ENVIRONMENTAL CONSULTANTS AND TRAINERS©

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ACE ENVIRONMENTAL, INC.

January 17, 2017

Edgardo Robles Dávila, PE
Alpha Engineering, PSC
El Paraíso Industrial Park
Ganges Street #5
San Juan, PR 00926-2907

Via E-Mail (erobles@alphaengineering.org)

Re: Carbon Monoxide Emissions Screening
Improvements to Intersection PR-2, 2R and San Juan Street
(RUM Entrance, La Vita), PR-2 Km.153.90, Mayaguez, Puerto Rico
[AC-200241 P000002441 MP-2 (66)]

Dear Engineer Robles:

This report summarizes the carbon monoxide (CO) emissions screening analysis in support of the above referenced project. The CO emissions screening analysis and its results are based on the proposed Project drawings provided by Alpha Engineering, PSC and Traffic Impact Study[1] prepared by PLC Traffic Consulting Engineers, PSC. Figure 1, attachment A shows the site location map for the proposed project.

The CO screening analysis using the latest mathematical model Motor Vehicle Emissions Simulator (MOVES2014a) developed by the Environmental Protection Agency's (EPA) Mobile Group (MG), was originally developed to be used for the preparation of State Implementation Plans and estimates emissions for mobile sources at the national, county, and project level for criteria air pollutants, greenhouse gases, and air toxics. However, no results were obtained in the Summary Report. After consultation with EPA's Mobile Group it was concluded the results were too small to display since the Summary Report only goes out a couple of decimal places. Because the Summary Reporter is JAVA coded, nothing can be done in the database to modify it to see the results. It is important to note that MOVES2014a expresses its results in grams per mile (g/mi). The model is designed to process projects with highway links of considerable lengths (hundreds of miles), compared to the links for this project, which

[1] PLC Traffic Consulting Engineers, PSC. Traffic Impact Study and Access Modification Justification Highway PR-2 Km. 152.0 to KM. 154.0 Mayagüez, Puerto Rico. (April 2017)

are in the order of an eighth of a mile. If the results are in the order of milligrams/mile, the Summary Report won't be able to show them.

In the alternative, ACE conducted a CO Screening Analysis using the model CALINE4 developed by the California Department of Transportation (CALTRANS). This was the model used by EPA before the development of MOVES.

CALINE 4 is a dispersion model that predicts carbon monoxide concentrations in areas close to road systems. The purpose of the model is to assist in the planning process of road construction projects by determining potential adverse effects to public health due excessive exposure to carbon monoxide. The results of the CALINE 4 model are compared to the federal Primary and Secondary Ambient Air Quality Standards (40 CFR 50), which are applicable to Puerto Rico (Table 1).

Table 1
Federal Ambient Air Quality Standards

Contaminant	Exposure Criteria	Limit	Standard
Carbon Monoxide	8-hour average	9 ppm – 10 g/m	Primary
	1-hour average	35 ppm – 40 g/m	Primary

The CO screening analysis conducted for the proposed action consisted of estimating carbon monoxide concentrations under worst case scenario conditions for years 2020 and 2040 utilizing the model CALINE 4, the traffic values and data obtained from the traffic study prepared for the proposed action, the ten receptors described in Table 3, and the proposed project alignment coordinates.

REPRESENTATIVE RECEIVERS

Ten (10) representative receivers were identified based on on the following criteria: current uses (institutional or residential) and their proximity to roadways PR-2, PR-102, PR-3108, and San Juan Street. These receivers are also representative for the five alignment alternatives evaluated by the Puerto Rico Highway and Transportation Authority (PRHTA). Table 2 describes representative receivers. The representative CO receiver locations are shown in Figures 2 to 6, Attachment A.

Table 2
Representative Receivers Description

Intersection	Receiver ID	Receiver Description
A (PR-2 Int. PR-102)	1A	Marisol Housing Apt. Building next to PR-102 First Floor
	1B	Marisol Housing Apt. Building next to PR-102 Second Floor
	6A	Marisol Housing Apt. Building next to PR-2 First Floor
A (PR-2 Int. PR-102)	6B	Marisol Housing Apt. Building next to PR-2 Second Floor
	6C	Marisol Housing Apt. Building next to PR-2 Second Floor
B (PR-2 Int. PR-3108)	2	Residence near PR-2 Int. PR-3108
C (PR-2)	5	Residence near PR-2
D (Roundabout PR-2 Int. UPRM Entrance San Juan Street)	4	University of Puerto Rico Mayaguez Campus' Plant nursery / Classroom
E (PR-2 near Vocational School)	3	Vocational School Classroom near PR-2
	7	Vocational School Classroom near PR-2

TRAFFIC LEVELS

Traffic levels were obtained from the Traffic Study[2]. Table 3 below summarizes peak hour traffic levels for State Roads PR-2, PR-102, PR-3108, RUM entrance roundabout and San Juan Street for each roadway segment evaluated for both construction year 2020 and design year 2040.

[2] PLC Traffic Consulting Engineers, PSC. Traffic Impact Study and Access Modification Justification Highway PR-2 Km. 152.0 to KM. 154.0 Mayagüez, Puerto Rico. (April 2017)

Table 3 Peak Hour Traffic Levels			
Roadway Segment	**Roadway**	**2020**	**2040**
A (PR-2 Int. PR-102)	PR-2	4209	7001
	PR-102	396	533
	Marginal PR-2	139	187
B (PR-2 Int. PR-3108)	PR-2	4251	5726
	PR-3108	531	715
C (PR-2)	PR-2	4251	5726
	Marginal PR-2	20	32
D (Roundabout PR-2 Int. UPRM Entrance San Juan Street)	PR-2 North	1054	1421
	PR-2 South	746	1005
	Roundabout	1490	2006
	San Juan Street	1061	1429
E (PR-2 near Vocational School)	PR-2 (North)	1054	1421
	PR-2 (South)	746	1005
	Marginal PR-2 (South)	40	50

Table 4 below summarizes the CALINE4 CO simulation results for the years 2020 and 2040. Results for the CALINE CO simulation for year 2020 and 2040can be found in Attachments B and C respectively.

Table 4 CALINE4 Carbon Monoxide simulation results			
Roadway Segment	**Receiver ID**	**[CO] 2020 (ppm)**	**[CO] 2040 (ppm)**
A (PR-2 Int. PR-102)	1A	2.7	4.5
	1B	2.7	4.5
	6A	4.5	7.4
	6B	4.5	7.4
	6C	4.5	7.4
B (PR-2 Int. PR-3108)	2	2.7	3.6
C (PR-2)	5	1.5	2.0

Table 4 CALINE4 Carbon Monoxide simulation results			
Roadway Segment	**Receiver ID**	**[CO] 2020 (ppm)**	**[CO] 2040 (ppm)**
D (Roundabout PR-2 Int. UPRM Entrance San Juan Street)	4	0.9	1.2
E (PR-2 near Vocational School)	3	0.7	0.9
	7	0.7	0.9

RESULTS

The concentrations under worst-case scenario conditions obtained were between 0.7 and 4.5 ppm for a one hour average for the year 2020 and between 0.9 and 7.4 ppm for the year 2040. The primary air quality standard for carbon monoxide is 35 ppm for the 1-hour average. The results obtained using the CALINE 4 model show levels of carbon monoxide well below the regulatory limits, indicating that the operation of proposed action would not have a significant adverse effect the receptors.

CONCLUSION

The results of the air quality assessment indicate that levels of carbon monoxide are below the regulatory limits, indicating that the operation of the proposed action would not have a significant adverse effect the receivers for all alignments. If you have questions or would like to clarify any point of this report, please contact the undersigned at (787) 567-1301 or Mr. William Sarriera at (787) 567-1302.

Cordially,

Edgar A. Vázquez Quiles
Associate

William Sarriera
Principal

Enclosures
Project No. ACE157-002

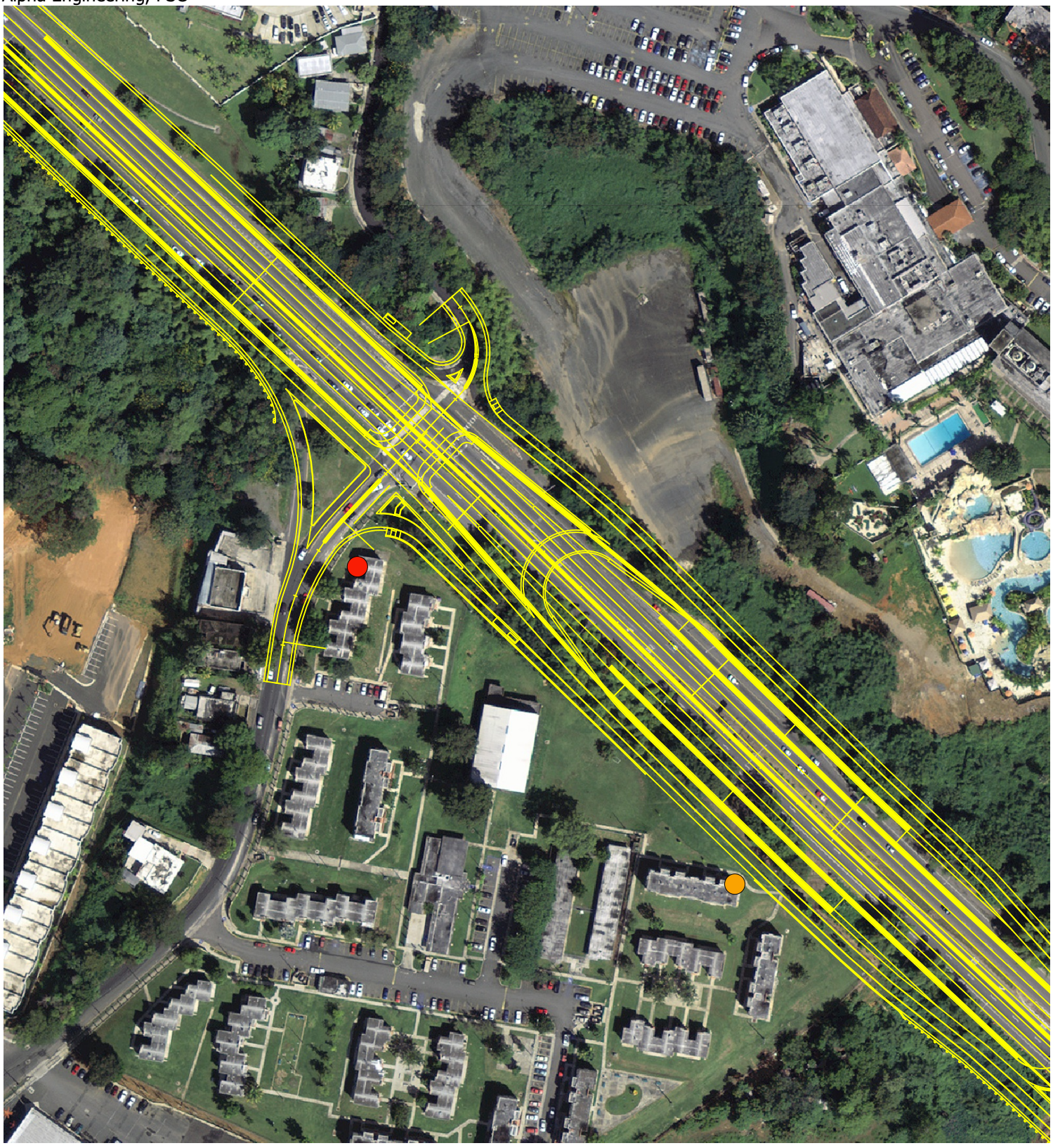
Attachment A
Figures

Figure 1 – Site Location Map
Improvements to intersection PR-2, 2R and San Juan St. (RUM Entrance, La VIta),
PR-2 KM 153.90, Mayagüez, PR [AC-200241 P000002441 MP-2(66)]
Alpha Engineering, PSC

Reference: 7.5-Minute Topographic Quadrangle of Mayaguez, Puerto Rico

US Geological Survey 1955

Figure 2 - Roadway Segment A (PR-2 / PR102)
Noise Study, Improvements to intersection PR-2, 2R and San Juan St. (RUM Entrance, La VIta), PR-2 KM 153.90, Mayagüez, PR [AC-200241 P000002441 MP-2(66)]
Alpha Engineering, PSC



Legend

- Receivers 6A 6B 6C
- Receivers 1A 1B
- ALTERNATIVE V

Reference: Aerial photograph of the Mayaguez area (2010
Recovered from USGS Earth Explorer

25 0 25 50 75 100 m

Figure 3 - Roadway Segment B (PR-2 / PR-3108)
Noise Study, Improvements to intersection PR-2, 2R and San Juan St. (RUM Entrance, La VIta), PR-2 KM 153.90, Mayagüez, PR [AC-200241 P000002441 MP-2(66)]
Alpha Engineering, PSC

Legend

Receiver2

Reference: Aerial photograph of the Mayaguez area (2010
Recovered from USGS Earth Explorer

25 0 25 50 75 100 m

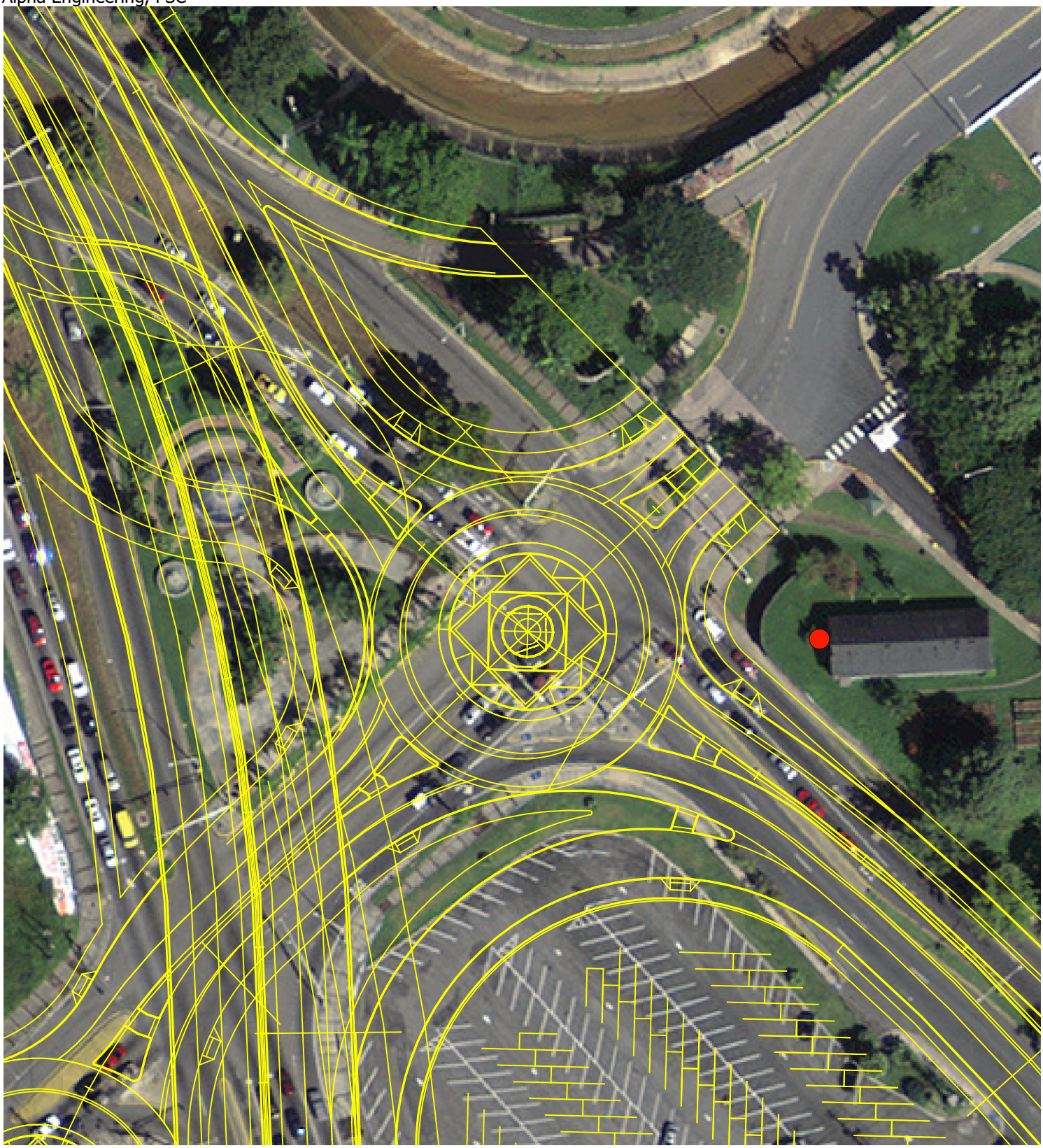
Figure 4 -Segment C (PR-2 / Receiver 5)
Noise Study, Improvements to intersection PR-2, 2R and San Juan St. (RUM Entrance, La VIta), PR-2 KM 153.90, Mayagüez, PR [AC-200241 P000002441 MP-2(66)]
Alpha Engineering, PSC

Legend

Receiver5 Reference: Aerial photograph of the Mayaguez area (2010
Recovered from USGS Earth Explorer

25 0 25 50 m

Figure 5 - Roadway Segment D (PR-2 /Roundabout UPRM / San Juan Street)
Noise Study, Improvements to intersection PR-2, 2R and San Juan St. (RUM Entrance, La VIta), PR-2 KM 153.90, Mayagüez, PR [AC-200241 P000002441 MP-2(66)]
Alpha Engineering, PSC



Legend

Receiver4

Reference: Aerial photograph of the Mayaguez area (2010
Recovered from USGS Earth Explorer

25 0 25 50 m

Figure 6 - Roadway Segment E (PR-2 / Vocational School)
Noise Study,Improvements to intersection PR-2, 2R and San Juan St. (RUM Entrance, La VIta), PR-2 KM 153.90, Mayagüez, PR [AC-200241 P000002441 MP-2(66)]
Alpha Engineering, PSC

Legend

- Receiver7
- Receiver3

Reference: Aerial photograph of the Mayaguez area (2010
Recovered from USGS Earth Explorer

25 0 25 50 m

Attachment B
CALINE 4 Simulation Results 2020

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: CO_SEGMENT_A_MAZ_2020
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT:

I. SITE VARIABLES

U=	1.0 M/S	Z0= 100. CM	ALT= 25. (M)
BRG=	WORST CASE	VD= 0.0 CM/S	
CLAS=	1 (A)	VS= 0.0 CM/S	
MIXH=	5. M	AMB= 0.0 PPM	
SIGTH=	5. DEGREES	TEMP= 27.7 DEGREE (C)	

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. PR-102_NEA	*	*****	*****	*****	*****	* AG	198	5.0	0.0	10.0
B. PR-102_NEB	*	*****	*****	*****	*****	* AG	198	5.0	0.0	10.0
C. PR-102_SWA	*	*****	*****	*****	*****	* AG	198	5.0	0.0	10.0
D. PR-102_SWB	*	*****	*****	*****	*****	* AG	198	5.0	0.0	10.0
E. PR-2_SE	*	*****	*****	*****	*****	* AG	2105	5.0	0.0	10.0
F. PR-2_NW	*	*****	*****	*****	*****	* AG	2105	5.0	0.0	10.0
G. MARPR-2	*	*****	*****	*****	*****	* AG	139	5.0	0.0	10.0
H. PR-2_102	*	*****	*****	*****	*****	* AG	139	5.0	0.0	10.0
I. PR-102_2	*	*****	*****	*****	*****	* AG	139	5.0	0.0	10.0

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. 1A	*	123660	242862	20.0
2. 1B	*	123660	242862	22.5
3. 6A	*	123808	242733	12.0
4. 6B	*	123808	242733	14.5
5. 6C	*	123808	242733	16.9

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: CO_SEGMENT_A_MAZ_2020
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT:

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. 1A	121.	2.7	0.0	0.0	0.0	0.0	1.4	1.2	0.1	0.0
2. 1B	121.	2.7	0.0	0.0	0.0	0.0	1.4	1.2	0.1	0.0
3. 6A	321.	4.5	0.0	0.0	0.0	0.0	2.2	2.0	0.2	0.0
4. 6B	321.	4.5	0.0	0.0	0.0	0.0	2.2	2.0	0.2	0.0
5. 6C	321.	4.5	0.0	0.0	0.0	0.0	2.2	2.0	0.2	0.0

RECEPTOR	CONC/LINK (PPM) I
1. 1A	0.0
2. 1B	0.0
3. 6A	0.0
4. 6B	0.0
5. 6C	0.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: CO_SEGMENT_B_MAZ_2020
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT:

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	25. (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	1 (A)	VS=	0.0 CM/S		
MIXH=	5. M	AMB=	0.0 PPM		
SIGTH=	5. DEGREES	TEMP=	27.7 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. PR-2 SE	*	*****	*****	*****	*****	* AG	2126	5.0	0.0	10.0
B. PR-2 NW	*	*****	*****	*****	*****	* AG	2126	5.0	0.0	10.0
C. PR-3108 NE	*	*****	*****	*****	*****	* AG	266	5.0	0.0	10.0
D. PR-3108 SW	*	*****	*****	*****	*****	* AG	266	5.0	0.0	10.0
E. MAR2_3108	*	*****	*****	*****	*****	* AG	139	5.0	0.0	10.0
F. 3108_MAR2	*	*****	*****	*****	*****	* AG	266	5.0	0.0	10.0
G. MAR_PR-2	*	*****	*****	*****	*****	* AG	139	5.0	0.0	10.0

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. R2	*	124038	242615	4.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	* BRG (DEG)	* PRED CONC (PPM)	* CONC/LINK (PPM) A	B	C	D	E	F	G
1. R2	* 301.	* 2.7	* 1.1	1.5	0.0	0.0	0.0	0.0	0.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: CO_SEGMENT_C_MAZ_2020
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT:

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	8. (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	1 (A)	VS=	0.0 CM/S		
MIXH=	5. M	AMB=	0.0 PPM		
SIGTH=	5. DEGREES	TEMP=	27.7 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. PR-2 SE	*	*****	*****	*****	*****	* AG	2126	5.0	0.0	10.0
B. PR-2 NW	*	*****	*****	*****	*****	* AG	2126	5.0	0.0	10.0
C. MAR_PR-2	*	*****	*****	*****	*****	* AG	22	5.0	0.0	10.0

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. R5	*	124584	242027	16.0

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	BRG (DEG)	*	PRED CONC (PPM)	*	CONC/LINK (PPM) A	B	C
1. R5	*	344.	*	1.5	*	0.8	0.7	0.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: CO_SEGMENT_C_MAZ_2020
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT:

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	8. (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	1 (A)	VS=	0.0 CM/S		
MIXH=	5. M	AMB=	0.0 PPM		
SIGTH=	5. DEGREES	TEMP=	27.7 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. PR-2 SE	*	*****	*****	*****	*****	* AG	2126	5.0	0.0	10.0
B. PR-2 NW	*	*****	*****	*****	*****	* AG	2126	5.0	0.0	10.0
C. MAR_PR-2	*	*****	*****	*****	*****	* AG	22	5.0	0.0	10.0

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. R5	*	124584	242027	16.0

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	BRG (DEG)	*	PRED CONC (PPM)	*	CONC/LINK (PPM) A	B	C
1. R5	*	344.	*	1.5	*	0.8	0.7	0.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: CO_SEGMENT_D_MAZ_2020
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT:

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	11. (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	1 (A)	VS=	0.0 CM/S		
MIXH=	5. M	AMB=	0.0 PPM		
SIGTH=	5. DEGREES	TEMP=	27.7 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. ROUNDAB1	*	*****	*****	*****	*****	* AG	1490	5.0	0.0	10.0
B. ROUNDAB2	*	*****	*****	*****	*****	* AG	1490	5.0	0.0	10.0
C. ROUNDAB3	*	*****	*****	*****	*****	* AG	1490	5.0	0.0	10.0
D. ROUNDAB4	*	*****	*****	*****	*****	* AG	1490	5.0	0.0	10.0
E. ROUNDAB5	*	*****	*****	*****	*****	* AG	1490	5.0	0.0	10.0
F. ROUNDAB6	*	*****	*****	*****	*****	* AG	1490	5.0	0.0	10.0
G. ROUNDAB7	*	*****	*****	*****	*****	* AG	1490	5.0	0.0	10.0
H. R-PR-2 NW1	*	*****	*****	*****	*****	* AG	1054	5.0	0.0	10.0
I. R-PR-2 NW2	*	*****	*****	*****	*****	* AG	1054	5.0	0.0	10.0
J. R-PR-2 NW3	*	*****	*****	*****	*****	* AG	1054	5.0	0.0	10.0
K. R-PR-2 SE1	*	*****	*****	*****	*****	* AG	746	5.0	0.0	10.0

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. R5	*	124752	241923	14.0

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

	*	* PRED	*	CONC/LINK

RECEPTOR	BRG (DEG)	CONC (PPM)	(PPM) A	B	C	D	E	F	G	H
1. R5	289.	0.9	0.2	0.3	0.0	0.0	0.0	0.0	0.2	0.1

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: CO_SEGMENT_D_MAZ_2020
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT:

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	CONC/LINK (PPM) I	J	K
1. R5	0.1	0.0	0.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: CO_SEGMENT_E_MAZ_2020
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT:

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	8. (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	1 (A)	VS=	0.0 CM/S		
MIXH=	5. M	AMB=	0.0 PPM		
SIGTH=	5. DEGREES	TEMP=	27.7 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. PR-2 S1	*	*****	*****	*****	*****	* AG	746	5.0	0.0	10.0
B. PR-2 S2	*	*****	*****	*****	*****	* AG	746	5.0	0.0	10.0
C. PR-2 S3	*	*****	*****	*****	*****	* AG	756	5.0	0.0	10.0
D. MAR_PR2S1	*	*****	*****	*****	*****	* AG	40	5.0	0.0	10.0
E. MAR_PR2S2	*	*****	*****	*****	*****	* AG	40	5.0	0.0	10.0
F. MAR_PR2S3	*	*****	*****	*****	*****	* AG	40	5.0	0.0	10.0
G. PR-2 N1	*	*****	*****	*****	*****	* AG	1054	5.0	0.0	10.0
H. PR-2 N2	*	*****	*****	*****	*****	* AG	1054	5.0	0.0	10.0
I. PR-2 N3	*	*****	*****	*****	*****	* AG	1054	5.0	0.0	10.0

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. R3	*	124707	241642	5.5
2. R7	*	124704	241512	5.0

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

	*	PRED	*	CONC/LINK
	*	BRG	* CONC	* (PPM)

RECEPTOR	* (DEG)	* (PPM)	* A	B	C	D	E	F	G	H
1. R3	* 169.	* 0.7	* 0.0	0.1	0.2	0.0	0.0	0.0	0.3	0.0
2. R7	* 22.	* 0.7	* 0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.2

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	*CONC/LINK * (PPM) * I
1. R3	* 0.0
2. R7	* 0.1

Attachment C
CALINE 4 Simulation Results 2040

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: CO_SEGMENT_A_MAZ_2040
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT:

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	25. (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	1 (A)	VS=	0.0 CM/S		
MIXH=	5. M	AMB=	0.0 PPM		
SIGTH=	5. DEGREES	TEMP=	27.7 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. PR-102_NEA	*	*****	*****	*****	*****	* AG	267	5.0	0.0	10.0
B. PR-102_NEB	*	*****	*****	*****	*****	* AG	267	5.0	0.0	10.0
C. PR-102_SWA	*	*****	*****	*****	*****	* AG	267	5.0	0.0	10.0
D. PR-102_SWB	*	*****	*****	*****	*****	* AG	267	5.0	0.0	10.0
E. PR-2_SE	*	*****	*****	*****	*****	* AG	3501	5.0	0.0	10.0
F. PR-2_NW	*	*****	*****	*****	*****	* AG	3501	5.0	0.0	10.0
G. MARPR-2	*	*****	*****	*****	*****	* AG	187	5.0	0.0	10.0
H. PR-2_102	*	*****	*****	*****	*****	* AG	187	5.0	0.0	10.0
I. PR-102_2	*	*****	*****	*****	*****	* AG	187	5.0	0.0	10.0

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. 1A	*	123660	242862	20.0
2. 1B	*	123660	242862	22.5
3. 6A	*	123808	242733	12.0
4. 6B	*	123808	242733	14.5
5. 6C	*	123808	242733	16.9

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JOB: CO_SEGMENT_A_MAZ_2040
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT:

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. 1A	121.	4.5	0.0	0.0	0.0	0.0	2.4	1.9	0.1	0.0
2. 1B	121.	4.5	0.0	0.0	0.0	0.0	2.4	1.9	0.1	0.0
3. 6A	321.	7.4	0.0	0.0	0.0	0.0	3.7	3.3	0.2	0.0
4. 6B	321.	7.4	0.0	0.0	0.0	0.0	3.7	3.3	0.2	0.0
5. 6C	321.	7.4	0.0	0.0	0.0	0.0	3.7	3.3	0.2	0.0

RECEPTOR	CONC/LINK (PPM) I
1. 1A	0.0
2. 1B	0.0
3. 6A	0.0
4. 6B	0.0
5. 6C	0.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: CO_SEGMENT_B_MAZ_2040
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT:

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	25. (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	1 (A)	VS=	0.0 CM/S		
MIXH=	5. M	AMB=	0.0 PPM		
SIGTH=	5. DEGREES	TEMP=	27.7 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. PR-2 SE	*	*****	*****	*****	*****	* AG	2863	5.0	0.0	10.0
B. PR-2 NW	*	*****	*****	*****	*****	* AG	2863	5.0	0.0	10.0
C. PR-3108 NE	*	*****	*****	*****	*****	* AG	358	5.0	0.0	10.0
D. PR-3108 SW	*	*****	*****	*****	*****	* AG	358	5.0	0.0	10.0
E. MAR2_3108	*	*****	*****	*****	*****	* AG	187	5.0	0.0	10.0
F. 3108_MAR2	*	*****	*****	*****	*****	* AG	187	5.0	0.0	10.0
G. MAR_PR-2	*	*****	*****	*****	*****	* AG	167	5.0	0.0	10.0

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. R2	*	124038	242615	4.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	* BRG (DEG)	* PRED CONC (PPM)	* CONC/LINK (PPM) A	B	C	D	E	F	G
1. R2	* 301.	* 3.6	* 1.5	2.1	0.0	0.0	0.0	0.0	0.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
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JOB: CO_SEGMENT_C_MAZ_2040
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT:

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	8. (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	1 (A)	VS=	0.0 CM/S		
MIXH=	5. M	AMB=	0.0 PPM		
SIGTH=	5. DEGREES	TEMP=	27.7 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. PR-2 SE	*	*****	*****	*****	*****	* AG	2863	5.0	0.0	10.0
B. PR-2 NW	*	*****	*****	*****	*****	* AG	2863	5.0	0.0	10.0
C. MAR_PR-2	*	*****	*****	*****	*****	* AG	32	5.0	0.0	10.0

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. R5	*	124584	242027	16.0

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	BRG (DEG)	*	PRED CONC (PPM)	*	CONC/LINK (PPM) A	B	C
1. R5	*	344.	*	2.0	*	1.1	0.9	0.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
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JOB: CO_SEGMENT_D_MAZ_2040
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT:

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	11. (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	1 (A)	VS=	0.0 CM/S		
MIXH=	5. M	AMB=	0.0 PPM		
SIGTH=	5. DEGREES	TEMP=	27.7 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. ROUNDAB1	*	*****	*****	*****	*****	* AG	2006	5.0	0.0	10.0
B. ROUNDAB2	*	*****	*****	*****	*****	* AG	2006	5.0	0.0	10.0
C. ROUNDAB3	*	*****	*****	*****	*****	* AG	2006	5.0	0.0	10.0
D. ROUNDAB4	*	*****	*****	*****	*****	* AG	2006	5.0	0.0	10.0
E. ROUNDAB5	*	*****	*****	*****	*****	* AG	2006	5.0	0.0	10.0
F. ROUNDAB6	*	*****	*****	*****	*****	* AG	2006	5.0	0.0	10.0
G. ROUNDAB7	*	*****	*****	*****	*****	* AG	2006	5.0	0.0	10.0
H. R-PR-2 NW1	*	*****	*****	*****	*****	* AG	1421	5.0	0.0	10.0
I. R-PR-2 NW2	*	*****	*****	*****	*****	* AG	1421	5.0	0.0	10.0
J. R-PR-2 NW3	*	*****	*****	*****	*****	* AG	1421	5.0	0.0	10.0
K. R-PR-2 SE1	*	*****	*****	*****	*****	* AG	1005	5.0	0.0	10.0

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. R5	*	124752	241923	14.0

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

	*	* PRED	*	CONC/LINK

RECEPTOR	BRG (DEG)	CONC (PPM)	(PPM) A	B	C	D	E	F	G	H
1. R5	289.	1.2	0.3	0.4	0.0	0.0	0.0	0.0	0.3	0.1

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JOB: CO_SEGMENT_D_MAZ_2040
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT:

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	CONC/LINK (PPM) I	J	K
1. R5	0.2	0.0	0.0

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JOB: CO_SEGMENT_E_MAZ_2040
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT:

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	8. (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	1 (A)	VS=	0.0 CM/S		
MIXH=	5. M	AMB=	0.0 PPM		
SIGTH=	5. DEGREES	TEMP=	27.7 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. PR-2 S1	*	*****	*****	*****	*****	* AG	1005	5.0	0.0	10.0
B. PR-2 S2	*	*****	*****	*****	*****	* AG	1005	5.0	0.0	10.0
C. PR-2 S3	*	*****	*****	*****	*****	* AG	1005	5.0	0.0	10.0
D. MAR_PR2S1	*	*****	*****	*****	*****	* AG	50	5.0	0.0	10.0
E. MAR_PR2S2	*	*****	*****	*****	*****	* AG	50	5.0	0.0	10.0
F. MAR_PR2S3	*	*****	*****	*****	*****	* AG	50	5.0	0.0	10.0
G. PR-2 N1	*	*****	*****	*****	*****	* AG	1421	5.0	0.0	10.0
H. PR-2 N2	*	*****	*****	*****	*****	* AG	1421	5.0	0.0	10.0
I. PR-2 N3	*	*****	*****	*****	*****	* AG	1421	5.0	0.0	10.0

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. R3	*	124707	241642	5.5
2. R7	*	124704	241512	5.0

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

	*	* PRED	*	CONC/LINK
	*	BRG	* CONC	* (PPM)

RECEPTOR	* (DEG)	* (PPM)	* A	B	C	D	E	F	G	H
1. R3	* 169.	* 0.9	* 0.0	0.2	0.3	0.0	0.0	0.0	0.4	0.0
2. R7	* 22.	* 0.9	* 0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.3

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JOB: CO_SEGMENT_E_MAZ_2040
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT:

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	*CONC/LINK * (PPM) * I
1. R3	* 0.0
2. R7	* 0.1