APPENDIX C

AIR QUALITY ANALYSIS, PROCEDURES AND RESULTS

Analysis Methods

Because the projected traffic volumes for the proposed facility in 2030 are similar to the traffic volumes projected for the design year utilized in the DEIS/FEIS (2013), the same modeling inputs and results that were utilized in the DEIS/FEIS were also utilized as the basis for the analysis in this SDEIS.

A microscale analysis was used to predict the effect that traffic on the proposed facility would have on local air quality. This analysis was utilized to predict the generation and dispersion of carbon monoxide (CO) within the immediate vicinity of the proposed facility. Traffic projections for the design year of 2013 were used in the analysis and the results were compared to the 1-Hour National Ambient Air Quality Standard (NAAQS) for CO of 35 parts per million (ppm).

Motor vehicle emission rates were computed using MOBILE5a (EPA's Mobile Source Emission Factor Model). To provide a worst-case scenario, the emission factors were developed using conservative model inputs. Carbon monoxide concentrations from highway vehicles were calculated by using CALINE3, a linear dispersion model.

A realistic worst-case approach was taken for nearly all-meteorological conditions. Wind directions were analyzed at predominant directions to determine the maximum CO concentrations. Other factors included a wind speed of one meter per second, a rural stable atmospheric condition, a mixing height of 3,280 feet (1,000 meters) and worst case minimum and maximum January temperatures of 29.1°F (-1.6°C) and 49.0°F (9.4°C), respectively.

Modeling was done for the peak 1-hour traffic condition. In addition, the highest projected traffic volumes were selected and utilized in the modeling to represent the entire proposed facility. A CO background concentration of 1.0 ppm, for the 1-hour concentration, was used to account for CO sources outside the study area. Speeds for the existing roadways and the proposed facility were based on the travel demand model inputs.

Representative receptor sites along the facility were chosen at locations where the highest CO concentrations could be expected and where the general public would have access during the analysis periods.

Since the project area is in attainment for ozone and is included in Metroplan's Metro 2030 Metropolitan Transportation Plan for CART Study, a mesoscale or "regional" analysis was not required.

Analysis Results

Modeling results indicate that CO concentrations ranging between 0.4 and 0.8 ppm will be generated in the mixing cell. These computer estimates, when combined with an estimated ambient/background level of 1.0 ppm, result in total CO concentrations ranging between 1.4 and 1.8 ppm. These projected concentrations are well below the 1-Hour NAAQS for CO (35 ppm).

Printouts of the model assumptions and results, for both MOBILE5a and CALINE3, are included on the following pages. These results show the predicted highest one-hour CO receptor concentrations for the design year 2013. These concentrations would be located in areas where the greatest traffic volumes are moving at their slowest probable speed.

CALINE 3 AND MOBILE5a PRINTOUTS

CALINE3

RUN: NORTHBELT 2013 (1)
DATE: 10-27-1993
TIME: 09:41:15

1.0 SITE VARIABLES

WIND VELOCITY	=	1.0 M/S	BEARING	=	225 DEGREES
CLASS	=	F	MIXING HEIGHT	=	100 M
AVERAGING TIME	=	60.0 MIN	AMBIENT CONC	=	1.0 PPM
ROUGHNESS	=	10.0 CM	STTLNG VELOCITY=		0.0 CM/S
			DEPSTN VELOCITY=		0.0 CM/S

2.0 LINK VARIABLES

LINK	LINK COORDINATES (M) X1	Y1	X2	Y2
1	0	0	1350	0
2	1350	0	9350	0
3	9350	0	12950	0
4	12950	0	20950	0

LINK	LINK DESCRIPTORS TYPE	VPH	EF	H	W
1	At-Grade	4250	10.6	1.0	50.0
2	At-Grade	3170	10.6	1.0	50.0
3	At-Grade	2300	10.6	1.0	50.0
4	At-Grade	4320	10.6	1.0	50.0

3.0 RECEPTOR COORDINATES (M)

RECEPTOR	X	Y	Z
1.0	675	0	1.0
2.0	5350	0	1.0
3.0	11150	0	1.0
4.0	16950	0	1.0

4.0 MODEL RESULTS

LINK	CO CONCENTRATIONS AT RECEPTORS 1	2	3	4
1	0.8	0.0	0.0	0.0
2	0.0	0.6	0.0	0.0
3	0.0	0.0	0.4	0.0
4	0.0	0.0	0.0	0.8
LNKS' PPM'	0.8	0.6	0.4	0.8
BKGRD PPM'	1.0	1.0	1.0	1.0
TOTAL PPM'	1.8	1.6	1.4	1.8

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1          PROMPT
MOBILE5a  JOB 60110 E 1: OUTFMT = 1 (long (220 column) numeric output format)
1          TAMFLG
1          SPDFLG
1          VMFLAG
1          MYMRFG
1          NEWFLG
1          IMFLAG
1          ALHFLG
1          ATPFLG
3          RLFLAG
1          LOCFLG  -  read in local area parameters as 2nd req sc rec
1          TEMFLG  -  calculate exhaust temperatures
1          OUTFMT  -  MOBILE5 210 column 3 dp numeric output format
4          PRTFLG
1          IDLFLG
1          NMHFLG
2          HCFLAG  -  print HC components
93 2221       JOBNY, IVOB
1 83 45.0 50.0 20.6 27.3 20.6                    1st req sc rec: IREJN,ICY,SPD(1),AMBT,PCCN,PCHC,PCCC
LITTLE ROCK, AR  C  20.  59. 11.5 11.5 93     LAP rec: SCNAME,RVPAST,TEMMIN,TEMMAX,RVPBAS,RVPIUS,IUSESY
1 93 45.0 50.0 20.6 27.3 20.6                    1st req sc rec: IREJN,ICY,SPD(1),AMBT,PCCN,PCHC,PCCC
LITTLE ROCK, AR  C  20.  59. 11.5 11.5 93     LAP rec: SCNAME,RVPAST,TEMMIN,TEMMAX,RVPBAS,RVPIUS,IUSESY
1 03 45.0 50.0 20.6 27.3 20.6                    1st req sc rec: IREJN,ICY,SPD(1),AMBT,PCCN,PCHC,PCCC
LITTLE ROCK, AR  C  20.  59. 11.5 11.5 93     LAP rec: SCNAME,RVPAST,TEMMIN,TEMMAX,RVPBAS,RVPIUS,IUSESY
1 13 45.0 50.0 20.6 27.3 20.6                    1st req sc rec: IREJN,ICY,SPD(1),AMBT,PCCN,PCHC,PCCC
LITTLE ROCK, AR  C  20.  59. 11.5 11.5 93     LAP rec: SCNAME,RVPAST,TEMMIN,TEMMAX,RVPBAS,RVPIUS,IUSESY
0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
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FILE: 60110IN2

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*
*       One or more evaporative temperatures (input daily
*       maximum, input ambient, calculated hot soak, and/or
*       calculated running loss) is 40F or less, or input
*       daily minimum is 25F or less; no evaporative emission
*       factors (hot soak, diurnal, running loss, or resting
*       loss) will be calculated.
@Emission factors are as of Jan. 1st of the indicated calendar year.
1  3 45.0/45.0/45.0/45.0/45.0/45.0/45.0 46 20.6 27.3 20.6   500. 1  1.125  1.535  2.167  1.730  1.426  0.277  0.366  1.105  1.463  1.303 0.606 0.194 0.067 0.031 0.002 0.002 0.072 0.006 LITTLE ROCK, AR
                                                                 X  1.082  1.466  2.073  1.654  1.076  0.277  0.366  1.108  1.463  1.244
                                                                 Y  0.006  0.009  0.011  0.009  0.012                        0.000  0.005
                                                                 Z  0.036  0.056  0.084  0.066  0.337                               0.051
                                                                 T  0.000  0.000  0.000  0.000  0.000                               0.000
                                                                 S  0.000  0.000  0.000  0.000  0.000                        0.000  0.000
1  3 45.0/45.0/45.0/45.0/45.0/45.0/45.0 46 20.6 27.3 20.6   500. 2 10.829 14.786 20.227 16.447 28.620  0.706  0.778  5.411 11.133 12.292 0.606 0.194 0.067 0.031 0.002 0.002 0.072 0.006 LITTLE ROCK, AR
1  3 45.0/45.0/45.0/45.0/45.0/45.0/45.0 46 20.6 27.3 20.6   500. 3  1.737  1.983  2.716  2.210  5.613  1.116  1.241  6.210  1.341  2.461 0.606 0.194 0.067 0.031 0.002 0.002 0.072 0.006 LITTLE ROCK, AR

-M 83 Comment:
*
*       One or more evaporative temperatures (input daily
*       maximum, input ambient, calculated hot soak, and/or
*       calculated running loss) is 40F or less. or input
*       daily minimum is 25F or less; no evaporative emission
*       factors (hot soak, diurnal, running loss, or resting
*       loss) will be calculated.
@Emission factors are as of Jan. 1st of the indicated calendar year.
1 13 45.0/45.0/45.0/45.0/45.0/45.0/45.0 46 20.6 27.3 20.6   500. 1  1.012  1.391  1.953  1.562  1.273  0.255  0.349  1.066  1.463  1.185 0.565 0.202 0.086 0.033 0.002 0.004 0.081 0.005 LITTLE ROCK, AR
                                                                 X  0.992  1.355  1.913  1.527  0.932  0.255  0.349  1.066  1.463  1.152
                                                                 Y  0.008  0.009  0.010  0.009  0.011                        0.000  0.007
                                                                 Z  0.013  0.021  0.029  0.026  0.331                               0.026
                                                                 T  0.000  0.000  0.000  0.000  0.000                               0.000
                                                                 S  0.000  0.000  0.000  0.000  0.000                        0.000  0.000
1 13 45.0/45.0/45.0/45.0/45.0/45.0/45.0 46 20.6 27.3 20.6   500. 2  9.415 13.116 17.774 14.531 12.705  0.681  0.755  5.320 11.133 10.637 0.585 0.202 0.086 0.033 0.002 0.004 0.081 0.005 LITTLE ROCK, AR
1 13 45.0/45.0/45.0/45.0/45.0/45.0/45.0 46 20.6 27.3 20.6   500. 3  1.625  1.824  2.551  2.045  4.953  1.024  1.157  6.374  1.341  2.237 0.585 0.202 0.086 0.033 0.002 0.004 0.081 0.005 LITTLE ROCK, AR
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JMOBILE5a  JOB 60110 E 1: OUTPUT = 1 (long (230 column) numeric output (orsol)
 MOBILE5a (26-Mar-93)
 0
-M 83 Comment:
+
                One or more evaporative temperatures (input daily
                maximum, input ambient, calculated hot soak, and/or
                calculated running loss) is 40F or less, or input
                daily minimum is 25F or less; no evaporative emission
                factors (hot soak, diurnal, running loss, or resting
                loss) will be calculated.
 P
 F                                                  P
 E                                        Alt. o                                                
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