

Appendix A

Air Quality LST Data

**EL ENCANTO
PHASE I**

**SUMMARY OF EL ENCANTO PHASE I
RESULTS BY PHASE**

El Encanto Phase 1				
Total On-Site				
	CO	NO_x	PM10	PM2.5
Demolition	55.9	80.2	3.8	2.7
Grading	17.3	36.9	2.2	1.8
Building	1.7	3.3	0.3	0.2
Localized Significance Threshold*	664	192	5	3
Exceed Significance?	NO	NO	NO	NO

SUMMARY OF EL ENCANTO PHASE I RESULTS BY PHASE AND EQUIPMENT

Demolition

Vehicle Description	No. of Vehicle	Hours	Trips	Length	CO	NOx	PM10	PM2.5	Combustion PM10	Fugitive PM10
Concrete/Industrial Saws	1	8.0			3.59	6.11	0.51	0.47	0.51	
Tractors/Loaders/Backhoes	2	8.0			6.63	13.29	1.57	1.06	1.02	0.55
Rubber Tired Dozers	1	1.0			1.69	3.41	0.70	0.25	0.15	0.55
Haul Trucks			21	40.0	43.96	57.38	1.052	0.968	1.052	
Total Onsite Emissions					55.87	80.19	3.83	2.75	1.68	1.10
Localized Significance Threshold*					664	192	5	3		
Exceed Significance?					NO	NO	NO	NO		

PM2.5 Fractions		
Combustion (Offroad)	Combustion (Onroad)	Fugitive
0.92	0.964	0.21

Grading

Vehicle Description	No. of Vehicle	Hours	Trips	Length	CO	NOx	PM10	PM2.5	Combustion PM10	Fugitive PM10
Rubber Tired Dozers	1	6.0			10.17	20.49	0.89	0.82	0.88	0.01
Graders	1	6.0			4.03	10.32	0.54	0.49	0.53	0.01
Tractors/Loaders/Backhoes	1	7.0			2.90	5.81	0.81	0.49	0.45	0.36
Haul Trucks			7	0.1	0.04	0.05	0.0009	0.0008		
Water Trucks			3	1.1	0.17	0.23	0.0041	0.004		
Total Onsite Emissions					17.31	36.89	2.25	1.80	1.86	0.38
Localized Significance Threshold*					664	192	5	3		
Exceed Significance?					NO	NO	NO	NO		

Building

Vehicle Description	No. of Vehicle	Hours	Trips	Length	CO	NOx	PM10	PM2.5
Tractors/Loaders/Backhoes	1	4.0			1.66	3.32	0.26	0.24
Haul Trucks			3	0.1	0.02	0.02	0.0004	0.0004
Total Onsite Emissions					1.67	3.34	0.26	0.24
Localized Significance Threshold*					664	192	5	3
Exceed Significance?					NO	NO	NO	NO
Localized Significance Threshold*					664	192	5	3
Exceed Significance?					NO	NO	NO	NO

0.26 0.24

EL ENCANTO PHASE I DEMOLITION PHASE

Example	Construction Activity
Encanto Phase 1	Demolition of Existing 32,670 Square Foot Structure ^a
Demolition Schedule	3 days ^a

Equipment Type ^{a,b}	No. of Equipment	hr/day	Crew Size
Concrete/Industrial Saws	1	8.0	8
Tractors/Loaders/Backhoes	2	8.0	
Rubber Tired Dozers	1	1.0	

Construction Equipment Emission Factors			
	CO	NOx	PM10
Equipment Type ^c	lb/hr	lb/hr	lb/hr
Concrete/Industrial Saws	0.449	0.764	0.064
Tractors/Loaders/Backhoes	0.414	0.830	0.064
Rubber Tired Dozers	1.695	3.414	0.147

Building Dimensions			
Description ^a	Width of Building	Length of Building	Height of Building
	ft	ft	ft
Total Project	20	50	15

Fugitive Dust Material Handling			
Aerodynamic Particle Size Multiplier ^d	Mean Wind Speed ^e	Moisture Content ^f	Debris Handled ^g
	mph		ton/day
0.35	10	2.0	501

Construction Vehicle (Mobile Source) Emission Factors			
	CO	NOx	PM10
	lb/mile	lb/mile	lb/mile
Heavy-Duty Truck ^h	0.026167	0.034155	0.000626

**EL ENCANTO PHASE I
DEMOLITION PHASE (Continued)**

On-Site Number of Trips and Trip Length		
Vehicle	No. of One-Way Trips/Dayⁱ	One-Way Trip Length^j (miles)
Haul Truck	21	40

Incremental Increase in Onsite Combustion Emissions from Construction Equipment			
Equation: Emission Factor (lb/hr) x No. of Equipment x Work Day (hr/day) = Onsite Construction Emissions (lb/day)			
Equipment Type	CO lb/day	NOx lb/day	PM10 lb/day
Concrete/Industrial Saws	3.59	6.11	0.51
Tractors/Loaders/Backhoes	6.63	13.29	1.02
Rubber Tired Dozers	1.69	3.41	0.15
Total	11.91	22.81	1.68

Incremental Increase in Onsite Fugitive Dust Emissions from Construction Equipment		
Material Handling ^k : $(0.0032 \times \text{Aerodynamic Particle Size Multiplier} \times (\text{wind speed (mph)/5})^{1.3} / (\text{moisture content}/2)^{1.4} \times \text{debris handled (ton/day)}) \times (1 - \text{control efficiency}) = \text{PM10 Emissions (lb/day)}$		
Description	Control Efficiency %	PM10^m lb/day
Material Handling (Demolition) ^l	60	0.55
Material Handling (Debris)	60	0.55
Total		1.10

Incremental Increase in Onsite Combustion Emissions from Onroad Mobile Vehicles			
Equation: Emission Factor (lb/mile) x No. of One-Way Trips/Day x 2 x Trip length (mile) = Mobile Emissions (lb/day)			
Vehicle	CO lb/day	NOx lb/day	PM10 lb/day
Haul Truck	43.96	57.38	1.052
Total	43.96	57.38	1.052

**EL ENCANTO PHASE I
DEMOLITION PHASE (Continued)**

Total Incremental Localized Emissions from Construction Activities			
Sources	CO lb/day	NOx lb/day	PM10 lb/day
On-site Emissions	55.9	80.2	3.8
Significance Thresholdⁿ	664	192	5
Exceed Significance?	NO	NO	NO

Combustion and Fugitive Summary	PM2.5 Fraction^o	PM10 lb/day	PM2.5 lb/day	Percentage Contribution
Combustion (Offroad)	0.92	1.7	1.5	55.42%
Combustion (Onroad)	0.96	1.052	1.014	36.31%
Fugitive	0.21	1.10	0.23	8.27%
Total		3.8	2.8	
Significance Thresholdⁿ			3	
Exceed Significance?			NO	

Notes:
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Adding lines or entering values with units different than those associated with the shaded cells may alter the integrity of the sheets or produce incorrect results.

- a) SCAQMD, estimated from survey data, Sept 2004
- b) Equipment name must match CARB Off-Road Model (see Off-Road Model EF worksheet) equipment name for sheet to look up EFs automatically.
- c) SCAB values provided by the ARB, Oct 2006. Assumed equipment is diesel fueled.
- d) USEPA, AP-42, Jan 1995, Section 13.2.4 Aggregate Handling and Storage Piles, p 13.2.4-3 Aerodynamic particle size multiplier for < 10 µm
- e) Mean wind speed - maximum of daily average wind speeds reported in 1981 meteorological data.
- f) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, equation 2-13, p 2-28
- g) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, p 2-28. Debris weight to area ratio = 0.046 ton/sq ft
(32,670 sq ft x 0.046 ton/sq ft)/3 days = 501 ton/day
- h) CARB, EMFAC2007 (version 2.3) Burden Model, Winter 2007, 75 F, 40% RH: EF, lb/yr = (EF, ton/yr x 2,000 lb/ton)/VMT
- i) Assumed 30 cubic yd truck capacity [(501 ton/day x 2,000 lb/ton x cyd/1,620 lb = 619 cyd)/30 cyd/truck = 21 one-way truck trips/day, building debris density is assumed to be 1,620 lb/cyd]
Multiple trucks can be used.
- j) Assumed trucks travel 0.1 mile through project site.
- k) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, equation 2-13, p 2-28.
- l) EPA suggests using the material handling equation for demolition emission estimates.
- m) Includes watering at least three times a day per Rule 403 (68% control efficiency)
- n) For illustration purposes only, this analysis is based on the most stringent LSTs. Please consult App. C of the Methodology Paper for applicable LSTs.
- o) ARB's CEIDARS database PM2.5 fractions - construction dust category for fugitive and diesel vehicle exhaust category for combustion.

EL ENCANTO PHASE I GRADING PHASE

Example	Construction Activity
Encanto Phase 1	Grading 32,670 Square Feet ^a
Grading Schedule -	3 days^a

Equipment Type ^{a,b}	No. of Equipment	hr/day	Crew Size
Rubber Tired Dozers	1	6.0	8
Graders	1	6.0	
Tractors/Loaders/Backhoes	1	7.0	

Construction Equipment Emission Factors			
	CO	NOx	PM10
Equipment Type ^c	lb/hr	lb/hr	lb/hr
Rubber Tired Dozers	1.695	3.414	0.147
Graders	0.671	1.720	0.089
Tractors/Loaders/Backhoes	0.414	0.830	0.064

Fugitive Dust Grading Parameters	
Vehicle Speed (mph) ^d	Vehicle Miles Traveled ^e
3	0.19

Fugitive Dust Stockpiling Parameters				
Silt Content ^f	Precipitation Days ^g	Mean Wind Speed Percent ^h	TSP Fraction	Area ⁱ (acres)
6.9	10	100	0.5	0.02

**EL ENCANTO PHASE I
GRADING PHASE (Continued)**

Fugitive Dust Material Handling				
Aerodynamic Particle Size Multiplier^j	Mean Wind Speed^k mph	Moisture Content^f	Dirt Handled^a cy	Dirt Handled^l lb/day
0.35	10	7.9	600	500,000

Construction Vehicle (Mobile Source) Emission Factors			
	CO lb/mile	NOx lb/mile	PM10 lb/mile
Heavy-Duty Truck ^m	0.026167	0.034155	0.000626

On-Site Number of Trips and Trip Length		
Vehicle	No. of One-Way Trips/Day	One-Way Trip Length (miles)
Haul Truck ⁿ	7	0.1
Water Truck ^o	3	1.1

Incremental Increase in Onsite Combustion Emissions from Construction Equipment			
Equation: Emission Factor (lb/hr) x No. of Equipment x Work Day (hr/day) = Onsite Construction Emissions (lb/day)			
Equipment Type	CO lb/day	NOx lb/day	PM10 lb/day
Rubber Tired Dozers	10.17	20.49	0.88
Graders	4.03	10.32	0.53
Tractors/Loaders/Backhoes	2.90	5.81	0.45
Total	17.1	36.6	1.9

Incremental Increase in Fugitive Dust Emissions from Construction Operations
Equations:

EL ENCANTO PHASE I GRADING PHASE (Continued)

Grading^p: PM10 Emissions (lb/day) = 0.60 x 0.051 x mean vehicle speed^{2.0} x VMTx (1 - control efficiency)

Storage Piles^q: PM10 Emissions (lb/day) = 1.7 x (silt content/1.5) x ((365-precipitation days)/235) x wind speed percent/15 x TSP fraction x Area) x (1 - control efficiency)

Material Handling^r PM10 Emissions (lb/day) = (0.0032 x aerodynamic particle size multiplier x (wind speed (mph)/5)^{1.3}/(moisture content/2)^{1.4} x dirt handled (lb/day)/2,000 (lb/ton)

(1 - control efficiency)

Description	Control Efficiency %	Unmitigated PM10 ^s lb/day
Earthmoving	60	0.02
Storage Piles	60	0.32
Material Handling	60	0.04
Total		0.38

Incremental Increase in Onsite Travel Emissions from Onroad Mobile Equipment

Equation: Emission Factor (lb/mile) x No. of One-Way Trips/Day x 2 x Trip length (mile) = Mobile Emissions (lb/day)

Vehicle	CO lb/day	NOx lb/day	PM10 lb/day
Haul Truck	0.0366	0.0478	0.0009
Water Truck	0.1727	0.2254	0.0041
	0.209	0.273	0.005

Total Incremental Localized Emissions from Construction Activities

Sources	CO lb/day	NOx lb/day	PM10 lb/day
On-site Emissions	17.3	36.9	2.2
Significance Threshold^t	664	192	5
Exceed Significance?	NO	NO	NO

EL ENCANTO PHASE I GRADING PHASE (Continued)

Combustion and Fugitive Summary	PM2.5 Fraction ^u	PM10 lb/day	PM2.5 lb/day	Percentage Contribution
Combustion (Offroad)	0.92	1.9	1.7	95.296%
Combustion (Onroad)	0.96	0.005	0.005	0.268%
Fugitive	0.21	0.38	0.08	4.435%
Total		2.2	1.8	
Significance Threshold^t			3	
Exceed Significance?			NO	

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- a) SCAQMD, estimated from survey data, Sept 2004
- b) Equipment name must match CARB Off-Road Model (see Off-Road Model EF worksheet) equipment name for sheet to look up EFs automatically.
- c) SCAB values provided by the ARB, Oct 2006. Assumed equipment is diesel fueled.
- d) Caterpillar Performance Handbook, Edition 33, October 2003 Operating Speeds, p 2-3.
- e) Assumed 13 foot wide blade with 2 foot overlap (11 foot wide). Vehicle miles traveled (VMT) = (32,670 sq ft/11 foot x mile/5,280 ft)/3 days = 0.19 mile
- f) USEPA, AP-42, July 1998, Table 11.9-3 Typical Values for Corection Factors Applicable to the Predictive Emission Factor Equations
- g) Table A9-9-E2, SCAQMD CEQA Air Quality Handbook, 1993
- h) Mean wind speed percent - percent of time mean wind speed exceeds 12 mph. At least one meteorological site recorded wind speeds greater than 12 mph over a 24-hour period in 1981.
- i) Assumed storage piles are 0.02 acres in size
- j) USEPA, AP-42, Jan 1995, Section 13.2.4 Aggregate Handling and Storage Piles, p 13.2.4-3 Aerodynamic particle size multiplier for < 10 µm
- k) Mean wind speed - maximum of daily average wind speeds reported in 1981 meteorological data.
- l) Assuming 600 cubic yards of dirt handled [(600 cyd x 2,500 lb/cyd)/3 days = 500,000 lb/day]
- m) CARB, EMFAC2007 (version 2.3) Burden Model, Winter 2007, 75 F, 40% RH: EF, lb/yr = (EF, ton/yr x 2,000 lb/ton)/VMT
- n) Assumed 30 cubic yd truck capacity for 600 cy of dirt [(600 cy x truck/30 cy)/2 days = 7 one-way truck trips/day]. Assumed haul truck travels 0.1 miles through facility
- o) Assumed six foot wide water truck traverses over 32,670 square feet of disturbed area
- p) USEPA, AP-42, July 1998, Table 11.9-1, Equation for Site Grading ≤ 10 µm
- q) USEPA, AP-42, Jan 1995, Section 13.2.4 Aggregate Handling and Storage Piles, Equation 1
- r) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, Sept 1992, EPA-450/2-92-004, Equation 2-12
- s) Includes watering at least three times a day per Rule 403 (68% control efficiency)
- t) For illustration purposes only, this analysis is based on the most stringent LSTs. Please consult App. C of the Methodology Paper for applicable LSTs.
- u) ARB's CEIDARS database PM2.5 fractions - construction dust category for fugitive and diesel vehicle exhaust category for combustion.

EL ENCANTO PHASE I STRUCTURE CONSTRUCTION

Example	Construction Activity
Encanto Phase 1	Building 10,000 Square Foot Structure ^a

Construction Schedule			
Equipment Type^{a,b}	No. of Equipment	hr/day	Crew Size
Tractors/Loaders/Backhoes	1	4.0	8

Construction Equipment Combustion Emission Factors			
Equipment Type^c	CO lb/hr	NOx lb/hr	PM10 lb/hr
Tractors/Loaders/Backhoes	0.414	0.830	0.064

Construction Vehicle (Mobile Source) Emission Factors			
	CO lb/mile	NOx lb/mile	PM10 lb/mile
Heavy-Duty Truck ^d	0.026167	0.034155	0.000626

On-Site Number of Trips and Trip Length		
Vehicle	No. of One-Way Trips/Day	One-Way Trip Length (miles)
Flatbed Trucks ^e	3	0.1

Incremental Increase in Onsite Idling Emissions from Onroad Mobile Vehicles			
Equation: Emission Factor (lb/hr) x No. of Equipment x Work Day (hr/day) = Onsite Construction Emissions (lb/day)			
Equipment Type	CO lb/day	NOx lb/day	PM10 lb/day

**EL ENCANTO PHASE I
STRUCTURE CONSTRUCTION (Continued)**

Tractors/Loaders/Backhoes	1.66	3.32	0.26
Total	1.66	3.32	0.26

Incremental Increase in Onsite Combustion Emissions from Onroad Mobile Vehicles

Equation: Emission Factor (lb/mile) x No. of One-Way Trips/Day x 2 x Trip length (mile) = Mobile Emissions (lb/day)

	CO	NOx	PM10
Vehicle	lb/day	lb/day	lb/day
Flatbed Trucks	0.016	0.020	0.0004
Total	0.02	0.02	0.000

Total Incremental Combustion Emissions from Construction Activities

	CO	NOx	PM10
Sources	lb/day	lb/day	lb/day
On-Site Emissions	1.7	3.3	0.3
Significance Threshold^g	664	192	5
Exceed Significance?	NO	NO	NO

Combustion and Fugitive Summary	PM2.5 Fraction^h	PM10	PM2.5	Percentage Contribution
		lb/day	lb/day	
Combustion (Offroad)	0.92	0.3	0.2	99.8%
Combustion (Onroad)	0.96	0.000	0.000	0.2%
Fugitive	0.21	0	0	0.0%
Total		0.3	0.2	
Significance Threshold^g			3	
Exceed Significance?			NO	

EL ENCANTO PHASE I STRUCTURE CONSTRUCTION (Continued)

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for cell. Adding lines or entering values with units different than those associated with the shaded cells may alter the integrity of the sheets or produce incorrect results.

a) SCAQMD, estimated from survey data, Sept 2004

b) Equipment name must match CARB Off-Road Model (see Off-Road Model EF worksheet) equipment name for sheet to look up EFs automatically.

c) SCAB values provided by the ARB, Oct 2006. Assumed equipment is diesel fueled.

d) CARB, EMFAC2007 (version 2.3) Burden Model, Winter 2007, 75 F, 40% RH: $EF, \text{ lb/yr} = (EF, \text{ ton/yr} \times 2,000 \text{ lb/ton})/\text{VMT}$

e) Assumed haul truck travels 0.1 miles through facility

f) Assumed six foot wide water truck traverses over 40,000 square feet of disturbed area

g) For illustration purposes only, this analysis is based on the most stringent LSTs. Please consult App. C of the Methodology Paper for applicable LSTs.

h) ARB's CEIDARS database PM2.5 fractions - construction dust category for fugitive and diesel vehicle exhaust category for combustion.

ARB OFFROAD MODEL EMISSION FACTORS

Sum of Ems Factor #/hr		Year	Pollutant			
		2007				
Eq Name	Hp	CO	NOx	PM10	SOx	VOC
Aerial Lifts	Composite	0.225	0.403	0.028	0.000	0.078
Air Compressors	Composite	0.387	0.830	0.058	0.001	0.129
Bore/Drill Rigs		0.539	1.473	0.065	0.002	0.146
Cement and Mortar Mixers	Composite	0.046	0.069	0.005	0.000	0.012
Concrete/Industrial Saws	Composite	0.449	0.764	0.064	0.001	0.156
Cranes	Composite	0.637	1.695	0.075	0.001	0.188
Crawler Tractors	Composite	0.709	1.622	0.099	0.001	0.218
Crushing/Proc. Equipment	Composite	0.782	1.655	0.105	0.001	0.250
Dumpers/Tenders	Composite	0.038	0.071	0.005	0.000	0.014
Excavators	Composite	0.598	1.423	0.078	0.001	0.182
Forklifts	Composite	0.250	0.643	0.035	0.001	0.086
Generator Sets	Composite	0.355	0.725	0.045	0.001	0.113
Graders	Composite	0.671	1.720	0.089	0.001	0.206
Off-Highway Tractors	Composite	0.927	2.274	0.111	0.002	0.269
Off-Highway Trucks	Composite	0.913	2.914	0.106	0.003	0.288
Other Construction Equipment	Composite	0.475	1.241	0.054	0.001	0.131
Other General Industrial Equipment	Composite	0.699	1.901	0.085	0.002	0.211
Other Material Handling Equipment	Composite	0.630	1.836	0.082	0.002	0.204
Pavers	Composite	0.600	1.129	0.080	0.001	0.206
Paving Equipment	Composite	0.469	1.033	0.071	0.001	0.156
Plate Compactors	Composite	0.026	0.035	0.002	0.000	0.005
Pressure Washers	Composite	0.070	0.108	0.008	0.000	0.023
Pumps	Composite	0.324	0.622	0.044	0.001	0.109
Rollers	Composite	0.442	0.907	0.063	0.001	0.141
Rough Terrain Forklifts	Composite	0.493	0.963	0.080	0.001	0.158
Rubber Tired Dozers	Composite	1.695	3.414	0.147	0.002	0.379
Rubber Tired Loaders	Composite	0.555	1.382	0.077	0.001	0.173
Scrapers	Composite	1.525	3.399	0.147	0.003	0.368
Signal Boards	Composite	0.097	0.181	0.011	0.000	0.025
Skid Steer Loaders	Composite	0.273	0.337	0.033	0.000	0.098
Surfacing Equipment	Composite	0.765	1.850	0.071	0.002	0.186
Sweepers/Scrubbers	Composite	0.567	1.028	0.082	0.001	0.196
Tractors/Loaders/Backhoes	Composite	0.414	0.830	0.064	0.001	0.131
Trenchers	Composite	0.517	0.858	0.071	0.001	0.194
Welders	Composite	0.234	0.319	0.030	0.000	0.092

EL ENCANTO PHASE 1 NON-LST EMISSIONS

DEMOLITION

Equipment Type ^{a,b}	No. of Equipment	hr/day	Crew Size
Concrete/Industrial Saws	1	8.0	4
Tractors/Loaders/Backhoes	2	8.0	
Rubber Tired Dozers	1	1.0	
	VOC	SOx	
Equipment Type^c	lb/hr	lb/hr	
Concrete/Industrial Saws	0.156	0.001	
Tractors/Loaders/Backhoes	0.131	0.001	
Rubber Tired Dozers	0.379	0.002	
Construction Vehicle (Mobile Source) Emission Factors			
	VOC	SOx	
	lb/mile	lb/mile	
Heavy-Duty Truckh	0.003516	0.044580	

Construction Worker Number of Trips and Trip Length

Vehicle	No. of One-Way Trips/Day ⁿ	One-Way Trip Length Miles ^a
	Haul Truck	21

Incremental Increase in Onsite Combustion Emissions from Construction Equipment

Equation: Emission Factor (lb/hr) x No. of Equipment x Work Day (hr/day) = Onsite Construction Emissions (lb/day)

Equipment Type	VOC lb/day	SOx lb/day
Concrete/Industrial Saws	1.25	0.02
Tractors/Loaders/Backhoes	2.09	0.00
Rubber Tired Dozers	0.38	0.00
Total	1.2	0.0

Incremental Increase in Onsite Combustion Emissions from Onroad Mobile Vehicles

Equation: Emission Factor (lb/mile) x No. of One-Way Trips/Day x 2 x Trip length (mile) = Mobile Emissions (lb/day)

Vehicle	VOC lb/day	SOx lb/day
Haul Truck	5.91	74.89
Total	5.91	74.89

Total Onsite Emissions	7.16	74.92
SCAQMD Threshold	75	150
Exceed Significance?	NO	NO

EL ENCANTO PHASE 1 NON-LST EMISSIONS (Continued)

GRADING

Equipment Type ^{a,b}	No. of Equipment	hr/day	Crew Size
Rubber Tired Dozers	1	6.0	8
Graders	1	6.0	
Tractors/Loaders/Backhoes	1	7.0	

Construction Equipment Emission Factors

Equipment Type ^c	VOC lb/hr	SOx lb/hr
Rubber Tired Dozers	0.379	0.002
Graders	0.206	0.001
Tractors/Loaders/Backhoes	0.131	0.001

Construction Vehicle (Mobile Source) Emission Factors

	VOC lb/mile	SOx lb/mile
Heavy-Duty Truckm	0.014462	0.047182

Construction Worker Number of Trips and Trip Length

Vehicle	No. of One-Way Trips/Day ⁿ	One-Way Trip Length (miles) ^{n, a}
Haul Truckn	7	0.1
Water Trucko	3	1.1

Incremental Increase in Onsite Combustion Emissions from Construction Equipment

Equation: Emission Factor (lb/hr) x No. of Equipment x Work Day (hr/day) = Onsite Construction Emissions (lb/day)

Equipment Type	VOC lb/day	SOx lb/day
Total	2.27	0.01
Total	2.3	0.0

Incremental Increase in Onsite Combustion Emissions from Onroad Mobile Vehicles

Equation: Emission Factor (lb/mile) x No. of One-Way Trips/Day x 2 x Trip length (mile) = Mobile Emissions (lb/day)

Vehicle	VOC lb/day	SOx lb/day
Haul Truckn	0.02	0.07
Water Trucko	0.1	0.31
Total	0.12	0.38

**EL ENCANTO PHASE 1
NON-LST EMISSIONS (Continued)**

Total Incremental Localized Emissions from Construction Activities			
Sources	VOC lb/day	SOx lb/day	
On-site Emissions	2.4	0.4	
Significance Threshold	75	150	
Exceed Significance?	NO	NO	

BUILDING

Equipment Type^{a,b}	No. of Equipment	hr/day	Crew Size
Tractors/Loaders/Backhoes	3	7.0	8

Construction Equipment Combustion Emission Factors

Equipment Type^c	VOC lb/hr	SOx lb/hr
Tractors/Loaders/Backhoes	0.131	0.001

Construction Vehicle (Mobile Source) Emission Factors

	VOC lb/mile	SOx lb/mile
Heavy-Duty Truck ^d	0.014462	0.047182

Construction Worker Number of Trips and Trip Length

Vehicle	No. of One-Way Trips/Day	One-Way Trip Length (miles)
Flatbed Trucks	3	0.1

Incremental Increase in Onsite Combustion Emissions from Construction Equipment

Equation: Emission Factor (lb/hr) x No. of Equipment x Work Day (hr/day) = Onsite Construction Emissions (lb/day)

Equipment Type	VOC lb/day	SOx lb/day
Tractors/Loaders/Backhoes	2.74	0.02
Total	2.74	0.02

Incremental Increase in Onsite Combustion Emissions from Onroad Mobile Vehicles

Equation: Emission Factor (lb/mile) x No. of One-Way Trips/Day x 2 x Trip length (mile) = Mobile Emissions (lb/day)

Vehicle	VOC lb/day	SOx lb/day
Haul Truck Delivery	0.01	0.03
Total	0.01	0.03

**EL ENCANTO PHASE 1
NON-LST EMISSIONS (Continued)**

Total Incremental Combustion Emissions from Construction Activities			
Sources	VOC lb/day	SOx lb/day	
On-Site Emissions	2.8	0.1	
Significance Threshold	75	150	
Exceed Threshold?	NO	NO	

**EL ENCANTO
PHASE II**

**SUMMARY OF EL ENCANTO PHASE 2
RESULTS BY PHASE**

El Encanto Phase 2				
Total On-Site				
	CO	NOx	PM10	PM2.5
Demolition	29.4	90.0	5.1	4.3
Site Preparation	17.8	43.6	3.4	2.2
Grading	30.6	89.4	6.2	4.7
Building	7.6	16.9	1.1	1.0
Arch Coating and Paving	19.5	40.0	2.8	2.6
Localized Significance Threshold*	1017	277	7	5
Exceed Significance?	NO	NO	NO	NO

SUMMARY OF EL ENCANTO PHASE 2 RESULTS BY PHASE AND EQUIPMENT

Demolition											PM2.5 Fractions		
Vehicle Description	No. of Vehicle	Hours	Trips	Length	CO	NOx	PM10	PM2.5	Combustion PM10	Fugitive PM10	Combustion (Offroad)	Combustion (Onroad)	Fugitive
Tractors/Loaders/Backhoes	1	7.0			2.90	5.81	0.45	0.41	0.45		0.92	0.964	0.21
Rubber Tired Dozers	1	7.0			3.32	8.69	0.93	0.46	0.38	0.55			
Haul Trucks			20	40	23.14	75.49	3.694	3.399	3.694				
Water Truck			3	3.8	0.33	1.08	0.053	0.048	0.053				
Total Onsite Emissions					29.4	90.0	5.1	4.3	0.82	0.55	5.62	5.00	
Localized Significance Threshold*					1017	277	7	5					
Exceed Significance?					NO	NO	NO	NO					
Site Preparation													
Vehicle Description	No. of Vehicle	Hours	Trips	Length	CO	NOx	PM10	PM2.5	Combustion PM10	Fugitive PM10			
Scrapers	1	7.0			10.67	23.79	1.43	1.03	1.03	0.40			
Tractors/Loaders/Backhoes	1	7.0			2.90	5.81	1.25	0.58	0.45	0.80			
Haul Trucks			2	40	2.31	7.55	0.369	0.340	0.369				
Water Trucks			3	22.6	1.96	6.40	0.31	0.285	0.310		3.35	2.26	
Total Onsite Emissions					17.8	43.6	3.4	2.2	1.47	1.20			
Localized Significance Threshold*					1017	277	7	5					
Exceed Significance?					NO	NO	NO	NO					
Grading													
Vehicle Description	No. of Vehicle	Hours	Trips	Length	CO	NOx	PM10	PM2.5	Combustion PM10	Fugitive PM10			
Graders	1	7.0			4.70	12.04	1.02	0.65	0.62	0.40			
Tractors/Loaders/Backhoes	2	7.0			5.80	11.62	1.98	1.05	0.89	1.09			
Haul Trucks			50	0.1	0.14	0.47	0.0231	0.021	0.0231				
Haul Trucks (Disposal)			50	0.1	19.67	64.17	3.1402	2.889	3.1402				
Water Trucks			3	3.8	0.33	1.08	0.05	0.05	0.050				
Total Onsite Emissions					30.6	89.4	6.2	4.7	0.89	1.09	6.22	4.81	

**SUMMARY OF EL ENCANTO PHASE 2
RESULTS BY PHASE AND EQUIPMENT (Continued)**

Localized Significance Threshold*	1017	277	7	5
Exceed Significance?	NO	NO	NO	NO

Building

Vehicle Description	No. of Vehicle	Hours	Trips	Length	CO	NOx	PM10	PM2.5
Forklifts	1	7.0			1.75	4.50	0.24	0.22
Tractors/Loaders/Backhoes	1	7.0			2.90	5.81	0.45	0.41
Generator Sets	1	7.0			2.48	5.07	0.31	0.29
Electric Welders	1	7.0			N/A	N/A	N/A	N/A
Haul Trucks			30	0.1	0.09	0.28	0.014	0.013
Water Trucks			3	4.5	0.39	1.27	0.06	0.06
Total Onsite Emissions					7.6	16.9	1.1	1.0
Localized Significance Threshold*					1017	277	7	5
Exceed Significance?					NO	NO	NO	NO

1.08 0.99

* Illustration purpose showing the most stringent LSTs. Please consult App. C of the Methodology Paper for applicable LSTs.

Architectural Coating and Asphalt Paving

Vehicle Description	No. of Vehicle	Hours	Trips	Length	CO	NOx	PM10	PM2.5
Pavers	1	8.0			4.80	9.03	0.64	0.59
Paving Equipment	1	8.0			3.75	8.27	0.57	0.52
Rollers	2	8.0			7.07	14.52	1.01	0.93
Cement and Mortar Mixers	1	3.0			0.14	0.21	0.01	0.01
Tractors/Loaders/Backhoes	1	8.0			3.31	6.64	0.51	0.47
Haul Trucks			9	0.1	0.03	0.08	0.004	0.004
Water Trucks			3	4.5	0.39	1.27	0.06	0.06
Total Onsite Emissions					19.5	40.0	2.8	2.6
Localized Significance Threshold*					1017	277	7	5
Exceed Significance?					NO	NO	NO	NO

2.80 2.58

EL ENCANTO PHASE 2 DEMOLITION PHASE

Example	Construction Activity
El Encanto Phase 2	Demolition of Existing 118,920 Square Foot Structure ^a
Demolition Schedule -	11 days ^a

Equipment Type ^{a,b}	No. of Equipment	hr/day	Crew Size
Tractors/Loaders/Backhoes	1	7.0	10
Other Construction Equipment	1	7.0	

Construction Equipment Emission Factors			
	CO	NOx	PM10
Equipment Type ^c	lb/hr	lb/hr	lb/hr
Tractors/Loaders/Backhoes	0.414	0.830	0.064
Other Construction Equipment	0.475	1.241	0.054

Building Dimensions			
Description ^a	Width of Building	Length of Building	Height of Building
	ft	ft	ft
Total Project	10	35	1

Fugitive Dust Material Handling			
Aerodynamic Particle Size Multiplier ^d	Mean Wind Speed ^e	Moisture Content ^f	Debris Handled ^g
	mph		ton/day
0.35	10	2.0	497

Construction Vehicle (Mobile Source) Emission Factors

**EL ENCANTO PHASE 2
DEMOLITION PHASE (Continued)**

	CO lb/mile	NOx lb/mile	PM10 lb/mile
Heavy-Duty Truck ^h	0.014462	0.047182	0.002309

Construction Worker Number of Trips and Trip Length		
Vehicle	No. of One-Way Trips/Dayⁱ	One Way Trip Length^j (miles)
Haul Truck	20	40
Water Truck	3	3.8

Incremental Increase in Onsite Combustion Emissions from Construction Equipment			
Equation: Emission Factor (lb/BHP-hr) x No. of Equipment x Work Day (hr/day) x Equipment rating (hp) x Load Factor (%/100) = Onsite Construction Emissions (lb/day)			
Equipment Type	CO lb/day	NOx lb/day	PM10 lb/day
Tractors/Loaders/Backhoes	2.90	5.81	0.45
Breakers	3.32	8.69	0.38
Total	6.2	14.5	0.8

Incremental Increase in Onsite Fugitive Dust Emissions from Construction Equipment		
Material Handling ^k : $(0.0032 \times \text{Aerodynamic Particle Size Multiplier} \times (\text{wind speed (mph)/5})^{1.3} / (\text{moisture content}/2)^{1.4} \times \text{debris handled (ton/day)}) \times (1 - \text{control efficiency}) = \text{PM10 Emissions (lb/day)}$		
Description	Control Efficiency %	PM10 Mitigated^m lb/day
Material Handling (Demolition) ^l	60	0.55
Material Handling (Debris)	60	0.55
Total		1.10

**EL ENCANTO PHASE 2
DEMOLITION PHASE (Continued)**

**Incremental Increase in Onsite Combustion Emissions from Onroad
Mobile Vehicles**

Equation: Emission Factor (lb/mile) x No. of One-Way Trips/Day x 2 x Trip length (mile) = Mobile Emissions (lb/day)

Vehicle	CO lb/day	NOx lb/day	PM10 lb/day
Haul Truck	23.14	75.49	3.694
Water Truck	0.33	1.08	0.05
Total	23.14	75.49	3.694

Total Incremental Localized Emissions from Construction Activities

Sources	CO lb/day	NOx lb/day	PM10 lb/day
On-site Emissions (Mitigated)	29.4	90.0	5.6
Significance Thresholdⁿ	1017	277	7
Exceed Significance?	NO	NO	NO

Combustion and Fugitive Summary

	PM2.5 Fraction^o	PM10 lb/day	PM2.5 lb/day	Percentage Contribution
Combustion (Offroad)	0.92	0.8	0.8	16.7%
Combustion (Onroad)	0.96	3.694	3.561	78.3%
Fugitive	0.21	1.10	0.23	5.1%
Total		5.6	4.6	
Significance Thresholdⁿ			5	
Exceed Significance?			NO	

Notes:

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a) SCAQMD, estimated from survey data, Sept 2004

EL ENCANTO PHASE 2 DEMOLITION PHASE (Continued)

- b) Equipment name must match CARB Off-Road Model (see Off-Road Model EF worksheet) equipment name for sheet to look up EFs automatically.
- c) SCAB values provided by the ARB, Oct 2006. Assumed equipment is diesel fueled.
- d) USEPA, AP-42, Jan 1995, Section 13.2.4 Aggregate Handling and Storage Piles, p 13.2.4-3 Aerodynamic particle size multiplier for $< 10 \mu\text{m}$
- e) Mean wind speed - maximum of daily average wind speeds reported in 1981 meteorological data.
- f) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, equation 2-13, p 2-28
- g) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, p 2-28. Debris weight to area ratio = 0.046 ton/sq ft
(118,920 sq ft x 0.046 ton/sq ft)/11 days =
497 ton/day
- h) CARB, EMFAC2007 (version 2.3) Burden Model, Winter 2007, 75 F, 40% RH: EF, lb/yr = (EF, ton/yr x 2,000 lb/ton)/VMT
- i) Assumed 30 cubic yd truck capacity [(497 tons/day x 2,000 lb/ton x cyd/1,620 lb = 614 cyd)/30 cyd/truck = 20 one-way truck trips/day, where building debris density is assumed to be 1,620 lb/cyd]
Multiple trucks may be used.
- j) Assumed trucks travel 0.1 mile through project site.
- k) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, equation 2-13, p 2-28. EPA suggests using the material handling equation for demolition emission estimates.
- l) EPA suggests using the material handling equation for demolition emission estimates.
- m) Includes watering at least three times a day per Rule 403 (68% control efficiency)
- n) Illustration purpose showing the most stringent LSTs. Please consult App. C of the Methodology Paper for applicable LSTs..
- o) ARB's CEIDARS database PM2.5 fractions - construction dust category for fugitive and diesel vehicle exhaust category for combustion.

EL ENCANTO PHASE 2 PREPARATION PHASE

Example	Construction Activity
El Encanto Phase 2	Site Preparation 118,920 Square Feet ^a
Site Preparation Schedule -	10 days^a

Equipment Type ^{a,b}	No. of Equipment	hr/day	Crew Size
Scrapers	1	7.0	8
Tractors/Loaders/Backhoes	1	7.0	

Construction Equipment Emission Factors			
	CO	NOx	PM10
Equipment Type ^c	lb/hr	lb/hr	lb/hr
Scrapers	1.525	3.399	0.147
Tractors/Loaders/Backhoes	0.414	0.830	0.064

Fugitive Dust Clearing Parameters - Scraping		
Silt Content ^d	Mean Vehicle Weight ^e ton	Vehicle Miles Traveled ^f
6.9	88.73	0.24

Fugitive Dust Stockpiling Parameters				
Silt Content ^d	Precipitation Days ^g	Mean Wind Speed Percent ^h	TSP Fraction	Area ⁱ (acres)
6.9	10	100	0.5	0.05

Fugitive Dust Material Handling					
Aerodynamic Particle Size Multiplier ^j	Mean Wind Speed ^k	Moisture Content ^d	Dirt Handled ^a	Debris Handled ^a	Dirt Handled ^l

**EL ENCANTO PHASE 2
PREPARATION PHASE (Continued)**

	mph		cy	cy	lb/day
0.35	10	7.9	350	96	87,500

Construction Vehicle (Mobile Source) Emission Factors

	CO lb/mile	NOx lb/mile	PM10 lb/mile
Heavy-Duty Truck ^m	0.014462	0.047182	0.002309

Construction Worker Number of Trips and Trip Length

Vehicle	No. of One-Way Trips/Day	One Way Trip Length (miles)
Haul Truck ⁿ	2	40
Water Truck ^o	3	22.6

Incremental Increase in Onsite Combustion Emissions from Construction Equipment

Equation: Emission Factor (lb/hr) x No. of Equipment x Work Day (hr/day) = Onsite Construction Emissions (lb/day)

Equipment Type	CO lb/day	NOx lb/day	PM10 lb/day
Scrapers	10.67	23.79	1.03
Tractors/Loaders/Backhoes	2.90	5.81	0.45
Total	13.6	29.6	1.5

Incremental Increase in Fugitive Dust Emissions from Construction Operations

Equations:

Scraping^p: PM10 Emissions (lb/day) = 1.5 x (silt content/12)^{0.9} x (mean vehicle weight)^{0.45} x VMT x (1 - control efficiency)

Storage Piles^q: PM10 Emissions (lb/day) = 1.7 x (silt content/1.5) x ((365-precipitation days)/235) x wind speed percent/15 x TSP fraction x Area) x (1 - control efficiency)

Material Handling^r: PM10 Emissions (lb/day) = (0.0032 x aerodynamic particle size multiplier x (wind speed (mph)/5)^{1.3}/(moisture content/2)^{1.4} x

**EL ENCANTO PHASE 2
PREPARATION PHASE (Continued)**

Description	dirt handled (lb/day)/2,000 (lb/ton) x (1 - control efficiency)	
	Control Efficiency %	Unmitigated PM10 ^t lb/day
Scraping	60	0.40
Storage Piles	60	0.79
Material Handling	60	0.01
Total		1.20

Incremental Increase in Onsite Combustion Emissions from Onroad Mobile Vehicles			
Equation: Emission Factor (lb/mile) x No. of One-Way Trips/Day x 2 x Trip length (mile) = Mobile Emissions (lb/day)			
Vehicle	CO lb/day	NOx lb/day	PM10 lb/day
Haul Truck	2.31	7.55	0.369
Water Truck	1.96	6.4	0.31
Total	4.27	13.95	0.68

Total Incremental Localized Emissions from Construction Activities			
Sources	CO lb/day	NOx lb/day	PM10 lb/day
On-site Emissions	17.8	43.6	3.4
Significance Threshold^u	1017	277	7
Exceed Significance?	NO	NO	NO

Combustion and Fugitive Summary	PM2.5 Fraction ^v	PM10 lb/day	PM2.5 lb/day	Percentage Contribution
Combustion (Offroad)	0.92	1.5	1.4	59.9%
Combustion (Onroad)	0.96	0.68	0.65	29.0%
Fugitive	0.21	1.2	0.25	11.1%
Total		3.4	2.3	

EL ENCANTO PHASE 2 PREPARATION PHASE (Continued)

Significance Threshold^u
Exceed Significance?

5
NO

Notes:

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- a) Data provided by Blue Green
- b) Equipment name must match CARB Off-Road Model (see Off-Road Model EF worksheet) equipment name for sheet to look up EFs automatically.
- c) SCAB values provided by the ARB, Oct 2006. Assumed equipment is diesel fueled.
- d) USEPA, AP-42, July 1998, Table 11.9-3 Typical Values for Corection Factors Applicable to the Predictive Emission Factor Equations
- e) Mean vehicle weight (120,460 pound empty with a 75,000 pound capacity) estimated from 631G Model Scraper Caterpillar Performance Handbook, Edition 33. Scraper in the same horsepower range (450-490 hp) as the composite ARB emission factors.
- f) Caterpillar G31G has a 11.5 foot wide blade, with an assumed 2 foot overlap (9.5 foot wide). Vehicle miles traveled (VMT) = $(118,920 \text{ sq ft} / 9.5 \text{ foot} \times \text{mile} / 5,280 \text{ ft}) / 10 \text{ days} = 0.24 \text{ miles}$
- g) Table A9-9-E2, SCAQMD CEQA Air Quality Handbook, 1993
- h) Mean wind speed percent - percent of time mean wind speed exceeds 12 mph
- i) Assumed storage piles are 0.05 acres in size
- j) USEPA, AP-42, Jan 1995, Section 13.2.4 Aggregate Handling and Storage Piles, p 13.2.4-3 Aerodynamic particle size multiplier for $< 10 \mu\text{m}$
- k) Mean wind speed - maximum of daily average wind speeds reported in 1981 meteorological data.
- l) Assuming 350 cubic yards of dirt handled $[(350 \text{ cyd} \times 2,500 \text{ lb/cyd}) / 10 \text{ days} = 87,500 \text{ lb/day}]$
- m) CARB, EMFAC2007 (version 2.3) Burden Model, Winter 2007, 75 F, 40% RH: $\text{EF, lb/yr} = (\text{EF, ton/yr} \times 2,000 \text{ lb/ton}) / \text{VMT}$
- n) Assumed 30 cubic yd truck capacity for 350 cyd of dirt and 96 cyd of debris $[(446 \text{ cyd} \times \text{truck} / 30 \text{ cyd}) / 10 \text{ days} = 2 \text{ one-way truck trips/day}]$. Assumed haul truck travels 0.1 miles through facility
- o) Assumed six foot wide water truck traverses over 118,920 square feet of disturbed area
- p) USEPA, AP-42, July 1998, Equation 1b and Table 13.2.2-2, AP-42, December 2003. Also see comment g of Table 11.9-1
- r) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, Sept 1992, EPA-450/2-92-004, Equation 2-12
- s) USEPA, AP-42, Jan 1995, Section 13.2.4 Aggregate Handling and Storage Piles, Equation 1
- t) Includes watering at least three times a day per Rule 403 (68% control efficiency reduced to 60% control effience following personal communication with James Koizumi).
- u) LSTs for Source Receptor Area 8 as identified in Appendix C of the Methodology Paper for LSTs.
- v) ARB's CEIDARS database PM2.5 fractions - construction dust category for fugitive and diesel vehicle exhaust category for combustion.

EL ENCANTO PHASE 2 GRADING PHASE

Example	Construction Activity
El Encanto Phase 2	Grading 118,920 Square Feet ^a
Site Preparation Schedule -	10 days ^a

Equipment Type ^{a,b}	No. of Equipment	hr/day	Crew Size
Graders	1	7.0	
Tractors/Loaders/Backhoes	2	7.0	

Construction Equipment Emission Factors			
	CO	NOx	PM10
Equipment Type ^c	lb/hr	lb/hr	lb/hr
Graders	0.671	1.720	0.089
Tractors/Loaders/Backhoes	0.414	0.830	0.064

Fugitive Dust Clearing Parameters - Scraping		
Silt Content ^d	Mean Vehicle Weight ^e	Vehicle Miles Traveled ^f
	ton	
6.9	88.73	0.24

Fugitive Dust Stockpiling Parameters				
Silt Content ^d	Precipitation Days ^g	Mean Wind Speed Percent ^h	TSP Fraction	Area ⁱ (acres)
6.9	10	100	0.5	0.05

**EL ENCANTO PHASE 2
GRADING PHASE (Continued)**

Fugitive Dust Material Handling

Aerodynamic Particle Size Multiplier^j	Mean Wind Speed^k mph	Moisture Content^f	Dirt Handled^a cy	Dirt Handled^l lb/day	Dirt Disposed^a cy
0.35	10	7.9	14,796	3,699,000	5,056

Construction Vehicle (Mobile Source) Emission Factors

	CO lb/mile	NOx lb/mile	PM10 lb/mile
Heavy-Duty Truck ^m	0.014462	0.047182	0.002309

Construction Worker Number of Trips and Trip Length

Vehicle	No. of One-Way Trips/Day	One Way Trip Length (miles)
Haul Truck ⁿ	50	0.1
Haul Truck (Disposal) ⁿ	17	40
Water Truck ^o	3	3.8

Incremental Increase in Onsite Combustion Emissions from Construction Equipment

Equation: Emission Factor (lb/hr) x No. of Equipment x Work Day (hr/day) = Onsite Construction Emissions (lb/day)

Equipment Type	CO lb/day	NOx lb/day	PM10 lb/day
Graders	4.70	12.04	0.62
Tractors/Loaders/Backhoes	5.80	11.62	0.89
Total	10.5	23.7	1.5

EL ENCANTO PHASE 2 GRADING PHASE (Continued)

Incremental Increase in Fugitive Dust Emissions from Construction Operations

Equations:

Scraping^p: PM10 Emissions (lb/day) = 1.5 x (silt content/12)^{0.9} x (mean vehicle weight)^{0.45} x VMT x (1 - control efficiency)

Storage Piles^q: PM10 Emissions (lb/day) = 1.7 x (silt content/1.5) x ((365-precipitation days)/235) x wind speed percent/15 x TSP fraction x Area) x (1 - control efficiency)

Material Handling^r: PM10 Emissions (lb/day) = (0.0032 x aerodynamic particle size multiplier x (wind speed (mph)/5)^{1.3}/(moisture content/2)^{1.4} x dirt handled (lb/day)/2,000 (lb/ton)

(1 - control efficiency)

Description	Control Efficiency %	PM10 ^s lb/day
Scraping	60	0.40
Storage Piles	60	0.79
Material Handling	60	0.30
Total		1.49

Incremental Increase in Onsite Combustion Emissions from Onroad Mobile Vehicles

Equation: Emission Factor (lb/mile) x No. of One-Way Trips/Day x 2 x Trip length (mile) = Mobile Emissions (lb/day)

Vehicle	CO lb/day	NOx lb/day	PM10 lb/day
Haul Truck	0.14	0.47	0.02
Haul Truck (Disposal)	19.67	64.17	3.14
Water Truck	0.33	1.08	0.05
Total	20.14	65.72	3.21

EL ENCANTO PHASE 2 GRADING PHASE (Continued)

Total Incremental Localized Emissions from Construction Activities			
Sources	CO lb/day	NOx lb/day	PM10 lb/day
On-site Emissions	30.6	89.4	6.2
Significance Threshold^t	1017	277	7
Exceed Significance?	NO	NO	NO

Combustion and Fugitive Summary	PM2.5 Fraction^u	PM10 lb/day	PM2.5 lb/day	Percentage Contribution
Combustion (Offroad)	0.92	1.5	1.4	29.1%
Combustion (Onroad)	0.96	3.21	3.10	64.4%
Fugitive	0.21	1	0.3	6.5%
Total		6.2	4.8	
Significance Threshold^t			5	
Exceed Significance?			NO	

Notes:
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a) Data provided by Blue Green

b) Equipment name must match CARB Off-Road Model (see Off-Road Model EF worksheet) equipment name for sheet to look up EFs automatically.

c) SCAB values provided by the ARB, Oct 2006. Assumed equipment is diesel fueled.

d) USEPA, AP-42, July 1998, Table 11.9-3 Typical Values for Corection Factors Applicable to the Predictive Emission Factor

Equations

e) Mean vehicle weight (120,460 pound empty with a 75,000 pound capacity) estimated from 631G Model Scraper Caterpillar Performance Handbook, Edition 33. Scraper in the same horsepower

range (450-490 hp) as the composite ARB emission factors.

f) Caterpillar G31G has a 11.5 foot wide blade, with an assumed 2 foot overlap (9.5 foot wide). Vehicle miles traveled (VMT) = (118,920 sq ft/9.5 foot x mile/5,280 ft)/10 days = 0.24 miles

g) Table A9-9-E2, SCAQMD CEQA Air Quality Handbook, 1993

h) Mean wind speed percent - percent of time mean wind speed exceeds 12 mph. At least one meteorological site recorded wind speeds greater than 12 mph over a 24-hour period in 1981.

i) Assumed storage piles are 0.05 acres in size

EL ENCANTO PHASE 2 GRADING PHASE (Continued)

- j) USEPA, AP-42, Jan 1995, Section 13.2.4 Aggregate Handling and Storage Piles, p 13.2.4-3 Aerodynamic particle size multiplier for $< 10 \mu\text{m}$
- k) Mean wind speed - maximum of daily average wind speeds reported in 1981 meteorological data.
- l) Assuming 14796 cubic yards of dirt handled $[(14796 \text{ cyd} \times 2,500 \text{ lb/cyd}) / \text{days} = 3,699,000 \text{ lb/day}]$
- m) CARB, EMFAC2007 (version 2.3) Burden Model, Winter 2007, 75 F, 40% RH: EF, lb/yr = (EF, ton/yr $\times 2,000 \text{ lb/ton}$)/VMT
- n) Assumed 30 cubic yd truck capacity for 14796 cyd of dirt $[(14796 \text{ cy} \times \text{truck}/30 \text{ cy})/10 \text{ days} = 50 \text{ one-way truck trips/day}]$. Assumed haul truck travels 0.1 miles through facility. Multiple trucks may be used.
- o) Assumed six foot wide water truck traverses over 118,920 square feet of disturbed area
- p) USEPA, AP-42, July 1998, Equation 1b and Table 13.2.2-2, AP-42, December 2003. Also see comment g of Table 11.9-1
- q) USEPA, AP-42, Jan 1995, Section 13.2.4 Aggregate Handling and Storage Piles, Equation 1
- r) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, Sept 1992, EPA-450/2-92-004, Equation 2-12
- s) Includes watering at least three times a day per Rule 403 (68% control efficiency reduced to 60% control efficiency following personal communication with James Koizumi).
- t) LSTs for Source Receptor Area 8 as identified in Appendix C of the Methodology Paper for LSTs.
- u) ARB's CEIDARS database PM_{2.5} fractions - construction dust category for fugitive and diesel vehicle exhaust category for combustion.

EL ENCANTO PHASE 2 STRUCTURE CONSTRUCTION

Example	Construction Activity
El Encanto Phase 2	Building 42,000 Square Foot Structure ^a

Construction Schedule Unknown			
Equipment Type^{a,b}	No. of Equipment	hr/day	Crew Size
Forklifts	1	7.0	10
Tractors/Loaders/Backhoes	1	7.0	
Generator Sets	1	7.0	
Electric Welders	1	7.0	

Construction Equipment Combustion Emission Factors			
	CO	NOx	PM10
Equipment Type^c	lb/hr	lb/hr	lb/hr
Forklifts	0.250	0.643	0.035
Tractors/Loaders/Backhoes	0.414	0.830	0.064
Generator Sets	0.355	0.725	0.045
Electric Welders	N/A	N/A	N/A

Construction Vehicle (Mobile Source) Emission Factors			
	CO	NOx	PM10
	lb/mile	lb/mile	lb/mile
Heavy-Duty Truck ^d	0.014462	0.047182	0.002309

Construction Worker Number of Trips and Trip Length		
Vehicle	No. of One-Way Trips/Day	Trip Length (miles)
Flatbed Truck ^e	30	0.1

**EL ENCANTO PHASE 2
STRUCTURE CONSTRUCTION (Continued)**

Water Truck^f

3

4.5

Incremental Increase in Onsite Combustion Emissions from Construction Equipment

Equation: Emission Factor (lb/hr) x No. of Equipment x Work Day (hr/day) = Onsite Construction Emissions (lb/day)

Equipment Type	CO lb/day	NOx lb/day	PM10 lb/day
Fork Lifts	1.75	4.50	0.24
Tractors/Loaders/Backhoes	2.90	5.81	0.45
Generator Sets	2.48	5.07	0.31
Electric Welders	N/A	N/A	N/A
Total	7.1	15.4	1.0

Incremental Increase in Onsite Combustion Emissions from Onroad Mobile Vehicles

Equation: Emission Factor (lb/mile) x No. of One-Way Trips/Day x 2 x Trip length (mile) = Mobile Emissions (lb/day)

Vehicle	CO lb/day	NOx lb/day	PM10 lb/day
Flatbed Truck	0.09	0.28	0.01
Water Truck	0.39	1.27	0.062
Total	0.48	1.55	0.08

Total Incremental Combustion Emissions from Construction Activities

Sources	CO lb/day	NOx lb/day	PM10 lb/day
On-Site Emissions	7.6	16.9	1.1
Significance Threshold^g	1017	277	7
Exceed Significance?	NO	NO	NO

**EL ENCANTO PHASE 2
STRUCTURE CONSTRUCTION (Continued)**

Combustion and Fugitive Summary	PM2.5 Fraction^h	PM10 lb/day	PM2.5 lb/day	Percentage Contribution
Combustion (Offroad)	0.92	1.0	0.9	92.6%
Combustion (Onroad)	0.96	0.08	0.07	7.4%
Fugitive	0.21	0	0.0	0.0%
Total		1.1	1.0	
Significance Threshold^g			5	
Exceed Significance?			NO	

Notes:

Project specific data may be entered into shaded cells. Changing the values in the shaded cells will not affect the integrity of the worksheets. Verify that units of values entered match units for cell.

Adding lines or entering values with units different than those associated with the shaded cells may alter the integrity of the sheets or produce incorrect results.

a) Data provided by Blue Green

b) Equipment name must match CARB Off-Road Model (see Off-Road Model EF worksheet) equipment name for sheet to look up EFs automatically.

c) SCAB values provided by the ARB, Oct 2006. Assumed equipment is diesel fueled except the welders which are powered by the generator.

d) CARB, EMFAC2007 (version 2.3) Burden Model, Winter 2007, 75 F, 40% RH: EF, lb/yr = (EF, ton/yr x 2,000 lb/ton)/VMT

e) Assumed haul truck travels 0.1 miles through facility

f) Assumed six foot wide water truck traverses over 42,000 square feet of disturbed area

g) LSTs for Source Receptor Area 8 as identified in Appendix C of the Methodology Paper for LSTs.

h) ARB's CEIDARS database PM2.5 fractions - construction dust category for fugitive and diesel vehicle exhaust category for combustion.

**EL ENCANTO PHASE 2
ARCHITECTURAL COATING AND ASPHALT PAVING**

Example El Encanto Phase 2	Construction Activity Architectural Coating and Asphalt Paving of Parking Lot
Construction Schedule -	10 days^a

Equipment Type^{a,b}	No. of Equipment	hr/day	Crew Size
Pavers	1	8.00	8
Paving Equipment	1	8.00	
Rollers	2	8.00	
Cement and Mortar Mixers	1	3.00	
Tractors/Loaders/Backhoes	1	8.00	

Construction Equipment Combustion Emission Factors			
	CO	NOx	PM10
Equipment Type^c	lb/hr	lb/hr	lb/hr
Pavers	0.600	1.129	0.080
Paving Equipment	0.469	1.033	0.071
Rollers	0.442	0.907	0.063
Cement and Mortar Mixers	0.046	0.069	0.005
Tractors/Loaders/Backhoes	0.414	0.830	0.064

Construction Vehicle (Mobile Source) Emission Factors			
	CO	NOx	PM10
	lb/mile	lb/mile	lb/mile
Heavy-Duty Truck ^d	0.014462	0.047182	0.002309

Construction Worker Number of Trips and Trip Length		
Vehicle	No. of One-Way Trips/Day	Trip Length (miles)

**EL ENCANTO PHASE 2
ARCHITECTURAL COATING AND ASPHALT PAVING (Continued)**

Delivery Truck ^e	9	0.1
Water Truck ^f	3	4.5

Incremental Increase in Onsite Combustion Emissions from Construction Equipment

Equation: Emission Factor (lb/hr) x No. of Equipment x Work Day (hr/day) = Onsite Construction Emissions (lb/day)

Equipment Type	CO lb/day	NOx lb/day	PM10 lb/day
Pavers	4.80	9.03	0.64
Paving Equipment	3.75	8.27	0.57
Rollers	7.07	14.52	1.01
Cement and Mortar Mixers	0.14	0.21	0.01
Tractors/Loaders/Backhoes	3.31	6.64	0.51
Total	19.1	38.7	2.7

Incremental Increase in Onsite Combustion Emissions from Onroad Mobile Vehicles

Equation: Emission Factor (lb/mile) x No. of One-Way Trips/Day x 2 x Trip length (mile) = Mobile Emissions (lb/day)

Vehicle	CO lb/day	NOx lb/day	PM10 lb/day
Delivery Truck	0.03	0.08	0.004
Water Truck	0.39	1.27	0.06
Total	0.42	1.35	0.06

Total Incremental Combustion Emissions from Construction Activities

Sources	CO lb/day	NOx lb/day	PM10 lb/day
On-Site Emissions	19.5	40.0	2.8
Significance Threshold^g	1017	277	7
Exceed Significance?	NO	NO	NO

**EL ENCANTO PHASE 2
ARCHITECTURAL COATING AND ASPHALT PAVING (Continued)**

Combustion and Fugitive Summary	PM2.5 Fraction^h	PM10	PM2.5	Percentage Contribution
		lb/day	lb/day	
Combustion (Offroad)	0.92	2.7	2.5	97.6%
Combustion (Onroad)	0.96	0.06	0.06	2.4%
Fugitive	0.21	0	0.0	0.0%
Total		2.8	2.6	
Significance Threshold^g			5.0	
Exceed Significance?			NO	
Notes:				
Project specific data may be entered into shaded cells. Changing the values in the shaded cells will not affect the integrity of the worksheets. Verify that units of values entered match units for cell.				
Adding lines or entering values with units different than those associated with the shaded cells may alter the integrity of the sheets or produce incorrect results.				
a) Data provided by Blue Green				
b) Equipment name must match CARB Off-Road Model (see Off-Road Model EF worksheet) equipment name for sheet to look up EFs automatically.				
c) SCAB values provided by the ARB, Oct 2006. Assumed equipment is diesel fueled.				
d) CARB, EMFAC2007 (version 2.3) Burden Model, Winter 2007, 75 F, 40% RH: EF, lb/yr = (EF, ton/yr x 2,000 lb/ton)/VMT				
e) Assumed haul truck travels 20 miles to pick up supplies				
f) Assumed six foot wide water truck traverses over 140,000 square feet of disturbed area				
g) LSTs for Source Receptor Area 8 as identified in Appendix C of the Methodology Paper for LSTs.				
h) ARB's CEIDARS database PM2.5 fractions - construction dust category for fugitive and diesel vehicle exhaust category for combustion.				

ARB OFFROAD MODEL EMISSION FACTORS

Sum of Ems Factor #/hr		Year					Pollutant				
		2007									
Eq Name	Hp	CO	NOx	PM10	SOx	VOC					
Aerial Lifts	Composite	0.225	0.403	0.028	0.000	0.078					
Air Compressors	Composite	0.387	0.830	0.058	0.001	0.129					
Bore/Drill Rigs	Composite	0.539	1.473	0.065	0.002	0.146					
Cement and Mortar Mixers	Composite	0.046	0.069	0.005	0.000	0.012					
Concrete/Industrial Saws	Composite	0.449	0.764	0.064	0.001	0.156					
Cranes	Composite	0.637	1.695	0.075	0.001	0.188					
Crawler Tractors	Composite	0.709	1.622	0.099	0.001	0.218					
Crushing/Proc. Equipment	Composite	0.782	1.655	0.105	0.001	0.250					
Dumpers/Tenders	Composite	0.038	0.071	0.005	0.000	0.014					
Excavators	Composite	0.598	1.423	0.078	0.001	0.182					
Forklifts	Composite	0.250	0.643	0.035	0.001	0.086					
Generator Sets	Composite	0.355	0.725	0.045	0.001	0.113					
Graders	Composite	0.671	1.720	0.089	0.001	0.206					
Off-Highway Tractors	Composite	0.927	2.274	0.111	0.002	0.269					
Off-Highway Trucks	Composite	0.913	2.914	0.106	0.003	0.288					
Other Construction Equipment	Composite	0.475	1.241	0.054	0.001	0.131					
Other General Industrial Equipment	Composite	0.699	1.901	0.085	0.002	0.211					
Other Material Handling Equipment	Composite	0.630	1.836	0.082	0.002	0.204					
Pavers	Composite	0.600	1.129	0.080	0.001	0.206					
Paving Equipment	Composite	0.469	1.033	0.071	0.001	0.156					
Plate Compactors	Composite	0.026	0.035	0.002	0.000	0.005					
Pressure Washers	Composite	0.070	0.108	0.008	0.000	0.023					
Pumps	Composite	0.324	0.622	0.044	0.001	0.109					
Rollers	Composite	0.442	0.907	0.063	0.001	0.141					
Rough Terrain Forklifts	Composite	0.493	0.963	0.080	0.001	0.158					
Rubber Tired Dozers	Composite	1.695	3.414	0.147	0.002	0.379					
Rubber Tired Loaders	Composite	0.555	1.382	0.077	0.001	0.173					
Scrapers	Composite	1.525	3.399	0.147	0.003	0.368					
Signal Boards	Composite	0.097	0.181	0.011	0.000	0.025					
Skid Steer Loaders	Composite	0.273	0.337	0.033	0.000	0.098					
Surfacing Equipment	Composite	0.765	1.850	0.071	0.002	0.186					
Sweepers/Scrubbers	Composite	0.567	1.028	0.082	0.001	0.196					
Tractors/Loaders/Backhoes	Composite	0.414	0.830	0.064	0.001	0.131					
Trenchers	Composite	0.517	0.858	0.071	0.001	0.194					
Welders	Composite	0.234	0.319	0.030	0.000	0.092					

EL ENCANTO PHASE 2 NON-LST EMISSIONS

DEMOLITION

Equipment Type ^{a,b}	No. of Equipment	hr/day	Crew Size
Tractors/Loaders/Backhoes	1	7.0	10
Other Construction Equipment	1	7.0	

Construction Equipment Emission Factors

Equipment Type ^c	VOC lb/hr	SOx lb/hr
Tractors/Loaders/Backhoes	0.131	0.001
Other Construction Equipment	0.131	0.001

Construction Vehicle (Mobile Source) Emission Factors

	VOC lb/mile	SOx lb/mile
Heavy-Duty Truck ^h	0.003516	0.044580

Construction Worker Number of Trips and Trip Length

Vehicle	No. of One-Way Trips/Day ⁱ	One Way Trip Length ^j (miles)
Haul Truck	20	40
Water Truck	3	3.8

Incremental Increase in Onsite Combustion Emissions from Construction Equipment

Equation: Emission Factor (lb/BHP-hr) x No. of Equipment x Work Day (hr/day) x Equipment rating (hp) x Load Factor (%/100) = Onsite Construction Emissions (lb/day)

Equipment Type	VOC lb/day	SOx lb/day

**EL ENCANTO PHASE 2
NON-LST EMISSIONS (Continued)**

Tractors/Loaders/Backhoes	0.91	0.05
Breakers	0.92	0.00
Total	1.8	0.1

Incremental Increase in Onsite Combustion Emissions from Onroad Mobile Vehicles

Equation: Emission Factor (lb/mile) x No. of One-Way Trips/Day x 2 x Trip length (mile) = Mobile Emissions (lb/day)

	VOC	SOx
Vehicle	lb/day	lb/day
Haul Truck	5.63	71.33
Water Truck	0.08	1.02
Total	5.63	71.33

Total Incremental Localized Emissions from Construction Activities

Sources	VOC	SOx
	lb/day	lb/day
On-site Emissions (Mitigated)	7.5	71.4
Significance Thresholdⁿ	75	150
Exceed Significance?	NO	NO

SITE PREPARATION

Equipment Type^{a,b}	No. of Equipment	hr/day	Crew Size
Scrapers	1	7.0	8
Tractors/Loaders/Backhoes	1	7.0	

Construction Equipment Emission Factors

	VOC	SOx
Equipment Type^c	lb/hr	lb/hr
Scrapers	0.368	0.003

**EL ENCANTO PHASE 2
NON-LST EMISSIONS (Continued)**

Tractors/Loaders/Backhoes	0.131	0.001
Construction Vehicle (Mobile Source) Emission Factors		
	VOC lb/mile	SOx lb/mile
Heavy-Duty Truck ^m	0.003516	0.044580

Construction Worker Number of Trips and Trip Length		
Vehicle	No. of One-Way Trips/Day	One Way Trip Length (miles)
Haul Truck ⁿ	2	40
Water Truck ^o	3	22.6

Incremental Increase in Onsite Combustion Emissions from Construction Equipment		
Equation: Emission Factor (lb/hr) x No. of Equipment x Work Day (hr/day) = Onsite Construction Emissions (lb/day)		
	VOC lb/day	SOx lb/day
Equipment Type		
Scrapers	2.57	0.02
Tractors/Loaders/Backhoes	0.91	0.01
Total	3.5	0.0
Incremental Increase in Onsite Combustion Emissions from Onroad Mobile Vehicles		
Equation: Emission Factor (lb/mile) x No. of One-Way Trips/Day x 2 x Trip length (mile) = Mobile Emissions (lb/day)		
	VOC lb/day	SOx lb/day
Vehicle		
Haul Truck	0.56	7.13
Water Truck	0.48	6.05
Total	1.04	13.18

**EL ENCANTO PHASE 2
NON-LST EMISSIONS (Continued)**

Total Incremental Localized Emissions from Construction Activities

Sources	VOC lb/day	SOx lb/day
On-site Emissions	4.5	13.2
Significance Threshold^u	75	150
Exceed Significance?	NO	NO

GRADING

Equipment Type^{a,b}	No. of Equipment	hr/day	Crew Size
Graders	1	7.0	
Tractors/Loaders/Backhoes	2	7.0	

Construction Equipment Emission Factors

Equipment Type^c	VOC lb/hr	SOx lb/hr
Graders	0.206	0.001
Tractors/Loaders/Backhoes	0.131	0.001

Construction Vehicle (Mobile Source) Emission Factors

	VOC lb/mile	SOx lb/mile
Heavy-Duty Truck ^m	0.003516	0.044580

Construction Worker Number of Trips and Trip Length

Vehicle	No. of One-Way Trips/Day	One Way Trip Length (miles)
Haul Truck ⁿ	50	0.1

**EL ENCANTO PHASE 2
NON-LST EMISSIONS (Continued)**

Haul Truck (Disposal) ⁿ	17	40
Water Truck ^o	3	3.8

Incremental Increase in Onsite Combustion Emissions from Construction Equipment

Equation: Emission Factor (lb/hr) x No. of Equipment x Work Day (hr/day) = Onsite Construction Emissions (lb/day)

Equipment Type	VOC lb/day	SOx lb/day
Graders	0.02	0.31
Tractors/Loaders/Backhoes	0.05	0.01
Total	0.1	0.3

Incremental Increase in Onsite Combustion Emissions from Onroad Mobile Vehicles

Equation: Emission Factor (lb/mile) x No. of One-Way Trips/Day x 2 x Trip length (mile) = Mobile Emissions (lb/day)

Vehicle	VOC lb/day	SOx lb/day
Haul Truck	0.04	0.45
Haul Truck (Disposal)	4.78	60.63
Water Truck	0.08	1.02
Total	4.90	62.09

Total Incremental Localized Emissions from Construction Activities

Sources	VOC lb/day	SOx lb/day
On-site Emissions	4.9	62.1
Significance Threshold^t	75	150
Exceed Significance?	NO	NO

BUILDING

**EL ENCANTO PHASE 2
NON-LST EMISSIONS (Continued)**

Equipment Type^{a,b}	No. of Equipment	hr/day	Crew Size
Forklifts	1	7.0	10
Tractors/Loaders/Backhoes	1	7.0	
Generator Sets	1	7.0	
Electric Welders	1	7.0	

Construction Equipment Combustion Emission Factors		
Equipment Type^c	VOC lb/hr	SOx lb/hr
Forklifts	0.086	0.001
Tractors/Loaders/Backhoes	0.131	0.001
Generator Sets	0.113	0.001
Electric Welders	N/A	N/A

Construction Vehicle (Mobile Source) Emission Factors		
	VOC lb/mile	SOx lb/mile
Heavy-Duty Truck ^d	0.003516	0.044580

Construction Worker Number of Trips and Trip Length		
Vehicle	No. of One-Way Trips/Day	Trip Length (miles)
Flatbed Truck ^e	30	0.1
Water Truck ^f	3	4.5

Incremental Increase in Onsite Combustion Emissions from Construction Equipment
Equation: Emission Factor (lb/hr) x No. of Equipment x Work Day (hr/day) = Onsite Construction Emissions (lb/day)

**EL ENCANTO PHASE 2
NON-LST EMISSIONS (Continued)**

Equipment Type	VOC lb/day	SOx lb/day
Fork Lifts	0.60	0.00
Tractors/Loaders/Backhoes	0.91	0.01
Generator Sets	0.79	0.00
Electric Welders	N/A	N/A
Total	2.3	0.0

Incremental Increase in Onsite Combustion Emissions from Onroad Mobile Vehicles

Equation: Emission Factor (lb/mile) x No. of One-Way Trips/Day x 2 x Trip length (mile) = Mobile Emissions (lb/day)

Vehicle	VOC lb/day	SOx lb/day
Flatbed Truck	0.02	0.27
Water Truck	0.09	1.2
Total	0.11	1.47

Total Incremental Combustion Emissions from Construction Activities

Sources	VOC lb/day	SOx lb/day
On-Site Emissions	2.4	1.5
Significance Threshold^g	75	150
Exceed Significance?	NO	NO

ASPHALT

Equipment Type^{a,b}	No. of Equipment	hr/day	Crew Size
Pavers	1	8.00	8
Paving Equipment	1	8.00	
Rollers	2	8.00	
Cement and Mortar Mixers	1	3.00	
Tractors/Loaders/Backhoes	1	8.00	

**EL ENCANTO PHASE 2
NON-LST EMISSIONS (Continued)**

Construction Equipment Combustion Emission Factors

Equipment Type^c	VOC lb/hr	SOx lb/hr
Pavers	0.206	0.001
Paving Equipment	0.156	0.001
Rollers	0.141	0.001
Cement and Mortar Mixers	0.012	0.000
Tractors/Loaders/Backhoes	0.131	0.001

Construction Vehicle (Mobile Source) Emission Factors

	VOC lb/mile	SOx lb/mile
Heavy-Duty Truck ^d	0.003516	0.044580

Construction Worker Number of Trips and Trip Length

Vehicle	No. of One-Way Trips/Day	Trip Length (miles)
Delivery Truck ^e	9	0.1
Water Truck ^f	3	4.5

Incremental Increase in Onsite Combustion Emissions from Construction Equipment

Equation: Emission Factor (lb/hr) x No. of Equipment x Work Day (hr/day) = Onsite Construction Emissions (lb/day)

Equipment Type	VOC lb/day	SOx lb/day
Pavers	1.65	0.01
Paving Equipment	1.24	0.01
Rollers	2.26	0.01

**EL ENCANTO PHASE 2
NON-LST EMISSIONS (Continued)**

Cement and Mortar Mixers	0.04	0.00
Tractors/Loaders/Backhoes	1.05	0.01
Total	6.2	0.0

Incremental Increase in Onsite Combustion Emissions from Onroad Mobile Vehicles

Equation: Emission Factor (lb/mile) x No. of One-Way Trips/Day x 2 x Trip length (mile) = Mobile Emissions (lb/day)

Vehicle	VOC lb/day	SOx lb/day
Delivery Truck	0.01	0.08
Water Truck	0.09	1.2
Total	0.10	1.28

Total Incremental Combustion Emissions from Construction Activities

Sources	VOC lb/day	SOx lb/day
On-Site Emissions	6.3	1.3
Significance Threshold^g	75	150
Exceed Significance?	NO	NO