USER'S GUIDE

to

CO Florida 2004

FDOT Intersection Air Quality (CO) Screening Model

Developed Under Research Sponsored by

The Florida Department of Transportation

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PREFACE

This model replaces COSCREEN98, the previous version of Florida's CO screening model for intersections. It updates the screening model to incorporate EPA's final version of MOBILE6. It has also been revised to provide significant new options for the user: the user may select from five intersection types (including a diamond interchange) which have more default receptors incorporated into the input. The user continues to have the option to locate additional receptors near any of the intersection types. In addition, a full wind angle search is included.

As with the previous screening models, the purpose of CO Florida 2004 (COFL) is to quickly screen major intersections for potential air quality exceedances.

Keyboard Access

Maneuvering around each screen may be accomplished with the mouse or the keyboard. The keyboard can access data entry or command buttons by using either the TAB key or by using the ALT key. Pressing the TAB key moves the focus or cursor from one object to the next in a predetermined order. Use the ALT key to access the menu on the **Title** screen - the TAB key does not go to the menu. The ALT key can be used when an object has an underlined letter in its name. For example, to enter the freeway speed (refer to Figure 6) on the diamond interchange **Intersection** screen, you can press the ALT + R keys because "r" is underlined in "FREEWAY SPEED". Press ALT + A to enter the southbound freeway through traffic. When using either of these methods to access text boxes, COFL highlights the text as shown in Figure 2 for Facility Name. If you begin typing while the text is highlighted, the data will be completely replaced by what you type. To remove the highlighting, press a keyboard arrow key or click the mouse.

Scenic Images

This version of the CO screening model includes images from Florida's state parks to add visual interest. To learn the source of these vistas, hold the mouse over the image.

INSTALLATION INSTRUCTIONS

Put the CO Florida 2004 Screening Model CD in the appropriate drive. If the setup program does not begin immediately, click the Start button, then go to Run. Locate the installation file *COFLsetup.exe* using the Browse button or type in the drive plus *COFLsetup.exe.*

Alternatively, once the CD is in the drive, you can simply double-click on the file *COFLsetup.exe* and it will install directly to your computer.

OPENING SCREEN

The CO Florida 2004 Screening Model (COFL) opens with the screen shown in Figure 1. The images represent Florida state symbols. Because Florida has so many symbols, these images change after a few seconds. You can identify each image by holding the mouse over the image.

Figure 1. Opening Screen

When the user clicks on the continue button, the program goes to the Title Screen (see next page).

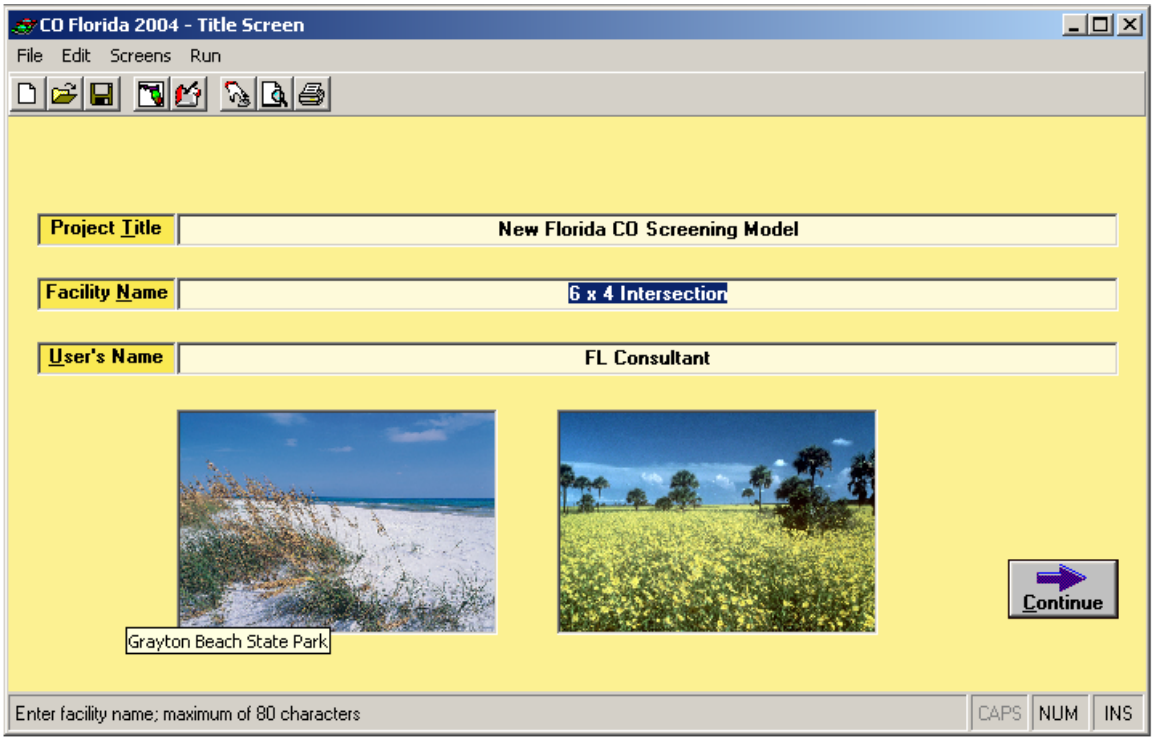

Figure 2. Title Screen

TITLE SCREEN

The **Title** screen (Figure 2) consists of a menu bar (File, Edit, Screens and Run), a tool bar, three data entry text boxes, a command button and a status bar. The screen also displays two images from Florida state parks. Learn the names of the parks by holding the mouse over the image.

Menu and Toolbar

All input can be directed from the **Title** screen using either the menu or the tool bar. All buttons on the tool bar correspond to menu commands, but not all menu commands are available as buttons. The intent was to put the most frequently used buttons at your fingertips. Note that the buttons for the **Intersection** and **Receptors** screens are not immediately accessible until the intersection type has been selected on the **Project Data** screen. Commands will be described in subsequent paragraphs.

A user may access the menu bar by the mouse or by simultaneously pressing the ALT plus underlined letter keys. For example, ALT+F will open “File” on the menu bar.

Commands

The commands in the menu are mostly typical Windows-based programming commands. They are listed and described at the end of this paragraph. If a command has shortcut keys, they are enclosed in parentheses. Commands with an asterisk (*) are also available as buttons.

File Menu

*New** - clears existing data entry, allowing for completely new data. (CTRL+N)

*Open** - opens an existing COFL input file so that you may view, edit or run the data. (CTRL+O)

*Save** - saves the displayed data to the opened input file. The Save button will open the Save As dialog box ***if*** no file has been opened. (CTRL+S)

Save As - saves the displayed data to an input file named by the user. Though MOBILE6 and CAL3QHC2 are DOS programs, you may name files in accordance with Windows naming conventions. (The model internally uses a file using DOS naming conventions.)

*Print** - prints the displayed input data or the most recently run output file. Note that more flexibility is available by printing from the **Text Viewer**.

About - displays information about the development of the COFL model.

Exit - closes the COFL model.

The File menu also keeps track of the ten most recently opened input files. They are listed between *About* and *Exit.* These files can be opened by clicking on their name in the File menu.

Edit Menu

Cut - copies selected text to the clipboard and removes it from the screen**.** (CTRL+X)

Copy - copies selected text to the clipboard, but the text also remains at its current location **.** (CTRL+C)

Paste - copies text from the clipboard to the location of the cursor. (CTRL+V)

Delete - removes selected text from the screen. (DEL)

The short-cut keys for cut (CTRL+X), copy (CTRL+C), paste (CTRL+V), and delete (DEL) are available on all screens.

Screens Menu

*Area** - opens the **Area** screen for the user to select the region where the project is located.

*Project Data** - opens the **Project Data** screen for the user to enter the environment (urban, suburban, or rural), type of intersection, year of analysis, and right-of-way distances

*Intersection** - opens the **Intersection** screen to display the layout of the intersection and relative location of the default receptors; speed and traffic volumes are entered on this screen; the default intersection type is a four-by-four intersection

*Receptors** - opens the **Receptors** screen for the user to enter the name and location of the non-default receptors; the table also lists the locations of the default receptors

*Text Viewer** - opens the **Text Viewer** screen for the user to view any text file; by default, the Text Viewer displays the most recent output.

Run Menu

View Input - displays the COFL input file in the **Text Viewer** screen

*Run** - runs COFL with the *displayed* input data; it is not necessary to save the data prior to running the model

*View Output** - displays the most recent output file in the **Text Viewer**

Data Entry

Project Title, Facility Name and User's Name are entered in the text boxes. Up to 80 characters may be used to describe these parameters. These data are not required in order to run the screening model; they are labels for the summary of results. The project title and facility name

will be centered at the top of the result summary. The user's name also appears near the top of the report but is left-justified. Pressing the ENTER key while in any of the text boxes opens the **Region** Screen.

Access to the data entry text boxes using the keyboard is similar to accessing the menu bar. For example, press the ALT and T keys to move the cursor and focus to the Project Title input. The TAB key may also be used to move between the text boxes and arrow button. When using either of these methods to access text boxes, COFL highlights the text as shown in Figure 2 for Facility Name.

Arrow Button
Clicking the arrow button opens the next screen, the **Region** screen, for data entry. Pressing the ENTER key while in any of the text boxes also activates this button.

Status Bar
The status bar at the bottom of the screen provides tool tips and the status of the CAPS LOCK, NUMBER LOCK, and INSERT keys. The status of these keys applies to the other screens except the status of the INSERT key does not apply to the Receptor table.

Once the user is finished with the Title Screen, and clicks continue, the program shifts to the Region Screen (see next page).

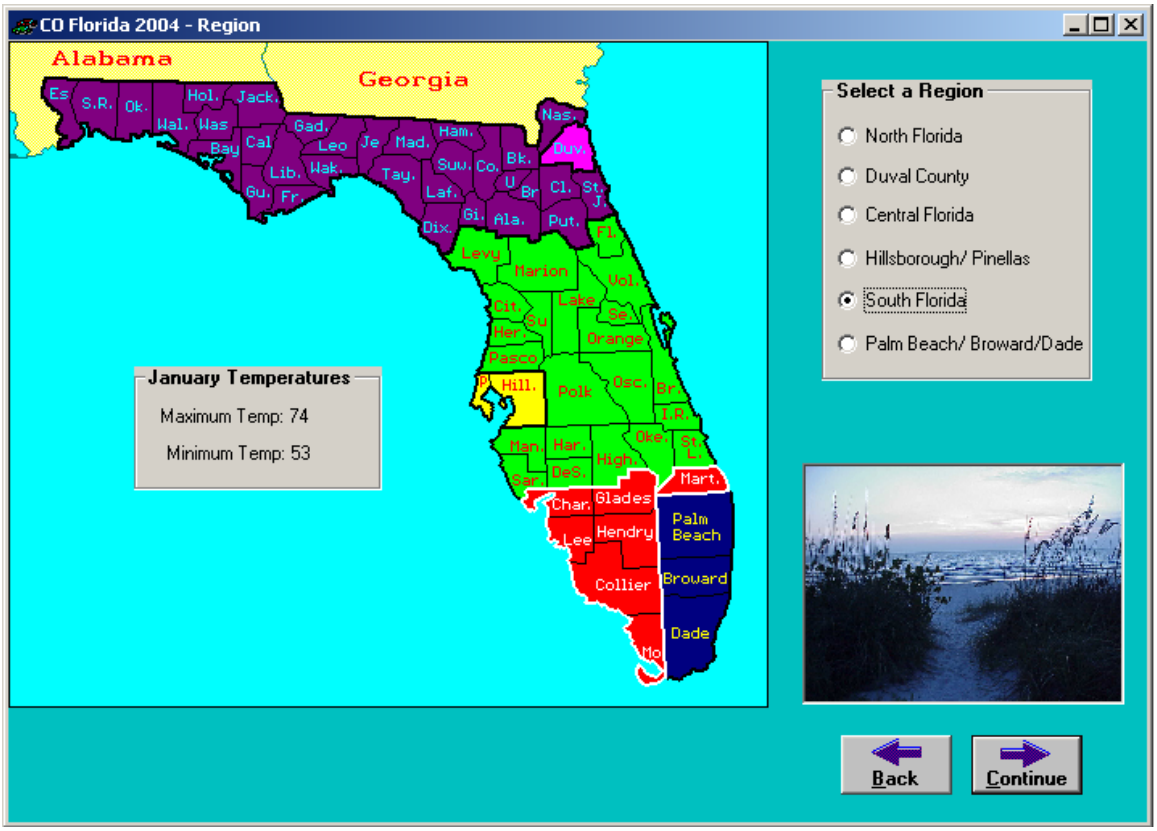

Figure 3. Region Screen

REGION SCREEN

This screen (as shown in Figure 3) is used for identifying the region in which the project is located. The region is selected by clicking on the option button (circle) beside the name of the region. Once the region is selected, the region flashes and is highlighted in red. The corresponding temperatures (for use in MOBILE6) are also displayed.

Six regions are available for selection. They were selected based on temperature and attainment history. The six regions are:

North Florida
Duval County
Central Florida
Hillsborough and Pinellas counties
South Florida
Palm Beach, Broward and Dade counties

You can move to different items on the screen by using the mouse, up/down arrow keys, TAB or ALT plus underlined letter. The park image on this screen is different for each region. There are two images for each region which alternate every few seconds. Hold the mouse over the image to identify the park. When done the user clicks continue" to go to the Project Data Screen (see next page).

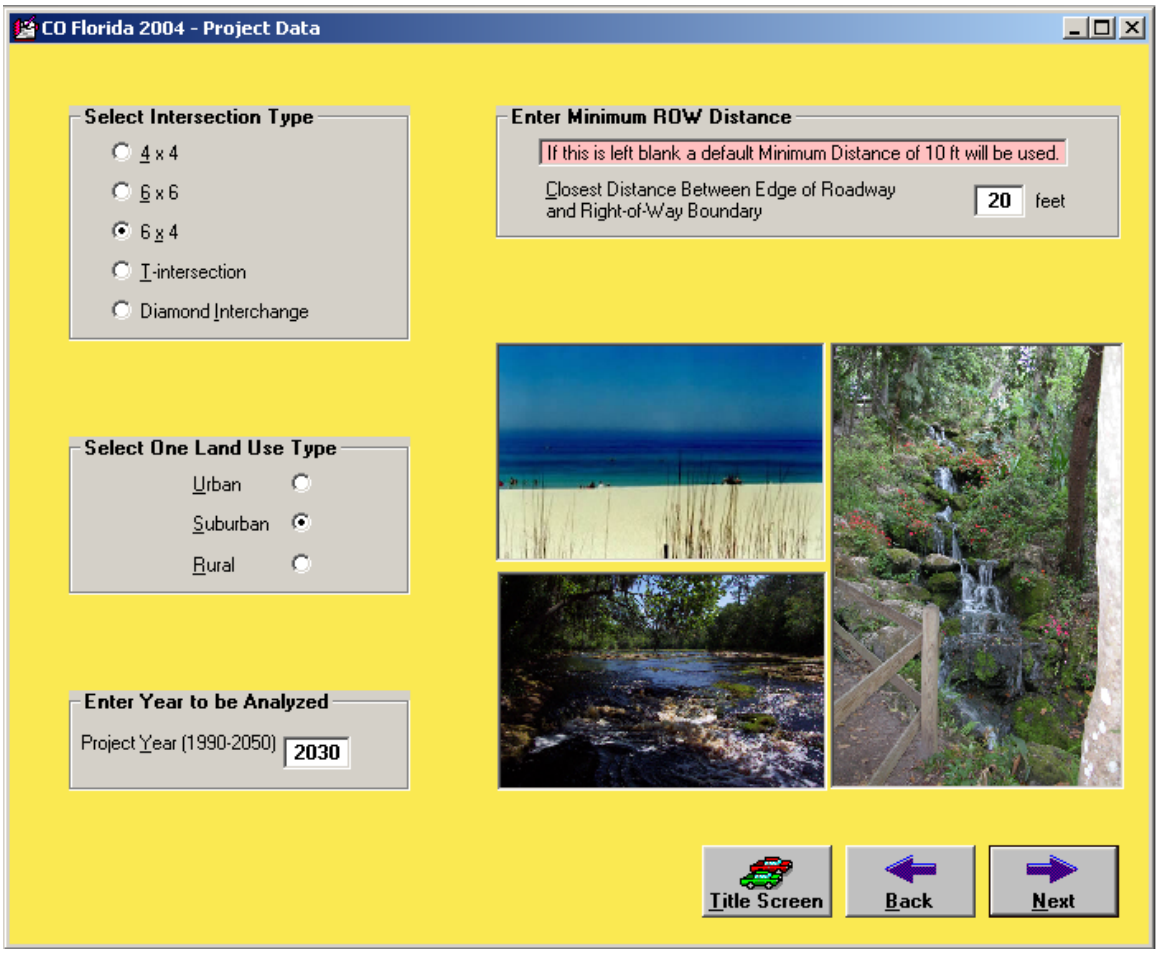

Figure 4. Project Data Screen

PROJECT DATA SCREEN

Enter data for land use type, intersection type, year of analysis, and minimum right-of-way distances in the **Project Data** screen as shown in Figure 4. You can move between the data entry boxes by clicking with the mouse or by using the TAB key or by simultaneously pressing ALT plus the underlined letter (or number) keys. You can also move between the options within Land Use or Intersection by using the arrow keys. All data are required unless otherwise noted.

Land Use Type

Select the appropriate land use type - urban, suburban, or rural. This impacts the surface roughness factor and atmospheric stability which are inputs in the CAL3QHC program. The land use also determines the background CO concentrations which are figured into the final results. Table 1 lists the land use options and their corresponding surface roughness factors, atmospheric stabilities and background concentrations.

Intersection Type

You may choose from five intersection types: 4 x 4, 6 x 6, 6 x 4, T, or diamond interchange. Pick the one that most closely relates to your situation. It is impossible to create all the possible intersection layouts that may exist. This is, however, just a screening model and the most

important intersections (from an air quality viewpoint) were incorporated. The model assumes the geometry and signal timing for each intersection type. The model defaults to the 4 x 4 option.

Year of Analysis
The year of analysis is between 1990 and 2050.

Right-of-Way Distances (Optional)
The final data entry on this screen is right-of-way distances. For standard intersections, enter the distance where the edge of the roadway and the right-of-way boundary are the closest. For the diamond interchange, you enter two distances. One is the minimum distance between the right-of-way boundary and the edge of the arterial roadway and the other is the minimum distance between the right-of-way boundary and the edge of the freeway ramp. This distance is used to locate the default receptors. No receptors will be located within the right-of-way. The default right-of-way distance is 10 feet because that is the closest distance between a receptor and edge-of-roadway that CAL3QHC will accept.

Table 1. Parameters Impacted by Land Use Type

Land Use Type	Surface Roughness, cm	Atmospheric Stability	CO Background Concentration, ppm	
			1-hour	8-hour
Urban	321	D	5.0	3.0
Suburban	108	D	3.33	2.0
Rural	10	E	1.67	1.0

After finishing this screen, the user proceeds to the Intersection Data Screen (see next page).

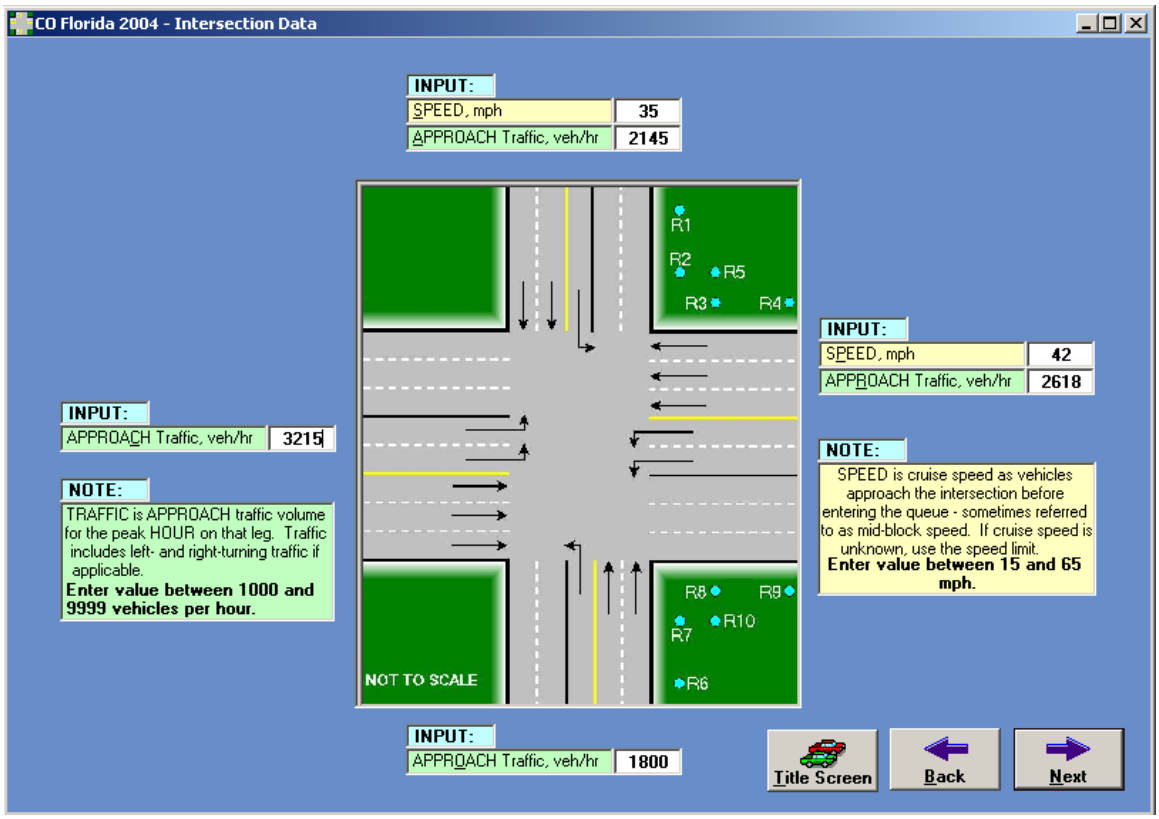

Figure 5. Intersection Data Screen for Standard Intersections

INTERSECTION DATA SCREEN

Roadway speeds and traffic volumes are entered in the **Intersection Data** screen. The screen looks slightly different for each intersection type. Figure 5 shows the screen for a six-by-four intersection which is also representative of the screen for four-by-four, six-by-six and T intersections. Figure 6 shows the screen for a diamond interchange. The **Intersection Data** screen also shows the relative locations of the default receptors represented by light blue circles and designated by the letter "R". The number after "R" identifies the default receptor; i.e., R1 is Default Receptor 1. The default receptors' distances from the roadways are listed in the table in the **Receptors** screen.

The orientation of the intersection on the screen may not match the orientation of the real intersection, but it is actually not critical. The receptors are oriented based on distances from the roads and not on a coordinate system. For discussion purposes, the top of the screen is referenced as north.

You can move between the data entry boxes by clicking with the mouse or by using the TAB key. You can also access a data entry box by simultaneously pressing the ALT key and the key of the underlined letter.

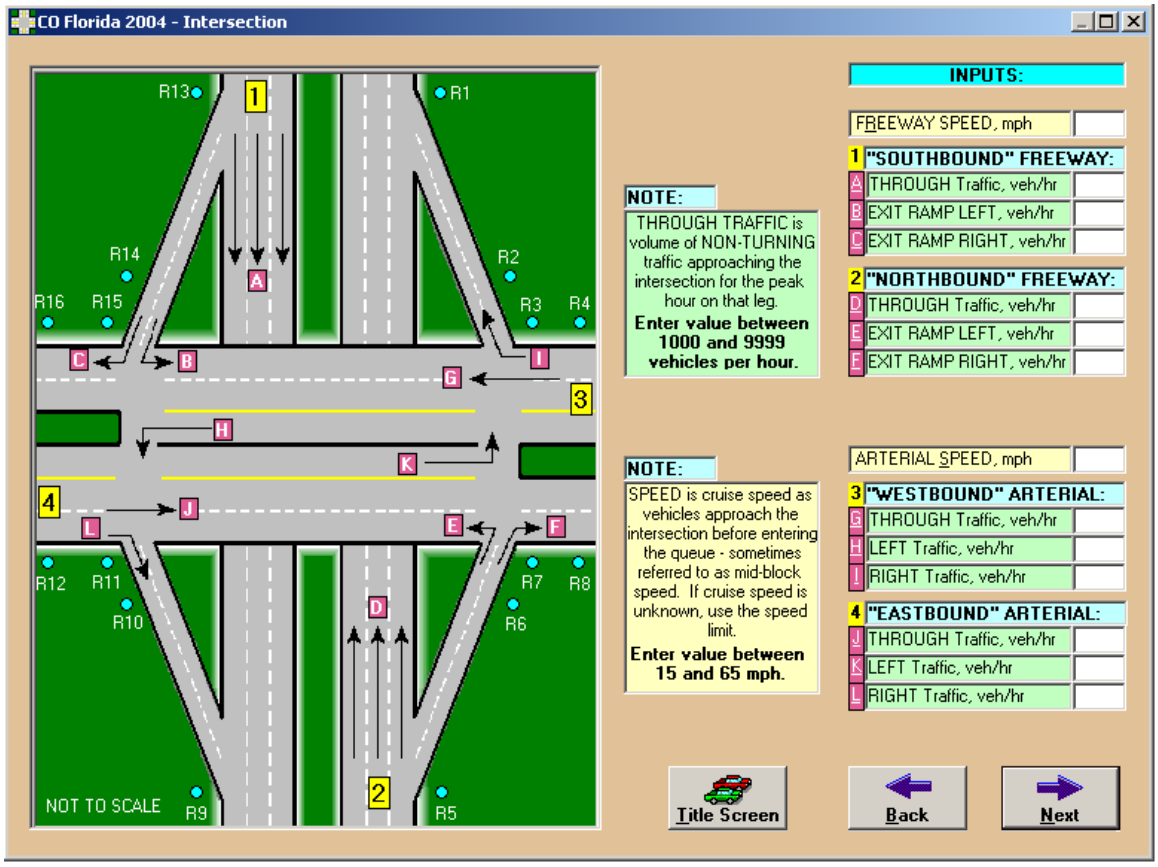

Figure 6. Intersection Data Screen for Diamond Interchange

Speed

Speed values must be between 15 and 65 miles per hour. The speeds to be entered are defined as the cruise speed as vehicles approach the intersection before entering the queue - sometimes referred to as mid-block speed. (Obviously, the through traffic on the freeway in the diamond interchange does not enter a queue.) If cruise speed is unknown, use the speed limit. Roadway speeds (in miles/hour) are entered for each road. It is assumed that the speeds on the roads are approximately the same in each direction.

Traffic Volume for Standard Intersections

Traffic volume is entered for each approach. The traffic volume is the peak **hour** volume on that leg. (COFL calculates the volume of left-turning traffic based on the assumption that 15 percent of approaching traffic will turn left.) All data boxes must have a value in them; an empty data entry box will result in an error when attempting to run the model.

The model evaluates the traffic volumes and determines which approach has the largest traffic volume. For 4x4 and 6x6 intersections, the largest traffic volume is applied to all four legs. For the 6x4 and T intersections, the largest traffic volume is determined for each road. Thus, the "north/south" road uses the larger of the "northbound" or "southbound" traffic volumes in each direction. The "east/west" road uses the larger of the "eastbound" or "westbound" traffic volumes for both traffic volumes. This is done because this is a screening model and it is desired to have conservative results.

Traffic Volumes for Diamond Interchanges

Traffic volume is entered for each approach. The traffic volume is the peak **hour** volume on that leg. The main difference between the diamond interchange and standard intersections is that turning traffic is entered for both the arterial and freeway. Another difference is that the model actually models two intersections simultaneously; one is west of the freeway and the other is east.

Because a diamond interchange is more confusing than a standard intersection, each leg is labeled with a number and each traffic volume is labeled with a letter. Refer to Figure 6. "Through" traffic is traffic that approaches the interchange and neither turns onto the freeway nor onto the arterial road. "Exit Ramp Left" traffic is the traffic that is leaving the freeway and turning left onto the arterial; thus, "Southbound Exit Ramp Left" traffic is traffic leaving the freeway that will be "eastbound" on the arterial road. "Exit Ramp Right" traffic is the traffic that is leaving the freeway and turning right onto the arterial road. "Arterial Left" traffic is turning left from the arterial road and onto the freeway; thus, "Arterial Westbound Left" traffic is turning from the arterial onto the freeway and heading south. "Arterial Right" traffic is turning right from the arterial road and onto the freeway. All data boxes must have a value of zero or greater in them; an empty data entry box will result in an error when attempting to run the model.

The model combines the appropriate traffic volumes to get the traffic volume on a specific roadway section. For example, traffic volumes D, K and I are summed to determine the total traffic volume on the northbound departure of the freeway. As with the standard intersection, the model determines the maximum traffic volume on each roadway and applies it in both directions. For example, if the largest traffic volume on the arterial is the westbound traffic, that traffic volume is also used for the eastbound traffic: "eastbound through" equals "westbound through", "eastbound left" equals "westbound left", and "eastbound right" equals "westbound right". This is done because this is a screening model and it is desired to have conservative results.

Command Buttons

Clicking the right arrow button opens the next screen, the **Receptors** screen. Clicking the left arrow button returns you to the **Project Data** screen. Clicking the Title Screen button returns you to the **Title** screen.

The next screen is the Receptors Screen (see next page).

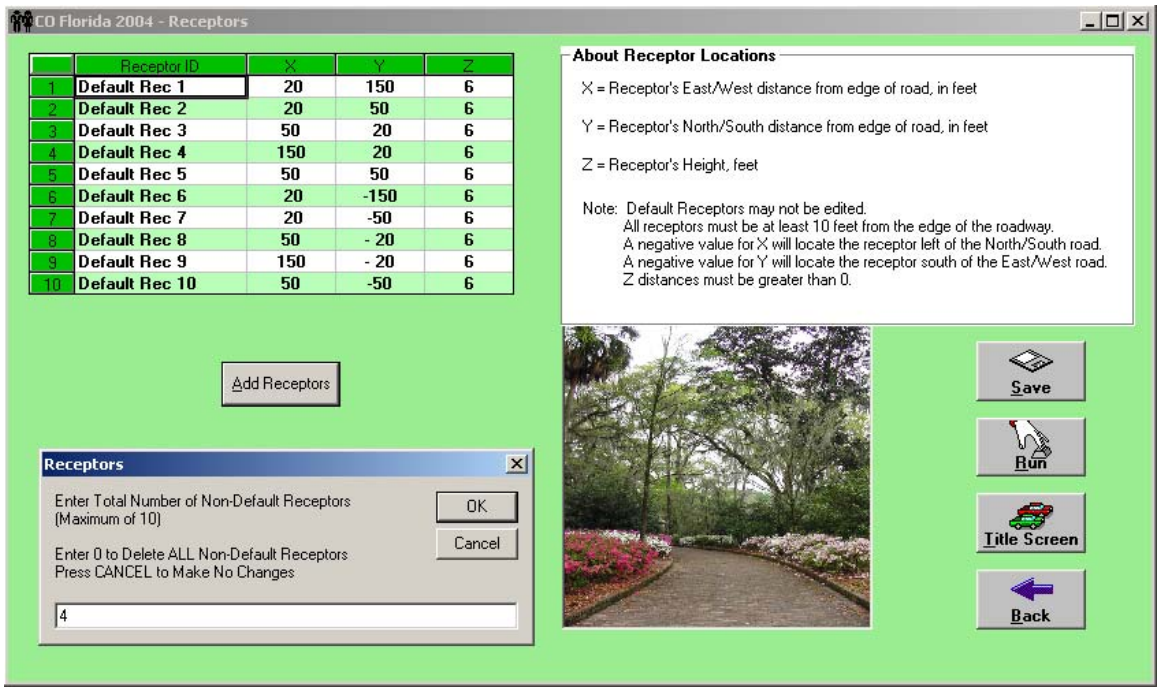

Figure 7. Receptors Screen

RECEPTORS SCREEN

The **Receptors** screen as shown in Figure 7 displays the table for receptor input. The table initially displays the default receptors. For each intersection type, a certain number of default receptors are assumed. Their relative locations are shown on the **Intersection** screen. The default receptors are identified as "Default Rec" and are in bold font. Default receptors may not be edited. Their distances are a function of internal parameters and the right-of-way distances entered in the **Project Data** screen. Additional receptors may be added using the Add Receptors button and is discussed below.

Non-default Receptors

Select the Add Receptors button in order to add more receptors. The number of non-default receptors are entered in the box that pops up. The COFL model will evaluate between 0 and 10 non-default receptors. You may leave this entry blank and the program will assume zero non-default receptors and only evaluate the CO concentrations at the default receptor locations. If you enter non-default receptors and then decide to eliminate them, press the Add Receptors button and enter "0". If non-default receptors exist in the table and you press the Add Receptors button and enter a number that is less than the number of existing non-default receptors, non-default receptors will be eliminated beginning at the bottom of the table. For example, if you have four non-default receptors and you enter "3", the first three non-default receptors will remain in the table, but the fourth will be deleted. If non-default receptors exist in the table and you enter a larger number, additional receptors will be added at the bottom of the table. For example, if you have two non-default receptors and enter "5", three more receptor rows will be added at the bottom of the table. THE NUMBER THAT YOU ENTER FOR NON-DEFAULT RECEPTORS IS ALWAYS THE **TOTAL** NUMBER OF NON-DEFAULT RECEPTORS, no matter how many may already be in the table. If you press the Add Receptors button and decide you do not

want to make any changes, press the Cancel button.
COFL has its own coordinate system for each intersection type and develops coordinates for the receptors from the distances input by the user. Thus, the user must only enter the distance from the edge of the closest travel lane of the roadway to the receptor, and not the actual coordinates. Positive and negative values are used to indicate direction which will be explained in a later paragraph. All distances must be in feet. *Remember that the coordinate system used by COFL is based on the intersection layout displayed on the* **Intersection** *screen*. North is assumed to be at the top of the screen. You may need to rotate your intersection to match the COFL layout for the 6x4 or T-intersections or for the diamond interchange. For example, your 6-lane road may run north/south, but to set up any additional receptors and in order to interpret the results, you will need to rotate your intersection 90 degrees.

The first column allows you to identify the receptor using up to 20 alphanumeric characters.

The "X" column is used for entering the east or west distance from the **edge** of the closest travel lane of the roadway to the receptor. This is not the same as the x-coordinate that you may have developed for your intersection, but is the x-***distance*** from the **edge** of the closest travel lane of the roadway. A positive “X” is interpreted as being east of the north/south road; a negative “X” is west of the north/south road.

The "Y" column is similar except that it is the north or south distance from the **edge** of the closest travel lane of the roadway to the receptor. A positive “Y” is interpreted as being north of the east/west road; a negative “Y” is south of the east/west road. (If your intersection is not oriented east/west and north/south, use distances perpendicular to the roadway.)

The "Z" column is for entering the receptor height in feet. A typical value is 6 feet. The model automatically enters 6 feet, but it is able to be edited.

To begin entering data, start typing or click on any non-default receptor cell in the table. Use the ENTER key to enter and exit the edit mode. Use the arrow keys to move to different cells and, of course, mouse-clicking will also move the cursor.

Command Buttons
Clicking the Back button returns you to the **Intersection** screen. Clicking the Title Screen button returns you to the **Title** screen. The Save button lets you save the data on all the screens to a file. The Run button allows you to run COFL from this screen without returning to the Title screen. The model runs with the displayed input data; it is not necessary to save the data prior to running the model. In addition to accessing the buttons by tabbing or by mouse-clicking, you can also press the ALT+(underlined letter) keys.

RUNNING THE FLORIDA CO SCREENING MODEL

The Florida CO Screening model may be run from either the Title screen or the Receptors screen. It uses the displayed data as input; it is not necessary to save the data prior to running the model. The model does a check to make sure that all necessary data have been entered. If any piece of data is missing, it creates a list for you.

With all data entered, COFL creates a MOBILE6 input file. It then goes to the DOS shell to run MOBILE6 in order to determine emission factors. Various information will scroll across the screen as this program runs. With the speed of current computers, this occurs fairly quickly. Close the DOS window, if necessary, when MOBILE6 has completed its execution. COFL then extracts the generated emission factors and incorporates them into a CAL3QHC2 input file. The model continues its analysis using CAL3QHC2. Again information will scroll across the DOS screen. COFL extracts the 1-hour concentrations calculated by CAL3QHC2 at the various receptors, adds the 1-hr background concentration, and also converts these data to 8-hour concentrations (including an 8-hr background).

The intermediate files are available in the application folder for viewing if desired. They are as follows:

mobile6.in	the MOBILE6 input file
mobile6.txt	the MOBILE6 output file
coefmob6.out	lists MOBILE6 emission factors extracted from *mobile6.txt*
incal3q.in	the CAL3QHC input file
outcal3q.out	the CAL3QHC output file

After the model finishes all the CAL3QHC runs, it extracts the outputs and creates a 1-page summary report (the report may become a 2-page report if the user specifies additional receptors, or in the case of the diamond interchange. The model displays the report in the Text Viewer Screen (see next page).

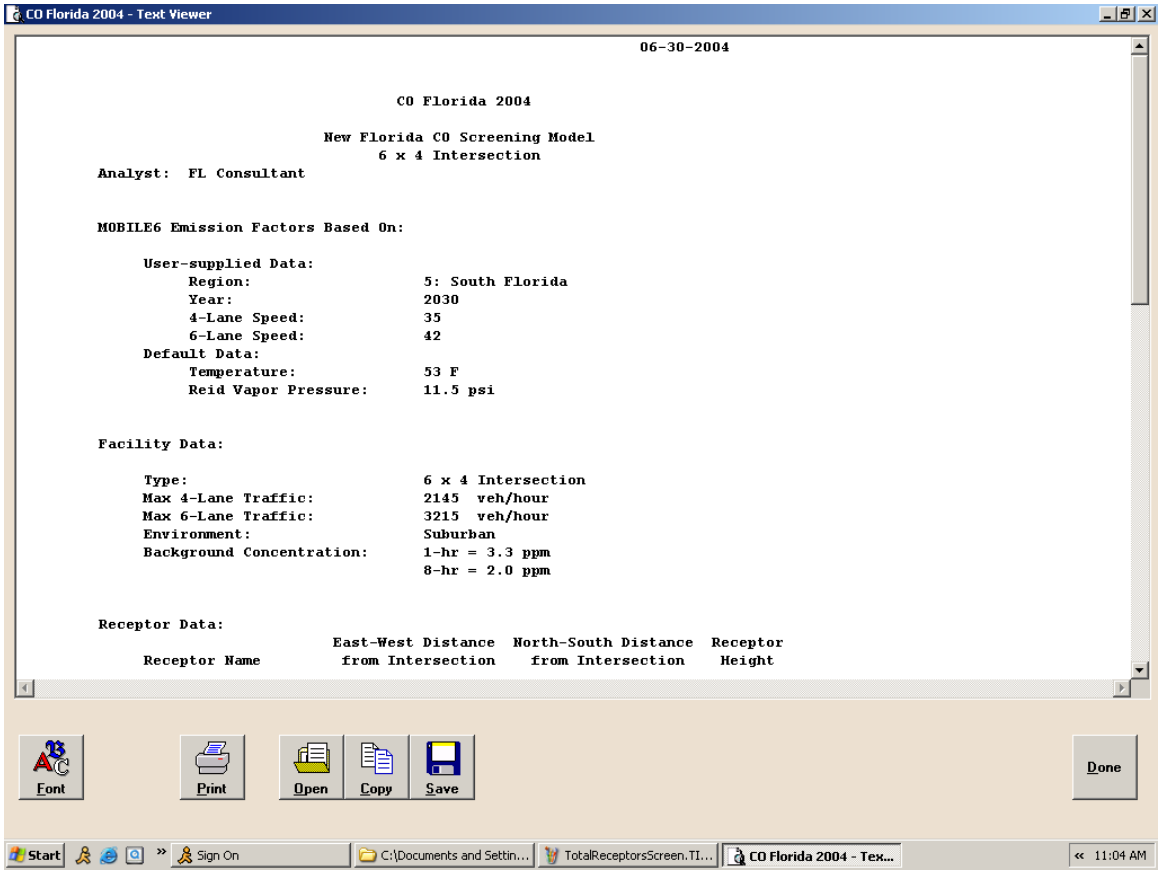

Figure 8. Text Viewer

TEXT VIEWER

The Text Viewer screen in Figure 8 immediately displays the results of the Florida CO Screening analysis. The Text Viewer screen can also be directly accessed by clicking the View button on the Title screen or by selecting "Text Viewer" from the Screens menu on the Title screen. By default, the most recent COFL run will be displayed, but the Text Viewer can be used to view any text file. If the file does not fit in the Text Viewer window, click on the scroll bars to view different portions of your file.

Editing cannot be done in this screen - this is not intended as a text editor. Several other options are available on this screen. They are described in the following paragraphs.

Font Button

The font can be changed by selecting the Font button. COFL output is designed for font Courier 10. Changing the font may result in lines running off the paper - text does not wrap around. This button may be most useful when viewing and printing other files.

Print Button
The Print button is for printing the displayed file. This button will display the Print dialog box which can be used to access other print parameters such as orientation and paper type. COFL is designed for the portrait format.

Open Button
The Open button allows you to open any other text file for viewing. If the output file has not been saved, you will be prompted to save it prior to opening another file. Even if you do not save it at this time, the output file is still available as *coscreen.out* until the next COFL run.

Copy Button
The Copy button copies the displayed file to the clipboard. The file can then be copied into another program, such as a word processing program for inclusion in an air quality report.

Save Button
The Save button opens the Save dialog box and saves the displayed file to the file named or selected by you. If you are saving the just-displayed results, the results will be saved without the left margin; this facilitates easier insertion of the output file into a report.

Done Button
The Done button closes this screen. If the output file has not been saved, you will be prompted to save it.

EXAMPLE INPUTS AND OUTPUTS

This section includes two examples. One example is for a 6x6 intersection. The files for this example are *Example1.inp* and *Example1.out.* They are shown in Figures 9 and 10. The second example is for a diamond interchange. The files for this example are *Example2.inp* and *Example2.out*. They are shown in Figures 11 and 12.

Figures 9 and 11 identify the type of data that the input values represent with italicized labels; these labels do not actually appear in the input files. It is provided here to assist in interpretation of the data. Note that all descriptive alphanumeric entries (string expressions) are surrounded by quotation marks. If there is more than one data entry per line, the data are separated by commas. If there is no data entry for a traffic volume, it is represented by "-1", this is to avoid confusion with a value of 0. Note that the data entries are very similar except for the traffic volumes. The traffic volumes for the 6x6 intersection are listed in a clockwise order; the traffic volumes for the diamond interchange are listed by road type.

Figures 10 and 12 display the results. Note that because of the number of receptors, the output is on two pages. The first part of the output summarizes the model inputs. It lists both data that the user provided and input values that are incorporated into the model. The output includes only the traffic volumes that were used in the dispersion modeling and not all the traffic that the user listed; that is, the model determines the maximum traffic volume(s).

The maximum 1-hour concentrations are the values calculated by CAL3QHC plus the 1-hour CO background concentrations. COFL calculates the 8-hour concentrations by multiplying the 1-hour values by a total persistence factor of 0.6. The model then scans the results to determine if either of the NAAQS standards for CO are violated and prints a corresponding statement.

Figure 9. 6x6 Intersection Input File *Example1.inp*

```
"6 x 6 Intersection"          Project
"South Florida - Rural"       Facility
"Joe Analyst"                 Analyst
5                             Region
3,2030,2                      Land use, year, intersection
12                            Right-of-way distance
2222                          Approach traffic for north leg
2333                          Approach traffic for east leg
2444                          Approach traffic for south leg
2555                          Approach traffic for west leg
46                            Speed for north/south road
43                            Speed for east/west road
10,4                          Number of default receptors, user receptors
"Default Rec 1",12,150,6      Remaining entries are default and user receptors:
"Default Rec 2",12,50,6           Receptor ID, x-, y- and z-coordinates
"Default Rec 3",50,12,6
"Default Rec 4",150,12,6
"Default Rec 5",50,50,6
"Default Rec 6",12,-150,6
"Default Rec 7",12,-50,6
"Default Rec 8",50,-12,6
"Default Rec 9",150,-12,6
```

```
"Default Rec 10",50,-50,6
"User Rec 1",12,100,6
"User Rec 2",100,12,6
"User Rec 3",12,-100,6
"User Rec 4",100,-12,6
```

Figure 10. 6x6 Intersection Output File *Example1.out*

```
                                                                07-28-2004

                                CO Florida 2004

Project:                        6 x 6 Intersection
Facility:                     South Florida - Rural
Analyst:  Joe Analyst

Environmental Data:
    Temperature:                    53 F
    Reid Vapor Pressure:            11.5 psi
    Land Use:                       Rural
    Stability Class:                E
    Surface Roughness:              10
    Background Concentration:       1-hr = 1.7 ppm       8-hr = 1.0 ppm

Project Data:
    Region:                         5: South Florida
    Year:                           2030
    Intersection Type:              6 x 6 Intersection
    Max Approach Traffic Volume:    2555  veh/hour
    Speed:                          43

Receptor Data (all distances are in feet):
                        East-West Distance  North-South Distance  Receptor
    Receptor Name        from Intersection    from Intersection    Height
    -------------       ------------------  --------------------  --------
    Default Rec 1                 12                   150             6
    Default Rec 2                 12                    50             6
    Default Rec 3                 50                    12             6
    Default Rec 4                150                    12             6
    Default Rec 5                 50                    50             6
    Default Rec 6                 12                  -150             6
    Default Rec 7                 12                   -50             6
    Default Rec 8                 50                   -12             6
    Default Rec 9                150                   -12             6
    Default Rec 10                50                   -50             6
    User Rec 1                    12                   100             6
    User Rec 2                   100                    12             6
    User Rec 3                    12                  -100             6
    User Rec 4                   100                   -12             6
```

RESULTS (including background CO):

Receptor Name	Max 1-Hr Conc (ppm)	Max 8-Hr Conc (ppm)
Default Rec 1	8.7	5.2
Default Rec 2	10.1	6.0
Default Rec 3	9.2	5.5
Default Rec 4	9.1	5.4
Default Rec 5	8.2	4.9
Default Rec 6	9.1	5.4
Default Rec 7	9.2	5.5
Default Rec 8	10.1	6.0
Default Rec 9	8.7	5.2
Default Rec 10	8.2	4.9
User Rec 1	9.3	5.6
User Rec 2	9.0	5.4
User Rec 3	9.0	5.4
User Rec 4	9.3	5.6

****
PROJECT PASSES - NO EXCEEDANCES OF NAAQ CO STANDARDS ARE PREDICTED
****

Figure 11. Diamond Intersection Input File *Example2.inp*

```
"Diamond Interchange"                          Project
"Central Florida - Suburban land use"          Facility
"Mary N. Quiry"                                User
3                                              Region
1,2005,5                                       Land use, year, intersection
15,35                                          Right-of-way distances
3800,240,120                                   Thru, left & right traffic for north leg (southbound freeway)
3200,300,100                                   Thru, left & right traffic for south leg (northbound freeway)
2500,298,120                                   Thru, left & right traffic for east leg (westbound arterial)
2000,100,320                                   Thru, left & right traffic for west leg (eastbound arterial)
50                                             Freeway speed
32                                             Arterial road speed
16,3                                           Number of default receptors, user receptors
"Default Rec 1",35,1020,6                      Remaining entries are default and user receptors:
"Default Rec 2",35,50,6                              Receptor ID, x-, y- and z-coordinates
"Default Rec 3",50,15,6
"Default Rec 4",150,15,6
"Default Rec 5",35,-1020,6
"Default Rec 6",35,-50,6
"Default Rec 7",50,-15,6
"Default Rec 8",150,-15,6
"Default Rec 9",-35,-1020,6
"Default Rec 10",-35,-50,6
"Default Rec 11",-50,-15,6
"Default Rec 12",-150,-15,6
"Default Rec 13",-35,1020,6
"Default Rec 14",-35,50,6
"Default Rec 15",-50,15,6
"Default Rec 16",-150,15,6
"User Rec 1",75,15,6
"User Rec 2",100,15,6
"User Rec 3",125,15,6
```

Figure 11. Diamond Intersection Output File *Example2.out*

07-28-2004

CO Florida 2004

Project: Diamond Interchange
Facility: Central Florida - Urban land use
Analyst: Mary N. Quiry

Environmental Data:

Temperature:	48 F
Reid Vapor Pressure:	11.5 psi
Land Use:	Urban
Stability Class:	D
Surface Roughness:	175
Background Concentration:	1-hr = 5.0 ppm 8-hr = 3.0 ppm

Project Data:

Region:	3: Central Florida
Year:	2005
Intersection Type:	Diamond Interchange
Max Freeway Traffic:	4160 veh/hour
Max Arterial Traffic:	2918 veh/hour
Freeway Speed:	50
Arterial Speed:	32

Receptor Data (all distances are in feet):

Receptor Name	East-West Distance from Intersection	North-South Distance from Intersection	Receptor Height
Default Rec 1	35	1020	6
Default Rec 2	35	50	6
Default Rec 3	50	15	6
Default Rec 4	150	15	6
Default Rec 5	35	-1020	6
Default Rec 6	35	-50	6
Default Rec 7	50	-15	6
Default Rec 8	150	-15	6
Default Rec 9	-35	-1020	6
Default Rec 10	-35	-50	6
Default Rec 11	-50	-15	6
Default Rec 12	-150	-15	6
Default Rec 13	-35	1020	6
Default Rec 14	-35	50	6
Default Rec 15	-50	15	6
Default Rec 16	-150	15	6
User Rec 1	75	15	6
User Rec 2	100	15	6
User Rec 3	125	15	6

Diamond Interchange
Central Florida - Urban land use

RESULTS (including background CO):

Receptor Name	Max 1-Hr Conc (ppm)	Max 8-Hr Conc (ppm)
Default Rec 1	10.2	6.1
Default Rec 2	10.6	6.4
Default Rec 3	13.1	7.9
Default Rec 4	13.2	7.9
Default Rec 5	10.2	6.1
Default Rec 6	11.2	6.7
Default Rec 7	12.9	7.7
Default Rec 8	12.2	7.3
Default Rec 9	10.2	6.1
Default Rec 10	10.6	6.4
Default Rec 11	13.1	7.9
Default Rec 12	13.2	7.9
Default Rec 13	10.2	6.1
Default Rec 14	11.2	6.7
Default Rec 15	12.9	7.7
Default Rec 16	12.2	7.3
User Rec 1	12.9	7.7
User Rec 2	13.1	7.9
User Rec 3	13.1	7.9

****
PROJECT PASSES - NO EXCEEDANCES OF NAAQ CO STANDARDS ARE PREDICTED
****