APPENDIX 5.1E

Construction Emissions and Impact Analysis

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Construction Emissions and Impact Analysis

5.1E.1 Onsite Construction

The initial construction of the LEC is expected to last approximately 24 months. Construction activities will occur in the following main phases:

Site preparation;

Foundation work;

Installation of major equipment; and

Construction/installation of major structures.

5.1E.1.1 Construction Activities

The construction of LEC will begin with site preparation activities, which include installation of drainage systems, underground utilities and conduits, grading and backfilling operations, and installation of pilings. After site preparation is finished, the construction of the foundations and structures is expected to begin. Once the foundations and structures are finished, installation and assembly of the mechanical and electrical equipment are scheduled to commence.

Fugitive dust emissions from the construction of the project will result from:

- Dust entrained during site preparation and grading/excavation at the construction site;
- Dust entrained during onsite travel on paved and unpaved surfaces;
- Dust entrained during 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, trenching, and construction of onsite structures;
- Exhaust from water trucks used to control construction dust emissions;
- Exhaust from portable welding machines;
- 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, fuel, 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. Maximum short-term impacts are calculated based on the equipment mix expected during Month 16 of the construction schedule.[1] Annual emissions are based on the average equipment mix during the peak 12-month period out of the overall 24-month construction period.

5.1E.1.2 Linear Facilities

The linear facilities that will be constructed for the proposed project include a new recycled water pipeline that will be constructed in the utility corridor that links the power plant with the adjacent water treatment plant and a 2.5 mile long natural gas pipeline. These linears will be constructed prior to or simultaneously with the construction of the project.

5.1E.2 Available Mitigation Measures

The following typical mitigation measures are proposed to control exhaust emissions from the diesel heavy equipment and potential emissions of fugitive dust during construction of the project.

- Unpaved roads and disturbed areas in the project construction site will be watered as frequently as necessary to prevent fugitive dust plumes. The frequency of watering can be reduced or eliminated during periods of precipitation.
- The vehicle speed limit will be 15 miles per hour within the construction site.
- The construction site entrances shall be posted with visible speed limit signs.
- Construction equipment vehicle tires will be inspected and washed as necessary to be cleaned free of dirt prior to entering paved roadways.
- Gravel ramps of at least 20 feet in length will be provided at the tire washing/cleaning station.
- Unpaved exits from the construction site will be graveled or treated to prevent track-out to public roadways.
- Construction vehicles will enter the construction site through the treated entrance roadways, unless an alternative route has been submitted to and approved by the Compliance Project Manager.
- Construction areas adjacent to any paved roadway will be provided with sandbags or other measures as specified in the Storm Water Pollution Prevention Plan (SWPPP) to prevent run-off to roadways.
- Paved roads within the construction site will be swept at least twice daily (or less during periods of precipitation) on days when construction activity occurs to prevent the accumulation of dirt and debris.

[1] See calculations in Attachment 5.1E-1.

- At least the first 500 feet of any public roadway exiting from the construction site shall be swept at least twice daily (or less during periods of precipitation) on days when construction activity occurs or on any other day when dirt or runoff from the construction site is visible on public roadways.
- Soil storage piles and disturbed areas that remain inactive for longer than 10 days will be covered or treated with appropriate dust suppressant compounds.
- Vehicles used to transport solid bulk material on public roadways and having the potential to cause visible emissions will be provided with a cover, or the materials will be sufficiently wetted and loaded onto the trucks in a manner to provide at least one foot of freeboard.
- Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) will be used on all construction areas that may be disturbed. Any windbreaks installed to comply with this condition shall remain in place until the soil is stabilized or permanently covered with vegetation.

An on-site Air Quality Construction Mitigation Manager will be responsible for directing and documenting compliance with construction-related mitigation conditions.

5.1E.3 Estimates of Emissions with Mitigation Measures - Onsite Construction

Tables 5.1E-1 and 5.1E-2 show the estimated maximum daily and annual heavy equipment exhaust and fugitive dust emissions with recommended mitigation measures for onsite construction activities. Detailed emission calculations are included as Attachment 5.1E-1.

TABLE 5.1E-1
Maximum Daily Emissions During Construction, Pounds Per Day

	NOx	CO	VOC	SOx	PM_{10}	$PM_{2.5}$
Onsite						
Construction Equipment	80.6	51.4	7.7	0.1	4.5	4.5
Fugitive Dust	--	--	--	--	21.0	4.9
Offsite						
Worker Travel, Truck Deliveries[a]	80.6	51.4	7.7	0.1	4.5	4.5
	--	--	--	--	21.0	4.9
Total Emissions						
Total	260.1	238.6	32.7	0.4	33.5	17.5

Note:
a. Offsite emissions.

TABLE 5.1E-2
Peak Annual Emissions During Project Construction, Tons Per Year

TABLE 5.1E-2
Peak Annual Emissions During Project Construction, Tons Per Year

	NOx	CO	VOC	SOx	PM_{10}	$PM_{2.5}$
Onsite						
Construction Equipment	7.2	4.6	0.7	0.01	0.4	0.4
Fugitive Dust	--	--	--	--	1.6	0.3
Offsite						
Worker Travel, Truck Deliveries [a]	2.3	17.7	1.7	0.02	0.2	0.2
Total Emissions						
Total	9.5	22.4	2.4	0.03	2.2	0.9

Note:

a. Offsite emissions.

5.1E.4 Analysis of Ambient Impacts from Onsite Construction

Ambient air quality impacts from emissions during construction of the project 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.

5.1E.4.1 Existing Ambient Levels

As with the modeling analysis of project operating impacts (Section 5.1.5), ambient monitoring data collected from monitoring stations in the project area were used to establish the ambient background levels for the construction impact modeling analysis. Table 5.1E-3 shows the maximum concentrations of NOx, SO_2, CO, and PM_{10} recorded for 2005 through 2007.

TABLE 5.1E-3
Modeled Background Concentrations in the Project Area

Pollutant	Averaging Prd	2005	2006	2007
NO_2	1 hour	163.6	135.4	131.6
	annual	32.1	34.0	30.2
SO_2	1 hour	46.8	23.4	44.2
	3 hour	15.6	13.0	28.6
	24 hour	7.9	7.9	10.8
	annual	2.7	2.7	2.7
CO	1 hour	5,375	5,500	4,500
	8 hour	3,178	2,500	2,567

TABLE 5.1E-3
Modeled Background Concentrations in the Project Area

Pollutant	Averaging Prd	2005	2006	2007
PM_{10}	24 hour	84	85	75
	annual	29.4	33.4	27.7
$PM_{2.5}$[a]	24 hour	44	42	48
	annual	12.5	13.1	12.9

a. 24-hour average $PM_{2.5}$ concentrations shown are 98th percentile values, based on the form of the standard.

5.1E.4.2 Dispersion Model

The EPA guideline AERMOD model was used to estimate ambient impacts from construction activities.

The emission sources for the construction site were grouped into three categories: exhaust emissions, construction dust emissions, and windblown dust emissions. The exhaust and construction dust emissions were modeled as volume sources with a vertical dimension of 6 meters. Construction dust sources were modeled as 11 volume sources in the project site area. Combustion exhaust sources were allocated to the project site area as well as to the laydown and parking areas where construction equipment activity will also occur. The horizontal dimension of each volume source was set to 65 meters, with sigma-y = 15.116 meters (based on the width of the construction area). The windblown dust emissions were modeled as area sources. For these windblown dust sources, the area covers the active construction area. An effective plume height of 0.5 meters was used in the modeling analysis.

The construction impacts modeling analysis receptor set excluded the areas under the applicant's control, including the existing NCPA property and the laydown and parking areas that will be fenced and used for equipment and worker vehicles during the construction period.

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 5.1E-1 were used. For pollutants with annual average ambient standards, the annual onsite emission levels shown in Table 5.1E-2 were used.

As with the refined modeling discussed in Section 5.1, the construction impact modeling was performed using the 2000 to 2004 Stockton monitoring station meteorological data set.

5.1E.4.3 Modeling Results

Based on the emission rates of NOx, SO_2, CO, and PM_{10} and the meteorological data, the AERMOD 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 NOx, SO_2, CO, and PM_{10}. The annual impacts are based on the annual emission rates of these pollutants.

The 1-hour and annual average concentrations of NO_2 were computed following the revised EPA guidance for computing these concentrations (August 9, 1995 *Federal Register,* 60 FR 40465). The OLM method was used for the 1-hour average NO_2 impacts; uncorrected 1-hour impacts are also reported for comparison. The annual average was calculated using the ambient ratio method (ARM) with the national default value of 0.75 for the annual average NO_2/NOx ratio.

The modeling analysis results are shown in Table 5.1E-4. Also included in the table are the maximum background levels that have occurred in the last 3 years and the resulting total ambient impacts. Construction impacts alone for all modeled pollutants are expected to be below the most stringent state and national standards. With the exception of the 24-hour and annual average PM_{10} standards, construction activities are not expected to cause an exceedance of state or federal ambient air quality standards. However, the state 24-hour and annual PM_{10} standards are exceeded in the absence of the construction emissions for the project.

The dust mitigation measures already proposed by the applicant are expected to be effective in minimizing fugitive dust emissions. The attached isopleth diagrams show the extent of the modeled impacts from construction PM_{10} for the 24-hour and annual averaging periods.

TABLE 5.1E-4
Modeled Maximum Onsite Construction Impacts

Pollutant	Averaging Time	Maximum Onsite Construction Impact (µg/m^3)	Background (µg/m^3)	Total Impact (µg/m^3)	State Standard (µg/m^3)	Federal Standard (µg/m^3)
NO_2[a]	1-hour	91.6	163.6	255	338	–
	Annual	3.6	34.0	38	–	100
SO_2	1-hour	0.4	46.8	47	650	–
	3-hour	0.3	28.6	29	–	1300
	24-hour	0.1	10.8	11	109	365
	Annual	0.01	2.7	2.7	–	80
CO	1-hour	210	5,500	5,710	23,000	40,000
	8-hour	94	3,178	3,272	10,000	10,000
PM_{10}[b]	24-hour	35.6	85	121	50	150
	Annual	4.2	33.4	37.6	20	--
$PM_{2.5}$[b]	24-Hour	10.2	48	58	–	35
	Annual	1.1	13.1	14.2	12	15

TABLE 5.1E-4
Modeled Maximum Onsite Construction Impacts

Pollutant	Averaging Time	Maximum Onsite Construction Impact (µg/m^3)	Background (µg/m^3)	Total Impact (µg/m^3)	State Standard (µg/m^3)	Federal Standard (µg/m^3)

Notes:

a. Ozone limiting method applied for 1-hour average, using concurrent O_3 data. ARM applied for annual average, using national default 0.75 ratio.

b. PM_{10} and $PM_{2.5}$ impacts shown are from fugitive dust as well as combustion sources. Annual average $PM_{2.5}/PM_{10}$ impact from combustion sources only is 0.45 µg/m^3.

As shown on these isopleth diagrams, maximum impacts occur on the project site fenceline, and concentrations decrease rapidly within a couple of hundred meters of the project site. For example, maximum modeled 24-hour average PM_{10} impacts along the fenceline are approximately 36 µg/m^3. However, impacts are reduced by half within tens of meters from the facility fenceline. Maximum impacts are reduced to 10 µg/m^3 or less at the freeway.

It is also important to note that emissions in an exhaust plume are dispersed through the entrainment of ambient air, which dilutes the concentration of the emissions as they are carried away from the source by winds. The process of mixing the pollutants with greater and greater volumes of cleaner air is controlled primarily by the turbulence in the atmosphere. This dispersion occurs both horizontally, as the exhaust plume rises above the emission point, and vertically, as winds carry the plume horizontally away from its source.

The rise of a plume above its initial point of release is a significant contributing factor to the reductions in ground-level concentrations, both because a rising plume entrains more ambient air as it travels downwind, and because it travels farther downwind (and thus also undergoes more horizontal dispersion) before it impacts the ground. Vertical plume rise occurs as a result of buoyancy (plume is hotter than ambient air, and hot air, being less dense, tends to rise) and/or momentum (plume has an initial vertical velocity).

In AERMOD, area sources are not considered to have either buoyant or momentum plume rise, and therefore the model assumes that there is no vertical dispersion taking place. Thus a significant source of plume dilution is ignored when sources are modeled as area sources. The project construction site impacts are not unusual in comparison to most construction project analyses. Construction sites that use good dust suppression techniques and low-emitting vehicles typically do not cause exceedances of air quality standards. The input and output modeling files are being provided electronically.

5.1E.4.4 Health Risk of Diesel Exhaust

The combustion portion of annual PM_{10} emissions from Table 5.1E-5 above was modeled separately to determine the annual average Diesel PM_{10} exhaust concentration. This was

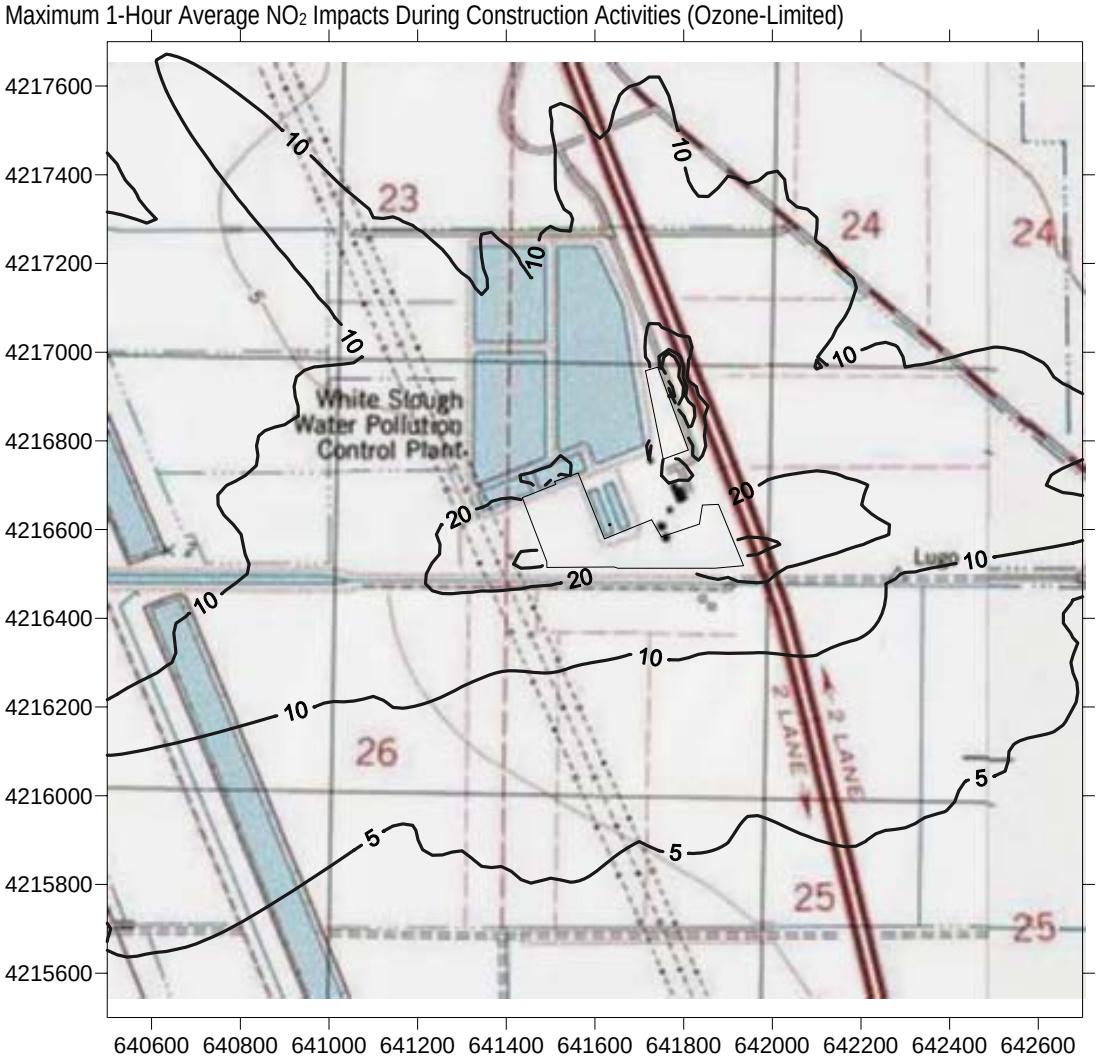
used with HARP-derived risk values for Diesel exhaust particulate[2] for a 9-year exposure to determine the potential carcinogenic risk from Diesel exhaust during construction.[3]

The maximum modeled annual average concentration of Diesel exhaust PM_{10} at any location is 0.45 μg/m^3. The cancer risk value obtained from HARP is 4.15×10^{-4} (derived OEHHA method). Adjusting the risk value by 9/70 to reflect a 9-year exposure yields an adjusted risk value of 5.34×10^{-5}. Using the risk value and adjustment factors described above, the carcinogenic risk due to exposure to Diesel exhaust during construction activities is expected to be approximately 24 in one million. This risk estimate is above the significance level of 10 in one million. However, these impacts are highly localized near the project site. As shown in the attached annual average Diesel combustion PM_{10} isopleth diagram (Figure 5.1E-3), the area in which the risk may exceed 10 in one million (Diesel PM_{10} impact greater than or equal to approximately 0.2 μg/m^3) barely extends l beyond the construction and laydown/parking areas and does not include any residences or sensitive receptors. This analysis remains conservative because, as discussed above, the modeled PM_{10} concentrations from construction operations are overpredicted by the AERMOD model.

[2] See Section 5.1.2.8 for a discussion of the use of the HARP model to derive cancer risk values.

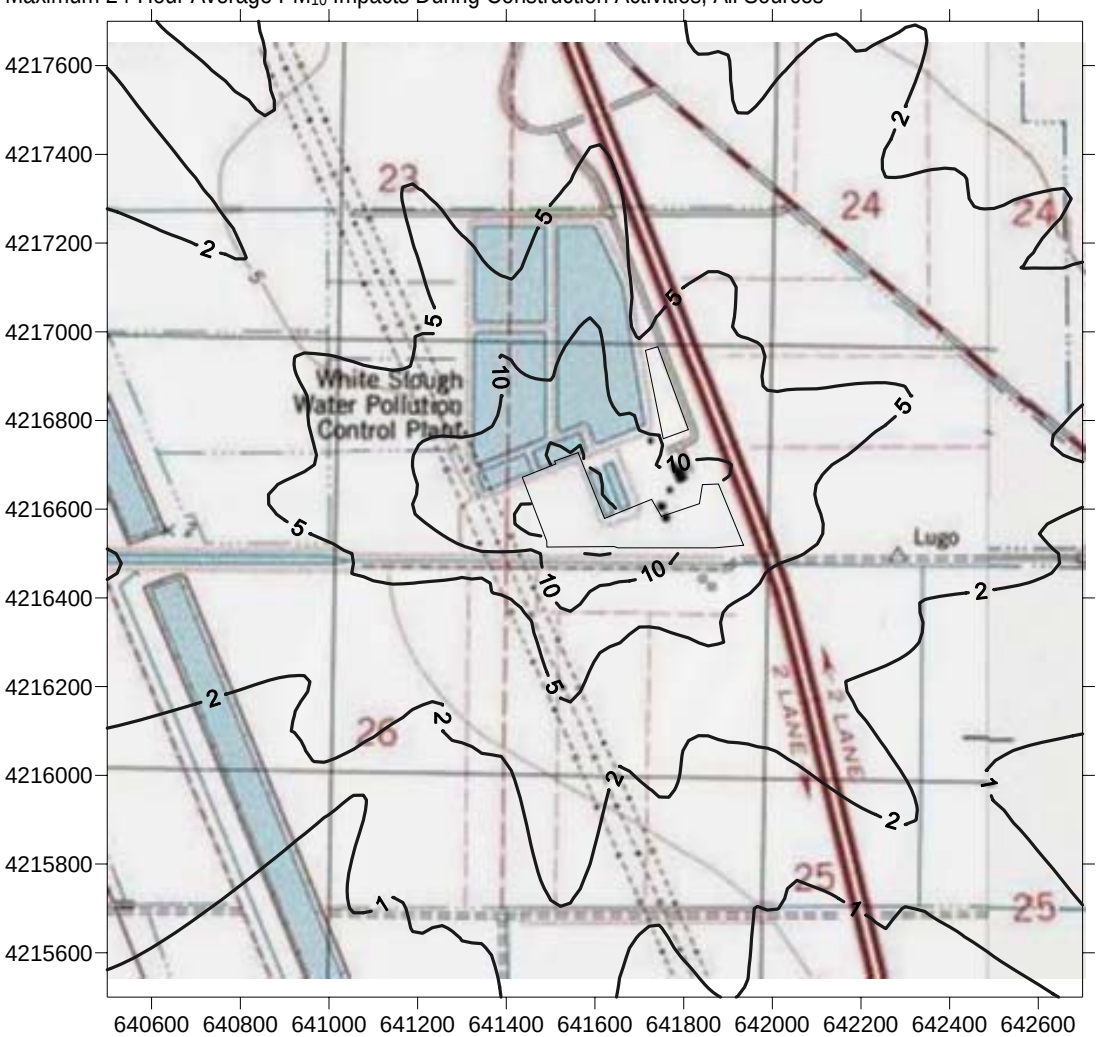
[3] OEHHA, "Adoption of Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments," 10/03/03, accessed at http://www.oehha.ca.gov/air/hot_spots/HRAguidefinal.html

FIGURE 5.1E-1
Maximum 1-Hour Average NO_2 Impacts During Construction Activities (Ozone-Limited)



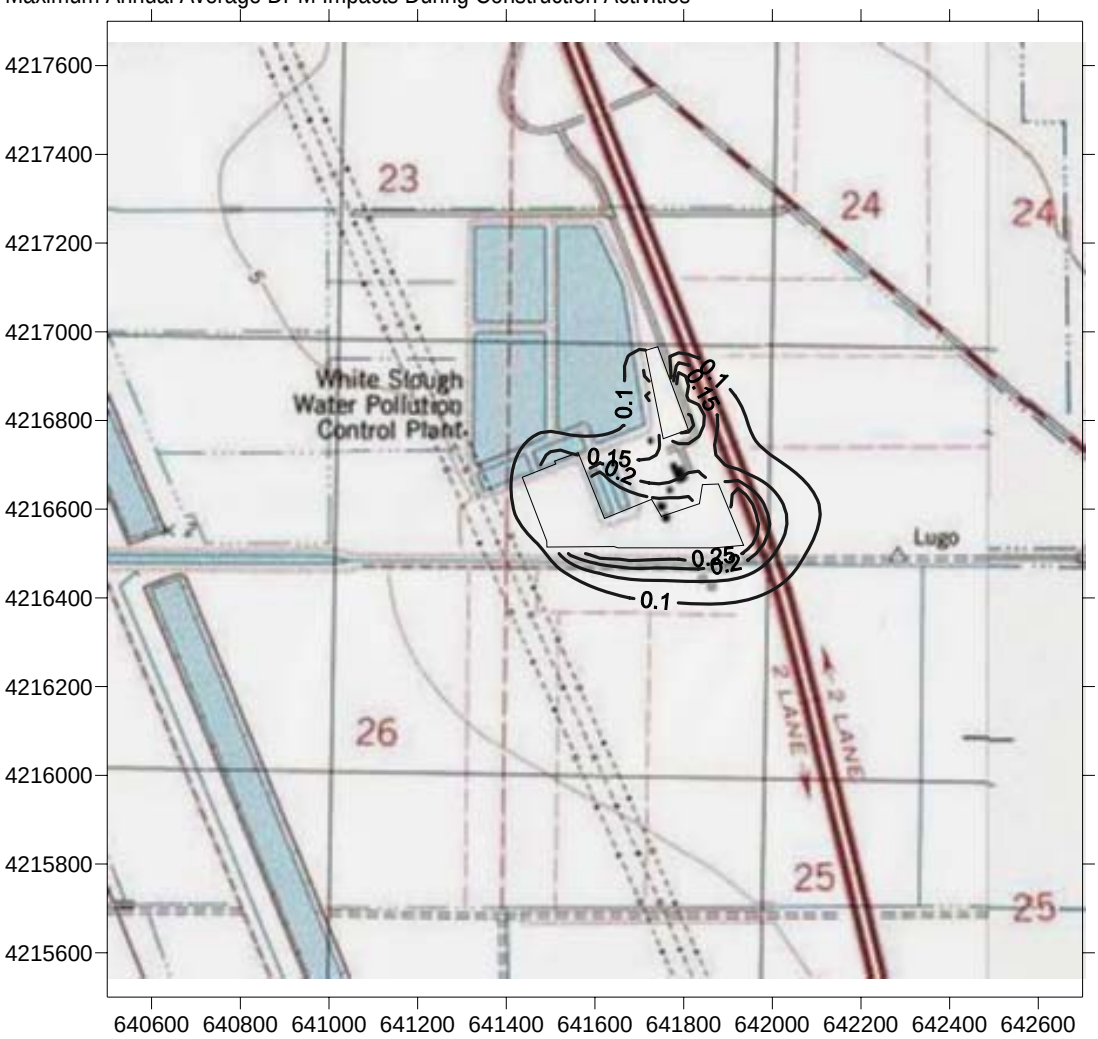
Concentrations are shown in $\mu g/m^3$.

FIGURE 5.1E-2
Maximum 24-Hour Average PM_{10} Impacts During Construction Activities, All Sources



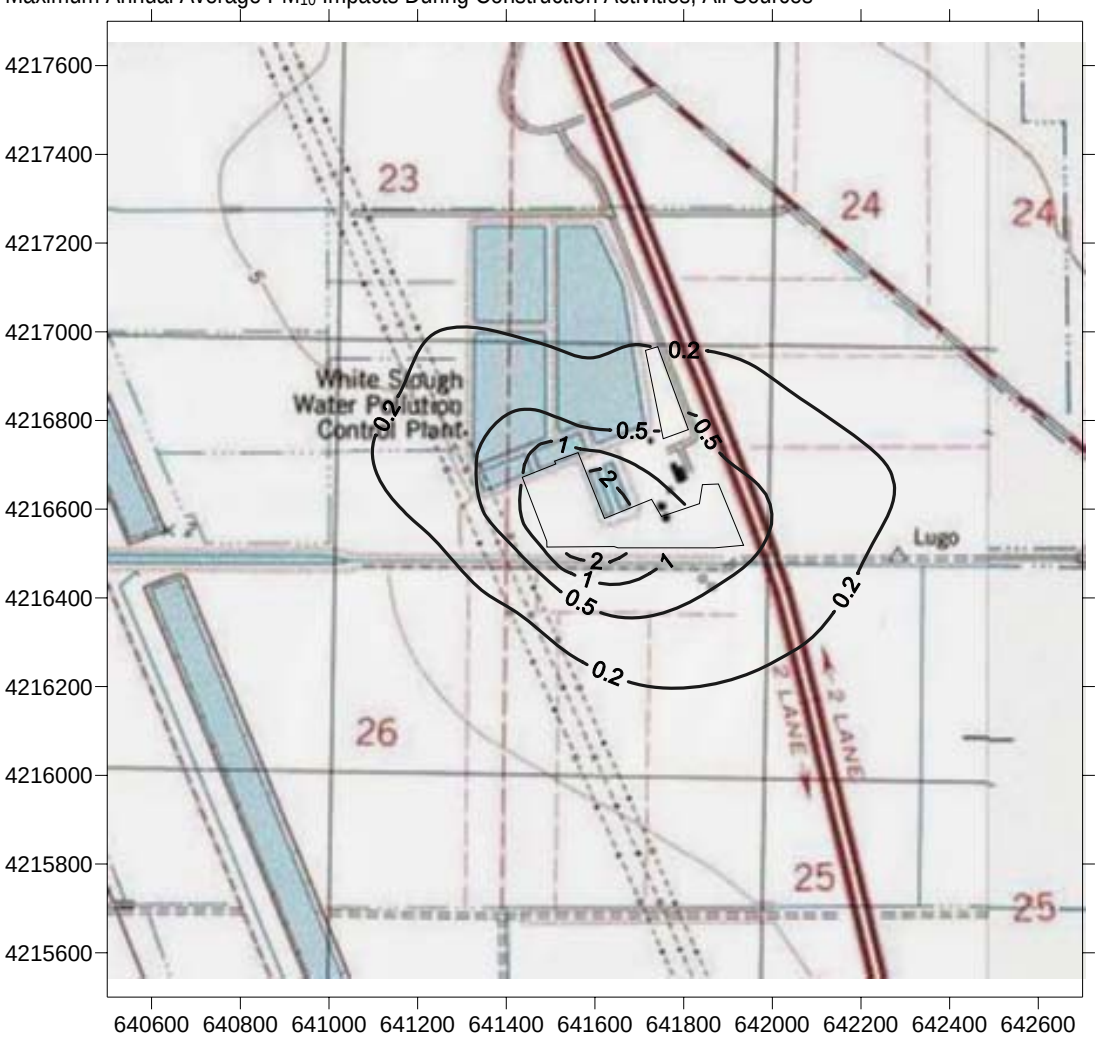
Concentrations are shown in $\mu g/m^3$.

FIGURE 5.1E-3
Maximum Annual Average DPM Impacts During Construction Activities



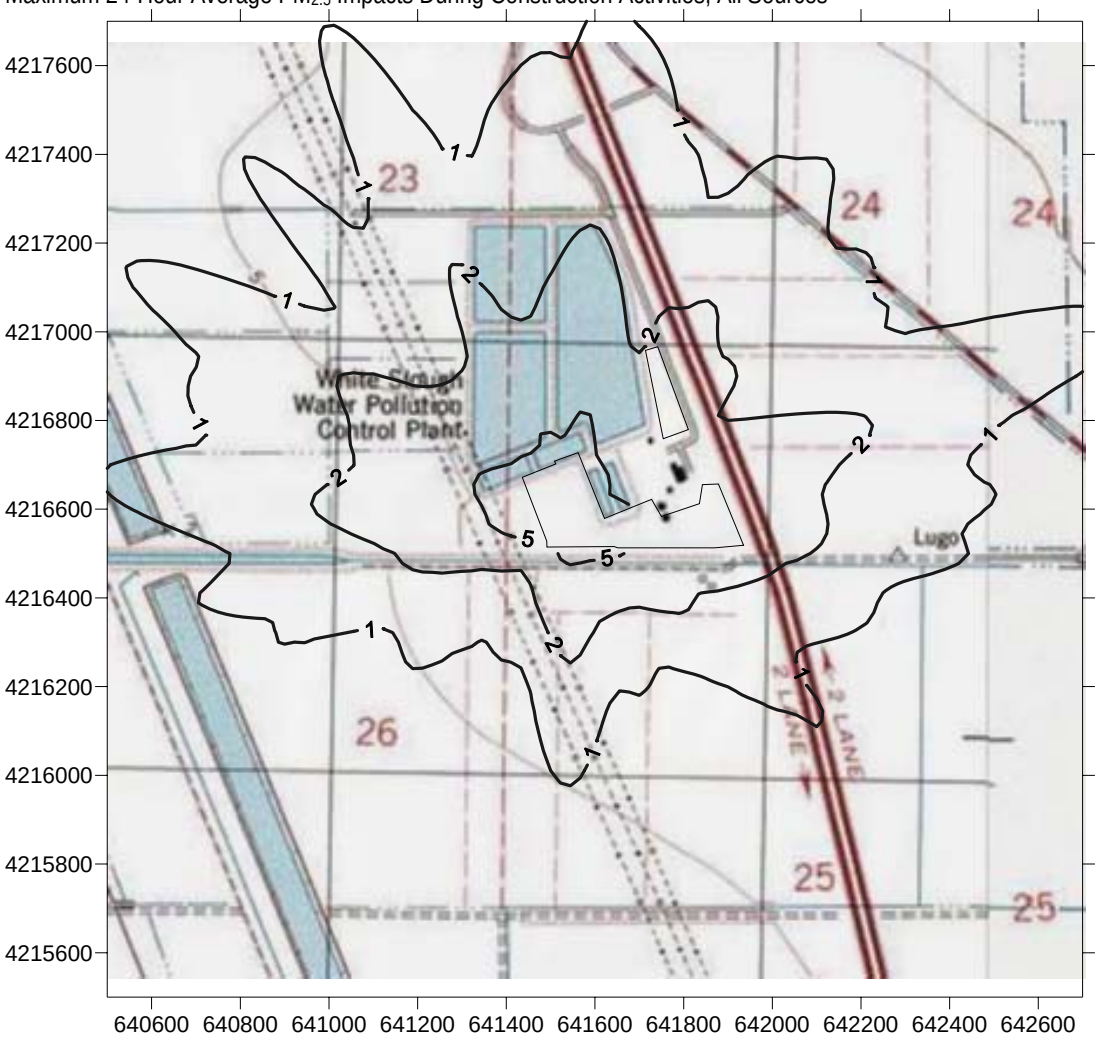
Concentrations are shown in $\mu g/m^3$.

FIGURE 5.1E-4
Maximum Annual Average PM_{10} Impacts During Construction Activities, All Sources



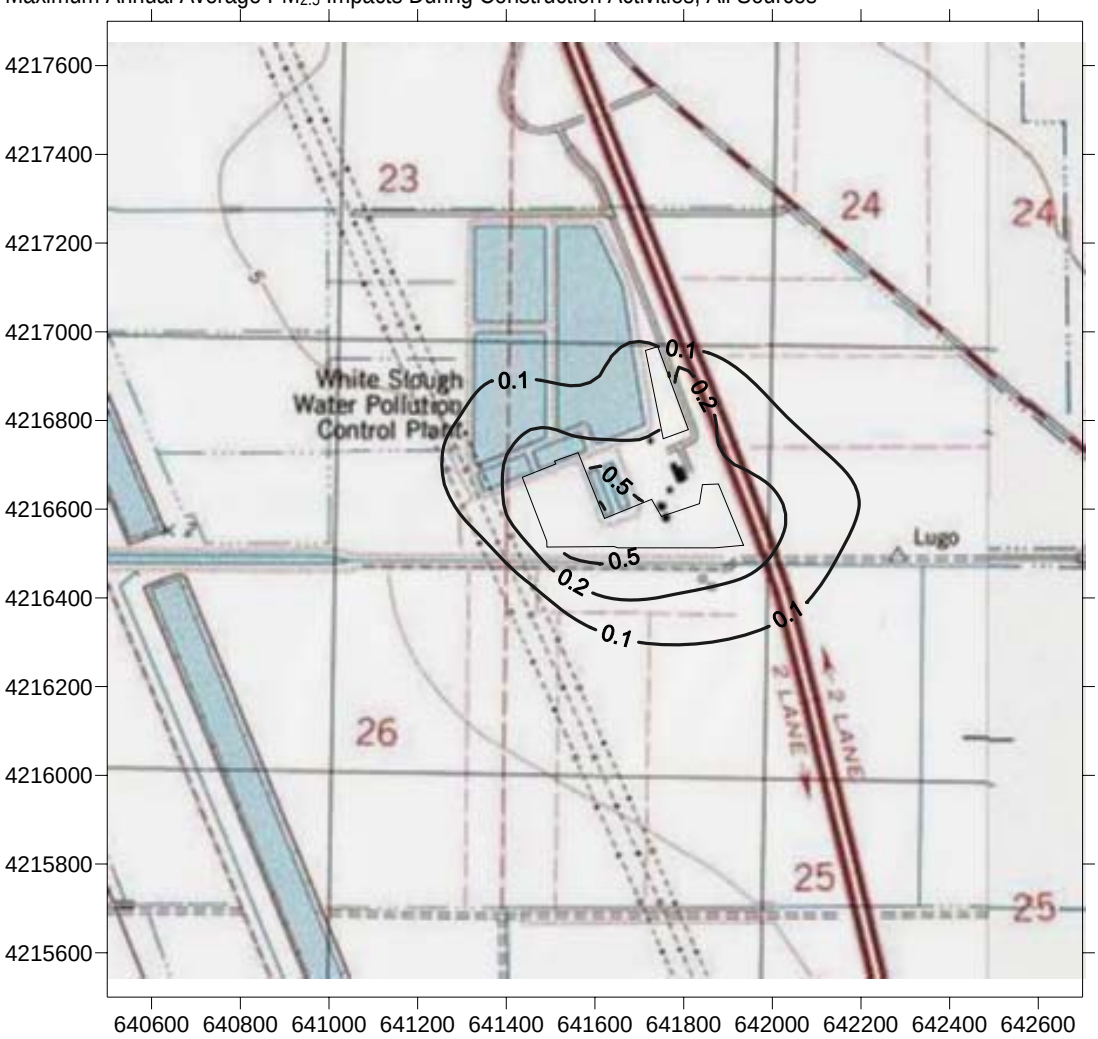
Concentrations are shown in $\mu g/m^3$.

FIGURE 5.1E-5
Maximum 24-Hour Average $PM_{2.5}$ Impacts During Construction Activities, All Sources



Concentrations are shown in $\mu g/m^3$.

FIGURE 5.1E-6
Maximum Annual Average $PM_{2.5}$ Impacts During Construction Activities, All Sources



Concentrations are shown in $\mu g/m^3$.

Attachment 5.1E-1
Detailed Construction Emissions Calculations

Daily and Annual Construction Emissions

Daily Construction Emissions (peak month)						
(lbs/day)						
	NOx	CO	VOC	SOx	PM2.5	PM10
Onsite						
Construction Equipment	80.61	51.42	7.72	0.10	4.46	4.46
Fugitive Dust					4.94	21.01
Subtotal =	80.61	51.42	7.72	0.10	9.40	25.47
Offsite						
Worker Travel	12.07	125.61	11.91	0.11	1.16	1.16
Truck Deliveries	167.46	61.55	13.01	0.14	6.90	6.90
Subtotal =	179.52	187.16	24.92	0.26	8.06	8.06
Total =	260.13	238.58	32.65	0.36	17.47	33.53

Peak Annual Construction Emissions (12-month period) (tons/yr)						
	NOx	CO	VOC	SOx	PM2.5	PM10
Onsite						
Construction Equipment	7.22	4.64	0.71	0.01	0.41	0.41
Fugitive Dust					0.27	1.61
Subtotal =	7.22	4.64	0.71	0.01	0.68	2.02
Offsite						
Worker Travel	1.68	17.50	1.66	0.02	0.16	0.16
Truck Deliveries	0.58	0.21	0.05	0.00	0.02	0.02
Subtotal =	2.27	17.71	1.70	0.02	0.19	0.19
Total =	9.49	22.35	2.42	0.03	0.87	2.21

LEC Construction Equipment Schedule

					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total
Pile driving equipment, 255 HP	100%	8 hr/day	6 days/week	48 hrs/week	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Roller Compactor, 100 HP	100%	8 hr/day	6 days/week	48 hrs/week	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Backhoe, 150 HP	100%	8 hr/day	6 days/week	48 hrs/week	1	2	2	2	2	3	3	3	3	3	3	2	2	2	2	2	2	1	1	1	1	1	1	1	46
Forklift, CAT V200, 175 HP	100%	8 hr/day	6 days/week	48 hrs/week	1	1	1	1	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	0	0	0	0	0	29
Bulldozer, 450G, 400 HP	100%	8 hr/day	6 days/week	48 hrs/week	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Motor Grader, 135 HP	100%	8 hr/day	6 days/week	48 hrs/week	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Crane, pile lifting, 25 ton, 160 HP	100%	8 hr/day	6 days/week	48 hrs/week	0	0	0	0	0	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	0	0	0	0	25
Excavator, 195 HP	100%	8 hr/day	6 days/week	48 hrs/week	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
Cranes, 230 ton, 220 HP	100%	8 hr/day	6 days/week	48 hrs/week	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	0	0	32
Cranes, 400 ton, 255 HP	100%	8 hr/day	6 days/week	48 hrs/week	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	9
Cranes, 15 ton, 101 HP	100%	8 hr/day	6 days/week	48 hrs/week	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	19
Manlift, 60ft, 30 HP	100%	8 hr/day	6 days/week	48 hrs/week	0	0	0	1	2	2	2	3	3	3	3	3	2	2	2	2	2	2	2	1	1	1	1	0	40
Scrapers, 550 HP	100%	8 hr/day	6 days/week	48 hrs/week	1	1	1	1	1	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	9
Water Truck, 225 HP	100%	8 hr/day	6 days/week	48 hrs/week	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24
Welding Unit, 70 HP	100%	8 hr/day	6 days/week	48 hrs/week	0	1	1	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	1	1					46
Dump truck, 210 HP	100%	8 hr/day	6 days/week	48 hrs/week	2	2	2	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
Boom truck, 220 HP	100%	8 hr/day	6 days/week	48 hrs/week	0	1	1	2	2	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2	54
Tandem Dump Truck, 30 CY, 250 HP	100%	8 hr/day	6 days/week	48 hrs/week	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Concrete pump truck, 350 HP	100%	8 hr/day	6 days/week	48 hrs/week	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Total vehicles					11	16	17	22	22	23	22	22	22	22	21	21	20	20	19	14	14	13	12	8	6	5	5	4	

Offsite Delivery Truck Emissions

Delivery Truck Daily Emissions (Maximum)												
Number of Deliveries Per Day	Average Round Trip Haul Distance (miles)	Vehicle Miles Traveled Per Day	Emission Factors (lbs/vmt)(1)					Daily Emissions (lbs/day)				
			NOx	CO	VOC	SOx	PM10	NOx	CO	VOC	SOx	PM10
88	49.8	4,382	0.0382	0.0140	0.0030	0.0000	0.0016	167.46	61.55	13.01	0.14	6.90
Idle exhaust (2)												0.32296

Delivery Truck Peak Annual Emissions												
Number of Deliveries Per Year	Average Round Trip Haul Distance (miles)	Vehicle Miles Traveled Per Year	Emission Factors (lbs/vmt)(1)					Annual Emissions (tons/yr)				
			NOx	CO	VOC	SOx	PM10	NOx	CO	VOC	SOx	PM10
614	49.8	30,577	0.0382	0.0140	0.0030	0.0000	0.0016	0.58	0.21	0.05	0.00	0.02
Idle exhaust (2,3)												0.00113

Notes:
(1) Emission factors for delivery trucks from Emfac2007 V2.3, San Joaquin County, model years 1966 to 2010.
(2) Peak annual number of trucks per year times 1 hr idle time per visit times 0.00367 lb/hr
(3) Based on 1.665 g/hr idle emission rate for the composite HDD truck fleet in 2010 from EMFAC2007 V2.3, San Joaquin County, 2010 fleet.

Offsite Worker Travel Emissions

Worker Travel Daily Emissions (Maximum)														
Number of Workers Per Day(1)	Average Vehicle Occupancy (person/veh.)	Number of Round Trips Per Day	Average Round Trip Distance (Miles)	Vehicle Miles Traveled Per Day (Miles)	Emission Factors (lbs/vmt)(1)					Daily Emissions (lbs/day)				
					NOx	CO	VOC	SOx	PM10	NOx	CO	VOC	SOx	PM10
302	1.1	272	49.8	13,536	0.0009	0.0093	0.0009	0.0000	0.0001	12.07	125.61	11.91	0.11	1.16

Worker Travel Peak Annual Emissions															
Average Number of Workers Per Day	Average Vehicle Occupancy (person/veh.)	Number of Round Trips Per Day	Average Round Trip Haul Distance (Miles)	Days per Year	Vehicle Miles Traveled Per Year	Emission Factors (lbs/vmt)(1)					Annual Emissions (tons/yr)				
						NOx	CO	VOC	SOx	PM10	NOx	CO	VOC	SOx	PM10
292	1.1	263	49.8	288	3,771,338	0.0009	0.0093	0.0009	0.0000	0.0001	1.68	17.50	1.66	0.02	0.16

Notes:

(1) Emission factors for worker travel from EMFAC2002, V2.2, San Diego County, model years 1965 to 2008.

Onsite Combustion Emissions

			Base Factors g/bhp, if Tier 1 >50 hp (1)						Appendix A Table A3 Adjustment (2)						Adjustment (3)	Adjusted Factors (g/bhp)					
Equipment	HP Cat.	Tier	BSFC lb/hp	NOx	CO	VOC	SOx	PM10	Adj. Type	NOx	CO	VOC	SOx	PM10	PM10 Fuel S	BSFC	NOx	CO	VOC	SOx	PM10
Pile driving equipment, 255 HP	175-300	3	0.367	2.50	0.75	0.18	0.005	0.15	None	1.10	1.00	1.00	1.00	1.00	-0.086	0.367	2.75	0.75	0.18	0.0049	0.06
Roller Compactor, 100 HP	75-100	2	0.408	4.70	2.37	0.37	0.006	0.24	Hi LF	0.95	1.53	1.05	1.01	1.23	-0.096	0.412	4.47	3.62	0.39	0.0055	0.20
Backhoe, 150 HP	100-175	3	0.367	2.50	0.87	0.18	0.005	0.22	Lo LF	1.21	2.57	2.29	1.18	2.37	-0.101	0.433	3.03	2.23	0.42	0.0057	0.42
Forklift, CAT V200, 175 HP	100-175	3	0.367	2.50	0.87	0.18	0.005	0.22	Hi LF	1.04	1.00	1.05	1.01	1.47	-0.087	0.371	2.60	0.87	0.19	0.0049	0.24
Bulldozer, 450G, 400 HP	300-600	3	0.367	2.50	0.84	0.17	0.005	0.15	Hi LF	1.04	1.00	1.05	1.01	1.47	-0.087	0.371	2.60	0.84	0.18	0.0049	0.13
Motor Grader, 135 HP	100-175	3	0.367	2.50	0.87	0.18	0.005	0.22	Hi LF	0.95	1.53	1.05	1.01	1.23	-0.087	0.371	2.38	1.33	0.19	0.0049	0.18
Crane, pile lifting, 25 ton, 160 HP	100-175	3	0.367	2.50	0.87	0.18	0.005	0.22	None	1.10	1.00	1.00	1.00	1.00	-0.086	0.367	2.75	0.87	0.18	0.0049	0.13
Excavator, 195 HP	175-300	3	0.367	2.50	0.75	0.18	0.005	0.15	Hi LF	1.04	1.00	1.05	1.01	1.47	-0.087	0.371	2.60	0.75	0.19	0.0049	0.13
Cranes, 230 ton, 220 HP	175-300	3	0.367	2.50	0.75	0.18	0.005	0.15	None	1.10	1.00	1.00	1.00	1.00	-0.086	0.367	2.75	0.75	0.18	0.0049	0.06
Cranes, 400 ton, 255 HP	175-300	3	0.367	2.50	0.75	0.18	0.005	0.15	None	1.10	1.00	1.00	1.00	1.00	-0.086	0.367	2.75	0.75	0.18	0.0049	0.06
Cranes, 15 ton, 101 HP	100-175	3	0.367	2.50	0.87	0.18	0.005	0.22	None	1.10	1.00	1.00	1.00	1.00	-0.086	0.367	2.75	0.87	0.18	0.0049	0.13
Manlift, 60ft, 30 HP	25-50	2	0.408	4.73	1.53	0.28	0.006	0.34	Lo LF	1.21	2.57	2.29	1.18	2.37	-0.113	0.481	5.72	3.94	0.64	0.0064	0.69
Scrapers, 550 HP	300-600	3	0.367	2.50	0.84	0.17	0.005	0.15	Hi LF	0.95	1.53	1.05	1.01	1.23	-0.087	0.371	2.38	1.29	0.18	0.0049	0.10
Water Truck, 225 HP	Onroad	na	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad
Welding Unit, 70 HP	50-75	2	0.408	4.44	2.16	0.44	0.0056	0.27	Hi LF	0.95	1.53	1.05	1.01	1.23	-0.096	0.412	4.22	3.31	0.46	0.0055	0.23
Dump truck, 210 HP	Onroad	na	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad
Boom truck, 220 HP	Onroad	na	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad
Tandem Dump Truck, 30 CY, 250 HP	Onroad	na	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad
Concrete pump truck, 350 HP	Onroad	na	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad	Onroad

	Adjusted factors lbs/1000 gallon (4)					
Equipment	Tier	NOx	CO	VOC	SOx	PM10
Pile driving equipment, 255 HP	3	117.29	31.88	7.83	0.21	2.74
Roller Compactor, 100 HP	2	169.60	137.47	14.65	0.21	7.55
Backhoe, 150 HP	3	109.34	80.51	15.20	0.21	15.19
Forklift, CAT V200, 175 HP	3	109.79	36.61	8.16	0.21	9.99
Bulldozer, 450G, 400 HP	3	109.79	35.60	7.40	0.21	5.65
Motor Grader, 135 HP	3	100.29	56.00	8.14	0.21	7.77
Crane, pile lifting, 25 ton, 160 HP	3	117.29	36.98	7.85	0.21	5.72
Excavator, 195 HP	3	109.79	31.57	8.14	0.21	5.65
Cranes, 230 ton, 220 HP	3	117.29	31.88	7.83	0.21	2.74
Cranes, 400 ton, 255 HP	2	117.29	31.88	7.83	0.21	2.74
Cranes, 15 ton, 101 HP	3	117.29	36.98	7.85	0.21	5.72
Manlift, 60ft, 30 HP	2	185.99	128.03	20.76	0.21	22.45
Scrapers, 550 HP	3	100.29	54.46	7.40	0.21	4.13
Water Truck, 225 HP	na	135.71	172.26	19.65	0.00	4.57
Welding Unit, 70 HP	2	160.21	125.59	17.47	0.21	8.79
Dump truck, 210 HP	na	135.71	172.26	19.65	0.00	4.57
Boom truck, 220 HP	na	135.71	172.26	19.65	0.00	4.57
Tandem Dump Truck, 30 CY, 250 HP	na	204.23	75.06	15.87	0.18	8.42
Concrete pump truck, 350 HP	na	204.23	75.06	15.87	0.18	8.42

Construction Equipment

Daily Fuel Use

Equipment	Hrs/Day Per Unit	Gals/Hr Per Unit	Daily Fuel Use (gals/day) Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11
Pile driving equipment, 255 HP	8.0	5.67	45.3	45.3	45.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Roller Compactor, 100 HP	8.0	2.50	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
Backhoe, 150 HP	8.0	3.10	24.8	49.6	49.6	49.6	49.6	74.4	74.4	74.4	74.4	74.4	74.4
Forklift, CAT V200, 175 HP	8.0	2.50	20.0	20.0	20.0	20.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Bulldozer, 450G, 400 HP	8.0	9.70	77.6	77.6	77.6	77.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Motor Grader, 135 HP	8.0	3.30	26.4	26.4	26.4	26.4	26.4	26.4	0.0	0.0	0.0	0.0	0.0
Crane, pile lifting, 25 ton, 160 HP	8.0	3.56	0.0	0.0	0.0	0.0	0.0	56.9	56.9	56.9	56.9	56.9	56.9
Excavator, 195 HP	8.0	4.70	0.0	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	0.0
Cranes, 230 ton, 220 HP	8.0	4.89	0.0	0.0	0.0	78.2	78.2	78.2	78.2	78.2	78.2	78.2	78.2
Cranes, 400 ton, 255 HP	8.0	5.67	0.0	0.0	0.0	0.0	0.0	0.0	45.3	45.3	45.3	45.3	45.3
Cranes, 15 ton, 101 HP	8.0	2.24	0.0	0.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0
Manlift, 60ft, 30 HP	8.0	1.27	0.0	0.0	0.0	10.2	20.3	20.3	20.3	30.5	30.5	30.5	30.5
Scrapers, 550 HP	8.0	11.25	90.0	90.0	90.0	90.0	90.0	0.0	0.0	0.0	0.0	0.0	0.0
Water Truck, 225 HP	8.0	3.13	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
Welding Unit, 70 HP	8.0	1.27	0.0	10.2	10.2	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5
Dump truck, 210 HP	8.0	3.13	50.1	50.1	50.1	50.1	50.1	25.0	25.0	0.0	0.0	0.0	0.0
Boom truck, 220 HP	8.0	3.13	0.0	25.0	25.0	50.1	50.1	75.1	75.1	75.1	75.1	75.1	75.1
Tandem Dump Truck, 30 CY, 250	8.0	3.13	25.0	25.0	25.0	25.0	25.0	25.0	0.0	0.0	0.0	0.0	0.0
Concrete pump truck, 350 HP	8.0	3.13	0.0	25.0	25.0	25.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total =			404.3	526.9	544.9	633.3	560.8	532.5	526.4	511.6	511.6	511.6	474.0

Construction Equipment
Daily Fuel Use

Equipment	Month 12	Month 13	Month 14	Month 15	Month 16	Month 17	Month 18	Month 19	Month 20	Month 21	Month 22	Month 23	Month 24
Pile driving equipment, 255 HP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Roller Compactor, 100 HP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Backhoe, 150 HP	49.6	49.6	49.6	49.6	49.6	49.6	24.8	24.8	24.8	24.8	24.8	24.8	24.8
Forklift, CAT V200, 175 HP	40.0	40.0	40.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0
Bulldozer, 450G, 400 HP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Motor Grader, 135 HP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crane, pile lifting, 25 ton, 160 HP	56.9	56.9	56.9	56.9	28.5	28.5	28.5	28.5	28.5	0.0	0.0	0.0	0.0
Excavator, 195 HP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranes, 230 ton, 220 HP	78.2	78.2	78.2	78.2	78.2	78.2	78.2	78.2	0.0	0.0	0.0	0.0	0.0
Cranes, 400 ton, 255 HP	45.3	45.3	45.3	45.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranes, 15 ton, 101 HP	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	0.0	0.0	0.0
Manlift, 60ft, 30 HP	30.5	20.3	20.3	20.3	20.3	20.3	20.3	20.3	10.2	10.2	10.2	10.2	0.0
Scrapers, 550 HP	90.0	90.0	90.0	90.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Water Truck, 225 HP	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
Welding Unit, 70 HP	30.5	30.5	30.5	30.5	20.3	20.3	20.3	10.2	10.2	0.0	0.0	0.0	0.0
Dump truck, 210 HP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boom truck, 220 HP	75.1	75.1	75.1	75.1	50.1	50.1	50.1	50.1	50.1	50.1	50.1	50.1	50.1
Tandem Dump Truck, 30 CY, 250	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Concrete pump truck, 350 HP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total =	539.2	529.0	529.0	509.0	310.0	310.0	285.2	275.0	166.6	128.0	110.1	110.1	99.9

Equipment	Daily NOx Emissions (lbs/day) Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Month 13	Month 14	Month 15	Month 16	Month 17	Month 18	Month 19	Month 20	Month 21	Month 22	Month 23	Month 24
Pile driving equipment, 255 HP	5.32	5.32	5.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Roller Compactor, 100 HP	3.39	3.39	3.39	3.39	3.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe, 150 HP	2.71	5.42	5.42	5.42	5.42	8.13	8.13	8.13	8.13	8.13	8.13	5.42	5.42	5.42	5.42	5.42	5.42	2.71	2.71	2.71	2.71	2.71	2.71	2.71
Forklift, CAT V200, 175 HP	2.20	2.20	2.20	2.20	4.39	4.39	4.39	4.39	4.39	4.39	4.39	4.39	4.39	4.39	2.20	2.20	2.20	2.20	2.20	0.00	0.00	0.00	0.00	0.00
Bulldozer, 450G, 400 HP	8.52	8.52	8.52	8.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Motor Grader, 135 HP	2.65	2.65	2.65	2.65	2.65	2.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane, pile lifting, 25 ton, 160 HP	0.00	0.00	0.00	0.00	0.00	6.67	6.67	6.67	6.67	6.67	6.67	6.67	6.67	6.67	6.67	3.34	3.34	3.34	3.34	3.34	0.00	0.00	0.00	0.00
Excavator, 195 HP	0.00	4.13	4.13	4.13	4.13	4.13	4.13	4.13	4.13	4.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cranes, 230 ton, 220 HP	0.00	0.00	0.00	9.18	9.18	9.18	9.18	9.18	9.18	9.18	9.18	9.18	9.18	9.18	9.18	9.18	9.18	9.18	9.18	0.00	0.00	0.00	0.00	0.00
Cranes, 400 ton, 255 HP	0.00	0.00	0.00	0.00	0.00	0.00	5.32	5.32	5.32	5.32	5.32	5.32	5.32	5.32	5.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cranes, 15 ton, 101 HP	0.00	0.00	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11	0.00	0.00	0.00
Manlift, 60ft, 30 HP	0.00	0.00	0.00	1.89	3.78	3.78	3.78	5.67	5.67	5.67	5.67	5.67	3.78	3.78	3.78	3.78	3.78	3.78	3.78	1.89	1.89	1.89	1.89	0.00
Scrapers, 550 HP	9.03	9.03	9.03	9.03	9.03	0.00	0.00	0.00	0.00	0.00	0.00	9.03	9.03	9.03	9.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Truck, 225 HP	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40
Welding Unit, 70 HP	0.00	1.63	1.63	4.88	4.88	4.88	4.88	4.88	4.88	4.88	4.88	4.88	4.88	4.88	4.88	3.26	3.26	3.26	1.63	1.63	0.00	0.00	0.00	0.00
Dump truck, 210 HP	6.80	6.80	6.80	6.80	6.80	3.40	3.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Boom truck, 220 HP	0.00	3.40	3.40	6.80	6.80	10.19	10.19	10.19	10.19	10.19	10.19	10.19	10.19	10.19	10.19	6.80	6.80	6.80	6.80	6.80	6.80	6.80	6.80	6.80
Tandem Dump Truck, 30 CY, 250 HP	5.11	5.11	5.11	5.11	5.11	5.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete pump truck, 350 HP	0.00	5.11	5.11	5.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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 =	49.12	66.10	68.21	**80.61**	71.06	68.03	65.58	64.07	64.07	64.07	59.95	66.26	64.37	64.37	62.18	39.47	39.47	36.76	35.13	21.87	16.90	14.80	14.80	12.91
Monthly Emissions (lbs/month) =	884	1,190	1,228	1,451	1,279	1,224	1,180	1,153	1,153	1,153	1,079	1,193	1,159	1,159	1,119	710	710	662	632	394	304	266	266	232
Annual Emissions (lbs/year) =												14,168	**14,443**	14,412	14,303	13,563	12,994	12,431	11,883	11,123	10,274	9,387	8,574	7,614
Annual Emissions (tons/year) =												7.08	**7.22**	7.21	7.15	6.78	6.50	6.22	5.94	5.56	5.14	4.69	4.29	3.81

Equipment	Daily CO Emissions (lbs/day) Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Month 13	Month 14	Month 15	Month 16	Month 17	Month 18	Month 19	Month 20	Month 21	Month 22	Month 23	Month 24
Pile driving equipment, 255 HP	1.45	1.45	1.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Roller Compactor, 100 HP	2.75	2.75	2.75	2.75	2.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe, 150 HP	2.00	3.99	3.99	3.99	3.99	5.99	5.99	5.99	5.99	5.99	5.99	3.99	3.99	3.99	3.99	3.99	3.99	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Forklift, CAT V200, 175 HP	0.73	0.73	0.73	0.73	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	0.73	0.73	0.73	0.73	0.73	0.00	0.00	0.00	0.00	0.00
Bulldozer, 450G, 400 HP	2.76	2.76	2.76	2.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Motor Grader, 135 HP	1.48	1.48	1.48	1.48	1.48	1.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane, pile lifting, 25 ton, 160 HP	0.00	0.00	0.00	0.00	0.00	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	1.05	1.05	1.05	1.05	1.05	0.00	0.00	0.00	0.00
Excavator, 195 HP	0.00	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cranes, 230 ton, 220 HP	0.00	0.00	0.00	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	0.00	0.00	0.00	0.00	0.00
Cranes, 400 ton, 255 HP	0.00	0.00	0.00	0.00	0.00	0.00	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cranes, 15 ton, 101 HP	0.00	0.00	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.00	0.00	0.00
Manlift, 60ft, 30 HP	0.00	0.00	0.00	1.30	2.60	2.60	2.60	3.90	3.90	3.90	3.90	3.90	2.60	2.60	2.60	2.60	2.60	2.60	2.60	1.30	1.30	1.30	1.30	0.00
Scrapers, 550 HP	4.90	4.90	4.90	4.90	4.90	0.00	0.00	0.00	0.00	0.00	0.00	4.90	4.90	4.90	4.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Truck, 225 HP	4.31	4.31	4.31	4.31	4.31	4.31	4.31	4.31	4.31	4.31	4.31	4.31	4.31	4.31	4.31	4.31	4.31	4.31	4.31	4.31	4.31	4.31	4.31	4.31
Welding Unit, 70 HP	0.00	1.28	1.28	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	2.55	2.55	2.55	1.28	1.28	0.00	0.00	0.00	0.00
Dump truck, 210 HP	8.63	8.63	8.63	8.63	8.63	4.31	4.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Boom truck, 220 HP	0.00	4.31	4.31	8.63	8.63	12.94	12.94	12.94	12.94	12.94	12.94	12.94	12.94	12.94	12.94	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.63
Tandem Dump Truck, 30 CY, 250 HP	1.88	1.88	1.88	1.88	1.88	1.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete pump truck, 350 HP	0.00	1.88	1.88	1.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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 =	30.89	41.54	42.20	**51.42**	48.81	45.26	43.35	40.33	40.33	40.33	39.15	42.05	40.75	40.75	40.02	27.03	27.03	25.03	23.76	19.23	16.90	16.24	16.24	14.94
Monthly Emissions (lbs/month) =	556	748	760	926	879	815	780	726	726	726	705	757	734	734	720	487	487	451	428	346	304	292	292	269
Annual Emissions (lbs/year) =												9,102	**9,279**	9,265	9,226	8,787	8,395	8,031	7,678	7,298	6,877	6,443	6,031	5,542
Annual Emissions (tons/year) =												4.55	**4.64**	4.63	4.61	4.39	4.20	4.02	3.84	3.65	3.44	3.22	3.02	2.77

Equipment	Daily VOC Emissions (lbs/day) Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Month 13	Month 14	Month 15	Month 16	Month 17	Month 18	Month 19	Month 20	Month 21	Month 22	Month 23	Month 24
Pile driving equipment, 255 HP	0.36	0.36	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Roller Compactor, 100 HP	0.29	0.29	0.29	0.29	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe, 150 HP	0.38	0.75	0.75	0.75	0.75	1.13	1.13	1.13	1.13	1.13	1.13	0.75	0.75	0.75	0.75	0.75	0.75	0.38	0.38	0.38	0.38	0.38	0.38	0.38
Forklift, CAT V200, 175 HP	0.16	0.16	0.16	0.16	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.16	0.16	0.16	0.16	0.16	0.00	0.00	0.00	0.00	0.00
Bulldozer, 450G, 400 HP	0.57	0.57	0.57	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Motor Grader, 135 HP	0.21	0.21	0.21	0.21	0.21	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane, pile lifting, 25 ton, 160 HP	0.00	0.00	0.00	0.00	0.00	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.22	0.22	0.22	0.22	0.22	0.00	0.00	0.00	0.00
Excavator, 195 HP	0.00	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cranes, 230 ton, 220 HP	0.00	0.00	0.00	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.00	0.00	0.00	0.00	0.00
Cranes, 400 ton, 255 HP	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cranes, 15 ton, 101 HP	0.00	0.00	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.00	0.00	0.00
Manlift, 60ft, 30 HP	0.00	0.00	0.00	0.21	0.42	0.42	0.42	0.63	0.63	0.63	0.63	0.63	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.21	0.21	0.21	0.21	0.00
Scrapers, 550 HP	0.67	0.67	0.67	0.67	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.67	0.67	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Truck, 225 HP	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
Welding Unit, 70 HP	0.00	0.18	0.18	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.35	0.35	0.35	0.18	0.18	0.00	0.00	0.00	0.00
Dump truck, 210 HP	0.98	0.98	0.98	0.98	0.98	0.49	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Boom truck, 220 HP	0.00	0.49	0.49	0.98	0.98	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Tandem Dump Truck, 30 CY, 250 HP	0.40	0.40	0.40	0.40	0.40	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete pump truck, 350 HP	0.00	0.40	0.40	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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 =	4.52	6.27	6.41	**7.72**	7.13	6.99	6.73	6.45	6.45	6.45	6.15	6.44	6.22	6.22	6.06	4.15	4.15	3.77	3.59	2.61	2.20	2.06	2.06	1.85
Monthly Emissions (lbs/month) =	81	113	115	139	128	126	121	116	116	116	111	116	112	112	109	75	75	68	65	47	40	37	37	33
Annual Emissions (lbs/year) =												1,399	**1,429**	1,429	1,422	1,358	1,304	1,246	1,190	1,121	1,044	965	892	809
Annual Emissions (tons/year) =												0.70	**0.71**	0.71	0.71	0.68	0.65	0.62	0.59	0.56	0.52	0.48	0.45	0.40

Equipment	Daily SOx Emissions (lbs/day) Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Month 13	Month 14	Month 15	Month 16	Month 17	Month 18	Month 19	Month 20	Month 21	Month 22	Month 23	Month 24
Pile driving equipment, 255 HP	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Roller Compactor, 100 HP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe, 150 HP	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Forklift, CAT V200, 175 HP	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bulldozer, 450G, 400 HP	0.02	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Motor Grader, 135 HP	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane, pile lifting, 25 ton, 160 HP	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
Excavator, 195 HP	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cranes, 230 ton, 220 HP	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.00
Cranes, 400 ton, 255 HP	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cranes, 15 ton, 101 HP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Manlift, 60ft, 30 HP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scrapers, 550 HP	0.02	0.02	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Truck, 225 HP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Welding Unit, 70 HP	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dump truck, 210 HP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Boom truck, 220 HP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tandem Dump Truck, 30 CY, 250 HP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete pump truck, 350 HP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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 =	0.07	0.09	0.09	**0.10**	0.09	0.08	0.08	0.09	0.09	0.09	0.08	0.09	0.09	0.09	0.09	0.05	0.05	0.04	0.04	0.02	0.01	0.01	0.01	0.01
Monthly Emissions (lbs/month) =	1.22	1.57	1.64	1.87	1.62	1.51	1.50	1.54	1.54	1.54	1.40	1.64	1.60	1.60	1.53	0.88	0.88	0.79	0.75	0.34	0.20	0.13	0.13	0.09
Annual Emissions (lbs/year) =												18.58	18.97	**19.00**	18.90	17.91	17.17	16.45	15.69	14.49	13.15	11.74	10.48	8.93
Annual Emissions (tons/year) =												0.01	0.01	**0.01**	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00

Equipment	Daily PM10 Emissions (lbs/day) Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Month 13	Month 14	Month 15	Month 16	Month 17	Month 18	Month 19	Month 20	Month 21	Month 22	Month 23	Month 24
Pile driving equipment, 255 HP	0.12	0.12	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Roller Compactor, 100 HP	0.15	0.15	0.15	0.15	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe, 150 HP	0.38	0.75	0.75	0.75	0.75	1.13	1.13	1.13	1.13	1.13	1.13	0.75	0.75	0.75	0.75	0.75	0.75	0.38	0.38	0.38	0.38	0.38	0.38	0.38
Forklift, CAT V200, 175 HP	0.20	0.20	0.20	0.20	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.20	0.20	0.20	0.20	0.20	0.00	0.00	0.00	0.00	0.00
Bulldozer, 450G, 400 HP	0.44	0.44	0.44	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Motor Grader, 135 HP	0.20	0.20	0.20	0.20	0.20	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane, pile lifting, 25 ton, 160 HP	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.16	0.16	0.16	0.16	0.16	0.00	0.00	0.00	0.00
Excavator, 195 HP	0.00	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cranes, 230 ton, 220 HP	0.00	0.00	0.00	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.00	0.00	0.00	0.00	0.00
Cranes, 400 ton, 255 HP	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cranes, 15 ton, 101 HP	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00
Manlift, 60ft, 30 HP	0.00	0.00	0.00	0.23	0.46	0.46	0.46	0.68	0.68	0.68	0.68	0.68	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.23	0.23	0.23	0.23	0.00
Scrapers, 550 HP	0.37	0.37	0.37	0.37	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.37	0.37	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Truck, 225 HP	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
Welding Unit, 70 HP	0.00	0.09	0.09	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.18	0.18	0.18	0.09	0.09	0.00	0.00	0.00	0.00
Dump truck, 210 HP	0.23	0.23	0.23	0.23	0.23	0.11	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Boom truck, 220 HP	0.00	0.11	0.11	0.23	0.23	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
Tandem Dump Truck, 30 CY, 250 HP	0.21	0.21	0.21	0.21	0.21	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete pump truck, 350 HP	0.00	0.21	0.21	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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 =	2.42	3.42	3.53	**4.14**	3.92	4.10	3.81	3.92	3.92	3.92	3.71	**3.70**	3.47	3.47	3.27	2.41	2.41	2.03	1.95	1.30	1.05	0.95	0.95	0.72
Monthly Emissions (lbs/month) =	44	62	63	74	71	74	68	71	71	71	67	67	63	63	59	43	43	37	35	23	19	17	17	13
Annual Emissions (lbs/year) =												801	820	**821**	816	785	758	721	687	640	589	535	486	432
Annual Emissions (tons/year) =												0.40	0.41	**0.41**	0.41	0.39	0.38	0.36	0.34	0.32	0.29	0.27	0.24	0.22

Onroad Emission Factors

	Emission Factors (1)					
	NOx	CO	VOC	SOx	PM10	PM2.5
Truck Hauling (lbs/vmt)	0.03821	0.01404	0.00297	0.00003	0.00158	0.00138
Truck Hauling (lbs/1000 gals)	204.23	75.06	15.87	0.18	8.42	7.36584
Light Duty Trucks/Cars (lbs/vmt)(1)	0.00089	0.00928	0.00088	0.00001	0.00009	0.00003
Light Duty Trucks (lbs/1000 gals)(2)	25.02	211.54	19.17	0.20	2.12	1.41229
Medium Duty Trucks (lbs/1000 gals)(3)	135.71	172.26	19.65	0.00	4.57	4.11

Gasoline Equipment Factors - Small Engines

			(gm/bhp-hr)		
	NOx	CO	POC	SO2	PM10
Small Equipment(1) (lbs/bhp-hr)	0.0066	0.082	0.0010	0.00059	0.00072
Small Equipment(1) (lb/1000 gal)	116.78	1459.70	17.75	10.49	12.80

Notes:

(1) NOx, CO and VOC factors reflect Tier 1 Emissions Standards for Large SI Engines, effective starting in 2004.
SO2 and PM10 factors from AP-42 Table 3.3-1.

Title : SJ County 2010 Fleet - PM10
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2008/06/13 09:08:41
Scen Year: 2010 -- All model years in the range 1966 to 2010 selected
Season : Annual
Area : San Joaquin County
I/M Stat : Enhanced Interim (2005)
Emissions: Tons Per Day
****

	LDA-NCAT	LDA-CAT	LDA-DSL	LDA-TOT	LDT1-NCAT	LDT1-CAT	LDT1-DSL	LDT1-TOT	LDT2-NCAT	LDT2-CAT	LDT2-DSL
Vehicles	3383	224182	696	228261	1748	51469	3783	56999	1229	97766	295
VMT/1000	51	8218	17	8286	32	1966	123	2120	23	3799	8
Trips	13394	1407470	3838	1424700	7017	322312	23208	352537	4972	614248	1666
Reactive Organic Gas Emissions											
Run Exh	0.32	0.47	0	0.79	0.21	0.14	0.01	0.36	0.14	0.32	0
Idle Exh	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0.08	0.83	0	0.91	0.04	0.19	0	0.23	0.03	0.44	0
Total Ex	0.4	1.3	0	1.7	0.25	0.33	0.01	0.59	0.18	0.76	0
Diurnal	0.02	0.21	0	0.23	0.01	0.05	0	0.06	0.01	0.09	0
Hot Soak	0.05	0.28	0	0.33	0.03	0.06	0	0.09	0.02	0.12	0
Running	0.27	0.78	0	1.06	0.09	0.31	0	0.4	0.06	0.62	0
Resting	0.01	0.1	0	0.12	0.01	0.03	0	0.03	0	0.05	0
Total	0.76	2.67	0	3.43	0.38	0.79	0.01	1.18	0.27	1.64	0
Carbon Monoxide Emissions											
Run Exh	3.91	21.14	0.01	25.05	2.44	6.66	0.07	9.17	1.7	13.57	0.01
Idle Exh	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0.46	9.74	0	10.2	0.24	2.65	0	2.9	0.17	5.53	0
Total Ex	4.37	30.88	0.01	35.25	2.68	9.31	0.07	12.06	1.87	19.09	0.01
Oxides of Nitrogen Emissions											
Run Exh	0.26	1.97	0.02	2.25	0.16	0.61	0.18	0.95	0.11	1.85	0.01
Idle Exh	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0.02	0.65	0	0.67	0.01	0.15	0	0.16	0.01	0.5	0
Total Ex	0.28	2.61	0.02	2.92	0.17	0.77	0.18	1.12	0.12	2.35	0.01
Carbon Dioxide Emissions (000)											
Run Exh	0.03	3.17	0.01	3.21	0.02	0.94	0.05	1	0.01	1.82	0
Idle Exh	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0	0.11	0	0.12	0	0.03	0	0.03	0	0.06	0
Total Ex	0.03	3.28	0.01	3.32	0.02	0.97	0.05	1.04	0.01	1.88	0
PM10 Emissions											
Run Exh	0	0.1	0	0.11	0	0.03	0.01	0.03	0	0.11	0
Idle Exh	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0	0.01	0	0.01	0	0	0	0	0	0.01	0
Total Ex	0	0.12	0	0.12	0	0.03	0.01	0.04	0	0.12	0
TireWear	0	0.07	0	0.07	0	0.02	0	0.02	0	0.03	0
BrakeWr	0	0.11	0	0.11	0	0.03	0	0.03	0	0.05	0
Total	0	0.3	0	0.31	0	0.07	0.01	0.09	0	0.2	0
PM2.5 Emissions											
Run Exh	0	0.1	0	0.1	0	0.03	0.01	0.03	0	0.1	0
Idle Exh	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0	0.01	0	0.01	0	0	0	0	0	0.01	0
Total Ex	0	0.11	0	0.11	0	0.03	0.01	0.03	0	0.11	0
TireWear	0	0.02	0	0.02	0	0	0	0	0	0.01	0
BrakeWr	0	0.05	0	0.05	0	0.01	0	0.01	0	0.02	0
Total	0	0.17	0	0.18	0	0.04	0.01	0.05	0	0.14	0
Lead	0	0	0	0	0	0	0	0	0	0	0
SOx	0	0.03	0	0.03	0	0.01	0	0.01	0	0.02	0
Fuel Consumption (000 gallons)											
Gasoline	3.85	341.74	0	345.59	2.36	101.27	0	103.63	1.67	196.31	0
Diesel	0	0	0.61	0.61	0	0	4.22	4.22	0	0	0.28

Title : SJ (
Version : Er
Run Date : 2
Scen Year: :
Season : A
Area : Sa
I/M Stat : Er
Emissions: T
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	LDT2-TOT	MDV-NCAT	MDV-CAT	MDV-DSL	MDV-TOT	LHDT1-NC	LHDT1-CA	LHDT1-DSI	LHDT1-TO	LHDT2-NC	LHDT2-CA	LHDT2-DSI	LHDT2-TO	MHDT-NCA	MHDT-CAT	MHDT-DSL	MHDT-TOT	HHDT-NCA	HHDT-CAT	HHDT-DSL
Vehicles	99290	549	52855	177	53581	63	7362	2658	10083	23	1366	1730	3119	254	853	4139	5246	17	146	7504
VMT/1000	3830	12	2095	6	2114	1	329	122	452	0	55	68	123	2	39	263	305	0	17	1202
Trips	620886	2374	334290	1099	337763	2088	243426	33433	278947	752	45182	21763	67697	11602	38973	116050	166626	773	6657	37974
Reactive Or																				
Run Exh	0.46	0.1	0.21	0	0.31	0.01	0.13	0.03	0.17	0	0.03	0.02	0.05	0.02	0.03	0.08	0.12	0	0.05	1.52
Idle Exh	0	0	0	0	0	0	0.01	0	0.01	0	0	0	0	0	0	0	0	0	0	0.18
Start Ex	0.47	0.02	0.29	0	0.3	0.02	0.14	0	0.16	0.01	0.03	0	0.04	0.13	0.08	0	0.21	0.02	0.03	0
Total Ex	0.93	0.12	0.49	0	0.61	0.03	0.29	0.03	0.34	0.01	0.06	0.02	0.09	0.15	0.11	0.08	0.34	0.02	0.08	1.7
Diurnal	0.1	0	0.04	0	0.04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hot Soak	0.14	0	0.06	0	0.06	0	0.01	0	0.01	0	0	0	0	0.01	0	0	0.01	0	0	0
Running	0.68	0.01	0.27	0	0.28	0.01	0.17	0	0.18	0	0.05	0	0.05	0.06	0.03	0	0.09	0.01	0	0
Resting	0.05	0	0.02	0	0.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1.9	0.13	0.89	0	1.02	0.04	0.48	0.03	0.54	0.01	0.12	0.02	0.15	0.21	0.14	0.08	0.43	0.03	0.08	1.7
Carbon Mor																				
Run Exh	15.27	1.7	7.43	0	9.13	0.23	1.49	0.15	1.87	0.08	0.32	0.1	0.5	0.39	0.51	0.72	1.61	0.16	0.74	6.2
Idle Exh	0	0	0	0	0	0	0.06	0	0.07	0	0.01	0	0.01	0	0.01	0.01	0.03	0	0	0.72
Start Ex	5.7	0.16	3.21	0	3.36	0.09	2.03	0	2.13	0.03	0.45	0	0.48	0.79	1.35	0	2.13	0.25	0.49	0
Total Ex	20.97	1.86	10.63	0	12.49	0.33	3.58	0.15	4.06	0.11	0.78	0.1	0.99	1.18	1.86	0.73	3.77	0.41	1.23	6.92
Oxides of N																				
Run Exh	1.97	0.1	1.17	0.01	1.28	0	0.2	0.58	0.78	0	0.04	0.4	0.45	0.01	0.12	2.66	2.79	0.01	0.2	21.51
Idle Exh	0	0	0	0	0	0	0	0.01	0.01	0	0	0	0.01	0	0	0.03	0.03	0	0	1.51
Start Ex	0.5	0.01	0.3	0	0.3	0	0.46	0	0.46	0	0.09	0	0.09	0.01	0.13	0	0.14	0	0.06	0
Total Ex	2.48	0.11	1.46	0.01	1.58	0	0.66	0.58	1.25	0	0.14	0.41	0.55	0.02	0.25	2.7	2.97	0.01	0.26	23.02
Carbon Dio																				
Run Exh	1.84	0.01	1.38	0	1.39	0	0.35	0.07	0.42	0	0.06	0.04	0.1	0	0.03	0.44	0.47	0	0.01	2.43
Idle Exh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.09
Start Ex	0.06	0	0.05	0	0.05	0	0.01	0	0.01	0	0	0	0	0	0	0	0	0	0	0
Total Ex	1.9	0.01	1.42	0	1.43	0	0.36	0.07	0.44	0	0.06	0.04	0.1	0	0.03	0.44	0.47	0	0.01	2.52
PM10 Emis																				
Run Exh	0.11	0	0.05	0	0.05	0	0	0.01	0.01	0	0	0.01	0.01	0	0	0.09	0.09	0	0	0.85
Idle Exh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03
Start Ex	0.01	0	0.01	0	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Ex	0.12	0	0.06	0	0.06	0	0.01	0.01	0.01	0	0	0.01	0.01	0	0	0.09	0.09	0	0	0.88
TireWear	0.03	0	0.02	0	0.02	0	0	0	0.01	0	0	0	0	0	0	0	0	0	0	0.05
BrakeWr	0.05	0	0.03	0	0.03	0	0	0	0.01	0	0	0	0	0	0	0	0	0	0	0.04
Total	0.21	0	0.11	0	0.11	0	0.01	0.01	0.02	0	0	0.01	0.01	0	0	0.1	0.1	0	0	0.96
PM2.5 Emis																				
Run Exh	0.1	0	0.05	0	0.05	0	0	0.01	0.01	0	0	0	0.01	0	0	0.08	0.08	0	0	0.78
Idle Exh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03
Start Ex	0.01	0	0.01	0	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Ex	0.11	0	0.05	0	0.05	0	0	0.01	0.01	0	0	0	0.01	0	0	0.08	0.08	0	0	0.81
TireWear	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.01
BrakeWr	0.02	0	0.01	0	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.02
Total	0.14	0	0.07	0	0.07	0	0.01	0.01	0.02	0	0	0.01	0.01	0	0	0.09	0.09	0	0	0.84
Lead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOx	0.02	0	0.01	0	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.02
Fuel Consu																				
Gasoline	197.98	1.23	147.62	0	148.85	0.27	37.94	0	38.2	0.09	6.41	0	6.5	0.69	3.59	0	4.28	0.11	1.35	0
Diesel	0.28	0	0	0.21	0.21	0	0	6.34	6.34	0	0	3.6	3.6	0	0	39.49	39.49	0	0	226.63

Title : SJ (
Version : E
Run Date : 2
Scen Year: :
Season : A
Area : Sa
I/M Stat : Er
Emissions: T
****

	HHDT-TOT	OBUS-NCA	OBUS-CAT	OBUS-DSL	OBUS-TOT	SBUS-NCA	SBUS-CAT	SBUS-DSL	SBUS-TOT	UB-NCAT	UB-CAT	UB-DSL	UB-TOT	MH-NCAT	MH-CAT	MH-DSL	MH-TOT	MCY-NCAT	MCY-CAT	MCY-DSL	MCY-TOT	ALL-TOT
Vehicles	7667	6	133	80	219	3	40	442	485	4	43	218	265	199	3877	560	4635	12405	5536	0	17941	487792
VMT/1000	1219	0	7	5	12	0	2	22	24	1	6	32	38	2	47	7	56	111	63	0	174	18754
Trips	45405	279	6069	2243	8591	11	160	1770	1941	18	172	871	1061	20	388	56	464	24807	11071	0	35878	3342490
Reactive Or																						
Run Exh	1.58	0	0.01	0	0.01	0	0	0.01	0.02	0.01	0.02	0.03	0.06	0.01	0.02	0	0.03	0.43	0.12	0	0.54	4.5
Idle Exh	0.18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2
Start Ex	0.05	0	0.01	0	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0.07	0.03	0	0.1	2.49
Total Ex	1.8	0	0.02	0	0.02	0	0.01	0.01	0.02	0.01	0.02	0.03	0.06	0.01	0.02	0	0.04	0.5	0.14	0	0.64	7.19
Diurnal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.01	0.03	0	0.04	0.48
Hot Soak	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.01	0.01	0	0.02	0.66
Running	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.04	0.04	0	0.09	2.85
Resting	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.01	0	0.02	0.24
Total	1.81	0.01	0.02	0	0.03	0	0.01	0.01	0.02	0.01	0.02	0.03	0.06	0.01	0.02	0	0.04	0.56	0.24	0	0.8	11.42
Carbon Mor																						
Run Exh	7.1	0.01	0.09	0.01	0.12	0.03	0.06	0.09	0.17	0.13	0.25	0.1	0.48	0.32	0.62	0.01	0.95	5.21	0.9	0	6.1	77.52
Idle Exh	0.72	0	0	0	0	0	0	0.01	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0.84
Start Ex	0.74	0.02	0.19	0	0.21	0	0.01	0	0.01	0	0.03	0	0.03	0	0.01	0	0.01	0.22	0.18	0	0.4	28.31
Total Ex	8.56	0.03	0.29	0.01	0.33	0.03	0.07	0.09	0.19	0.14	0.28	0.1	0.51	0.32	0.63	0.01	0.96	5.43	1.08	0	6.51	106.67
Oxides of N																						
Run Exh	21.72	0	0.03	0.04	0.07	0	0.01	0.29	0.3	0	0.07	0.65	0.72	0.01	0.09	0.07	0.17	0.16	0.08	0	0.24	33.7
Idle Exh	1.51	0	0	0	0	0	0	0.02	0.02	0	0	0	0	0	0	0	0	0	0	0	0	1.58
Start Ex	0.06	0	0.02	0	0.02	0	0	0	0	0	0	0	0	0	0	0	0	0.01	0	0	0.01	2.44
Total Ex	23.29	0	0.05	0.04	0.1	0	0.01	0.31	0.32	0	0.08	0.65	0.73	0.01	0.09	0.07	0.17	0.17	0.08	0	0.25	37.71
Carbon Diox																						
Run Exh	2.44	0	0.01	0.01	0.01	0	0	0.04	0.04	0	0.01	0.09	0.09	0	0.04	0.01	0.05	0.01	0.01	0	0.02	11.08
Idle Exh	0.09	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Start Ex	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.28
Total Ex	2.53	0	0.01	0.01	0.01	0	0	0.04	0.04	0	0.01	0.09	0.09	0	0.04	0.01	0.05	0.02	0.01	0	0.03	11.46
PM10 Emiss																						
Run Exh	0.85	0	0	0	0	0	0	0.01	0.01	0	0	0.01	0.01	0	0	0	0	0.01	0	0	0.01	1.3
Idle Exh	0.03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03
Start Ex	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03
Total Ex	0.88	0	0	0	0	0	0	0.01	0.01	0	0	0.01	0.01	0	0	0	0	0.01	0	0	0.01	1.36
TireWear	0.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.21
BrakeWr	0.04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.28
Total	0.96	0	0	0	0	0	0	0.01	0.01	0	0	0.01	0.01	0	0	0	0	0.01	0	0	0.01	1.84
PM2.5 Emis																						
Run Exh	0.78	0	0	0	0	0	0	0.01	0.01	0	0	0.01	0.01	0	0	0	0	0	0	0	0	1.19
Idle Exh	0.03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03
Start Ex	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03
Total Ex	0.81	0	0	0	0	0	0	0.01	0.01	0	0	0.01	0.01	0	0	0	0	0	0	0	0	1.25
TireWear	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.05
BrakeWr	0.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.12
Total	0.84	0	0	0	0	0	0	0.01	0.01	0	0	0.01	0.01	0	0	0	0	0.01	0	0	0.01	1.42
Lead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOx	0.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.11
Fuel Consur																						
Gasoline	1.45	0.02	0.62	0	0.63	0.02	0.19	0	0.21	0.08	0.58	0	0.66	0.21	3.78	0	3.98	2.61	1.37	0	3.99	855.95
Diesel	226.63	0	0	0.78	0.78	0	0	3.31	3.31	0	0	8.03	8.03	0	0	1.06	1.06	0	0	0	0	294.57

Daily Dust Emissions (lbs/day) - PM2.5

Equipment	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Month 13	Month 14	Month 15	Month 16	Month 17	Month 18	Month 19	Month 20	Month 21	Month 22	Month 23	Month 24
Pile driving equipment, 255 HP																								
Roller Compactor, 100 HP	0.08	0.08	0.08	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe, 150 HP	6.68E-02	1.34E-01	1.34E-01	1.34E-01	1.34E-01	2.01E-01	2.01E-01	2.01E-01	2.01E-01	2.01E-01	2.01E-01	1.34E-01	1.34E-01	1.34E-01	1.34E-01	1.34E-01	1.34E-01	6.68E-02	6.68E-02	6.68E-02	6.68E-02	6.68E-02	6.68E-02	6.68E-02
Forklift, CAT V200, 175 HP																								
Bulldozer, 450G, 400 HP	1.85	1.85	1.85	1.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Motor Grader, 135 HP	0.06	0.06	0.06	0.06	0.06	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane, pile lifting, 25 ton, 160 HP																								
Excavator, 195 HP	0.00E+00	2.25E-02	2.25E-02	2.25E-02	2.25E-02	2.25E-02	2.25E-02	2.25E-02	2.25E-02	2.25E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cranes, 230 ton, 220 HP																								
Cranes, 400 ton, 255 HP																								
Cranes, 15 ton, 101 HP																								
Manlift, 60ft, 30 HP																								
Scrapers, 550 HP	1.85	1.85	1.85	1.85	1.85	0.00	0.00	0.00	0.00	0.00	0.00	1.85	1.85	1.85	1.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Truck, 225 HP	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Welding Unit, 70 HP																								
Dump truck, 210 HP	0.15	0.15	0.15	0.15	0.15	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Boom truck, 220 HP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tandem Dump Truck, 30 CY, 250 HP	0.08	0.08	0.08	0.08	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete pump truck, 350 HP	0.00	0.08	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Windblown Dust (active construction area)	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
Worker Unpaved Road Travel	0.01	0.01	0.02	0.02	0.03	0.04	0.05	0.06	0.06	0.07	0.09	0.10	0.11	0.11	0.11	0.11	0.10	0.09	0.08	0.07	0.06	0.04	0.03	0.02
Delivery Truck Unpaved Road Travel	0.03	0.12	0.20	0.29	0.25	0.29	0.37	0.43	0.29	0.24	0.19	0.18	0.15	0.12	0.11	0.09	0.04	0.03	0.06	0.06	0.15	0.08	0.06	0.06
Total =	4.50	4.76	**4.84**	4.94	2.98	1.09	1.05	1.04	0.90	0.86	0.81	2.59	2.56	2.54	2.52	0.66	0.60	0.51	0.54	0.53	0.60	0.51	0.49	0.47
Monthly Emissions (lbs/month) =	80.97	85.71	87.15	88.97	53.68	19.60	18.92	18.78	16.25	15.51	14.59	46.62	46.14	45.68	45.44	11.93	10.84	9.22	9.75	9.58	10.87	9.18	8.80	8.54
Annual Emissions (lbs/year) =												**546.75**	511.91	471.88	430.17	353.13	310.29	299.91	290.74	281.54	276.16	269.84	264.05	225.97
Annual Emissions (tons/year) =												**0.27**	0.26	0.24	0.22	0.18	0.16	0.15	0.15	0.14	0.14	0.13	0.13	0.11

Daily Dust Emissions (lbs/day) - PM10

Equipment	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Month 13	Month 14	Month 15	Month 16	Month 17	Month 18	Month 19	Month 20	Month 21	Month 22	Month 23	Month 24
Pile driving equipment, 255 HP																								
Roller Compactor, 100 HP	0.84	0.84	0.84	0.84	0.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe, 150 HP	1.90	3.80	3.80	3.80	3.80	5.70	5.70	5.70	5.70	5.70	5.70	3.80	3.80	3.80	3.80	3.80	3.80	1.90	1.90	1.90	1.90	1.90	1.90	1.90
Forklift, CAT V200, 175 HP																								
Bulldozer, 450G, 400 HP	3.36	3.36	3.36	3.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Motor Grader, 135 HP	0.83	0.83	0.83	0.83	0.83	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane, pile lifting, 25 ton, 160 HP																								
Excavator, 195 HP	0.00	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cranes, 230 ton, 220 HP																								
Cranes, 400 ton, 255 HP																								
Cranes, 15 ton, 101 HP																								
Manlift, 60ft, 30 HP																								
Scrapers, 550 HP	3.36	3.36	3.36	3.36	3.36	0.00	0.00	0.00	0.00	0.00	0.00	3.36	3.36	3.36	3.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Truck, 225 HP	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19
Welding Unit, 70 HP																								
Dump truck, 210 HP	1.53	1.53	1.53	1.53	1.53	0.77	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Boom truck, 220 HP																								
Tandem Dump Truck, 30 CY, 250 HP	0.77	0.77	0.77	0.77	0.77	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete pump truck, 350 HP	0.00	0.77	0.77	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Windblown Dust (active construction area)	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27
Worker Unpaved Road Travel	0.07	0.11	0.17	0.20	0.28	0.36	0.51	0.61	0.62	0.65	0.90	0.99	1.07	1.11	1.07	1.12	1.01	0.87	0.83	0.73	0.57	0.36	0.30	0.15
Delivery Truck Unpaved Road Travel	0.29	1.22	1.96	2.94	2.50	2.89	3.72	4.31	2.89	2.45	1.91	1.81	1.47	1.18	1.08	0.88	0.39	0.29	0.64	0.64	1.52	0.78	0.64	0.64
Total =	15.41	19.20	20.00	**21.01**	16.52	13.94	13.31	13.24	11.83	11.41	10.98	12.43	12.16	11.90	11.77	8.27	7.67	5.53	5.83	5.73	6.45	5.51	5.30	5.15
Monthly Emissions (lbs/month) =	277.40	345.58	359.94	378.12	297.38	250.87	239.58	238.23	212.86	205.46	197.63	223.66	218.83	214.27	211.91	148.85	138.02	99.58	104.95	103.21	116.14	99.24	95.45	92.78
Annual Emissions (lbs/year) =												**3226.71**	3168.13	3036.83	2888.79	2659.52	2500.16	2348.87	2214.25	2079.22	1982.51	1876.28	1774.11	1643.22
Annual Emissions (tons/year) =												**1.61**	1.58	1.52	1.44	1.33	1.25	1.17	1.11	1.04	0.99	0.94	0.89	0.82

Construction Equipment Process Rates For Dust Calculations

Equipment	Daily Process Rate/Unit	Units	Total Daily Process Rate Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Month 13	Month 14	Month 15	Month 16	Month 17	Month 18	Month 19	Month 20	Month 21	Month 22	Month 23	Month 24
Pile driving equipment, 255 HP	N/A	N/A																								
Roller Compactor, 100 HP	3.0	vmt/day	3.03	3.03	3.03	3.03	3.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe, 150 HP	1260	tons/day	1260.00	2520.00	2520.00	2520.00	2520.00	3780.00	3780.00	3780.00	3780.00	3780.00	3780.00	2520.00	2520.00	2520.00	2520.00	2520.00	2520.00	1260.00	1260.00	1260.00	1260.00	1260.00	1260.00	1260.00
Forklift, CAT V200, 175 HP	N/A	N/A																								
Bulldozer, 450G, 400 HP	8	hrs/day	8.00	8.00	8.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Motor Grader, 135 HP	3.0	vmt/day	3.03	3.03	3.03	3.03	3.03	3.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane, pile lifting, 25 ton, 160 HP	N/A	N/A																								
Excavator, 195 HP	1260.0	tons/day	0.00	1260.00	1260.00	1260.00	1260.00	1260.00	1260.00	1260.00	1260.00	1260.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cranes, 230 ton, 220 HP	N/A	N/A																								
Cranes, 400 ton, 255 HP	N/A	N/A																								
Cranes, 15 ton, 101 HP	N/A	N/A																								
Manlift, 60ft, 30 HP	N/A	N/A																								
Scrapers, 550 HP	8	hrs/day	8.00	8.00	8.00	8.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	8.00	8.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Truck, 225 HP	9.1	vmt/day	9.09	9.09	9.09	9.09	9.09	9.09	9.09	9.09	9.09	9.09	9.09	9.09	9.09	9.09	9.09	9.09	9.09	9.09	9.09	9.09	9.09	9.09	9.09	9.09
Welding Unit, 70 HP	N/A	N/A																								
Dump truck, 210 HP	3.0	vmt/day	6.06	6.06	6.06	6.06	6.06	3.03	3.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Boom truck, 220 HP	N/A	N/A																								
Tandem Dump Truck, 30 CY, 250 HP	3.0	vmt/day	3.03	3.03	3.03	3.03	3.03	3.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete pump truck, 350 HP	3.0	vmt/day	0.00	3.03	3.03	3.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Windblown Dust (active construction area)	191,400	scf/day	191,400	191,400	191,400	191,400	191,400	191,400	191,400	191,400	191,400	191,400	191,400	191,400	191,400	191,400	191,400	191,400	191,400	191,400	191,400	191,400	191,400	191,400	191,400	191,400
Workers	0.1	vmt/day	1.08	1.70	2.67	3.13	4.32	5.57	7.73	9.32	9.49	9.94	13.81	15.17	16.31	16.93	16.42	17.16	15.45	13.35	12.67	11.19	8.69	5.57	4.60	2.33
Delivery Trucks	0.25	vmt/day	1.50	6.25	10.00	15.00	12.75	14.75	19.00	22.00	14.75	12.50	9.75	9.25	7.50	6.00	5.50	4.50	2.00	1.50	3.25	3.25	7.75	4.00	3.25	3.25

Longest dimension of construction site 1000 feet

Notes - Fugitive Dust Emission Calculations

(1) Wind erosion emission factor for active construction area is based on "Improvement of Specific Emission Factors (BACM Project No. 1), Final Report", prepared for South Coast AQMD by Midwest Research Institute, March 1996.
(2) Material unloading emission factors are based on AP-42, Section 13.2.4, 11/06.
(Based on average annual wind speed recorded onsite and default soil moisture contents.)
(3) Trenching emission factor is based on AP-42, Table 11.9-2 (dragline operations), 1/95.
(Based on default soil moisture content.)
(4) Unpaved surface travel emission factors for water trucks, loaders, dump trucks, forklifts, delivery trucks, are based on AP-42, Section 13.2.2, 11/06.
(Based on default soil silt content.)
(5) Dust control efficiency for unpaved road travel and active excavation area is based on "Control of Open Fugitive Dust Sources", U.S. EPA, 9/88.
(Based on default evaporation rate shown in EPA document, Figure 3-2, 9/88, and typical water application rate shown in EPA document, page 3-23, 9/88.)

Fugitive Dust Controlled Emission Factors

Equipment	Units	Uncontrolled PM2.5 Emission Factor(1) (lbs/unit)	Uncontrolled PM10 Emission Factor(1) (lbs/unit)	Control Factor(1) (%)	Controlled PM2.5 Emission Factor(1) (lbs/unit)	Controlled PM10 Emission Factor(1) (lbs/unit)
Pile driving equipment, 255 HP	N/A					
Roller Compactor, 100 HP	vmt	0.33	3.25	92%	0.03	0.28
Backhoe, 150 HP	tons	5.30E-05	1.51E-03	0%	0.00	0.00
Forklift, CAT V200, 175 HP	N/A					
Bulldozer, 450G, 400 HP	hours	0.23	0.42	0%	0.23	0.42
Motor Grader, 135 HP	vmt	0.02	0.28	0%	0.02	0.28
Crane, pile lifting, 25 ton, 160 HP	N/A					
Excavator, 195 HP	tons	1.79E-05	1.18E-04	0%	1.79E-05	1.18E-04
Cranes, 230 ton, 220 HP	N/A					
Cranes, 400 ton, 255 HP	N/A					
Cranes, 15 ton, 101 HP	N/A					
Manlift, 60ft, 30 HP	N/A					
Scrapers, 550 HP	hours	0.23	0.42	0%	0.23	0.42
Water Truck, 225 HP	vmt	0.28	2.84	92%	0.02	0.24
Welding Unit, 70 HP	N/A					
Dump truck, 210 HP	vmt	0.30	2.98	92%	0.03	0.25
Boom truck, 220 HP	N/A					
Tandem Dump Truck, 30 CY, 250 HP	vmt	0.30	2.98	92%	0.03	0.25
Concrete pump truck, 350 HP	vmt	0.30	2.98	92%	0.03	0.25
Windblown Dust (active construction area)	sq.ft.	6.73E-06	1.682E-05	92%	5.71E-07	1.43E-06
Worker Unpaved Road Travel	vmt	0.08	0.77	92%	0.01	0.07
Delivery Truck Unpaved Road Travel	vmt	0.23	2.31	92%	0.02	0.20