

APPENDIX 4. AIR QUALITY CALCULATIONS

SUMMARY OF EMISSION ESTIMATES FOR CONSTRUCTION ACTIVITIES

Summary of Total Maximum Daily Emissions

Sources	NOx (lb/day)	PM10 (lb/day)	CO (lb/day)	ROCs (lb/day)	SOx (lb/day)
Grading and Excavation	39.32	3.36	35.54	7.31	5.17
Tower Foundation and Erection	37.51	3.70	38.19	7.40	4.94
On-Road Workers and Crew	11.34	0.95	25.12	5.21	0.21
On-Road Haul Trucks	53.16	1.73	6.84	5.67	0.44
Fugitive Dust		123.96			
Total Emissions	141.33	133.70	105.69	25.59	10.76

DAILY EMISSION ESTIMATES FOR CONSTRUCTION EQUIPMENT

Miscellaneous Material Handling / Bulldozing¹

Pieces of Construction Equipment	Hours per Day	Equipment Hours per Day	Rule 403 Reduction	"Emission Factor (lbs per hour)"	PM10 Emissions (lbs per day)"
8	8	64	70%	1.3	24.96

Graded Surface²

Emission Factor	Acres per Day	Rule 403 Reduction	PM10 Emissions (lbs per day)
26.4	12.5	0.7	99.0

Summary of Fugitive Dust Emissions

Units	Material Handling	Graded Surface	Fugitive Dust (lb/day)
lb/day	24.96	99.00	123.96

¹ Sources: Table A9-9-F SCAQMD CEQA Handbook, 1993, and Section 13.2.4 of USEPA Compilation of Air Pollutant Emission Factors (AP-42)

² Source: Table A9-9 SCAQMD CEQA Handbook, 1993

DAILY FUGITIVE DUST EMISSION ESTIMATES FOR CONSTRUCTION ACTIVITIES³

Off-Road Emission Estimates

Parameter	Units	Grading and Excavation					Tower Foundation and Erection			
		Grader	Paver	Backhoe	Roller	Trencher	Driller	Crane	Aerial Lift	Forklift
Number of Equipment Units		1	1	2	1	1	1	1	2	1
Operational Hours hr/day	8	8	8	8	8	8	8	8	8	8
Average Rated Horse Power	hp	156	99	79	99	34.2	209	194	43	83
Typical Load Factor	%	57.50%	62.00%	46.50%	57.50%	58.00%	75.00%	43.00%	50.50%	30.00%
Emission Factor lb/hp-hr										
NOx		0.0152	0.0152	0.0152	0.0152	0.0152	0.0152	0.0152	0.0152	0.0152
PM10		0.0015	0.001	0.001	0.001	0.0015	0.0015	0.0015	0.0015	0.0015
CO		0.02	0.007	0.015	0.007	0.02	0.02	0.009	0.013	0.013
ROCs		0.003	0.001	0.003	0.002	0.003	0.003	0.003	0.003	0.003
SOx		0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Total Daily Emissions (lb/day)										
NOx		10.908	10.144	8.934	6.922	2.412	19.061	10.144	5.281	3.028
PM10		1.076	1.001	0.588	0.455	0.238	1.881	1.001	0.521	0.299
CO		14.352	6.006	8.816	3.188	3.174	25.080	6.006	4.517	2.590
ROCs		2.153	2.002	1.763	0.911	0.476	3.762	2.002	1.042	0.598
SOx		1.435	1.335	1.176	0.911	0.317	2.508	1.335	0.695	0.398

³ Activity Emissions are based on equipment operating according to SCE prediction during day of highest activity.
Sources:

Tables A9-8-B and -C, A9-5-K-6 and A9-5-L SCAQMD CEQA Air Quality Handbook (1993)

EMFAC 2002 Emission Factors for On-Road Vehicles (summary provided by SCAQMD, 8/03)

On-Road Truck (NOx/CO) EMFAC 2002 factors from SCE, based on Orange County average per vehicle type.

Mitigation: Equipment meets ARB/EPA Tier 1 (1996) Off-Road Compression-Ignition Engine Standards (NOx best management practice)

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DAILY FUGITIVE DUST EMISSION ESTIMATES FOR CONSTRUCTION ACTIVITIES
On-Road Emission Estimates

Parameter	Units	Dump Trucks	Crew Trucks	Commute Vehicles	Haul Trucks
Miles per day		5	100	50	300
Vehicles per day		2	8	30	6
Emission Factor	(lb/mile)				
NOx		0.02304	0.01051	0.00180	0.02953
PM10		0.00096	0.00096	0.00011	0.00096
CO		0.00729	0.00019	0.01660	0.00380
ROCs		0.00315	0.00315	0.00177	0.00315
SOx		0.00024	0.00024	0.00001	0.00024
Total Daily Emissions	(lb/day)				
NOx		0.230	8.409	2.700	53.159
PM10		0.010	0.769	0.170	1.730
CO		0.073	0.150	24.900	6.841
ROCs		0.032	2.520	2.657	5.670
SOx		0.002	0.194	0.015	0.437

SUMMARY OF TOTAL EQUIPMENT AND MOBILE SOURCE EMISSIONS

Sources	NOx (lb/day)	PM10 (lb/day)	CO (lb/day)	ROCs (lb/day)	SOx (lb/day)
Grading and Excavation	39.32	3.36	35.54	7.31	5.17
Tower Foundation and Erection	37.51	3.70	38.19	7.40	4.94
On-Road Workers and Crew	11.34	0.95	25.12	5.21	0.21
On-Road Haul Trucks	53.16	1.73	6.84	5.67	0.44