the CO level, in parts per million, at the selected receptor location(s).

The intersection that generates the highest level of peak-hour vehicles is at the signalized intersection of US Highway 301 and Causeway Boulevard. The traffic data used for the CO screening analysis has been prepared from data presented in the project's US Highway 301 *Traffic Technical Memorandum* dated August 2008. The project years analyzed are the project's Build year (2008) and the project's Design year (2030). Design Hour Volume (DHV) traffic data for the worst-case approach link for the Build alternative is presented in *Table 2-1*. The speed used in the CO Florida 2004 model was determined to be representative of typical peak-hour cruise speeds as vehicles approach the intersection before entering the queue.

The receptor locations within the project study are determined based on modeling parameters set by the *FDOT PD&E Manual* Chapter 16, Air Quality Analysis. The receptor was located at a distance of 10 feet from the edge of the outside traffic lane of the cross street and 10 feet from the edge of the adjacent street. This location represents nearest probable congregating area. The environment selected for this model is a suburban land use type, which includes a background CO level of 3.3 parts per million for one-hour predictions and 2.0 parts per million for eight-hour predictions.

Table 2-1 CO Florida 2004 Results Data Summary						
YEAR	DESIGN HOUR TRAFFIC VOLUME -	SPEED (miles per hour)	PREDICTED CO CONCENTRATION		NAAQS MAX. CO CONCENTRATION	
T La IIX	WORST-CASE LINK		1-HR ppm	8-HR ppm	1-HR ppm	8-HR ppm
2006 Existing	2190	55	11.4	6.9	35	9
2008 Build	2667	55	12.3	7.4	35	9
2030 Design	3985	55	11.0	6.6	35	9

#### 3.0 **RESULTS**

The results of the air screening analysis are presented in *Table 2-1*. The output from the screening analysis can be found in *Appendix A*. The One-Hour CO screening analysis for the 2008 Build year for this project indicates that the worst-case CO levels are estimated to be 12.3 parts per million (ppm). The Eight-Hour CO screening analysis for the 2008 Build year indicates that the worst-case CO levels are estimated to be 7.4 ppm. For the 2030 Design year, the One-Hour CO screening analysis indicates a worst-case CO level of 11.0 ppm, while the Eight-Hour CO screening analysis indicates levels of 6.6 ppm. In all cases, the project is not expected to exceed the NAAQS maximum CO levels of 35 ppm for the One-Hour and 9 ppm for the Eight-Hour.

#### 4.0 CONCLUSIONS

The results of the CO screening analysis indicate that the 2008 Build year and the 2030 Design year scenarios are not expected to exceed the NAAQS for CO (9.0 parts per million for Eighthour screening). Thus, the project passes the CO screening analysis, and air quality impacts due to the project are not expected.

#### 5.0 CONSTRUCTION

Construction activities will cause minor short-term air quality impacts in the form of dust from earthwork and unpaved roads. These impacts will be minimized by adherence to all state and local regulations.

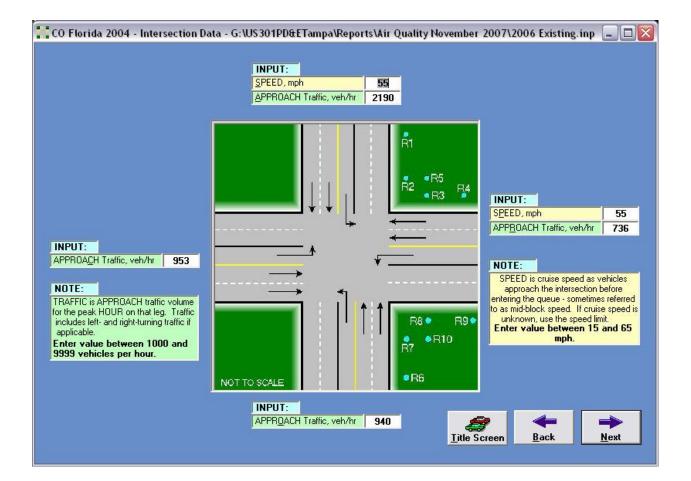
#### 6.0 COORDINATION

All state and local agencies will be provided with an opportunity to comment on this project. The project is located in an area, which has been designated as attainment for all air quality standards under the criteria specified in the Clean Air Act Amendments of 1990; therefore, conformity does not apply.

## Appendix A CO Florida 2004 Output 2006 Existing

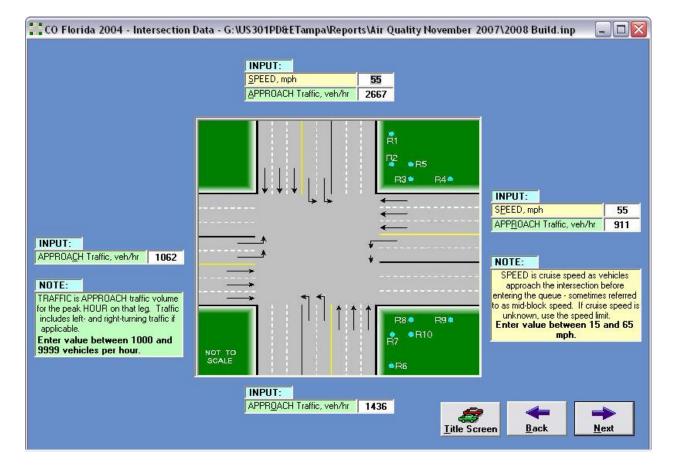
2006 Existing 2015 Build 2030 Design

2006 Existing Output.txt 11-15-2007 CO Florida 2004 US 301 PD&E Study Project: Facility: Hillsborough County Analyst: Carrie Kelly Environmental Data: 50 F 11.5 psi Temperature: Reid Vapor Pressure: Land Use: Suburban Stability Class: D Surface Roughness: 108 Background Concentration: 1 - hr = 3.3 ppm8-hr = 2.0 ppmProject Data: 4: Hillsborough / Pinellas Region: 2006 Year: Intersection Type: 4 x 4 Intersection 2190 veh/hour Max Approach Traffic Volume: Speed: 55 Receptor Data (all distances are in feet): East-West Distance North-South Distance Receptor Receptor Name from Intersection from Intersection Height \_\_\_\_\_ Default Rec 1 10 150 6 Default Rec 2 10 50 6 50 10 6 Default Rec 3 Default Rec 4 150 6 10 Default Rec 5 50 50 6 Default Rec 6 10 -150 6 Default Rec 7 10 -50 6 6 Default Rec 8 50 -10 6 6 Default Rec 9 150 -10 Default Rec 10 50 -50 **RESULTS** (including background CO): Max 1-Hr Max 8-Hr Conc (ppm) Conc (ppm) Receptor Name -----\_\_\_\_\_ \_\_\_\_\_ Default Rec 1 10.2 6.1 Default Rec 2 11.4 6.9 6.7 11.2 Default Rec 3 Default Rec 4 11.2 6.7 5.5 Default Rec 5 9.2 Default Rec 6 Default Rec 7 11.2 11.2 6.7 Default Rec 8 11.4 6.9 Default Rec 9 10.2 6.1 Default Rec 10 9.2 5.5 PROJECT PASSES - NO EXCEEDANCES OF NAAQ CO STANDARDS ARE PREDICTED 2006 Existing Traffic Inputs:



	2008 Bui <sup>-</sup>	ld Output.tx1	t 11-15-2	007
	CO Flori	da 2004		
Project: Facility: Analyst: Carrie Kelly	US 301 PD Hillsborou	&E Study gh County		
Environmental Data: Temperature: Reid Vapor Pressure: Land Use: Stability Class: Surface Roughness: Background Concentration:	50 F 11.5 Subur D 108 1-hr	ban	8-hr = 2.0	ppm
Project Data: Region: Year: Intersection Type: Max Approach Traffic Volu Speed:	2008	llsborough / Intersectio veh/hour		
Receptor Data (all distances East Receptor Name fro	are in feet -West Dista m Intersect	nce North-S.	outh Distance Intersection	Receptor Height
Default Rec 1 Default Rec 2 Default Rec 3 Default Rec 4 Default Rec 5 Default Rec 6 Default Rec 7 Default Rec 8 Default Rec 9 Default Rec 10	$ \begin{array}{r} 10\\ 10\\ 50\\ 150\\ 10\\ 10\\ 10\\ 50\\ 150\\ 50\\ 50\\ \end{array} $		150 50 10 10 50 -150 -50 -10 -10 -50	6 6 6 6 6 6 6 6 6 6
RESULTS (including background	CO):	Max 1-Hr	Max 8-Hr	
Receptor Nam	e -	Conc (ppm)	Conc (ppm)	
Default Rec Default Rec	2 3 4 5 6 7 8 9	11.0 12.1 12.3 12.1 10.6 12.1 12.3 12.1 12.3 12.1 11.0 10.6	6.6 7.3 7.4 7.3 6.4 7.3 7.4 7.3 7.4 7.3 6.6 6.4	
**************************************	EEDANCES OF	NAAQ CO STA	NDARDS ARE PRE	DICTED

#### 2008 Build Traffic Inputs:



2030 Design.out 11-15-2007 CO Florida 2004 US 301 PD&E Study Project: Facility: Hillsborough County Analyst: Carrie Kelly Environmental Data: 50 F 11.5 psi Temperature: Reid Vapor Pressure: Land Use: Suburban Stability Class: D Surface Roughness: 108 Background Concentration: 1 - hr = 3.3 ppm8-hr = 2.0 ppmProject Data: 4: Hillsborough / Pinellas Region: 2030 Year: Intersection Type: 6 x 6 Intersection 3985 veh/hour Max Approach Traffic Volume: 55 Speed: Receptor Data (all distances are in feet): East-West Distance North-South Distance Receptor Receptor Name from Intersection from Intersection Height - - - - - - - -Default Rec 1 10 150 6 Default Rec 2 10 50 6 50 10 6 Default Rec 3 Default Rec 4 150 6 10 Default Rec 5 50 50 6 Default Rec 6 10 -150 6 Default Rec 7 10 -50 6 6 Default Rec 8 50 -10 6 6 Default Rec 9 150 -10 Default Rec 10 50 -50 **RESULTS** (including background CO): Max 1-Hr Max 8-Hr Conc (ppm) Receptor Name Conc (ppm) -----\_\_\_\_\_ \_\_\_\_\_ Default Rec 1 10.1 6.1 Default Rec 2 11.0 6.6 Default Rec 3 11.0 6.6 Default Rec 4 10.6 6.4 Default Rec 5 5.7 9.4 Default Rec 6 Default Rec 7 10.6 6.4 11.0 6.6 Default Rec 8 11.0 6.6 10.1 Default Rec 9 6.1 Default Rec 10 9.4 5.7 PROJECT PASSES - NO EXCEEDANCES OF NAAQ CO STANDARDS ARE PREDICTED

#### 2030 Design Traffic Inputs:

