APPENDIX B – AIR AND GREENHOUSE GAS EMISSIONS MODELING DATA

Road Construction Emissions Model, Version 8.1.0

Daily Emission Estimates for -> Clay Street

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	0.92	6.63	10.52	12.89	0.45	12.44	2.98	0.39	2.59	0.02	1,790.23	0.42	0.03	1,808.11
Grading/Excavation	5.39	44.10	58.64	15.16	2.72	12.44	5.04	2.46	2.59	0.09	8,470.22	2.45	0.09	8,557.48
Drainage/Utilities/Sub-Grade	4.57	38.16	46.41	14.72	2.28	12.44	4.70	2.11	2.59	0.07	6,851.83	1.56	0.07	6,910.83
Paving	1.65	17.13	16.21	0.99	0.99	0.00	0.88	0.88	0.00	0.03	2,939.28	0.73	0.04	2,968.33
Maximum (pounds/day)	5.39	44.10	58.64	15.16	2.72	12.44	5.04	2.46	2.59	0.09	8,470.22	2.45	0.09	8,557.48
Total (tons/construction project)	0.41	3.39	4.27	1.25	0.21	1.05	0.41	0.19	0.22	0.01	634.21	0.17	0.01	640.32

Notes:

Project Start Year ->	2020
Project Length (months) ->	9
Total Project Area (acres) ->	1
Maximum Area Disturbed/Day (acres) ->	1
Water Truck Used? ->	Yes

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	33	0	60	160	40
Grading/Excavation	1	8	30	30	680	40
Drainage/Utilities/Sub-Grade	0	9	0	30	560	40
Paving	0	22	0	60	400	40

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Clay Street

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.01	0.07	0.10	0.13	0.00	0.12	0.03	0.00	0.03	0.00	17.72	0.00	0.00	16.24
Grading/Excavation	0.21	1.75	2.32	0.60	0.11	0.49	0.20	0.10	0.10	0.00	335.42	0.10	0.00	307.43
Drainage/Utilities/Sub-Grade	0.16	1.32	1.61	0.51	0.08	0.43	0.16	0.07	0.09	0.00	237.42	0.05	0.00	217.24
Paving	0.02	0.25	0.24	0.01	0.01	0.00	0.01	0.01	0.00	0.00	43.65	0.01	0.00	39.99
Maximum (tons/phase)	0.21	1.75	2.32	0.60	0.11	0.49	0.20	0.10	0.10	0.00	335.42	0.10	0.00	307.43
Total (tons/construction project)	0.41	3.39	4.27	1.25	0.21	1.05	0.41	0.19	0.22	0.01	634.21	0.17	0.01	580.89

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Operational Mobile Emissions

Scenario: Existing Conditions (Year 2018)

Idling Vehicle Emission Factors (grams/second) in 2018

ROG	Nox	CO	PM10	PM2.5
0.000857	0.004604	0.005261	0.000084	0.000080

1. US 50/Bedford Avenue Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	3275	26	0.161	0.864	0.987	0.016	0.015

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	3563	21	0.141	0.759	0.867	0.014	0.013

2. Main Street/Bedford Avenue Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1045	18	0.036	0.191	0.218	0.003	0.003

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1216	22	0.050	0.271	0.310	0.005	0.005

3. Main Street/Clay Street Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	986	20	0.037	0.200	0.229	0.004	0.003

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1087	15	0.031	0.165	0.189	0.003	0.003

4. Main Street/Cedar Revine Road Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1156	8	0.017	0.094	0.107	0.002	0.002

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1271	10	0.024	0.129	0.147	0.002	0.002

5. Pacific Street/Cedar Ravine Road Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1001	30	0.057	0.305	0.348	0.006	0.005

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	930	24	0.042	0.226	0.259	0.004	0.004

Scenario: Opening Year Conditions (Year 2021) - ALL WAY STOP OPTION

Idling Vehicle Emission Factors (grams/second) in 2021

ROG	Nox	CO	PM10	PM2.5
0.000836	0.005317	0.005046	0.000096	0.000092

1. US 50/Bedford Avenue Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	3275	27	0.163	1.036	0.983	0.019	0.018

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	3563	21	0.138	0.876	0.832	0.016	0.015

2. Main Street/Bedford Avenue Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1045	17	0.033	0.208	0.197	0.004	0.004

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1216	20	0.045	0.285	0.270	0.005	0.005

3. Main Street/Clay Street Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	0		0.000	0.000	0.000	0.000	0.000

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	0		0.000	0.000	0.000	0.000	0.000

4. Main Street/Cedar Revine Road Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1215	12	0.027	0.171	0.162	0.003	0.003

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1346	15	0.037	0.236	0.224	0.004	0.004

5. Pacific Street/Cedar Ravine Road Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1001	20	0.037	0.234	0.223	0.004	0.004

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	930	18	0.031	0.196	0.186	0.004	0.003

Operational Mobile Emissions

Scenario: Opening Year Conditions (Year 2021) - SIGNAL OPTION

Idling Vehicle Emission Factors (grams/second) in 2021

ROG	Nox	CO	PM10	PM2.5
0.000836	0.005317	0.005046	0.000096	0.000092

1. US 50/Bedford Avenue Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	3275	27	0.163	1.036	0.983	0.019	0.018

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	3563	21	0.138	0.876	0.832	0.016	0.015

2. Main Street/Bedford Avenue Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1045	18	0.035	0.220	0.209	0.004	0.004

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1216	21	0.047	0.299	0.284	0.005	0.005

3. Main Street/Clay Street Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	0		0.000	0.000	0.000	0.000	0.000

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	0		0.000	0.000	0.000	0.000	0.000

4. Main Street/Cedar Revine Road Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1215	11	0.025	0.157	0.149	0.003	0.003

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1346	11	0.027	0.173	0.165	0.003	0.003

5. Pacific Street/Cedar Ravine Road Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1001	17	0.031	0.199	0.189	0.004	0.003

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	930	17	0.029	0.185	0.176	0.003	0.003

Scenario: Cumulative Year Conditions (Year 2035) - ALL WAY STOP OPTION

Idling Vehicle Emission Factors (grams/second) in 2035

ROG	Nox	CO	PM10	PM2.5
0.000505	0.005089	0.002749	0.000031	0.000029

1. US 50/Bedford Avenue Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	4650	94	0.487	4.900	2.647	0.030	0.028

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	5240	93	0.543	5.463	2.951	0.033	0.031

2. Main Street/Bedford Avenue Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1770	49	0.097	0.972	0.525	0.006	0.006

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1830	111	0.226	2.277	1.230	0.014	0.013

3. Main Street/Clay Street Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	0		0.000	0.000	0.000	0.000	0.000

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	0		0.000	0.000	0.000	0.000	0.000

4. Main Street/Cedar Revine Road Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1950	68	0.148	1.486	0.803	0.009	0.009

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	2115	88	0.207	2.086	1.127	0.013	0.012

5. Pacific Street/Cedar Ravine Road Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1620	46	0.083	0.835	0.451	0.005	0.005

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1690	76	0.143	1.440	0.778	0.009	0.008

Operational Mobile Emissions

Scenario: Cumualtive Year Conditions (Year 2035) - SIGNAL OPTION

Idling Vehicle Emission Factors (grams/second) in 2035

ROG	Nox	CO	PM10	PM2.5
0.000505	0.005089	0.002749	0.000031	0.000029

1. US 50/Bedford Avenue Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	4650	94	0.487	4.900	2.647	0.030	0.028

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	5240	88	0.513	5.169	2.792	0.031	0.030

2. Main Street/Bedford Avenue Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1770	38	0.075	0.754	0.407	0.005	0.004

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1830	76	0.155	1.559	0.842	0.009	0.009

3. Main Street/Clay Street Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	0		0.000	0.000	0.000	0.000	0.000

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	0		0.000	0.000	0.000	0.000	0.000

4. Main Street/Cedar Revine Road Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1950	32	0.069	0.700	0.378	0.004	0.004

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	2115	45	0.106	1.067	0.576	0.006	0.006

5. Pacific Street/Cedar Ravine Road Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1620	29	0.052	0.527	0.284	0.003	0.003

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1690	50	0.094	0.947	0.512	0.006	0.005

Scenario: Cumualtive Year Conditions (Year 2035) - NO BUILD ALTERNATIVE

Idling Vehicle Emission Factors (grams/second) in 2035

ROG	Nox	CO	PM10	PM2.5
0.000505	0.005089	0.002749	0.000031	0.000029

1. US 50/Bedford Avenue Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	4650	95	0.492	4.952	2.675	0.030	0.028

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	5240	93	0.543	5.463	2.951	0.033	0.031

2. Main Street/Bedford Avenue Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1770	38	0.075	0.754	0.407	0.005	0.004

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1830	113	0.230	2.318	1.252	0.014	0.013

3. Main Street/Clay Street Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1395	53	0.082	0.829	0.448	0.005	0.005

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1510	79	0.133	1.337	0.722	0.008	0.008

4. Main Street/Cedar Revine Road Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1880	38	0.080	0.801	0.433	0.005	0.005

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	2030	73	0.165	1.661	0.897	0.010	0.010

5. Pacific Street/Cedar Ravine Road Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1620	47	0.085	0.854	0.461	0.005	0.005

PM PEAK	Volume	Intersection Delay (secs)	Emissions (pounds) ROG	Nox	CO	PM10	PM2.5
Intersection	1690	84	0.158	1.591	0.860	0.010	0.009

Operational Mobile
Greenhouse Gas Emissions

Scenario: Existing Conditions (Year 2018)

Idling Vehicle Emission Factors (grams/second) in 2018

CO2	CH4
2.495435	0.000203

1. US 50/Bedford Avenue Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e)		
			CO2	CH4	Total Co2e
Intersection	3275	26	0.21249	0.00043	**0.2129**
PM PEAK	**Volume**	**Intersection Delay (secs)**	**Emissions (metric tons CO2e)**		
			CO2	CH4	Total Co2e
Intersection	3563	21	0.18672	0.00038	0.1871

2. Main Street/Bedford Avenue Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e)		
			CO2	CH4	Total Co2e
Intersection	1045	18	0.046939	0.000095	0.0470
PM PEAK	**Volume**	**Intersection Delay (secs)**	**Emissions (metric tons CO2e)**		
			CO2	CH4	Total Co2e
Intersection	1216	22	0.06676	0.00014	**0.0669**

3. Main Street/Clay Street Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e)		
			CO2	CH4	Total Co2e
Intersection	986	20	0.049210	0.000100	**0.0493**
PM PEAK	**Volume**	**Intersection Delay (secs)**	**Emissions (metric tons CO2e)**		
			CO2	CH4	Total Co2e
Intersection	1087	15	0.040688	0.000083	0.0408

4. Main Street/Cedar Revine Road Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e)		
			CO2	CH4	Total Co2e
Intersection	1156	8	0.023078	0.000047	0.0231
PM PEAK	**Volume**	**Intersection Delay (secs)**	**Emissions (metric tons CO2e)**		
			CO2	CH4	Total Co2e
Intersection	1271	10	0.031717	0.000065	**0.0318**

5. Pacific Street/Cedar Ravine Road Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e)		
			CO2	CH4	Total Co2e
Intersection	1001	30	0.074938	0.000152	**0.0751**
PM PEAK	**Volume**	**Intersection Delay (secs)**	**Emissions (metric tons CO2e)**		
			CO2	CH4	Total Co2e
Intersection	930	24	0.055698	0.000113	0.0558

Total annual emissions (sum of peak hours * 10 * 365)					
777.2	244.2	180.0	116.0	274.1	**1,591.4**

Scenario: Opening Year Conditions (Year 2021) - All-Way Stop Option

Idling Vehicle Emission Factors (grams/second) in 2021

CO2	CH4
2.365972	0.000119

1. US 50/Bedford Avenue Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e)		
			CO2	CH4	Total Co2e
Intersection	3275	27	0.20921	0.00026	**0.2095**
PM PEAK	**Volume**	**Intersection Delay (secs)**	**Emissions (metric tons CO2e)**		
			CO2	CH4	Total Co2e
Intersection	3563	21	0.17703	0.00022	0.1773

2. Main Street/Bedford Avenue Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e)		
			CO2	CH4	Total Co2e
Intersection	1045	17	0.042031	0.000053	0.0421
PM PEAK	**Volume**	**Intersection Delay (secs)**	**Emissions (metric tons CO2e)**		
			CO2	CH4	Total Co2e
Intersection	1216	20	0.057540	0.000073	**0.0576**

3. Main Street/Clay Street Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e)		
			CO2	CH4	Total Co2e
Intersection	0		0.000000	0.000000	0.0000
PM PEAK	**Volume**	**Intersection Delay (secs)**	**Emissions (metric tons CO2e)**		
			CO2	CH4	Total Co2e
Intersection	0		0.000000	0.000000	0.0000

4. Main Street/Cedar Revine Road Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e)		
			CO2	CH4	Total Co2e
Intersection	1215	12	0.034496	0.000043	0.0345
PM PEAK	**Volume**	**Intersection Delay (secs)**	**Emissions (metric tons CO2e)**		
			CO2	CH4	Total Co2e
Intersection	1346	15	0.047769	0.000060	**0.0478**

5. Pacific Street/Cedar Ravine Road Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e)		
			CO2	CH4	Total Co2e
Intersection	1001	20	0.047367	0.000060	**0.0474**
PM PEAK	**Volume**	**Intersection Delay (secs)**	**Emissions (metric tons CO2e)**		
			CO2	CH4	Total Co2e
Intersection	930	18	0.039606	0.000050	0.0397

Total annual emissions (sum of peak hours * 10 * 365)					
764.6	210.3	0.0	174.6	173.1	**1,322.6**

Operational Mobile
Greenhouse Gas Emissions

Scenario: Opening Year Conditions (Year 2021) - Signal Option

Idling Vehicle Emission Factors (grams/second) in 2021

CO2	CH4
2.365972	0.000119

1. US 50/Bedford Avenue Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e)		
			CO2	CH4	Total Co2e
Intersection	3275	27	0.209211	0.000264	**0.2095**

PM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e)		
			CO2	CH4	Total Co2e
Intersection	3563	21	0.177029	0.000223	0.1773

2. Main Street/Bedford Avenue Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e)		
			CO2	CH4	Total Co2e
Intersection	1045	18	0.044504	0.000056	0.0446

PM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e)		
			CO2	CH4	Total Co2e
Intersection	1216	21	0.060417	0.000076	**0.0605**

3. Main Street/Clay Street Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e)		
			CO2	CH4	Total Co2e
Intersection	0		0.000000	0.000000	0.0000

PM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e)		
			CO2	CH4	Total Co2e
Intersection	0		0.000000	0.000000	0.0000

4. Main Street/Cedar Revine Road Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e)		
			CO2	CH4	Total Co2e
Intersection	1215	11	0.031621	0.000040	0.0317

PM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e)		
			CO2	CH4	Total Co2e
Intersection	1346	11	0.035031	0.000044	**0.0351**

5. Pacific Street/Cedar Ravine Road Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e)		
			CO2	CH4	Total Co2e
Intersection	1001	17	0.040262	0.000051	**0.0403**

PM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e)		
			CO2	CH4	Total Co2e
Intersection	930	17	0.037406	0.000047	0.0375

					Total annual emissions (sum of peak hours * 10 * 365)
764.6	220.8	0.0	128.0	147.1	**1,260.5**

Scenario: Cumulative Year Conditions (Year 2035) - All-Way Stop Option

Idling Vehicle Emission Factors (grams/second) in 2035

CO2	CH4
2.607291	0.000041

1. US 50/Bedford Avenue Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e)		
			CO2	CH4	Total Co2e
Intersection	4650	94	1.139647	0.000447	1.1401

PM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e)		
			CO2	CH4	Total Co2e
Intersection	5240	93	1.270585	0.000498	**1.2711**

2. Main Street/Bedford Avenue Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e)		
			CO2	CH4	Total Co2e
Intersection	1770	49	0.226130	0.000089	0.2262

PM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons)		
			CO2	CH4	Total Co2e
Intersection	1830	111	0.529619	0.000208	**0.5298**

3. Main Street/Clay Street Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e)		
			CO2	CH4	Total Co2e
Intersection	0		0.000000	0.000000	0.0000

PM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e)		
			CO2	CH4	Total Co2e
Intersection	0		0.000000	0.000000	0.0000

4. Main Street/Cedar Revine Road Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e)		
			CO2	CH4	Total Co2e
Intersection	1950	68	0.345727	0.000136	0.3459

PM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e)		
			CO2	CH4	Total Co2e
Intersection	2115	88	0.485269	0.000190	**0.4855**

5. Pacific Street/Cedar Ravine Road Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e)		
			CO2	CH4	Total Co2e
Intersection	1620	46	0.194295	0.000076	0.1944

PM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e)		
			CO2	CH4	Total Co2e
Intersection	1690	76	0.334880	0.000131	**0.3350**

					Total annual emissions (sum of peak hours * 10 * 365)
4,639.5	1,933.9	0.0	1,771.9	1,222.8	**9,568.0**

Operational Mobile
Greenhouse Gas Emissions

Scenario: Cumualtive Year Conditions (Year 2035) - Signal Option

Idling Vehicle Emission Factors (grams/second) in 2035

CO2	CH4
2.607291	0.000041

1. US 50/Bedford Avenue Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e) CO2	CH4	Total Co2e
Intersection	4650	94	1.139647	0.000447	1.1401
PM PEAK	**Volume**	**Intersection Delay (secs)**	**Emissions (metric tons CO2e) CO2**	**CH4**	**Total Co2e**
Intersection	5240	88	1.202274	0.000471	**1.2027**

2. Main Street/Bedford Avenue Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e) CO2	CH4	Total Co2e
Intersection	1770	38	0.175366	0.000069	0.1754
PM PEAK	**Volume**	**Intersection Delay (secs)**	**Emissions (metric tons CO2e) CO2**	**CH4**	**Total Co2e**
Intersection	1830	76	0.362622	0.000142	**0.3628**

3. Main Street/Clay Street Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e) CO2	CH4	Total Co2e
Intersection	0		0.000000	0.000000	0.0000
PM PEAK	**Volume**	**Intersection Delay (secs)**	**Emissions (metric tons CO2e) CO2**	**CH4**	**Total Co2e**
Intersection	0		0.000000	0.000000	0.0000

4. Main Street/Cedar Revine Road Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e) CO2	CH4	Total Co2e
Intersection	1950	32	0.162695	0.000064	0.1628
PM PEAK	**Volume**	**Intersection Delay (secs)**	**Emissions (metric tons CO2e) CO2**	**CH4**	**Total Co2e**
Intersection	2115	45	0.248149	0.000097	**0.2482**

5. Pacific Street/Cedar Ravine Road Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e) CO2	CH4	Total Co2e
Intersection	1620	29	0.122491	0.000048	0.1225
PM PEAK	**Volume**	**Intersection Delay (secs)**	**Emissions (metric tons CO2e) CO2**	**CH4**	**Total Co2e**
Intersection	1690	50	0.220316	0.000086	**0.2204**

					Total annual emissions (sum of peak hours * 10 * 365)
4,390.0	1,324.1	0.0	906.1	804.5	**7,424.7**

Scenario: Cumulative Year Conditions (Year 2035) - No Project

Idling Vehicle Emission Factors (grams/second) in 2035

CO2	CH4
2.607291	0.000041

1. US 50/Bedford Avenue Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e) CO2	CH4	Total Co2e
Intersection	4650	95	1.151771	0.000451	1.1522
PM PEAK	**Volume**	**Intersection Delay (secs)**	**Emissions (metric tons CO2e) CO2**	**CH4**	**Total Co2e**
Intersection	5240	93	1.270585	0.000498	**1.2711**

2. Main Street/Bedford Avenue Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e) CO2	CH4	Total Co2e
Intersection	1770	38	0.175366	0.000069	0.1754
PM PEAK	**Volume**	**Intersection Delay (secs)**	**Emissions (metric tons CO2e) CO2**	**CH4**	**Total Co2e**
Intersection	1830	113	0.539162	0.000211	**0.5394**

3. Main Street/Clay Street Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e) CO2	CH4	Total Co2e
Intersection	1395	53	0.192770	0.000076	0.1928
PM PEAK	**Volume**	**Intersection Delay (secs)**	**Emissions (metric tons CO2e) CO2**	**CH4**	**Total Co2e**
Intersection	1510	79	0.311024	0.000122	**0.3111**

4. Main Street/Cedar Revine Road Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e) CO2	CH4	Total Co2e
Intersection	1880	38	0.186265	0.000073	0.1863
PM PEAK	**Volume**	**Intersection Delay (secs)**	**Emissions (metric tons CO2e) CO2**	**CH4**	**Total Co2e**
Intersection	2030	73	0.386374	0.000151	**0.3865**

5. Pacific Street/Cedar Ravine Road Intersection

AM PEAK	Volume	Intersection Delay (secs)	Emissions (metric tons CO2e) CO2	CH4	Total Co2e
Intersection	1620	47	0.198519	0.000078	0.1986
PM PEAK	**Volume**	**Intersection Delay (secs)**	**Emissions (metric tons CO2e) CO2**	**CH4**	**Total Co2e**
Intersection	1690	84	0.370131	0.000145	**0.3703**

					Total annual emissions (sum of peak hours * 10 * 365)
4,639.5	1,968.7	1,135.7	1,410.8	1,351.5	**10,506.2**

El Dorado County Fleet Mix Emission Rates for Idling Vehicles

Eldorado County EMFAC Fleet Mix Average - 5 Miles Per Hour Emission Rates (grams/mile)

Year 2018		Year 2021		Year 2035	
Pollutants	**Emission Rate**	**Pollutants**	**Emission Rate**	**Pollutants**	**Emission Rate**
CO	3.7879568	CO	3.6332669	CO	1.9794982
CO2	1796.7130449	CO2	1703.4997856	CO2	1877.2494183
CH4	0.1461976	CH4	0.0858652	CH4	0.0294312
NOx	3.3151397	NOx	3.8284174	NOx	3.6644206
PM10	0.0602487	PM10	0.0694383	PM10	0.0221241
PM2.5	0.0574713	PM2.5	0.0662746	PM2.5	0.0210573
ROG	0.6169769	ROG	0.6018235	ROG	0.3639465

Eldorado County EMFAC Fleet Mix Average - Idling Emissions (grams/second)

[grams per mile * 5 miles per hour / 3600 seconds per hour]

Year 2018		Year 2021		Year 2035	
Pollutants	**Emission Rate**	**Pollutants**	**Emission Rate**	**Pollutants**	**Emission Rate**
CO	0.0052611	CO	0.0050462	CO	0.0027493
CO2	2.4954348	CO2	2.3659719	CO2	2.6072909
CH4	0.0002031	CH4	0.0001193	CH4	0.0000409
NOx	0.0046044	NOx	0.0053172	NOx	0.0050895
PM10	0.0000837	PM10	0.0000964	PM10	0.0000307
PM2.5	0.0000798	PM2.5	0.0000920	PM2.5	0.0000292
ROG	0.0008569	ROG	0.0008359	ROG	0.0005055

El Dorado County Fleet Mix 2018 Emission Rates for 5 Miles Per Hour

EMFAC2014 (v1.0.7) Emission Rates	Season: Annual
Region Type: County	Vehicle Classification: EMFAC2011 Categories
Region: El Dorado	Vehicle Model Year: Aggregated
Calendar Year: 2018	Speed: 5 Miles per hour

Vehicel Class	Fuel	VMT	ROG		CO		NOx		CO2		PM10		PM2.5		CH4	
		(miles/day)	Rate (g/mile)	Total (g)	Rate (g/mile)	Total (g)	Rate (g/mile)	Total (g)	Rate (g/mile)	Total (g)	Rate (g/mile)	Total (g)	Rate (g/mile)	Total (g)	Rate (g/mile)	Total (g)
All Other Buses	Dsl	20.049	0.6272	12.5755	1.7216	34.5155	11.6965	234.5037	2319.2295	46498.2618	0.0503	1.0093	0.0482	0.9656	0.0291	0.5841
LHD1	Dsl	0.705	0.8390	0.5914	3.4886	2.4592	4.1279	2.9100	1297.3669	914.5681	0.1489	0.1050	0.1425	0.1004	0.0390	0.0275
LHD2	Dsl	1771.115	0.7807	1382.6502	3.3150	5871.2743	3.0208	5350.1415	1360.2358	2409134.7405	0.1063	188.3182	0.1017	180.1716	0.0363	64.2215
MH	Dsl	4.847	1.2986	6.2944	2.6644	12.9149	17.7572	86.0731	2112.6680	10240.5523	0.5105	2.4746	0.4884	2.3675	0.0603	0.2924
Motor Coach	Dsl	53.360	1.2481	66.5967	4.0749	217.4401	18.8215	1004.3226	3373.7730	180025.5206	0.0621	3.3130	0.0594	3.1697	0.0580	3.0932
SBUS	Dsl	21.075	0.8346	17.5893	1.3212	27.8438	19.4236	409.3500	2342.8321	49374.8530	0.1626	3.4261	0.1555	3.2779	0.0388	0.8170
T6 Ag	Dsl	4.592	7.0158	32.2142	7.8910	36.2327	22.3984	102.8460	2392.9905	10987.7949	1.6877	7.7494	1.6147	7.4142	0.3259	1.4963
T6 CAIRP Heavy	Dsl	26.264	0.4571	12.0052	1.4648	38.4718	9.2797	243.7237	2249.6804	59085.8834	0.0367	0.9637	0.0351	0.9220	0.0212	0.5576
T6 CAIRP Small	Dsl	6.535	1.1650	7.6136	2.2423	14.6542	9.9780	65.2085	2240.2003	14640.2598	0.1357	0.8869	0.1298	0.8486	0.0541	0.3536
T6 Instate Construction Heavy	Dsl	1.558	0.7253	1.1299	1.6670	2.5969	12.0877	18.8305	2294.5330	3574.4700	0.0893	0.1392	0.0855	0.1331	0.0337	0.0525
T6 Instate Construction Small	Dsl	4.782	1.8937	9.0559	3.0968	14.8091	11.9296	57.0486	2277.4018	10890.8172	0.2623	1.2541	0.2509	1.1999	0.0880	0.4206
T6 Instate Heavy	Dsl	0.279	0.6890	0.1922	1.8126	0.5055	10.8656	3.0303	2300.3699	641.5469	0.0692	0.0193	0.0662	0.0185	0.0320	0.0089
T6 Instate Small	Dsl	31.524	2.8768	90.6875	4.1845	131.9112	14.7773	465.8368	2311.6883	72873.2793	0.4467	14.0810	0.4274	13.4718	0.1336	4.2122
T6 OOS Heavy	Dsl	99.647	0.4583	45.6638	1.4584	145.3286	9.4299	939.6601	2252.7948	224483.9630	0.0373	3.7120	0.0356	3.5514	0.0213	2.1210
T6 OOS Small	Dsl	220.787	1.1650	257.2197	2.2423	495.0793	9.9780	2203.0102	2240.2003	494608.1855	0.1357	29.9641	0.1298	28.6678	0.0541	11.9472
T6 Public	Dsl	0.893	0.3123	0.2788	0.9213	0.8223	9.6779	8.6383	2261.6149	2018.6552	0.0380	0.0339	0.0364	0.0325	0.0145	0.0129
T6 Utility	Dsl	2.740	0.1801	0.4934	0.9478	2.5970	5.2533	14.3940	2276.2900	6236.9826	0.0039	0.0106	0.0037	0.0101	0.0084	0.0229
T7 Ag	Dsl	0.977	13.0779	12.7800	19.2199	18.7821	39.2470	38.3529	3636.0602	3553.2286	2.9026	2.8365	2.7770	2.7138	0.6074	0.5936
T7 CAIRP	Dsl	36.176	1.2620	45.6551	4.7071	170.2833	21.1300	764.3940	3209.1500	116093.4534	0.0623	2.2535	0.0596	2.1560	0.0586	2.1206
T7 CAIRP Construction	Dsl	0.052	1.2549	0.0654	4.4040	0.2294	21.2329	1.1059	3235.2267	168.5094	0.0568	0.0030	0.0543	0.0028	0.0583	0.0030
T7 NNOOS	Dsl	2.553	0.7314	1.8676	3.4502	8.8094	17.2304	43.9941	2974.8233	7595.5749	0.0236	0.0601	0.0225	0.0575	0.0340	0.0867
T7 NOOS	Dsl	0.089	1.2504	0.1115	4.6723	0.4167	21.2659	1.8967	3212.7925	286.5549	0.0622	0.0055	0.0595	0.0053	0.0581	0.0052
T7 POAK	Dsl	3.166	1.4831	4.6955	4.9975	15.8225	19.8790	62.9385	3330.6045	10544.9534	0.0576	0.1823	0.0551	0.1744	0.0689	0.2181
T7 Public	Dsl	1.009	0.7146	0.7207	1.9653	1.9821	22.3110	22.5017	3349.5157	3378.1448	0.1312	0.1324	0.1256	0.1266	0.0332	0.0335
T7 Single	Dsl	0.145	2.4985	0.3621	4.8413	0.7017	25.8719	3.7496	3525.7894	510.9933	0.4126	0.0598	0.3948	0.0572	0.1160	0.0168
T7 Single Construction	Dsl	13.213	1.2632	16.6902	3.3650	44.4610	18.5268	244.7930	3273.3666	43250.6124	0.1336	1.7653	0.1278	1.6889	0.0587	0.7752
T7 SWCV	Dsl	43.904	0.1231	5.4040	0.3544	15.5594	16.3437	717.5528	7340.3797	322271.7644	0.0204	0.8936	0.0195	0.8549	0.0057	0.2510
T7 Tractor	Dsl	0.231	1.8207	0.4201	5.3693	1.2388	23.0580	5.3201	3368.7820	777.2709	0.1330	0.0307	0.1272	0.0294	0.0846	0.0195
T7 Tractor Construction	Dsl	70.714	1.6749	118.4366	4.5930	324.7925	22.5337	1593.4569	3302.1974	233512.8586	0.1325	9.3707	0.1268	8.9653	0.0778	5.5011
T7 Utility	Dsl	0.802	0.3653	0.2930	2.1570	1.7299	8.1773	6.5581	3145.7105	2522.8400	0.0059	0.0047	0.0056	0.0045	0.0170	0.0136
UBUS	Dsl	3.896	0.7576	2.9516	11.1035	43.2615	11.2516	43.8383	3716.2391	14479.1989	0.2348	0.9148	0.2246	0.8753	0.0352	0.1371
LHD1	Gas	463.240	0.4699	217.6807	5.4121	2507.1047	0.8527	395.0241	1403.3685	650096.2694	0.0123	5.6990	0.0113	5.2443	0.1810	83.8612
LHD2	Gas	1693.187	0.2189	370.6769	2.3835	4035.6594	0.4785	810.2373	1481.5368	2508519.2487	0.0076	12.8505	0.0070	11.8156	0.0885	149.7834
MH	Gas	303.296	0.8495	257.6634	13.1952	4002.0597	1.2547	380.5307	3941.2857	1195374.4507	0.0133	4.0263	0.0122	3.7126	0.2933	88.9580
OBUS	Gas	17.900	0.6737	12.0599	5.4027	96.7074	1.3569	24.2891	3861.3002	69116.9738	0.0059	0.1057	0.0054	0.0972	0.2722	4.8732
SBUS	Gas	5.865	1.9152	11.2332	14.8755	87.2499	3.2763	19.2164	1834.9404	10762.5278	0.0272	0.1593	0.0250	0.1465	0.7739	4.5391
T6TS	Gas	34.230	1.1795	40.3729	10.8283	370.6467	2.0795	71.1813	3853.4548	131902.0001	0.0104	0.3545	0.0095	0.3264	0.4558	15.6023
T7IS	Gas	0.172	3.7220	0.6403	71.7662	12.3455	6.4128	1.1032	4324.7691	743.9660	0.0040	0.0007	0.0037	0.0006	1.5040	0.2587
UBUS	Gas	0.005	2.3781	0.0128	15.2853	0.0822	1.9777	0.0106	3901.4722	20.9847	0.0074	0.0000	0.0068	0.0000	0.9610	0.0052
Sum		4965.575		3063.6450		18809.3824		16461.5734		8921712.7129		299.1692		285.3779		447.8975
Average emissions per vehicle (g/mile)				0.6170		3.7880		3.3151		1796.7130		0.0602		0.0575		0.1462
Average emissions per vehicle (g/second)			**ROG**	**0.000857**	**CO**	**0.005261**	**NOx**	**0.004604**	**CO2**	**2.495435**	**PM10**	**0.000084**	**PM2.5**	**0.000080**	**CH4**	**0.000203**

El Dorado County Fleet Mix 2021 Emission Rates for 5 Miles Per Hour

EMFAC2014 (v1.0.7) Emission Rates	Season: Annual
Region Type: County	Vehicle Classification: EMFAC2011 Categories
Region: El Dorado	Vehicle Model Year: Aggregated
Calendar Year: 2021	Speed: 5 Miles per hour

Vehicel Class	Fuel	VMT	ROG		CO		NOx		CO2		PM10		PM2.5		CH4	
		(miles/day)	Rate (g/mile)	Total (g)	Rate (g/mile)	Total (g)	Rate (g/mile)	Total (g)	Rate (g/mile)	Total (g)	Rate (g/mile)	Total (g)	Rate (g/mile)	Total (g)	Rate (g/mile)	Total (g)
All Other Buses	Dsl	22.685	0.4868	11.0440	1.6698	37.8790	10.3618	235.0569	2262.2024	51318.1699	0.0236	0.5363	0.0226	0.5131	0.0226	0.5130
LHD1	Dsl	1385.402	0.8512	1179.2380	3.6283	5026.5913	3.7919	5253.2997	1284.7873	1779947.3000	0.1404	194.5435	0.1343	186.1277	0.0395	54.7734
LHD2	Dsl	383.428	0.7847	300.8900	3.4491	1322.4870	2.4995	958.3678	1333.2739	511214.7375	0.0924	35.4473	0.0884	33.9138	0.0364	13.9758
MH	Dsl	14.135	1.2856	18.1723	2.6960	38.1099	16.9594	239.7295	2105.2378	29758.5680	0.4612	6.5190	0.4412	6.2370	0.0597	0.8441
Motor Coach	Dsl	6.531	1.0138	6.6210	3.9509	25.8016	17.8974	116.8800	3254.5814	21254.2031	0.0370	0.2417	0.0354	0.2312	0.0471	0.3075
SBUS	Dsl	26.022	0.7456	19.4029	1.3497	35.1207	17.0719	444.2422	2302.0808	59904.2653	0.1273	3.3122	0.1218	3.1689	0.0346	0.9012
T6 Ag	Dsl	6.535	3.8366	25.0732	4.8771	31.8732	16.0942	105.1798	2346.7437	15336.5473	0.8893	5.8118	0.8508	5.5604	0.1782	1.1646
T6 CAIRP Heavy	Dsl	1.735	0.3117	0.5407	1.3326	2.3115	9.1857	15.9327	2190.9916	3800.2784	0.0139	0.0241	0.0133	0.0231	0.0145	0.0251
T6 CAIRP Small	Dsl	5.324	0.2491	1.3266	1.1660	6.2083	8.4366	44.9208	2169.4767	11551.3609	0.0088	0.0471	0.0085	0.0451	0.0116	0.0616
T6 Instate Construction Heavy	Dsl	0.421	0.4986	0.2101	1.5393	0.6486	11.0882	4.6723	2255.5049	950.4144	0.0373	0.0157	0.0357	0.0151	0.0232	0.0098
T6 Instate Construction Small	Dsl	47.630	0.2809	13.3769	1.2794	60.9393	8.8071	419.4784	2199.9513	104782.9485	0.0092	0.4400	0.0088	0.4210	0.0130	0.6213
T6 Instate Heavy	Dsl	107.143	0.4992	53.4816	1.7345	185.8354	10.7413	1150.8483	2282.2230	244523.8118	0.0307	3.2903	0.0294	3.1480	0.0232	2.4841
T6 Instate Small	Dsl	245.909	0.3721	91.5053	1.3723	337.4571	10.2857	2529.3444	2233.1859	549160.5836	0.0250	6.1590	0.0240	5.8926	0.0173	4.2502
T6 OOS Heavy	Dsl	0.994	0.3130	0.3111	1.3352	1.3269	9.2317	9.1745	2193.5150	2179.9244	0.0140	0.0139	0.0134	0.0133	0.0145	0.0144
T6 OOS Small	Dsl	3.051	0.2491	0.7601	1.1660	3.5571	8.4366	25.7379	2169.4767	6618.4957	0.0088	0.0270	0.0085	0.0258	0.0116	0.0353
T6 Public	Dsl	41.822	0.2668	11.1582	0.9470	39.6055	8.3416	348.8618	2212.0576	92512.7766	0.0236	0.9851	0.0225	0.9425	0.0124	0.5183
T6 Utility	Dsl	1.009	0.1827	0.1843	0.9618	0.9701	5.7071	5.7565	2222.8930	2242.1663	0.0040	0.0040	0.0038	0.0038	0.0085	0.0086
T7 Ag	Dsl	0.052	7.9756	0.4154	13.1168	0.6832	29.4166	1.5322	3454.7504	179.9435	1.7284	0.0900	1.6536	0.0861	0.3704	0.0193
T7 CAIRP	Dsl	2.843	0.9267	2.6345	4.2794	12.1657	21.2754	60.4830	3055.5950	8686.6559	0.0314	0.0892	0.0300	0.0853	0.0430	0.1224
T7 CAIRP Construction	Dsl	0.135	0.9295	0.1253	4.0400	0.5444	20.9237	2.8197	3047.7474	410.7169	0.0321	0.0043	0.0307	0.0041	0.0432	0.0058
T7 NNOOS	Dsl	3.525	0.5782	2.0383	3.1878	11.2374	17.1593	60.4894	2848.9775	10043.1042	0.0129	0.0456	0.0124	0.0436	0.0269	0.0947
T7 NOOS	Dsl	1.123	0.9243	1.0380	4.2785	4.8045	21.3369	23.9599	3058.7144	3434.7294	0.0312	0.0351	0.0299	0.0335	0.0429	0.0482
T7 POAK	Dsl	0.169	1.4106	0.2390	5.1592	0.8741	21.6856	3.6740	3273.2814	554.5615	0.0520	0.0088	0.0497	0.0084	0.0655	0.0111
T7 Public	Dsl	15.080	0.6249	9.4233	2.0348	30.6848	18.7417	282.6187	3205.9003	48343.9506	0.0914	1.3781	0.0874	1.3185	0.0290	0.4377
T7 Single	Dsl	47.770	1.2583	60.1096	3.4833	166.3971	22.0642	1054.0148	3417.2660	163243.7515	0.1196	5.7153	0.1145	5.4680	0.0584	2.7919
T7 Single Construction	Dsl	0.349	0.7953	0.2773	3.0249	1.0545	15.9955	5.5762	3137.5688	1093.7832	0.0408	0.0142	0.0391	0.0136	0.0369	0.0129
T7 SWCV	Dsl	77.590	0.1151	8.9271	0.3333	25.8607	12.1319	941.3085	7077.3876	549133.1725	0.0178	1.3846	0.0171	1.3247	0.0053	0.4146
T7 Tractor	Dsl	0.805	1.4232	1.1452	5.2265	4.2054	23.2820	18.7335	3292.8314	2649.5325	0.0682	0.0549	0.0653	0.0525	0.0661	0.0532
T7 Tractor Construction	Dsl	0.260	1.1239	0.2921	4.2067	1.0934	21.3636	5.5527	3160.3852	821.4265	0.0507	0.0132	0.0486	0.0126	0.0522	0.0136
T7 Utility	Dsl	0.006	0.3731	0.0021	2.2028	0.0122	8.7893	0.0488	3081.7560	17.1092	0.0061	0.0000	0.0058	0.0000	0.0173	0.0001
UBUS	Dsl	36.054	0.6059	21.8442	11.0418	398.0993	9.7921	353.0431	3664.9780	132136.6813	0.1812	6.5315	0.1733	6.2489	0.0281	1.0146
LHD1	Gas	1409.927	0.3738	527.0581	4.1715	5881.4734	0.7552	1064.8393	1395.1900	1967116.6930	0.0111	15.6619	0.0102	14.4005	0.1511	212.9740
LHD2	Gas	148.629	0.1352	20.0922	1.4006	208.1728	0.3310	49.1991	1451.9559	215802.9770	0.0070	1.0414	0.0064	0.9575	0.0546	8.1189
MH	Gas	41.078	0.6157	25.2931	9.0637	372.3193	1.0679	43.8665	3917.7121	160932.1648	0.0112	0.4581	0.0103	0.4212	0.2488	10.2204
OBUS	Gas	21.149	0.4127	8.7290	3.2911	69.6045	0.8419	17.8062	3789.2419	80138.7452	0.0064	0.1353	0.0059	0.1244	0.1668	3.5272
SBUS	Gas	4.220	0.8522	3.5965	6.6813	28.1970	1.8007	7.5995	1797.9421	7587.8126	0.0149	0.0629	0.0137	0.0578	0.3444	1.4533
T6TS	Gas	42.427	0.6447	27.3534	5.3763	228.0986	1.2472	52.9148	3787.9414	160710.1215	0.0084	0.3553	0.0077	0.3267	0.2605	11.0530
T7IS	Gas	3.934	3.0158	11.8640	62.7735	246.9500	5.9795	23.5232	4232.4874	16650.5521	0.0039	0.0155	0.0036	0.0142	1.2186	4.7940
UBUS	Gas	30.048	1.7975	54.0097	12.0823	363.0430	1.6073	48.2964	3851.2153	115719.6178	0.0074	0.2213	0.0068	0.2035	0.7263	21.8243
Sum		4186.948		2519.8035		15212.2980		16029.3830		7132464.3546		290.7346		277.4884		359.5133
Average emissions per vehicle (g/mile)				0.6018		3.6333		3.8284		1703.4998		0.0694		0.0663		0.0859
Average emissions per vehicle (g/second)			**ROG**	**0.000836**	**CO**	**0.005046**	**NOx**	**0.005317**	**CO2**	**2.365972**	**PM10**	**0.000096**	**PM2.5**	**0.000092**	**CH4**	**0.000119**

El Dorado County Fleet Mix 2035 Emission Rates for 5 Miles Per Hour

EMFAC2014 (v1.0.7) Emission Rates	Season: Annual
Region Type: County	Vehicle Classification: EMFAC2011 Categories
Region: El Dorado	Vehicle Model Year: Aggregated
Calendar Year: 2035	Speed: 5 Miles per hour

Vehicel Class	Fuel	VMT	ROG		CO		NOx		CO2		PM10		PM2.5		CH4	
		(miles/day)	Rate (g/mile)	Total (g)	Rate (g/mile)	Total (g)	Rate (g/mile)	Total (g)	Rate (g/mile)	Total (g)	Rate (g/mile)	Total (g)	Rate (g/mile)	Total (g)	Rate (g/mile)	Total (g)
All Other Buses	Dsl	29.246	0.2533	7.4086	1.3334	38.9966	10.6026	310.0826	2133.0000	62381.2784	0.0063	0.1840	0.0060	0.1761	0.0118	0.3441
LHD1	Dsl	590.608	0.8006	472.8372	3.6498	2155.6072	1.5953	942.1888	1187.7544	701496.7918	0.0601	35.4952	0.0575	33.9596	0.0372	21.9624
LHD2	Dsl	230.776	0.7503	173.1424	3.3706	777.8495	0.4814	111.1067	1205.3876	278174.0969	0.0243	5.6074	0.0232	5.3648	0.0348	8.0421
MH	Dsl	5.344	1.0038	5.3647	2.4614	13.1542	12.7500	68.1372	2036.5095	10883.3203	0.1924	1.0283	0.1841	0.9838	0.0466	0.2492
Motor Coach	Dsl	8.058	0.5049	4.0680	2.9811	24.0205	17.0874	137.6844	3018.7292	24323.9111	0.0095	0.0762	0.0091	0.0729	0.0234	0.1889
SBUS	Dsl	25.067	0.2829	7.0912	1.2532	31.4145	9.2073	230.8016	2142.1244	53696.9663	0.0101	0.2522	0.0096	0.2413	0.0131	0.3294
T6 Ag	Dsl	6.535	0.2909	1.9013	1.5314	10.0078	11.5958	75.7811	2175.3490	14216.4406	0.0074	0.0485	0.0071	0.0464	0.0135	0.0883
T6 CAIRP Heavy	Dsl	2.140	0.2280	0.4879	1.1960	2.5595	9.2844	19.8695	2092.4734	4478.1044	0.0056	0.0119	0.0053	0.0114	0.0106	0.0227
T6 CAIRP Small	Dsl	6.570	0.2154	1.4151	1.1328	7.4418	8.5831	56.3874	2109.7586	13860.2314	0.0051	0.0334	0.0049	0.0319	0.0100	0.0657
T6 Instate Construction Heavy	Dsl	0.417	0.2596	0.1083	1.3652	0.5698	10.8519	4.5290	2130.4128	889.1265	0.0065	0.0027	0.0062	0.0026	0.0121	0.0050
T6 Instate Construction Small	Dsl	47.175	0.2372	11.1911	1.2476	58.8537	9.7897	461.8239	2119.4453	99983.9489	0.0058	0.2736	0.0055	0.2617	0.0110	0.5198
T6 Instate Heavy	Dsl	122.541	0.2953	36.1838	1.5266	187.0772	11.7875	1444.4590	2140.0863	262249.3235	0.0081	0.9967	0.0078	0.9536	0.0137	1.6806
T6 Instate Small	Dsl	288.729	0.2789	80.5287	1.3957	402.9690	11.2152	3238.1553	2143.9666	619025.0699	0.0086	2.4796	0.0082	2.3723	0.0130	3.7403
T6 OOS Heavy	Dsl	1.226	0.2281	0.2797	1.1967	1.4673	9.2891	11.3903	2092.5446	2565.8728	0.0056	0.0068	0.0053	0.0065	0.0106	0.0130
T6 OOS Small	Dsl	3.764	0.2154	0.8108	1.1328	4.2639	8.5831	32.3079	2109.7586	7941.3917	0.0051	0.0191	0.0049	0.0183	0.0100	0.0377
T6 Public	Dsl	64.964	0.1976	12.8360	0.9916	64.4160	7.0172	455.8597	2124.4001	138008.5893	0.0057	0.3690	0.0054	0.3531	0.0092	0.5962
T6 Utility	Dsl	1.151	0.1779	0.2048	0.9366	1.0780	6.3013	7.2527	2111.2457	2430.0051	0.0038	0.0044	0.0037	0.0042	0.0083	0.0095
T7 Ag	Dsl	0.052	0.6817	0.0355	4.0251	0.2097	20.7405	1.0803	3010.3151	156.7947	0.0135	0.0007	0.0129	0.0007	0.0317	0.0016
T7 CAIRP	Dsl	3.508	0.5718	2.0055	3.3536	11.7633	20.1370	70.6336	2769.0456	9712.8459	0.0115	0.0403	0.0110	0.0385	0.0266	0.0932
T7 CAIRP Construction	Dsl	0.133	0.5820	0.0777	3.4347	0.4584	20.8735	2.7861	2790.1721	372.4133	0.0114	0.0015	0.0109	0.0015	0.0270	0.0036
T7 NNOOS	Dsl	4.349	0.4971	2.1623	2.9354	12.7677	16.7915	73.0343	2760.4993	12006.7688	0.0093	0.0403	0.0089	0.0386	0.0231	0.1004
T7 NOOS	Dsl	1.386	0.5720	0.7925	3.3552	4.6486	20.1423	27.9076	2769.2776	3836.8927	0.0115	0.0159	0.0110	0.0152	0.0266	0.0368
T7 POAK	Dsl	0.317	0.6236	0.1975	3.6824	1.1664	23.0210	7.2921	2784.9656	882.1617	0.0125	0.0040	0.0119	0.0038	0.0290	0.0092
T7 Public	Dsl	23.633	0.4333	10.2396	2.2346	52.8110	12.2881	290.4046	2874.8333	67941.0799	0.0177	0.4192	0.0170	0.4011	0.0201	0.4756
T7 Single	Dsl	45.101	0.6125	27.6266	3.2470	146.4455	17.5162	790.0007	2948.8552	132996.9461	0.0188	0.8477	0.0180	0.8110	0.0285	1.2832
T7 Single Construction	Dsl	0.345	0.4830	0.1668	2.8424	0.9814	15.3353	5.2949	2832.2566	977.9150	0.0091	0.0031	0.0087	0.0030	0.0224	0.0077
T7 SWCV	Dsl	100.210	0.0815	8.1685	0.2450	24.5545	3.5526	356.0067	6490.9112	650454.2319	0.0130	1.3017	0.0124	1.2454	0.0038	0.3794
T7 Tractor	Dsl	0.587	0.6980	0.4100	4.0010	2.3505	23.0924	13.5659	2869.3045	1685.6067	0.0158	0.0093	0.0151	0.0089	0.0324	0.0190
T7 Tractor Construction	Dsl	0.257	0.6068	0.1562	3.5799	0.9216	21.5943	5.5590	2815.7420	724.8566	0.0120	0.0031	0.0115	0.0030	0.0282	0.0073
T7 Utility	Dsl	0.006	0.3680	0.0023	2.1732	0.0138	10.2262	0.0648	2809.6282	17.7991	0.0060	0.0000	0.0057	0.0000	0.0171	0.0001
UBUS	Dsl	30.873	0.1990	6.1445	10.6921	330.0939	5.4535	168.3657	3470.9209	107156.8540	0.0451	1.3936	0.0432	1.3333	0.0092	0.2854
LHD1	Gas	716.011	0.0912	65.2807	0.7184	514.4142	0.3286	235.2857	1333.6666	954920.1844	0.0078	5.5806	0.0072	5.1312	0.0368	26.3787
LHD2	Gas	142.785	0.0243	3.4709	0.2279	32.5405	0.0736	10.5136	1375.6856	196427.3322	0.0076	1.0850	0.0070	0.9976	0.0098	1.4025
MH	Gas	17.912	0.1509	2.7029	1.0416	18.6585	0.4201	7.5242	3737.6345	66950.2587	0.0076	0.1368	0.0070	0.1258	0.0610	1.0922
OBUS	Gas	24.251	0.0793	1.9234	0.4793	11.6223	0.1986	4.8154	3665.7224	88897.3247	0.0077	0.1864	0.0071	0.1714	0.0320	0.7772
SBUS	Gas	7.291	0.0566	0.4128	0.3142	2.2910	0.1498	1.0921	1741.5434	12698.1295	0.0074	0.0538	0.0068	0.0494	0.0229	0.1668
T6TS	Gas	69.959	0.0816	5.7083	0.5252	36.7396	0.2090	14.6218	3669.1786	256691.5621	0.0076	0.5326	0.0070	0.4897	0.0330	2.3066
T7IS	Gas	4.106	2.2720	9.3286	58.5568	240.4224	5.8466	24.0051	3828.9003	15720.6965	0.0073	0.0301	0.0067	0.0277	0.9181	3.7695
UBUS	Gas	29.935	0.1420	4.2494	1.0869	32.5368	0.6635	19.8627	3695.2880	110617.1957	0.0072	0.2160	0.0066	0.1986	0.0574	1.7171
Sum		2657.319		967.1220		5260.1580		9737.5340		4988450.3189		58.7907		55.9559		78.2081
Average emissions per vehicle (g/mile)				0.3639		1.9795		3.6644		1877.2494		0.0221		0.0211		0.0294
Average emissions per vehicle (g/second)			**ROG**	**0.000505**	**CO**	**0.002749**	**NOx**	**0.005089**	**CO2**	**2.607291**	**PM10**	**0.000031**	**PM2.5**	**0.000029**	**CH4**	**0.000041**

EL DORADO COUNTY AIR QUALITY MANAGEMENT DISTRICT

RULE 223-1 FUGITIVE DUST - CONSTRUCTION, BULK MATERIAL HANDLING, BLASTING, OTHER EARTHMOVING ACTIVITIES AND CARRYOUT AND TRACKOUT PREVENTION

(Adopted 7/19/2005, Amended 10/18/2005)

INDEX **PAGE**

LIST OF TABLES

223-1.1 GENERAL

A. **PURPOSE:** The purpose of this rule is to limit fugitive dust emissions from construction, and construction related activities.

B. **APPLICABILITY:** This rule applies to any construction or construction related activities, including, but not limited to, land clearing, grubbing, scraping, travel on site, and travel on access roads. This rule also applies to all sites that are subject to this rule where carryout or trackout has occurred or may occur on paved public roads or the paved shoulders of a paved public road. This rule also applies to the construction of new landfill disposal sites or modification to existing landfill disposal sites prior to commencement of landfilling activities.

C. **DISCOVERY OF NATURALLY OCCURRING ASBESTOS**: If owner/operator discovers any naturally occurring asbestos, serpentine, or ultramafic rock after the project has commenced, then:

1. If naturally-occurring asbestos, serpentine, or ultramafic rock is discovered by the owner/operator, a Professional Geologist, or the Air Pollution Control Officer in the area to be disturbed after the start of any construction or construction related activity, the owner/operator must report the discovery to the EDCAQMD no later than the next business day; and

2. The project must comply with applicable provisions of Rule 223-2 and the State of California Asbestos Airborne Toxic Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining Operations (CCR Title 17, Section 93105.

223-1.2 EXEMPTIONS

A. **GENERAL:** Exemptions as defined in EDCAQMD Rule 223.2.A through F shall apply to this rule.

B. **BULK MATERIAL HANDLING:** Activities listed in Rule 223-1.2.B are exempt from Rule 223-1.

1. Any outdoor storage, handling or transport of bulk materials which would be damaged by wetting with water or by the application of chemical/organic dust suppressants, provided owners/operators demonstrate to the satisfaction of the Air Pollution Control Officer that none of the control measures specified in Table 2 of this Rule can be implemented.

2. Transport of a bulk material in an outdoor area for a distance of twelve feet or less with the use of chute or conveyor device.

3. Outdoor storage of any bulk material at a single site where no material is actively being added or removed at the end of the workday or overnight and where the total material stored is less than 100 cubic yards.

223-1.3 DEFINITIONS

The definitions of terms in EDCAQMD Rule 223 (General Requirements) shall apply to this rule.

223-1.4 GENERAL REQUIREMENTS

A. Visible emissions shall not exceed the shade designated as No. 0 on the Ringelmann Chart, or 0% opacity as determined in accordance with US EPA Method 9, at 50 feet from the point-of-origin and at the property line. Visible emissions shall not exceed the shade designated as No. 1 on the Ringelmann Chart, or 20% opacity as determined in accordance with US EPA Method 9 at the point-of-origin. Applicable Best Management Practices included in Table 1 through 4 of this Rule or similar effective measures shall be utilized to comply with fugitive dust standards of this rule from each fugitive dust source type within the active operation.

B. Vehicle Speed Limitations and Posting of Speed Limit Signs

1. An owner/operator shall limit the speed of vehicles traveling within construction sites if necessary to prevent visible dust emissions in excess of the standards in Section 223-1.4 A.

C. When sustained wind speeds result in visible dust emissions in excess of the standards in Section 223-1.4 A, despite the application of dust mitigation measures, grading and earthmoving operations except water trucks shall be suspended.

223-1.5 ADMINISTRATIVE REQUIREMENTS

A. Fugitive Dust Control Plan

1. An owner/operator shall submit a Fugitive Dust Control Plan to the Air Pollution Control Officer prior to the start of any construction activity for which a grading permit was issued by El Dorado County or an incorporated city within El Dorado County. An updated Fugitive Dust Control Plan must be submitted if the project is significantly modified, a new grading permit is issued, the owner/operator changes, or at the request of the Air Pollution Control Officer.

   Construction activities shall not commence until the Air Pollution Control Officer has approved or conditionally approved the Fugitive Dust Control Plan. An owner/operator shall provide written notification to the Air Pollution Control Officer at least 10 days prior to the initial commencement of earthmoving activities via fax or mail. The requirement to submit a Fugitive Dust Control Plan shall apply to all such activities conducted for residential and non-residential (e.g., commercial, industrial, or institutional) purposes or conducted by any governmental entity.

2. An owner/operator may submit one Fugitive Dust Plan covering multiple construction stages within same project, provided the plan includes description of activities and control measures for all stages of the project. The Fugitive Dust Control Plan shall specify the expected start and final completion date of each project.

3. The Fugitive Dust Control Plan shall describe all fugitive dust control measures to be implemented before, during and after any dust generating activity.

4. A Fugitive Dust Control Plan shall contain all the information described in Section 223-1.5.B. The Air Pollution Control Officer shall approve, disapprove or conditionally approve the Fugitive Dust Control Plan within 30 days of plan submittal.

5. An owner/operator shall retain a copy of an approved Fugitive Dust Control Plan at the project site. The approved Fugitive Dust Control Plan shall remain valid until the termination of all dust

generating activities. Failure to comply with the provisions of an approved Fugitive Dust Control Plan is deemed to be a violation of this rule. Regardless of whether an approved Fugitive Dust Control Plan is in place or not, or even when the owner/operator responsible for the plan is complying with an approved Fugitive Dust Control Plan, the owner/operator shall comply with all requirements of Rules 223 and 223-1 at all times.

B. A Fugitive Dust Control Plan shall contain all of the following information:

1. Name(s), address(es), and phone number(s) of person(s) and owner(s)/operator(s) responsible for the preparation, submittal, and implementation of the Fugitive Dust Control Plan and responsible for the dust generating operation and the application of dust control measures.

2. A plot plan which shows the type and location of each project.

3. The total area of land surface to be disturbed, and total area in acres of the entire project site.:

4. The expected start and completion dates of dust generating and soil disturbance activities to be performed on the site.

5. The actual and potential sources of fugitive dust emissions on the site and the location of bulk material handling and storage areas, paved and unpaved roads; entrances and exits where carryout/trackout may occur; and traffic areas.

6. Best Management Practice (Rule 223-1, Table 1 through 4) or other effective measures for:
   a. Construction
   b. Bulk Material Handling
   c. Carryout and Trackout Management
   d. Blasting Activities

7. Large Operations must include Dust Control Measures (Rule 223-1, Table 5 and 6).

8. If chemical dust suppressants are to be applied, the following information must be included: product specifications; manufacturer's usage instructions (method, frequency, and intensity of application); type, number, and capacity of application equipment; and information on environmental impacts and approvals or certifications related to appropriate and safe use for ground application.

9. Specific surface treatment(s) and/or control measures utilized to control material carryout, trackout, and sedimentation where unpaved and/or access points join paved roads.

223-1.6 REQUIREMENTS FOR TRACKOUT MANAGEMENT

A. An owner/operator shall prevent or cleanup carryout and trackout as specified in Section 223-1.6.A. The use of blower devices, or dry rotary brushes or brooms, for removal of carryout and trackout on public roads is expressly prohibited. The removal of carryout and trackout from paved public roads does not exempt an owner/operator from obtaining state or local agency permits which may be required for the cleanup of mud and dirt on paved public roads.

1. Owners/operators shall prevent carryout and trackout, or immediately remove carryout and trackout when it extends 50 feet or more from the nearest unpaved surface exit point of a site and at the minimum remove all other visible carryout and trackout at the end of each workday.

2. Cleanup of carryout and trackout shall be accomplished by:
   a. Manually sweeping and picking-up; or
   b. Operating a rotary brush or broom accompanied or preceded by sufficient wetting; or
   c. Operating a PM10-efficient street sweeper.
   d. Flushing with water, if curbs or gutters are not present, and where the use of water will not result in a source of trackout material or result in adverse impacts on storm water drainage systems or violate any National Pollutant Discharge Elimination System permit program.

B. An owner/operator of any site with 150 or more vehicle trips per day, or 20 or more vehicle trips per day by vehicles with three or more axles shall in addition to the requirements in Section 223-1.6.A, take the following preventative actions for carryout and trackout:

1. Installing and maintaining a trackout control device (grizzlies, gravel pads or paved surfaces) designed and maintained to control trackout at all access points to paved public roads; or

2. Utilizing a carryout and trackout prevention procedure which has been demonstrated to the satisfaction of the Air Pollution Control Officer as achieving an equivalent or greater level of control.

C. Control for disturbed surface area and storage piles shall comply with all applicable requirements of this Rule.

223-1.7. ADDITIONAL REQUIREMENTS FOR LARGE OPERATIONS

A. Any person who conducts or authorizes the conducting of a large operation subject to this Rule shall implement the applicable actions specified in Table 5 of this Rule at all times and shall implement the applicable actions specified in Table 6 of this Rule when the applicable performance standards can not be met through use of Table 5 actions; and shall:

1. Submit a Large Operation Notification to the Air Pollution Control Officer within 7 days of qualifying as a large operation;

2. Maintain daily records to document the specific dust control actions taken, retain such records for a period of not less than two years; and make such records available to the Air Pollution Control Officer upon request;

3. Identify a dust control supervisor that:
   a. is employed by or contracted with the property owner or developer;
   b. is on the site or available on-site within 30 minutes during working hours;
   c. has the authority to expeditiously employ sufficient dust mitigation measures to ensure compliance with all Rule requirements;

223-1.8 AIR MONITORING

Ambient air monitoring shall be conducted at the request of the Air Pollution Control Officer.

223-1.9 RECORDKEEPING

A. Recordkeeping

1. A person or owner/operator shall maintain records and any other supporting documents to demonstrate compliance with the requirements of EDCAQMD Rules 223-1 only for those days that a control measure was implemented.

2. Such records shall include the type of control measure(s) used, the location and extent of coverage, and the date, amount, and frequency of application of dust suppressant, manufacturer's dust suppressant product information sheet that identifies the name of the dust suppressant and application instructions.

3. Except where noted otherwise in this rule, records shall be retained for two years following project completion that results in the termination of all dust generating activities. Records shall be made available to the Air Pollution Control Officer upon request.

223-1.10 TEST METHODS

A. Surface Crusting: "Measurement of the stability of surface crusting on horizontal surfaces" shall be as follows:

1. Where a visible crust exists, drop a steel ball with a diameter of 15.9 millimeters (0.625 inches) and a mass ranging from 16 to 17 grams from a distance of 30 centimeters (one foot) directly above at a 90 degree angle (perpendicular) to the ground surface. If blowsand (thin deposits of loose grains covering less than 50 percent of the surface that have not originated from the surface being tested) is present, clear the blowsand from the surfaces to be tested before dropping the steel ball.

2. A sufficient crust is determined to exist if, when the ball is dropped according to Section 223-1.10.A.1, the ball does not sink into the surface so that it is partially or fully surrounded by loose grains and, upon removing the ball, the surface on which it was dropped has not been pulverized so that loose grains are visible.

3. Drop the ball three times each in three representative test areas within a survey area measuring 1 foot by 1 foot that represents a random portion of the surface being evaluated. The test area shall be deemed to have passed if at least two of the three times the ball was dropped, the results met the criteria in Section 223-1.10.A.1. If all three test areas pass, the area shall be deemed to be "sufficiently crusted".

B. Adequately Wetted: Field determination of "adequately wetted" shall be as follows:

1. If the district-approved asbestos dust mitigation plan has specified a percent moisture content for specific materials the determination shall be as specified in the district-approved asbestos dust mitigation plan; or

2. If no moisture threshold is specified in a district-approved asbestos dust mitigation plan, a sample of at least one (1) quart in volume shall be taken from the top three (3) inches of a road, or bare area or from the surface of a stockpile. The sample shall be poured out from a height of four (4) feet onto a clean hard surface. The material shall be considered to be adequately wetted if there is no observable dust emitted when the material is dropped.

RULE 223-1 TABLE 1
BEST MANAGEMENT PRACTICE
(Construction and Other Earthmoving Activities)

Source Category	Control Measure	Guidance
Backfilling	A1 Stabilize backfill material when not actively handling; and A2 Stabilize backfill material during handling; and A3 Stabilize soil at completion of activity. .	□ Mix backfill soil with water prior to moving □ Dedicate water truck or high capacity hose to backfilling equipment. □ Empty loader bucket slowly so that no dust plumes are generated. □ Minimize drop height from loader bucket.
Clearing and grubbing	B1 Maintain stability of soil through pre-watering of site prior to clearing and grubbing; and B2 Stabilize soil during clearing and grubbing activities; and B3 Stabilize soil immediately after clearing and grubbing activities.	□ Maintain live perennial vegetation where possible. □ Apply water in sufficient quantity to prevent generation of dust plumes.
Clearing forms	C1 Use water spray to clear forms; or C2 Use sweeping and water spray to clear forms; or C3 Use vacuum system to clear forms.	□ Use of high pressure air to clear forms may cause exceedance of Rule requirements.
Crushing	D1 Stabilize surface soils prior to operation of support equipment; and D2 Stabilize material after crushing.	□ Follow permit conditions for crushing equipment. □ Pre-water material prior to loading into crusher. □ Monitor crusher emissions opacity. □ Apply water to crushed material to prevent dust plumes.
Cut and fill	E1 Pre-water soils prior to cut and fill activities; and E2 Stabilize soil during and after cut and fill activities	□ For large sites, pre-water with sprinklers or water trucks and allow time for penetration. □ Use water as necessary to keep dust down.
Demolition – mechanical/manual	F1 Stabilize wind erodible surfaces to reduce dust; and F2 Stabilize surface soil where support equipment and vehicles will operate; and F3 Stabilize loose soil and demolition debris.	□ Apply water in sufficient quantities to prevent the generation of visible dust plumes.

RULE 223-1 TABLE 1
BEST MANAGEMENT PRACTICE
(Construction and Other Earthmoving Activities)

Source Category	Control Measure	Guidance
Disturbed soil	G1 Stabilize disturbed soil throughout the construction site; and G2 Stabilize disturbed soil between structures	□ Limit vehicular traffic and disturbances on soils where possible. □ If interior block walls are planned, install as early as possible. □ Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes.
Earth-moving activities	H1 Pre-apply water; and H2 Re-apply water as necessary to maintain soils in a damp condition and to ensure that visible emissions do not exceed 50 feet or beyond property line in any direction; and H3 Stabilize soils once earth-moving activities are complete.	□ Grade each project phase separately, timed to coincide with construction phase. □ Upwind fencing can prevent material movement on site. □ Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes.
Importing/exporting of bulk materials	I1 Stabilize or adequately wet material while loading to reduce fugitive dust emissions; and I2 Maintain at least six inches of freeboard on haul vehicles traveling offsite; and I3 Stabilize or adequately wet material while transporting to reduce fugitive dust emissions; and I4 Stabilize material while unloading to reduce fugitive dust emissions.	□ Use tarps or other suitable enclosures on haul trucks. □ Comply with track-out prevention/ mitigation requirements. □ Provide water while loading and unloading to reduce visible dust plumes.
Landscaping	J1 Stabilize soils, materials and slopes.	□ Apply water to materials to stabilize. □ Maintain materials in a crusted condition. □ Maintain effective cover over materials □ Stabilize sloping surfaces using soil binders until vegetation or ground cover can effectively stabilize the slopes □ Hydroseed prior to rainy season.
Road shoulder maintenance	K1 Apply water to unpaved shoulders prior to clearing; and K2 Apply chemical dust suppressants and/or other appropriate material in accordance with DOT specifications to maintain a stabilized surface after completing road shoulder maintenance.	□ Installation of curbing and/or paving of road shoulders can reduce recurring maintenance costs. □ Use of chemical dust suppressants can inhibit vegetation growth and reduce future road shoulder maintenance costs.

RULE 223-1 TABLE 1
BEST MANAGEMENT PRACTICE
(Construction and Other Earthmoving Activities)

Source Category	Control Measure	Guidance
Screening	L1 Pre-water material prior to screening; and L2 Limit fugitive dust emissions to opacity and plume length standards; and L3 Stabilize material immediately after screening.	□ Dedicate water truck or high capacity hose to screening operation. □ Drop material through the screen slowly and minimize drop height. □ Install wind barrier with a porosity of no more than 50% upwind of screen to the height of the drop point.
Staging areas	M1 Stabilize staging areas during use; and M2 Stabilize staging area soils at project completion.	□ Limit size of staging area. □ Limit vehicle speeds to prevent visible dust in excess of standards per 223-1.4.A. □ Limit number and size of staging area entrances/exists.
Stockpiles/Bulk Material Handling	N1 Stabilize stockpiled materials. N2 Stockpiles within 100 yards of off-site occupied buildings must not be greater than eight feet in height; or must have a road bladed to the top to allow water truck access or must have an operational water irrigation system that is capable of complete stockpile coverage.	□ Add or remove material from the downwind portion of the storage pile. □ Maintain storage piles to avoid slides.
Traffic areas for construction activities	O1 Stabilize or maintain adequate moisture on all off-road traffic and parking areas; and O2 Stabilize or maintain adequate moisture on all haul routes; and O3 Direct construction traffic over established haul routes.	□ Apply gravel/paving to all haul routes as soon as possible to all future roadway areas. □ Barriers can be used to ensure vehicles are only used on established parking areas/haul routes.
Trenching	P1 Stabilize surface soils where trencher or excavator and support equipment will operate; and P2 Stabilize soils at the completion of trenching activities.	□ Pre-watering of soils prior to trenching is an effective preventive measure. □ Washing mud and soils from equipment at the conclusion of trenching activities can prevent crusting and drying of soil on equipment.
Truck loading	Q1 Pre-water material prior to loading; or Q2 Apply water as loader bucket is being emptied; and Q2 Freeboard must be 6 inches or greater (VCS 23114)	□ Empty loader bucket such that no visible dust plumes are created. □ Ensure that the loader bucket is close to the truck to minimize drop height while loading.

RULE 223-1 TABLE 1
BEST MANAGEMENT PRACTICE
(Construction and Other Earthmoving Activities)

Source Category	Control Measure	Guidance
Turf Overseeding	R1 Apply sufficient water immediately prior to conducting turf vacuuming activities to meet opacity and plume length standards; and R2 Cover haul vehicles prior to exiting the site.	Haul waste material immediately off-site.
Unpaved roads/parking lots	S1 Stabilize soils to meet the applicable performance standards(Surface crusting); and S2 Limit vehicular travel to established unpaved roads (haul routes) and unpaved parking lots.	Restricting vehicular access to established unpaved travel paths and parking lots can reduce stabilization requirements.
Vacant land	T1 In instances where vacant lots are 0.10 acre or larger and have a cumulative area of 500 square feet or more that are driven over and/or used by motor vehicles and/or off-road vehicles, prevent motor vehicle and/or off-road vehicle trespassing, parking and/or access.	Installing barriers, curbs, fences, gates, posts, signs, shrubs, trees or other effective control measures to prevent access to motor or off-road vehicles.

RULE 223-1 TABLE 2
BEST MANAGEMENT PRACTICE
(Bulk Material Handling)

Source Category	**Control Actions**
Handling Of Bulk Materials	A1 When handling bulk materials, apply water or chemical/organic stabilizers/ suppressants;
Storage of Bulk Materials	B1 When storing bulk materials, comply with the conditions for a stabilized surface; or B2 Cover bulk materials stored outdoors with tarps, plastic or other suitable material and anchor in such a manner that prevents the cover from being removed by wind action; or B3 Construct and maintain wind barriers with less than 50% porosity. If utilizing fences or wind barriers, apply water or chemical/organic stabilizers/suppressants; or B4 Utilize a 3-sided structure with a height at least equal to the height of the storage pile and with less than 50% porosity.
On-Site Transporting of Bulk Materials	C1 Limit vehicular speed while traveling on the work site; or C2 Load all haul trucks such that the freeboard is not less than six (6) inches when material is transported across any paved public access road; or C3 Apply water to the top of the load; or C4 Cover haul trucks with a tarp or other suitable cover.
Off-Site Transporting of Bulk Materials	D1 Clean the interior of the cargo compartment or cover the cargo compartment before the empty truck leaves the site; and D2 Prevent spillage or loss of bulk material from holes or other openings in the cargo compartment's floor, sides and/or tailgate; and D3 Load all haul trucks such that the freeboard is not less than six (6) inches when material is transported on any paved road, and apply water to the top of the load; or cover haul trucks with a tarp or other suitable cover.
Outdoor Transport Of Bulk Materials With A Chute Or Conveyor:	E1 Fully enclose the chute or conveyor; or E2 Operate water spray equipment; or E3 Wash separated or screened materials to remove conveyed materials having an aerodynamic diameter of 10 microns or less.

RULE 223-1 TABLE 3
BEST MANAGEMENT PRACTICE
(Removal and Prevention of Trackout)

Source Category	**Control Actions**
Removal of Trackout Material	A1 Manually sweeping and picking-up; or A2 Operating a rotary brush or broom accompanied or preceded by sufficient wetting; or A3 Operating a PM10-efficient street sweeper; or A4 Flushing with water, where the use of water will not result in adverse impacts on storm water drainage systems or violate any National Pollutant Discharge Elimination System permit program; and A5 The use of blower devices, or dry rotary brushes or dry brooms is expressly prohibited.
Frequency of Trackout Material Removal	B1 At the minimum trackout must be removed at the end of the day; and B2 Trackout must be immediately removed when it extends 50 feet or more from the nearest unpaved surface exit point of a site; and B3 On interior paved roads trackout must be removed at least once per workday.
Trackout Prevention for Large Operations or Sites with more than 150 vehicle trips/day.	C1 Installation of grizzlies, or similar devices designed to remove dirt/mud from tires; or C2 Installation of gravel pads; or C3 Paving of interior roads.

RULE 223-1 TABLE 4
BEST MANAGEMENT PRACTICE
(Blasting Activities)

Source Category	Control Measure	Guidance
Site Preparation (drilling, setting charges, burial of charges)	A1 Reduce dust from drilling operation A2 Pre-wet blast area A3 Cover charges to minimize dust	□ Control rate of drilling □ Apply water fog □ Place blast mats over charges □ Place soil mounds over charges □ Wet entire area prior to blasting
Blasting activities	B1 Dust cannot exceed 50 ft or cross the project property line	□ Conduct blasting on calm days □ Consider wind direction with respect to your property line, nearby residences and other receptors.
Post-Blasting Activities	C1 Follow Best Management Practice for all construction activities (Rule 223-1, Table 1)	

RULE 223-1 TABLE 5
DUST CONTROL MEASURES FOR LARGE OPERATIONS

Source Category	Control Actions
Earth-moving (except construction cutting and filling areas, and mining operations)	A1 Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM method D-2216, or other equivalent method approved by the Air Pollution Control Officer. Two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations each subsequent four-hour period of active operations; or A2 For any earth-moving which is more than 50 feet from all property lines, conduct watering as necessary to prevent visible dust emissions from exceeding 50 feet in length in any direction. Visible emissions must not extend beyond property boundary.
Earth-moving: Construction fill areas:	B1 Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM method D-2216, or other equivalent method approved by the Air Pollution Control Officer. For areas which have an optimum moisture content for compaction of less than 12 percent, as determined by ASTM Method 1557 or other equivalent method approved by the Air Pollution Control Officer complete the compaction process as expeditiously as possible after achieving at least 70 percent of the optimum soil moisture content. Two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations during each subsequent four hour period of active operations; or B2 For any earth-moving which is more than 50 feet from all property lines, conduct watering as necessary to prevent visible dust emissions from exceeding 50 feet in length in any direction. Visible emissions must not extend beyond property boundary.
Earth-moving: Construction cut areas	C1 Conduct watering as necessary to prevent any visible emissions from extending beyond property boundary.
Disturbed surface areas: (except completed grading areas)	D1 Apply dust suppression in sufficient quantity and frequency to maintain a stabilized surface. Any areas which cannot be stabilized, as evidenced by wind driven fugitive dust must have an application of water at least twice per day to at least 80 percent of the unstabilized area.
Disturbed surface areas: Completed grading areas	E1 Apply chemical stabilizers within five working days of grading completion; or E2 Take actions F1 or F3 specified for inactive disturbed surface areas.

RULE 223-1 TABLE 5
DUST CONTROL MEASURES FOR LARGE OPERATIONS

Source Category	Control Actions
Inactive disturbed surface areas	F1 Apply water to at least 80 percent of all inactive disturbed surface areas on a daily basis when there is evidence of wind driven fugitive dust, excluding any areas which are inaccessible to watering vehicles due to excessive slope or other safety conditions; or F2 Apply dust suppressants in sufficient quantity and frequency to maintain a stabilized surface; or F3 Establish a vegetative ground cover within 21 days after active operations have ceased. Ground cover must be of sufficient density to expose less than 30 percent of unstabilized ground within 90 days of planting, and at all times thereafter; or F4 Utilize any combination of control actions F1, F2 and F3 such that, in total, these actions apply to all inactive disturbed surface areas. F5 Establishment and maintenance of surface crusting sufficient to satisfy the test in Section 223-1.10 F6 Approved mixture of tackifier and fiber mulch, applied per manufacturer's recommendation.
Unpaved Roads	G1 Water all roads used for any vehicular traffic at least once per every two hours of active operations or as often as necessary; or G2 Apply a chemical stabilizer to all unpaved road surfaces in sufficient quantity and frequency to maintain a stabilized surface; and G3 Restrict vehicle speeds where necessary ;
Open storage piles	H1 Apply chemical stabilizers; or H2 Apply water to at least 80 percent of the surface area of all open storage piles on a daily basis when there is evidence of wind driven fugitive dust; or H3 Install temporary coverings; or H4 Install a three-sided enclosure with walls with no more than 50 percent porosity which extend, at a minimum, to the top of the pile. This option may only be used at aggregate-related plants or at cement manufacturing facilities.
All Categories	I1 Any other control measures approved by the Air Pollution Control Officer as equivalent to the methods specified in Table 5 may be used.

RULE 223-1 TABLE 6
CONTINGENCY DUST CONTROL MEASURES FOR LARGE OPERATIONS

Source Category	Control Actions
Earth-moving	A1 Cease all active operations except for dust mitigation activities; or A2 Apply water to soil not more than 15 minutes prior to moving such soil; and A3 Apply water during soil moving or disturbance operations.
Disturbed surface areas	B1 On the last day of active operations prior to a weekend, holiday or any other period when active operations will not occur for not more than four consecutive days: apply water with a mixture of chemical stabilizer diluted to not less than 1/20 of the concentration required to maintain a stabilized surface for a period of six months; or B2 Apply chemical stabilizers prior to wind event; or B3 Apply water to all unstabilized disturbed areas 3 times per day. If there is any evidence of wind driven fugitive dust, watering frequency is increased to a minimum of four times per day; or B4 Take the actions specified in Table 5, control action F3; or B5 Utilize any combination of control actions B1, B2 and B3B such that, in total, these actions apply to all disturbed surface areas.
Unpaved roads	C1 Apply chemical stabilizers prior to wind event; or C2 Apply water twice per hour during active operation; or C3 Stop all vehicular traffic, except for dust mitigation equipment.
Open storage piles	D1 Apply water twice per hour; or D2 Install temporary coverings.
Bulk Material Transport	E1 Cover all haul vehicles; or E2 Freeboard must be 6 inches or greater (VCS 23114)
All Categories	F1 Any other control measures approved by the Air Pollution Control Officer as equivalent to the methods specified in Table 6 may be used.

EL DORADO COUNTY AIR QUALITY MANAGEMENT DISTRICT

RULE 223-2 FUGITIVE DUST – ASBESTOS HAZARD MITIGATION
(Adopted 7/19/2005, Amended 10/18/2005)

INDEX **PAGE**

REFERENCE A - Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying and Surface Mining, Section 93105, Title 17, California Code of Regulations

REFERENCE B - Asbestos Airborne Toxic Control Measure For Surfacing Applications, Section 93106, Title 17, California Code of Regulations

5-2.1 GENERAL

A. **PURPOSE:** The purpose of this Rule is to reduce the amount of asbestos particulate matter entrained in the ambient air as a result of any construction or construction related activities, that disturbs or potentially disturbs naturally occurring asbestos by requiring actions to prevent, reduce or mitigate asbestos emissions.

B. **APPLICABILITY:** Unless one of the exemptions specified in Section 223-2.2 Exemptions applies, this Rule shall apply to **any construction or construction related activity** that:

1. is in excess of 20 cubic yards of graded material per project, or if required by the Air Pollution Control Officer **and**

2. meets **either** of the following criteria:

. Any portion of the area to be disturbed:
  . is located in a geographic ultramafic rock unit, **or**
  . has naturally-occurring asbestos, serpentine or ultramafic rock as determined by owner/operator, Professional Geologist or the Air Pollution Control Officer, **or**
  ii. is located within designated Naturally Occurring Asbestos Review Areas on the current El Dorado County Naturally Occurring Asbestos Review Area Map

. Naturally-occurring asbestos, serpentine, or ultramafic rock is discovered by the owner/operator, a Professional Geologist, or the Air Pollution Control Officer in the area to be disturbed after the start of any construction or construction related activity.

C. **ASBESTOS RELATED STATE OF CALIFORNIA REGULATIONS**

1. In addition to the requirements of this rule there are two State of California regulations for asbestos control that are applicable within El Dorado County and enforceable by the El Dorado County Air Quality Management District (EDCAQMD). These two asbestos control regulations are Attachments A and B to this rule.

Reference A: Asbestos Airborne Toxic Control Measure (ATCM) for Construction, Grading, Quarrying and Surface Mining Operations (California Code of Regulations, Title 17, Section 93105)

. Reference B: Asbestos Airborne Toxic Control Measure (ATCM) for Surfacing Applications (California Code of Regulations, Title 17, Section 93106)

1. A person who is subject to the Asbestos Airborne Toxic Control Measure (ATCM) for Construction, Grading, Quarrying and Surface Mining Operations (California Code of Regulations, Title 17, Section 93105) is required to comply with the following sections in addition to the requirements under the ATCM:

a. Section 223-2.4.A. regarding the visible emission standards.

b. Section 223-2.4.C: regarding the suspension of operations under high wind conditions.

c. Section 223-2.4.D: regarding the posting of Asbestos Warning signs.

d. Section 223-2.6.A and B: regarding trackout removal.

e. Section 223-2.6.D: regarding disposal of asbestiform containing soils removed by excavation.

e. Section 223-2.6.E: regarding 30-day time limit and other requirements for completion of post construction stabilization/mitigation.

223-2.2 EXEMPTION

A**. GENERAL:** Exemptions as defined in EDCAQMD Rule 223.2 A through F shall apply to this rule.

B. **GEOLOGIC EVALUATION**: The Air Pollution Control Officer may provide an exemption from this Rule for any property that meets at least one of the criteria in Section 223-2.1.B if a Professional Geologist has **conducted** a geologic evaluation of the property and determined that no serpentine or ultramafic rock, or asbestos, is likely to be found in the area to be disturbed. Before an exemption can be granted, the owner/operator must provide a copy of a report detailing the geologic evaluation to the Air Pollution Control Officer for his or her consideration.

1. At a minimum, the geologic evaluation must include:
   a. A general description of the property and the proposed use;
   b. A detailed site characterization which may include:
      . A physical site inspection;
      . Offsite geologic evaluation of adjacent property;
      . Evaluation of existing geological maps and studies of the site and surrounding area;
      . Development of geologic maps of the site and vicinity;
      . Identification and description of geologic units, rock and soil types, and features that could be related to the presence of ultramafic rocks, serpentine, or asbestos mineralization; and
      . A subsurface investigation to evaluate the nature and extent of geologic materials in the subsurface where excavation is planned; methods of subsurface investigation may include, but are not limited to borings, test pits, trenching, and geophysical surveys;
   c. A classification of rock types found must conform to the nomenclature based on the International Union of Geological Science system;
   d. A description of the sampling procedures used;
   e. A description of the analytical procedures used, which may include mineralogical analyses, petrographic analyses, chemical analyses, or analyses for asbestos content;
   f. An archive of collected rock samples for third party examination (to be kept for at least one year after the completion of the project); and
   g. A geologic evaluation report documenting observations, methods, data, and findings; the format and content of the report should follow the Guidelines for the Assessment of Naturally Occurring Asbestos issued by the California Geologic Survey.

2. The Air Pollution Control Officer may request any additional tests or other information needed to evaluate an application for exemption

3. The Air Pollution Control Officer shall grant or deny a request for an exemption within 30 days of the receipt of a complete application.

4. If the request for an exemption is denied, the Air Pollution Control Officer shall provide written reasons for the denial.

5. Expiration of the Geologic Exemption: If the owner/operator discovers any naturally-occurring asbestos, serpentine, or ultramafic rock in the area to be disturbed after the exemption is granted, then:

    a. The owner/operator must comply with the requirements of this Rule.
    b. The owner/operator must report the discovery of the naturally-occurring asbestos, serpentine or ultramafic rock to the Air Pollution Control Officer no later than the next business day.
    g. The exemption under Section 223-2.2.B shall expire and cease to be effective.

223-2.3 DEFINITIONS

In addition to the definitions of terms in EDCAQMD Rule 223 (General Requirements), the following definitions shall apply to this rule.

E. **ADEQUATELY WETTED:** sufficiently moistened with water to minimize the release of particulate matter into the ambient air.

F. **APPROVED ASBESTOS BULK TEST METHOD:** ARB Test Method 435 or an alternative asbestos bulk test method approved in writing by the Executive Officer of the California Air Resources Board.

G. **ARB:** the California Air Resources Board.

H. **ARB TEST METHOD 435:** the test method specified in title 17, California Code of Regulations, Section 94147.

I. **ASBESTOS:** asbestiforms of the following minerals: chrysotile (fibrous serpentine), crocidolite (fibrous riebeckite), amosite (fibrous cummingtonite--grunerite), asbestiform amphiboles (e.g. edenite, winchite and richterite), fibrous tremolite, fibrous actinolite, fibrous anthophyllite and tremolite/actinolite solution series of asbestiform minerals.

J. **ASBESTOS-CONTAINING MATERIAL:** any material that has asbestos content of 0.25 percent or greater by ARB test method 435.

K. **ASBESTOS CONTAINING WASTE or ACW:** asbestos containing waste managed at a landfill as authorized by Section 25143.7, chapter 6.5 of the California Health and Safety Code, which contains greater than (1%) friable asbestos by weight. Asbestos containing waste does not include waste contaminated with another hazardous waste as identified in chapter 11, division 4.5, Title 22, California Code of Regulations.

L. **ASBESTOS DUST MITIGATION PLAN:** a detailed written document specifying measures that would be implemented to minimize the emissions of asbestos-laden dust.

D. EL DORADO COUNTY NATURALLY OCCURING ASBESTOS REVIEW AREA MAP: a map created by adding mapping accuracy buffers to (1) faults and areas likely to contain asbestos as shown on the March 2000 Department of Mines and Geology “Areas More Likely to Contain Naturally-Occurring Asbestos in Western El Dorado County, California” map and (2) documented discovery sites containing at least 0.25% Asbestos. The most current map is provided on the EDCAQMD website and is available at the El Dorado County Surveyor’s office.

E. G**EOGRAPHIC ULTRAMAFIC ROCK UNIT:** a geographic area that is designated as an ultramafic rock unit or ultrabasic rock unit, including the unit boundary line, on any of the maps referenced in Appendix A of the Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying and Surface Mining, Section 93105, Title 17, California Code of Regulations

F. **GEOLOGIC EVALUATION:** an evaluation of a property by a Professional Geologist to determine the presence of various types of rocks, including but not limited to ultramafic rock, serpentinite, or other metamorphic derivatives of ultramafic rock.

G. **HEPA FILTER:** a High Efficiency Particulate Air filter used to remove particles less than one (1) micron in aerodynamic diameter that operates at removal efficiencies of 99.9 percent or greater.

H. **NATURALLY-OCCURRING ASBESTOS:** asbestos that has not been processed in an asbestos mill or is not asbestos mine tailings.

I. **PROFESSIONAL GEOLOGIST:** an individual who is currently licensed as a geologist with the State of California, Department of Consumer Affairs, Board of Geology and Geophysicists.

J. **REMOTE LOCATION:** any location that is at least one (1.0) mile from the location of a receptor.

K. **RECEPTOR:** includes, but is not limited to, any hospital, school, day care center, work site, business, residence, and permanent campground. The distance to the nearest receptor is to be measured from the outermost limit of the area to be disturbed or road surface, whichever is closer.

L. **SERPENTINE:** any form of the following hydrous magnesium silicate minerals: antigorite, lizardite, and chrysotile.

M. **SERPENTINITE:** a rock consisting almost entirely of serpentine, although small amounts of other minerals such as magnetite, chromite, talc, brucite, and tremolite-actinolite may also be present. "Serpentinite" is a metamorphic derivative of the ultramafic rocks, peridotite, pyroxenite, or dunite.

N. **ULTRABASIC ROCK:** ultramafic rock.

O. **ULTRAMAFIC ROCK:** an igneous rock composed of 90 percent or greater of one or a combination of the following iron/magnesium-rich, dark-colored silicate minerals: olivine, pyroxene or more rarely amphibole. For the purposes of this section, "ultramafic rock" includes the following rock types: dunite, pyroxenite and peridotite; and their metamorphic derivatives.

P. **VEGETATIVE COVER**: ground cover with sufficient density to expose less than 30 percent of unstabilized ground within 90 days of planting, and at all times thereafter.

1-9.1 GENERAL REQUIREMENTS

A. Visible emissions shall not exceed the shade designated as No. 0 on the Ringelmann Chart, or 0% opacity as determined in accordance with US EPA Method 9, at 25 feet from the point-of-origin and at the property line. Visible emissions shall not exceed the shade designated as No. 1 on the Ringelmann Chart, or 20% opacity as determined in accordance with US EPA Method 9at the point-of-origin. Applicable Best Management Practices included in Table 1 through 4 of this Rule or

similar effective measures shall be utilized to comply with fugitive dust standards of this rule from each fugitive dust source type within the active operation.

A. Vehicle Speed Limitations and Posting of Speed Limit Signs

1. An owner/operator shall limit the speed of vehicles traveling within construction sites to a maximum of 15 miles per hour.

2 An owner/operator shall post speed limit signs limiting vehicle speed to maximum of 15 miles per hour that meet State and Federal Department of Transportation standards at each construction site's uncontrolled unpaved access/haul road entrance.

C. When sustained wind speeds result in visible dust emissions in excess of the standards in Section 223-2.4 A., despite the application of dust mitigation measures, grading and earthmoving operations except except for dust mitigation activities shall be suspended

D. Warning Signs shall be posted at the main entrance(s) to the project for the duration of soil disturbance activities. Signs shall be posted in letter of sufficient size as to be readily visible and legible. The following wording is recommended: "Warning. Soils in the area may contain naturally occurring asbestos. Asbestos is a known carcinogen. Report excessive fugitive dust to the contractor at (contractor phone number), NOA Hotline: 888-FYI4NOA or EDCAQMD: 530-621-6662"

I. Following operations and activities are expressly prohibited:

2. Rock crushing of asbestos-containing material;

2. Use of blower devices for any removal of asbestos-containing material.

223-2.5 ADMINISTRATIVE REQUIREMENTS

A. Asbestos Dust Mitigation Plan

1. An owner/operator shall submit an Asbestos Dust Mitigation Plan to the Air Pollution Control Officer prior to the start of any construction activity that is applicable to this rule. An updated Asbestos Dust Mitigation Plan must be submitted if the project is significantly modified, a new grading permit is issued, the owner/operator changes or at the request of the Air Pollution Control Officer.

   Construction activities shall not commence until the Air Pollution Control Officer has approved or conditionally approved the Asbestos Dust Mitigation Plan. An owner/operator shall provide written notification to the Air Pollution Control Officer at least 10 days prior to the commencement of earthmoving activities via fax or mail. Projects that are less than 1 acre shall provide notification to the Air Pollution Control Officer at least 48 hours prior to earthmoving activities via fax or mail. The requirement to submit an Asbestos Dust Mitigation Plan shall apply to all such activities conducted for residential and non-residential (e.g., commercial, industrial, or institutional) purposes or conducted by any governmental entity.

2. . An owner/operator may submit one Asbestos Dust Mitigation Plan covering multiple construction stages within same project, provided the plan includes description of activities and

control measures for all stages of the project. The Asbestos Dust Mitigation Plan shall specify the expected start and final completion date of each project.

3. Asbestos Dust Mitigation Plan shall describe all dust mitigation measures to be implemented before, during and after any dust generating activity.

4. Asbestos Dust Mitigation Plan shall contain all the information described in Section 223-2.5.B. The Air Pollution Control Officer shall approve, disapprove or conditionally approve the Asbestos Dust Mitigation Plan within 30 days of plan submittal.

5. An owner/operator shall retain a copy of an approved Asbestos Dust Mitigation Plan at the project site. The approved Asbestos Dust Mitigation Plan shall remain valid until the termination of all dust generating activities. Failure to comply with the provisions of an approved Asbestos Dust Mitigation Plan is deemed to be a violation of this rule. Regardless of whether an approved Asbestos Dust Mitigation Plan is in place or not, or even when the owner/operator responsible for the plan is complying with an approved Asbestos Dust Mitigation Plan, the owner/operator shall comply also with all requirements of this Rule at all times.

B. An Asbestos Dust Mitigation Plan shall contain all of the following information:

0. Name(s), address(s), and phone number(s) of person(s) and owner(s)/operator(s) responsible for the preparation, submittal, and implementation of the Asbestos Dust Mitigation Plan and responsible for the dust generating operation and the application of dust control measures.

0. A plot plan which shows the type and location of each project.

0. The total area of land surface to be disturbed and total area in acres of the entire project site.

0. The expected start and completion dates of dust generating and soil disturbance activities to be performed on the site.

0. The actual and potential sources of fugitive dust emissions on the site and the location of bulk material handling and storage areas, paved and unpaved roads; entrances and exits where carryout/trackout may occur; and traffic areas.

0. Best Management Practice (Rule 223-2, Table 1 through 4) or other effective measures for:
   - Construction
   - Bulk Material Handling
   - Carryout and Trackout Management
   - Blasting Activities

0. Large Operations must include Dust Control Measures (Rule 223-2, Table 5 and 6).

0. If chemical dust suppressants are to be applied, the following information must be included: product specifications; manufacturer's usage instructions (method, frequency, and intensity of application); type, number, and capacity of application equipment; and information on environmental impacts and approvals or certifications related to appropriate and safe use for ground application.

0. Specific surface treatment(s) and/or control measures utilized to control material carryout, trackout, and sedimentation where unpaved and/or access points join paved roads.

10. Frequency of reporting: The plan shall state how often the items specified in Section 223-2.9. and any other items identified in the plan, will be reported to the EDCAQMD.

223-2.6 REQUIREMENTS FOR TRACKOUT MANAGEMENT, EXCAVATED SOIL MANAGEMENT AND POST-CONSTRUCTION STABILIZATION

A. An owner/operator shall prevent or cleanup carryout and trackout as specified in Section 223-2.6.A. The use of blower devices, or dry rotary brushes or brooms, for removal of carryout and trackout on public roads is expressly prohibited. The removal of carryout and trackout from paved public roads does not exempt an owner/operator from obtaining state or local agency permits which may be required for the cleanup of mud and dirt on paved public roads.

1. Owners/operators shall prevent carryout and trackout, or remove all visible carryout and trackout immediately.

2. Cleanup of carryout and trackout shall be accomplished by:
   a. Wet sweeping and picking-up; or
   b. Operating a HEPA filter equipped vacuum device; or
   c. Flushing with water, if curbs or gutters are not present, and where the use of water will not result in a source of trackout material or result in adverse impacts on storm water drainage systems or violate any National Pollutant Discharge Elimination System permit program.

E. An owner/operator of any site with 150 or more vehicle trips per day, or 20 or more vehicle trips per day by vehicles with three or more axles shall in addition to the requirements in Section 223-2.6.A, take the following preventative actions for carryout and trackout:

1. Installing and maintaining a trackout control device (grizzlies, gravel pads or paved surfaces) designed and maintained to control trackout at all access points to paved public roads; or:

2. Utilizing a carryout and trackout prevention procedure which has been demonstrated to the satisfaction of the Air Pollution Control Officer as achieving an equivalent or greater level of control.

F. Control for disturbed surface areas and storage piles, shall comply with all applicable requirements of this Rule.

G. Disposal of asbestiform containing soils removed by excavation:

1. Placing excavated soils into fills constructed elsewhere on the project.
   a. The location(s) of such removals and the placement quantities and locations shall be documented.
   b. Fills with a naturally occurring asbestos content equal to or greater than 1.0% by ARB Test Method 435, or when visually evident fibrous materials likely to be asbestos are present, located in residential landscaping areas shall be covered by at least two feet (24 inches) of non-asbestiform containing material or by concrete or asphalt paving.

2. It is the owner/operator responsibility that final destination (usage or disposal) and transports of any excavated soils from the project is in conducted in full compliance with pertinent federal,

state and local rules and regulations including CA Title 17, Section 93106, Asbestos Airborne Toxic Control Measure for Surfacing Applications.

3. For any soils transported off-site the following information must be documented, retained for a period of at least 3 years, and provided to the Air Pollution Control Officer upon request:
   e. Project location
   f. Laboratory results for any asbestos soil testing done at the project location
   g. Date(s) of off-site transport(s) of excavated soils
   h. Location(s) where excavated soils were transported to
   i. Total quantity transported to each location
   j. Intended usage (fill, surface application), if the final destination is other than Class II or Class III landfill disposal facility.

H. Control for off-site transport. The owner/operator shall ensure that no trucks are allowed to transport excavated material off-site unless:

1. Trucks are maintained such that no spillage can occur from holes or other openings in cargo compartments; and

2. Loads are adequately wetted; and
   a. Covered with tarps; or
   b. Loaded such that the material does not touch the front, back, or sides of the cargo compartment at any point less than six inches from the top and that no point of the load extends above the top of the cargo compartment.

5. If excavated material is classified as a hazardous waste/material, off-site transport must comply with pertinent State and Federal rules and regulations.

I. Post construction stabilization of disturbed areas. For multiple phase projects, the property owner shall be responsible for ensuring that the soil be stabilized following each phase of the project using one of the methods listed below or by any other method approved by the APCO. Upon completion of all phases of the project, but no later than 30 days following the end of soil disturbing activities, all disturbed surfaces with naturally occurring asbestos content of equal to or greater than 0.25% by ARB test method 435 shall be stabilized using one or more of the following methods:

1. Establishment of a vegetative cover;

2. Placement of non-asbestos containing material on disturbed soil areas shall be as follows:
   a. At least three (3.0) inches in residential and nonresidential areas;
   b. A total of at least twelve (12) inches or the maximum depth of irrigation improvements, whichever is higher, in residential landscaping areas with a naturally occurring asbestos content greater than 0.25% by ARB Test Method 435, or when visually evident fibrous materials likely to be asbestos are present;

3. Paving, building foundations, concrete flatwork or retaining walls

223-2.7. ADDITIONAL REQUIREMENTS FOR LARGE OPERATIONS

E. Any person who conducts or authorizes the conducting of a large operation subject to this Rule shall implement the applicable actions specified in Table 5 of this Rule at all times and shall implement the

applicable actions specified in Table 6 of this Rule when the applicable performance standards can not be met through use of Table 5 actions; and shall:

0. Submit a Large Operation Notification to the Air Pollution Control Officer within 7 days of qualifying as a large operation;

0. Maintain daily records to document the specific dust control actions taken, maintain such records for a period of not less than three years; and make such records available to the Air Pollution Control Officer upon request;

0. Identify a dust control supervisor that:
   a. is employed by or contracted with the property owner or developer;
   b. is on the site or available on-site within 30 minutes during working hours;
   c. has the authority to expeditiously employ sufficient dust mitigation measures to ensure compliance with all Rule requirements.

223-2.8 AIR MONITORING FOR ASBESTOS

A. Pursuant to the requirements of California Health and Safety Code Section 41511:

1. Air monitoring may be required by the Air Pollution Control Officer.

2. The Air Pollution Control Officer may require revisions to the asbestos dust mitigation plan on the basis of the results of the air monitoring.

. Air monitoring for asbestos (if required by the Air Pollution Control Officer).

0. If required by the Air Pollution Control Officer, the Asbestos Dust Mitigation Plan shall include an air-monitoring component.

1. The air monitoring component shall specify the following:
   . Type of air sampling device(s);
   . Siting of air sampling device(s);
   . Sampling duration and frequency; and
   . Analytical method
   . Frequency and detail of analytical data submittal

223-2.9 RECORDKEEPING AND REPORTING REQUIREMENTS

A. Recordkeeping Requirements: The owner shall retain all of the following records for at least ten (10) years following the completion of the construction project:

0. The results of any air monitoring conducted any time during the project.

0. The documentation for any geologic evaluation conducted on the property for the purposes of obtaining an exemption, except the archive of collected samples which may be discarded at the expiration of the exemption or one (1) year after the exemption is granted whichever is less.

0. The results of any asbestos bulk sampling that meets any of the following conditions:

a. The asbestos bulk sampling was conducted by the owner/operator to document the applicability of or compliance with this section.
b. The asbestos bulk sampling was done at the request of the Air Pollution Control Officer or the El Dorado Building Department or Department of Transportation (DOT).

7. The placement quantities and both removal and placement location of asbestiform containing soils removed by excavation as required in 223-2.6.D.

8. Records and reports for the project, as defined in 223-2.9.A, shall be provided upon request with disclosures in real estate transactions concerning the project or property.

B. Reporting Requirements: The owner/operator of any grading or construction operation subject to this section shall submit the following to the EDCAQMD:

1. The results of any air monitoring conducted at the request of the Air Pollution Control Officer.

2. The laboratory results of any asbestos bulk sampling or testing.

3. The areas where asbestos was identified, removed, and placed, onsite or offsite shall be described upon completion of the project.

4. Any public complaints received by the contractor during the project shall be reported as requested by the Air Pollution Control Officer.

223-2.10 TEST METHODS

E. Ultramafic Rock: The ultramafic rock composition of any material shall be determined using standard analysis techniques including, but not limited to, color index assessment, microscopic examination, petrographic analysis or rock thin sections, or chemical analysis techniques, such as X-ray fluorescence spectrometry or inductively coupled plasma analysis.

F. Bulk Sampling Methods: ARB Test Method 435, or an alternative asbestos bulk test method approved in writing by the Executive Officer of the California Air Resources Board, shall be used to determine the asbestos content of a bulk sample. For the purposes of determining compliance with this section, references in ARB Test Method 435 to "serpentine aggregate" shall mean "gravel" or other "bulk materials" to be tested for asbestos content.

G. Surface Crusting: “Measurement of the stability of surface crusting on horizontal surfaces” shall be as follows:

1. Where a visible crust exists, drop a steel ball with a diameter of 15.9 millimeters (0.625 inches) and a mass ranging from 16 to 17 grams from a distance of 30 centimeters (one foot) directly above at a 90 degree angle (perpendicular) to the ground surface. If blowsand (thin deposits of loose grains covering less than 50 percent of the surface that have not originated from the surface being tested) is present, clear the blowsand from the surfaces to be tested before dropping the steel ball.

2. A sufficient crust is determined to exist if, when the ball is dropped according to Section 223-2.10.C.1 the ball does not sink into the surface so that it is partially or fully surrounded by loose

grains and, upon removing the ball, the surface on which it was dropped has not been pulverized so that loose grains are visible.

0. Drop the ball three times each in three representative test areas within a survey area measuring 1 foot by 1 foot that represents a random portion of the surface being evaluated. The test area shall be deemed to have passed if at least two of the three times the ball was dropped, the results met the criteria in Section 223-2.10.C.1. If all three test areas pass, the area shall be deemed to be "sufficiently crusted".

C. Analysis of Air Samples: Analysis of all air samples shall follow the analytical method specified by the United States Environmental Protection Agency, Asbestos Hazard Emergency Response Act (AHERA) criteria for asbestos (40 CFR, Part 763 Subpart E, Appendix A, adopted October 30, 1987), with the following exceptions:

0. The analytical sensitivity shall be 0.001 structures per cubic centimeter (0.001 s/cc); and

0. All asbestos structures with an aspect ratio greater than three to one (3:1) shall be counted irrespective of length.

2. The results of the analysis of air samples shall be reported as transmission electron microscopy (TEM) asbestos structures per cubic centimeter (s/cc).

D. Adequately Wetted: Field determination of "adequately wetted" shall be as follows:

0. If the district-approved asbestos dust mitigation plan has specified a percent moisture content for specific materials the determination shall be as specified in the district-approved asbestos dust mitigation plan; or

0. If no moisture threshold is specified in a district-approved asbestos dust mitigation plan, a sample of at least one (1) quart in volume shall be taken from the top three (3) inches of a road, or bare area or from the surface of a stockpile. The sample shall be poured out from a height of four (4) feet onto a clean hard surface. The material shall be considered to be adequately wetted if there is no observable dust emitted when the material is dropped.

RULE 223-2 TABLE 1
BEST MANAGEMENT PRACTICE FOR ASBESTOS DUST MITIGATION
(Construction And Other Earthmoving Activities)

Source Category	Control Measure	Guidance
Backfilling	A1 Stabilize backfill material when not actively handling; and A2 Stabilize backfill material during handling; and A3 Stabilize soil at completion of activity. .	□ Mix backfill soil with water prior to moving □ Dedicate water truck or high capacity hose to backfilling equipment. □ Empty loader bucket slowly so that no dust plumes are generated. □ Minimize drop height from loader bucket.
Clearing and grubbing	B1 Maintain stability of soil through pre-watering of site prior to clearing and grubbing; and B2 Stabilize soil during clearing and grubbing activities; and B3 Stabilize soil immediately after clearing and grubbing activities.	□ Maintain live perennial vegetation where possible. □ Apply water in sufficient quantity to prevent generation of visible dust.
Clearing forms	C1 Use water spray to clear forms; or C2 Use sweeping and water spray to clear forms; or C3 Use vacuum system to clear forms.	□ Use of high pressure air to clear forms may cause exceedance of Rule requirements.
Crushing	D1 Crushing asbestos containing material is expressly prohibited..	
Cut and fill	E1 Pre-water soils prior to cut and fill activities; and E2 Stabilize soil during and after cut and fill activities.	□ For large sites, pre-water with sprinklers or water trucks and allow time for penetration. □ Use water as necessary to keep dust down.
Demolition – mechanical/manual	F1 Stabilize wind erodible surfaces to reduce dust; and F2 Stabilize surface soil where support equipment and vehicles will operate; and F3 Stabilize loose soil and demolition debris.	□ Apply water in sufficient quantities to prevent the generation of visible dust.
Disturbed soil	G1 Stabilize disturbed soil throughout the construction site; and G2 Stabilize disturbed soil between structures	□ Limit vehicular traffic and disturbances on soils where possible. □ If interior block walls are planned, install as early as possible. □ Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes.

RULE 223-2 TABLE 1
BEST MANAGEMENT PRACTICE FOR ASBESTOS DUST MITIGATION
(Construction And Other Earthmoving Activities)

Source Category	Control Measure	Guidance
Earth-moving activities	H1 Pre-apply water; and H2 Re-apply water as necessary to maintain soils in a damp condition and to ensure that visible emissions do not exceed 25 feet or beyond property line in any direction; and H3 Stabilize soils once earth-moving activities are complete.	Grade each project phase separately, timed to coincide with construction phase. Upwind fencing can prevent material movement on site. Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes. Suspend operations when winds generate visible dust emissions despite control measures
Importing/exporting of bulk materials	I1 Stabilize or adequately wet material while loading to reduce fugitive dust emissions; and I2 Maintain at least six inches of freeboard on haul vehicles traveling off-site; and I3 Stabilize or adequately wet material while transporting to reduce fugitive dust emissions; and I4 Stabilize material while unloading to reduce fugitive dust emissions.	Use tarps or other suitable enclosures on haul trucks. Comply with track-out prevention/ mitigation requirements. Provide water while loading and unloading to reduce visible dust plumes. Maintain trucks and cargo compartments, to prevent any spillage of material. If excavated material is classified as a hazardous waste/material, off-site transport must comply with pertinent State and Federal rules and regulations.
Landscaping	J1 Stabilize soils, materials and slopes.	Apply water to materials to stabilize. Maintain materials in a crusted condition. Maintain effective cover over materials Stabilize sloping surfaces using soil binders until vegetation or ground cover can effectively stabilize the slopes Hydroseed prior to rainy season.
Road shoulder maintenance	K1 Apply water to unpaved shoulders prior to clearing; and K2 Apply chemical dust suppressants and/or other appropriate material in accordance with DOT specifications to maintain a stabilized surface after completing road shoulder maintenance.	Installation of curbing and/or paving of road shoulders can reduce recurring maintenance costs. Use of chemical dust suppressants can inhibit vegetation growth and reduce future road shoulder maintenance costs.
Staging areas	M1 Stabilize staging areas during use; and M2 Stabilize staging area soils at project completion.	Limit size of staging area. Limit vehicle speeds to 15 miles per hour. Limit number and size of staging area entrances/exists.

RULE 223-2 TABLE 1
BEST MANAGEMENT PRACTICE FOR ASBESTOS DUST MITIGATION
(Construction And Other Earthmoving Activities)

Source Category	Control Measure	Guidance
Stockpiles/Bulk Material Handling	N1 Stabilize stockpiled materials. N2 Stockpiles within 100 yards of off-site occupied buildings must not be greater than eight feet in height; or must have a road bladed to the top to allow water truck access or must have an operational water irrigation system that is capable of complete stockpile coverage.	Add or remove material from the downwind portion of the storage pile. Maintain storage piles to avoid slides.
Traffic areas for construction activities	O1 Stabilize or maintain adequate moisture on all off-road traffic and parking areas; and O2 Stabilize or maintain adequate moisture on all haul routes; and O3 Direct construction traffic over established haul routes.	Apply gravel/paving to all haul routes as soon as possible to all future roadway areas. Barriers can be used to ensure vehicles are only used on established parking areas/haul routes.
Trenching	P1 Stabilize surface soils where trencher or excavator and support equipment will operate; and P2 Stabilize soils at the completion of trenching activities.	Pre-watering of soils prior to trenching is an effective preventive measure. Washing mud and soils from equipment at the conclusion of trenching activities can prevent crusting and drying of soil on equipment.
Truck loading	Q1 Material must be adequately wet prior to loading; and Q2 Freeboard must be 6 inches or greater (VCS 23114)	Empty loader bucket such that no visible dust plumes are created. Ensure that the loader bucket is close to the truck to minimize drop height while loading.
Unpaved roads/parking lots	S1 Stabilize soils to meet the applicable performance standards (Surface Crusting); and S2 Limit vehicular travel to established unpaved roads (haul routes) and unpaved parking lots.	Restricting vehicular access to established unpaved travel paths and parking lots can reduce stabilization requirements.

RULE 223-2 TABLE 1
BEST MANAGEMENT PRACTICE FOR ASBESTOS DUST MITIGATION
(Construction And Other Earthmoving Activities)

Source Category	Control Measure	Guidance
Vacant land	T1 In instances where vacant lots are 0.10 acre or larger and have a cumulative area of 500 square feet or more that are driven over and/or used by motor vehicles and/or off-road vehicles, prevent motor vehicle and/or off-road vehicle trespassing, parking and/or access.	□ Installing barriers, curbs, fences, gates, posts, signs, shrubs, trees or other effective control measures to prevent access to motor or off-road vehicles.
Onsite Disposal of asbestiform containing soils	U1 If possible, place excavated soils into fills constructed elsewhere on the project	□ Fills with NOA content equal to or greater than 1.0%, or when visually evident fibrous materials likely to be asbestos are present, in residential landscaping areas must be covered by at least 24 inches of clean fill □ Document location and quantities of fills
Offsite disposal of asbestiform containing soils	V1 Management and disposition of excavated soils transported offsite must be in accordance with federal, state and local regulations.	□ For excavated soils transported offsite, information per Rule 223-2.6.D.3. must be documented by owner/operator and retained for a period of 3 years.
Post Construction Stabilization of Disturbed Areas	W1 Must be completed no later than 30 days following completion of the project.	□ Establishment of vegetative cover; or □ Placement of at least 3 inches of clean fill, □ Placement of a total of at least 12 inches, or maximum depth of irrigation improvements, whichever is higher, of clean fill in residential landscaping areas with NOA greater than 0.25%; or □ Paving, Foundations, Retaining Walls; or □ Other measures as approved by APCO.
Signage	X1 Post Warning Signs at the main entrance to the project for the duration of soil disturbance activities	□ Signs to be in compliance with current OSHA requirements □ Proposition 65 (H&S Code 25249.5-25249.13) may apply

RULE 223-2 TABLE 2
BEST MANAGEMENT PRACTICE FOR ASBESTOS DUST MITIGATION
(Bulk Material Handling)

Source Category	**Control Actions**
Handling Of Bulk Materials	A1 When handling bulk materials, apply water or chemical/organic stabilizers/ suppressants;
Storage of Bulk Materials	B1 When storing bulk materials, comply with the conditions for a stabilized surface; or B2 Cover bulk materials stored outdoors with tarps, plastic or other suitable material and anchor in such a manner that prevents the cover from being removed by wind action; or B3 Construct and maintain wind barriers with less than 50% porosity. If utilizing fences or wind barriers, apply water or chemical/organic stabilizers/suppressants; or B4 Utilize a 3-sided structure with a height at least equal to the height of the storage pile and with less than 50% porosity.
On-Site Transporting of Bulk Materials	C1 Limit vehicular speed while traveling on the work site; or C2 Load all haul trucks such that the freeboard is not less than six (6) inches when material is transported across any paved public access road; or C3 Apply water to the top of the load; or C4 Cover haul trucks with a tarp or other suitable cover.
Off-Site Transporting of Bulk Materials	D1 Clean the interior of the cargo compartment or cover the cargo compartment before the empty truck leaves the site; and D2 Material must be adequately wet prior to loading; and D3 Prevent spillage or loss of bulk material from holes or other openings in the cargo compartment's floor, sides and/or tailgate; and D4 Load all haul trucks such that the freeboard is not less than six (6) inches when material is transported on any paved road, and apply water to the top of the load; or cover haul trucks with a tarp or other suitable cover. D5 If excavated material is classified as a hazardous waste/material, off-site transport must comply with pertinent State and Federal rules and regulations.
Outdoor Transport Of Bulk Materials With A Chute Or Conveyor:	E1 Fully enclose the chute or conveyor; or E2 Operate water spray equipment; or E3 Wash separated or screened materials to remove conveyed materials having an aerodynamic diameter of 10 microns or less.

RULE 223-2 TABLE 3
BEST MANAGEMENT PRACTICE FOR ASBESTOS DUST MITIGATION
(Removal and Prevention of Trackout)

Source Category	**Control Actions**
Removal of Trackout Material	A1 Manually wet sweeping and picking-up; or A2 Operating HEPA filter equipped vacuum device; or A3 Flushing with water, where the use of water will not result in adverse impacts on storm water drainage systems or violate any National Pollutant Discharge Elimination System permit program; and A4 The use of blower devices, or dry rotary brushes or dry brooms is expressly prohibited.
Frequency of Trackout Material Removal	B1 Visible trackout must be immediately removed from paved public roads; and B4 On interior paved roads trackout must be removed at least once per workday.
Trackout Prevention for Large Operations or Sites with more than 150 vehicle trips/day.	C1 Installation of grizzlies, or similar devices designed to remove dirt/mud from tires; or C2 Installation of gravel pad; or C3 Paving of interior roads.

RULE 223-2 TABLE 4
BEST MANAGEMENT PRACTICE FOR ASBESTOS DUST MITIGATION
(Blasting Activities)

Source Category	**Control Measure**	**Guidance**
Site Preparation (drilling, setting charges, burial of charges)	A1 Reduce dust from drilling operation A2 Pre-wet blast area A3 Cover charges to minimize dust	□ Control rate of drilling □ Apply water fog □ Place blast mats over charges □ Place soil mounds over charges □ Wet entire area prior to blasting
Blasting activities	B1 Dust cannot exceed 25 ft or cross the project property line	□ Conduct blasting on calm days □ Consider wind direction with respect to your property line, nearby residences and other receptors.
Post-Blasting Activities	C1 Follow Best Management Practices for all construction activities (Table 223-2, Table 1)	

RULE 223-2 TABLE 5
DUST CONTROL MEASURES FOR LARGE OPERATIONS

Source Category	Control Actions
Earth-moving (except construction cutting and filling areas, and mining operations)	A1 Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM method D-2216, or other equivalent method approved by the Air Pollution Control Officer. Two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations each subsequent four-hour period of active operations; or A2 For any earth-moving which is more than 25 feet from all property lines, conduct watering as necessary to prevent visible dust emissions from exceeding 25 feet in length in any direction. Visible emissions must not extend beyond property boundary.
Earth-moving: Construction fill areas:	B1 Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM method D-2216, or other equivalent method approved by the Air Pollution Control Officer. For areas which have an optimum moisture content for compaction of less than 12 percent, as determined by ASTM Method 1557 or other equivalent method approved by the Air Pollution Control Officer complete the compaction process as expeditiously as possible after achieving at least 70 percent of the optimum soil moisture content. Two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations during each subsequent four hour period of active operations. B2 For any earth-moving which is more than 25 feet from all property lines, conduct watering as necessary to prevent visible dust emissions from exceeding 25 feet in length in any direction. Visible emissions must not extend beyond property boundary.
Earth-moving: Construction cut areas	C1 Conduct watering as necessary to prevent any visible emissions from extending beyond property boundary.
Disturbed surface areas: (except completed grading areas)	D1 Apply dust suppression in sufficient quantity and frequency to maintain a stabilized surface. Any areas which cannot be stabilized, as evidenced by wind driven fugitive dust must have an application of water at least twice per day to at least 80 percent of the unstabilized area.
Disturbed surface areas: Completed grading areas	E1 Apply chemical stabilizers within five working days of grading completion; or E2 Take actions F1 or F3 specified for inactive disturbed surface areas.

RULE 223-2 TABLE 5
DUST CONTROL MEASURES FOR LARGE OPERATIONS

Source Category	Control Actions
Inactive disturbed surface areas	F1 Apply water to at least 80 percent of all inactive disturbed surface areas on a daily basis when there is evidence of wind driven fugitive dust, excluding any areas which are inaccessible to watering vehicles due to excessive slope or other safety conditions; or F2 Apply dust suppressants in sufficient quantity and frequency to maintain a stabilized surface; or F3 Establish a vegetative ground cover within 21 days after active operations have ceased. Ground cover must be of sufficient density to expose less than 30 percent of unstabilized ground within 90 days of planting, and at all times thereafter; or F4 Utilize any combination of control actions F1, F2 and F3 such that, in total, these actions apply to all inactive disturbed surface areas. F5 Establishment and maintenance of surface crusting sufficient to satisfy the test in Section 223-2.10.C F6 Approved mixture of tackifier and fiber mulch, applied per manufacturer's recommendation.
Unpaved Roads	G1 Water all roads used for any vehicular traffic at least once per every two hours of active operations or as often as necessary; or G2 Apply a chemical stabilizer to all unpaved road surfaces in sufficient quantity and frequency to maintain a stabilized surface; and G3 Restrict vehicle speeds to 15 miles per hour;
Open storage piles	H1 Apply chemical stabilizers; or H2 Apply water to at least 80 percent of the surface area of all open storage piles on a daily basis when there is evidence of wind driven fugitive dust; or H3 Install temporary coverings; or H4 Install a three-sided enclosure with walls with no more than 50 percent porosity which extend, at a minimum, to the top of the pile. This option may only be used at aggregate-related plants or at cement manufacturing facilities.
All Categories	I1 Any other control measures approved by the Air Pollution Control Officer as equivalent to the methods specified in Table 5 may be used.

RULE 223-2 TABLE 6
CONTINGENCY DUST CONTROL MEASURES FOR LARGE OPERATIONS

Source Category	Control Actions
Earth-moving	A1 Cease all active operations except for dust mitigation activities; or A2 Apply water to soil not more than 15 minutes prior to moving such soil; and A3 Apply water during soil moving or disturbance operations.
Disturbed surface areas	B1 On the last day of active operations prior to a weekend, holiday or any other period when active operations will not occur for not more than four consecutive days: apply water with a mixture of chemical stabilizer diluted to not less than 1/20 of the concentration required to maintain a stabilized surface for a period of six months; or B2 Apply chemical stabilizers prior to wind event; or B3 Apply water to all unstabilized disturbed areas 3 times per day. If there is any evidence of wind driven fugitive dust, watering frequency is increased to a minimum of four times per day; or B4 Take the actions specified in Table 5, control action F3; or B5 Utilize any combination of control actions B1, B2 and B3B such that, in total, these actions apply to all disturbed surface areas.
Unpaved roads	C1 Apply chemical stabilizers prior to wind event; or C2 Apply water twice per hour during active operation; or C3 Stop all vehicular traffic, except for dust mitigation equipment.
Open storage piles	D1 Apply water twice per hour; or D2 Install temporary coverings.
Bulk Material Transport	E1 Cover all haul vehicles; or E2 Freeboard must be 6 inches or greater (VCS 23114)
All Categories	F1 Any other control measures approved by the Air Pollution Control Officer as equivalent to the methods specified in Table 6 may be used.