APPENDIX B.5

Construction Emissions and Impact Analysis

Construction Phases

Construction of GSEP is expected to last approximately 37 months. The construction will occur in the following four main phases:

- Site preparation;
- Foundation work;
- Construction/installation of major structures; and,
- Installation of major equipment.

Construction Schedule
The construction sequence for power plant construction includes the following general steps: (1) mobilization, (2) site preparation and grading, (3) foundation construction, (4) major equipment installation including the solar array field and offsite linears (if required), (5) balance of plant construction, (6) testing and commissioning.

The total site construction related acreage is ~1887 acres, i.e., temporary disturbance area comprised of 1800 acres on the main plant site and ~87 acres for offsite linears, including the proposed access road. The maximum acreage disturbed on any one day during constriction will be 160 acres. Although the site is essentially flat, the site will require moderate to extensive grading and leveling prior to construction of the power blocks, support systems, solar array field, and site buildings. 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 and structures are finished, installation and assembly of the mechanical and electrical equipment are scheduled to commence.

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

- Dust entrained during site preparation and finish grading/excavation at the construction site;
- Dust entrained during offsite 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, and construction of onsite structures;
- Exhaust from water trucks used to control construction dust emissions;
- Exhaust from Diesel-powered welding machines, electric generators, air compressors, and water pumps;

- 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. Worst-case daily dust emissions are expected to occur during the first months of construction when site preparation occurs. The worst-case daily exhaust emissions are expected to occur during the middle of the construction schedule during the installation of the major mechanical equipment. Annual emissions are based on the average equipment mix and use rates during the construction period. Daily emissions are derived from the annual values using the estimated construction time frame.

Available Mitigation Measures

The following mitigation measures are proposed to control exhaust emissions from the Diesel heavy equipment used during construction of GSEP:

- The applicant will have an on-site construction mitigation manager who will be responsible for the implementation and compliance of the construction mitigation program. The documentation of the ongoing implementation and compliance with the proposed construction mitigations will be provided on a periodic basis.
- All unpaved roads and disturbed areas in the project and laydown construction sites will be watered as frequently as necessary to control fugitive dust. The frequency of watering will be on a minimum schedule of four (4) times during the daily construction activity period. Watering may be reduced or eliminated during periods of precipitation.
- Onsite vehicle speeds will be limited to <15 miles per hour on unpaved areas within the project construction site.
- The construction site entrance(s) will be posted with visible speed limit signs.
- All construction equipment vehicle tires will be inspected and cleaned as necessary to be free of dirt prior to leaving the construction site via paved roadways.
- Gravel ramps will be provided at the tire cleaning area.
- All unpaved exits from the construction site will be graveled or treated to reduce track-out to public roadways.
- All construction vehicles will enter the construction site through the treated entrance roadways, unless an alternative route has been provided.
- Construction areas adjacent to any paved roadway will be provided with sandbags or other similar measures as specified in the construction Storm Water Pollution Prevention Plan (SWPPP) to prevent runoff to roadways.

- All paved roads within the construction site will be cleaned on a periodic basis (or less during periods of precipitation), to prevent the accumulation of dirt and debris.
- The first 500 feet of any public roadway exiting the construction site will be cleaned on a periodic basis (or less during periods of precipitation), using wet sweepers or air filtered dry vacuum sweepers, when construction activity occurs or on any day when dirt or runoff from the construction site is visible on the public roadways.
- Any soil storage piles and/or disturbed areas that remain inactive for longer than 10 days will be covered, or shall be treated with appropriate dust suppressant compounds.
- All vehicles that are used to transport solid bulk material on public roadways and that have the potential to cause visible emissions will be covered, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to minimize fugitive dust emissions. A minimum freeboard height of two (2) feet will be required on all bulk materials transport.
- 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 will remain in place until the soil is stabilized or permanently covered with vegetation.
- Disturbed areas will be re-vegetated as soon as practical.

To mitigate exhaust emissions from construction equipment, the applicant is proposing the following:

- The applicant will work with the construction contractor to utilize to the extent feasible, EPA-ARB Tier 2/Tier 3 engine compliant equipment for equipment over 100 horsepower.
- Insure periodic maintenance and inspections per the manufacturers specifications.
- Reduce idling time through equipment and construction scheduling.
- Use California low sulfur diesel fuels (<=15 ppmw S).

Estimation of Emissions with Mitigation Measures

Tables B.5-1 through B.5-3 show the estimated average daily and annual onsite heavy equipment exhaust and fugitive dust emissions with recommended mitigation measures. Detailed emission calculations are included in Table B.5-5.

TABLE B.5-1 AVERAGE DAILY ONSITE EMISSIONS DURING CONSTRUCTION, POUNDS PER DAY

	NO_x	CO	VOC	SO_x	$PM_{10}/PM_{2.5}$
Construction Fugitive Dust	0	0	0	0	203.4/42.7
Equipment and Vehicle Exhaust	93.7	46.7	13.4	0.11	4.97/4.93
Total =	93.7	46.7	13.4	0.11	208.4/47.63

TABLE B.5-2 AVERAGE ANNUAL ONSITE EMISSIONS DURING CONSTRUCTION, TONS PER YEAR

	NO_x	CO	VOC	SO_x	$PM_{10}/PM_{2.5}$
Construction Fugitive Dust	0	0	0	0	9.14/1.92
Equipment and Vehicle Exhaust	12.37	6.20	1.77	0.015	0.66/0.65
Total =	12.37	6.20	1.77	0.015	9.80/2.57

TABLE B.5-3 ANNUAL ONSITE EMISSIONS DURING CONSTRUCTION, TONS PER CONSTRUCTION PERIOD (37 MONTHS)

	NO_x	CO	VOC	SO_x	$PM_{10}/PM_{2.5}$
Construction Fugitive Dust	0	0	0	0	28.1/5.9
Equipment and Vehicle Exhaust	38.14	19.01	5.45	0.05	2.02/2.01
Total =	38.14	19.01	5.45	0.05	30.1/7.91

Analysis of Ambient Impacts from Facility Construction

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

Existing Ambient Levels

As with the modeling analysis of project operating impacts (Section 5.2), monitoring stations delineated in Section 5.2 were used to establish the ambient background levels for the construction impact modeling analysis. Table 5.2-15 showed the maximum concentrations of NO_x, SO_2, CO, $PM_{2.5}$ and PM_{10} recorded for 2006 through 2008 at those monitoring stations.

Dispersion Model

As in the analysis of project operating impacts, the USEPA-approved model AERMOD (version 07026) was used to estimate ambient impacts from construction activities. A detailed discussion of the AERMOD model and the associated processing programs AERSURFACE, AERMET, and AERMAP is included in Section 5.2. The construction impacts modeling analysis generally used the same modeling options, receptor locations, and meteorological data as used for the project operating impact analysis. To reduce run times for the area source(s) modeled for fugitive dust and the large number of point sources modeled for mobile combustion source equipment, the TOXICS keyword was used for modeling construction impacts. Also, since maximum impacts due to construction activities are expected to occur at or near the property boundary, only the downwash and fenceline receptor grids were used for modeling construction impacts. A detailed discussion of the receptor locations and meteorological data is included in Section 5.2.

The emission sources for the construction site were grouped into two categories: exhaust emissions and dust emissions. Combustion equipment exhaust emissions were modeled as

twenty-five (25) 10-foot (3.048 meter) high point sources (exhaust parameters of 750 Kelvin, 64.681 m/s velocity, and 0.1524m diameter) placed at regular 150-meter intervals around a 160-acre construction area. Construction fugitive dust emissions were modeled as area sources covering the same 160-acre construction area with an effective height of 0.5 meters. Based on the location of maximum impacts on the fenceline north of Block 1 in the project operating impact analysis, construction sources were located in a 160-acre square-area around Block 1 and extending to the north edge of the solar collectors along the north Project fenceline. Combustion and fugitive emissions were assumed to occur for 10 hours/day (8 AM to 6 PM) consistent with the expected period of onsite construction activities generating both exhaust emissions and fugitive dust.

To determine the construction impacts on short-term ambient standards (24 hours and less), the estimated worst-case daily onsite construction emission levels shown in Table B.5-1 were used. For pollutants with annual average ambient standards, the annual onsite emission levels shown in Table B.5-2 were used.

Modeling Results

Based on the emission rates of NO_x, SO_2, CO, $PM_{2.5}$, and PM_{10}, the modeling options, receptor grids, and meteorological data, AERMOD calculates short-term 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} spread over the estimated daily hours of operation. The annual impacts are based on the annual emission rates of these pollutants.

The annual average concentrations of NO_2 were computed following the revised USEPA guidance for computing these concentrations (August 9, 1995 Federal Register, 60 FR 40465). 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/NO_x ratio.

The modeling analysis results are shown in Table B.5-4. Also included in the table are the maximum background levels that have occurred in the last three years and the resulting total ambient impacts. As shown in Table B.5-4, modeled construction impacts for all modeled pollutants are below the most stringent state or national standards. However, total combined (modeled plus background) impacts are greater than the state PM_{10} and national 24-hour $PM_{2.5}$ standards since background pollutant concentrations already are nearly equal to or exceed these standards in the absence of the construction emissions for GSEP.

TABLE B.5-4 MODELED MAXIMUM CONSTRUCTION IMPACTS

Pollutant	Averaging Time	Maximum Construction Impacts (µg/m³)	Background (µg/m³)	Total Impact (µg/m³)	State Standard (µg/m³)	Federal Standard (µg/m³)
NO_2[a]	1-hour Annual	17.2 0.31	149 38.0	166 38.3	339 57	- 100
SO_2	1-hour 3-hour 24-hour Annual	0.020 0.014 0.003 0.0005	47.2 31.2 13.1 2.7	47.22 31.21 13.10 2.70	655 - 105 -	- 1300 365 80
CO	1-hour 8-hour	8.58 2.25	2530 1789	2539 1791	23,000 10,000	40,000 10,000

PM_{10}	24-hour Annual[b]	45.0 0.82	88 31.0	133.0 31.8	50 20	150 -
$PM_{2.5}$	24-hour Annual[b]	9.45 0.19	28 10.4	37.5 10.6	- 12	35 15.0
Notes: [a]ARM applied for annual average, using national default 0.75 ratio. [b]Annual Arithmetic Mean.						

Again, AAQS are only exceeded for pollutants and averaging times where background concentrations already are nearly equal to or exceed the AAQS. It should be noted that modeled GSEP construction impacts are not unusual in comparison to modeled impacts for most construction sites; in practice, construction sites that use good dust suppression techniques and low-emitting vehicles typically would not be expected to cause exceedances of ambient air quality standards. The input and output modeling files are being provided electronically to the appropriate agencies.

Attachment - Detailed Emission Calculations

Table B.5-5 Construction Emissions Calculations

Table B.5-6 Construction Equipment Schedules

Table B.5-7 Construction Manpower Schedules

Table B.5-8 MDAB EMFAC Output

Table B.5-9 EMFAC Composite EF Calculations

Table B.5-10 Construction Modeling Impact Summary

Table B.5-5 Construction Emission Totals

Construction Activity	lbs/day NOx	CO	VOC	SOx	PM10	PM2.5	tons per const period NOx	CO	VOC	SOx	PM10	PM2.5	tons per year NOx	CO	VOC	SOx	PM10	PM2.5
Main Site																		
Construction Equipment-Exhaust																		
Main Site	93.700	46.700	13.400	0.110	4.970	4.930	38.136	19.007	5.454	0.045	2.023	2.007	12.368	6.164	1.769	0.015	0.656	0.651
T-Line	59.300	42.000	14.300	0.080	4.010	3.980	24.135	17.094	5.820	0.033	1.632	1.620	7.828	5.544	1.888	0.011	0.529	0.525
Gas Line	84.900	65.300	21.600	0.100	6.230	6.180	34.554	26.577	8.791	0.041	2.536	2.515	11.207	8.620	2.851	0.013	0.822	0.816
Access Road	140.400	88.300	28.200	0.150	10.510	10.410	57.143	35.938	11.477	0.061	4.278	4.237	18.533	11.656	3.722	0.020	1.387	1.374
Construction Site-Fugitive Dust	0.000	0.000	0.000	0.000	203.400	42.700	0.000	0.000	0.000	0.000	28.100	5.900	0.000	0.000	0.000	0.000	9.114	1.914
Construction Dust-Access Rd Const.	0.000	0.000	0.000	0.000	3.200	0.670	0.000	0.000	0.000	0.000	0.099	0.020	0.000	0.000	0.000	0.000	0.032	0.006
Site Delivery-Vehicle Exhaust	2.380	0.760	0.170	0.003	0.110	0.110	0.969	0.309	0.069	0.001	0.045	0.045	0.314	0.100	0.022	0.000	0.015	0.015
Site Support-Vehicle Exhaust	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Worker Travel-Vehicle Exhaust	27.750	277.000	23.000	0.250	2.250	2.250	11.294	112.739	9.361	0.102	0.916	0.916	3.663	36.564	3.036	0.033	0.297	0.297
Track Out-Fugitive Dust	0.000	0.000	0.000	0.000	2.360	0.400	0.000	0.000	0.000	0.000	0.961	0.163	0.000	0.000	0.000	0.000	0.312	0.053
Unpaved Roads-Fugitive Dust	0.000	0.000	0.000	0.000	73.240	7.170	0.000	0.000	0.000	0.000	2.420	0.240	0.000	0.000	0.000	0.000	0.785	0.078
Paved Roads-Fugitive Dust	0.000	0.000	0.000	0.000	1.240	0.040	0.000	0.000	0.000	0.000	0.505	0.016	0.000	0.000	0.000	0.000	0.164	0.005
Offsite Linear Emissions are included in the above sector calculations, i.e., acreages, equipment types and use rates, schedules, etc.																		
TOTALS	**408.430**	**520.060**	**100.670**	**0.693**	**311.520**	**78.840**	**166.231**	**211.664**	**40.973**	**0.282**	**43.513**	**17.678**	**53.913**	**68.648**	**13.288**	**0.091**	**14.112**	**5.733**
Onsite Modeling Emissions	*93.700*	*46.700*	*13.400*	*0.110*	*208.400*	*47.630*	*38.140*	*19.010*	*5.450*	*0.050*	*30.100*	*7.910*	*12.370*	*6.200*	*1.770*	*0.015*	*9.800*	*2.570*

Total Const Months:	37
Total Const Years:	3.08
Total Const Days:	814

CONSTRUCTION EQUIPMENT EXHAUST EMISSIONS

Project: **Genesis Solar Energy Project**

Assumptions:

1. The average diesel engine employed in construction equipment use consumes fuel at a rate of: **0.06** gal/hp-hr

Ref: EPA, NR-009b Publication, November 2002.
Ref: Sacramento County APCD Const. Program Data, V. 6.0.3, 3/2007.
Ref: EPA, NR-009c Publication, EPA 420-P-04-009, April 2004.
Ref: Niland Energy Project, IID, AFC Vol 2, App A.
Ref: South Coast AQMD PR XXI, Draft Staff Report, 3-15-95, and SCAQMD CEQA Manual, 11/03.
The above noted references present fuel consumption values which range from 0.050 to 0.064 gal/hp-hr for diesel engines used in construction related equipment. The value of 0.060 gal/hp-hr was chosen as a reasonable upper mid-range value for construction emissions calculations.

2. Construction equipment exhaust emissions will be calculated on an annual basis using the site specific equipment list, HP ratings, hours of use, days of use, etc. Annual emissions will be apportioned to daily values based on the estimated construction period time on site.

3. The equipment list derived from the South Coast AQMD (12/2006) will be used to establish the various equipment categories. Data produced by the Sacramento APCD was used to establish the average HP ratings for each equipment category. HP rating data was supplemented by data from SCAQMD CEQA Handbook (Table A9-8-C) if not available from Sacramento APCD.

4. Construction Schedule:			Construction Totals:		
	10	hrs/day		220	hrs/month
	5	days/week		8140	hrs/const period
	22	days/month		814	days/const period
	37	months			

5. Anticipated Construction Start Year: **2010** (estimated earliest year)

Project supplied equipment list and use rates were consolidated into the following categories:
See construction support data for equipment ratings, use rates, etc.

Equipment Category	Avg HP	# of Units Used for Project	Avg Use Rate Hrs/day	# of Days On Site (each)	Total Hrs/Day	Total Hp-Hrs per Day	Total Hrs per Const Period	Total Hp-Hrs per Const Period
Bore/Drill Rigs/Pile Drivers	0	0	0	0	0	0	0	0
Cement Mixers	0	0	0	0	0	0	0	0
Industrial/Concrete Saws	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	414260
Crawler Tractors/Dozers	0	0	0	0	0	0	0	90600
Crushing/Processing Eq.	0	0	0	0	0	0	0	0
Dump and Tender Trucks	0	0	0	0	0	0	0	10326900
Excavators	0	0	0	0	0	0	0	0
Forklifts/Aerial Lifts/Booms	0	0	0	0	0	0	0	0
Generators/Compressors	0	0	0	0	0	0	0	40984
Graders	0	0	0	0	0	0	0	33600
Off Highway Tractors	0	0	0	0	0	0	0	0
Off Highway Trucks	0	0	0	0	0	0	0	0
Other Const. Eq.-Diesel	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	8352
Paving Eq./Surfacing Eq.	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0
Rollers/Compactors	0	0	0	0	0	0	0	77900
Rough Terrain Forklifts	0	0	0	0	0	0	0	0
Rubber Tired Dozers	0	0	0	0	0	0	0	0
Rubber Tired Loaders	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	112200
Signal Boards/Light Sets	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0
Tractors/Loaders/Backhoes	0	0	0	0	0	0	0	162870
Trenchers	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	39000
Other Const. Eq.-Gasoline	0	0	0	0	0	0	0	6701930

*includes equipment and use rates for proposed offsite linears.

Estimated Const Period Hp-Hrs = 18008596

Estimated Const Period Fuel Use = 1080516 gals

2010 Equipment Emissions Factors

Equip. Type	HP	lbs/hp-hr CO	lbs/hp-hr VOC	lbs/hp-hr NOx	lbs/hp-hr SOx	lbs/hp-hr PM10
Bore/Drill Rigs/Pile Drivers	0	0.001400	0.000400	0.004700	0.000008	0.000200
Cement Mixers	0	0.003800	0.001400	0.006500	0.000009	0.000400
Industrial/Concrete Saws	0	0.006400	0.002500	0.006100	0.000008	0.000600
Cranes	0	0.001400	0.000500	0.004900	0.000005	0.000200
Crawler Tractors/Dozers	0	0.004300	0.001100	0.008500	0.000008	0.000500
Crushing/Processing Eq.	0	0.002500	0.000900	0.010200	0.000011	0.000300
Dump and Tender Trucks	0	0.001300	0.000400	0.002600	0.000004	0.000100
Excavators	0	0.003800	0.000800	0.006400	0.000007	0.000400
Forklifts/Aerial Lifts/Booms	0	0.002100	0.000600	0.003800	0.000004	0.000300
Generators/Compressors	0	0.005800	0.002200	0.006100	0.000008	0.000600
Graders	0	0.002000	0.000700	0.007200	0.000008	0.000300
Off Highway Tractors	0	0.004900	0.001300	0.010100	0.000008	0.000600
Off Highway Trucks	0	0.001500	0.000500	0.004600	0.000005	0.000200
Other Const. Eq.-Diesel	0	0.005900	0.002100	0.005600	0.000007	0.000500
Pavers	0	0.004400	0.001400	0.008100	0.000007	0.000700
Paving Eq./Surfacing Eq.	0	0.006600	0.002800	0.005300	0.000006	0.000600
Plate Compactors	0	0.001800	0.000300	0.002100	0.000004	0.000100
Rollers/Compactors	0	0.003500	0.001000	0.006200	0.000006	0.000500
Rough Terrain Forklifts	0	0.004200	0.000900	0.007400	0.000008	0.000400
Rubber Tired Dozers	0	0.003500	0.000700	0.006400	0.000005	0.000300
Rubber Tired Loaders	0	0.003600	0.000800	0.006600	0.000007	0.000400
Scrapers	0	0.002900	0.001000	0.009900	0.000009	0.000400
Signal Boards/Light Sets	0	0.002500	0.000500	0.003000	0.000006	0.000100
Skid Steer Loaders	0	0.005000	0.001600	0.004900	0.000007	0.000400
Tractors/Loaders/Backhoes	0	0.003000	0.000800	0.004700	0.000005	0.000400
Trenchers	0	0.004000	0.001300	0.007600	0.000006	0.000600
Welders	0	0.002300	0.000700	0.004100	0.000004	0.000400
Other Const. Eq.-Gasoline (Avg.)	0.0	0.003300	0.000900	0.006500	0.000006	0.000400
Avg Diesel Factors		0.0035	0.0011	0.0061	0.000007	0.0004

SCAQMD off-road emissions factor database, website, 12/2006. Load factor adjustments incorporated.
EFs are for equipment inventory year 2010.

Construction Period Emissions, lbs

Equip. Type	CO	VOC	NOx	SOx	PM10
Bore/Drill Rigs/Pile Drivers	0	0	0	0	0
Cement Mixers	0	0	0	0	0
Industrial/Concrete Saws	0	0	0	0	0
Cranes	580	207	2030	2	83
Crawler Tractors/Dozers	390	100	770	1	45
Crushing/Processing Eq.	0	0	0	0	0
Dump and Tender Trucks	13425	4131	26850	41	1033
Excavators	0	0	0	0	0
Forklifts/Aerial Lifts/Booms	0	0	0	0	0
Generators/Compressors	238	90	250	0	25
Graders	67	24	242	0	10
Off Highway Tractors	0	0	0	0	0
Off Highway Trucks	0	0	0	0	0
Other Const. Eq.-Diesel	0	0	0	0	0
Pavers	37	12	68	0	6
Paving Eq./Surfacing Eq.	0	0	0	0	0
Plate Compactors	0	0	0	0	0
Rollers/Compactors	273	78	483	0	39
Rough Terrain Forklifts	0	0	0	0	0
Rubber Tired Dozers	0	0	0	0	0
Rubber Tired Loaders	0	0	0	0	0
Scrapers	325	112	1111	1	45
Signal Boards/Light Sets	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0
Tractors/Loaders/Backhoes	489	130	765	1	65
Trenchers	0	0	0	0	0
Welders	90	27	160	0	16
Other Const. Eq.-Gasoline	22116	6032	43563	40	2681

Totals	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	
lbs per const. period	38029	10942	76291	87	4047	4010.29	
tons per const. period	19.0	5.5	38.1	0.044	2.02	2.01	
Average lbs/day =	46.7	13.4	93.7	0.107	4.97	4.93	
Estimated Maximum lbs/day =	*61.2*	*17.6*	*122.8*	*0.141*	*6.5*	*6.5*	*note 3*
Average lbs/month =	1027.8	295.7	2061.9	2.363	109.37	108.39	
Average tons/year =	6.17	1.77	12.37	0.014	0.66	0.65	

CARB-CEIDARS, Updated Size Fractions for PM Profiles: PM2.5 = 0.991 of PM10 : Diesel Vehicle Exhaust
CO2 EF: CCAR General Protocol, June 2006, for CA-Low Sulfur Diesel combustion.

	CO2
lbs per const period	23728126
tons per const period	11864

Other Assumptions and References:

1. Trench construction times per: Southern Regional Water Pipeline Alliance, 3/08.
   Optimum trench construction progress rate is 80m (260ft) per day.
   Non-optimum trench construction progress rate is 30m (100 ft) per day.
   An average progress of 180 ft/day is used where applicable.
2. Paving speeds can range from 3 to 15 m/min depending on asphalt delivery rates and required compaction thickness.
   A minium paving speed of 3 m/min (10 ft/min or 600 ft/hr) I used where applicable.
   The minimum speed is based upon a 3" compacted layer, 12 ft lane width, with an asphalt delivery rate of ~140 tons/hr.
   Ref: Asphalt Paving Speed, Pavement Worktip No. 31, AAPA, 11/2001.
3. Estimation of maximum daily emissions is extremely variable. Some projects provide estimated manpower and equipment use schedules, but even this data usually leads to a wide range of assumptions being made in order to estimate equipment exhaust emissions for a maximum work day. The methodology used in this analysis assumes that the estimated maximum day represents the ratio of the number of pieces of equipment on site on any day during the maximum month as compared to the number of pieces of equipment on site on any day during an average month.

CONSTRUCTION EQUIPMENT EXHAUST EMISSIONS

Project: **Genesis Solar Energy Project=Gas Line** Construction

Assumptions:

1. The average diesel engine employed in construction equipment use consumes fuel at a rate of: **0.06** gal/hp-hr

Ref: EPA, NR-009b Publication, November 2002.
Ref: Sacramento County APCD Const. Program Data, V. 6.0.3, 3/2007.
Ref: EPA, NR-009c Publication, EPA 420-P-04-009, April 2004.
Ref: Niland Energy Project, IID, AFC Vol 2, App A.
Ref: South Coast AQMD PR XXI, Draft Staff Report, 3-15-95, and SCAQMD CEQA Manual, 11/03.
The above noted references present fuel consumption values which range from 0.050 to 0.064 gal/hp-hr for diesel engines used in construction related equipment. The value of 0.060 gal/hp-hr was chosen as a reasonable upper mid-range value for construction emissions calculations.

2. Construction equipment exhaust emissions will be calculated on an annual basis using the site specific equipment list, HP ratings, hours of use, days of use, etc. Annual emissions will be apportioned to daily values based on the estimated construction period time on site.

3. The equipment list derived from the South Coast AQMD (12/2006) will be used to establish the various equipment categories. Data produced by the Sacramento APCD was used to establish the average HP ratings for each equipment category. HP rating data was supplemented by data from SCAQMD CEQA Handbook (Table A9-8-C) if not available from Sacramento APCD.

4. Construction Schedule:			Construction Totals:		
	10	hrs/day		220	hrs/month
	5	days/week		1100	hrs/const period
	22	days/month		110	days/const period
	5	months			

5. Anticipated Construction Start Year: **2010**

Project supplied equipment list and use rates were consolidated into the following categories:
See construction support data for equipment ratings, use rates, etc.

Equipment Category	Avg HP	# of Units Used for Project	Avg Use Rate Hrs/day	# of Days On Site (each)	Total Hrs/Day	Total Hp-Hrs per Day	Total Hrs per Const Period	Total Hp-Hrs per Const Period
Bore/Drill Rigs/Pile Drivers	0	0	0	0	0	0	0	0
Cement Mixers	0	0	0	0	0	0	0	0
Industrial/Concrete Saws	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	57090
Crawler Tractors/Dozers	0	0	0	0	0	0	0	67100
Crushing/Processing Eq.	0	0	0	0	0	0	0	0
Dump and Tender Trucks	0	0	0	0	0	0	0	787050
Excavators	0	0	0	0	0	0	0	0
Forklifts/Aerial Lifts/Booms	0	0	0	0	0	0	0	264000
Generators/Compressors	0	0	0	0	0	0	0	25850
Graders	0	0	0	0	0	0	0	0
Off Highway Tractors	0	0	0	0	0	0	0	0
Off Highway Trucks	0	0	0	0	0	0	0	0
Other Const. Eq.-Diesel	0	0	0	0	0	0	0	737000
Pavers	0	0	0	0	0	0	0	0
Paving Eq./Surfacing Eq.	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0
Rollers/Compactors	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0
Rubber Tired Dozers	0	0	0	0	0	0	0	0
Rubber Tired Loaders	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0
Signal Boards/Light Sets	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0
Tractors/Loaders/Backhoes	0	0	0	0	0	0	0	246400
Trenchers	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0
Other Const. Eq.-Gasoline	0	0	0	0	0	0	0	0

*includes equipment and use rates for proposed offsite linears.

Estimated Const Period Hp-Hrs = 2184490

Estimated Const Period Fuel Use = 131069 gals

2010 Equipment Emissions Factors

Equip. Type	HP	lbs/hp-hr CO	lbs/hp-hr VOC	lbs/hp-hr NOx	lbs/hp-hr SOx	lbs/hp-hr PM10
Bore/Drill Rigs/Pile Drivers	0	0.001400	0.000400	0.004700	0.000008	0.000200
Cement Mixers	0	0.003800	0.001400	0.006500	0.000009	0.000400
Industrial/Concrete Saws	0	0.006400	0.002500	0.006100	0.000008	0.000600
Cranes	0	0.001400	0.000500	0.004900	0.000005	0.000200
Crawler Tractors/Dozers	0	0.004300	0.001100	0.008500	0.000008	0.000500
Crushing/Processing Eq.	0	0.002500	0.000900	0.010200	0.000011	0.000300
Dump and Tender Trucks	0	0.001300	0.000400	0.002600	0.000004	0.000100
Excavators	0	0.003800	0.000800	0.006400	0.000007	0.000400
Forklifts/Aerial Lifts/Booms	0	0.002100	0.000600	0.003800	0.000004	0.000300
Generators/Compressors	0	0.005800	0.002200	0.006100	0.000008	0.000600
Graders	0	0.002000	0.000700	0.007200	0.000008	0.000300
Off Highway Tractors	0	0.004900	0.001300	0.010100	0.000008	0.000600
Off Highway Trucks	0	0.001500	0.000500	0.004600	0.000005	0.000200
Other Const. Eq.-Diesel	0	0.005900	0.002100	0.005600	0.000007	0.000500
Pavers	0	0.004400	0.001400	0.008100	0.000007	0.000700
Paving Eq./Surfacing Eq.	0	0.006600	0.002800	0.005300	0.000006	0.000600
Plate Compactors	0	0.001800	0.000300	0.002100	0.000004	0.000100
Rollers/Compactors	0	0.003500	0.001000	0.006200	0.000006	0.000500
Rough Terrain Forklifts	0	0.004200	0.000900	0.007400	0.000008	0.000400
Rubber Tired Dozers	0	0.003500	0.000700	0.006400	0.000005	0.000300
Rubber Tired Loaders	0	0.003600	0.000800	0.006600	0.000007	0.000400
Scrapers	0	0.002900	0.001000	0.009900	0.000009	0.000400
Signal Boards/Light Sets	0	0.002500	0.000500	0.003000	0.000006	0.000100
Skid Steer Loaders	0	0.005000	0.001600	0.004900	0.000007	0.000400
Tractors/Loaders/Backhoes	0	0.003000	0.000800	0.004700	0.000005	0.000400
Trenchers	0	0.004000	0.001300	0.007600	0.000006	0.000600
Welders	0	0.002300	0.000700	0.004100	0.000004	0.000400
Other Const. Eq.-Gasoline	0.0	0.003300	0.000900	0.006500	0.000006	0.000400

SCAQMD off-road emissions factor database, website, 12/2006. Load factor adjustments incorporated.
EFs are for equipment inventory year 2010.

Construction Period Emissions, lbs

Equip. Type	CO	VOC	NOx	SOx	PM10
Bore/Drill Rigs/Pile Drivers	0	0	0	0	0
Cement Mixers	0	0	0	0	0
Industrial/Concrete Saws	0	0	0	0	0
Cranes	80	29	280	0	11
Crawler Tractors/Dozers	289	74	570	1	34
Crushing/Processing Eq.	0	0	0	0	0
Dump and Tender Trucks	1023	315	2046	3	79
Excavators	0	0	0	0	0
Forklifts/Aerial Lifts/Booms	554	158	1003	1	79
Generators/Compressors	150	57	158	0	16
Graders	0	0	0	0	0
Off Highway Tractors	0	0	0	0	0
Off Highway Trucks	0	0	0	0	0
Other Const. Eq.-Diesel	4348	1548	4127	5	369
Pavers	0	0	0	0	0
Paving Eq./Surfacing Eq.	0	0	0	0	0
Plate Compactors	0	0	0	0	0
Rollers/Compactors	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0
Rubber Tired Dozers	0	0	0	0	0
Rubber Tired Loaders	0	0	0	0	0
Scrapers	0	0	0	0	0
Signal Boards/Light Sets	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0
Tractors/Loaders/Backhoes	739	197	1158	1	99
Trenchers	0	0	0	0	0
Welders	0	0	0	0	0
Other Const. Eq.-Gasoline	0	0	0	0	0

Totals	CO	VOC	NOx	SOx	PM10	PM2.5	
lbs per const. period	7183	2377	9343	12	685	679.27	
tons per const. period	3.6	1.2	4.7	0.0	0.34	0.34	
Average lbs/day =	65.3	21.6	84.9	0.10	6.23	6.18	
Estimated Maximum lbs/day =	*85.5*	*28.3*	*111.3*	*0.1*	*8.2*	*8.1*	*note 3*
Average lbs/month =	1436.7	475.5	1868.5	2.3	137.09	135.85	
Average tons/year =	8.62	2.85	11.21	0.01	0.82	0.82	

CARB-CEIDARS, Updated Size Fractions for PM Profiles: PM2.5 = 0.991 of PM10 : Diesel Vehicle Exhaust
CO2 EF: CCAR General Protocol, June 2006, for CA-Low Sulfur Diesel combustion.

	CO2
lbs per const period	2878284
tons per const period	1439

Other Assumptions and References:

1. Trench construction times per: Southern Regional Water Pipeline Alliance, 3/08.
   Optimum trench construction progress rate is 80m (260ft) per day.
   Non-optimum trench construction progress rate is 30m (100 ft) per day.
   An average progress of 180 ft/day is used where applicable.
2. Paving speeds can range from 3 to 15 m/min depending on asphalt delivery rates and required compaction thickness.
   A minium paving speed of 3 m/min (10 ft/min or 600 ft/hr) I used where applicable.
   The minimum speed is based upon a 3" compacted layer, 12 ft lane width, with an asphalt delivery rate of ~140 tons/hr.
   Ref: Asphalt Paving Speed, Pavement Worktip No. 31, AAPA, 11/2001.
3. Estimation of maximum daily emissions is extremely variable. Some projects provide estimated manpower and equipment use schedules, but even this data usually leads to a wide range of assumptions being made in order to estimate equipment exhaust emissions for a maximum work day. The methodology used in this analysis assumes that the estimated maximum day represents the ratio of the number of pieces of equipment on site on any day during the maximum month as compared to the number of pieces of equipment on site on any day during an average month.

CONSTRUCTION EQUIPMENT EXHAUST EMISSIONS

Project: **Genesis Solar Energy Project - T Line** Construction

Assumptions:

1. The average diesel engine employed in construction equipment use consumes fuel at a rate of: **0.06** gal/hp-hr

Ref: EPA, NR-009b Publication, November 2002.
Ref: Sacramento County APCD Const. Program Data, V. 6.0.3, 3/2007.
Ref: EPA, NR-009c Publication, EPA 420-P-04-009, April 2004.
Ref: Niland Energy Project, IID, AFC Vol 2, App A.
Ref: South Coast AQMD PR XXI, Draft Staff Report, 3-15-95, and SCAQMD CEQA Manual, 11/03.
The above noted references present fuel consumption values which range from 0.050 to 0.064 gal/hp-hr for diesel engines used in construction related equipment. The value of 0.060 gal/hp-hr was chosen as a reasonable upper mid-range value for construction emissions calculations.

2. Construction equipment exhaust emissions will be calculated on an annual basis using the site specific equipment list, HP ratings, hours of use, days of use, etc. Annual emissions will be apportioned to daily values based on the estimated construction period time on site.

3. The equipment list derived from the South Coast AQMD (12/2006) will be used to establish the various equipment categories. Data produced by the Sacramento APCD was used to establish the average HP ratings for each equipment category. HP rating data was supplemented by data from SCAQMD CEQA Handbook (Table A9-8-C) if not available from Sacramento APCD.

4. Construction Schedule:	**10**	hrs/day	Construction Totals:	220	hrs/month
	5	days/week		1320	hrs/const period
	22	days/month		132	days/const period
	6	months			

5. Anticipated Construction Start Year: **2010**

Project supplied equipment list and use rates were consolidated into the following categories:
See construction support data for equipment ratings, use rates, etc.

Equipment Category	Avg HP	# of Units Used for Project	Avg Use Rate Hrs/day	# of Days On Site (each)	Total Hrs/Day	Total Hp-Hrs per Day	Total Hrs per Const Period	Total Hp-Hrs per Const Period
Bore/Drill Rigs/Pile Drivers	0	0	0	0	0	0	0	207900
Cement Mixers	0	0	0	0	0	0	0	0
Industrial/Concrete Saws	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	181500
Crawler Tractors/Dozers	0	0	0	0	0	0	0	0
Crushing/Processing Eq.	0	0	0	0	0	0	0	0
Dump and Tender Trucks	0	0	0	0	0	0	0	528000
Excavators	0	0	0	0	0	0	0	0
Forklifts/Aerial Lifts/Booms	0	0	0	0	0	0	0	272240
Generators/Compressors	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0
Off Highway Tractors	0	0	0	0	0	0	0	0
Off Highway Trucks	0	0	0	0	0	0	0	0
Other Const. Eq.-Diesel	0	0	0	0	0	0	0	634700
Pavers	0	0	0	0	0	0	0	0
Paving Eq./Surfacing Eq.	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0
Rollers/Compactors	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0
Rubber Tired Dozers	0	0	0	0	0	0	0	0
Rubber Tired Loaders	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0
Signal Boards/Light Sets	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0
Tractors/Loaders/Backhoes	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0
Other Const. Eq.-Gasoline	0	0	0	0	0	0	0	0

*includes equipment and use rates for proposed offsite linears.

Estimated Const Period Hp-Hrs = 1824340

Estimated Const Period Fuel Use = 109460 gals

2010 Equipment Emissions Factors

Equip. Type	HP	lbs/hp-hr CO	lbs/hp-hr VOC	lbs/hp-hr NOx	lbs/hp-hr SOx	lbs/hp-hr PM10
Bore/Drill Rigs/Pile Drivers	0	0.001400	0.000400	0.004700	0.000008	0.000200
Cement Mixers	0	0.003800	0.001400	0.006500	0.000009	0.000400
Industrial/Concrete Saws	0	0.006400	0.002500	0.006100	0.000008	0.000600
Cranes	0	0.001400	0.000500	0.004900	0.000005	0.000200
Crawler Tractors/Dozers	0	0.004300	0.001100	0.008500	0.000008	0.000500
Crushing/Processing Eq.	0	0.002500	0.000900	0.010200	0.000011	0.000300
Dump and Tender Trucks	0	0.001300	0.000400	0.002600	0.000004	0.000100
Excavators	0	0.003800	0.000800	0.006400	0.000007	0.000400
Forklifts/Aerial Lifts/Booms	0	0.002100	0.000600	0.003800	0.000004	0.000300
Generators/Compressors	0	0.005800	0.002200	0.006100	0.000008	0.000600
Graders	0	0.002000	0.000700	0.007200	0.000008	0.000300
Off Highway Tractors	0	0.004900	0.001300	0.010100	0.000008	0.000600
Off Highway Trucks	0	0.001500	0.000500	0.004600	0.000005	0.000200
Other Const. Eq.-Diesel	0	0.005900	0.002100	0.005600	0.000007	0.000500
Pavers	0	0.004400	0.001400	0.008100	0.000007	0.000700
Paving Eq./Surfacing Eq.	0	0.006600	0.002800	0.005300	0.000006	0.000600
Plate Compactors	0	0.001800	0.000300	0.002100	0.000004	0.000100
Rollers/Compactors	0	0.003500	0.001000	0.006200	0.000006	0.000500
Rough Terrain Forklifts	0	0.004200	0.000900	0.007400	0.000008	0.000400
Rubber Tired Dozers	0	0.003500	0.000700	0.006400	0.000005	0.000300
Rubber Tired Loaders	0	0.003600	0.000800	0.006600	0.000007	0.000400
Scrapers	0	0.002900	0.001000	0.009900	0.000009	0.000400
Signal Boards/Light Sets	0	0.002500	0.000500	0.003000	0.000006	0.000100
Skid Steer Loaders	0	0.005000	0.001600	0.004900	0.000007	0.000400
Tractors/Loaders/Backhoes	0	0.003000	0.000800	0.004700	0.000005	0.000400
Trenchers	0	0.004000	0.001300	0.007600	0.000006	0.000600
Welders	0	0.002300	0.000700	0.004100	0.000004	0.000400
Other Const. Eq.-Gasoline	0.0	0.003300	0.000900	0.006500	0.000006	0.000400

SCAQMD off-road emissions factor database, website, 12/2006. Load factor adjustments incorporated.
EFs are for equipment inventory year 2010.

Construction Period Emissions, lbs

Equip. Type	CO	VOC	NOx	SOx	PM10
Bore/Drill Rigs/Pile Drivers	291	83	977	2	42
Cement Mixers	0	0	0	0	0
Industrial/Concrete Saws	0	0	0	0	0
Cranes	254	91	889	1	36
Crawler Tractors/Dozers	0	0	0	0	0
Crushing/Processing Eq.	0	0	0	0	0
Dump and Tender Trucks	686	211	1373	2	53
Excavators	0	0	0	0	0
Forklifts/Aerial Lifts/Booms	572	163	1035	1	82
Generators/Compressors	0	0	0	0	0
Graders	0	0	0	0	0
Off Highway Tractors	0	0	0	0	0
Off Highway Trucks	0	0	0	0	0
Other Const. Eq.-Diesel	3745	1333	3554	4	317
Pavers	0	0	0	0	0
Paving Eq./Surfacing Eq.	0	0	0	0	0
Plate Compactors	0	0	0	0	0
Rollers/Compactors	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0
Rubber Tired Dozers	0	0	0	0	0
Rubber Tired Loaders	0	0	0	0	0
Scrapers	0	0	0	0	0
Signal Boards/Light Sets	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0
Tractors/Loaders/Backhoes	0	0	0	0	0
Trenchers	0	0	0	0	0
Welders	0	0	0	0	0
Other Const. Eq.-Gasoline	0	0	0	0	0

Totals	CO	VOC	NOx	SOx	PM10	PM2.5	
lbs per const. period	5548	1881	7828	10	530	524.93	
tons per const. period	2.8	0.9	3.9	0.0	0.26	0.26	
Average lbs/day =	42.0	14.3	59.3	0.08	4.01	3.98	
Estimated Maximum lbs/day =	*55.1*	*18.7*	*77.7*	*0.1*	*5.3*	*5.2*	*note 3*
Average lbs/month =	924.7	313.6	1304.7	1.7	88.28	87.49	
Average tons/year =	5.55	1.88	7.83	0.01	0.53	0.52	

CARB-CEIDARS, Updated Size Fractions for PM Profiles: PM2.5 = 0.991 of PM10 : Diesel Vehicle Exhaust
CO2 EF: CCAR General Protocol, June 2006, for CA-Low Sulfur Diesel combustion.

	CO2
lbs per const period	2403750
tons per const period	1202

Other Assumptions and References:

1. Trench construction times per: Southern Regional Water Pipeline Alliance, 3/08.
   Optimum trench construction progress rate is 80m (260ft) per day.
   Non-optimum trench construction progress rate is 30m (100 ft) per day.
   An average progress of 180 ft/day is used where applicable.
2. Paving speeds can range from 3 to 15 m/min depending on asphalt delivery rates and required compaction thickness.
   A minium paving speed of 3 m/min (10 ft/min or 600 ft/hr) I used where applicable.
   The minimum speed is based upon a 3" compacted layer, 12 ft lane width, with an asphalt delivery rate of ~140 tons/hr.
   Ref: Asphalt Paving Speed, Pavement Worktip No. 31, AAPA, 11/2001.
3. Estimation of maximum daily emissions is extremely variable. Some projects provide estimated manpower and equipment use schedules, but even this data usually leads to a wide range of assumptions being made in order to estimate equipment exhaust emissions for a maximum work day. The methodology used in this analysis assumes that the estimated maximum day represents the ratio of the number of pieces of equipment on site on any day during the maximum month as compared to the number of pieces of equipment on site on any day during an average month.

CONSTRUCTION EQUIPMENT EXHAUST EMISSIONS

Project: **Genesis Solar Energy Project - Access** Road Construction

Assumptions:

1. The average diesel engine employed in construction equipment use consumes fuel at a rate of: **0.06** gal/hp-hr

Ref: EPA, NR-009b Publication, November 2002.
Ref: Sacramento County APCD Const. Program Data, V. 6.0.3, 3/2007.
Ref: EPA, NR-009c Publication, EPA 420-P-04-009, April 2004.
Ref: Niland Energy Project, IID, AFC Vol 2, App A.
Ref: South Coast AQMD PR XXI, Draft Staff Report, 3-15-95, and SCAQMD CEQA Manual, 11/03.
The above noted references present fuel consumption values which range from 0.050 to 0.064 gal/hp-hr for diesel engines used in construction related equipment. The value of 0.060 gal/hp-hr was chosen as a reasonable upper mid-range value for construction emissions calculations.

2. Construction equipment exhaust emissions will be calculated on an annual basis using the site specific equipment list, HP ratings, hours of use, days of use, etc. Annual emissions will be apportioned to daily values based on the estimated construction period time on site.

3. The equipment list derived from the South Coast AQMD (12/2006) will be used to establish the various equipment categories. Data produced by the Sacramento APCD was used to establish the average HP ratings for each equipment category. HP rating data was supplemented by data from SCAQMD CEQA Handbook (Table A9-8-C) if not available from Sacramento APCD.

4. Construction Schedule:			Construction Totals:		
	10	hrs/day		220	hrs/month
	5	days/week		660	hrs/const period
	22	days/month		66	days/const period
	3	months			

5. Anticipated Construction Start Year: **2010**

Project supplied equipment list and use rates were consolidated into the following categories:
See construction support data for equipment ratings, use rates, etc.

Equipment Category	Avg HP	# of Units Used for Project	Avg Use Rate Hrs/day	# of Days On Site (each)	Total Hrs/Day	Total Hp-Hrs per Day	Total Hrs per Const Period	Total Hp-Hrs per Const Period
Bore/Drill Rigs/Pile Drivers	0	0	0	0	0	0	0	0
Cement Mixers	0	0	0	0	0	0	0	0
Industrial/Concrete Saws	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0
Crawler Tractors/Dozers	0	0	0	0	0	0	0	0
Crushing/Processing Eq.	0	0	0	0	0	0	0	0
Dump and Tender Trucks	0	0	0	0	0	0	0	211200
Excavators	0	0	0	0	0	0	0	0
Forklifts/Aerial Lifts/Booms	0	0	0	0	0	0	0	0
Generators/Compressors	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	184800
Off Highway Tractors	0	0	0	0	0	0	0	0
Off Highway Trucks	0	0	0	0	0	0	0	0
Other Const. Eq.-Diesel	0	0	0	0	0	0	0	330880
Pavers	0	0	0	0	0	0	0	0
Paving Eq./Surfacing Eq.	0	0	0	0	0	0	0	30624
Plate Compactors	0	0	0	0	0	0	0	0
Rollers/Compactors	0	0	0	0	0	0	0	865920
Rough Terrain Forklifts	0	0	0	0	0	0	0	0
Rubber Tired Dozers	0	0	0	0	0	0	0	0
Rubber Tired Loaders	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0
Signal Boards/Light Sets	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0
Tractors/Loaders/Backhoes	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0
Other Const. Eq.-Gasoline	0	0	0	0	0	0	0	0

*includes equipment and use rates for proposed offsite linears.

Estimated Const Period Hp-Hrs 1623424

Estimated Const Period Fuel Use 97405 gals

2010 Equipment Emissions Factors

Equip. Type	HP	lbs/hp-hr CO	lbs/hp-hr VOC	lbs/hp-hr NOx	lbs/hp-hr SOx	lbs/hp-hr PM10
Bore/Drill Rigs/Pile Drivers	0	0.001400	0.000400	0.004700	0.000008	0.000200
Cement Mixers	0	0.003800	0.001400	0.006500	0.000009	0.000400
Industrial/Concrete Saws	0	0.006400	0.002500	0.006100	0.000008	0.000600
Cranes	0	0.001400	0.000500	0.004900	0.000005	0.000200
Crawler Tractors/Dozers	0	0.004300	0.001100	0.008500	0.000008	0.000500
Crushing/Processing Eq.	0	0.002500	0.000900	0.010200	0.000011	0.000300
Dump and Tender Trucks	0	0.001300	0.000400	0.002600	0.000004	0.000100
Excavators	0	0.003800	0.000800	0.006400	0.000007	0.000400
Forklifts/Aerial Lifts/Booms	0	0.002100	0.000600	0.003800	0.000004	0.000300
Generators/Compressors	0	0.005800	0.002200	0.006100	0.000008	0.000600
Graders	0	0.002000	0.000700	0.007200	0.000008	0.000300
Off Highway Tractors	0	0.004900	0.001300	0.010100	0.000008	0.000600
Off Highway Trucks	0	0.001500	0.000500	0.004600	0.000005	0.000200
Other Const. Eq.-Diesel	0	0.005900	0.002100	0.005600	0.000007	0.000500
Pavers	0	0.004400	0.001400	0.008100	0.000007	0.000700
Paving Eq./Surfacing Eq.	0	0.006600	0.002800	0.005300	0.000006	0.000600
Plate Compactors	0	0.001800	0.000300	0.002100	0.000004	0.000100
Rollers/Compactors	0	0.003500	0.001000	0.006200	0.000006	0.000500
Rough Terrain Forklifts	0	0.004200	0.000900	0.007400	0.000008	0.000400
Rubber Tired Dozers	0	0.003500	0.000700	0.006400	0.000005	0.000300
Rubber Tired Loaders	0	0.003600	0.000800	0.006600	0.000007	0.000400
Scrapers	0	0.002900	0.001000	0.009900	0.000009	0.000400
Signal Boards/Light Sets	0	0.002500	0.000500	0.003000	0.000006	0.000100
Skid Steer Loaders	0	0.005000	0.001600	0.004900	0.000007	0.000400
Tractors/Loaders/Backhoes	0	0.003000	0.000800	0.004700	0.000005	0.000400
Trenchers	0	0.004000	0.001300	0.007600	0.000006	0.000600
Welders	0	0.002300	0.000700	0.004100	0.000004	0.000400
Other Const. Eq.-Gasoline	0.0	0.003300	0.000900	0.006500	0.000006	0.000400

SCAQMD off-road emissions factor database, website, 12/2006. Load factor adjustments incorporated.
EFs are for equipment inventory year 2010.

Construction Period Emissions, lbs

Equip. Type	CO	VOC	NOx	SOx	PM10
Bore/Drill Rigs/Pile Drivers	0	0	0	0	0
Cement Mixers	0	0	0	0	0
Industrial/Concrete Saws	0	0	0	0	0
Cranes	0	0	0	0	0
Crawler Tractors/Dozers	0	0	0	0	0
Crushing/Processing Eq.	0	0	0	0	0
Dump and Tender Trucks	275	84	549	1	21
Excavators	0	0	0	0	0
Forklifts/Aerial Lifts/Booms	0	0	0	0	0
Generators/Compressors	0	0	0	0	0
Graders	370	129	1331	1	55
Off Highway Tractors	0	0	0	0	0
Off Highway Trucks	0	0	0	0	0
Other Const. Eq.-Diesel	1952	695	1853	2	165
Pavers	0	0	0	0	0
Paving Eq./Surfacing Eq.	202	86	162	0	18
Plate Compactors	0	0	0	0	0
Rollers/Compactors	3031	866	5369	5	433
Rough Terrain Forklifts	0	0	0	0	0
Rubber Tired Dozers	0	0	0	0	0
Rubber Tired Loaders	0	0	0	0	0
Scrapers	0	0	0	0	0
Signal Boards/Light Sets	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0
Tractors/Loaders/Backhoes	0	0	0	0	0
Trenchers	0	0	0	0	0
Welders	0	0	0	0	0
Other Const. Eq.-Gasoline	0	0	0	0	0

Totals	CO	VOC	NOx	SOx	PM10	PM2.5	
lbs per const. period	5829	1860	9264	10	693	687.09	
tons per const. period	2.9	0.9	4.6	0.0	0.35	0.34	
Average lbs/day =	88.3	28.2	140.4	0.15	10.51	10.41	
Estimated Maximum lbs/day =	*115.7*	*36.9*	*183.9*	*0.2*	*13.8*	*13.6*	*note 3*
Average lbs/month =	1943.1	620.1	3087.9	3.3	231.11	229.03	
Average tons/year =	11.66	3.72	18.53	0.02	1.39	1.37	

CARB-CEIDARS, Updated Size Fractions for PM Profiles: PM2.5 = 0.991 of PM10 : Diesel Vehicle Exhaust
CO2 EF: CCAR General Protocol, June 2006, for CA-Low Sulfur Diesel combustion.

	CO2
lbs per const period	2139023
tons per const period	1070

Other Assumptions and References:

1. Trench construction times per: Southern Regional Water Pipeline Alliance, 3/08.
   Optimum trench construction progress rate is 80m (260ft) per day.
   Non-optimum trench construction progress rate is 30m (100 ft) per day.
   An average progress of 180 ft/day is used where applicable.
2. Paving speeds can range from 3 to 15 m/min depending on asphalt delivery rates and required compaction thickness.
   A minium paving speed of 3 m/min (10 ft/min or 600 ft/hr) I used where applicable.
   The minimum speed is based upon a 3" compacted layer, 12 ft lane width, with an asphalt delivery rate of ~140 tons/hr.
   Ref: Asphalt Paving Speed, Pavement Worktip No. 31, AAPA, 11/2001.
3. Estimation of maximum daily emissions is extremely variable. Some projects provide estimated manpower and equipment use schedules, but even this data usually leads to a wide range of assumptions being made in order to estimate equipment exhaust emissions for a maximum work day. The methodology used in this analysis assumes that the estimated maximum day represents the ratio of the number of pieces of equipment on site on any day during the maximum month as compared to the number of pieces of equipment on site on any day during an average month.

CONSTRUCTION PHASE-Main Project Site Fugitive Dust Emissions

MRI Level 2 Analysis

Acres Subject to Construction Disturbance Activites:	1826	***	
Max Acres Subject to Construction Disturbance Activites on any day:	160	***	
Emissions Factor for PM10 Uncontrolled, tons/acre/month:	0.0144		
PM2.5 fraction of PM10 (per CARB CEIDARS Profiles):	0.21		
Activity Levels: Hrs/Day:	10		
Days/Wk:	5		
Days/Month:	22		
Const Period, Months:	37		3.1 years
Const Period, Days:	814		

Wet Season Adjustment (Per AP-42, Section 13.2.2, Figure 13.2.2-1, 12/03)

Mean # days/year with rain > = 0.01 inch:	20	
Mean # months/yr with rain > = 0.01 inch:	0.67	
Adjusted Const Period, Months:	34.94	
Adjusted Const Period, Days:	752	

Controls for Fugitive Dust:

Proposed watering schedule is eve	3.3	Hours

SCAQMD Mitigation Measures, Table XI-A, 4/07

3.3 hour watering interval yields 60% control of PM10/PM2.5

Speed control of onsite const traffic to < =15 mph = 44% control

Calculated % control based on mitigations propos	78	% control
Conservative control % used for emissions estimate	78	% control
	0.22	release fraction

Emissions: Controlled	PM10	PM2.5
tons/month	0.507	0.106
tons/period	17.713	3.720
Max lbs/day	46.1	9.677

Cut and Fill Data:

Total cu/yds:	***	800000	~795793 onsite
10^3 cu/yds:		800	~4200 offsite
MRI PM10 emissions factor, tons/1000 cu.yds:		0.059	
PM10 uncontrolled emissions, tons/period:		47.20	
Cut and Fill Activity Period, months:		6.0	
Cut and Fill Activity Period, days:		132.0	
PM10 Controlled Emissions:	tons/period	10.38	
PM2.5 Controlled Emisisons:	tons/period	2.18	
PM10 Controlled Emissions:	tons/month	1.73	
PM2.5 Controlled Emisisons:	tons/month	0.36	
PM10 Controlled Emissions:	max lbs/day	157.3	
PM2.5 Controlled Emisisons:	max lbs/day	33.0	

Emissions Totals: (first 6 months only)	**PM10**	**PM2.5**
tons/period	**28.1**	**5.9**
tons/month	**2.2**	**0.5**
max lbs/day	**203.4**	**42.7**

Ref: MRI Report, South Coast AQMD Project No. 95040, March 1996, Level 2 Analysis Procedure.

MRI Report factor of 0.011 tons/acre/month is based on 168 hours per month of const activity.

For an activity rate of 220 hrs/month, the adjusted EF would be 0.0144 tons/acre/month.

*** includes estimated surface area and trench cut and fill for proposed offsite linears (except the access road).

CONSTRUCTION PHASE- Access Road Construction Area

MRI Level 2 Analysis

Acres Subject to Construction Disturbance Activites:		55	
Max Acres Subject to Construction Disturbance Activites on any day:		11	*
Emissions Factor for PM10 Uncontrolled, tons/acre/month:		0.0144	
PM2.5 fraction of PM10 (per CARB CEIDARS Profiles):		0.21	
Activity Levels:	Hrs/Day:	10	
	Days/Wk:	5	
	Days/Month:	22	
	Const Period, Months:	3	0.3 years
	Const Period, Days:	66	
Wet Season Adjustment (Per AP-42, Section 13.2.2, Figure 13.2.2-1, 12/03)			
	Mean # days/year with rain > = 0.01 inch:	20	
	Mean # months/yr with rain > = 0.01 inch:	0.67	
	Adjusted Const Period, Months:	2.83	
	Adjusted Const Period, Days:	61	
Controls for Fugitive Dust:			
	Proposed watering schedule is eve	3.3	Hours

SCAQMD Mitigation Measures, Table XI-A, 4/07
3.3 hour watering interval yields 60% control of PM10/PM2.5

Calculated % control based on watering interval r	78	% control
Conservative control % used for emissions estimate	78	% control
	0.22	release fraction

Emissions: Controlled	PM10	PM2.5
tons/month	0.035	0.007
tons/period	0.099	0.021
Max lbs/day	3.2	0.665

Cut and Fill Data:

Total cu/yds:		0
10^3 cu/yds:		0
MRI PM10 emissions factor, tons/1000 cu.yds:		0.059
PM10 uncontrolled emissions, tons/period:		0.00
Cut and Fill Activity Period, months:		0.0
Cut and Fill Activity Period, days:		0.0
PM10 Controlled Emissions:	tons/period	0.00
PM2.5 Controlled Emisisons:	tons/period	0.00
PM10 Controlled Emissions:	tons/month	0.00
PM2.5 Controlled Emisisons:	tons/month	0.00
PM10 Controlled Emissions:	max lbs/day	0.0
PM2.5 Controlled Emisisons:	max lbs/day	0.0

Emissions Totals:	**PM10**	**PM2.5**
tons/period	**0.098736**	**0.02**
tons/month	**0.034848**	**0.01**
max lbs/day	**3.2**	**0.67**

Ref: MRI Report, South Coast AQMD Project No. 95040, March 1996, Level 2 Analysis Procedure.
MRI Report factor of 0.011 tons/acre/month is based on 168 hours per month of const activity.
For an activity rate of 220 hrs/month, the adjusted EF would be 0.0144 tons/acre/month.
*55 acres in temporary disturbance area, it is estimated that ~20% of this acreage will be actively disturbed on any day.

PAVED ROAD FUGITIVE DUST EMISSIONS
(associated with construction traffic)

Length of Paved Road used for/by Construction Access		0.9	miles, roundtrip distance***
Avg weight of vehicular equipment on road:		2.5	tons (range 2 - 42 tons)
Road surface silt loading factor:		0.28	g/m2 (range 0.03 - 400 g/m2)
Particle size multiplier factors:	PM10	0.016	lb/VMT
	PM2.5	0.0024	lb/VMT
C factors (brake and tire wear):	PM10	0.00047	lb/VMT
	PM2.5	0.00036	lb/VMT
Avg vehicle speed on road:		25	mph (range 10-55 mph)
Number of vehicles per day:		576	VMT/day: 518.4
			VMT/month 11404.8
Number of construction work days per month:		22	VMT/period 398483.7
	Total vehicles per m	12672	
Number of construction work months:		34.94	after wet season adjustment*
	Total vehicles per const per	442760	

	PM10	PM2.5	
Calc 1	0.207	0.207	
Calc 2	0.864	0.864	
Calc 3	0.002	0.0001	lb/VMT

Emissions	PM10	PM2.5
lbs/day	1.24	0.04
lbs/month	27.36	0.80
lbs/period	955.82	28.01
tons/period	0.48	0.01

Default Silt Load Values for Paved Road Types

Freeway	0.02 g/m2
Arterial	0.036 g/m2
Collector	0.036 g/m2
Local	0.28 g/m2
Rural	1.6 g/m2

* see main const dust site page for this value
EPA, AP-42, Section 13.2.1, March 2006, updated 9/2008.

*** Note: fugitive roadway emissions from construction traffic are based on the use of a 0.45 mile section of paved roadway at the site entrance.
Allocation of emissions from the project traffic will be based on a 1 mile roundtrip adjacent to the project site, i.e., paved road emissions plus trackout emissions.

UNPAVED ROAD FUGITIVE DUST

Length of Unpaved Road used for/by Construction A		5	miles***			
Avg weight of vehicular equipment on road:		2.5	tons (range 2 - 42 tons)			
Road surface silt content:		5.3	% (range 1.8 - 35%)			
Road surface material moisture content:		25	% (range 0.03 - 13%)			
			avg daily value with watering			
		k	a	c	d	
Particle size multiplier factors:	PM10	1.8	1	0.2	0.5	
	PM2.5	0.18	1	0.2	0.5	
C factors (brake and tire wear):	PM10	0.00047	lb/VMT			
	PM2.5	0.00036	lb/VMT			
Avg vehicle speed on road:		5	mph (range 10-55 mph)			
Number of vehicles per day:		99		VMT/day:	495	
				VMT/month	10890	
Number of construction work days per month:		22		VMT/period	32670	
Total vehicles per m		2178				
Number of construction work months:		3	after wet season adjustment*			
Total vehicles per const per		6534				

	PM10	PM2.5
Calc 1	0.442	0.442
Calc 2	0.408	0.408
Calc 3	2.187	2.187
Calc 4	0.148	0.015
Calc 5	0.148	0.014

Emissions	PM10	PM2.5
lbs/day	73.24	7.17
lbs/month	1611.19	157.71
lbs/period	4833.58	473.13
tons/period	2.42	0.24

Watering of the road surface will be used to reduce emissions by increasing road surface moisture content.
EPA, AP-42, Section 13.2.2, March 2006
*** For vehicles accessing main site in months 1-3 during road construction phase.

CONSTRUCTION PHASE - Truck Delivery and Site Support Vehicle Emissions

Ref: MDAB, Emfac 2007, V2.3, Nov 2006
On-Road Heavy Duty Diesels (1966-2010)
On Road Medium Duty Gas (1966-2010)

		Emissions Factors (lbs/vmt)							
Delivery Vehicle Use Rates		NOx	CO	VOC	SOx	PM10	CO2		
Const Days per Period:	814	0.03422	0.009532	0.002411	0.00004	0.001556	4.04823	Diesel	
Const Period VMT Diesel:	56250	0.00202	0.01296	0.001125	0.000015	0.000098	1.4488	MD Gas	
Avg Daily Diesel VMT:	69			Daily Emissions (lbs)					
Const Period VMT Gasoline:	6250	**NOx**	**CO**	**VOC**	**SOx**	**PM10**	**CO2**	**PM2.5**	
Avg Daily Gasoline VMT:	8	**2.365**	**0.659**	**0.167**	**0.003**	**0.108**	**279.746**	**0.107**	Diesel
		0.016	0.100	0.009	0.000	0.001	11.124	0.001	MD Gas
*estimated number of deliveries = 2500				Tons per Const Period					
at 25 miles per one way trip to site from Blythe		0.962	0.268	0.068	0.001	0.044	113.856	0.043	Diesel
		0.006	0.041	0.004	0.000	0.000	4.528	0.000	MD Gas

Site Support Vehicle Use Rates (emissions included in the Exhaust sheets, i.e., total Hp-Hr calculations)

Gasoline Vehicle VMT Period	0	**NOx**	**CO**	**VOC**	**SOx**	**PM10**	**CO2**			**PM2.5**
Avg Daily Gasoline VMT:	0	0.000791	0.008821	0.000769	0.000009	0.000075	0.825741	lbs/vmt*	gasoline	
Diesel Vehicle VMT Period:	0	0.000006	0.000003	0.000001	0.000001	0.000001	0.001446	lbs/vmt*	diesel	
Avg Daily Diesel VMT:	0	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**lbs/day**	**gasoline**	**0.0000**
		0.0000	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**lbs/day**	**diesel**	**0.0000**
		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**tons/period**	**gasoline**	0.0000
		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**tons/period**	**diesel**	0.0000

Ref: MDAB, Emfac 2007, V2.3, Nov 2006
LDPs (gas and diesel), 1966-2010

Avg haul distance: to the site from Blythe railyard and immediate supply area is 25 miles one way
(Delivery trucks are not dedicated to the site therefore backhaul distances are not included in VMT)
Assumed 90% deliveries by HD diesel trucks and 10% by MD gas trucks.

CARB-CEIDARS, Updated Fractions for PM Profiles: PM2.5 = 0.991 of PM10 for Diesel Exhaust, and 0.998 for Gasoline Vehicles.

It should be noted that these emissions are not necessarily new emissions to the regional air shed. A significant portion of the truck services will be derived from the existing regional truck services vehicle pool, and as such these truck emissions would most likely be involved in deliveries in the area regardless of whether or not the proposed facility is constructed. As such, a major portion of the above estimated emissions would not be considered as additions to the air shed.

CONSTRUCTION PHASE - Worker Travel - Emissions

Ref: MDAB, Emfac 2007, V2.3, Nov 2C
On Road Vehicles (1966-2010)
LDP/LDT Weighted Avg Efs

Max # of Workers/Day:	1092	
Avg # of Workers/Day:	640	
Avg Occupancy/Vehicle:	1.3	
Round Trips/Day:	500	
Avg Roundtrip Distance:	50	miles
VMT/Day:	25000	
VMT/Const Period:	20350000	
Total Const Days:	814	

Emissions Factors (lbs/VMT)

NOx	CO	VOC	SOx	PM10	CO2
0.00111	0.01108	0.00092	0.00001	0.00009	0.91102

Avg. Daily Emissions (lbs)

NOx	CO	VOC	SOx	PM10		PM2.5
27.750	**277.000**	**23.000**	**0.250**	**2.250**	**22775.500**	**2.246**

Tons per Const Period

11.2943	**112.7390**	**9.3610**	**0.1018**	**0.9158**	**9269.6285**	**0.9139**

Total Bus VMT/Const Period:	0
Avg Bus VMT/Const Day:	0

Ref: MDAB, Emfac 2007, V2.3, Nov 2C
On Road Vehicles (1966-2010)
Bus Carriers

Emissions Factors (lbs/VMT)

NOx	CO	VOC	SOx	PM10	CO2
0.013846	0.016154	0.002308	0.000077	0.000077	3.846

Avg. Daily Emissions (lbs)

NOx	CO	VOC	SOx	PM10	CO2	PM2.5
0.000	0.000	0.000	0.000	0.000	0.000	0.000

Tons per Const Period

0.000	0.000	0.000	0.000	0.000	0.000	0.000

It should be noted that these emissions are not necessarily new emissions to the regional air shed. A significant portion of the workers will be derived from the existing work force pool in the urban regional area, and as such these workers would most likely be involved in projects in the area regardless of whether or not the proposed facility is constructed. As such, a major portion of the above estimated emissions would not be considered as additions to the air shed.

CONSTRUCTION PHASE - Trackout Emissions

Paved Road Length (miles):	0.1	estimated roundtrip trackout distance				
Daily # of Vehicles:	576					
Avg Vehicle Weight (tons):	2.5			PM10	PM2.5*	
Total Unadjusted VMT/day	57.6			0.361		
Particle Size Multipliers	PM10			0.864		
lb/VMT	0.023			0.001	0.0001	lb/VMT
C factor, lb/VMT	0.00047			**2.358**	0.3984	**lbs/day**
Road Sfc Silt Loading (g/m^2):	0.56			**0.026**	0.0044	**tons/month**
# of Active Trackout Points:	1			**0.91**	0.1531	**tons/period**
Added Trackout Miles:	PM10					
Trackout VMT/day:	3456		*Default Silt Load Values for Paved Road Types*			
Final Adjusted VMT/day	3514			Freeway	0.02 g/m2	
Final Adjusted VMT/month	77299			Arterial	0.036 g/m2	
Final Adjusted VMT/period	2700834			Collector	0.036 g/m2	
Construction days/month:	22.0			Local	0.28 g/m2	
Construction months/period:	34.9			Rural	1.6 g/m2	
Control Applied to Trackout:	Sweeping and Cleaning (Water washing)					
Control Efficiency, %	90	0.9	Release Factor =	0.1		

* PM2.5 fraction of PM10 assumed to be 0.169 (CARB CEIDARS updated fraction values) for paved roads.

EPA, AP-42, Section 13.2.1, Proposed revisions dated 9/2008.
Use silt loading factor from default values for road type if no site specific data is available.
Trackout effects approximately 260 ft (0.1 mile) of roadway arriving and departing from the site access point.
See the mileage note on the paved road calculation sheet.

CO2e Emissions Estimates

Total CO2 emisisons from diesel combustion:	15688.9	tons/period
Total CO2 emissions from gasoline combustion:	9274.5	tons/period

Approximate methane fraction of CO2 for diesel combustion:	0.000051
Approximate N2O fraction of CO2 for diesel combustion:	0.000032
Approximate methane fraction of CO2 for gasoline combustion:	0.000213
Approximate N2O fraction of CO2 for gasoline combustion:	0.000113

Estimated methane from diesel combustion:	0.800134	tons/period
Estimated N2O from diesel combustion:	0.502045	tons/period
Estimated methane from gasoline combustion:	1.975469	tons/period
Estimated N2O from diesel combustion:	1.048019	tons/period

Estimated methane CO2e from diesel combustion:	16.80281	tons/period
Estimated N2O CO2e from diesel combustion:	155.6339	tons/period
Estimated methane CO2e from gasoline combustion:	41.48484	tons/period
Estimated N2O CO2e from gasoline combustion:	324.8857	tons/period

Total CO2e emissions from construction **25502** **tons/period**

22952 ***metric tons/period***

CCAR General Protocol, June 2006, Version 2.1.
IPCC SAR values for methane and N2O.

Average Vehicle Weight Estimate for Construction Period

Vehicle Type	Weight tons	# Vehicles per day	Frac. of total vehicles
Passenger Cars	2	500	0.868
LD Pickups	3	34	0.059
MD Pickups	4	36	0.063
HD Loaded*	40	3	0.005
HD Unloaded*	20	3	0.005
Buses	20	0	0.000
		576	1.000

Weighted Avg Vehicle Weight, tons : **2.5**

* Ref: Liberty Energy XXIII DEIR, City of Banning, CA., Aspen Environmental Group, June 2

Construction Support Data

	Dimensions	Quantity	Acres
Temporary Disturbance:			
Transmission Line			
Construction laydown/assembly areas	100' X 200'	1	0.46
Conductor Pulling Area	50' X 140'	25	4.02
Crossing Structures	100' X 100'	4	1.84
Pole Pad Construction Areas	50' X 50' (see note 1)	59	2.86
Gas Line			
Construction Right of Way	50' X 5 miles (see note 2)	1	36.36
Roads			
Site Access Road Construction	50' X 6.5 miles (see Note 3)	1	15.76
Total Disturbed Area			**61.30**
Permanent Disturbance:			
Transmission Pole Pads	6' X 6'	59	0.05
Spur Roads	70' X 14'	59	1.87
Substation Expansion	75' X 240'	87499.45	0.41
Site Access Road	30' X 6.5 miles	1	23.64
Gas Line	N/A	N/A	N/A
Project Site	varies	1	1800.00
Total Disturbed Area			**1825.97**

Notes

1. The 50' X 50' Pole Pad Construction area does not include the 6' X 6' permanent pole pad disturbance or the portion of the spur road that is coincident with the 50'X50' pole pad construction area.
2. Approximately 20' of the gas line construction right of way will overlap the access road construction right of way; therefore, has not been included in the temporary disturbance calculation.
3. The temporary disturbance shown excludes the permanent disturbance for the access road.

WorleyParsons
resources & energy

Table B.5-6 (5 Pages)

NextEra - Genesis Solar Energy Project
Preliminary Equipment Hours/Miles 250 MW Unit
REV C By: J.Foster
7/9/2009

Equipment/Vehicle Type	Fuel	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	
Construction Equipment																																							
Air Compressor, Ingersoll-Rand	Diesel	176	176	176	176	704	704	704	880	1056	1408	1056	1232	1232	1232	1232	1760	1584	1584	1584	1760	2464	1760	1760	1760	1408	1056	1056	880	880	704	704	1056	704	704	704	352	#REF!	
Asphalt Paver, Cat	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	176	176	176	0	0	0	0	0	0	0	0	0	176	176	176	#REF!	
Scraper, Cat	Diesel	0	880	1320	1760	1760	1760	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	0	0	0	0	#REF!	
Dozer, Cat	Diesel	0	440	440	440	440	440	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	0	0	0	0	#REF!	
Dozer, Cat	Diesel	0	440	440	440	440	440	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	0	0	0	0	#REF!	
Blade, Cat	Diesel	220	220	440	440	220	220	0	0	0	0	0	0	0	0	0	0	0	0	0	220	220	220	220	0	0	0	0	0	0	0	220	220	220	220	0	0	#REF!	
10 Wheeler Dump Truck	Diesel	880	880	880	1320	1320	880	880	440	0	0	0	0	0	0	0	0	0	880	440	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#REF!	
Front End Loader	Diesel	440	440	440	660	660	440	440	220	0	0	0	0	0	0	0	0	0	440	220	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#REF!	
Water Trucks, Freightliner 4000 gallon	Diesel	880	880	880	880	880	880	880	660	660	440	440	1320	1320	1320	1320	1320	1320	1320	1100	1100	880	880	880	880	880	440	440	440	440	440	440	440	440	440	440	#REF!	
Water Pull (6000 gallon) CAT	Diesel	440	440	440	440	440	440	440	0	0	0	0	440	440	440	440	440	440	440	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#REF!	
Backhoe, Cat,	Diesel	0	0	220	220	220	440	440	440	440	220	220	220	220	440	440	440	660	660	660	660	330	330	220	220	220	220	220	220	220	220	220	110	110	0	0	0	#REF!	
Compactor, Cat	Diesel	0	0	110	110	110	220	220	220	220	110	110	110	0	110	110	110	220	220	220	220	220	220	220	110	110	0	0	0	0	0	0	110	110	110	110	110	#REF!	
Crane, 150-Ton, Manitowoc	Diesel	0	0	0	0	0	110	220	220	220	220	220	110	110	110	110	0	110	220	220	220	220	220	110	110	110	110	0	0	0	0	0	0	0	0	0	0	#REF!	
Crane, 20-Ton, Grove	Diesel	0	110	110	110	110	110	110	110	220	660	440	440	550	550	550	550	550	550	440	550	990	660	660	660	550	440	440	440	440	330	330	330	220	220	220	110	#REF!	
Crane, 225-Ton, Manitowoc,	Diesel	0	0	0	0	0	0	0	0	220	220	220	220	220	220	220	220	220	220	220	440	440	440	220	220	220	220	220	220	220	220	220	220	220	0	0	0	#REF!	
Crane, 40-Ton, Grove	Diesel	0	110	220	220	220	220	660	660	660	660	660	660	770	880	880	880	880	1320	1320	1320	1320	880	880	880	880	660	660	660	660	660	660	660	220	220	220	220	#REF!	
Loader, Cat,	Diesel	0	0	0	110	110	110	220	330	330	330	330	330	330	220	220	220	110	220	330	330	330	330	330	330	220	110	110	0	0	0	0	0	0	0	0	0	#REF!	
Truck, Concrete Pump, REED	Diesel	0	0	0	0	220	220	220	220	220	220	220	220	220	220	220	440	440	330	330	330	330	330	220	220	220	220	220	220	110	110	110	110	110	0	0	0	#REF!	
Welder, Multiquip	Diesel	110	110	110	220	330	660	770	990	990	1650	1650	1760	1760	1760	1870	1980	2310	1430	1540	1540	2200	2200	2200	2200	2200	1650	1650	1650	660	550	550	550	550	550	550	550	#REF!	
Welder, Multiquip	Gasoline	0	550	550	550	550	770	770	770	770	1100	1100	1100	1650	1650	1650	1650	1870	1540	1540	1540	1760	1760	1760	1540	1430	1100	1100	1100	770	770	770	660	660	660	440	330	#REF!	
Motor Vehicles																																							
On-site Vehicles																																							
On-Site Welding Truck	Gasoline	0	0	220	220	220	220	220	220	440	660	660	660	660	660	880	880	880	550	880	880	880	880	880	880	770	miles												
On-Site Fuel/Lube Truck International	Diesel	110	330	330	330	330	330	330	110	110	220	220	220	330	550	550	550	550	550	550	330	220	330	330	330	330	miles												
On-Site Flatbed Truck, Chevrolet	Gasoline	110	110	110	220	220	220	220	330	330	770	550	550	660	660	660	770	550	550	550	660	660	1100	880	880	880	miles												
On-Site Watering Truck	Diesel	110	110	110	110	110	110	110	110	110	110	110	110	220	220	220	220	220	220	220	220	220	220	220	220	220	miles												
On-Site Dump Truck, Volvo	Diesel	0	110	110	110	110	220	220	220	220	440	440	440	440	550	550	550	550	550	440	440	330	550	550	550	550	miles												
On-Site 3/4 Ton Pick-Up, Ford	Gasoline	220	440	440	440	440	440	440	440	440	1100	1100	1100	1320	1540	1540	1540	1540	1540	1540	1540	1540	1320	1320	1320	1320	miles												
On-site Vehicles																											miles											
Off-Site Flat Bed Trucks	Gasoline	0	0	1100	1100	2200	2200	5500	5500	5500	11000	16500	16500	16500	16500	17600	17600	13200	13200	11000	11000	8800	14300	17600	17600	17600	miles												
Off-Site Asphalt Trucks	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4400	4400	4400	0	miles											
Off-Site Rock trucks	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12100	12100	12100	12100	12100	12100	1100	1100	0	miles											
Off-Site Cement Trucks, Mack	Gasoline	0	0	0	0	2200	2200	11000	11000	11000	16500	22000	27500	27500	11000	11000	8800	11000	7700	16500	16500	14300	19800	23100	27500	27500	miles											
Off-Site Worker Commute	Diesel	76230	95480	124740	157080	194040	272580	361900	418110	496850	544390	571340	589820	601370	622160	619080	582890	623700	672210	718410	739200	793100	814680	841610	840840	773080	miles											
Off-Site Dump Trucks	Diesel	0	0	0	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200	4400	4400	4400	4400	4400	4400	4400	4400	4400	4400	miles											
Off-Site Low Boy Trucks	Gasoline	0	0	0	5500	5500	5500	5500	5500	5500	5500	5500	5500	5500	5500	5500	8800	8800	8800	8800	8800	8800	7700	7700	7700	7700	miles											
Off-Site Pickup Trucks	Diesel	0	0	0	5500	5500	5500	5500	5500	5500	5500	5500	5500	5500	5500	5500	11000	11000	11000	11000	11000	11000	8800	8800	8800	8800	miles											
Off-Site Pipe Hauling Trucks	Diesel	0	0	0	0	0	0	0	0	0	0	1100	1100	1100	2200	2200	2200	2200	1100	1100	1100	0	0	1100	1100	1100	miles											
Off-Site Water Trucks	Gasoline	110	110	110	110	110	110	110	110	110	110	110	110	220	220	220	220	220	220	220	220	110	110	110	110	110	miles											
Off-Site Fuel Lube Trucks - Int	Diesel	0	0	0	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	2200	2200	2200	2200	2200	2200	1100	1100	1100	1100	miles											

Note 1: Based on 22 days per working month & 10 hours per day
Note 2: Equipment does not include offsite work.
Note 3. Worker commute and deliveries assumed to come from Blythe CA.
Note 4: Worker commute assume 30% car pooling

WorleyParsons
resources & energy

NextEra - Genesis Solar Energy Project
Preliminary Equipment Schedule 250 MW Unit
REV C
7/8/2009
NextEra - Genesis Solar Energy Project

By: J.Foster

Equipment/Vehicle Type	Model	Horsepower	Fuel	Hours per Day	Monthly Number																																		Total Hp-Hrs
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	
Construction Equipment																																								
Air Compressor, Ingersoll-Rand	P85WK	23.5	Diesel	8	1	1	1	1	4	4	4	5	6	6	6	7	7	7	7	10	9	9	8	10	14	10	10	10	6	6	6	5	5	4	4	6	4	4	4	2	#REF!	40984
Asphalt Paver, Cat	AP1055B	174	Diesel	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	1	1	1	#REF!	8352
Scraper, Cat	623	330	Diesel	10	0	4	6	6	8	8	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	0	0	0	#REF!	112200
Dozer, Cat	834	498	Diesel	10	0	2	2	2	2	2	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	0	0	0	#REF!	49800
Dozer, Cat	D-9	410	Diesel	10	0	2	2	2	2	2	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	0	0	0	#REF!	41000
Blade, Cat	14H	210	Diesel	10	1	1	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	1	1	1	1	0	0	#REF!	33600
10 Wheeler Dump Truck	-	300	Diesel	10	4	4	4	6	6	4	4	2	0	0	0	0	0	0	0	0	0	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#REF!	120000
Front End Loader	973C	220	Diesel	10	2	2	2	3	3	2	2	1	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#REF!	44000
Water Trucks, Freightliner 4000 gallon	FL80	320	Diesel	10	4	4	4	4	4	4	4	3	3	2	2	6	6	6	6	6	6	6	5	5	4	4	4	4	4	2	2	2	2	2	2	2	2	2	2	#REF!	422400
Water Pull (6000 gallon) CAT	651	500	Diesel	10	2	2	2	2	2	2	2	0	0	0	0	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#REF!	140000
Backhoe, Cat,	430E	97	Diesel	5	0	0	2	2	2	4	4	4	4	2	2	2	2	4	4	4	6	6	6	3	3	2	2	2	2	2	2	2	2	1	1	0	0	0	0	#REF!	44620
Compactor, Cat	826H	410	Diesel	5	0	0	1	1	1	2	2	2	2	1	1	1	0	1	1	1	2	2	2	2	2	2	2	1	1	0	0	0	0	0	1	1	1	1	1	#REF!	77900
Crane, 150-Ton, Manitowoc	555	347	Diesel	5	0	0	0	0	0	1	2	2	2	2	1	1	1	1	0	1	2	2	2	2	2	1	1	1	1	0	0	0	0	0	0	0	0	0	0	#REF!	52060
Crane, 20-Ton, Grove	YB777	130	Diesel	5	0	1	1	1	1	1	1	1	2	6	4	4	5	5	5	5	5	5	4	5	9	6	6	6	5	4	4	4	4	3	3	3	2	2	2	1	#REF!	91900
Crane, 225-Ton, Manitowoc,	14000	340	Diesel	5	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	2	2	2	4	4	4	2	2	2	2	2	2	2	2	2	2	2	0	0	0	#REF!	95200
Crane, 40-Ton, Grove	RT600	173	Diesel	5	0	1	2	2	2	2	6	6	6	6	6	6	7	8	6	6	6	8	12	12	12	12	6	6	6	6	6	6	6	6	6	2	2	2	2	#REF!	185110
Loader, Cat,	972G	275	Diesel	5	0	0	0	1	1	1	2	3	3	3	3	3	3	2	2	2	1	2	3	3	3	3	3	3	2	1	1	0	0	0	0	0	0	0	0	#REF!	74250
Truck, Concrete Pump, REED	XT36R-160	350	Diesel	5	0	0	0	0	2	2	2	2	2	2	2	2	2	2	2	4	4	3	3	3	3	3	2	2	2	2	2	1	1	1	1	1	0	0	0	#REF!	108500
Welder, Multiquip	BLW-300SS	19.5	Diesel	5	1	1	1	2	3	6	7	9	9	15	15	18	18	18	17	18	21	13	14	14	20	20	20	20	20	15	15	15	6	5	5	5	5	5	5	5	#REF!	39000
Welder, Multiquip	BLW-300SS	19.5	Gasoline	5	0	5	5	5	5	7	7	7	7	10	10	10	16	15	15	15	17	14	14	14	16	16	16	14	13	10	10	10	7	7	7	8	8	8	4	3	#REF!	33930
Motor Vehicles																																									
On-site Vehicles																																									
On-Site Welding Truck		300	Gasoline	5	-	-	2	2	2	2	2	2	4	6	6	6	6	6	6	6	6	5	5	6	6	6	6	6	6	6	6	6	6	3	6	6	4	2	2	2	1	270,000
On-Site FuelLube Truck International	4400 SA	230	Diesel	5	1	3	3	3	3	3	3	1	1	2	2	2	3	5	5	5	5	5	5	5	3	2	3	3	3	3	2	2	2	2	2	2	1	1	1	1	1	110,400
On-Site Flatbed Truck, Chevrolet	T7500	200	Gasoline	5	1	1	1	1	2	2	2	2	3	3	7	5	5	6	6	6	7	5	5	5	5	6	6	10	6	6	6	5	5	5	3	3	3	3	3	3	3	162,000
On-Site Welfaring Truck	FL80	320	Diesel	5	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	80,000
On-Site Dump Truck, Volvo	385	Diesel	5	-	1	1	1	1	1	2	2	2	2	4	4	4	4	5	5	5	5	5	5	4	4	4	4	4	4	3	2	2	1	1	1	1	1	1	1	1	1	215,800
On-Site 3/4 Ton Pick-Up, Ford	F-250	200	Gasoline	5	2	4	4	4	4	4	4	4	4	10	10	10	12	14	14	14	14	14	14	14	14	12	12	12	12	10	10	10	10	10	10	10	10	2	2	2	2	324,000
On-site Vehicles																																									
Off-Site Flat Bed Trucks	T7500	200	Gasoline	50	-	-	1	1	2	2	5	5	5	10	15	15	15	15	16	16	12	12	10	10	8	13	15	16	16	15	15	15	10	10	5	5	3	3	1	1	1	3,200,000
Off-Site Asphalt Trucks	N/A	250	Diesel	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4	4	4	-	-	-	-	-	-	-	-	4	4	4	-	300,000
Off-Site Rock trucks	N/A	250	Diesel	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	11	11	11	11	11	11	11	1	1,700,000
Off-Site Cement Trucks, Mack	RD690S	250	Diesel	50	-	-	-	-	-	2	2	10	10	10	15	20	25	25	10	10	8	10	7	15	15	13	18	21	25	25	10	10	8	8	5	5	5	3	3	1	-	4,425,000
Off-Site Worker Commute	N/A	0	Gasoline	50	99	124	162	204	252	354	470	543	645	707	742	766	781	808	804	757	810	873	933	960	1030	1058	1093	1092	1004	807	803	798	775	562	554	479	447	404	357	324	249	-
Off-Site Dump Trucks	N/A	200	Diesel	50	-	-	-	2	2	2	2	2	2	2	2	2	2	2	2	4	4	4	4	4	4	4	4	4	4	2	2	2	2	2	2	2	2	2	2	2	2	880,000
Off-Site Low Boy Trucks	N/A	175	Diesel	50	-	-	-	5	5	5	5	5	5	5	5	5	5	5	6	8	8	8	8	8	8	7	7	7	7	5	5	3	3	3	3	3	2	2	2	2	2	1,505,000
Off-Site Pickup Trucks	F-250	235	Gasoline	50	-	-	-	5	5	5	5	5	6	5	5	5	5	5	5	10	10	10	10	10	10	6	8	8	8	6	5	5	5	5	5	5	3	3	3	3	3	2,397,000
Off-Site Pipe Hauling Trucks	T7500	200	Diesel	50	-	-	-	-	-	-	-	-	-	-	1	1	1	2	2	2	2	2	1	1	-	-	1	1	1	2	2	2	2	1	1	1	-	-	-	-	-	280,000
Off-Site Water Trucks	FL80	200	Diesel	5	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	40,000
Off-Site Fuel Lube Trucks - Int	4400SA	175	Gasoline	50	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	315,000

WorleyParsons
resources & energy

NextEra - Genesis Solar Energy Project
Transmission Line Construction Schedule, Labor and Equipment Loading
REV A
REVB
7/9/2009

By: **J.Foster**
Chkd **J.Marchek**

	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9
Laborer	8	8	8	8	8	8
Operator	4	4	4	4	4	2
Teamster	2	2	2	2	2	2
Electrician	20	20	20	20	20	20
Total	34	34	34	34	34	32

MAN MONTHS			202
CRAFT HOURS			44440

TRANSMISSION LINE EQUIPMENT AND VEHICLE NUMBERS
Monthly Vehicle Numbers

	hp	fuel	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9
Cable Puller	385	Diesel	0	0	0	0	2	2
3/4 Pick-Up Ford F-250	235	Diesel	3	3	3	3	3	3
Forklift Cat 3054E	120	Diesel	2	2	2	2	2	2
Pole Digger International 4700	210	Diesel	1	2	2	2	2	0
Crane 90 Ton	275	Diesel	1	1	1	1	1	1
Water Truck	200	Diesel	4	4	4	4	4	4
Manlift JLG 1350SJP	87	Diesel	2	2	2	2	2	2
Material Deliveries	N/A	Diesel	1	1	1	2	0	0

Monthly Operating Hours or Miles

	hp	hours	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9		Total Hp-Hrs
Cable Puller	385	5	0	0	0	0	220	220	hours	169400
3/4 Pick-Up Ford F-250	235	5	330	330	330	330	330	330	hours	465300
Forklift Cat 3054E	120	5	220	220	220	220	220	220	hours	158400
Pole Digger International 4700	210	5	110	220	220	220	220	0	hours	207900
Crane 90 Ton	275	5	110	110	110	110	110	110	hours	181500
Water Truck	200	5	440	440	440	440	440	440	hours	528000
Manlift JLG 1350SJP	87	5	220	220	220	220	220	220	hours	114840
	N/A	50	1100	1100	1100	2200	0	0	miles	
Worker Commute	N/A	50	37400	37400	37400	37400	37400	35200	miles	

WorleyParsons
resources & energy

NextEra - Genesis Solar Energy Project
REV A
7/2/2009 By: J.Foster

Grade, Prep and Rock

Access Road Length	10	miles	
Road Width	30	feet	(24 ft plus 3 feet shoulders)
Total Road Area	1,584,000	ft2	
Production Capacity	35,000	ft2/day	
Emergency Diesel Generator Emissions	45.26	days	
Number of Weeks	9.05	weeks	

Pave and Finish

Access Road Length	10	miles
Road Width	30	feet
Total Road Area	1,584,000	ft2
Production Capacity	105,000	ft2/day
Number of Days	15	days
Number of Weeks	3.02	weeks

ACCESS ROAD LABOR			
	Month 1	Month 2	Month 3
Operators	7	7	12
Teamster	2	2	3
Laborer	2	2	6
Inspector	1	1	2
Foreman	1	1	1
Total	13	13	24

GAS LINE EQUIPMENT AND VEHICLE NUMBERS					
Monthly Vehicle Numbers					
	hp	Fuel	Month 1	Month 2	Month 3
Asphalt Paver - Cat, AP1055B	174	Diesel	0	0	1
Blade - Cat, 14H	210	Diesel	2	2	1
Compactor - Cat, 826H	410	Diesel	1	2	2
Roller - Cat, 826H	410	Diesel	1	2	4
Water Truck - Freight Linder,FL80	200	Diesel	2	2	2
3/4 Tone Pick-Up - Ford, F250	235	Diesel	2	2	4

GAS LINE EQUIPMENT AND VEHICLE HOURS								
Monthly Operating Hours								Total
	hp	Fuel	Hours or Miles/day	Month 1	Month 2	Month 3		Hp-Hrs
Asphalt Paver - Cat, AP1055B	174	Diesel	8	0	0	176	hours	30624
Blade - Cat, 14H	210	Diesel	8	352	352	176	hours	184800
Compactor - Cat, 826H	410	Diesel	8	176	352	352	hours	360800
Roller - Cat, 826H	410	Diesel	8	176	352	704	hours	505120
Water Truck - Freight Linder,FL80	200	Diesel	8	352	352	352	hours	211200
3/4 Tone Pick-Up - Ford, F250	235	Diesel	8	352	352	704	hours	330880
Worker Commutes	N/A	N/A	50	14300	14300	26400	miles	
Deliveries	N/A	N/A	50	39107	348	39531	miles	

WorleyParsons
resources & energy

NextEra - Genesis Solar Energy Project
Gas Line Schedule, Labor and Equipment
REV A By: J.Foster
7/2/2009

	MONTH 15	MONTH 16	MONTH 17	MONTH 18	MONTH 19
Operator	15	15	15	15	10
Teamster	0	0	2	2	2
Mechanic	2	2	2	2	2
Laborer	10	15	15	15	10
Welder	10	10	10	10	10
Foreman	2	2	2	2	2
Total	39	44	46	46	36

GAS LINE EQUIPMENT AND VEHICLE NUMBERS							
Monthly Vehicle Numbers							
	hp	Fuel	MONTH 15	MONTH 16	MONTH 17	MONTH 18	MONTH 19
Backhoe 416E	74	Diesel	2	2	2	2	2
Loader CAT 966R	150	Diesel	2	2	2	2	2
Dozer CAT D8	305	Diesel	1	1	0	0	0
Crane 50 Ton Grove TR600E	173	Diesel	1	1	1	0	0
Sideboom CAT572R Series 2	240	Diesel	2	2	2	2	2
Air Compressor Ingersol-Rand P65WK	23.5	Diesel	2	2	2	2	2
Dump Truck Volvo WG64T	385	Diesel	1	1	1		
Welding Truck	200	Diesel	4	4	4	4	4
Water Truck	200	Diesel	2	2	2	2	2
Flatbed Chevrolet T7500	200	Diesel	2	2	2	2	2
3/4 Ton Pick Up Ford F-250	235	gasoline	4	4	4	4	4
Work Commute	N/A	gasoline	39	44	46	46	36
Material & Equipment Delivery	N/A	Diesel	6	3	3	3	3

GAS LINE EQUIPMENT AND VEHICLE HOURS										
Monthly Operating Hours										Total
Revisions	hp	Fuel	Hours/day	MONTH 15	MONTH 16	MONTH 17	MONTH 18	MONTH 19		Hp-Hrs
Backhoe 416E	74	Diesel	5	220	220	220	220	220	hours	81400
Loader CAT 966R	150	Diesel	5	220	220	220	220	220	hours	165000
Dozer D8	305	Diesel	5	110	110	0	0	0	hours	67100
Crane 50Ton	173	Diesel	5	110	110	110	0	0	hours	57090
Sideboom	240	Diesel	5	220	220	220	220	220	hours	264000
Air Compressor 185 cfm	23.5	Diesel	5	220	220	220	220	220	hours	25850
Dump Truck	385	Diesel	5	110	110	110	0	0	hours	127050
Welding Truck	200	Diesel	5	440	440	440	440	440	hours	440000
Water Truck	200	Diesel	8	220	220	220	220	220	hours	220000
Flatbed	200	Diesel	5	220	220	220	220	220	hours	220000
3/4 Ton Pick Up Ford F-250	235	gasoline	5	440	440	440	440	440	hours	517000
Work Commute	N/A	gasoline	50	42900	48400	50600	50600	39600	miles	
Material & Equipment Delivery	N/A	Diesel	50	6600	3300	3300	3300	3300	miles	

WorleyParsons
resources & energy

Table B.5-7

NextEra - Genesis Solar Energy Project
Preliminary Labor Schedule 250 MW Unit
REV C By: B.Anders
7/9/2009 Chkd J.Foster

			Monthly Number																																	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
CRAFT																																							
BOILERMAKERS																																							
CARPENTER			4	8	8	8	8	13	18	18	23	28	38	36	42	50	50	58	48	43	42	30	35	36	44	44	50	50	50	50	40	30	24	12	12	8	8	8	8
ELECTRICIAN			8	10	10	35	35	40	45	55	80	70	80	80	80	80	80	90	90	80	85	80	105	105	105	104	104	80	80	75	75	60	60	45	45	35	25	24	24
INSULATORS			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	8	16	24	24	24	24	12	0	0	0	0	8	8	16	24	24	24	24	12
IRONWORKER (CIVIL & STRUCT)			3	6	6	6	12	26	26	32	40	40	45	48	55	66	70	80	84	92	67	80	82	71	70	69	67	66	70	74	72	66	61	48	42	31	25	21	12
LABORERS (CIVIL, CONCRETE, STRUCT, ELEC, & MECH)			14	18	32	36	38	44	48	52	62	60	62	66	68	68	74	107	109	109	108	90	100	96	96	94	96	68	64	64	64	58	58	46	46	36	34	28	28
CEMENT MASONS			0	0	0	0	0	4	4	4	6	6	4	4	4	4	4	4	4	8	8	8	6	6	4	4	4	4	4	4	4	4	4	4	0	0	0	0	0
MILLWRIGHTS			0	0	0	0	0	0	0	0	3	3	3	16	16	16	16	16	16	14	14	14	22	22	22	24	24	16	16	16	16	14	14	14	19	19	19	8	8
OPERATING ENGINEERS (CIVIL, CONCRETE, STRUCT, ELEC & MECH)			30	30	42	35	35	38	38	40	40	38	38	39	39	39	54	62	56	66	72	64	60	60	60	61	59	39	39	37	31	31	28	28	22	22	22	22	20
PAINTERS			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	8	12	15	15	10	0	0	0	0	0	0	5	8	12	15	15	10
PIPEFITTERS			0	0	10	20	40	70	100	100	120	130	130	130	130	130	142	162	182	212	242	230	220	220	200	190	150	130	130	130	130	130	130	130	100	90	70	60	20
TEAMSTERS (CIVIL, CONCRETE, STRUCT, ELEC, & MECH)			9	9	18	17	17	17	17	17	15	26	26	26	26	30	30	43	45	45	41	39	39	50	38	37	37	30	30	28	28	28	24	24	24	24	12	11	11
Total PB Craft			54	69	104	123	151	218	262	284	359	407	432	456	471	498	494	591	588	639	679	656	701	708	686	677	624	498	494	489	488	435	417	372	342	301	254	221	153
SOLAR FIELD CRAFT			0	0	0	25	45	80	150	200	225	240	250	250	250	250	250	90	110	130	150	200	225	250	305	315	300	250	250	250	250	100	80	50	50	50	50	50	50
TOTAL CRAFT			**54**	**69**	**104**	**148**	**196**	**298**	**412**	**484**	**584**	**647**	**682**	**706**	**721**	**748**	**744**	**681**	**708**	**769**	**629**	**656**	**926**	**958**	**991**	**992**	**924**	**748**	**744**	**739**	**718**	**535**	**497**	**422**	**392**	**351**	**304**	**271**	**203**
STAFF																																							
CONSTRUCTION STAFF			29	39	42	40	40	40	44	44	44	44	44	44	44	44	44	60	80	80	80	80	80	80	80	80	60	44	44	44	44	44	44	44	44	44	44	44	36
CM STAFF (NextEra)			10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	5	5	5	5	5	5	5	5	5	5	5	5
SUBCONTRACTORS			6	6	6	6	6	6	4	3	3	2	2	2	2	2	2	2	8	8	8	8	8	4	4	4	4	4	4	4	4	4	4	4	4	2	2	2	2
TA										2	4	4	4	4	4	4	4	4	4	6	6	6	6	6	8	6	6	6	6	6	4	4	4	4	2	2	2	2	2
			45	55	58	56	56	56	58	59	61	60	60	60	60	60	60	76	102	104	104	104	104	100	102	100	80	59	59	59	57	57	57	57	55	53	53	53	45
Total Project			99	124	162	204	252	354	470	543	645	707	742	766	781	808	804	757	810	873	933	960	1030	1058	1093	1092	1004	807	803	798	775	592	554	479	447	404	357	324	248

Notes
1) Assume 22 days per month 10 hours per day
2) Labor for all offsite linears included

Revisions
REV A - Issued for PDO
REV B -Revised labor number
REV C - Compiled unit 1 and unit 2 schedules

Table B.5-8

Title : MDAB-2014
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2009/07/09 09:24:51
Calen Year: 2014 -- All model years in the range 1970 to 2014 selected
Season : Annual
Area : Mojave Desert Air Basin Average
I/M Stat : Enhanced Basic (2005) -- Using I/M schedule for area 69 San Bernardino (MD)
Emissions: Tons Per Day

	Light Duty Passenger Cars				Light Duty Trucks				Medium Duty Trucks				Heavy Duty Trucks - Gasoline Trucks							
	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Diesel	Total	Non-cat	Cat	Total	Diesel Trucks	Total HD Trucks	Urban Buses	Motor-cycles	All Vehicles
Vehicles	1550.	358243.	587.	360381.	2518.	257363.	5620.	265501.	544.	98783.	7592.	106919.	359.	16284.	16644.	40391.	57035.	199.	48532.	838565.
VMT/1000	29.	15158.	16.	15203.	61.	11486.	202.	11749.	12.	4297.	329.	4639.	4.	333.	337.	6428.	6765.	30.	664.	39050.
Trips	5983.	2249030.	3126.	2258140.	9782.	1602200.	33473.	1645450.	3671.	1041760.	93500.	1138940.	4479.	75776.	80255.	290995.	371250.	795.	97055.	5511630.
Reactive Organic Gas Emissions																				
Run Exh	0.21	0.75	0.00	0.96	0.44	1.04	0.01	1.50	0.11	0.40	0.05	0.56	0.02	0.15	0.17	4.57	4.74	0.03	2.33	10.12
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.64	0.64	0.00	0.00	0.67
Start Ex	0.04	0.83	0.00	0.87	0.06	0.84	0.00	0.90	0.03	0.53	0.00	0.55	0.05	0.13	0.18	0.00	0.18	0.00	0.23	2.74
Total Ex	0.24	1.59	0.00	1.83	0.50	1.89	0.01	2.40	0.14	0.95	0.05	1.13	0.07	0.28	0.35	5.21	5.56	0.03	2.57	13.53
Diurnal	0.01	0.22	0.00	0.23	0.02	0.21	0.00	0.23	0.00	0.06	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.62
Hot Soak	0.02	0.34	0.00	0.36	0.03	0.29	0.00	0.32	0.00	0.10	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.83
Running	0.11	0.87	0.00	0.97	0.08	1.27	0.00	1.36	0.01	0.61	0.00	0.62	0.02	0.04	0.06	0.00	0.06	0.00	0.15	3.16
Resting	0.01	0.14	0.00	0.15	0.01	0.14	0.00	0.15	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.39
Total	0.39	3.15	0.00	3.54	0.65	3.79	0.01	4.46	0.15	1.75	0.05	1.95	0.10	0.33	0.43	5.21	5.64	0.03	2.90	18.52
Carbon Monoxide Emissions																				
Run Exh	2.53	28.49	0.01	31.04	5.36	37.27	0.12	42.75	2.08	11.77	0.30	14.14	0.73	4.90	5.63	19.56	25.19	0.18	25.99	139.30
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.01	0.14	0.00	0.02	0.03	2.83	2.85	0.00	0.00	2.99
Start Ex	0.20	10.72	0.00	10.92	0.35	11.59	0.00	11.93	0.22	6.49	0.00	6.70	0.45	2.38	2.83	0.00	2.83	0.02	1.08	33.49
Total Ex	2.74	39.21	0.01	41.96	5.71	48.86	0.12	54.69	2.30	18.38	0.30	20.98	1.18	7.30	8.49	22.39	30.87	0.20	27.07	175.78
Oxides of Nitrogen Emissions																				
Run Exh	0.15	2.80	0.03	2.98	0.31	4.68	0.35	5.33	0.10	1.96	1.51	3.57	0.02	0.93	0.95	62.16	63.11	0.17	0.89	76.06
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.00	7.28	7.28	0.00	0.00	7.30
Start Ex	0.01	0.78	0.00	0.79	0.02	0.96	0.00	0.98	0.01	1.31	0.00	1.31	0.01	0.27	0.28	0.00	0.28	0.00	0.03	3.39
Total Ex	0.16	3.58	0.03	3.76	0.32	5.64	0.35	6.31	0.11	3.26	1.53	4.90	0.03	1.20	1.23	69.44	70.67	0.17	0.93	86.75
Carbon Dioxide Emissions (000)																				
Run Exh	0.02	6.07	0.01	6.10	0.03	5.79	0.08	5.90	0.01	3.04	0.19	3.24	0.00	0.24	0.24	12.59	12.84	0.05	0.12	28.24
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.41	0.41	0.00	0.00	0.42
Start Ex	0.00	0.18	0.00	0.18	0.00	0.16	0.00	0.16	0.00	0.10	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45
Total Ex	0.02	6.25	0.01	6.27	0.04	5.95	0.08	6.06	0.01	3.14	0.19	3.34	0.00	0.24	0.25	13.01	13.26	0.05	0.12	29.11
PM10 Emissions																				
Run Exh	0.00	0.20	0.00	0.21	0.00	0.30	0.01	0.32	0.00	0.12	0.01	0.13	0.00	0.00	0.00	2.84	2.84	0.00	0.02	3.52
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	0.07	0.07	0.00	0.00	0.07
Start Ex	0.00	0.02	0.00	0.02	0.00	0.03	0.00	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
Total Ex	0.00	0.22	0.00	0.23	0.00	0.33	0.01	0.34	0.00	0.13	0.01	0.14	0.00	0.00	0.00	2.91	2.91	0.00	0.02	3.65
TireWear	0.00	0.13	0.00	0.13	0.00	0.10	0.00	0.10	0.00	0.04	0.00	0.05	0.00	0.00	0.00	0.24	0.25	0.00	0.00	0.53
BrakeWr	0.00	0.21	0.00	0.21	0.00	0.16	0.00	0.16	0.00	0.06	0.00	0.06	0.00	0.01	0.01	0.19	0.20	0.00	0.00	0.64
Total	0.00	0.57	0.00	0.57	0.00	0.59	0.01	0.61	0.00	0.23	0.02	0.25	0.00	0.01	0.01	3.35	3.36	0.00	0.03	4.82
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	0.06	0.00	0.06	0.00	0.06	0.00	0.06	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.12	0.13	0.00	0.00	0.28
Fuel Consumption (000 gallons)																				
Gasoline	2.29	646.88	0.00	649.17	4.67	617.55	0.00	622.22	1.39	324.88	0.00	326.26	0.61	26.16	26.77	0.00	26.77	1.19	17.84	1643.46
Diesel	0.00	0.00	0.56	0.56	0.00	0.00	6.96	6.96	0.00	0.00	16.94	16.94	0.00	0.00	0.00	1170.75	1170.75	3.80	0.00	1199.02

Table B.5-9 (2 Pages)

EMFAC Composite Emissions Factor Conversion

EMFAC 2007, V2.3, Nov 2006

County: MDAB
Year: 2010
Model Years: 1966-2010

EMFAC Burden Output

		LDP(gas)	LDP(diesel)	LDT(gas)	LDT(diesel)	MDT(gas)	MDT(diesel)	HDT(gas)	HDT(diesel)	Buses	Motorcycles
Daily VMT/1000		13830	26	10165	265	3893	333	281	5474	26	587
Daily VMT		13830000	26000	10165000	265000	3893000	333000	281000	5474000	26000	587000
ROG, tpd		5.32	0.001	5.74	0.02	2.19	0.05	0.61	6.6	0.03	2.85
CO, tpd		61	0.02	71.96	0.16	25.22	0.3	10.32	26.09	0.21	30.59
NOx, tpd		5.47	0.04	7.83	0.46	3.93	1.97	1.4	93.66	0.18	0.86
CO2, tpd	(x 1000) >	5710	10	5220	100	2820	190	210	11080	50	100
PM10, tpd		0.52	0.001	0.53	0.001	0.19	0.02	0.01	4.26	0.001	0.03
SOx, tpd		0.06	0.001	0.05	0.001	0.03	0.001	0.001	0.11	0.001	0.001

Composite Efs

	LDP(gas) g/VMT	LDP(diesel) g/VMT	LDT(gas) g/VMT	LDT(diesel) g/VMT	MDT(gas) g/VMT	MDT(diesel) g/VMT	HDT(gas) g/VMT	HDT(diesel) g/VMT	Buses g/VMT	Motorcycles g/VMT
ROG	0.35	0.00	0.51	0.0018	0.51	0.00	1.97	1.09	1.05	4.40
CO	4.00	0.00	6.42	0.0143	5.88	0.02	33.32	4.32	7.33	47.28
NOx	0.36	0.00	0.70	0.0411	0.92	0.13	4.52	15.52	6.28	1.33
CO2	374.55	0.66	465.86	8.9245	657.14	12.46	677.96	1836.24	1744.58	154.55
PM10	0.03	0.00	0.05	0.0001	0.04	0.00	0.03	0.71	0.03	0.05
SOx	0.0039	0.0001	0.0045	0.0001	0.0070	0.0001	0.0032	0.0182	0.0349	0.0015

Composite Efs

	LDP(gas) lb/VMT	LDP(diesel) lb/VMT	LDT(gas) lb/VMT	LDT(diesel) lb/VMT	MDT(gas) lb/VMT	MDT(diesel) lb/VMT	HDT(gas) lb/VMT	HDT(diesel) lb/VMT	Buses lb/VMT	Motorcycles lb/VMT
ROG	0.000769	0.000000	0.001129	0.000004	0.001125	0.000007	0.004342	0.002411	0.002308	0.009710
CO	0.008821	0.000003	0.014158	0.000031	0.012957	0.000043	0.073452	0.009532	0.016154	0.104225
NOx	0.000791	0.000006	0.001541	0.000091	0.002019	0.000285	0.009964	0.034220	0.013846	0.002930
CO2	0.825741	0.001446	1.027054	0.019675	1.448754	0.027477	1.494662	4.048228	3.846154	0.340716
PM10	0.000075	0.000000	0.000104	0.000000	0.000098	0.000003	0.000071	0.001556	0.000077	0.000102
SOx	0.000009	0.000000	0.000010	0.000000	0.000015	0.000000	0.000007	0.000040	0.000077	0.000003

Weighted Avg LDP/LDT Gasoline

	g/VMT	lb/VMT	Calc 1	0.424
ROG	0.418	0.00092	Calc 2	0.576
CO	5.027	0.01108		
NOx	0.503	0.00111		
CO2	413.2	0.91102		
PM10	0.040	0.00009		
SOx	0.004	0.00001		

	LDP(gas)	LDP(diesel)	LDT(gas)	LDT(diesel)	MDT(gas)	MDT(diesel)	HDT(gas)	HDT(diesel)	Buses	Motorcycles
Annual VMT	5.05E+09	9.49E+06	3.71E+09	9.67E+07	1.42E+09	1.22E+08	1.03E+08	2.00E+09	9.49E+06	2.14E+08
Daily Fuel Use, 10^3 gal	595.18	0.93	546.84	9.12	292.71	17.15	22.92	997.05	4.57	15.52
Daily Fuel Use, gals	595180	930	546840	9120	292710	17150	22920	997050	4570	15520
Annual Fuel Use, gals	217240700	339450	199596600	3328800	106839150	6259750	8365800	363923250	1668050	5664800
Average Miles/gallon	23.2	28.0	18.6	29.1	13.3	19.4	12.3	5.5	5.7	37.8

EMFAC Composite Emissions Factor Conversion

EMFAC 2007, V2.3, Nov 2006

County: MDAB
Year: 2014
Model Years: 1970-2014

EMFAC Burden Output

		LDP(gas)	LDP(diesel)	LDT(gas)	LDT(diesel)	MDT(gas)	MDT(diesel)	HDT(gas)	HDT(diesel)	Buses	Motorcycles
Daily VMT/1000		15187	16	11547	202	4310	329	337	6428	30	664
Daily VMT		15187000	16000	11547000	202000	4310000	329000	337000	6428000	30000	664000
ROG, tpd		3.54	0.01	4.45	0.01	1.9	0.05	0.43	5.21	0.03	2.9
CO, tpd		41.95	0.01	54.57	0.12	20.68	0.3	8.49	22.39	0.2	27.07
NOx, tpd		3.73	0.03	5.96	0.35	3.37	1.53	1.23	69.44	0.17	0.93
CO2, tpd	(x 1000) >	6260	10	5980	80	3150	190	250	13010	50	120
PM10, tpd		0.57	0.001	0.6	0.01	0.23	0.02	3.35	0.01	0.001	0.03
SOx, tpd		0.06	0.001	0.06	0.001	0.03	0.001	0.12	0.001	0.001	0.001

Composite Efs

	LDP(gas) g/VMT	LDP(diesel) g/VMT	LDT(gas) g/VMT	LDT(diesel) g/VMT	MDT(gas) g/VMT	MDT(diesel) g/VMT	HDT(gas) g/VMT	HDT(diesel) g/VMT	Buses g/VMT	Motorcycles g/VMT
ROG	0.21	0.00	0.35	0.0008	0.40	0.00	1.16	0.74	0.91	3.96
CO	2.51	0.00	4.29	0.0094	4.35	0.02	22.85	3.16	6.05	36.98
NOx	0.22	0.00	0.47	0.0275	0.71	0.09	3.31	9.80	5.14	1.27
CO2	373.93	0.60	469.81	6.2851	663.02	11.35	672.98	1836.09	1511.97	163.95
PM10	0.03	0.00	0.05	0.0008	0.05	0.00	9.02	0.00	0.03	0.04
SOx	0.0036	0.0001	0.0047	0.0001	0.0063	0.0001	0.3230	0.0001	0.0302	0.0014

Composite Efs

	LDP(gas) lb/VMT	LDP(diesel) lb/VMT	LDT(gas) lb/VMT	LDT(diesel) lb/VMT	MDT(gas) lb/VMT	MDT(diesel) lb/VMT	HDT(gas) lb/VMT	HDT(diesel) lb/VMT	Buses lb/VMT	Motorcycles lb/VMT
ROG	0.000466	0.000001	0.000771	0.000002	0.000882	0.000007	0.002552	0.001621	0.002000	0.008735
CO	0.005524	0.000001	0.009452	0.000021	0.009596	0.000040	0.050386	0.006966	0.013333	0.081536
NOx	0.000491	0.000004	0.001032	0.000061	0.001564	0.000201	0.007300	0.021605	0.011333	0.002801
CO2	0.824389	0.001317	1.035767	0.013856	1.461717	0.025021	1.483680	4.047915	3.333333	0.361446
PM10	0.000075	0.000000	0.000104	0.000002	0.000107	0.000003	0.019881	0.000003	0.000067	0.000090
SOx	0.000008	0.000000	0.000010	0.000000	0.000014	0.000000	0.000712	0.000000	0.000067	0.000003

Weighted Avg LDP/LDT Gasoline

	g/VMT	lb/VMT	Calc 1	0.432
ROG	0.271	0.00060	Calc 2	0.568
CO	3.275	0.00722		
NOx	0.329	0.00072		
CO2	415.3	0.91569		
PM10	0.040	0.00009		
SOx	0.004	0.00001		

	LDP(gas)	LDP(diesel)	LDT(gas)	LDT(diesel)	MDT(gas)	MDT(diesel)	HDT(gas)	HDT(diesel)	Buses	Motorcycles
Annual VMT	5.54E+09	5.84E+06	4.21E+09	7.37E+07	1.57E+09	1.20E+08	1.23E+08	2.35E+09	1.10E+07	2.42E+08
Daily Fuel Use, 10^3 gal	649.17	0.56	622.22	6.96	326.26	16.94	26.77	1170.75	4.99	17.84
Daily Fuel Use, gals	649170	560	622220	6960	326260	16940	26770	1170750	4990	17840
Annual Fuel Use, gals	236947050	204400	227110300	2540400	119084900	6183100	9771050	427323750	1821350	6511600
Average Miles/gallon	23.4	28.6	18.6	29.0	13.2	19.4	12.6	5.5	6.0	37.2

Table B.5-10 Modeling Inputs/Results for Genesis Ford Lake Construction Impacts (Combustion Sources as Point Sources)

Short Term Impacts (24 hrs and less)						Long Term Impacts (annual)					
	NOx	CO	SOx	PM10	PM2.5		NOx	CO	SOx	PM10	PM2.5
Combustion (lbs/day)	93.7	46.7	0.11	4.97	4.93	Combustion (tons/year)	12.37	6.20	0.015	0.656	0.651
						Combustion (days/year)**	264	264	264	264	264
Combustion (hrs/day)	10	10	10	10	10	Combustion (hrs/day)	10	10	10	10	10
Combustion (lbs/hr)	9.37	4.67	0.01	0.50	0.49	Combustion (lbs/hr)**	6.78	3.40	0.01	0.36	0.36
Combustion (g/sec)	1.18E+00	5.88E-01	1.39E-03	6.26E-02	6.21E-02	Combustion (g/sec)	8.54E-01	4.28E-01	1.04E-03	4.53E-02	4.49E-02
Construction Dust (lbs/day)				203.4	42.7	Construction Dust (tons/year)				9.14	1.92
						Construction Dust (days/year)				264	264
Construction Dust (hrs/day)				10	10	Construction Dust (hrs/day)				10	10
Construction Dust (lbs/hr)				20.34	4.27	Construction Dust (lbs/hr)**				5.010	1.052
Construction Dust (g/sec)	159.93 acres			2.56E+00	5.38E-01	Construction Dust (g/sec)				6.31E-01	1.33E-01
AERMOD Inputs	**647,220 m^2**		**25 Pt.Srcs**								
Combustion (g/s/src)	4.722E-02	2.354E-02	5.544E-05	2.505E-03	2.485E-03	Combustion (g/s/src)	3.416E-02	1.712E-02	4.142E-05	1.812E-03	1.797E-03
Construction Dust ($g/s/m^2$)				3.960E-06	8.313E-07	Construction Dust ($g/s/m^2$)				9.754E-07	2.047E-07
AERMOD Results (ug/m^3)											
Combustion Only						Combustion Only					
1-hour Max	17.215	8.580	0.020	0.91310							
3-hour Max			0.014	0.61431							
8-hour Max		2.252		0.23968							
24-hour Max			0.003	0.13766	0.13655	Annual	0.411		0.0005	0.02179	0.02161
All Particulate Sources						All Particulate Sources					
24-hour Max				44.98372	9.45137	Annual				0.81850	0.18736
1-hour NO2 w/ OLM	17.215	for Max 1-hr O3 (ppm)		0.092		Annual NO2 w/ ARM	0.308	based on ARM Ratio of:		75%	
Background (ug/m^3)						Background (ug/m^3)					
1-hour Max	149	2530	47.2								
3-hour Max			31.2								
8-hour Max		1789									
24-hour Max			13.1	88	28	Annual	38.0		2.7	31.0	10.4
Total + Background (ug/m^3)						Total + Background (ug/m^3)					
1-hour Max	166	2539	47.22								
3-hour Max			31.21								
8-hour Max		1791									
24-hour Max			13.10	133.0	37.5	Annual	38.3		2.70	31.8	10.6

**Even for construction projects taking less than 12-months or 7 days/wk, the hourly emissions for modeling are still based on total tons (projects<12 months) or tons/year (projects>12months) divided by 365 days since all days in the met dataset (i.e., all 12 months and all 365 days - i.e., 7 days/week) are modeled.