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APPENDIX E  
TABLES SUMMARIZING EMISSIONS AND  
AIR QUALITY IMPACTS

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Table 4-4  
 Estimate of Air Emissions From Quarry Operations  
*(Emissions Based on 45,000 Cubic Yards per Year)*

Operation	Emission Factor <i>(lb/ton)</i>	Percent Control <i>(%)</i>	Reference	-----PM-10 Emissions-----		
				<i>(lb/hr)</i>	<i>(lb/day)</i>	<i>(lbs/yr)</i>
Excavation	0.0007	(controlled)	AP-42	0.06563	0.525	63
Blasting	0.015	(controlled)	AP-42	1.4063	11.25	1350
Loading/Material Handling	0.0024	85	SCAPCD	0.03375	0.27	32.4
<b>Totals</b>				<b>1.51</b>	<b>12.045</b>	<b>1445.4</b>

**Notes:**

1. Annual Throughput (yd<sup>3</sup>/yr): 45000 cubic yds/yr
2. Emission factors from AP-42 Tables 11.1-5, 11.1-8 and Section 13.2-4 (EPA 1995)



Table 4-5  
 Estimate of Air Emissions From Rock Crushing and Screening Operations  
*(Emissions Based on 45,000 Cubic Yards per Year)*

Operation	Emission Factor (lb/ton)	Percent Control (%)	Reference	-----PM-10 Emissions-----		
				(lb/hr)	(lb/day)	(lbs/yr)
Rock Crushing	0.017	90	SCAPCD	0.1594	1.275	153
Screening	0.12	90	SCAPCD	1.1250	9.000	1080
Loading/Material Handling	0.0024	85	SCAPCD	0.0338	0.270	32.4
<b>Totals</b>				<b>1.318</b>	<b>10.545</b>	<b>1265</b>

**Notes:**

1. Annual Throughput (yd3/yr): 45000 cubic yds/yr



Table 4-6  
 Estimate of Air Emissions From Drum Type Asphalt Batch Plant  
 (Based on 100,000 Cubic Yards per Year)

Pollutant	Emission Factor (lb/ton)	Reference	-----Emissions-----		
			(lb/hr)	(lb/day)	(lbs/yr)
PM-10	0.0082	Table 11.1.5 (AP-42)	0.573	4.58	550
CO	0.2359	SCAPCD	12.29	98.3	11795
NOx	0.072	SCAPCD	3.75	30.00	3600
SO <sub>2</sub>	0.0745	SCAPCD	3.88	31.04	3725
TOC	0.069	Table 11.1.8 (AP-42)	3.594	28.75	3450

**Notes:**

1. Plant throughput (yd<sup>3</sup>/yr): 100000
2. Emission factors from AP-42 (1995) and Shasta County APCD letter dated July 12, 2000.
3. PM-10 emissions includes fugitive dust emissions from two (2) transfer points estimated to equal 0.0014 lbs/ton (Ref: Ap-42 Table 11.19.2-2).





Table 4-7  
Shasta Valley Asphalt and Aggregate Project  
Estimate of Toxic Air Emissions

	<b>Pollutant</b>	<i>Emission</i>	<i>Reference</i>	<i>Annual Emissions</i>	
		<i>Factor</i> <i>(lb/ton)</i>		<i>(lb/yr)</i>	<i>(gram/sec)</i>
PAHs	Acenaphthene	3.06E-07	CATEF	6.12E-02	1.94064E-09
	Acenaphthylene	5.26E-07	CATEF	1.05E-01	3.33587E-09
	Anthracene	5.74E-08	CATEF	1.15E-02	3.64028E-10
	Benzo(a)anthracene	1.11E-08	CATEF	2.22E-03	7.03957E-11
	Benzo(a) pyrene	1.84E-09	CATEF	3.68E-04	1.16692E-11
	Benzo(b)fluoranthene	2.10E-09	CATEF	0.00042	1.33181E-11
	Benzo(g,h,l)perylene	1.20E-09	CATEF	0.00024	7.61035E-12
	Benzo(k)fluoranthene	8.17E-10	CATEF	0.0001634	5.18138E-12
	Chrysene	8.17E-10	CATEF	0.0001634	5.18138E-12
	Dibenz(a,h)anthracene	8.17E-10	CATEF	1.63E-04	5.18138E-12
	Fluoranthene	3.57E-08	CATEF	0.00714	2.26408E-10
	Flourene	6.58E-07	CATEF	0.1316	4.17301E-09
	Napthalene	3.08E-05	CATEF	6.16	1.95332E-07
	Phenanthrene	6.64E-07	CATEF	0.1328	4.21106E-09
	Pyrene	5.62E-08	CATEF	0.01124	3.56418E-10
VOCs	Benzene	5.90E-05	CATEF	11.8	3.74176E-07
	Formaldehyde	1.38E-04	CATEF	27.6	8.7519E-07



Table 4-7  
 Shasta Valley Asphalt and Aggregate Project  
 Estimate of Toxic Air Emissions

Metals	Arsenic	2.37E-06	CATEF	4.74E-01	1.50304E-08
	Beryllium	4.16E-07	CATEF	8.32E-02	2.63825E-09
	Cadmium	7.67E-07	CATEF	1.53E-01	4.86428E-09
	Chrome+6	1.04E-07	CATEF	2.08E-02	6.59564E-10
	Copper	6.01E-06	CATEF	1.20E+00	3.81152E-08
	Lead	1.41E-06	CATEF	2.82E-01	8.94216E-09
	Mercury	7.02E-06	CATEF	1.40E+00	4.45205E-08
	Nickel	8.42E-06	CATEF	1.68E+00	5.33993E-08
	Selenium	2.08E-07	CATEF	4.16E-02	1.31913E-09
	Phosphorus	5.50E-05	AP-42	1.10E+01	3.48808E-07
	Zinc	2.52E-05	CATEF	5.04E+00	1.59817E-07

**Notes:**

1. Emission factors from CARB's CATEF Database (copy attached).
2. Annual throughput:           100000       cubic yards/yr



Table 4-8  
 Estimate of PM-10 Emissions From Concrete Batch Plant  
*(Emissions Based on 25,000 Cubic Yards per Year)*

Operation	Emission Factor (lb/yard)	Control Efficiency (%)	Reference	-----Emissions-----		
				(lb/hr)	(lb/day)	(lbs/yr)
Sand and Aggregate Transfer	0.0064	80	SCAPCD	0.0333	0.27	32
Cement Unloading	0.0064	80	SCAPCD	0.0333	0.27	32
Weight Hopper Loading	0.0064	80	SCAPCD	0.0333	0.27	32
Truck Loading	0.0064	80	SCAPCD	0.0333	0.27	32
<b>Total</b>				<b>0.13</b>	<b>1.1</b>	<b>128</b>

**Notes:**

- 1. Plant throughput (yd<sup>3</sup>/yr): 25000
- 3. Emission factors from Shasta County APCD



Table 4-9  
Estimate of Air Emissions From Vehicular Traffic

	Pollutant	Emission Factor (gram/mile)	-----Emissions-----		
			(lb/hr)	(lb/day)	(ton/yr)
<b>Trucks</b>					
	PM-10	2.28	0.81	6.5	0.39
	CO	7.96	2.83	22.6	1.36
	NOx	16.44	5.84	46.7	2.80
	SO <sub>2</sub>	1.90	0.675	5.40	0.324
	TOC	2.21	0.78	6.3	0.38
<b>Autos</b>					
	PM-10	0.01	0.010	0.08	0.005
	CO	7.52	7.89	63.11	3.79
	NOx	1.09	1.143	9.15	0.549
	SO <sub>2</sub>	0.008	0.008	0.07	0.004
	TOC	0.38	0.399	3.19	0.191

Notes.

Emission Factors from EMFAC7 - Based on 40 mph, summertime factors.

Trucks Includes traffic for concrete batch plant, asphalt plant and other industrial activities. Based on 43 trips/day 30 miles/trip for 120 days/year  
Total truck mileage: 1290 miles/day Ref. Table 3-3.

Autos/Light Trucks

Includes commercial light-duty trucks, employee and misc. vehicles.  
Based on 127 trips/day, 30 miles roundtrip, 120 days/year  
Daily Mileage: 3810 miles/day Ref. Table 3-3.





Table 4-10  
Estimate of Air Quality Impacts

Pollutant	Averaging Time	Project Impact (ug/cu meter)	Percent of Standard (ug/cu meter)	Air Quality Standard (ug/cu meter)
PM-10	<i>24-hr</i>	35	69.8	50
	<i>Annual</i>	4	83	30
CO	<i>1-hr</i>	21	0.7	23,000
	<i>8-hr</i>	12	1.2	10,000
NOx	<i>1 hr</i>	6	Note 1	470
	<i>Annual</i>	0.023	72	100
SO2	<i>1-hr</i>	7	10	655
	<i>3-hr</i>	4.9	0.4	1,300
	<i>24-hr</i>	18.9	25	105
	<i>Annual</i>	0.02	8.4	80

Notes.

Project impacts based on use of ISC3 model with meteorological data from Soldier Mountain.  
Copy of model output is attached.



Table 4-11  
Comparison of Project versus Cumulative Emissions

Facility	Annual PM-10 <i>(tons/yr)</i>	Annual NOx <i>(tons/yr)</i>	Annual VOC <i>(tons/yr)</i>	Location of Max <i>(m)</i>
Burney Forest Products	47	132	1	
SP Burney	24	25	79	953
Burney Min. Power	30	104	10	430
Dicalite	5	5	7	1000
3 Mountain Power	105	131	22	1071
PG&E	5	229	Negligible	764
Total	216	626	119	
<b><i>Hat Creek Project</i></b>	<b><i>2.09</i></b>	<b><i>5.15</i></b>	<b><i>1.725</i></b>	

**Notes:**

1. Location of maximum ground level concentration (GLC) based on SCREEN3 Model output.

