APPENDIX A – 2

AIR QUALITY
CONSTRUCTION EMISSIONS AND IMPACT ANALYSIS

This appendix presents construction emissions data for the new facility site and configuration.

A-2.1 CONSTRUCTION PHASES

Construction of Larkspur III is expected to last approximately 7 months. The construction will occur in the following two main phases:

- Site grading; and,
- Site building (includes concrete pouring and installation of major equipment).

The site where the Larkspur 3 equipment will be installed is approximately 0.7 acres in size and is essentially flat. As such, the site will require only minimum grading and leveling. Site preparation includes finish grading, excavation of footings and foundations, and backfilling operations. After site preparation is finished, the construction of the foundations and structures is expected to begin. Once the foundations are finished, installation and assembly of the mechanical and electrical equipment are scheduled to commence.

Fugitive dust emissions from the construction of Larkspur III will result from:

- Site preparation and finish grading/excavation at the construction site;
- Onsite travel on unpaved surfaces;
- Aggregate and soil loading and unloading operations; and
- Wind erosion of areas disturbed during construction activities.

Combustion emissions during construction will result from:

- Exhaust from the diesel construction equipment used for site preparation, grading, excavation, and construction of onsite structures;
- Exhaust from water trucks used to control construction dust emissions;
- Exhaust from pickup trucks and diesel trucks used to transport workers and materials around the construction site;
- Exhaust from diesel trucks used to deliver concrete, equipment, and construction supplies to the construction site; and exhaust from automobiles used by workers to commute to the construction site.

To determine the potential worst-case daily construction impacts, exhaust and dust emission rates have been evaluated for each source of emissions. Worst-case daily dust emissions are expected to occur during the first 3 months of construction when site preparation occurs. The worst-case daily exhaust emissions are also expected to occur during the first three months of the construction schedule during the site grading and site preparation activities. Annual emissions are based on the average equipment mix during the 8-month construction period.

A-2.2 AVAILABLE MITIGATION MEASURES

The following mitigation measures are proposed to control exhaust emissions from the diesel heavy equipment used during construction of Larkspur III:

- Operational measures, including limits on time spent with the engine idling by shutting down equipment when not in use;

- Regular preventive maintenance to prevent emission increases due to engine problems;
- Use of low sulfur and low aromatic fuel meeting California standards for motor vehicle diesel fuel; and
- Use of low-emitting gas and diesel engines meeting state and federal emissions standards (Tier I, II, and III) for construction equipment, including, but not limited to catalytic converter systems and particulate filter systems.

The following mitigation measures are proposed to control fugitive dust emissions during construction of the project:

- Use either water application or chemical dust suppressant application to control dust emissions from on-site unpaved road travel and unpaved parking areas;
- Use vacuum sweeping and/or water flushing of paved road surface to remove buildup of loose material to control dust emissions from travel on the paved access road (including adjacent public streets impacted by construction activities) and paved parking areas;
- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard;
- Limit traffic speeds on all unpaved site areas to 5 mph;
- Install sandbags or other erosion control measures to prevent silt runoff to roadways;
- Replant vegetation in disturbed areas as quickly as possible;
- Use wheel washers or wash off tires of all trucks exiting construction site; and
- Mitigate fugitive dust emissions from wind erosion of areas disturbed from construction activities (including storage piles) by application of either water or chemical dust suppressant.

A-2.3 ESTIMATION OF EMISSIONS WITH MITIGATION MEASURES

A detailed Excel Workbook was created to develop construction emissions estimates for the entire construction effort. The resulting emissions tables are presented later in this Appendix. Equipment-specific emissions factors were used to estimate mass emissions for all criteria pollutants from diesel-fueled construction equipment (USEPA 2004a; USEPA 1991). For calculations of construction emissions the assumptions were made that the construction of the Project would occur over an 8-month period with an 8-hour workday and a 5-day workweek. The Project engineering contractor provided a list of equipment needed during each month of the construction effort. This list, which is reproduced in Table A-2-1, provided the basis for estimating pollutant emissions throughout the term of construction, and helped to identify the periods of probable maximum short-term emissions. An ultra-low fuel sulfur content of 0.0015 percent by weight (15 ppm) was assumed for all diesel equipment operations.

Fugitive dust emissions resulting from onsite soil disturbances were also estimated in separate worksheets of the Construction Excel Workbook using USEPA emission factors for bulldozing and dirt-pushing, travel on unpaved roads and handling/storage of aggregate materials. A dust control efficiency of 85 percent was assumed to be achieved for these activities by frequent watering or adding chemical dust suppressants when required.

Emissions from on-road heavy trucks and worker commute trips were estimated using emission factors developed by means of the EMFAC2002 model, with inputs representing San Diego County. Construction workers were assumed to commute to the site from the south San Diego County area.

Table A-2-1
Anticipated Construction Equipment

Equipment	Quantity	Months of Service	Horse power Rating
Concrete Truck	1	5	250
Grader	1	3	250
Concrete Boom Truck	1	5	225
Water Trucks	1	8	250
Mobile Cranes	1	5	250

Table A-2-2 and Table A-2-3 respectively, present the estimated maximum daily emissions and total emissions of air pollutants over the 8-month construction project.

TABLE A-2-2
DAILY MAXIMUM CRITERIA POLLUTANT CONSTRUCTION EMISSIONS (lbs/day)

Emission Type	PM10	CO	VOC	NOx	SOx
Site Clearing (Months 1 - 3)					
Combustion exhaust	1.06	7.63	2.82	29.03	0.03
Fugitive dust	0.85	-	-	-	-
Site Clearing Emissions Daily Max	***1.9***	***7.6***	***2.8***	***29.0***	***0.03***
Concrete Pouring (Months 4 – 8)					
Combustion exhaust	1.65	12.15	4.32	42.59	0.04
Fugitive dust	0.63	-	-	-	-
Concrete Pouring Emissions Daily Max	***2.3***	***12.2***	***4.3***	***42.6***	***0.04***
On Road Vehicles (Duration of Project)					
Heavy Trucks	9.32	0.36	0.08	1.29	0.00
Passenger Vehicles	7.78	15.6	1.68	1.68	0.01
Daily Emissions from On-Road Vehicles	***17.1***	***16.0***	***1.8***	***3.0***	***0.0***
Max Daily Emissions from Any Activity	**19.4**	**28.1**	**6.1**	**45.6**	**0.1**

Notes:
- = not applicable
CO = carbon monoxide
lbs = pounds
NO_x = nitrogen oxide(s)
PM_{10} = particulate matter less than 10 micrometers in diameter
VOC = volatile organic compounds
SO_x = sulfur oxide(s)

TABLE A-2-3
TOTAL PROJECT CONSTRUCTION EMISSIONS OF CRITERIA POLLUTANTS (Tons)

Emission Type	PM10	CO	VOC	NOx	SOx
Site Clearing (Months 1 - 3)					
Combustion exhaust	0.01	0.10	0.04	0.36	0.00
Fugitive dust	0.01	-	-	-	-

TABLE A-2-3
TOTAL PROJECT CONSTRUCTION EMISSIONS OF CRITERIA POLLUTANTS (Tons)

Total Emissions from Site Clearing	***0.02***	***0.10***	***0.04***	***0.36***	***0.00***
Concrete Pouring (Months 3 – 7)					
Combustion exhaust	0.09	0.67	0.24	2.34	0.00
Fugitive dust	0.03	-	-	-	-
Total Emissions from Concrete Pouring	***0.11***	***0.67***	***0.24***	***2.34***	***0.00***
On Road Vehicles (Duration of Project)					
Heavy Trucks	0.25	0.00	0.01	0.04	0.00
Passenger Vehicles	0.60	1.20	0.12	0.13	0.00
Total Emissions from On-Road Vehicles	***0.85***	***1.20***	***0.13***	***0.17***	***0.00***
Total Project Emissions (tons)	**1.0**	**2.0**	**0.4**	**2.9**	**0.0**

Notes:
- = not applicable
CO = carbon monoxide
NO_x = nitrogen oxide(s)
PM_{10} = particulate matter less than 10 micrometers in diameter
VOC = volatile compounds
SO_x = sulfur oxide(s)

A-2.4 ANALYSIS OF AMBIENT IMPACTS FROM FACILITY CONSTRUCTION

Ambient air quality impacts from emissions during the construction of Larkspur 3 were estimated using an air quality dispersion modeling analysis. The modeling analysis considers the construction site location, the surrounding topography, and the sources of emissions during construction, including vehicle and equipment exhaust emissions and fugitive dust.

Development of Project emissions estimates over the planned 7-month construction period is described in the previous section. For purposes of evaluating construction air quality impacts, it is useful to break the construction schedule into a sequence of essentially non-overlapping phases, each occurring on specific areas of the site and with characteristic equipment and vehicle requirements. The Excel Workbook used to estimate pollutant emissions from each construction task was organized to conduct separate calculations of equipment exhaust and fugitive dust emissions associated with each distinct construction activity. Emissions from heavy truck trips and worker commuter trips to and from the site during specific construction activities were also included. These worksheets are presented at the end of this appendix.

Each phase of construction will require different numbers and sizes of construction equipment operating at different locations within the Larkspur site. Thus it is not obvious which activity would be likely to produce the highest offsite concentrations for the different pollutants and averaging times governed by ambient air quality standards. Experience shows that the pollutants and averaging times that are generally most important for construction emissions in California are: one-hour NO_2 concentrations and 24-hour $PM_{10}/PM_{2.5}$ concentrations; therefore the focus was on scenarios that would maximize potential offsite impacts for these values. The principal criteria for selecting these modeling scenarios were magnitude of estimated emissions, activity duration and proximity of emission sources to the Larkspur site boundary. The selected scenarios for the Larkspur construction effort are:

- Site Grading (Months 1-3)

- Site Building (Months 4-8).

For each scenario, short-term impacts were modeled using the equipment grouping that would be expected to cause the highest emissions on the same day. All construction activities were assumed to occur during an 8-hour day. Calculation of annual emissions assumed all construction activities that would occur over the entire 8-month construction period.

A-2.5 EXISTING AMBIENT LEVELS

As with the modeling analysis of project operating impacts (Section 3.1), monitoring stations delineated in Section 3.1 were used to establish the ambient background levels for the construction impact modeling analysis.

A-2.6 DISPERSION MODELING METHODS

As in the analysis of project operating impacts, the AERMOD model was used to estimate ambient impacts from construction activities. A detailed discussion of the AERMOD dispersion model is included in Section 3.1.2.3. The emission sources for the construction site were grouped into two categories: exhaust emissions and dust emissions. The exhaust emissions were modeled as multiple volume sources located at the areas of the construction site where the activities are expected to occur. For NOx, the ozone limiting method (OLM) was used and the equipment assumed to be onsite were modeled as point sources with stack parameters of 4 meter stack height, 622ºK stack temperature, stack diameters of 0.076 to 0.127 meters, and exit velocities between 53.2 to 76.6 meters per second, depending on the size (horsepower) of the specific piece of construction equipment. The stack parameters were obtained from the California Air Resources Board document *Risk Management Guidance for the Permitting of New Stationary Diesel-Fueled Engines. October 2000.* The NO_2 emission rates for each piece of equipment were used. The emission rates were calculated based on the hours of operation, horsepower, and SCAB Fleet Average Emission Factors for 2007. The dust emissions were modeled as a single area source that covered the total area of the construction site with an effective emission plume height of 2 meters. The construction impacts modeling analysis used the same receptor locations as used for the project operating impact analysis. A detailed discussion of the receptor locations is included in Sections 3.1.7 and 3.1.8.

To determine the construction impacts on short-term ambient standards (24 hours and less), the worst-case daily onsite construction emission levels shown in Table A-2-2 were used. The annual onsite emission levels shown in Table A-2-3 were used for pollutants with annual average ambient standards. As with the project operating impact analysis, the meteorological data set used for the construction emission impacts analysis is data collected from the AQMD Otay Mesa met station for 2000-2002.

A-2.7 MODELING RESULTS

Based on the emission rates of NO_x, SO_2, CO, $PM_{2.5}$, and PM_{10} and the meteorological data, the model calculates hourly and annual ambient impacts for each pollutant. As mentioned above, the modeled 1-hour, 3-hour 8-hour, and 24-hour ambient impacts are based on the worst-case daily emission rates of NO_x, SO_2, CO, $PM_{2.5}$, and PM_{10}. The annual impacts are based on the annual emission rates of these pollutants.

The one-hour and annual average concentrations of NO_2 were computed using the AERMOD OLM. The model incorporated recorded hourly ozone data from the Otay Mesa monitoring station for 2000-2002.

The construction modeling analysis results are shown in Tables A-2-4a and A-2-4b. Also included in the tables are the maximum background levels that have occurred in the last three years and the resulting total ambient impacts. As shown in Tables A-2-4a and A-2-4b, with the exception of 24-hour $PM_{2.5}$ and PM_{10} impacts for the state standard, construction impacts for all modeled pollutants are expected to be below the most stringent state and national standards. The state 24-hour $PM_{2.5}$ and PM_{10} standards are already exceeded in the absence of construction emissions for Larkspur 3.

Table A-2-2a
AERMOD Construction Impact Modeling Results -- Site Grading

Pollutant	Averaging Period	Maximum Modeled Impact ($\mu g/m^3$)	PSD Significant Impact Level ($\mu g/m^3$)	Background ($\mu g/m^3$)	Maximum Total Predicted Concentration ($\mu g/m^3$)	Most Stringent AAQS ($\mu g/m^3$)	UTM Coordinates	
							East (m)	North (m)
Construction Impacts – Site Grading								
CO	1 hour	369.7	NA	9,600	9,996.7	23,000	505,375	3,603,050
	8 hour	66.1	NA	5,543	5,609.1	10,000	505,375	3,603,150
NO_2	1 hour*	86.6	NA	235.0	321.6	338	505,368	3,603,143
	Annual	2.49	NA	45.06	47.6	56	505,425	3,603,100
PM_{10}	24 hour	18.9	NA	155	173.9	50	505,375	3,603,150
	Annual	2.23	NA	58	60.2	20	505,392	3,603,097
$PM_{2.5}$	24 hour	6.75	NA	41	47.8	35	505,375	3,603,150
	Annual	0.49	NA	13.9	14.4	12	505,392	3,603,097
SO_2	1 hour	1.43	NA	117.55	119.0	655	505,375	3,603,050
	3 hour	0.66	NA	80.98	81.6	1,300	505,375	3,603,150
	24 hour	0.14	NA	39.18	39.3	105	505,375	3,603,150
	Annual	0.002	NA	15.67	15.7	80	505,425	3,603,100

Notes:

$\mu g/m^3$ = micrograms per cubic meter
CO = carbon monoxide
ISCST3 = USEPA Industrial Source Complex model, Version 02035
NA = Not applicable
NAAQS = Most stringent ambient air quality standard for the averaging period
NO_2 = nitrogen dioxide
OLM = ozone limiting method
PM_{10} = particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter. All PM emissions during operation assumed to be $PM_{2.5}$
* = NOX_OLM results with actual ozone concentrations from Otay monitoring station
PSD = Prevention of Significant Deterioration
SO_2 = sulfur dioxide
UTM = Universal Transverse Mercator
m = meters

Table A-2-2b
AERMOD Construction Impact Modeling Results -- Site Building

Pollutant	Averaging Period	Maximum Modeled Impact (µg/m³)	PSD Significant Impact Level (µg/m³)	Background (µg/m³)	Maximum Total Predicted Concentration (µg/m³)	Most Stringent AAQS (µg/m³)	UTM Coordinates	
							East (m)	North (m)
Construction Impacts – Building								
CO	1 hour	562.0	NA	9,600	10,162	23,000	505,375	3,603,050
	8 hour	93.7	NA	5,543	5,636.7	10,000	505,375	3,603,150
NO_2	1 hour*	101.4	NA	235.0	336.4	338	505,425	3,603,100
	Annual	2.49	NA	45.06	47.6	56	505,425	3,603,100
PM_{10}	24 hour	17.6	NA	155	172.6	50	505,375	3,603,150
	Annual	2.23	NA	58	60.2	20	505,392	3,603,097
$PM_{2.5}$	24 hour	8.29	NA	41	49.3	35	505,375	3,603,150
	Annual	0.49	NA	13.9	14.4	12	505,392	3,603,097
SO_2	1 hour	1.87	NA	117.55	119.4	655	505,375	3,603,050
	3 hour	0.86	NA	80.98	81.8	1,300	505,375	3,603,150
	24 hour	0.19	NA	39.18	39.4	105	505,375	3,603,150
	Annual	0.002	NA	15.67	15.7	80	505,425	3,603,100

Notes:

µg/m³ = micrograms per cubic meter
CO = carbon monoxide
ISCST3 = USEPA Industrial Source Complex model, Version 02035
NA = Not applicable
NAAQS = Most stringent ambient air quality standard for the averaging period
NO_2 = nitrogen dioxide
OLM = ozone limiting method
PM_{10} = particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter. All PM emissions during operation assumed to be $PM_{2.5}$
* = NOX_OLM results with actual ozone concentrations from Otay monitoring station
PSD = Prevention of Significant Deterioration
SO_2 = sulfur dioxide
UTM = Universal Transverse Mercator
m = meters

Annual Emissions

			Daily Emissions (lb/day)					
Activity	**Months**	**Emission Type**	**PM10**	**PM2.5**	**CO**	**VOC**	**NOx**	**SOx**
Site Clearing	3	Combustion exhaust	1.06	0.97	7.63	2.82	29.03	0.03
	Month 1-3	Fugitive dust	0.68	0.14				
Total Emissions from Site Clearing			**1.7**	**1.1**	**7.6**	**2.8**	**29.0**	**0.0**
Concrete Pouring	5	Combustion exhaust	1.65	1.52	12.15	4.32	42.59	0.04
	Months 4-8	Fugitive dust	0.63	0.13				
Total Emissions from Concrete Pouring			**2.3**	**1.6**	**12.1**	**4.3**	**42.6**	**0.0**
On Road Vehicles	8	Heavy Truck	9.27		0.00	0.00	0.01	0.00
	Months 1 - 8	Passenger Vehicles	7.78		15.6	1.68	1.68	0.01
Total Emissions from On Road Vehicles			**17.0**	**0.0**	**15.6**	**1.7**	**1.7**	**0.0**
Highest Daily Emissions from Any Activity (pounds)			**19.3**	**1.6**	**27.7**	**6.0**	**44.3**	**0.1**

			Annual Emissions (tons/year)					
Activity	**Months**	**Emission Type**	**PM10**	**PM2.5**	**CO**	**VOC**	**NOx**	**SOx**
Site Clearing	3	Combustion exhaust	0.02	0.02	0.14	0.05	0.52	0.00
	Month 1-3	Fugitive dust	0.02	0.00				
Total Emissions from Site Clearing			**0.0**	**0.0**	**0.1**	**0.1**	**0.5**	**0.0**
Concrete Pouring	5	Combustion exhaust	0.09	0.08	0.67	0.24	2.34	0.00
	Months 4-8	Fugitive dust	0.03	0.01				
Total Emissions from Concrete Pouring			**0.1**	**0.1**	**0.7**	**0.2**	**2.3**	**0.0**
On Road Vehicles	8	Heavy Truck	0.25		0.00	0.00	0.00	0.00
	Months 1 - 8	Passenger Vehicles	0.60		1.20	0.13	0.13	0.00
Total Emissions from On Road Vehicles			**0.8**	**0.0**	**1.2**	**0.1**	**0.1**	**0.0**
Total Annual Emissions from All Activities			**1.0**	**0.1**	**2.0**	**0.4**	**3.0**	**0.0**

Site Clearing - Diesel Fired Equipment

Activity occurs in months 1, 2 and 3 only, but only 12 days per month.

					Emission factors (lb/hr)						Hourly Emissions (lb/hr)						Daily Emissions (lb/day)						Annual Emissions (ton/yr)					
Equipment	**Quantity**	**Hours/Day**	**Horsepower**	**Days/year**	**PM10**	**PM2.5**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO**	**VOC**	**NOx**	**SOx**
Grader	1	7	250	36	0.080	0.074	0.581	0.209	2.148	0.002	0.08	0.07	0.58	0.21	2.15	0.00	0.56	0.52	4.07	1.46	15.04	0.01	0.010	0.009	0.073	0.026	0.271	0.000
Water Truck	1	7	250	36	0.071	0.065	0.510	0.193	1.999	0.002	0.07	0.07	0.51	0.19	2.00	0.00	0.50	0.46	3.57	1.35	14.00	0.01	0.009	0.008	0.064	0.024	0.252	0.000
										Total	**0.15**	**0.14**	**1.09**	**0.40**	**4.15**	**0.00**	**1.06**	**0.97**	**7.63**	**2.82**	**29.03**	**0.03**	**0.02**	**0.02**	**0.14**	**0.05**	**0.52**	**0.00**

Notes:
Equipment list, quantity, horsepower, and hours of operation from Washington Group.
Emission factors from CARB Off-road Mobile Source Emission Factors (2006-2020). (2007 data used).
PM2.5 emission factors from updated CEIDARS List with PM2.5 fractions. PM2.5 numbers obtained by multiplying the PM10 values by fraction in CEIDARS list for onroad or offroad diesel vehicles.

MODEL EMISSION RATE INPUTS

CO 1-HR	CO 8-HR	NOx 1-HR	NOx Annual
0.36	0.36	1.38	0.040

PM10 24-HF	PM10 Anr	PM2.5 24-H	PM2.5 Annual
0.04	0.0014	0.04	0.0013

SO2 1-HR	SO2 3-HF	SO2 24-HR	SO2 Annual
1.30E-03	1.30E-03	1.14E-03	3.74E-05

Minor differences between inputs and calculated values are due to rounding differences.
(3 volume sources)

Site Clearing

Travel on unpaved road

Activity occurs in months 1, 2 and 3 only, but only 12 days per month.

$F = 2.1 * G/12 * H/30 * (J/3)^{0.7} * (I/4)^{0.5} * (365-K)/365$ SCAQMD Table A9-9-D

Emission factor for vehicle travel on unpaved roads (lb/VMT)

16 G = Surface silt loading (%) (from Table A9-9-D-1 for farm road)
4 H = Mean vehicle speed (mph)
7 I = Mean number of wheels on vehicle (average from equipment listed below)
13.00 J = Mean vehicle weight (ton) (from Caterpillar website, average of 5 pieces of equipment)
38 K = Number of days with >= 0.01 inches of precipitation per year (from WRCC Chula Vista Co-op)
1.235 PM10 lb/VMT

Equipment	Quantity	Hours/Day	Days/year	Miles travelled per hour	Watering Control Efficiency	PM10 Emissions (lb/hr)	PM10 Emissions (lb/day)	PM10 Emissions (tons/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (lb/day)	PM2.5 Emissions (tons/yr)
Grader	1	7	36	0.25	85%	0.05	0.32	0.01	0.01	0.07	0.00
Water Truck	1	7	36	0.25	85%	0.05	0.32	0.01	0.01	0.07	0.00
					Total	**0.09**	**0.65**	**0.01**	**0.02**	**0.14**	**0.00**

Equipment weight from Caterpillar website (www.cat.com/cda)
Water efficiency from CEQA Table 11-4 watering 3 times daily or using chemical suppressants
PM2.5 emission factors from updated CEIDARS List with PM2.5 fractions.
PM2.5 numbers obtained by multiplying the PM10 values by fraction in CEIDARS list for appropriate fugitive dust sources.

Grading

Activity occurs in months 1 and 2 only, but only 12 days per month.

$E = p^* .051 * (S)^{2.0}$

0.6 p = particle size multiplier = 0.60 for PM10
5 S = avg speed of vehicle (mph) (from AP-42 Table 11.9-3)
0.77 lb/VMT EPA AP-42 Table 11.9-1 EMISSION FACTOR EQUATIONS FOR
PM10 UNCONTROLLED OPEN DUST SOURCES AT WESTERN SURFACE COAL MINES

Equipment	Quantity	Hours/Day	Days/year	Miles travelled per hour	Watering Control Efficiency	PM10 Emissions (lb/hr)	PM10 Emissions (lb/day)	PM10 Emissions (tons/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (lb/day)	PM2.5 Emissions (tons/yr)
Grader	1	7	36	0.25	85%	0.03	0.20	0.00	0.01	0.04	0.00
					Total	**0.03**	**0.20**	**0.00**	**0.01**	**0.04**	**0.00**

Water efficiency from CEQA Table 11-4 watering 3 times daily or using chemical suppressants

MODEL EMISSION RATE INPUTS

Equipment	Weight (tons)	Wheels	
Water Truck	13.00	10	
Loader	13.00	4	
	26.00	14.00	**TOTAL**
	13.0	7	AVERAGE

PM10 24-HI	PM10 Annu	PM2.5 24-H	PM2.5 Annual
0.106	0.003	0.023	7.48E-04

Minor differences between inputs and calculated values are due to rounding differences.

Concrete Pouring - Diesel Fired Equipment

Activity occurs in months 4 through 8 only.

					Emission factors (lb/hr)						Hourly Emissions (lb/hr)						Daily Emissions (lb/day)						Annual Emissions (ton/yr)					
Equipment	**Quantity**	**Hours/Day**	**Horsepower**	**Days/year**	**PM10**	**PM2.5**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO**	**VOC**	**NOx**	**SOx**
Concrete Truck	1	8	250	110	0.071	0.065	0.510	0.193	1.999	0.002	0.07	0.07	0.51	0.19	2.00	0.00	0.57	0.52	4.08	1.54	15.99	0.02	0.03	0.03	0.22	0.08	0.88	0.00
Concrete Boom	1	8	225	110	0.078	0.072	0.596	0.199	1.858	0.002	0.08	0.07	0.60	0.20	1.86	0.00	0.62	0.57	4.77	1.59	14.86	0.01	0.03	0.03	0.26	0.09	0.82	0.00
Crane	1	8	250	110	0.057	0.053	0.412	0.148	1.467	0.001	0.06	0.05	0.41	0.15	1.47	0.00	0.46	0.42	3.30	1.18	11.73	0.01	0.03	0.02	0.18	0.07	0.65	0.00
										Total	**0.21**	**0.19**	**1.52**	**0.54**	**5.32**	**0.01**	**1.65**	**1.52**	**12.15**	**4.32**	**42.59**	**0.04**	**0.09**	**0.08**	**0.67**	**0.24**	**2.34**	**0.00**

Notes:
Equipment list, quantity, horsepower, and hours of operation from Washington Group.
Emission factors from CARB Off-road Mobile Source Emission Factors (2006-2020). (2007 data used). Values presented are scaled to match the HP presented.
PM2.5 emission factors from updated CEIDARS List with PM2.5 fractions. PM2.5 numbers obtained by multiplying the PM10 values by fraction in CEIDARS list for onroad or offroad diesel vehicles.

MODEL EMISSION RATE INPUTS

CO 1-HR	CO 8-HR	NOx 1-HR	NOx Annual
0.51	0.51	1.77	0.178

PM10 24-HR	PM10 Anr	PM2.5 24-H	PM2.5 Annual
0.07	0.007	0.06	0.006

SO2 1-HR	SO2 3-HR	SO2 24-HR	SO2 Annual
0.0017	0.0017	0.0017	1.67E-04

Minor differences between inputs and calculated values are due to rounding differences. (3 volume sources)

Building

Travel on unpaved road

Activity occurs in months 4 through 8 only.

$F = 2.1 * G/12 * H/30 * (J/3)^{0.7} * (I/4)^{0.5} * (365-K)/365$ SCAQMD Table A9-9-D

Emission factor for vehicle travel on unpaved roads (lb/VMT)

16 G = Surface silt loading (%) (from Table A9-9-D-1 for farm road)
4 H = Mean vehicle speed (mph)
10 I = Mean number of wheels on vehicle (from Table A9-9-D-3)
21.50 J = Mean vehicle weight (ton) (average from equipment listed below)
38 K = Number of days with >= 0.01 inches of precipitation per year (from WRCC Chula Vista Co-op)
2.099 PM10 lb/VMT

Equipment	Quantity	Hours/Day	Days/year	Miles travelled per hour	Watering Control Efficiency	PM10 Emissions (lb/hr)	PM10 Emissions (lb/day)	PM10 Emissions (tons/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (lb/day)	PM2.5 Emissions (tons/yr)
Concrete Truck	1	8	110	0.25	85%	0.08	0.63	0.03	0.02	0.13	0.01
Concrete Boom Tru	1	8	110	0	85%	0.00	0.00	0.00	0.00	0.00	0.00
Crane	1	8	110	0	85%	0.00	0.00	0.00	0.00	0.00	0.00
					Total	**0.08**	**0.63**	**0.03**	**0.02**	**0.13**	**0.01**

Equipment weight from Caterpillar website (www.cat.com/cda)
Water efficiency from CEQA Table 11-4 watering 3 times daily or using chemical suppressants
PM2.5 emission factors from updated CEIDARS List with PM2.5 fractions.
PM2.5 numbers obtained by multiplying the PM10 values by fraction in CEIDARS list for appropriate fugitive dust sources.

Equipment	Wheels	Weight (tons)	
Concrete Truck	10	30	
Boom Truck	10	13	
	20		**TOTAL**
	10	21.50	**AVERAGE**

MODEL EMISSION RATE INPUTS

PM10 24-Hl	PM10 Annu	PM2.5 24-H	PM2.5 Annual
0.08	0.008	0.017	0.0017

Minor differences between inputs and calculated values are due to rounding differences.

EMISSION CALCULATIONS FOR ONROAD VEHICLES

Passenger vehicle travel on paved roads
Fugitive Emissions

0.0064 PM10 lb/VMT (from Table A9-9-B-1 for major streets/highways) CEQA Table A9-9-B

Equipment	Monthly Average Number of Employees	Hours/Day	Days/year	Miles travelled per trip	Total miles travelled per year	PM10 Emissions (lb/hr)	PM10 Emissions (lb/day)	PM10 Emissions (tons/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (lb/day)	PM2.5 Emissions (tons/yr)
All Employee Vehicles	40	2	154	30	184800	3.84	7.68	0.591	0.65	1.30	0.10

Assumed average distance travelled off site for all employees commuting will be 15 miles
times 2 for return trip 30 miles
Employee numbers based on average employees on site (40) for 17 months,
based on data provided by the Washington Group.
Assumed 1 employee per vehicle
Water efficiency from CEQA Table 11-4 watering 3 times daily or using chemical suppressants
PM2.5 emission factors from updated CEIDARS List with PM2.5 fractions.
PM2.5 numbers obtained by multiplying the PM10 values by fraction in CEIDARS list for appropriate fugitive dust sources.

Passenger vehicle travel on paved roads
Combustion Emissions

						Emission Factors (lbs/VMT)						Daily Emission (lbs/day)						Annual Emission (TPY)					
Equipment	Monthly Average Number of Employees	Hours/Day	Days/year	Miles travelled per trip	Total miles travelled per year	PM10	PM2.5	CO	VOC	NOx	SOx	PM10	PM2.5	CO	VOC	NOx	SOx	PM10	PM2.5	CO	VOC	NOx	SOx
All Employee Vehicles	40	2	154	30	184800	0.00008		0.013	0.0014	0.0014	0.000009	0.096		15.6	1.68	1.68	0.011	0.007		1.201	0.129	0.129	0.001

Emission factors from BAAQMD EMFAC 2002 Ver 2.2, 4.03 On Road Vehicles.
LDP/LDT Weighted Avg Efs.

EMISSION CALCULATIONS FOR ONROAD HEAVY DUTY VEHICLES

EMISSION FACTOR FOR ONROAD VEHICLES

Onroad Vehicle	Fuel Type	Vehicle Count	Weight (lbs)	Vehicle Type	EF (lbs/VMT) [1]				
					TOC	CO	NOx	PM10	SO2
Semi Truck	D	1	26000	HHD	1.31E-05	5.55E-05	2.01E-04	8.06E-06	2.12E-07
Dump Truck	D	1	26000	HHD	1.31E-05	5.55E-05	2.01E-04	8.06E-06	2.12E-07
Concrete Truck	D	1	60000	HHD	1.31E-05	5.55E-05	2.01E-04	8.06E-06	2.12E-07
Service Truck	D	1	26000	HHD	1.31E-05	5.55E-05	2.01E-04	8.06E-06	2.12E-07
Heavy Haul Truck	D	1	60000	HHD	1.31E-05	5.55E-05	2.01E-04	8.06E-06	2.12E-07

1. To obtain the emission factors, EMFAC2007 was run in the "planning inventory" mode for the modeling year of 2007. The San Diego County average fleet information was chosen, and the inventory was run for winter. The emission factor for a given vehicle category was back calculated using the daily emissions and daily VMT for that vehicle category.

EMISSION CALCULATION FOR ONROAD VEHICLES

Onroad Vehicles[1]	Total Days[2]	Total Trips / Activity	Total Trips / Day	Round Trip Distance (mile)	Daily Total VMT	Daily Emissions (lbs)					Project Emissions (lbs)				
						TOC	CO	NOx	PM10	SO2	TOC	CO	NOx	PM10	SO2
Semi Truck	135	40	0.3	10	3.0	3.89E-05	1.64E-04	5.96E-04	2.39E-05	6.28E-07	5.26E-03	2.22E-02	8.04E-02	3.22E-03	8.48E-05
Dump Truck	54	36	0.7	15	10.0	1.31E-04	5.55E-04	2.01E-03	8.06E-05	2.12E-06	7.10E-03	3.00E-02	1.09E-01	4.35E-03	1.14E-04
Concrete Truck	44	52	1.2	15	17.7	2.33E-04	9.83E-04	3.56E-03	1.43E-04	3.76E-06	1.03E-02	4.33E-02	1.57E-01	6.28E-03	1.65E-04
Service Truck	69	21	0.3	15	4.6	6.00E-05	2.53E-04	9.18E-04	3.68E-05	9.68E-07	4.14E-03	1.75E-02	6.33E-02	2.54E-03	6.68E-05
Heavy Haul Truck	135	12	0.1	10	0.9	1.17E-05	4.93E-05	1.79E-04	7.16E-06	1.88E-07	1.58E-03	6.66E-03	2.41E-02	9.67E-04	2.54E-05
Total					**Total**	**0.00 lbs**	**0.00 lbs**	**0.01 lbs**	**0.00 lbs**	**0.00 lbs**	**0.03 lbs**	**0.12 lbs**	**0.43 lbs**	**0.02 lbs**	**0.00 lbs**
											0.00	**0.00**	**0.00**	**0.00**	**0.0 tons**

1. Heavy vehicle round trips per phase provided by the Washington Group.
2. Based on equipment usage as given for each respective phase.

FUGITIVE EMISSIONS FROM VEHICLE TRAFFIC ON PAVED ROAD

Vehicle Type	Mean Vehicles Speed (mph) [Vehicles Weight (tons)]	Total No. Of Trips / Day	PM10 EF (lbs/VMT) [1]	Round Trip Distance (mile)	Daily Total VMT (all units)	Total No. of Days Operated	VMT/ Project	Daily Emissions (lbs)	Project Emissions (lbs)
Semi Truck	[13]	0.30	0.1117	10	3.0	135	400	0.33	44.66
Dump Truck	[13]	0.67	0.1117	15	10.0	54	540	1.12	60.29
Concrete Truck	[30]	1.18	0.3926	15	17.7	44	780	6.96	306.23
Service Truck	[13]	0.30	0.1117	15	4.6	69	315	0.51	35.17
Heavy Haul Truck	[30]	0.09	0.3926	10	0.9	135	120	0.35	47.11
Total								**9.3**	**493**

1. EF are calculated using equations in AP-42, Section 13.2.1 Equation 1.

EF calculations are based on the following assumptions:

Silt Loading 0.04 oz/yd^2 1.356 g/m^2 SCAQMD CEQA Table A9-9-C-1.

Dump And Delivery Trucks

	HHDT-DSL
Vehicles	28021
VMT/1000	2653
Trips	471663

Total Organic Gas Emissions	
Run Exh	2.8
Idle Exh	0.3
Start Ex	0

Total Ex	3.1
Diurnal	0
Hot Soak	0
Running	0
Resting	0

Total	3.1
EF (lbs/VMT)	**1.31E-05**

Carbon Monoxide Emissions	
Run Exh	11.89
Idle Exh	1.19
Start Ex	0

Total Ex	13.08
EF (lbs/VMT)	**5.55E-05**

Oxides of Nitrogen Emissions	
Run Exh	45.67
Idle Exh	1.75
Start Ex	0

Total Ex	47.42
EF (lbs/VMT)	**2.01E-04**

Carbon Dioxide Emissions (000)	
Run Exh	4.93
Idle Exh	0.11
Start Ex	0

Total Ex	5.04
EF (lbs/VMT)	**2.14E-05**

PM10 Emissions	
Run Exh	1.71
Idle Exh	0.05
Start Ex	0

Total Ex	1.76
TireWear	0.07
BrakeWr	0.06

Total	1.9
EF (lbs/VMT)	**8.06E-06**

Lead	0
SOx	0.05
EF (lbs/VMT)	**2.12E-07**

Fuel Consumption (000 gallons)	
Gasoline	0
Diesel	453.63

Title : San Diego County Subarea Winter CYr 2007 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2007/03/09 11:39:20
Scen Year: 2007 -- All model years in the range 1965 to 2007 selected
Season : Winter
Area : San Diego County
I/M Stat : Enhanced Interim (2005)
Emissions: Tons Per Day

	- - - Light Duty Passenger Cars - - -				- - - - - Light Duty Trucks - - - - -				- - - - - Medium Duty Trucks - - - -				- - - - Heavy Duty Trucks - - - - Gasoline Trucks - - - -				Diesel	Total HD	Urban	Motor-	All
	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Total	Trucks	Trucks	Buses	cycles	Vehicles
Vehicles	25369.	1109840.	5634.	1140840.	12916.	701793.	12682.	727391.	3083.	240745.	16029.	259857.	3017.	27937.	30954.	28021.	58975.	858.	80847.	2268770.
VMT/1000	434.	41476.	143.	42054.	263.	28737.	457.	29457.	76.	10652.	797.	11524.	33.	596.	629.	2653.	3283.	121.	784.	87224.
Trips	103497.	7022700.	32000.	7158190.	53575.	4460660.	79122.	4593360.	27454.	2476500.	195171.	2699130.	35875.	217425.	253299.	471663.	724962.	3430.	161678.	15340700.
Total Organic Gas Emissions																				
Run Exh	3.22	5.70	0.03	8.95	1.98	3.98	0.04	6.01	0.70	2.86	0.22	3.78	0.26	0.70	0.95	2.80	3.76	0.14	3.62	26.25
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.06	0.00	0.01	0.02	0.30	0.32	0.00	0.00	0.37
Start Ex	0.65	5.43	0.00	6.08	0.33	3.33	0.00	3.67	0.20	2.27	0.00	2.47	0.44	0.47	0.91	0.00	0.91	0.00	0.47	13.60
Total Ex	3.87	11.13	0.03	15.03	2.32	7.31	0.04	9.67	0.90	5.18	0.22	6.31	0.70	1.18	1.88	3.10	4.98	0.14	4.09	40.22
Diurnal	0.17	1.02	0.00	1.19	0.09	0.54	0.00	0.63	0.01	0.15	0.00	0.16	0.00	0.01	0.01	0.00	0.01	0.00	0.18	2.17
Hot Soak	0.56	1.90	0.00	2.46	0.29	1.01	0.00	1.31	0.05	0.36	0.00	0.41	0.03	0.01	0.04	0.00	0.04	0.00	0.15	4.37
Running	2.37	5.09	0.00	7.46	0.82	4.57	0.00	5.38	0.12	2.15	0.00	2.28	0.20	0.15	0.35	0.00	0.35	0.00	0.59	16.07
Resting	0.16	0.75	0.00	0.90	0.08	0.42	0.00	0.50	0.01	0.12	0.00	0.13	0.00	0.00	0.01	0.00	0.01	0.00	0.13	1.66
Total	7.14	19.88	0.03	27.05	3.60	13.85	0.04	17.49	1.09	7.97	0.22	9.28	0.93	1.36	2.29	3.10	5.39	0.14	5.14	64.49
Carbon Monoxide Emissions																				
Run Exh	38.66	125.85	0.12	164.64	23.13	102.43	0.30	125.86	11.64	46.97	0.96	59.57	6.03	11.73	17.76	11.89	29.65	0.87	46.56	427.13
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.02	0.32	0.01	0.07	0.09	1.19	1.28	0.00	0.00	1.60
Start Ex	3.54	56.27	0.00	59.81	1.82	38.97	0.00	40.80	1.46	25.18	0.00	26.64	3.47	7.15	10.62	0.00	10.62	0.03	1.66	139.56
Total Ex	42.20	182.12	0.12	224.45	24.95	141.40	0.30	166.66	13.10	72.45	0.97	86.52	9.52	18.95	28.47	13.08	41.55	0.90	48.22	568.29
Oxides of Nitrogen Emissions																				
Run Exh	2.39	15.04	0.25	17.69	1.44	16.13	0.83	18.39	0.58	8.50	4.61	13.70	0.17	2.77	2.94	45.67	48.61	2.26	1.27	101.91
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.05	0.00	0.00	0.00	1.75	1.75	0.00	0.00	1.80
Start Ex	0.16	3.74	0.00	3.90	0.08	3.55	0.00	3.63	0.04	3.63	0.00	3.67	0.06	0.92	0.97	0.00	0.97	0.00	0.06	12.24
Total Ex	2.55	18.78	0.25	21.59	1.52	19.68	0.83	22.02	0.62	12.13	4.65	17.41	0.23	3.69	3.92	47.42	51.34	2.26	1.32	115.94
Carbon Dioxide Emissions (000)																				
Run Exh	0.25	17.37	0.06	17.68	0.15	14.88	0.18	15.21	0.06	8.14	0.45	8.65	0.03	0.44	0.47	4.93	5.40	0.31	0.10	47.36
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.11	0.11	0.00	0.00	0.12
Start Ex	0.02	0.57	0.00	0.59	0.01	0.44	0.00	0.45	0.01	0.23	0.00	0.23	0.01	0.01	0.02	0.00	0.02	0.00	0.01	1.31
Total Ex	0.27	17.94	0.06	18.27	0.16	15.33	0.18	15.66	0.06	8.38	0.46	8.90	0.03	0.45	0.49	5.04	5.53	0.31	0.11	48.79
PM10 Emissions																				
Run Exh	0.02	0.54	0.02	0.57	0.01	0.70	0.03	0.74	0.00	0.27	0.05	0.32	0.00	0.01	0.01	1.71	1.72	0.04	0.04	3.43
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.00	0.00	0.05
Start Ex	0.00	0.05	0.00	0.05	0.00	0.06	0.00	0.06	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14
Total Ex	0.02	0.59	0.02	0.63	0.01	0.76	0.03	0.80	0.00	0.29	0.05	0.34	0.00	0.01	0.01	1.76	1.77	0.04	0.04	3.62
TireWear	0.00	0.37	0.00	0.37	0.00	0.25	0.00	0.26	0.00	0.10	0.01	0.11	0.00	0.01	0.01	0.07	0.08	0.00	0.00	0.83
BrakeWr	0.01	0.57	0.00	0.58	0.00	0.40	0.01	0.41	0.00	0.15	0.01	0.16	0.00	0.01	0.01	0.06	0.07	0.00	0.01	1.23
Total	0.03	1.53	0.02	1.58	0.02	1.41	0.04	1.47	0.01	0.54	0.07	0.62	0.00	0.02	0.03	1.90	1.92	0.04	0.05	5.68
Lead	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SOx	0.00	0.18	0.00	0.18	0.00	0.15	0.00	0.15	0.00	0.08	0.00	0.09	0.00	0.00	0.01	0.05	0.05	0.00	0.00	0.48
Fuel Consumption (000 gallons)																				
Gasoline	35.68	1869.53	0.00	1905.21	21.32	1594.08	0.00	1615.40	8.99	870.73	0.00	879.72	5.20	49.88	55.08	0.00	55.08	1.88	20.46	4477.75
Diesel	0.00	0.00	5.14	5.14	0.00	0.00	15.75	15.75	0.00	0.00	41.03	41.03	0.00	0.00	0.00	453.63	453.63	26.73	0.00	542.29

Title : BEC Heavy Duty Trucks

Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2007/02/25 16:40:45
Scen Year: 2007 -- All model years in the range 1965 to 2007 selected
Season : Winter
Area : Fresno County
I/M Stat : Enhanced Interim (2005)
Emissions: Tons Per Day

	Light Duty Trucks 1 (T1)				Light Duty Trucks 2 (T2)				Medium Duty Trucks (T3)				Light-Heavy Duty Trucks 1 (T4)				Light-Heavy Duty Trucks 2 (T5)				Medium-Heavy Duty Trucks (T6)				HH Duty	School Buses		Urban Buses		Total
	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Diesel	Total	Diesel Trks	Gas	Diesel	Gas	Diesel	Buses
Vehicles	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	12792.	0.	0.	0.	0.	0.
VMT/1000	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2117.	0.	0.	0.	0.	0.
Trips	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	64732.	0.	0.	0.	0.	0.
Total Organic Gas Emissions																														
Run Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.31	0.00	0.00	0.00	0.00	0.00
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.43	0.00	0.00	0.00	0.00	0.00
Start Ex	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Ex	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.73	0.00	0.00	0.00	0.00	0.00
Diurnal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hot Soak	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Running	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Resting	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.73	0.00	0.00	0.00	0.00	0.00
Carbon Monoxide Emissions																														
Run Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.02	0.00	0.00	0.00	0.00	0.00
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00
Start Ex	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Ex	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.70	0.00	0.00	0.00	0.00	0.00
Oxides of Nitrogen Emissions																														
Run Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.67	0.00	0.00	0.00	0.00	0.00
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.37	0.00	0.00	0.00	0.00	0.00
Start Ex	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Ex	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	47.04	0.00	0.00	0.00	0.00	0.00
Carbon Dioxide Emissions (000)																														
Run Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.28	0.00	0.00	0.00	0.00	0.00
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00
Start Ex	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Ex	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.42	0.00	0.00	0.00	0.00	0.00
PM10 Emissions																														
Run Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.75	0.00	0.00	0.00	0.00	0.00
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00
Start Ex	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Ex	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.81	0.00	0.00	0.00	0.00	0.00
TireWear	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00
BrakeWr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.96	0.00	0.00	0.00	0.00	0.00
Lead	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SOx	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00
Fuel Consumption (000 gallons)																														
Gasoline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	397.86	0.00	0.00	0.00	0.00	0.00