APPENDIX E

Emission Calculations for Alternatives

MILES TRAVELED BY TRUCKS IN SOUTH COAST AIR BASIN
UNDER THE NO PROJECT ALTERNATIVE

Direction	Estimated % of Trucks[1]	Trucks per Day[2]	Miles[3]	Total Miles[4]
East (outside of Basin)	20	20	250	5000
East (inside of Basin)	8.2	8.2	60	492
Northeast	5.6	5.6	25	140
North	8.2	8.2	30	246
Northwest	9.6	9.6	40	384
West	1.6	1.6	15	24
Southwest	6.4	6.4	10	64
South	8.2	8.2	15	123
Southeast	8.2	8.2	20	164
Within Vernon	7.2	7.2	20	144
Within City of LA	16.8	16.8	30	504
Totals	100	100		7285
Estimated Average Miles[5]				72.85

(1) Estimated percent of the trucks traveling in each direction. One additional trip is assumed to travel east outside of the South Coast Air Basin for transport of sold wastes for recycling/disposal.

(2) Average number of trucks per day in each direction (estimated % of trucks x 100)

(3) Estimated mileage in each direction.

(4) Total miles in the Basin in each direction.

(5) Average truck miles per day (total miles/total number of trucks).

Alternative 1 - No Project Alternative
Vehicle Emissions

On Road Mobile Emission Factors from California ARB EMFAC2002 Scenario Year 2006 (Model Years 1965 to 2006)

Vehicle Type	CO Emissions Factor (lb/mile)	VOC Emission Factor (lb/mile)	NOx Emissions Factor (lb/mile)	SOx Emissions Factor (lb/mile)	PM10 Emissions Factor (lb/mile)
Light Duty/Autos	0.013925	0.001497	0.001489	0.000009	0.00008
Heavy Diesel Trucks	0.019135	0.002779	0.026756	0.000248	0.000483

Source	Parameters			Peak Day Emissions, lbs/day				
	Number of Vehicles	Total Number of Trips	Distance Traveled per Trip	CO Emissions	VOC Emissions	NOx Emissions	SOx Emissions	PM10 Emissions
Workers Commuting	0	0	16.2	0.00	0.00	0.00	0.00	0.00
Daily Delivery Diesel Trucks	100	200	72.6	277.84	40.35	388.50	3.60	7.01

Source	Parameters		CO	VOC	NOx	SOx	PM10
Total Emissions from Workers' Vehicles	0	0	0.00	0.00	0.00	0.00	0.00
Total Emissions for Heavy Diesel Trucks	100	200	277.84	40.35	388.50	3.60	7.01
			277.84	40.35	388.50	3.60	7.01

Alternative 2 - Truck Emissions

On Road Mobile Emission Factors from California ARB EMFAC2002 Scenario Year 2006 (Model Years 1965 to 2006)

Vehicle Type	CO Emissions Factor (lb/mile)	VOC Emission Factor (lb/mile)	NOx Emissions Factor (lb/mile)	SOx Emissions Factor (lb/mile)	PM10 Emissions Factor (lb/mile)
Light Duty/Autos	0.013925	0.001497	0.001489	0.000009	0.00008
Heavy Diesel Trucks	0.019135	0.002779	0.026756	0.000248	0.000483

Source	Parameters			Peak Day Emissions, lbs/day				
	Number of Vehicles	Total Number of Trips	Distance Traveled per Trip	CO Emissions	VOC Emissions	NOx Emissions	SOx Emissions	PM10 Emissions
Workers Commuting	0	0	16.2	0.00	0.00	0.00	0.00	0.00
Trucks to Wilmington	100	200	33.5	128.20	18.62	179.27	1.66	3.24
Trucks to Antelope Valley	100	200	47.92	183.39	26.63	256.43	2.38	4.63
Trucks to City of Industry	100	200	30.3	115.96	16.84	162.14	1.50	2.93

MILES TRAVELED BY TRUCKS IN SOUTH COAST AIR BASIN UNDER ALTERNATIVE 2

	Wilmington Site				Antelope Valley Site		
Direction	Estimated % of Trucks[1]	Trucks per Day[2]	Miles[3]	Total Miles[4]	Trucks per Day[2]	Miles[3]	Total Miles[4]
East (outside of Basin)	1.0	1.0	95	95.0	1.0	52	52.0
East (inside of Basin)	10.0	10.0	70	700.0	10.0	27	270.0
Northeast	7.0	7.0	40	280.0	7.0	15	105.0
North	10.0	10.0	50	500.0	10.0	10	100.0
Northwest	12.0	12.0	55	660.0	12.0	20	240.0
West	2.0	2.0	15	30.0	2.0	20	40.0
Southwest	8.0	8.0	10	80.0	8.0	55	440.0
South	10.0	10.0	5	50.0	10.0	45	450.0
Southeast	10.0	10.0	10	100.0	10.0	80	800.0
Within Vernon	9.0	9.0	25	225.0	9.0	80	720.0
Within City of LA	21.0	21.0	30	630.0	21.0	75	1575.0
Totals	100	100		3350.0	100.0		4792.0
Estimated Average Miles[5]				33.5			47.9

	City of Industry Site			
Direction	Estimated % of Trucks[1]	Trucks per Day[2]	Miles[3]	Total Miles[4]
East (outside of Basin)	1.0	1.0	55	55.0
East (inside of Basin)	10.0	10.0	30	300.0
Northeast	7.0	7.0	50	350.0
North	10.0	10.0	30	300.0
Northwest	12.0	12.0	60	720.0
West	2.0	2.0	40	80.0
Southwest	8.0	8.0	10	80.0
South	10.0	10.0	10	100.0
Southeast	10.0	10.0	40	400.0
Within Vernon	9.0	9.0	25	225.0
Within City of LA	21.0	21.0	20	420.0
Totals	100	100		3030.0
Estimated Average Miles[5]				30.3

(1) Estimated percent of the trucks traveling in each direction. One additional trip is assumed to travel east outside of the South Coast Air Basin for transport of sold wastes for recycling/disposal.

(2) Average number of trucks per day in each direction (estimated % of trucks x 100)

(3) Estimated mileage in each direction.

(4) Total miles in the Basin in each direction.

(5) Average truck miles per day (total miles/total number of trucks).

Alternative 2
Fugitive Vehicle Emissions

Fugitive Dust Emission Estimates From Trucks and Employee Vehicles

Wilmington Site

Source Type	Number	Fuel	Peak Daily Trips	One-way Distance	Emission Factor (lb/vmt)	Peak PM-10 (lbs/day)
Passenger Vehicle/ On Paved Roadways	30	Gasoline	2	16.2	0.000856	0.83
Trucks on Paved Roadways	100	Diesel	2	33.5	0.0206	138.02
Total	130					138.85

Antelope Valley Site

Source Type	Number	Fuel	Peak Daily Trips	One-way Distance	Emission Factor (lb/vmt)	Peak PM-10 (lbs/day)
Passenger Vehicle/ On Paved Roadways	30	Gasoline	2	16.2	0.000856	0.83
Trucks on Paved Roadways	100	Diesel	2	47.92	0.0206	197.43
Total	130					198.26

Alternative 2
Fugitive Vehicle Emissions

City of Industry Site

Source Type	Number	Fuel	Peak Daily Trips	One-way Distance	Emission Factor (lb/vmt)	Peak PM-10 (lbs/day)
Passenger Vehicle/ On Paved Roadways	30	Gasoline	2	16.2	0.000856	0.83
Trucks on Paved Roadways	100	Diesel	2	30.3	0.0206	124.84
Total	130					125.67

* Emission Calculations for travel on paved roads from EPA AP-42 Section 13.2.1

$E = k(sL/2)^{0.65} \times (W/3)^{1.5}$

Where: k = 0.016 lb/VMT for PM10, sL = road silt loading (gms/m2) from CARB Methodology 7.9 for paved roads (0.240 for local roads and 0.037 for major/collector roads), W = weight of vehicles (2.4 tons for cars; 5 for pickup trucks, and 20 for heavy trucks)

**Emission Calculations for travel on unpaved roads from EPA AP-42 Section 13.2.2

$E = 2.6(s/12)^{0.8} \times (W/3)^{0.4}/(M/0.2)^{0.3}$

Where: s = surface silt content (assumed to be 11%, AP-42 Table 13.2.2-1), W = vehicle weight (tons) same assumptions as above, and M = material moisture content (assumed to be 10 percent since these emissions would only come from a water truck watering the site).