



# **Third Amendment to the Proponent’s Environmental Assessment for Southern California Edison Company’s Alberhill System Project Volume 3**

June 2023 (Amended PEA submittal date)

Construction of Alberhill Substation, construction of two new 500 kilovolt (kV) transmission line segments to connect the new substation to Southern California Edison Company’s (SCE’s) existing Serrano-Valley 500 kV transmission line, construction of a new 115 kV subtransmission line and modifications to four existing 115 kV subtransmission lines to transfer five existing 115/12 kV substations to the new Alberhill 500/115 kV Substation, installation of telecommunications improvements to connect the new facilities to SCE’s telecommunications network.

The Alberhill System Project would be located in the unincorporated Riverside County and the cities of Lake Elsinore, Wildomar, and Menifee.

## **Application A.09-09-022 to the California Public Utilities Commission**

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**SOIL IMPORT OPTION 1 WITH PROJECT COMMITMENT J**

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## AIR QUALITY CALCULATIONS

### Construction Emissions

The following emissions were calculated for construction activities:

1. Peak daily criteria pollutant emissions for comparison with the South Coast Air Quality Management District (SCAQMD) mass daily emissions CEQA significance thresholds. The following steps were used to calculate these emissions:
  - a. Daily emissions were calculated for each construction phase for each Proposed Project Component.
 

These calculations are in Table 7 through Table 50.

Total daily emissions, including both on-site and off-site sources, are summarized by construction phase in Table 1.

Emission factors for off-road construction equipment and motor vehicle exhaust are from the SCAQMD CEQA Handbook webpage for calendar year 2025.

The exhaust emission factors are in Table 53 through Table 55.

Emission factors for fugitive PM10 and PM2.5 from vehicle travel on paved and unpaved roads were calculated using emission factor equations from AP-42 Sections 13.2.1 and 13.2.2.

These emission factors are in Table 56.

PM10 and PM2.5 emission factors for earth moving and soil handling were calculated from AP-42 sections and from the SCAQMD CEQA Handbook.

These emission factors are in Table 57.
  - b. The construction phases for each Proposed Project component that could overlap were identified, and daily emissions from overlapping phases were added together. The highest emissions that could occur on a single day during construction of each Proposed Project component were then identified. These emissions are summarized in Table 2.
  - c. Since construction of all of the Proposed Project components could occur at the same time, the maximum daily emissions during construction of the components were added together to estimate peak daily construction emissions. However, since substation site demolition and water line relocation activities would be completed prior to the start of any other construction, they were not included in the peak daily emissions calculation. The peak daily construction emissions are in Table 2.
2. Maximum daily on-site emissions during construction of each Proposed Project component for use in a Localized Significance Threshold (LST) analysis using the look-up table in Appendix C to the SCAQMD's Localized Significance Methodology. The following steps were used to calculate these emissions and to conduct the LST analysis.
  - a. Daily on-site emissions were calculated for each construction phase for each Proposed Project Component. On-site emissions for substation construction were defined as emissions that would occur on the substation site. On-site emissions for 500 kV transmission line and 115 kV subtransmission line construction were defined as emissions that would occur at a single 500 kV lattice tower or a 115 kV pole

## AIR QUALITY CALCULATIONS

location.

These calculations are in Table 9 through Table 50.

On-site daily emissions by construction phase are summarized in Table 3.

The same emission factors used to calculate total daily emission were used to calculate on-site daily emissions.

- b. Since multiple construction phases could occur at the same time at the substation site, daily on-site emissions from overlapping phases were added together to identify maximum on-site daily emissions during substation construction. Maximum daily on-site emissions during telecommunications construction were added to the maximum daily emissions during substation construction, since telecommunications construction will occur at the substation site. Maximum daily on-site emissions Table 4.
- c. Since only one construction phase could occur at a 500 kV transmission line tower location or 115 kV subtransmission line pole location, emissions from overlapping phases were not added together to calculate maximum daily on-site emissions. Maximum daily on-site emissions during 500 kV transmission line and 115 kV subtransmission line construction are in Table 4.
- d. Distances to the closest receptors were determined for the LST analysis. For the substation site, the distance to the closest commercial receptor was used for analyses for CO and NO<sub>2</sub>, since the air quality thresholds are for short-term averaging periods. The distance to the closest residential receptor was used for the PM<sub>10</sub> and PM<sub>2.5</sub> analyses, since the air quality thresholds are for 24-hour averaging periods, and an individual would probably not be located at a commercial location for 24 hours.  
The closest receptor to a 500 kV transmission tower location is a residence.  
A distance of 25 meters was assumed for the receptor distance for the analysis for 115 kV subtransmission line construction.
- e. The look-up table values for the Lake Elsinore source/receptor area were used for the LST analyses.
- f. The maximum construction area in the look-up tables of 5 acres was used for the LST analysis for the substation site, and the minimum area of 1 acre was used for the 500 kV transmission line tower and 115 kV subtransmission line pole analyses.
- g. The maximum allowable daily on-site emissions for the analyses for the substation and 500 kV transmission line towers were calculated using linear interpolation with receptor distance of the emissions in the look-up tables to calculate allowable emissions for the actual receptor distances. Interpolation was not used for the LST analyses for the 115 kV subtransmission line analyses, since the receptor distance was assumed to be 25 meters. The LST analyses are in Table 5.

3. Total greenhouse gas (GHG) emissions during construction. The following steps were used to calculate these emissions:



## AIR QUALITY CALCULATIONS

- a. Total GHG emissions were calculated for each construction phase for Each Proposed Project Component. These calculations are in Table 9 through Table 50. Total GHG emissions, including both on-site and off-site sources, are summarized by construction phase in Table 6.

Emission factors for off-road construction equipment and motor vehicle exhaust are from the SCAQMD CEQA Handbook webpage for calendar year 2025.

The exhaust emission factors are in Table 53 through Table 55.

- b. Total GHG emissions during each construction phase were added together to calculate total GHG emissions during construction. These emissions are summarized in Table 6.

### Operational Emissions

The following emissions were calculated for operational activities:

1. Peak daily criteria pollutant emissions for comparison with the South Coast Air Quality Management District (SCAQMD) mass daily emissions CEQA significance thresholds. The following steps were used to calculate these emissions:

- a. Daily emissions were calculated for each operational activity, including 500 kV transmission line inspections, 115 kV subtransmission line inspections and visits to the substation site. These calculations are in Table 52.

Emission factors for off-road construction equipment and motor vehicle exhaust are from the SCAQMD CEQA Handbook webpage for calendar year 2025.

The exhaust emission factors are in Table 53 through Table 55.

Emission factors for fugitive PM10 and PM2.5 from vehicle travel on paved and unpaved roads were calculated using emission factor equations from AP-42 Sections 13.2.1 and 13.2.2.

These emission factors are in Table 56.

- b. It was conservatively assumed that the transmission line inspections would both occur on the same day as a visit to the substation site, and daily emissions from these three activities were added together to peak daily operational emissions. These emissions are in Table 52.

2. Annual greenhouse gas (GHG) emissions during operation. The following steps were used to calculate these emissions:

- a. Annual emissions were calculated for each operational activity, including 500 kV transmission line inspections, 115 kV subtransmission line inspections and visits to the substation site. These calculations are in Table 52.

Emission factors for off-road construction equipment and motor vehicle exhaust are from the SCAQMD CEQA Handbook webpage for calendar year 2025.

## AIR QUALITY CALCULATIONS

The exhaust emission factors are in Table 53 through Table 55.

- b. Annual emissions from leakage of sulfur hexafluoride (SF6) from gas-insulated switch gear (GIS) were calculated by multiplying the total amount of SF6 in new GIS by the estimated annual leakage rate. The annual SF6 leakage rate was then multiplied by the SF6 global warming potential to calculate annual CO2-equivalent emissions from SF6 leakage. These calculations are in Table 52.
- c. Annual GHG emissions from the operational activities and from SF6 leakage were added together to calculate Annual operational GHG emissions. These emissions are summarized in Table 52.

**Table 1**  
**Construction Emissions Summary**  
**Total Daily Criteria Pollutant Emissions by Construction Phase**

Phase	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
<b>Substation Site Demolition</b>	3.42	23.90	30.16	0.12	13.35	2.22
<b>Substation Site Water Line Relocation</b>	0.65	6.60	2.80	0.01	18.26	1.92
<b>Substation Construction</b>						
Survey	0.11	0.86	0.07	0.00	5.78	0.57
Grading	8.99	55.86	53.28	0.21	139.29	18.40
Fencing	0.42	4.32	1.30	0.01	16.15	1.62
Civil	2.90	31.01	20.07	0.10	23.43	2.88
Control Building	0.17	1.32	0.20	0.00	14.80	1.47
Electrical	1.26	12.43	6.41	0.03	17.75	1.96
Wiring	0.28	2.25	0.63	0.01	11.58	1.16
Transformers	0.66	6.27	2.25	0.01	21.41	2.20
Maintenance Crew Equipment Check	0.12	0.94	0.19	0.00	15.42	1.54
Testing	0.11	0.87	0.07	0.00	8.56	0.85
Asphalting	2.41	11.86	12.23	0.05	24.21	2.77
Landscaping	1.72	11.07	15.40	0.07	20.80	2.43
<b>500 kV Transmission Line Construction</b>						
Survey	0.11	0.89	0.08	0.00	9.32	0.93
Marshalling Yard	0.63	4.65	2.81	0.02	14.43	1.51
Roads and Landing Work	2.37	19.00	10.34	0.05	30.22	4.38
Install Helicopter Platforms	0.16	1.23	0.10	0.00	0.32	0.02
Tower Removal	1.02	6.57	4.56	0.02	47.74	4.91
Foundation Removal	0.61	6.89	2.73	0.01	22.42	2.33
Tower Foundations Installation	2.01	15.93	6.66	0.06	48.92	5.11
Install Micropile Foundations	0.16	1.23	0.10	0.00	0.32	0.02
Tower Steel Haul	0.31	3.62	0.90	0.01	25.12	2.53
Tower Steel Assembly	0.98	8.03	3.96	0.02	15.36	1.64
Tower Erection	1.46	8.84	6.22	0.03	38.06	3.98
Tower Erection (Helicopter) Ground Support	0.82	6.98	2.35	0.02	42.96	4.34
Tower Helicopter Operations	46.71	56.80	577.42	32.18	12.02	12.02
Wire Stringing	20.27	61.08	38.52	1.51	175.06	18.50
Restoration	1.08	8.31	4.75	0.03	23.20	2.75
<b>115 kV Subtransmission Line Construction</b>						
Survey	0.12	0.96	0.08	0.00	0.25	0.02
Marshalling Yard	0.36	3.35	1.16	0.01	10.65	1.09
Roads and Landing Work	1.79	14.07	8.05	0.04	5.22	1.19
Guard Structure Installation	1.61	10.08	7.33	0.05	0.69	0.27
Remove Existing Wood H-Frames and Poles	1.07	7.58	4.97	0.02	0.60	0.20
Remove Existing Tubular Steel/Light Weight Steel Poles	0.98	5.99	4.23	0.02	0.69	0.18
Install Tubular Steel Pole Foundations	1.41	11.32	5.50	0.05	1.65	0.33
Steel Pole Haul	0.70	3.43	3.10	0.02	0.41	0.12
Steel Pole Assembly	0.98	5.99	4.23	0.02	0.69	0.18
Steel Pole Erection	0.98	5.99	4.23	0.02	0.69	0.18
Wire Stringing	5.07	29.37	24.43	0.15	2.08	0.80
Vault Installation	2.63	17.58	10.62	0.07	2.05	0.52
Duct Bank Installation	1.39	13.75	6.11	0.04	2.20	0.46
Install Underground Cable	3.51	19.09	13.63	0.09	1.50	0.50
Guard Structure Removal	1.50	9.66	7.71	0.04	0.69	0.29
Restoration	1.22	9.85	5.55	0.03	3.58	0.53
<b>Telecommunications Construction</b>						
Tower Foundation	0.71	8.05	4.31	0.02	0.93	0.25
Tower Construction	0.99	5.82	4.82	0.02	0.45	0.18
Dish Installation	0.27	2.81	1.45	0.01	0.30	0.07
Control Building	0.54	3.56	3.15	0.02	0.23	0.09
Overhead Communications Installation	0.60	3.97	3.18	0.02	0.33	0.10
Substation Telecommunications Equipment Installation	0.08	0.62	0.05	0.00	0.16	0.01
Santiago Peak Communication Site	0.45	2.87	1.50	0.01	16.20	1.65
<b>Additional Substation Construction</b>						

**Table 1**  
**Construction Emissions Summary**  
**Total Daily Criteria Pollutant Emissions by Construction Phase**

Phase	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
Civil	1.16	12.41	6.30	0.03	5.48	0.73
Electrical	1.41	13.32	7.68	0.03	0.84	0.31
Wiring	0.44	3.97	1.56	0.01	0.59	0.09
Testing	0.11	0.83	0.07	0.00	0.22	0.02
Civil - Demo	0.58	5.75	3.19	0.02	5.46	0.63

**Table 2**  
**Construction Emissions Summary**  
**Total Daily Criteria Pollutant Emissions for Overlapping Construction Phases**

Group <sup>a</sup>	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
<b>Substation Construction</b>						
Survey	0.11	0.86	0.07	0.00	5.78	0.57
Grading	8.99	55.86	53.28	0.21	139.29	18.40
Fencing, Control Building, Electrical, Wiring, Transformers, Maintenance Crew Equipment Check, Testing, Asphaltting	5.43	40.28	23.30	0.12	129.89	13.56
Civil	2.90	31.01	20.07	0.10	23.43	2.88
Landscaping	1.72	11.07	15.40	0.07	20.80	2.43
<b>Maximum</b>	<b>8.99</b>	<b>55.86</b>	<b>53.28</b>	<b>0.21</b>	<b>139.29</b>	<b>18.40</b>
<b>500 kV Transmission Line Construction</b>						
Survey	0.11	0.89	0.08	0.00	9.32	0.93
Marshalling Yard, Road and Landing Work, Install Helicopter Platforms	3.15	24.89	13.25	0.07	44.97	5.91
Marshalling Yard, Tower Removal, Tower Foundations Installation, Install Micropile Foundations, Tower Steel Haul, Tower Steel Assembly, Tower Erection, Tower Erection (Helicopter) Ground Support, Tower Helicopter Operations	54.09	112.65	604.98	32.37	244.93	36.06
Marshalling Yard, Foundation Removal	1.24	11.55	5.54	0.03	36.85	3.84
Marshalling Yard, Wire Stringing	20.89	65.73	41.33	1.52	189.48	20.01
Restoration	1.08	8.31	4.75	0.03	23.20	2.75
<b>Maximum</b>	<b>54.09</b>	<b>112.65</b>	<b>604.98</b>	<b>32.37</b>	<b>244.93</b>	<b>36.06</b>
<b>115 kV Subtransmission Line Construction</b>						
Survey	0.12	0.96	0.08	0.00	0.25	0.02
Marshalling Yard, Roads and Landing Work, Guard Structure Installation, Remove Existing Wood H-Frames and Poles, Remove Existing Tubular Steel/Light Weight Steel Poles, Install Tubular Steel Pole Foundations, Steel Pole Haul, Steel Pole Assembly, Steel Pole Erection, Wire Stringing, Guard Structure Removal, Vault Installation, Duct Bank Installation, Install Underground Cable	23.99	157.27	105.30	0.64	29.82	6.30
Restoration	1.22	9.85	5.55	0.03	3.58	0.53
<b>Maximum</b>	<b>23.99</b>	<b>157.27</b>	<b>105.30</b>	<b>0.64</b>	<b>29.82</b>	<b>6.30</b>
<b>Telecommunications Construction</b>						
Tower Foundation	0.71	8.05	4.31	0.02	0.93	0.25
Tower Construction	0.99	5.82	4.82	0.02	0.45	0.18
Dish Installation, Control Building, Overhead Communications Installation, Substation Telecommunications Equipment Installation	1.49	10.96	7.83	0.05	1.02	0.28
Santiago Peak Communication Site	0.45	2.87	1.50	0.01	16.20	1.65
<b>Maximum</b>	<b>1.49</b>	<b>10.96</b>	<b>7.83</b>	<b>0.05</b>	<b>16.20</b>	<b>1.65</b>
<b>Additional Substation Construction</b>						
Civil, Electrical, Wiring, Testing, Civil - Demo	3.68	36.28	18.80	0.09	12.58	1.77
<b>Maximum</b>	<b>3.68</b>	<b>36.28</b>	<b>18.80</b>	<b>0.09</b>	<b>12.58</b>	<b>1.77</b>
<b>PEAK DAILY<sup>b</sup></b>	<b>92.24</b>	<b>373.02</b>	<b>790.18</b>	<b>33.35</b>	<b>442.82</b>	<b>64.18</b>

<sup>a</sup> The construction phases within a group could all occur at the same time.

<sup>b</sup> Peak daily emissions are the sum of the maximum daily emissions during construction of the substation, the 500 kV transmission lines, the 115 kV subtransmission lines, the telecommunications facilities, and additional substation construction.

**Table 3**  
**Construction Emissions Summary**  
**Onsite Daily Criteria Pollutant Emissions by Construction Phase**

Phase	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
<b>Substation Site Demolition</b>	1.39	12.73	7.70	0.02	10.05	1.33
<b>Substation Site Water Line Relocation</b>	0.47	5.16	2.68	0.01	17.89	1.89
<b>Substation Construction</b>						
Survey	0.00	0.03	0.00	0.00	5.57	0.56
Grading	7.77	48.63	41.91	0.15	137.21	17.92
Fencing	0.16	2.27	1.13	0.00	15.61	1.58
Civil	1.69	23.53	10.30	0.04	22.13	2.45
Control Building	0.01	0.09	0.09	0.00	14.48	1.45
Electrical	0.87	9.35	6.16	0.02	16.94	1.90
Wiring	0.08	0.61	0.49	0.00	11.14	1.13
Transformers	0.40	4.21	2.08	0.01	20.87	2.16
Maintenance Crew Equipment Check	0.02	0.12	0.12	0.00	15.21	1.52
Testing	0.01	0.05	0.00	0.00	8.35	0.84
Asphalting	1.52	6.44	4.79	0.01	22.67	2.44
Landscaping	0.30	2.81	1.80	0.00	18.41	1.87
<b>500 kV Transmission Line Construction</b>						
Survey	0.00	0.00	0.00	0.00	0.00	0.00
Marshalling Yard	0.43	3.24	1.93	0.01	14.08	1.47
Roads and Landing Work	2.09	16.82	9.96	0.05	9.63	2.33
Install Helicopter Platforms	1.15	15.80	7.68	0.03	1.62	0.51
Tower Removal	0.75	4.54	3.93	0.02	0.16	0.15
Foundation Removal	0.48	5.92	2.51	0.01	0.11	0.10
Tower Foundations Installation	2.01	15.93	6.66	0.06	48.92	5.11
Install Micropile Foundations	1.15	15.80	7.68	0.03	0.24	0.22
Tower Steel Haul	0.18	2.65	0.59	0.01	0.02	0.02
Tower Steel Assembly	0.70	5.79	3.60	0.02	0.14	0.13
Tower Erection	1.07	5.93	5.55	0.02	0.21	0.20
Tower Erection (Helicopter) Ground Support	0.00	0.00	0.00	0.00	0.00	0.00
Tower Helicopter Operations	0.00	0.00	0.00	0.00	0.00	0.00
Wire Stringing	5.93	32.28	29.00	0.15	1.00	0.92
Restoration	0.87	6.75	4.42	0.02	2.77	0.71
<b>115 kV Subtransmission Line Construction</b>						
Survey	0.00	0.00	0.00	0.00	0.00	0.00
Marshalling Yard	0.26	2.53	1.09	0.01	10.43	1.08
Roads and Landing Work	1.60	12.73	7.50	0.04	4.88	1.15
Guard Structure Installation	1.35	8.18	6.39	0.04	0.23	0.22
Remove Existing Wood H-Frames and Poles	0.84	5.86	4.22	0.02	0.17	0.16
Remove Existing Tubular Steel/Light Weight Steel Poles	0.66	3.63	3.35	0.01	0.13	0.12
Install Tubular Steel Pole Foundations	1.11	9.18	4.07	0.03	1.16	0.25
Steel Pole Haul	0.51	2.12	2.39	0.01	0.09	0.08
Steel Pole Assembly	0.66	3.63	3.35	0.01	0.13	0.12
Steel Pole Erection	0.66	3.63	3.35	0.01	0.13	0.12
Wire Stringing	4.34	23.98	22.32	0.13	0.72	0.66
Vault Installation	1.92	12.58	7.81	0.05	0.71	0.36
Duct Bank Installation	0.71	8.86	3.54	0.02	0.89	0.30
Install Underground Cable	2.99	15.06	12.75	0.08	0.44	0.40
Guard Structure Removal	1.27	7.94	6.96	0.03	0.27	0.25
Restoration	0.96	7.93	4.78	0.02	3.10	0.48
<b>Telecommunications Construction</b>						
Tower Foundation	0.53	6.74	3.59	0.01	0.61	0.21
Tower Construction	0.83	4.64	4.38	0.02	0.17	0.15
Dish Installation	0.14	1.81	1.20	0.00	0.05	0.05
Control Building	0.46	2.97	2.93	0.02	0.09	0.08
Overhead Communications Installation	0.46	2.97	2.93	0.02	0.09	0.08
Substation Telecommunications Equipment Installation	0.00	0.00	0.00	0.00	0.00	0.00
Santiago Peak Communication Site	0.35	2.05	1.43	0.01	15.98	1.64
<b>Additional Substation Construction</b>						

**Table 3**  
**Construction Emissions Summary**  
**Onsite Daily Criteria Pollutant Emissions by Construction Phase**

Phase	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
Civil	0.78	9.93	3.94	0.02	4.99	0.61
Electrical	1.15	11.27	7.51	0.02	0.30	0.27
Wiring	0.17	1.92	1.39	0.00	0.06	0.05
Testing	0.00	0.00	0.00	0.00	0.00	0.00
Civil - Demo	0.30	3.79	1.95	0.01	5.02	0.56

**Table 4**  
**Construction Emissions Summary**  
**Total Daily Onsite Criteria Pollutant Emissions for Overlapping Construction Phases**

Group <sup>a</sup>	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
<b>Substation Site Demolition</b>	1.39	12.73	7.70	0.02	10.05	1.33
<b>Substation Site Water Line Relocation</b>	0.47	5.16	2.68	0.01	17.89	1.89
<b>Substation and Telecommunications Construction</b>						
Survey	0.00	0.03	0.00	0.00	5.57	0.56
Grading	7.77	48.63	41.91	0.15	137.21	17.92
Fencing, Control Building, Electrical, Wiring, Transformers, Maintenance Crew Equipment Check, Testing, Asphaltting	3.05	23.14	14.86	0.04	125.28	13.02
Civil	1.69	23.53	10.30	0.04	22.13	2.45
Landscaping	0.30	2.81	1.80	0.00	18.41	1.87
<b>Maximum Substation Construction</b>	<b>7.77</b>	<b>48.63</b>	<b>41.91</b>	<b>0.15</b>	<b>137.21</b>	<b>17.92</b>
<b>Maxim Substation plus Telecommunications</b>	<b>8.60</b>	<b>55.37</b>	<b>46.29</b>	<b>0.17</b>	<b>153.19</b>	<b>19.56</b>
<b>500 kV Transmission Line Construction</b>						
Survey	0.00	0.00	0.00	0.00	0.00	0.00
Marshalling Yard	0.43	3.24	1.93	0.01	14.08	1.47
Roads and Landing Work	2.09	16.82	9.96	0.05	9.63	2.33
Install Helicopter Platforms	1.15	15.80	7.68	0.03	1.62	0.51
Tower Removal	0.75	4.54	3.93	0.02	0.16	0.15
Foundation Removal	0.48	5.92	2.51	0.01	0.11	0.10
Tower Foundations Installation	2.01	15.93	6.66	0.06	48.92	5.11
Install Micropile Foundations	1.15	15.80	7.68	0.03	0.24	0.22
Tower Steel Haul	0.18	2.65	0.59	0.01	0.02	0.02
Tower Steel Assembly	0.70	5.79	3.60	0.02	0.14	0.13
Tower Erection	1.07	5.93	5.55	0.02	0.21	0.20
Tower Erection (Helicopter) Ground Support	0.00	0.00	0.00	0.00	0.00	0.00
Tower Helicopter Operations	0.00	0.00	0.00	0.00	0.00	0.00
Wire Stringing	5.93	32.28	29.00	0.15	1.00	0.92
Restoration	0.87	6.75	4.42	0.02	2.77	0.71
<b>Maximum</b>	<b>5.93</b>	<b>32.28</b>	<b>29.00</b>	<b>0.15</b>	<b>48.92</b>	<b>5.11</b>
<b>115 kV Subtransmission Line Construction</b>						
Survey	0.00	0.00	0.00	0.00	0.00	0.00
Marshalling Yard	0.26	2.53	1.09	0.01	10.43	1.08
Roads and Landing Work	1.60	12.73	7.50	0.04	4.88	1.15
Guard Structure Installation	1.35	8.18	6.39	0.04	0.23	0.22
Remove Existing Wood H-Frames and Poles	0.84	5.86	4.22	0.02	0.17	0.16
Remove Existing Tubular Steel/Light Weight Steel Poles	0.66	3.63	3.35	0.01	0.13	0.12
Install Tubular Steel Pole Foundations	1.11	9.18	4.07	0.03	1.16	0.25
Steel Pole Haul	0.51	2.12	2.39	0.01	0.09	0.08
Steel Pole Assembly	0.66	3.63	3.35	0.01	0.13	0.12
Steel Pole Erection	0.66	3.63	3.35	0.01	0.13	0.12
Wire Stringing	4.34	23.98	22.32	0.13	0.72	0.66
Vault Installation	1.92	12.58	7.81	0.05	0.71	0.36
Duct Bank Installation	0.71	8.86	3.54	0.02	0.89	0.30
Install Underground Cable	2.99	15.06	12.75	0.08	0.44	0.40
Guard Structure Removal	1.27	7.94	6.96	0.03	0.27	0.25
Restoration	0.96	7.93	4.78	0.02	3.10	0.48
<b>Maximum</b>	<b>4.34</b>	<b>23.98</b>	<b>22.32</b>	<b>0.13</b>	<b>10.43</b>	<b>1.15</b>
<b>Telecommunications Construction</b>						
Tower Foundation	0.53	6.74	3.59	0.01	0.61	0.21
Tower Construction	0.83	4.64	4.38	0.02	0.17	0.15
Dish Installation	0.14	1.81	1.20	0.00	0.05	0.05
Control Building	0.46	2.97	2.93	0.02	0.09	0.08
Overhead Communications Installation	0.46	2.97	2.93	0.02	0.09	0.08
Substation Telecommunications Equipment Installation	0.00	0.00	0.00	0.00	0.00	0.00
Santiago Peak Communication Site	0.35	2.05	1.43	0.01	15.98	1.64
<b>Maximum</b>	<b>0.83</b>	<b>6.74</b>	<b>4.38</b>	<b>0.02</b>	<b>15.98</b>	<b>1.64</b>
<b>Additional Substation Construction</b>						



**Table 4**  
**Construction Emissions Summary**  
**Total Daily Onsite Criteria Pollutant Emissions for Overlapping Construction Phases**

<b>Group<sup>a</sup></b>	<b>VOC (lb/day)</b>	<b>CO (lb/day)</b>	<b>NOX (lb/day)</b>	<b>SOX (lb/day)</b>	<b>PM10 (lb/day)</b>	<b>PM2.5 (lb/day)</b>
Civil	0.78	9.93	3.94	0.02	4.99	0.61
Electrical	1.15	11.27	7.51	0.02	0.30	0.27
Wiring	0.17	1.92	1.39	0.00	0.06	0.05
Testing	0.00	0.00	0.00	0.00	0.00	0.00
Civil - Demo	0.30	3.79	1.95	0.01	5.02	0.56
<b>Maximum</b>	<b>1.15</b>	<b>11.27</b>	<b>7.51</b>	<b>0.02</b>	<b>5.02</b>	<b>0.61</b>

<sup>a</sup> The construction phases within a group could all occur at the same time at the same location.

The following 115 kV Subtransmission Line construction activity emissions were divided by the following number of locations:

- Roads and Landing Work: 6 structure pads per day
- Guard Structure Installation: 4 structures per day
- Remove Existing H-Frames and Poles: 15 poles per day
- Remove Existing Tubular Steel/Light Weight Steel Poles: 2 poles per day
- Steel Pole Assembly: 2 poles per day
- Steel Pole Erection: 2 poles per day
- Guard Structure Removal: 6 structures per day
- Restoration: 6 structure pads per day

**Table 5**  
**Construction Emissions**  
**Localized Significance Threshold Analysis**

Pollutant	Maximum Daily Onsite Emissions	Receptor Distance (m)	Allowable Emissions Interpolation <sup>a</sup>				Interpolated Emissions (lb/day) <sup>b</sup>	Allowable Exceeded?
			Distance 1 (m)	Emissions 1 (lb/day)	Distance 2 (m)	Emissions 2 (lb/day)		
<b>Demolition<sup>c,d</sup></b>								
CO	13	270	200	7,535	500	25,792	11,795	No
NOx	8	270	200	672	500	1,072	765	No
PM10	10	420	200	96	500	207	177	No
PM2.5	1	420	200	31	500	105	85	No
<b>Water Line Relocation<sup>c,e</sup></b>								
CO	5	270	200	4,850	500	21,040	8,628	No
NOx	3	270	200	460	500	896	562	No
PM10	18	420	200	67	500	178	148	No
PM2.5	2	420	200	20	500	86	68	No
<b>Substation and Telecommunications Construction<sup>c</sup></b>								
CO	55	270	200	7,535	500	25,792	11,795	No
NOx	46	270	200	672	500	1,072	765	No
PM10	153	420	200	96	500	207	177	No
PM2.5	20	420	200	31	500	105	85	No
<b>500 kV Transmission Line Construction<sup>f</sup></b>								
CO	32	93	50	974	100	1,918	1,786	No
NOx	29	93	50	203	100	292	280	No
PM10	49	93	50	12	100	30	27	Yes
PM2.5	5	93	50	4	100	8	7	No
<b>115 kV Subtransmission Line Construction<sup>g</sup></b>								
CO	24	25	25	661	25	661	661	No
NOx	22	25	25	162	25	162	162	No
PM10	10	25	25	13	25	13	13	No
PM2.5	1	25	25	3	25	3	3	No

<sup>a</sup> Allowable emissions are from Appendix C to Final Localized Significance Methodology, SCAQMD, revised July 2008, downloaded from <http://www.aqmd.gov/ceqa/handbook/LST/LST.html>

<sup>b</sup> Interpolated emissions = Emissions 1 + (Receptor distance - Distance 1) x (Emissions 2 - Emissions 1) / (Distance 2 - Distance 1)

<sup>c</sup> CO and NOx receptor distances are closest commercial receptor; PM10 and PM2.5 are closest residential receptor. Allowable emissions are for a 5 acre site.

<sup>d</sup> Allowable emissions are for a 5 acre site.

<sup>e</sup> Allowable emissions are for a 1 acre site.

<sup>f</sup> Closest receptor to a transmission tower base is a residence at approximately 93 meters. Allowable emissions are for a 1 acre site.

<sup>g</sup> Allowable emissions for CO, NOx and PM2.5 are for a 1-acre site to represent construction at a pole location.

Maximum PM10 emissions occur at the marshalling yard, so allowable emissions are for a 5-acre site

**Table 6**  
**Construction Emissions Summary**  
**Total Greenhouse Gas Emissions by Construction Phase**

Phase	CO <sub>2</sub> e (MT)
<b>Substation Site Demolition</b>	283.31
<b>Substation Site Water Line Relocation</b>	11.84
<b>Substation Construction</b>	
Survey	1.89
Grading	557.62
Fencing	7.31
Civil	375.00
Control Building	4.02
Electrical	346.90
Wiring	71.94
Transformers	57.20
Maintenance Crew Equipment Check	8.83
Testing	25.71
Asphalting	66.81
Landscaping	144.94
<b>500 kV Transmission Line Construction</b>	
Survey	0.52
Marshalling Yard	87.79
Roads and Landing Work	53.15
Install Helicopter Platforms	32.89
Tower Removal	4.03
Foundation Removal	1.46
Tower Foundations Installation	63.63
Install Micropile Foundations	122.15
Tower Steel Haul	3.76
Tower Steel Assembly	38.82
Tower Erection	32.96
Tower Erection (Helicopter) Ground Support	6.40
Tower Helicopter Operations	1,626.43
Wire Stringing	18.53
Restoration	4.27
<b>115 kV Subtransmission Line Construction</b>	
Survey	2.54
Marshalling Yard	145.31
Roads and Landing Work	128.76
Guard Structure Installation	52.96
Remove Existing Wood H-Frames and Poles	24.84
Remove Existing Tubular Steel/Light Weight Steel Poles	4.98
Install Tubular Steel Pole Foundations	159.88
Steel Pole Haul	95.64
Steel Pole Assembly	254.01
Steel Pole Erection	254.01
Wire Stringing	541.72
Vault Installation	15.31
Duct Bank Installation	17.61
Install Underground Cable	94.21
Guard Structure Removal	29.04
Restoration	22.66
<b>Telecommunications Construction</b>	
Tower Foundation	3.69

**Table 6**  
**Construction Emissions Summary**  
**Total Greenhouse Gas Emissions by Construction Phase**

<b>Phase</b>	<b>CO<sub>2</sub>e (MT)</b>
Tower Construction	29.76
Dish Installation	2.99
Control Building	21.81
Overhead Communications Installation	28.92
Substation Telecommunications Equipment Installation	0.91
Santiago Peak Communication Site	18.85
<b>Additional Substation Construction</b>	
Civil	11.89
Electrical	24.70
Wiring	12.80
Testing	2.43
Civil - Demo	6.67
<b>Total</b>	<b>6,069.00</b>

**Table 7  
Substation Site Demolition Emissions**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.39	12.69	7.61	0.02	0.39	0.36	47.9
Onsite Motor Vehicle Exhaust	0.01	0.04	0.09	0.00	0.00	0.00	1.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	9.65	0.97	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>1.39</b>	<b>12.73</b>	<b>7.70</b>	<b>0.02</b>	<b>10.05</b>	<b>1.33</b>	<b>48.9</b>
Offsite Motor Vehicle Exhaust	2.03	11.17	22.45	0.10	1.19	0.89	234.4
Offsite Motor Vehicle Fugitive PM	--	--	--	--	2.11	0.00	
<b>Offsite Total</b>	<b>2.03</b>	<b>11.17</b>	<b>22.45</b>	<b>0.10</b>	<b>3.30</b>	<b>0.89</b>	<b>234.4</b>
<b>Total</b>	<b>3.42</b>	<b>23.90</b>	<b>30.16</b>	<b>0.12</b>	<b>13.35</b>	<b>2.22</b>	<b>283.3</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Track Loader	148	2	50	8
Bobcat	75	1	50	4

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Track Loader	148	0.082	0.727	0.445	0.001	0.024	0.022	121.188	0.007	Crawler Tractors
Bobcat	75	0.017	0.267	0.124	0.001	0.002	0.002	42.762	0.002	Skid Steer Loaders

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction=

0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Track Loader	1.32	11.62	7.11	0.02	0.39	0.35
Bobcat	0.07	1.07	0.50	0.00	0.01	0.01
<b>Total</b>	<b>1.39</b>	<b>12.69</b>	<b>7.61</b>	<b>0.02</b>	<b>0.39</b>	<b>0.36</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Track Loader	44.0	0.0	44.0
Bobcat	3.9	0.0	3.9
<b>Total</b>	<b>47.9</b>	<b>0.0</b>	<b>47.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number <sup>b</sup>	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Water Truck	1	50	4	10
<b>Offsite</b>				
Dump Truck	40	50	N/A	60
Worker Commute	4	50	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

<sup>b</sup> Dump trucks based on 20,000 CY hauled offsite over 50 days and 10 CY/truck = 20,000 / 50 / 10 = 40

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
<b>Offsite</b>									
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 7**  
**Substation Site Demolition Emissions**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Water Truck	0.01	0.04	0.09	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.01</b>	<b>0.04</b>	<b>0.09</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Dump Truck	1.92	10.35	22.38	0.10	1.16	0.87
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>2.03</b>	<b>11.17</b>	<b>22.45</b>	<b>0.10</b>	<b>1.19</b>	<b>0.89</b>
<b>Total</b>	<b>2.04</b>	<b>11.21</b>	<b>22.54</b>	<b>0.10</b>	<b>1.19</b>	<b>0.89</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Water Truck	1.0	0.0	1.0
<b>Onsite Total</b>	<b>1.0</b>	<b>0.0</b>	<b>1.0</b>
<b>Offsite</b>			
Dump Truck	228.3	0.0	228.4
Worker Commute	6.0	0.0	6.1
<b>Offsite Total</b>	<b>234.4</b>	<b>0.0</b>	<b>234.4</b>
<b>Total</b>	<b>235.3</b>	<b>0.0</b>	<b>235.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Water Truck	1	Unpaved	10	0.965	0.097	9.65	0.97
<b>Onsite Total</b>						<b>9.65</b>	<b>0.97</b>
<b>Offsite</b>							
Dump Truck	40	Paved	60	0.001	0.000	1.92	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>2.11</b>	<b>0.00</b>
<b>Total</b>						<b>11.77</b>	<b>0.97</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion <sup>d</sup>	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 8  
Substation Site Water Line Relocation Emissions**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.46	5.08	2.56	0.01	0.10	0.10	7.4
Onsite Motor Vehicle Exhaust	0.01	0.09	0.12	0.00	0.01	0.01	0.2
Onsite Motor Vehicle Fugitive PM	--	--	--	--	17.63	1.76	
Earthwork Fugitive PM	--	--	--	--	0.15	0.03	
<b>Onsite Total</b>	<b>0.47</b>	<b>5.16</b>	<b>2.68</b>	<b>0.01</b>	<b>17.89</b>	<b>1.89</b>	<b>7.6</b>
Offsite Motor Vehicle Exhaust	0.18	1.44	0.12	0.00	0.04	0.03	4.2
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.34	0.00	
<b>Offsite Total</b>	<b>0.18</b>	<b>1.44</b>	<b>0.12</b>	<b>0.00</b>	<b>0.38</b>	<b>0.03</b>	<b>4.2</b>
<b>Total</b>	<b>0.65</b>	<b>6.60</b>	<b>2.80</b>	<b>0.01</b>	<b>18.26</b>	<b>1.92</b>	<b>11.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Backhoe	79	1	20	8
Crane	125	1	20	5

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Backhoe	79	0.028	0.338	0.176	0.001	0.006	0.005	51.728	0.003	Tractors/Loaders/Backhoes
Crane	125	0.046	0.474	0.230	0.001	0.012	0.011	80.345	0.004	Cranes

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction=

0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Backhoe	0.22	2.70	1.41	0.00	0.04	0.04
Crane	0.23	2.37	1.15	0.00	0.06	0.06
<b>Total</b>	<b>0.46</b>	<b>5.08</b>	<b>2.56</b>	<b>0.01</b>	<b>0.10</b>	<b>0.10</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Backhoe	3.8	0.0	3.8
Crane	3.6	0.0	3.6
<b>Total</b>	<b>7.4</b>	<b>0.0</b>	<b>7.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number <sup>b</sup>	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Flatbed Truck	1	20	1	2.5
Stakebed Truck	2	20	2	5
Crew Vehicle	2	20	2	5
<b>Offsite</b>				
Worker Commute	7	20	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Flatbed Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Stakebed Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Crew Vehicle	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Highest (Most Conservative) EMFAC2007 (version 2.3) or Highest (Most Conservative) EMFAC2007 (version 2.3)

**Table 8  
Substation Site Water Line Relocation Emissions**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Flatbed Truck	0.00	0.01	0.02	0.00	0.00	0.00
Stakebed Truck	0.01	0.04	0.09	0.00	0.00	0.00
Crew Vehicle	0.00	0.03	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.01</b>	<b>0.09</b>	<b>0.12</b>	<b>0.00</b>	<b>0.01</b>	<b>0.01</b>
<b>Offsite</b>						
Worker Commute	0.18	1.44	0.12	0.00	0.04	0.03
<b>Offsite Total</b>	<b>0.18</b>	<b>1.44</b>	<b>0.12</b>	<b>0.00</b>	<b>0.04</b>	<b>0.03</b>
<b>Total</b>	<b>0.20</b>	<b>1.53</b>	<b>0.24</b>	<b>0.01</b>	<b>0.05</b>	<b>0.03</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Flatbed Truck	0.1	0.0	0.1
Crew Vehicle	0.1	0.0	0.1
<b>Onsite Total</b>	<b>0.2</b>	<b>0.0</b>	<b>0.2</b>
<b>Offsite</b>			
Worker Commute	4.2	0.0	4.2
<b>Offsite Total</b>	<b>4.2</b>	<b>0.0</b>	<b>4.2</b>
<b>Total</b>	<b>4.4</b>	<b>0.0</b>	<b>4.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Flatbed Truck	1	Unpaved	2.5	0.965	0.097	2.41	0.24
Stakebed Truck	2	Unpaved	5	0.965	0.097	9.65	0.97
Crew Vehicle	2	Unpaved	5	0.556	0.056	5.56	0.56
<b>Onsite Total</b>						<b>17.63</b>	<b>1.76</b>
<b>Offsite</b>							
Worker Commute	7	Paved	60	0.001	0.000	0.34	0.00
<b>Offsite Total</b>						<b>0.34</b>	<b>0.00</b>
<b>Total</b>						<b>17.97</b>	<b>1.76</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	147	9.94E-04	2.07E-04	0.15	0.03
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.15</b>	<b>0.03</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Based on trench 4 ft. wide x 6 ft. deep x 1,700 ft. long over 20 days x 2 = 4 ft. x 6 ft. x 1,770 ft. / 27 cu. ft. per CY / 20 days = 151 CY/day 7



**Table 9  
Substation Construction Emissions  
Survey**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.00	0.03	0.00	0.00	0.00	0.00	0.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	5.56	0.56	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.00</b>	<b>0.03</b>	<b>0.00</b>	<b>0.00</b>	<b>5.57</b>	<b>0.56</b>	<b>0.1</b>
Offsite Motor Vehicle Exhaust	0.10	0.82	0.07	0.00	0.02	0.02	1.8
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.19	0.00	
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.22</b>	<b>0.02</b>	<b>1.8</b>
<b>Total</b>	<b>0.11</b>	<b>0.86</b>	<b>0.07</b>	<b>0.00</b>	<b>5.78</b>	<b>0.57</b>	<b>1.9</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
None				

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
None		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
None	0.0	0.0	0.0
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Crew Vehicle	2	15	2	5
<b>Offsite</b>				
Worker Commute	4	15	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Crew Vehicle	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 9**  
**Substation Construction Emissions**  
**Survey**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Crew Vehicle	0.00	0.03	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.03</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>
<b>Total</b>	<b>0.11</b>	<b>0.86</b>	<b>0.07</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Crew Vehicle	0.1	0.0	0.1
<b>Onsite Total</b>	<b>0.1</b>	<b>0.0</b>	<b>0.1</b>
<b>Offsite</b>			
Worker Commute	1.8	0.0	1.8
<b>Offsite Total</b>	<b>1.8</b>	<b>0.0</b>	<b>1.8</b>
<b>Total</b>	<b>1.9</b>	<b>0.0</b>	<b>1.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Crew Vehicle	2	Unpaved	5	0.556	0.056	5.56	0.56
<b>Onsite Total</b>						<b>5.56</b>	<b>0.56</b>
<b>Offsite</b>							
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.19</b>	<b>0.00</b>
<b>Total</b>						<b>5.76</b>	<b>0.56</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 10**  
**Substation Construction Emissions**  
**Grading**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	7.68	48.05	41.39	0.15	1.61	1.48	393.3
Onsite Motor Vehicle Exhaust	0.09	0.59	0.52	0.00	0.04	0.03	9.2
Onsite Motor Vehicle Fugitive PM	--	--	--	--	109.10	10.91	
Earthwork Fugitive PM	--	--	--	--	26.46	5.50	
<b>Onsite Total</b>	<b>7.77</b>	<b>48.63</b>	<b>41.91</b>	<b>0.15</b>	<b>137.21</b>	<b>17.92</b>	<b>402.4</b>
Offsite Motor Vehicle Exhaust	1.22	7.23	11.36	0.05	0.64	0.47	155.2
Offsite Motor Vehicle Fugitive PM	--	--	--	--	1.44	0.00	
<b>Offsite Total</b>	<b>1.22</b>	<b>7.23</b>	<b>11.36</b>	<b>0.05</b>	<b>2.08</b>	<b>0.47</b>	<b>155.2</b>
<b>Total</b>	<b>8.99</b>	<b>55.86</b>	<b>53.28</b>	<b>0.21</b>	<b>139.29</b>	<b>18.40</b>	<b>557.6</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Dozer	305	2	60	7
Loader	147	3	60	4
Scraper	267	3	60	7
Grader	110	1	60	7
4x4 Backhoe	79	2	60	7
4x4 Tamper	174	1	60	7
Excavator	152	1	60	7

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Dozer	305	0.139	0.588	0.753	0.003	0.028	0.026	259.229	0.013	Crawler Tractors
Loader	147	0.055	0.620	0.259	0.001	0.013	0.012	106.315	0.005	Rubber Tired Loaders
Scraper	267	0.176	0.733	0.973	0.003	0.036	0.034	321.428	0.016	Scrapers
Grader	110	0.052	0.501	0.322	0.001	0.015	0.014	74.965	0.005	Graders
4x4 Backhoe	79	0.028	0.338	0.176	0.001	0.006	0.005	51.728	0.003	Tractors/Loaders/Backhoes
4x4 Tamper	174	0.038	0.586	0.173	0.001	0.007	0.007	106.516	0.003	Other Construction Equipment
Excavator	152	0.052	0.664	0.198	0.001	0.009	0.008	112.222	0.005	Excavators

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5  
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,  
[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Dozer	1.95	8.23	10.54	0.04	0.39	0.36
Loader	0.66	7.44	3.11	0.01	0.16	0.14
Scraper	3.69	15.40	20.43	0.07	0.77	0.70
Grader	0.36	3.51	2.25	0.01	0.11	0.10
4x4 Backhoe	0.39	4.73	2.47	0.01	0.08	0.07
4x4 Tamper	0.27	4.10	1.21	0.01	0.05	0.05
Excavator	0.36	4.64	1.39	0.01	0.06	0.06
<b>Total</b>	<b>7.68</b>	<b>48.05</b>	<b>41.39</b>	<b>0.15</b>	<b>1.61</b>	<b>1.48</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Dozer	98.8	0.0	98.9
Loader	34.7	0.0	34.8
Scraper	183.7	0.0	183.9
Grader	14.3	0.0	14.3
4x4 Backhoe	19.7	0.0	19.7
4x4 Tamper	20.3	0.0	20.3
Excavator	21.4	0.0	21.4
<b>Total</b>	<b>392.9</b>	<b>0.0</b>	<b>393.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Table 10**  
**Substation Construction Emissions**  
**Grading**

**Motor Vehicle Usage**

Vehicle	Number <sup>b</sup>	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Water Truck	3	60	7	17.5
Crew Vehicle	6	60	7	17.5
<b>Offsite</b>				
Dump Truck	20	60	N/A	60
Worker Commute	10	60	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

<sup>b</sup> Dump trucks based on 8,000 CY hauled offsite over 60 days and 10 CY/truck = 8,000 / 60 / 10 = 13.3

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Crew Vehicle	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Water Truck	0.04	0.23	0.49	0.00	0.03	0.02
Crew Vehicle	0.05	0.36	0.03	0.00	0.01	0.01
<b>Onsite Total</b>	<b>0.09</b>	<b>0.59</b>	<b>0.52</b>	<b>0.00</b>	<b>0.04</b>	<b>0.03</b>
<b>Offsite</b>						
Dump Truck	0.96	5.17	11.19	0.05	0.58	0.44
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
<b>Offsite Total</b>	<b>1.22</b>	<b>7.23</b>	<b>11.36</b>	<b>0.05</b>	<b>0.64</b>	<b>0.47</b>
<b>Total</b>	<b>1.31</b>	<b>7.82</b>	<b>11.88</b>	<b>0.06</b>	<b>0.68</b>	<b>0.50</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Water Truck	6.0	0.0	6.0
Crew Vehicle	3.2	0.0	3.2
<b>Onsite Total</b>	<b>9.2</b>	<b>0.0</b>	<b>9.2</b>
<b>Offsite</b>			
Dump Truck	137.0	0.0	137.0
Worker Commute	18.1	0.0	18.2
<b>Offsite Total</b>	<b>155.1</b>	<b>0.0</b>	<b>155.2</b>
<b>Total</b>	<b>164.3</b>	<b>0.0</b>	<b>164.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Water Truck	3	Unpaved	17.5	0.965	0.097	50.67	5.07
Crew Vehicle	6	Unpaved	17.5	0.556	0.056	58.43	5.84
<b>Onsite Total</b>						<b>109.10</b>	<b>10.91</b>
<b>Offsite</b>							
Dump Truck	20	Paved	60	0.001	0.000	0.96	0.00
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
<b>Offsite Total</b>						<b>1.44</b>	<b>0.00</b>
<b>Total</b>						<b>110.54</b>	<b>10.91</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Table 10**  
**Substation Construction Emissions**  
**Grading**

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	3,078	9.94E-04	2.07E-04	3.06	0.64
Bulldozing, Scraping and Grading	hr/day	42	0.348	0.072	14.60	3.04
Storage Pile Wind Erosion <sup>d</sup>	acres	0.4	22.0	4.58	8.80	1.83
<b>Total</b>					<b>26.46</b>	<b>5.50</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Peak daily estimated from total of 114,700 CY plus 70,000 CY from borrow pit, total 184,700 CY over 60 days

<sup>d</sup> Based on 1,000 CY in each of two cones 9 ft. tall x 100 ft. diameter

**Table 11  
Substation Construction Emissions  
Fencing**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.14	2.13	0.99	0.00	0.02	0.02	2.3
Onsite Motor Vehicle Exhaust	0.02	0.13	0.14	0.00	0.01	0.00	0.4
Onsite Motor Vehicle Fugitive PM	--	--	--	--	15.59	1.56	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.16</b>	<b>2.27</b>	<b>1.13</b>	<b>0.00</b>	<b>15.61</b>	<b>1.58</b>	<b>2.8</b>
Offsite Motor Vehicle Exhaust	0.26	2.06	0.17	0.01	0.06	0.04	4.5
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.48	0.00	
<b>Offsite Total</b>	<b>0.26</b>	<b>2.06</b>	<b>0.17</b>	<b>0.01</b>	<b>0.54</b>	<b>0.04</b>	<b>4.5</b>
<b>Total</b>	<b>0.42</b>	<b>4.32</b>	<b>1.30</b>	<b>0.01</b>	<b>16.15</b>	<b>1.62</b>	<b>7.3</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Bobcat	75	1	15	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Bobcat	75	0.017	0.267	0.124	0.001	0.002	0.002	42.762	0.002	Skid Steer Loaders

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Bobcat	0.14	2.13	0.99	0.00	0.02	0.02
<b>Total</b>	<b>0.14</b>	<b>2.13</b>	<b>0.99</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Bobcat	2.3	0.0	2.3
<b>Total</b>	<b>2.3</b>	<b>0.0</b>	<b>2.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Flatbed Truck	1	15	3	7.5
Crewcab Truck	3	15	2	5
<b>Offsite</b>				
Worker Commute	10	15	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Flatbed Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Crewcab Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 11  
Substation Construction Emissions  
Fencing**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Flatbed Truck	0.01	0.04	0.05	0.00	0.00	0.00
Crewcab Truck	0.01	0.09	0.09	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.02</b>	<b>0.13</b>	<b>0.14</b>	<b>0.00</b>	<b>0.01</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
<b>Offsite Total</b>	<b>0.26</b>	<b>2.06</b>	<b>0.17</b>	<b>0.01</b>	<b>0.06</b>	<b>0.04</b>
<b>Total</b>	<b>0.28</b>	<b>2.19</b>	<b>0.31</b>	<b>0.01</b>	<b>0.06</b>	<b>0.04</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Flatbed Truck	0.1	0.0	0.1
Crewcab Truck	0.3	0.0	0.3
<b>Onsite Total</b>	<b>0.4</b>	<b>0.0</b>	<b>0.4</b>
<b>Offsite</b>			
Worker Commute	4.5	0.0	4.5
<b>Offsite Total</b>	<b>4.5</b>	<b>0.0</b>	<b>4.5</b>
<b>Total</b>	<b>5.0</b>	<b>0.0</b>	<b>5.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Flatbed Truck	1	Unpaved	7.5	0.965	0.097	7.24	0.72
Crewcab Truck	3	Unpaved	5	0.556	0.056	8.35	0.83
<b>Onsite Total</b>						<b>15.59</b>	<b>1.56</b>
<b>Offsite</b>							
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
<b>Offsite Total</b>						<b>0.48</b>	<b>0.00</b>
<b>Total</b>						<b>16.07</b>	<b>1.56</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 12**  
**Substation Construction Emissions**  
**Civil**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.68	23.43	10.09	0.04	0.26	0.24	155.6
Onsite Motor Vehicle Exhaust	0.02	0.10	0.21	0.00	0.01	0.01	3.9
Onsite Motor Vehicle Fugitive PM	--	--	--	--	21.72	2.17	
Earthwork Fugitive PM	--	--	--	--	0.14	0.03	
<b>Onsite Total</b>	<b>1.69</b>	<b>23.53</b>	<b>10.30</b>	<b>0.04</b>	<b>22.13</b>	<b>2.45</b>	<b>159.4</b>
Offsite Motor Vehicle Exhaust	1.21	7.48	9.77	0.05	0.58	0.43	215.6
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.72	0.00	
<b>Offsite Total</b>	<b>1.21</b>	<b>7.48</b>	<b>9.77</b>	<b>0.05</b>	<b>1.30</b>	<b>0.43</b>	<b>215.6</b>
<b>Total</b>	<b>2.90</b>	<b>31.01</b>	<b>20.07</b>	<b>0.10</b>	<b>23.43</b>	<b>2.88</b>	<b>375.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Excavator	152	2	90	4
Foundation Auger	79	2	90	7
Backhoe	79	3	90	6
Skip Loader	75	2	90	3
Bobcat Skid Steer	75	2	90	4
Forklift	83	1	90	4
17-Ton Crane	125	1	90	2

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Excavator	152	0.052	0.664	0.198	0.001	0.009	0.008	112.222	0.005	Excavators
Foundation Auger	79	0.025	0.466	0.195	0.001	0.002	0.002	77.122	0.002	Bore/Drill Rigs
Backhoe	79	0.028	0.338	0.176	0.001	0.006	0.005	51.728	0.003	Tractors/Loaders/Backhoes
Skip Loader	75	0.017	0.267	0.124	0.001	0.002	0.002	42.762	0.002	Skid Steer Loaders
Bobcat Skid Steer	75	0.017	0.267	0.124	0.001	0.002	0.002	42.762	0.002	Skid Steer Loaders
Forklift	83	0.017	0.209	0.100	0.000	0.002	0.002	31.225	0.002	Forklifts
17-Ton Crane	125	0.046	0.474	0.230	0.001	0.012	0.011	80.345	0.004	Cranes

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5  
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,  
[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Excavator	0.41	5.31	1.59	0.01	0.07	0.07
Foundation Auger	0.35	6.52	2.74	0.01	0.03	0.03
Backhoe	0.51	6.08	3.17	0.01	0.10	0.09
Skip Loader	0.10	1.60	0.74	0.00	0.01	0.01
Bobcat Skid Steer	0.14	2.13	0.99	0.00	0.02	0.02
Forklift	0.07	0.83	0.40	0.00	0.01	0.01
17-Ton Crane	0.09	0.95	0.46	0.00	0.02	0.02
<b>Total</b>	<b>1.68</b>	<b>23.43</b>	<b>10.09</b>	<b>0.04</b>	<b>0.26</b>	<b>0.24</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Excavator	36.7	0.0	36.7
Foundation Auger	44.1	0.0	44.1
Backhoe	38.0	0.0	38.1
Skip Loader	10.5	0.0	10.5
Bobcat Skid Steer	26.2	0.0	26.3
Forklift	0.0	0.0	0.0
17-Ton Crane	0.0	0.0	0.0
<b>Total</b>	<b>155.5</b>	<b>0.0</b>	<b>155.6</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)



**Table 12**  
**Substation Construction Emissions**  
**Civil**

**Motor Vehicle Usage**

Vehicle	Number <sup>b</sup>	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Dump Truck	2	90	2	5
Water Truck	1	90	5	12.5
<b>Offsite</b>				
Concrete Truck	17	90	N/A	60
Worker Commute	15	90	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

<sup>b</sup> Concrete trucks based on 15,000 CY over 90 days and 10 CY/truck = 15,000 / 90 / 10 = 16.6

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
<b>Offsite</b>									
Concrete Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Dump Truck	0.01	0.04	0.09	0.00	0.00	0.00
Water Truck	0.01	0.05	0.12	0.00	0.01	0.00
<b>Onsite Total</b>	<b>0.02</b>	<b>0.10</b>	<b>0.21</b>	<b>0.00</b>	<b>0.01</b>	<b>0.01</b>
<b>Offsite</b>						
Concrete Truck	0.82	4.40	9.51	0.04	0.50	0.37
Worker Commute	0.39	3.08	0.26	0.01	0.09	0.06
<b>Offsite Total</b>	<b>1.21</b>	<b>7.48</b>	<b>9.77</b>	<b>0.05</b>	<b>0.58</b>	<b>0.43</b>
<b>Total</b>	<b>1.23</b>	<b>7.58</b>	<b>9.98</b>	<b>0.05</b>	<b>0.59</b>	<b>0.44</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Dump Truck	1.7	0.0	1.7
Water Truck	2.1	0.0	2.1
<b>Onsite Total</b>	<b>3.9</b>	<b>0.0</b>	<b>3.9</b>
<b>Offsite</b>			
Concrete Truck	174.7	0.0	174.7
Worker Commute	40.8	0.0	40.8
<b>Offsite Total</b>	<b>215.5</b>	<b>0.0</b>	<b>215.6</b>
<b>Total</b>	<b>219.4</b>	<b>0.0</b>	<b>219.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Dump Truck	2	Unpaved	5	0.965	0.097	9.65	0.97
Water Truck	1	Unpaved	12.5	0.965	0.097	12.06	1.21
<b>Onsite Total</b>						<b>21.72</b>	<b>2.17</b>
<b>Offsite</b>							
Concrete Truck	17	Paved	60	0.001	0.000	0.82	0.00
Worker Commute	15	Paved	60	0.001	0.000	0.72	0.00
<b>Offsite Total</b>						<b>0.72</b>	<b>0.00</b>
<b>Total</b>						<b>22.44</b>	<b>2.17</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Table 12**  
**Substation Construction Emissions**  
**Civil**

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	140	9.94E-04	2.07E-04	0.14	0.03
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.14</b>	<b>0.03</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Peak daily estimated from total of 12,000 CY over 90 days

**Table 13  
Substation Construction Emissions  
Control Building**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.01	0.09	0.09	0.00	0.00	0.00	0.4
Onsite Motor Vehicle Fugitive PM	--	--	--	--	14.48	1.45	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.01</b>	<b>0.09</b>	<b>0.09</b>	<b>0.00</b>	<b>14.48</b>	<b>1.45</b>	<b>0.4</b>
Offsite Motor Vehicle Exhaust	0.16	1.23	0.10	0.00	0.03	0.02	3.6
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.29	0.00	
<b>Offsite Total</b>	<b>0.16</b>	<b>1.23</b>	<b>0.10</b>	<b>0.00</b>	<b>0.32</b>	<b>0.02</b>	<b>3.6</b>
<b>Total</b>	<b>0.17</b>	<b>1.32</b>	<b>0.20</b>	<b>0.00</b>	<b>14.80</b>	<b>1.47</b>	<b>4.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
None				

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
None		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
None	0.0	0.0	0.0
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Carry-all Truck	2	20	2	5
Stake Truck	1	20	2	5
<b>Offsite</b>				
Worker Commute	6	20	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Carry-all Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Stake Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 13  
Substation Construction Emissions  
Control Building**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Carry-all Truck	0.01	0.06	0.06	0.00	0.00	0.00
Stake Truck	0.00	0.03	0.03	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.01</b>	<b>0.09</b>	<b>0.09</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.16	1.23	0.10	0.00	0.03	0.02
<b>Offsite Total</b>	<b>0.16</b>	<b>1.23</b>	<b>0.10</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>
<b>Total</b>	<b>0.17</b>	<b>1.32</b>	<b>0.20</b>	<b>0.00</b>	<b>0.04</b>	<b>0.03</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Carry-all Truck	0.3	0.0	0.3
Stake Truck	0.1	0.0	0.1
<b>Onsite Total</b>	<b>0.4</b>	<b>0.0</b>	<b>0.4</b>
<b>Offsite</b>			
Worker Commute	3.6	0.0	3.6
<b>Offsite Total</b>	<b>3.6</b>	<b>0.0</b>	<b>3.6</b>
<b>Total</b>	<b>4.0</b>	<b>0.0</b>	<b>4.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Carry-all Truck	2	Unpaved	5	0.965	0.097	9.65	0.97
Stake Truck	1	Unpaved	5	0.965	0.097	4.83	0.48
<b>Onsite Total</b>						<b>14.48</b>	<b>1.45</b>
<b>Offsite</b>							
Worker Commute	6	Paved	60	0.001	0.000	0.29	0.00
<b>Offsite Total</b>						<b>0.29</b>	<b>0.00</b>
<b>Total</b>						<b>14.77</b>	<b>1.45</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 14**  
**Substation Construction Emissions**  
**Electrical**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.85	9.25	6.15	0.02	0.25	0.23	206.2
Onsite Motor Vehicle Exhaust	0.01	0.10	0.01	0.00	0.00	0.00	4.5
Onsite Motor Vehicle Fugitive PM	--	--	--	--	16.69	1.67	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.87</b>	<b>9.35</b>	<b>6.16</b>	<b>0.02</b>	<b>16.94</b>	<b>1.90</b>	<b>210.8</b>
Offsite Motor Vehicle Exhaust	0.39	3.08	0.26	0.01	0.09	0.06	136.1
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.72	0.00	
<b>Offsite Total</b>	<b>0.39</b>	<b>3.08</b>	<b>0.26</b>	<b>0.01</b>	<b>0.81</b>	<b>0.06</b>	<b>136.1</b>
<b>Total</b>	<b>1.26</b>	<b>12.43</b>	<b>6.41</b>	<b>0.03</b>	<b>17.75</b>	<b>1.96</b>	<b>346.9</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Scissor Lift	87	2	300	5
Manlift	43	2	300	7
Reach Manlift	87	2	300	6
15-Ton Crane	125	1	300	5

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Scissor Lift	87	0.018	0.226	0.150	0.000	0.006	0.006	38.072	0.002	Aerial Lifts
Manlift	43	0.017	0.135	0.122	0.000	0.003	0.003	19.613	0.002	Aerial Lifts
Reach Manlift	87	0.018	0.226	0.150	0.000	0.006	0.006	38.072	0.002	Aerial Lifts
15-Ton Crane	125	0.046	0.474	0.230	0.001	0.012	0.011	80.345	0.004	Cranes

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Scissor Lift	0.18	2.26	1.50	0.00	0.06	0.06
Manlift	0.23	1.89	1.71	0.00	0.05	0.04
Reach Manlift	0.21	2.72	1.79	0.01	0.08	0.07
15-Ton Crane	0.23	2.37	1.15	0.00	0.06	0.06
<b>Total</b>	<b>0.85</b>	<b>9.25</b>	<b>6.15</b>	<b>0.02</b>	<b>0.25</b>	<b>0.23</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Scissor Lift	51.8	0.0	51.9
Manlift	37.4	0.0	37.4
Reach Manlift	62.2	0.0	62.2
15-Ton Crane	54.7	0.0	54.7
<b>Total</b>	<b>206.0</b>	<b>0.0</b>	<b>206.2</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Crew Truck	6	300	2	5
<b>Offsite</b>				
Worker Commute	15	300	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 14**  
**Substation Construction Emissions**  
**Electrical**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Crew Truck	0.01	0.10	0.01	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.01</b>	<b>0.10</b>	<b>0.01</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.39	3.08	0.26	0.01	0.09	0.06
<b>Offsite Total</b>	<b>0.39</b>	<b>3.08</b>	<b>0.26</b>	<b>0.01</b>	<b>0.09</b>	<b>0.06</b>
<b>Total</b>	<b>0.40</b>	<b>3.19</b>	<b>0.27</b>	<b>0.01</b>	<b>0.09</b>	<b>0.06</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Crew Truck	4.5	0.0	4.5
<b>Onsite Total</b>	<b>4.5</b>	<b>0.0</b>	<b>4.5</b>
<b>Offsite</b>			
Worker Commute	136.0	0.0	136.1
<b>Offsite Total</b>	<b>136.0</b>	<b>0.0</b>	<b>136.1</b>
<b>Total</b>	<b>140.6</b>	<b>0.0</b>	<b>140.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Crew Truck	6	Unpaved	5	0.556	0.056	16.69	1.67
<b>Onsite Total</b>						<b>16.69</b>	<b>1.67</b>
<b>Offsite</b>							
Worker Commute	15	Paved	60	0.001	0.000	0.72	0.00
<b>Offsite Total</b>						<b>0.72</b>	<b>0.00</b>
<b>Total</b>						<b>17.41</b>	<b>1.67</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 15  
Substation Construction Emissions  
Wiring**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.07	0.54	0.49	0.00	0.01	0.01	8.9
Onsite Motor Vehicle Exhaust	0.01	0.07	0.01	0.00	0.00	0.00	2.5
Onsite Motor Vehicle Fugitive PM	--	--	--	--	11.13	1.11	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.08</b>	<b>0.61</b>	<b>0.49</b>	<b>0.00</b>	<b>11.14</b>	<b>1.13</b>	<b>11.4</b>
Offsite Motor Vehicle Exhaust	0.21	1.65	0.14	0.01	0.05	0.03	60.5
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.38	0.00	
<b>Offsite Total</b>	<b>0.21</b>	<b>1.65</b>	<b>0.14</b>	<b>0.01</b>	<b>0.43</b>	<b>0.03</b>	<b>60.5</b>
<b>Total</b>	<b>0.28</b>	<b>2.25</b>	<b>0.63</b>	<b>0.01</b>	<b>11.58</b>	<b>1.16</b>	<b>71.9</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Manlift	43	1	250	4

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Manlift	43	0.017	0.135	0.122	0.000	0.003	0.003	19.613	0.002	Aerial Lifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Manlift	0.07	0.54	0.49	0.00	0.01	0.01
<b>Total</b>	<b>0.07</b>	<b>0.54</b>	<b>0.49</b>	<b>0.00</b>	<b>0.01</b>	<b>0.01</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Manlift	8.9	0.0	8.9
<b>Total</b>	<b>8.9</b>	<b>0.0</b>	<b>8.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Crew Truck	4	250	2	5
<b>Offsite</b>				
Worker Commute	8	250	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 15  
Substation Construction Emissions  
Wiring**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Crew Truck	0.01	0.07	0.01	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.01</b>	<b>0.07</b>	<b>0.01</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.21	1.65	0.14	0.01	0.05	0.03
<b>Offsite Total</b>	<b>0.21</b>	<b>1.65</b>	<b>0.14</b>	<b>0.01</b>	<b>0.05</b>	<b>0.03</b>
<b>Total</b>	<b>0.22</b>	<b>1.71</b>	<b>0.14</b>	<b>0.01</b>	<b>0.05</b>	<b>0.03</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Crew Truck	2.5	0.0	2.5
<b>Onsite Total</b>	<b>2.5</b>	<b>0.0</b>	<b>2.5</b>
<b>Offsite</b>			
Worker Commute	60.5	0.0	60.5
<b>Offsite Total</b>	<b>60.5</b>	<b>0.0</b>	<b>60.5</b>
<b>Total</b>	<b>63.0</b>	<b>0.0</b>	<b>63.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Crew Truck	4	Unpaved	5	0.556	0.056	11.13	1.11
<b>Onsite Total</b>						<b>11.13</b>	<b>1.11</b>
<b>Offsite</b>							
Worker Commute	8	Paved	60	0.001	0.000	0.38	0.00
<b>Offsite Total</b>						<b>0.38</b>	<b>0.00</b>
<b>Total</b>						<b>11.51</b>	<b>1.11</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]



**Table 16  
Substation Construction Emissions  
Transformers**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.38	4.10	1.98	0.01	0.09	0.08	27.4
Onsite Motor Vehicle Exhaust	0.02	0.11	0.10	0.00	0.01	0.00	2.6
Onsite Motor Vehicle Fugitive PM	--	--	--	--	20.78	2.08	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.40</b>	<b>4.21</b>	<b>2.08</b>	<b>0.01</b>	<b>20.87</b>	<b>2.16</b>	<b>30.0</b>
Offsite Motor Vehicle Exhaust	0.26	2.06	0.17	0.01	0.06	0.04	27.2
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.48	0.00	
<b>Offsite Total</b>	<b>0.26</b>	<b>2.06</b>	<b>0.17</b>	<b>0.01</b>	<b>0.54</b>	<b>0.04</b>	<b>27.2</b>
<b>Total</b>	<b>0.66</b>	<b>6.27</b>	<b>2.25</b>	<b>0.01</b>	<b>21.41</b>	<b>2.20</b>	<b>57.2</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Crane	125	1	90	6
Forklift	83	1	90	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Crane	125	0.046	0.474	0.230	0.001	0.012	0.011	80.345	0.004	Cranes
Forklift	83	0.017	0.209	0.100	0.000	0.002	0.002	31.225	0.002	Forklifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Crane	0.28	2.85	1.38	0.01	0.07	0.07
Forklift	0.10	1.25	0.60	0.00	0.01	0.01
<b>Total</b>	<b>0.38</b>	<b>4.10</b>	<b>1.98</b>	<b>0.01</b>	<b>0.09</b>	<b>0.08</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Crane	19.7	0.0	19.7
Forklift	7.6	0.0	7.7
<b>Total</b>	<b>27.3</b>	<b>0.0</b>	<b>27.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Crew Truck	4	90	2	5
Low Bed Truck	1	90	4	10
<b>Offsite</b>				
Worker Commute	10	90	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Low Bed Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 16**  
**Substation Construction Emissions**  
**Transformers**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Crew Truck	0.01	0.07	0.01	0.00	0.00	0.00
Low Bed Truck	0.01	0.04	0.09	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.02</b>	<b>0.11</b>	<b>0.10</b>	<b>0.00</b>	<b>0.01</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
<b>Offsite Total</b>	<b>0.26</b>	<b>2.06</b>	<b>0.17</b>	<b>0.01</b>	<b>0.06</b>	<b>0.04</b>
<b>Total</b>	<b>0.28</b>	<b>2.17</b>	<b>0.27</b>	<b>0.01</b>	<b>0.06</b>	<b>0.04</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Crew Truck	0.9	0.0	0.9
Low Bed Truck	1.7	0.0	1.7
<b>Onsite Total</b>	<b>2.6</b>	<b>0.0</b>	<b>2.6</b>
<b>Offsite</b>			
Worker Commute	27.2	0.0	27.2
<b>Offsite Total</b>	<b>27.2</b>	<b>0.0</b>	<b>27.2</b>
<b>Total</b>	<b>29.8</b>	<b>0.0</b>	<b>29.8</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Crew Truck	4	Unpaved	5	0.556	0.056	11.13	1.11
Low Bed Truck	1	Unpaved	10	0.965	0.097	9.65	0.97
<b>Onsite Total</b>						<b>20.78</b>	<b>2.08</b>
<b>Offsite</b>							
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
<b>Offsite Total</b>						<b>0.48</b>	<b>0.00</b>
<b>Total</b>						<b>21.26</b>	<b>2.08</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 17  
Substation Construction Emissions  
Maintenance Crew Equipment Check**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.02	0.12	0.12	0.00	0.01	0.00	1.6
Onsite Motor Vehicle Fugitive PM	--	--	--	--	15.20	1.52	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.02</b>	<b>0.12</b>	<b>0.12</b>	<b>0.00</b>	<b>15.21</b>	<b>1.52</b>	<b>1.6</b>
Offsite Motor Vehicle Exhaust	0.10	0.82	0.07	0.00	0.02	0.02	7.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.19	0.00	
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.22</b>	<b>0.02</b>	<b>7.3</b>
<b>Total</b>	<b>0.12</b>	<b>0.94</b>	<b>0.19</b>	<b>0.00</b>	<b>15.42</b>	<b>1.54</b>	<b>8.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
None				

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
None										

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
None	0.0	0.0	0.0
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Maintenance Truck	2	60	4	10
<b>Offsite</b>				
Worker Commute	4	60	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Maintenance Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 17**  
**Substation Construction Emissions**  
**Maintenance Crew Equipment Check**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Maintenance Truck	0.02	0.12	0.12	0.00	0.01	0.00
<b>Onsite Total</b>	<b>0.02</b>	<b>0.12</b>	<b>0.12</b>	<b>0.00</b>	<b>0.01</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>
<b>Total</b>	<b>0.12</b>	<b>0.94</b>	<b>0.19</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Maintenance Truck	1.6	0.0	1.6
<b>Onsite Total</b>	<b>1.6</b>	<b>0.0</b>	<b>1.6</b>
<b>Offsite</b>			
Worker Commute	7.3	0.0	7.3
<b>Offsite Total</b>	<b>7.3</b>	<b>0.0</b>	<b>7.3</b>
<b>Total</b>	<b>8.8</b>	<b>0.0</b>	<b>8.8</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Maintenance Truck	2	Unpaved	10	0.760	0.076	15.20	1.52
<b>Onsite Total</b>						<b>15.20</b>	<b>1.52</b>
<b>Offsite</b>							
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.19</b>	<b>0.00</b>
<b>Total</b>						<b>15.39</b>	<b>1.52</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 18**  
**Substation Construction Emissions**  
**Testing**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.01	0.05	0.00	0.00	0.00	0.00	1.5
Onsite Motor Vehicle Fugitive PM	--	--	--	--	8.35	0.83	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.01</b>	<b>0.05</b>	<b>0.00</b>	<b>0.00</b>	<b>8.35</b>	<b>0.84</b>	<b>1.5</b>
Offsite Motor Vehicle Exhaust	0.10	0.82	0.07	0.00	0.02	0.02	24.2
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.19	0.00	
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.22</b>	<b>0.02</b>	<b>24.2</b>
<b>Total</b>	<b>0.11</b>	<b>0.87</b>	<b>0.07</b>	<b>0.00</b>	<b>8.56</b>	<b>0.85</b>	<b>25.7</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
None				

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
None										

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
None	0.0	0.0	0.0
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Crew Truck	2	200	3	7.5
<b>Offsite</b>				
Worker Commute	4	200	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 18**  
**Substation Construction Emissions**  
**Testing**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Crew Truck	0.01	0.05	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.01</b>	<b>0.05</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>
<b>Total</b>	<b>0.11</b>	<b>0.87</b>	<b>0.07</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Crew Truck	1.5	0.0	1.5
<b>Onsite Total</b>	<b>1.5</b>	<b>0.0</b>	<b>1.5</b>
<b>Offsite</b>			
Worker Commute	24.2	0.0	24.2
<b>Offsite Total</b>	<b>24.2</b>	<b>0.0</b>	<b>24.2</b>
<b>Total</b>	<b>25.7</b>	<b>0.0</b>	<b>25.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Crew Truck	2	Unpaved	7.5	0.556	0.056	8.35	0.83
<b>Onsite Total</b>						<b>8.35</b>	<b>0.83</b>
<b>Offsite</b>							
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.19</b>	<b>0.00</b>
<b>Total</b>						<b>8.54</b>	<b>0.83</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 19  
Substation Construction Emissions  
Asphalting**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.87	6.33	4.62	0.01	0.21	0.19	12.0
Onsite Motor Vehicle Exhaust	0.02	0.11	0.17	0.00	0.01	0.01	1.2
Onsite Motor Vehicle Fugitive PM	--	--	--	--	22.45	2.25	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Asphaltic Paving VOC	0.6	--	--	--	--	--	--
<b>Onsite Total</b>	<b>1.52</b>	<b>6.44</b>	<b>4.79</b>	<b>0.01</b>	<b>22.67</b>	<b>2.44</b>	<b>13.2</b>
Offsite Motor Vehicle Exhaust	0.89	5.42	7.45	0.04	0.44	0.32	53.6
Offsite Motor Vehicle Fugitive PM	--	--	--	--	1.11	0.00	
<b>Offsite Total</b>	<b>0.89</b>	<b>5.42</b>	<b>7.45</b>	<b>0.04</b>	<b>1.54</b>	<b>0.32</b>	<b>53.6</b>
<b>Total</b>	<b>2.41</b>	<b>11.86</b>	<b>12.23</b>	<b>0.05</b>	<b>24.21</b>	<b>2.77</b>	<b>66.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Paving Roller	46	2	30	4
Asphalt Paver	152	1	30	4
Tractor	45	1	30	3
Asphalt Curb Machine	35	1	30	3

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Paving Roller	46	0.034	0.226	0.178	0.000	0.007	0.006	25.983	0.003	Rollers
Asphalt Paver	152	0.090	0.754	0.524	0.001	0.029	0.026	128.285	0.008	Pavers
Tractor	45	0.032	0.268	0.190	0.000	0.004	0.003	30.347	0.003	Tractors/Loaders/Backhoes
Asphalt Curb Machine	35	0.047	0.235	0.179	0.000	0.010	0.009	23.927	0.004	Paving Equipment

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Paving Roller	0.28	1.81	1.42	0.00	0.05	0.05
Asphalt Paver	0.36	3.02	2.10	0.01	0.11	0.11
Tractor	0.09	0.80	0.57	0.00	0.01	0.01
Asphalt Curb Machine	0.14	0.71	0.54	0.00	0.03	0.03
<b>Total</b>	<b>0.87</b>	<b>6.33</b>	<b>4.62</b>	<b>0.01</b>	<b>0.21</b>	<b>0.19</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Paving Roller	2.8	0.0	2.8
Asphalt Paver	7.0	0.0	7.0
Tractor	1.2	0.0	1.2
Asphalt Curb Machine	1.0	0.0	1.0
<b>Total</b>	<b>12.0</b>	<b>0.0</b>	<b>12.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number <sup>b</sup>	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Stake Truck	1	30	4	10
Dump Truck	1	30	3	7.5
Crew Truck	2	30	2	5
<b>Offsite</b>				
Asphalt Delivery Truck	13	30	N/A	60
Worker Commute	10	30	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

<sup>b</sup> Asphalt delivery trucks based on 3,900 CY over 30 days and 10 CY/truck = 3,900 / 30 / 10 = 13

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Stake Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05

**Table 19**  
**Substation Construction Emissions**  
**Asphalting**

Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Asphalt Delivery Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Stake Truck	0.01	0.04	0.09	0.00	0.00	0.00
Dump Truck	0.01	0.03	0.07	0.00	0.00	0.00
Crew Truck	0.00	0.03	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.02</b>	<b>0.11</b>	<b>0.17</b>	<b>0.00</b>	<b>0.01</b>	<b>0.01</b>
<b>Offsite</b>						
Asphalt Delivery Truck	0.63	3.36	7.27	0.03	0.38	0.28
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
<b>Offsite Total</b>	<b>0.89</b>	<b>5.42</b>	<b>7.45</b>	<b>0.04</b>	<b>0.44</b>	<b>0.32</b>
<b>Total</b>	<b>0.91</b>	<b>5.53</b>	<b>7.61</b>	<b>0.04</b>	<b>0.45</b>	<b>0.33</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Stake Truck	0.6	0.0	0.6
Dump Truck	0.4	0.0	0.4
Crew Truck	0.2	0.0	0.2
<b>Onsite Total</b>	<b>1.2</b>	<b>0.0</b>	<b>1.2</b>
<b>Offsite</b>			
Asphalt Delivery Truck	44.5	0.0	44.5
Worker Commute	9.1	0.0	9.1
<b>Offsite Total</b>	<b>53.6</b>	<b>0.0</b>	<b>53.6</b>
<b>Total</b>	<b>54.7</b>	<b>0.0</b>	<b>54.8</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Stake Truck	1	Unpaved	10	0.965	0.097	9.65	0.97
Dump Truck	1	Unpaved	7.5	0.965	0.097	7.24	0.72
Crew Truck	2	Unpaved	5	0.556	0.056	5.56	0.56
<b>Onsite Total</b>						<b>22.45</b>	<b>2.25</b>
<b>Offsite</b>							
Asphalt Delivery Truck	13	Paved	60	0.001	0.000	0.62	0.00
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
<b>Offsite Total</b>						<b>1.11</b>	<b>0.00</b>
<b>Total</b>						<b>23.56</b>	<b>2.25</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

a From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Asphaltic Paving VOC Emissions**

Area Paved (acre/day) <sup>a</sup>	Emission Factor (lb/acre) <sup>b</sup>	VOC (lb/day) <sup>c</sup>
0.24	2.62	0.6

<sup>a</sup> Assumed twice daily average for 156,000 ft<sup>2</sup> total in 30 days:

2 x 156,000 ft<sup>2</sup> / 30 days / 43,560 ft<sup>2</sup> per acre = 0.24 acres

<sup>b</sup> From URBEMISS 2007 User's Guide, Appendix A,

<http://www.urbemis.com/software/download.html>

<sup>c</sup> Emissions [lb/day] = Emission factor [lb/acre] x Area paved [acre/day]



**Table 20  
Substation Construction Emissions  
Landscaping**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.29	2.71	1.73	0.00	0.03	0.03	6.9
Onsite Motor Vehicle Exhaust	0.01	0.10	0.08	0.00	0.01	0.00	1.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	18.37	1.84	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.30</b>	<b>2.81</b>	<b>1.80</b>	<b>0.00</b>	<b>18.41</b>	<b>1.87</b>	<b>8.0</b>
Offsite Motor Vehicle Exhaust	1.42	8.26	13.60	0.06	0.76	0.56	136.9
Offsite Motor Vehicle Fugitive PM	--	--	--	--	1.63	0.00	
<b>Offsite Total</b>	<b>1.42</b>	<b>8.26</b>	<b>13.60</b>	<b>0.06</b>	<b>2.39</b>	<b>0.56</b>	<b>136.9</b>
<b>Total</b>	<b>1.72</b>	<b>11.07</b>	<b>15.40</b>	<b>0.07</b>	<b>20.80</b>	<b>2.43</b>	<b>144.9</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Tractor	45	1	45	7
Forklift	83	1	45	4

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Tractor	45	0.032	0.268	0.190	0.000	0.004	0.003	30.347	0.003	Tractors/Loaders/Backhoes
Forklift	83	0.017	0.209	0.100	0.000	0.002	0.002	31.225	0.002	Forklifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction=

0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Tractor	0.22	1.87	1.33	0.00	0.03	0.02
Forklift	0.07	0.83	0.40	0.00	0.01	0.01
<b>Total</b>	<b>0.29</b>	<b>2.71</b>	<b>1.73</b>	<b>0.00</b>	<b>0.03</b>	<b>0.03</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Tractor	4.3	0.0	4.3
Forklift	2.5	0.0	2.6
<b>Total</b>	<b>6.9</b>	<b>0.0</b>	<b>6.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number <sup>b</sup>	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Dump Truck	1	45	3	7.5
Crew Truck	4	45	2	5
<b>Offsite</b>				
Crushed Rock Delivery Truck	24	45	N/A	60
Worker Commute	10	45	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

<sup>b</sup> Crushed rock delivery trucks based on 10,800 CY over 45 days and 10 CY/truck = 10,800 / 45 / 10 = 24

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Crushed Rock Delivery Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 20**  
**Substation Construction Emissions**  
**Landscaping**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Dump Truck	0.01	0.03	0.07	0.00	0.00	0.00
Crew Truck	0.01	0.07	0.01	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.01</b>	<b>0.10</b>	<b>0.08</b>	<b>0.00</b>	<b>0.01</b>	<b>0.00</b>
<b>Offsite</b>						
Crushed Rock Delivery Truck	1.15	6.21	13.43	0.06	0.70	0.52
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
<b>Offsite Total</b>	<b>1.42</b>	<b>8.26</b>	<b>13.60</b>	<b>0.06</b>	<b>0.76</b>	<b>0.56</b>
<b>Total</b>	<b>1.43</b>	<b>8.36</b>	<b>13.68</b>	<b>0.06</b>	<b>0.76</b>	<b>0.57</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Dump Truck	0.6	0.0	0.6
Crew Truck	0.5	0.0	0.5
<b>Onsite Total</b>	<b>1.1</b>	<b>0.0</b>	<b>1.1</b>
<b>Offsite</b>			
Crushed Rock Delivery Truck	123.3	0.0	123.3
Worker Commute	13.6	0.0	13.6
<b>Offsite Total</b>	<b>136.9</b>	<b>0.0</b>	<b>136.9</b>
<b>Total</b>	<b>138.0</b>	<b>0.0</b>	<b>138.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Dump Truck	1	Unpaved	7.5	0.965	0.097	7.24	0.72
Crew Truck	4	Unpaved	5	0.556	0.056	11.13	1.11
<b>Onsite Total</b>						<b>18.37</b>	<b>1.84</b>
<b>Offsite</b>							
Crushed Rock Delivery Truck	24	Paved	60	0.001	0.000	1.15	0.00
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
<b>Offsite Total</b>						<b>1.63</b>	<b>0.00</b>
<b>Total</b>						<b>20.00</b>	<b>1.84</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 21**  
**500 kV Transmission Line Construction Emissions**  
**Survey**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.0</b>
Offsite Motor Vehicle Exhaust	0.11	0.89	0.08	0.00	0.03	0.02	0.5
Offsite Motor Vehicle Fugitive PM	--	--	--	--	9.30	0.91	
<b>Offsite Total</b>	<b>0.11</b>	<b>0.89</b>	<b>0.08</b>	<b>0.00</b>	<b>9.32</b>	<b>0.93</b>	<b>0.5</b>
<b>Total</b>	<b>0.11</b>	<b>0.89</b>	<b>0.08</b>	<b>0.00</b>	<b>9.32</b>	<b>0.93</b>	<b>0.5</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
None				

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
None		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
None	0.0	0.0	0.0
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
1/2-Ton Pick-up Truck, 4x4	2	4	N/A	10
Worker Commute	4	4	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
1/2-Ton Pick-up Truck, 4x4	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 21**  
**500 kV Transmission Line Construction Emissions**  
**Survey**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1/2-Ton Pick-up Truck, 4x4	0.01	0.07	0.01	0.00	0.00	0.00
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.11</b>	<b>0.89</b>	<b>0.08</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>
<b>Total</b>	<b>0.11</b>	<b>0.89</b>	<b>0.08</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1/2-Ton Pick-up Truck, 4x4	0.0	0.0	0.0
Worker Commute	0.5	0.0	0.5
<b>Offsite Total</b>	<b>0.5</b>	<b>0.0</b>	<b>0.5</b>
<b>Total</b>	<b>0.5</b>	<b>0.0</b>	<b>0.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None							
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1/2-Ton Pick-up Truck, 4x4	2	Unpaved	10	0.455	0.046	9.10	0.91
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>9.30</b>	<b>0.91</b>
<b>Total</b>						<b>9.30</b>	<b>0.91</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 22**  
**500 kV Transmission Line Construction Emissions**  
**Marshalling Yard**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.41	3.14	1.79	0.01	0.06	0.06	55.8
Onsite Motor Vehicle Exhaust	0.02	0.10	0.14	0.00	0.01	0.01	4.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	14.01	1.40	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.43</b>	<b>3.24</b>	<b>1.93</b>	<b>0.01</b>	<b>14.08</b>	<b>1.47</b>	<b>59.9</b>
Offsite Motor Vehicle Exhaust	0.20	1.41	0.87	0.01	0.06	0.04	27.9
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.28	0.00	
<b>Offsite Total</b>	<b>0.20</b>	<b>1.41</b>	<b>0.87</b>	<b>0.01</b>	<b>0.35</b>	<b>0.04</b>	<b>27.9</b>
<b>Total</b>	<b>0.63</b>	<b>4.65</b>	<b>2.81</b>	<b>0.02</b>	<b>14.43</b>	<b>1.51</b>	<b>87.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Boom/Crane Truck	215	1	137	5
Rough Terrain Forklift	125	1	137	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Boom/Crane Truck	215	0.054	0.232	0.271	0.001	0.009	0.009	112.159	0.005	Cranes
Rough Terrain Forklift	125	0.023	0.331	0.073	0.001	0.003	0.003	56.054	0.002	Forklifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Boom/Crane Truck	0.27	1.16	1.35	0.01	0.05	0.04
Rough Terrain Forklift	0.14	1.99	0.44	0.00	0.02	0.02
<b>Total</b>	<b>0.41</b>	<b>3.14</b>	<b>1.79</b>	<b>0.01</b>	<b>0.06</b>	<b>0.06</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Boom/Crane Truck	34.8	0.0	34.9
Rough Terrain Forklift	20.9	0.0	20.9
<b>Total</b>	<b>55.7</b>	<b>0.0</b>	<b>55.8</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number <sup>b</sup>	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
1-Ton Crew Cab, 4x4 Truck, Semi Tractor	1	137	4	10
Jet A Fuel Truck	1	137	0.5	1.25
Water Truck	1	137	1	2.5
<b>Offsite</b>				
Flat Bed Truck/Trailer	1	10	N/A	60
Concrete Mixer Truck	1	10	N/A	10
Jet A Fuel Truck	1	137	N/A	20
Water Truck	1	137	N/A	20
Worker Commute	4	137	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

<sup>b</sup> Dump trucks based on 8,000 CY hauled offsite over 60 days and 10 CY/truck = 8,000 / 60 / 10 = 13.3

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
1-Ton Crew Cab, 4x4 Truck, Semi Tractor	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Jet A Fuel Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
<b>Offsite</b>									
Flat Bed Truck/Trailer	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Concrete Mixer Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Jet A Fuel Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05

**Table 22**  
**500 kV Transmission Line Construction Emissions**  
**Marshalling Yard**

Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
1-Ton Crew Cab, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
Truck, Semi Tractor	0.00	0.02	0.05	0.00	0.00	0.00
Jet A Fuel Truck	0.00	0.01	0.01	0.00	0.00	0.00
Water Truck	0.00	0.01	0.02	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.02</b>	<b>0.10</b>	<b>0.14</b>	<b>0.00</b>	<b>0.01</b>	<b>0.01</b>
<b>Offsite</b>						
Flat Bed Truck/Trailer	0.06	0.36	0.37	0.00	0.02	0.01
Concrete Mixer Truck	0.01	0.06	0.06	0.00	0.00	0.00
Jet A Fuel Truck	0.02	0.09	0.19	0.00	0.01	0.01
Water Truck	0.02	0.09	0.19	0.00	0.01	0.01
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.20</b>	<b>1.41</b>	<b>0.87</b>	<b>0.01</b>	<b>0.06</b>	<b>0.04</b>
<b>Total</b>	<b>0.22</b>	<b>1.51</b>	<b>1.02</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
1-Ton Crew Cab, 4x4	1.8	0.0	1.8
Truck, Semi Tractor	1.3	0.0	1.3
Jet A Fuel Truck	0.33	0.00	0.33
Water Truck	0.65	0.00	0.65
<b>Onsite Total</b>	<b>4.1</b>	<b>0.0</b>	<b>4.1</b>
<b>Offsite</b>			
Flat Bed Truck/Trailer	0.8	0.0	0.8
Concrete Mixer Truck	0.1	0.0	0.1
Jet A Fuel Truck	5.21	0.00	5.21
Water Truck	5.21	0.00	5.21
Worker Commute	16.6	0.0	16.6
<b>Offsite Total</b>	<b>27.9</b>	<b>0.0</b>	<b>27.9</b>
<b>Total</b>	<b>32.0</b>	<b>0.0</b>	<b>32.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008. [http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
1-Ton Crew Cab, 4x4	1	Unpaved	10	0.556	0.056	5.56	0.56
Truck, Semi Tractor	1	Unpaved	5	0.965	0.097	4.83	0.48
Jet A Fuel Truck	1	Unpaved	1.25	0.965	0.097	1.21	0.12
Water Truck	1	Unpaved	2.5	0.965	0.097	2.41	0.24
<b>Onsite Total</b>						<b>14.01</b>	<b>1.40</b>
<b>Offsite</b>							
Flat Bed Truck/Trailer	1	Paved	60	0.001	0.000	0.05	0.00
Concrete Mixer Truck	1	Paved	10	0.001	0.000	0.01	0.00
Jet A Fuel Truck	1	Paved	20	0.00	0.00	0.02	0.00
Water Truck	1	Paved	20	0.00	0.00	0.02	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.28</b>	<b>0.00</b>
<b>Total</b>						<b>14.29</b>	<b>1.40</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

a From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 23**  
**500 kV Transmission Line Construction Emissions**  
**Roads and Landing Work**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	2.09	16.82	9.96	0.05	0.45	0.42	44.9
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	9.17	1.91	
<b>Onsite Total</b>	<b>2.09</b>	<b>16.82</b>	<b>9.96</b>	<b>0.05</b>	<b>9.63</b>	<b>2.33</b>	<b>44.9</b>
Offsite Motor Vehicle Exhaust	0.28	2.18	0.37	0.01	0.07	0.05	8.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	20.52	2.00	
<b>Offsite Total</b>	<b>0.28</b>	<b>2.18</b>	<b>0.37</b>	<b>0.01</b>	<b>20.59</b>	<b>2.05</b>	<b>8.3</b>
<b>Total</b>	<b>2.37</b>	<b>19.00</b>	<b>10.34</b>	<b>0.05</b>	<b>30.22</b>	<b>4.38</b>	<b>53.1</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Road Grader	250	1	24	6
Backhoe/Front Loader	125	1	24	8
Drum Type Compactor	100	1	24	6
Track Type Dozer	150	1	24	8
Excavator	250	1	24	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Road Grader	250	0.078	0.355	0.365	0.002	0.013	0.012	172.113	0.007	Graders
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
Drum Type Compactor	100	0.039	0.380	0.265	0.001	0.014	0.013	58.989	0.004	Rollers
Track Type Dozer	150	0.082	0.727	0.445	0.001	0.024	0.022	121.188	0.007	Crawler Tractors
Excavator	250	0.065	0.321	0.222	0.002	0.007	0.007	158.683	0.006	Excavators

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction = 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Road Grader	0.47	2.13	2.19	0.01	0.08	0.07
Backhoe/Front Loader	0.34	4.67	1.29	0.01	0.06	0.05
Drum Type Compactor	0.24	2.28	1.59	0.00	0.08	0.08
Track Type Dozer	0.66	5.81	3.56	0.01	0.19	0.18
Excavator	0.39	1.93	1.33	0.01	0.04	0.04
<b>Total</b>	<b>2.09</b>	<b>16.82</b>	<b>9.96</b>	<b>0.05</b>	<b>0.45</b>	<b>0.42</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Road Grader	11.2	0.0	11.3
Backhoe/Front Loader	8.8	0.0	8.8
Drum Type Compactor	3.9	0.0	3.9
Track Type Dozer	10.6	0.0	10.6
Excavator	10.4	0.0	10.4
<b>Total</b>	<b>44.8</b>	<b>0.0</b>	<b>44.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Table 23**  
**500 kV Transmission Line Construction Emissions**  
**Roads and Landing Work**

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				
<b>Offsite</b>				
1-Ton Crew Cab, 4x4	2	24	N/A	5
Water Truck	2	24	N/A	5
Lowboy Truck/Trailer	1	24	N/A	5
Worker Commute	10	24	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
Water Truck	0.01	0.04	0.09	0.00	0.00	0.00
Lowboy Truck/Trailer	0.00	0.02	0.05	0.00	0.00	0.00
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
<b>Offsite Total</b>	<b>0.28</b>	<b>2.18</b>	<b>0.37</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>
<b>Total</b>	<b>0.28</b>	<b>2.18</b>	<b>0.37</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1-Ton Crew Cab, 4x4	0.3	0.0	0.3
Water Truck	0.5	0.0	0.5
Lowboy Truck/Trailer	0.2	0.0	0.2
Worker Commute	7.3	0.0	7.3
<b>Offsite Total</b>	<b>8.3</b>	<b>0.0</b>	<b>8.3</b>
<b>Total</b>	<b>8.3</b>	<b>0.0</b>	<b>8.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1-Ton Crew Cab, 4x4	2	Unpaved	5	0.556	0.056	5.56	0.56
Water Truck	2	Unpaved	5	0.965	0.097	9.65	0.97
Lowboy Truck/Trailer	1	Unpaved	5	0.965	0.097	4.83	0.48
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
<b>Offsite Total</b>						<b>20.52</b>	<b>2.00</b>
<b>Total</b>						<b>20.52</b>	<b>2.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**



**Table 23**  
**500 kV Transmission Line Construction Emissions**  
**Roads and Landing Work**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	4,334	9.94E-04	2.07E-04	4.31	0.90
Bulldozing, Scraping and Grading	hr/day	14	0.348	0.072	4.87	1.01
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>9.17</b>	<b>1.91</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Estimate 80,000 CY of cut plus 50,000 CY of fill yields 130,000 CY of soil handling over 30 days. Approx 4,334 CY/day.

**Table 23b**  
**500 kV Transmission Line Construction Emissions**  
**Install Helicopter Platforms**

Emissions Summary							
Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.15	15.80	7.68	0.03	0.24	0.22	28.5
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	--
Earthwork Fugitive PM	--	--	--	--	1.38	0.29	--
<b>Onsite Total</b>	<b>1.15</b>	<b>15.80</b>	<b>7.68</b>	<b>0.03</b>	<b>1.62</b>	<b>0.51</b>	<b>28.5</b>
Offsite Motor Vehicle Exhaust	0.16	1.23	0.10	0.00	0.03	0.02	4.4
Offsite Helicopter Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.29	0.00	--
<b>Offsite Total</b>	<b>0.16</b>	<b>1.23</b>	<b>0.10</b>	<b>0.00</b>	<b>0.32</b>	<b>0.02</b>	<b>4.4</b>
<b>Total</b>	<b>1.30</b>	<b>17.03</b>	<b>7.78</b>	<b>0.03</b>	<b>1.94</b>	<b>0.53</b>	<b>32.9</b>

Construction Equipment Summary				
Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor	150	1	24	8
Grout Machine	60	1	24	8
Drill Rig	75	1	24	8
Transfer Pump	60	1	24	8

Note: Helicopter use accounted for in Table 29c

Construction Equipment Exhaust Emission Factors										
Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor	150	0.042	0.500	0.219	0.001	0.010	0.010	88.483	0.004	Air Compressors
Grout Machine	60	0.038	0.504	0.273	0.001	0.009	0.008	80.859	0.003	Other Construction Equipment
Drill Rig	75	0.025	0.466	0.195	0.001	0.002	0.002	77.122	0.002	Bore/Drill Rigs
Transfer Pump	60	0.038	0.504	0.273	0.001	0.009	0.008	80.859	0.003	Other Construction Equipment

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction = 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

Construction Equipment Daily Criteria Pollutant Exhaust Emissions						
Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor	0.34	4.00	1.75	0.01	0.08	0.08
Grout Machine	0.30	4.04	2.18	0.01	0.07	0.06
Drill Rig	0.20	3.73	1.56	0.01	0.02	0.01
Transfer Pump	0.30	4.04	2.18	0.01	0.07	0.06
<b>Total</b>	<b>1.15</b>	<b>15.80</b>	<b>7.68</b>	<b>0.03</b>	<b>0.24</b>	<b>0.22</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions			
Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor	7.7	0.0	7.7
Grout Machine	7.0	0.0	7.0
Drill Rig	6.7	0.0	6.7
Transfer Pump	7.0	0.0	7.0
<b>Total</b>	<b>28.5</b>	<b>0.0</b>	<b>28.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Usage				
Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
Worker Commute	6	24	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 23b**  
**500 kV Transmission Line Construction Emissions**  
**Install Helicopter Platforms**

Motor Vehicle Exhaust Emission Factors									
Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions						
Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.16	1.23	0.10	0.00	0.03	0.02
<b>Offsite Total</b>	<b>0.16</b>	<b>1.23</b>	<b>0.10</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>
<b>Total</b>	<b>0.16</b>	<b>1.23</b>	<b>0.10</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions			
Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Worker Commute	4.4	0.0	4.4
<b>Offsite Total</b>	<b>4.4</b>	<b>0.0</b>	<b>4.4</b>
<b>Total</b>	<b>4.4</b>	<b>0.0</b>	<b>4.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

<sup>a</sup> From Table 56

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Fugitive Particulate Matter Emissions							
Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Worker Commute	6	Paved	60	0.001	0.000	0.29	0.00
<b>Offsite Total</b>						<b>0.29</b>	<b>0.00</b>
<b>Total</b>						<b>0.29</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions						
Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	1,388	9.94E-04	2.07E-04	1.38	0.29
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>1.38</b>	<b>0.29</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Estimate

**Table 24**  
**500 kV Transmission Line Construction Emissions**  
**Tower Removal**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.75	4.54	3.93	0.02	0.16	0.15	2.6
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.75</b>	<b>4.54</b>	<b>3.93</b>	<b>0.02</b>	<b>0.16</b>	<b>0.15</b>	<b>2.6</b>
Offsite Motor Vehicle Exhaust	0.27	2.03	0.63	0.01	0.07	0.05	1.4
Offsite Motor Vehicle Fugitive PM	--	--	--	--	47.51	4.71	
<b>Offsite Total</b>	<b>0.27</b>	<b>2.03</b>	<b>0.63</b>	<b>0.01</b>	<b>47.58</b>	<b>4.76</b>	<b>1.4</b>
<b>Total</b>	<b>1.02</b>	<b>6.57</b>	<b>4.56</b>	<b>0.02</b>	<b>47.74</b>	<b>4.91</b>	<b>4.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor Trailer	60	1	4	8
Rough Terrain Crane (L)	275	1	4	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
Rough Terrain Crane (L)	275	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor Trailer	0.23	2.42	1.54	0.00	0.07	0.07
Rough Terrain Crane (L)	0.51	2.12	2.39	0.01	0.09	0.08
<b>Total</b>	<b>0.75</b>	<b>4.54</b>	<b>3.93</b>	<b>0.02</b>	<b>0.16</b>	<b>0.15</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor Trailer	0.7	0.0	0.7
Rough Terrain Crane (L)	2.0	0.0	2.0
<b>Total</b>	<b>2.6</b>	<b>0.0</b>	<b>2.6</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
1-Ton Crew Cab, 4x4	2	4	N/A	5
1-Ton Flat Bed, 4x4	2	4	N/A	20
Flat Bed Truck/Trailer	1	4	N/A	20
Worker Commute	8	4	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Flat Bed Truck/Trailer	HHD	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 24**  
**500 kV Transmission Line Construction Emissions**  
**Tower Removal**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
1-Ton Flat Bed, 4x4	0.04	0.24	0.25	0.00	0.01	0.01
Flat Bed Truck/Trailer	0.02	0.09	0.19	0.00	0.01	0.01
Worker Commute	0.21	1.65	0.14	0.01	0.05	0.03
<b>Offsite Total</b>	<b>0.27</b>	<b>2.03</b>	<b>0.63</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>
<b>Total</b>	<b>0.27</b>	<b>2.03</b>	<b>0.63</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1-Ton Crew Cab, 4x4	0.1	0.0	0.1
1-Ton Flat Bed, 4x4	0.2	0.0	0.2
Flat Bed Truck/Trailer	0.2	0.0	0.2
Worker Commute	1.0	0.0	1.0
<b>Offsite Total</b>	<b>1.4</b>	<b>0.0</b>	<b>1.4</b>
<b>Total</b>	<b>1.4</b>	<b>0.0</b>	<b>1.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.ciimateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.ciimateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1-Ton Crew Cab, 4x4	2	Unpaved	5	0.556	0.056	5.56	0.56
1-Ton Flat Bed, 4x4	2	Unpaved	20	0.556	0.056	22.26	2.23
Flat Bed Truck/Trailer	1	Unpaved	20	0.965	0.097	19.30	1.93
Worker Commute	8	Paved	60	0.001	0.000	0.38	0.00
<b>Offsite Total</b>						<b>47.51</b>	<b>4.71</b>
<b>Total</b>						<b>47.51</b>	<b>4.71</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 25**  
**500 kV Transmission Line Construction Emissions**  
**Foundation Removal**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.48	5.92	2.51	0.01	0.11	0.10	0.9
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.48</b>	<b>5.92</b>	<b>2.51</b>	<b>0.01</b>	<b>0.11</b>	<b>0.10</b>	<b>0.9</b>
Offsite Motor Vehicle Exhaust	0.13	0.97	0.22	0.00	0.03	0.02	0.6
Offsite Motor Vehicle Fugitive PM	--	--	--	--	22.28	2.21	
<b>Offsite Total</b>	<b>0.13</b>	<b>0.97</b>	<b>0.22</b>	<b>0.00</b>	<b>22.31</b>	<b>2.23</b>	<b>0.6</b>
<b>Total</b>	<b>0.61</b>	<b>6.89</b>	<b>2.73</b>	<b>0.01</b>	<b>22.42</b>	<b>2.33</b>	<b>1.5</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor Trailer	60	1	2	8
Backhoe/Front Loader	125	1	2	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction=

0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor Trailer	0.23	2.42	1.54	0.00	0.07	0.07
Backhoe/Front Loader	0.25	3.50	0.97	0.01	0.04	0.04
<b>Total</b>	<b>0.48</b>	<b>5.92</b>	<b>2.51</b>	<b>0.01</b>	<b>0.11</b>	<b>0.10</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor Trailer	0.3	0.0	0.3
Backhoe/Front Loader	0.6	0.0	0.6
<b>Total</b>	<b>0.9</b>	<b>0.0</b>	<b>0.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
1-Ton Crew Cab, 4x4	1	4	N/A	5
Dump Truck	1	2	N/A	20
Worker Commute	4	4	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Dump Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 25**  
**500 kV Transmission Line Construction Emissions**  
**Foundation Removal**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab, 4x4	0.00	0.03	0.03	0.00	0.00	0.00
Dump Truck	0.02	0.12	0.12	0.00	0.01	0.00
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.13</b>	<b>0.97</b>	<b>0.22</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>
<b>Total</b>	<b>0.13</b>	<b>0.97</b>	<b>0.22</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1-Ton Crew Cab, 4x4	0.0	0.0	0.0
Dump Truck	0.1	0.0	0.1
Worker Commute	0.5	0.0	0.5
<b>Offsite Total</b>	<b>0.6</b>	<b>0.0</b>	<b>0.6</b>
<b>Total</b>	<b>0.6</b>	<b>0.0</b>	<b>0.6</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1-Ton Crew Cab, 4x4	1	Unpaved	5	0.556	0.056	2.78	0.28
Dump Truck	1	Unpaved	20	0.965	0.097	19.30	1.93
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>22.28</b>	<b>2.21</b>
<b>Total</b>						<b>22.28</b>	<b>2.21</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 26**  
**500 kV Transmission Line Construction Emissions**  
**Tower Foundations Installation**

Emissions Summary							
Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.73	13.83	6.02	0.05	0.23	0.21	53.6
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	--
Earthwork Fugitive PM	--	--	--	--	0.20	0.04	--
<b>Onsite Total</b>	<b>1.73</b>	<b>13.83</b>	<b>6.02</b>	<b>0.05</b>	<b>0.43</b>	<b>0.26</b>	<b>53.6</b>
Offsite Motor Vehicle Exhaust	0.28	2.10	0.64	0.01	0.08	0.05	10.1
Offsite Motor Vehicle Fugitive PM	--	--	--	--	48.42	4.80	--
<b>Offsite Total</b>	<b>0.28</b>	<b>2.10</b>	<b>0.64</b>	<b>0.01</b>	<b>48.49</b>	<b>4.85</b>	<b>10.1</b>
<b>Total</b>	<b>2.01</b>	<b>15.93</b>	<b>6.66</b>	<b>0.06</b>	<b>48.92</b>	<b>5.11</b>	<b>63.6</b>

Construction Equipment Summary				
Equipment	Horse-power	Number	Days Used	Hours Used/Day
Boom/Crane Truck	350	1	30	7
Backhoe/Front Loader	125	1	30	10
Low Drill	385	1	16	10

Construction Equipment Exhaust Emission Factors										
Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
Low Drill	385	0.071	0.551	0.162	0.003	0.006	0.005	311.309	0.006	Bore/Drill Rigs

<sup>a</sup> From Table 53  
<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10  
 PM2.5 Fraction= 0.920  
 From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5  
 and PM 2.5 Significance Thresholds, SCAQMD, October 2006,  
[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

Construction Equipment Daily Criteria Pollutant Exhaust Emissions						
Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Boom/Crane Truck	0.60	2.47	2.78	0.01	0.10	0.09
Backhoe/Front Loader	0.42	5.84	1.61	0.01	0.07	0.07
Low Drill	0.71	5.51	1.62	0.03	0.06	0.05
<b>Total</b>	<b>1.73</b>	<b>13.83</b>	<b>6.02</b>	<b>0.05</b>	<b>0.23</b>	<b>0.21</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions			
Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Boom/Crane Truck	17.2	0.0	17.2
Backhoe/Front Loader	13.8	0.0	13.8
Low Drill	22.6	0.0	22.6
<b>Total</b>	<b>53.5</b>	<b>0.0</b>	<b>53.6</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 53  
<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Usage				
Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	2	30	N/A	5
Water Truck	1	30	N/A	5
Dump Truck	1	30	N/A	10
Concrete Mixer Truck	3	18	N/A	10
Worker Commute	9	30	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed



**Table 26**  
**500 kV Transmission Line Construction Emissions**  
**Tower Foundations Installation**

<b>Motor Vehicle Exhaust Emission Factors</b>									
Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Concrete Mixer Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

<b>Motor Vehicle Daily Criteria Pollutant Exhaust Emissions</b>						
Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
Water Truck	0.00	0.02	0.05	0.00	0.00	0.00
Dump Truck	0.01	0.04	0.09	0.00	0.00	0.00
Concrete Mixer Truck	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.24	1.85	0.16	0.01	0.05	0.03
<b>Offsite Total</b>	<b>0.28</b>	<b>2.10</b>	<b>0.64</b>	<b>0.01</b>	<b>0.08</b>	<b>0.05</b>
<b>Total</b>	<b>0.28</b>	<b>2.10</b>	<b>0.64</b>	<b>0.01</b>	<b>0.08</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

<b>Motor Vehicle Total Greenhouse Gas Emissions</b>			
Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	0.0	0.0	0.0
Water Truck	0.3	0.0	0.3
Dump Truck	0.6	0.0	0.6
Concrete Mixer Truck	1.0	0.0	1.0
Worker Commute	8.2	0.0	8.2
<b>Offsite Total</b>	<b>10.0</b>	<b>0.0</b>	<b>10.1</b>
<b>Total</b>	<b>10.0</b>	<b>0.0</b>	<b>10.1</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

<sup>a</sup> From Table 56

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

<b>Motor Vehicle Fugitive Particulate Matter Emissions</b>							
Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	2	Unpaved	5	0.455	0.046	4.55	0.46
Water Truck	1	Unpaved	5	0.965	0.097	4.83	0.48
Dump Truck	1	Unpaved	10	0.965	0.097	9.65	0.97
Concrete Mixer Truck	3	Unpaved	10	0.965	0.097	28.95	2.90
Worker Commute	9	Paved	60	0.001	0.000	0.43	0.00
<b>Offsite Total</b>						<b>48.42</b>	<b>4.80</b>
<b>Total</b>						<b>48.42</b>	<b>4.80</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

<b>Earthwork Fugitive Particulate Matter Emissions</b>						
Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	200	9.94E-04	2.07E-04	0.20	0.04
Buildozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.20</b>	<b>0.04</b>

<sup>a</sup> From Table 57

**Table 26**  
**500 kV Transmission Line Construction Emissions**  
**Tower Foundations Installation**

<sup>a</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]  
<sup>b</sup> Estimate

**Table 26b**  
**500 kV Transmission Line Construction Emissions**  
**Install Micropile Foundations**

Emissions Summary							
Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.15	15.80	7.68	0.03	0.24	0.22	104.7
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>1.15</b>	<b>15.80</b>	<b>7.68</b>	<b>0.03</b>	<b>0.24</b>	<b>0.22</b>	<b>104.7</b>
Offsite Motor Vehicle Exhaust	0.16	1.23	0.10	0.00	0.03	0.02	17.4
Offsite Helicopter Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.29	0.00	
<b>Offsite Total</b>	<b>0.16</b>	<b>1.23</b>	<b>0.10</b>	<b>0.00</b>	<b>0.32</b>	<b>0.02</b>	<b>17.4</b>
<b>Total</b>	<b>1.30</b>	<b>17.03</b>	<b>7.78</b>	<b>0.03</b>	<b>0.56</b>	<b>0.24</b>	<b>122.1</b>

Construction Equipment Summary				
Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor	150	1	96	8
Grout Machine	60	1	80	8
Drill Rig	75	1	96	8
Transfer Pump	60	1	80	8

Note: Helicopter use accounted for in Table 29c

Construction Equipment Exhaust Emission Factors										
Equipment	Horse-power	0.042814	0.500686	0.28637	0.001746	0.0041623	PM2.5 (lb/hr) <sup>b</sup>	164.8678	0.003863	Category
Compressor	150	0.042	0.500	0.219	0.001	0.010	0.010	88.483	0.004	Air Compressors
Grout Machine	60	0.038	0.504	0.273	0.001	0.009	0.008	80.859	0.003	Other Construction Equipment
Drill Rig	75	0.025	0.466	0.195	0.001	0.002	0.002	77.122	0.002	Bore/Drill Rigs
Transfer Pump	60	0.038	0.504	0.273	0.001	0.009	0.008	80.859	0.003	Other Construction Equipment

<sup>a</sup> From Table 53  
<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10  
 PM2.5 Fraction = 0.920  
 From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006,  
[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

Construction Equipment Daily Criteria Pollutant Exhaust Emissions						
Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor	0.34	4.00	1.75	0.01	0.08	0.08
Grout Machine	0.30	4.04	2.18	0.01	0.07	0.06
Drill Rig	0.20	3.73	1.56	0.01	0.02	0.01
Transfer Pump	0.30	4.04	2.18	0.01	0.07	0.06
<b>Total</b>	<b>1.15</b>	<b>15.80</b>	<b>7.68</b>	<b>0.03</b>	<b>0.24</b>	<b>0.22</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions			
Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor	30.8	0.0	30.9
Grout Machine	23.5	0.0	23.5
Drill Rig	26.9	0.0	26.9
Transfer Pump	23.5	0.0	23.5
<b>Total</b>	<b>104.6</b>	<b>0.0</b>	<b>104.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT].  
 Emission factors are in Table 53  
<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Usage				
Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
Worker Commute	6	96	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 26b**  
**500 kV Transmission Line Construction Emissions**  
**Install Micropile Foundations**

<b>Motor Vehicle Exhaust Emission Factors</b>									
Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

<b>Motor Vehicle Daily Criteria Pollutant Exhaust Emissions</b>						
Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.16	1.23	0.10	0.00	0.03	0.02
<b>Offsite Total</b>	<b>0.16</b>	<b>1.23</b>	<b>0.10</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>
<b>Total</b>	<b>0.16</b>	<b>1.23</b>	<b>0.10</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

<b>Motor Vehicle Total Greenhouse Gas Emissions</b>			
Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Worker Commute	17.4	0.0	17.4
<b>Offsite Total</b>	<b>17.4</b>	<b>0.0</b>	<b>17.4</b>
<b>Total</b>	<b>17.4</b>	<b>0.0</b>	<b>17.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

<sup>a</sup> From Table 56

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

<b>Motor Vehicle Fugitive Particulate Matter Emissions</b>							
Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Worker Commute	6	Paved	60	0.001	0.000	0.29	0.00
<b>Offsite Total</b>						<b>0.29</b>	<b>0.00</b>
<b>Total</b>						<b>0.29</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

<b>Earthwork Fugitive Particulate Matter Emissions</b>						
Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Estimate

**Table 27**  
**500 kV Transmission Line Construction Emissions**  
**Tower Steel Haul**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.18	2.65	0.59	0.01	0.02	0.02	2.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.18</b>	<b>2.65</b>	<b>0.59</b>	<b>0.01</b>	<b>0.02</b>	<b>0.02</b>	<b>2.0</b>
Offsite Motor Vehicle Exhaust	0.13	0.97	0.32	0.00	0.04	0.02	1.7
Offsite Motor Vehicle Fugitive PM	--	--	--	--	25.06	2.49	
<b>Offsite Total</b>	<b>0.13</b>	<b>0.97</b>	<b>0.32</b>	<b>0.00</b>	<b>25.10</b>	<b>2.51</b>	<b>1.7</b>
<b>Total</b>	<b>0.31</b>	<b>3.62</b>	<b>0.90</b>	<b>0.01</b>	<b>25.12</b>	<b>2.53</b>	<b>3.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Rough Terrain Forklift	125	1	10	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Rough Terrain Forklift	125	0.023	0.331	0.073	0.001	0.003	0.003	56.054	0.002	Forklifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Rough Terrain Forklift	0.18	2.65	0.59	0.01	0.02	0.02
<b>Total</b>	<b>0.18</b>	<b>2.65</b>	<b>0.59</b>	<b>0.01</b>	<b>0.02</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Rough Terrain Forklift	2.0	0.0	2.0
<b>Total</b>	<b>2.0</b>	<b>0.0</b>	<b>2.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
1-Ton Crew Cab Flat Bed, 4x4	2	10	N/A	5
Flat Bed Truck/Trailer	1	10	N/A	20
Worker Commute	4	10	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Flat Bed Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 27**  
**500 kV Transmission Line Construction Emissions**  
**Tower Steel Haul**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab Flat Bed, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
Flat Bed Truck/Trailer	0.02	0.09	0.19	0.00	0.01	0.01
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.13</b>	<b>0.97</b>	<b>0.32</b>	<b>0.00</b>	<b>0.04</b>	<b>0.02</b>
<b>Total</b>	<b>0.13</b>	<b>0.97</b>	<b>0.32</b>	<b>0.00</b>	<b>0.04</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1-Ton Crew Cab Flat Bed, 4x4	0.1	0.0	0.1
Flat Bed Truck/Trailer	0.4	0.0	0.4
Worker Commute	1.2	0.0	1.2
<b>Offsite Total</b>	<b>1.7</b>	<b>0.0</b>	<b>1.7</b>
<b>Total</b>	<b>1.7</b>	<b>0.0</b>	<b>1.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1-Ton Crew Cab Flat Bed, 4x4	2	Unpaved	5	0.556	0.056	5.56	0.56
Flat Bed Truck/Trailer	1	Unpaved	20	0.965	0.097	19.30	1.93
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>25.06</b>	<b>2.49</b>
<b>Total</b>						<b>25.06</b>	<b>2.49</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 28**  
**500 kV Transmission Line Construction Emissions**  
**Tower Steel Assembly**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.70	5.79	3.60	0.02	0.14	0.13	25.2
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.70</b>	<b>5.79</b>	<b>3.60</b>	<b>0.02</b>	<b>0.14</b>	<b>0.13</b>	<b>25.2</b>
Offsite Motor Vehicle Exhaust	0.29	2.24	0.36	0.01	0.07	0.04	13.7
Offsite Motor Vehicle Fugitive PM	--	--	--	--	15.15	1.47	
<b>Offsite Total</b>	<b>0.29</b>	<b>2.24</b>	<b>0.36</b>	<b>0.01</b>	<b>15.22</b>	<b>1.51</b>	<b>13.7</b>
<b>Total</b>	<b>0.98</b>	<b>8.03</b>	<b>3.96</b>	<b>0.02</b>	<b>15.36</b>	<b>1.64</b>	<b>38.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Rough Terrain Forklift	125	1	40	6
RT Crane (M)	215	1	40	6
Compressor Trailer	60	1	40	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Rough Terrain Forklift	125	0.023	0.331	0.073	0.001	0.003	0.003	56.054	0.002	Forklifts
RT Crane (M)	215	0.054	0.232	0.271	0.001	0.009	0.009	112.159	0.005	Cranes
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Rough Terrain Forklift	0.14	1.99	0.44	0.00	0.02	0.02
RT Crane (M)	0.33	1.39	1.62	0.01	0.06	0.05
Compressor Trailer	0.23	2.42	1.54	0.00	0.07	0.07
<b>Total</b>	<b>0.70</b>	<b>5.79</b>	<b>3.60</b>	<b>0.02</b>	<b>0.14</b>	<b>0.13</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Rough Terrain Forklift	6.1	0.0	6.1
RT Crane (M)	12.2	0.0	12.2
Compressor Trailer	6.8	0.0	6.8
<b>Total</b>	<b>25.1</b>	<b>0.0</b>	<b>25.2</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	2	40	N/A	10
1-Ton Crew Cab Flat Bed, 4x4	2	40	N/A	5
Worker Commute	10	40	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 28**  
**500 kV Transmission Line Construction Emissions**  
**Tower Steel Assembly**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.02	0.12	0.12	0.00	0.01	0.00
1-Ton Crew Cab Flat Bed, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
<b>Offsite Total</b>	<b>0.29</b>	<b>2.24</b>	<b>0.36</b>	<b>0.01</b>	<b>0.07</b>	<b>0.04</b>
<b>Total</b>	<b>0.29</b>	<b>2.24</b>	<b>0.36</b>	<b>0.01</b>	<b>0.07</b>	<b>0.04</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	1.0	0.0	1.0
1-Ton Crew Cab Flat Bed, 4x4	0.5	0.0	0.5
Worker Commute	12.1	0.0	12.1
<b>Offsite Total</b>	<b>13.7</b>	<b>0.0</b>	<b>13.7</b>
<b>Total</b>	<b>13.7</b>	<b>0.0</b>	<b>13.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	2	Unpaved	10	0.455	0.046	9.10	0.91
1-Ton Crew Cab Flat Bed, 4x4	2	Unpaved	5	0.556	0.056	5.56	0.56
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
<b>Offsite Total</b>						<b>15.15</b>	<b>1.47</b>
<b>Total</b>						<b>15.15</b>	<b>1.47</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

a From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]



**Table 29**  
**500 kV Transmission Line Construction Emissions**  
**Tower Erection**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.07	5.93	5.55	0.02	0.21	0.20	17.7
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>1.07</b>	<b>5.93</b>	<b>5.55</b>	<b>0.02</b>	<b>0.21</b>	<b>0.20</b>	<b>17.7</b>
Offsite Motor Vehicle Exhaust	0.38	2.91	0.67	0.01	0.09	0.06	15.2
Offsite Motor Vehicle Fugitive PM	--	--	--	--	37.75	3.72	
<b>Offsite Total</b>	<b>0.38</b>	<b>2.91</b>	<b>0.67</b>	<b>0.01</b>	<b>37.85</b>	<b>3.78</b>	<b>15.2</b>
<b>Total</b>	<b>1.46</b>	<b>8.84</b>	<b>6.22</b>	<b>0.03</b>	<b>38.06</b>	<b>3.98</b>	<b>33.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor Trailer	60	1	33	8
RT Crane (M)	215	1	22	6
RT Crane (L)	275	1	11	6

Note: Helicopter use accounted for in Table 29c

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
RT Crane (M)	215	0.054	0.232	0.271	0.001	0.009	0.009	112.159	0.005	Cranes
RT Crane (L)	275	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor Trailer	0.23	2.42	1.54	0.00	0.07	0.07
RT Crane (M)	0.33	1.39	1.62	0.01	0.06	0.05
RT Crane (L)	0.51	2.12	2.39	0.01	0.09	0.08
<b>Total</b>	<b>1.07</b>	<b>5.93</b>	<b>5.55</b>	<b>0.02</b>	<b>0.21</b>	<b>0.20</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor Trailer	5.6	0.0	5.6
RT Crane (M)	6.7	0.0	6.7
RT Crane (L)	5.4	0.0	5.4
<b>Total</b>	<b>17.7</b>	<b>0.0</b>	<b>17.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateaction.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateaction.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	3	33	N/A	15
1-Ton Crew Cab Flat Bed, 4x4	2	33	N/A	15
Worker Commute	12	33	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 29**  
**500 kV Transmission Line Construction Emissions**  
**Tower Erection**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.04	0.27	0.28	0.00	0.01	0.01
1-Ton Crew Cab Flat Bed, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
Worker Commute	0.31	2.47	0.21	0.01	0.07	0.05
<b>Offsite Total</b>	<b>0.38</b>	<b>2.91</b>	<b>0.67</b>	<b>0.01</b>	<b>0.09</b>	<b>0.06</b>
<b>Total</b>	<b>0.38</b>	<b>2.91</b>	<b>0.67</b>	<b>0.01</b>	<b>0.09</b>	<b>0.06</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	1.9	0.0	1.9
1-Ton Crew Cab Flat Bed, 4x4	1.3	0.0	1.3
Worker Commute	12.0	0.0	12.0
<b>Offsite Total</b>	<b>15.2</b>	<b>0.0</b>	<b>15.2</b>
<b>Total</b>	<b>15.2</b>	<b>0.0</b>	<b>15.2</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	3	Unpaved	15	0.455	0.046	20.48	2.05
1-Ton Crew Cab Flat Bed, 4x4	2	Unpaved	15	0.556	0.056	16.69	1.67
Worker Commute	12	Paved	60	0.001	0.000	0.58	0.00
<b>Offsite Total</b>						<b>37.75</b>	<b>3.72</b>
<b>Total</b>						<b>37.75</b>	<b>3.72</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 29b

**500 kV Transmission Line Construction Emissions  
Tower Erection (Helicopter) Ground Support**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.0</b>
Offsite Motor Vehicle Exhaust	0.59	4.56	0.81	0.01	0.14	0.09	5.0
Offsite Helicopter Exhaust	0.23	2.42	1.54	0.00	0.07	0.07	1.36
Offsite Motor Vehicle Fugitive PM	--	--	--	--	42.75	4.18	
<b>Offsite Total</b>	<b>0.82</b>	<b>6.98</b>	<b>2.35</b>	<b>0.02</b>	<b>42.96</b>	<b>4.34</b>	<b>6.4</b>
<b>Total</b>	<b>0.82</b>	<b>6.98</b>	<b>2.35</b>	<b>0.02</b>	<b>42.96</b>	<b>4.34</b>	<b>6.4</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor Trailer	60	1	8	8

Note: Helicopter use accounted for in Table 29c

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor Trailer	0.23	2.42	1.54	0.00	0.07	0.07
<b>Total</b>	<b>0.23</b>	<b>2.42</b>	<b>1.54</b>	<b>0.00</b>	<b>0.07</b>	<b>0.07</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor Trailer	1.4	0.0	1.4
<b>Total</b>	<b>1.4</b>	<b>0.0</b>	<b>1.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	2	2	N/A	15
1-Ton Truck, 4x4	2	2	N/A	15
Fuel, Helicopter Support Truck	1	2	N/A	15
Worker Commute	20	8	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Fuel, Helicopter Support Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 29b**  
**500 kV Transmission Line Construction Emissions**  
**Tower Erection (Helicopter) Ground Support**

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions						
Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
1-Ton Truck, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
Fuel, Helicopter Support Truck	0.01	0.09	0.09	0.00	0.00	0.00
Worker Commute	0.52	4.11	0.35	0.01	0.12	0.08
<b>Offsite Total</b>	<b>0.59</b>	<b>4.56</b>	<b>0.81</b>	<b>0.01</b>	<b>0.14</b>	<b>0.09</b>
<b>Total</b>	<b>0.59</b>	<b>4.56</b>	<b>0.81</b>	<b>0.01</b>	<b>0.14</b>	<b>0.09</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions			
Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	0.1	0.0	0.1
1-Ton Truck, 4x4	0.1	0.0	0.1
Fuel, Helicopter Support Truck	0.0	0.0	0.0
Worker Commute	4.8	0.0	4.8
<b>Offsite Total</b>	<b>5.0</b>	<b>0.0</b>	<b>5.0</b>
<b>Total</b>	<b>5.0</b>	<b>0.0</b>	<b>5.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008. [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Fugitive Particulate Matter Emissions							
Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	2	Unpaved	15	0.455	0.046	13.66	1.37
1-Ton Truck, 4x4	2	Unpaved	15	0.455	0.046	13.66	1.37
Fuel, Helicopter Support Truck	1	Unpaved	15	0.965	0.097	14.48	1.45
Worker Commute	20	Paved	60	0.001	0.000	0.96	0.00
<b>Offsite Total</b>						<b>42.75</b>	<b>4.18</b>
<b>Total</b>						<b>42.75</b>	<b>4.18</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions						
Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 29c

**500 kV Transmission Line Construction Emissions  
Tower Helicopter Operations**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.0</b>
Offsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Offsite Helicopter Exhaust	46.71	56.80	577.42	32.18	12.02	12.02	1626.43
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
<b>Offsite Total</b>	<b>46.71</b>	<b>56.80</b>	<b>577.42</b>	<b>32.18</b>	<b>12.02</b>	<b>12.02</b>	<b>1626.4</b>
<b>Total</b>	<b>46.71</b>	<b>56.80</b>	<b>577.42</b>	<b>32.18</b>	<b>12.02</b>	<b>12.02</b>	<b>1626.4</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Kaman K-Max	1500	1	120	8
Hughes 500E Helicopter	317	1	127	12
Sikorsky S64	9000	1	7	12

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Kaman K-Max	1500	1.129	1.353	7.403	0.626	0.201	0.201	1978.170	0.055	See note c
Hughes 500E Helicopter	317	2.106	2.645	1.067	0.218	0.035	0.035	676.039	0.019	See note c
Sikorsky S64	9000	1.786	2.088	47.051	2.464	0.966	0.966	7788.012	0.216	See note c

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction = 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

<sup>c</sup> All except SOx, PM2.5, CO2, and CH4 from Guidance on the Determination of Helicopter Emissions, Federal Department of the Environment, Transport, Energy and Communications,

DETEC, Federal Office of Civil Aviation FOCA, Division Aviation Policy and Strategy, Swiss Confederation, March 2009.

Downloaded from <http://www.bazl.admin.ch/experten/regulation/03312/03419/03532/index.html?lang=en>

PM2.5 emissions assumed equal to PM10

SOx emissions [lb/hr] = Fuel use [kg/hr] x 1000 [g/kg] / 453.6 [g/lb] x Fuel sulfur [wt. %] / 100 x 2 [lb SO2/lbS]

K-Max Fuel use = 283.86 kg/hr from Guidance on the Determination of Helicopter Emissions

Hughes 500E Fuel use = 98.8 kg/hr from Guidance on the Determination of Helicopter Emissions

Sikorsky S64 Fuel use = 1,118 kg/hr from Guidance on the Determination of Helicopter Emissions

Fuel sulfur = 0.05% from estimated average for Jet A

CO2 emissions [lb/hr] = CO2 emission factor [kg/gal] x 1000 [g/kg] / 453.6 [g/lb] x Fuel use [kg/hr] x 1000 [g/kg] / 453.6 [g/lb] / Fuel density [lb/gal]

CO2 emission factor = 9.75 kg/gal from Table 13.1 of 2013 Climate Registry Default Emission Factors, downloaded from

<http://www.theclimaterestry.org/downloads/2013/01/2013-Climat-Registry-Default-Emissions-Factors.pdf>

CH4 emission factor = 0.27 g/gal from Table 13.7 of 2013 Climate Registry Default Emission Factors

K-Max Fuel use = 283.86 kg/hr from Guidance on the Determination of Helicopter Emissions

Hughes 500E Fuel use = 98.8 kg/hr from Guidance on the Determination of Helicopter Emissions

Sikorsky S64 Fuel use = 1,118 kg/hr from Guidance on the Determination of Helicopter Emissions

Jet-A density = 6.8 lb/gal

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Kaman K-Max	9.03	10.83	59.22	5.01	1.60	1.60
Hughes 500E Helicopter	25.27	31.74	12.80	2.61	0.42	0.42
Sikorsky S64	21.44	25.06	564.62	29.57	11.60	11.60
<b>Total<sup>b</sup></b>	<b>46.71</b>	<b>56.80</b>	<b>577.42</b>	<b>32.18</b>	<b>12.02</b>	<b>12.02</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

<sup>b</sup> Total daily emissions assume that the Kaman K-Max and Sikorsky S64 would not operate on the same day.

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Kaman K-Max	861.4	0.0	861.9
Hughes 500E Helicopter	467.3	0.0	467.6
Sikorsky S64	296.7	0.0	296.9
<b>Total</b>	<b>1,625.5</b>	<b>0.0</b>	<b>1,626.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO2-equivalent (CO2e) emission factors are CO2 emissions plus 21 x CH4 emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateestry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateestry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

**Table 29c**  
**500 kV Transmission Line Construction Emissions**  
**Tower Helicopter Operations**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				
<b>Offsite</b>				
None				

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed.

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Fuel, Helicopter Support Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 29c**  
**500 kV Transmission Line Construction Emissions**  
**Tower Helicopter Operations**

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions						
Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.00	0.00	0.00	0.00	0.00	0.00
1-Ton Truck, 4x4	0.00	0.00	0.00	0.00	0.00	0.00
Fuel, Helicopter Support Truck	0.00	0.00	0.00	0.00	0.00	0.00
Worker Commute	0.00	0.00	0.00	0.00	0.00	0.00
<b>Offsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions			
Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	0.0	0.0	0.0
1-Ton Truck, 4x4	0.0	0.0	0.0
Fuel, Helicopter Support Truck	0.0	0.0	0.0
Worker Commute	0.0	0.0	0.0
<b>Offsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

<sup>b</sup> Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008. [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Fugitive Particulate Matter Emissions							
Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
None						0.00	0.00
<b>Offsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Total</b>						<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Table 30**  
**500 kV Transmission Line Construction Emissions**  
**Wire Stringing**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	5.93	32.28	29.00	0.15	1.00	0.92	0.00
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>5.93</b>	<b>32.28</b>	<b>29.00</b>	<b>0.15</b>	<b>1.00</b>	<b>0.92</b>	<b>0.0</b>
Offsite Motor Vehicle Exhaust	1.70	12.93	3.12	0.04	0.42	0.29	18.5
Offsite Helicopter Exhaust	12.64	15.87	6.40	1.31	0.21	0.21	0.00
Offsite Motor Vehicle Fugitive PM	--	--	--	--	173.42	17.08	
<b>Offsite Total</b>	<b>14.34</b>	<b>28.80</b>	<b>9.52</b>	<b>1.35</b>	<b>174.06</b>	<b>17.58</b>	<b>18.5</b>
<b>Total</b>	<b>20.27</b>	<b>61.08</b>	<b>38.52</b>	<b>1.51</b>	<b>175.06</b>	<b>18.50</b>	<b>18.5</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Bucket Truck	250	2	9	8
RT Crane (M)	215	2	9	6
Boom/Crane Truck	350	2	9	6
Spacing Cart	10	2	3	8
Static Truck/Tensioner	350	1	9	6
3 Drum Straw Sock Puller	300	1	4	6
Bull Wheel Puller	525	1	5	6
Sag Cat w/ winches	350	2	9	4
Backhoe/Front Loader	125	1	9	4
D8 Cat	350	2	9	4
Hughes 500 E Helicopter	N/A	1	2	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Bucket Truck	250	0.058	0.371	0.366	0.002	0.011	0.010	212.856	0.005	Aerial Lifts
RT Crane (M)	215	0.054	0.232	0.271	0.001	0.009	0.009	112.159	0.005	Cranes
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Spacing Cart	10	0.012	0.062	0.074	0.000	0.003	0.003	10.107	0.001	Other Construction Equipment
Static Truck/Tensioner	350	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment
3 Drum Straw Sock Puller	300	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment
Bull Wheel Puller	525	0.044	0.347	0.202	0.001	0.007	0.006	122.505	0.004	Other Construction Equipment
Sag Cat w/ winches	350	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
D8 Cat	350	0.139	0.588	0.753	0.003	0.028	0.026	259.229	0.013	Crawler Tractors
Hughes 500 E Helicopter	317	2.106	2.645	1.067	0.218	0.035	0.035	676.039		See note c

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

<sup>c</sup> All except SOx, PM2.5 and CO2 from Guidance on the Determination of Helicopter Emissions, Federal Department of the Environment, Transport, Energy and Communications, DETEC, Federal Office of

Civil Aviation FOCA, Division Aviation Policy and Strategy, Swiss Confederation, March 2009. Downloaded from <http://www.bazl.admin.ch/fachleute/01169/01174/01628/index.html?lang=en>

PM2.5 emissions assumed equal to PM10

SOx emissions [lb/hr] = Fuel use [kg/hr] x 1000 [g/kg] / 453.6 [g/lb] x Fuel sulfur [wt. %] / 100 x 2 [lb SO2/lbS]

Fuel use = 98.8 kg/hr from Guidance on the Determination of Helicopter Emissions

Fuel sulfur = 0.05% from estimated average for Jet-A

CO2 emissions [lb/hr] = CO2 emission factor [kg/gal] x 1000 [g/kg] / 453.6 [g/lb] x Fuel use [kg/hr] x 1000 [g/kg] / 453.6 [g/lb] / Fuel density [lb/gal]

CO2 emission factor = 9.57 kg/gal from Table C.3 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008.

Downloaded from [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Fuel use = 98.8 kg/hr from Guidance on the Determination of Helicopter Emissions

Jet-A density = 6.8 lb/gal



**Table 30**  
**500 kV Transmission Line Construction Emissions**  
**Wire Stringing**

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Bucket Truck	0.93	5.94	5.86	0.03	0.17	0.16
RT Crane (M)	0.65	2.78	3.25	0.02	0.11	0.10
Boom/Crane Truck	1.03	4.24	4.77	0.02	0.18	0.16
Spacing Cart	0.19	0.99	1.18	0.00	0.05	0.04
Static Truck/Tensioner	0.48	2.76	1.82	0.01	0.06	0.05
3 Drum Straw Sock Puller	0.48	2.76	1.82	0.01	0.06	0.05
Bull Wheel Puller	0.27	2.08	1.21	0.01	0.04	0.04
Sag Cat w/ winches	0.63	3.68	2.43	0.02	0.08	0.07
Backhoe/Front Loader	0.17	2.34	0.65	0.00	0.03	0.03
D8 Cat	1.11	4.70	6.02	0.02	0.22	0.21
Hughes 500 E Helicopter	12.64	15.87	6.40	1.31	0.21	0.21
<b>Total</b>	<b>18.56</b>	<b>48.15</b>	<b>35.40</b>	<b>1.46</b>	<b>1.21</b>	<b>1.13</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Bucket Truck	13.9	0.0	13.9
RT Crane (M)	5.5	0.0	5.5
Boom/Crane Truck	8.8	0.0	8.8
Spacing Cart	0.2	0.0	0.2
Static Truck/Tensioner	6.2	0.0	6.2
3 Drum Straw Sock Puller	2.8	0.0	2.8
Bull Wheel Puller	1.7	0.0	1.7
Sag Cat w/ winches	8.3	0.0	8.3
Backhoe/Front Loader	1.7	0.0	1.7
D8 Cat	8.5	0.0	8.5
Hughes 500 E Helicopter	3.7	0.0	3.7
<b>Total</b>	<b>61.2</b>	<b>0.0</b>	<b>61.2</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	4	9	N/A	20
1-Ton Crew Cab, 4x4	6	9	N/A	20
Wire Truck/Trailer	4	6	N/A	5
Dump Truck	1	9	N/A	5
Lowboy Truck/Trailer	3	9	N/A	15
Fuel, Helicopter Support Truck	1	2	N/A	30
Worker Commute	55	9	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Wire Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Fuel, Helicopter Support Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 30**  
**500 kV Transmission Line Construction Emissions**  
**Wire Stringing**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.07	0.48	0.49	0.00	0.02	0.02
1-Ton Crew Cab, 4x4	0.11	0.71	0.74	0.00	0.03	0.03
Wire Truck/Trailer	0.02	0.09	0.19	0.00	0.01	0.01
Dump Truck	0.00	0.02	0.05	0.00	0.00	0.00
Lowboy Truck/Trailer	0.04	0.19	0.42	0.00	0.02	0.02
Fuel, Helicopter Support Truck	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	1.44	11.31	0.95	0.04	0.32	0.21
<b>Offsite Total</b>	<b>1.70</b>	<b>12.93</b>	<b>3.12</b>	<b>0.04</b>	<b>0.42</b>	<b>0.29</b>
<b>Total</b>	<b>1.70</b>	<b>12.93</b>	<b>3.12</b>	<b>0.04</b>	<b>0.42</b>	<b>0.29</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	0.9	0.0	0.9
1-Ton Crew Cab, 4x4	1.4	0.0	1.4
Wire Truck/Trailer	0.2	0.0	0.2
Dump Truck	0.1	0.0	0.1
Lowboy Truck/Trailer	0.8	0.0	0.8
Fuel, Helicopter Support Truck	0.1	0.0	0.1
Worker Commute	15.0	0.0	15.0
<b>Offsite Total</b>	<b>18.5</b>	<b>0.0</b>	<b>18.5</b>
<b>Total</b>	<b>18.5</b>	<b>0.0</b>	<b>18.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	4	Unpaved	20	0.455	0.046	36.42	3.64
1-Ton Crew Cab, 4x4	6	Unpaved	20	0.556	0.056	66.77	6.68
Wire Truck/Trailer	4	Unpaved	5	0.965	0.097	19.30	1.93
Dump Truck	1	Unpaved	5	0.965	0.097	4.83	0.48
Lowboy Truck/Trailer	3	Unpaved	15	0.965	0.097	43.43	4.34
Fuel, Helicopter Support Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	55	Paved	60	0.001	0.000	2.64	0.00
<b>Offsite Total</b>						<b>173.42</b>	<b>17.08</b>
<b>Total</b>						<b>173.42</b>	<b>17.08</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 31**  
**500 kV Transmission Line Construction Emissions**  
**Restoration**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.87	6.75	4.42	0.02	0.19	0.17	3.3
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	2.58	0.54	
<b>Onsite Total</b>	<b>0.87</b>	<b>6.75</b>	<b>4.42</b>	<b>0.02</b>	<b>2.77</b>	<b>0.71</b>	<b>3.3</b>
Offsite Motor Vehicle Exhaust	0.20	1.56	0.32	0.01	0.05	0.03	1.0
Offsite Motor Vehicle Fugitive PM	--	--	--	--	20.38	2.00	
<b>Offsite Total</b>	<b>0.20</b>	<b>1.56</b>	<b>0.32</b>	<b>0.01</b>	<b>20.43</b>	<b>2.04</b>	<b>1.0</b>
<b>Total</b>	<b>1.08</b>	<b>8.31</b>	<b>4.75</b>	<b>0.03</b>	<b>23.20</b>	<b>2.75</b>	<b>4.3</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Road Grader	250	1	4	6
Backhoe/Front Loader	125	1	4	4
Drum Type Compactor	100	1	4	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Road Grader	250	0.078	0.355	0.365	0.002	0.013	0.012	172.113	0.007	Graders
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
Drum Type Compactor	100	0.039	0.380	0.265	0.001	0.014	0.013	58.989	0.004	Rollers

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction = 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Road Grader	0.47	2.13	2.19	0.01	0.08	0.07
Backhoe/Front Loader	0.17	2.34	0.65	0.00	0.03	0.03
Drum Type Compactor	0.24	2.28	1.59	0.00	0.08	0.08
<b>Total</b>	<b>0.87</b>	<b>6.75</b>	<b>4.42</b>	<b>0.02</b>	<b>0.19</b>	<b>0.17</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Road Grader	1.9	0.0	1.9
Backhoe/Front Loader	0.7	0.0	0.7
Drum Type Compactor	0.6	0.0	0.6
<b>Total</b>	<b>3.3</b>	<b>0.0</b>	<b>3.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
1-Ton Crew Cab, 4x4	2	4	N/A	5
Water Truck	1	4	N/A	5
Lowboy Truck/Trailer	1	4	N/A	10
Worker Commute	7	4	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 31**  
**500 kV Transmission Line Construction Emissions**  
**Restoration**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
Water Truck	0.00	0.02	0.05	0.00	0.00	0.00
Lowboy Truck/Trailer	0.01	0.04	0.09	0.00	0.00	0.00
Worker Commute	0.18	1.44	0.12	0.00	0.04	0.03
<b>Offsite Total</b>	<b>0.20</b>	<b>1.56</b>	<b>0.32</b>	<b>0.01</b>	<b>0.05</b>	<b>0.03</b>
<b>Total</b>	<b>0.20</b>	<b>1.56</b>	<b>0.32</b>	<b>0.01</b>	<b>0.05</b>	<b>0.03</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1-Ton Crew Cab, 4x4	0.1	0.0	0.1
Water Truck	0.0	0.0	0.0
Lowboy Truck/Trailer	0.1	0.0	0.1
Worker Commute	0.8	0.0	0.8
<b>Offsite Total</b>	<b>1.0</b>	<b>0.0</b>	<b>1.0</b>
<b>Total</b>	<b>1.0</b>	<b>0.0</b>	<b>1.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1-Ton Crew Cab, 4x4	2	Unpaved	5	0.556	0.056	5.56	0.56
Water Truck	1	Unpaved	5	0.965	0.097	4.83	0.48
Lowboy Truck/Trailer	1	Unpaved	10	0.965	0.097	9.65	0.97
Worker Commute	7	Paved	60	0.001	0.000	0.34	0.00
<b>Offsite Total</b>						<b>20.38</b>	<b>2.00</b>
<b>Total</b>						<b>20.38</b>	<b>2.00</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	500	9.94E-04	2.07E-04	0.50	0.10
Bulldozing, Scraping and Grading	hr/day	6	0.348	0.072	2.09	0.43
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>2.58</b>	<b>0.54</b>

a From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Estimate

**Table 32**  
**115 kV Subtransmission Line Construction Emissions**  
**Survey**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.0</b>
Offsite Motor Vehicle Exhaust	0.12	0.96	0.08	0.00	0.03	0.02	2.5
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.22	0.00	
<b>Offsite Total</b>	<b>0.12</b>	<b>0.96</b>	<b>0.08</b>	<b>0.00</b>	<b>0.25</b>	<b>0.02</b>	<b>2.5</b>
<b>Total</b>	<b>0.12</b>	<b>0.96</b>	<b>0.08</b>	<b>0.00</b>	<b>0.25</b>	<b>0.02</b>	<b>2.5</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
None				

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
None		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
None	0.0	0.0	0.0
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				
<b>Offsite</b>				
1-Ton Truck, 4x4	2	18	8	20
Worker Commute	4	18	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
1-Ton Truck, 4x4	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 32**  
**115 kV Subtransmission Line Construction Emissions**  
**Survey**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Truck, 4x4	0.02	0.14	0.01	0.00	0.00	0.00
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.12</b>	<b>0.96</b>	<b>0.08</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>
<b>Total</b>	<b>0.12</b>	<b>0.96</b>	<b>0.08</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1-Ton Truck, 4x4	0.4	0.0	0.4
Worker Commute	2.2	0.0	2.2
<b>Offsite Total</b>	<b>2.5</b>	<b>0.0</b>	<b>2.5</b>
<b>Total</b>	<b>2.5</b>	<b>0.0</b>	<b>2.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None							
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1-Ton Truck, 4x4	2	Paved	20	0.001	0.000	0.03	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.22</b>	<b>0.00</b>
<b>Total</b>						<b>0.22</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 33**  
**115 kV Subtransmission Line Construction Emissions**  
**Marshalling Yard**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.25	2.45	0.98	0.01	0.04	0.03	92.9
Onsite Motor Vehicle Exhaust	0.01	0.08	0.11	0.00	0.01	0.00	8.2
Onsite Motor Vehicle Fugitive PM	--	--	--	--	10.39	1.04	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.26</b>	<b>2.53</b>	<b>1.09</b>	<b>0.01</b>	<b>10.43</b>	<b>1.08</b>	<b>101.1</b>
Offsite Motor Vehicle Exhaust	0.10	0.82	0.07	0.00	0.02	0.02	44.2
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.19	0.00	
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.22</b>	<b>0.02</b>	<b>44.2</b>
<b>Total</b>	<b>0.36</b>	<b>3.35</b>	<b>1.16</b>	<b>0.01</b>	<b>10.65</b>	<b>1.09</b>	<b>145.3</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Boom/Crane Truck	215	1	365	2
Rough Terrain Forklift	125	1	365	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Boom/Crane Truck	215	0.054	0.232	0.271	0.001	0.009	0.009	112.159	0.005	Cranes
Rough Terrain Forklift	125	0.023	0.331	0.073	0.001	0.003	0.003	56.054	0.002	Forklifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction=

0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Boom/Crane Truck	0.11	0.46	0.54	0.00	0.02	0.02
Rough Terrain Forklift	0.14	1.99	0.44	0.00	0.02	0.02
<b>Total</b>	<b>0.25</b>	<b>2.45</b>	<b>0.98</b>	<b>0.01</b>	<b>0.04</b>	<b>0.03</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Boom/Crane Truck	37.1	0.0	37.2
Rough Terrain Forklift	55.7	0.0	55.7
<b>Total</b>	<b>92.8</b>	<b>0.0</b>	<b>92.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
1-Ton Crew Cab, 4x4	1	365	4	10
Truck, Semi Tractor	1	365	2	5
<b>Offsite</b>				
Worker Commute	4	365	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Truck, Semi Tractor	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 33**  
**115 kV Subtransmission Line Construction Emissions**  
**Marshalling Yard**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
1-Ton Crew Cab, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
Truck, Semi Tractor	0.00	0.02	0.05	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.01</b>	<b>0.08</b>	<b>0.11</b>	<b>0.00</b>	<b>0.01</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>
<b>Total</b>	<b>0.12</b>	<b>0.90</b>	<b>0.18</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
1-Ton Crew Cab, 4x4	4.8	0.0	4.8
Truck, Semi Tractor	3.5	0.0	3.5
<b>Onsite Total</b>	<b>8.2</b>	<b>0.0</b>	<b>8.2</b>
<b>Offsite</b>			
Worker Commute	44.1	0.0	44.2
<b>Offsite Total</b>	<b>44.1</b>	<b>0.0</b>	<b>44.2</b>
<b>Total</b>	<b>52.4</b>	<b>0.0</b>	<b>52.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
1-Ton Crew Cab, 4x4	1	Unpaved	10	0.556	0.056	5.56	0.56
Truck, Semi Tractor	1	Unpaved	5	0.965	0.097	4.83	0.48
<b>Onsite Total</b>						<b>10.39</b>	<b>1.04</b>
<b>Offsite</b>							
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.19</b>	<b>0.00</b>
<b>Total</b>						<b>10.58</b>	<b>1.04</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]



**Table 34**  
**115 kV Subtransmission Line Construction Emissions**  
**Roads and Landing Work**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.60	12.73	7.49	0.04	0.34	0.31	109.3
Onsite Motor Vehicle Exhaust	0.00	0.00	0.01	0.00	0.00	0.00	0.2
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.97	0.10	
Earthwork Fugitive PM	--	--	--	--	3.58	0.74	
<b>Onsite Total</b>	<b>1.60</b>	<b>12.73</b>	<b>7.50</b>	<b>0.04</b>	<b>4.88</b>	<b>1.15</b>	<b>109.5</b>
Offsite Motor Vehicle Exhaust	0.18	1.34	0.55	0.01	0.05	0.04	19.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.29	0.00	
<b>Offsite Total</b>	<b>0.18</b>	<b>1.34</b>	<b>0.55</b>	<b>0.01</b>	<b>0.34</b>	<b>0.04</b>	<b>19.3</b>
<b>Total</b>	<b>1.79</b>	<b>14.07</b>	<b>8.05</b>	<b>0.04</b>	<b>5.22</b>	<b>1.19</b>	<b>128.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Road Grader	250	1	88	4
Backhoe/Front Loader	125	1	88	6
Drum Type Compactor	100	1	88	4
Track Type Dozer	150	1	88	6
Excavator	250	1	44	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Road Grader	250	0.078	0.355	0.365	0.002	0.013	0.012	172.113	0.007	Graders
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
Drum Type Compactor	100	0.039	0.380	0.265	0.001	0.014	0.013	58.989	0.004	Rollers
Track Type Dozer	150	0.082	0.727	0.445	0.001	0.024	0.022	121.188	0.007	Crawler Tractors
Excavator	250	0.065	0.321	0.222	0.002	0.007	0.007	158.683	0.006	Excavators

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Road Grader	0.31	1.42	1.46	0.01	0.05	0.05
Backhoe/Front Loader	0.25	3.50	0.97	0.01	0.04	0.04
Drum Type Compactor	0.16	1.52	1.06	0.00	0.05	0.05
Track Type Dozer	0.49	4.36	2.67	0.01	0.14	0.13
Excavator	0.39	1.93	1.33	0.01	0.04	0.04
<b>Total</b>	<b>1.60</b>	<b>12.73</b>	<b>7.49</b>	<b>0.04</b>	<b>0.34</b>	<b>0.31</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Road Grader	27.5	0.0	27.5
Backhoe/Front Loader	24.3	0.0	24.3
Drum Type Compactor	9.4	0.0	9.4
Track Type Dozer	29.0	0.0	29.1
Excavator	19.0	0.0	19.0
<b>Total</b>	<b>109.2</b>	<b>0.0</b>	<b>109.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh.
<b>Onsite</b>				
Water Truck	1	88	8	1
<b>Offsite</b>				
1-Ton Crew Cab, 4x4	1	88	N/A	30
Lowboy Truck/Trailer	1	44	N/A	30
Worker Commute	5	88	N/A	60

**Table 34**  
**115 kV Subtransmission Line Construction Emissions**  
**Roads and Landing Work**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
<b>Offsite</b>									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Water Truck	0.00	0.00	0.01	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
Lowboy Truck/Trailer	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.13	1.03	0.09	0.00	0.03	0.02
<b>Offsite Total</b>	<b>0.18</b>	<b>1.34</b>	<b>0.55</b>	<b>0.01</b>	<b>0.05</b>	<b>0.04</b>
<b>Total</b>	<b>0.18</b>	<b>1.34</b>	<b>0.56</b>	<b>0.01</b>	<b>0.05</b>	<b>0.04</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Water Truck	0.2	0.0	0.2
<b>Onsite Total</b>	<b>0.2</b>	<b>0.0</b>	<b>0.2</b>
<b>Offsite</b>			
1-Ton Crew Cab, 4x4	3.5	0.0	3.5
Lowboy Truck/Trailer	2.5	0.0	2.5
Worker Commute	13.3	0.0	13.3
<b>Offsite Total</b>	<b>19.3</b>	<b>0.0</b>	<b>19.3</b>
<b>Total</b>	<b>19.4</b>	<b>0.0</b>	<b>19.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Water Truck	1	Unpaved	1	0.965	0.097	0.97	0.10
<b>Onsite Total</b>						<b>0.97</b>	<b>0.10</b>
<b>Offsite</b>							
1-Ton Crew Cab, 4x4	1	Paved	30	0.001	0.000	0.02	0.00
Lowboy Truck/Trailer	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	5	Paved	60	0.001	0.000	0.24	0.00
<b>Offsite Total</b>						<b>0.29</b>	<b>0.00</b>
<b>Total</b>						<b>1.25</b>	<b>0.10</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	100	9.94E-04	2.07E-04	0.10	0.02
Bulldozing, Scraping and Grading	hr/day	10	0.348	0.072	3.48	0.72
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>3.58</b>	<b>0.74</b>

a From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Estimate

**Table 35**  
**115 kV Subtransmission Line Construction Emissions**  
**Guard Structure Installation**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.35	8.18	6.39	0.04	0.23	0.22	43.7
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>1.35</b>	<b>8.18</b>	<b>6.39</b>	<b>0.04</b>	<b>0.23</b>	<b>0.22</b>	<b>43.7</b>
Offsite Motor Vehicle Exhaust	0.26	1.90	0.94	0.01	0.07	0.05	9.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.38	0.00	
<b>Offsite Total</b>	<b>0.26</b>	<b>1.90</b>	<b>0.94</b>	<b>0.01</b>	<b>0.46</b>	<b>0.05</b>	<b>9.3</b>
<b>Total</b>	<b>1.61</b>	<b>10.08</b>	<b>7.33</b>	<b>0.05</b>	<b>0.69</b>	<b>0.27</b>	<b>53.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor Trailer	60	1	26	6
Auger Truck	210	1	26	6
Boom/Crane Truck	350	1	26	8
Bucket Truck	250	1	26	4

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
Auger Truck	210	0.043	0.343	0.098	0.002	0.004	0.003	188.102	0.004	Bore/Drill Rigs
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Bucket Truck	250	0.058	0.371	0.366	0.002	0.011	0.010	212.856	0.005	Aerial Lifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor Trailer	0.17	1.81	1.16	0.00	0.05	0.05
Auger Truck	0.26	2.06	0.59	0.01	0.02	0.02
Boom/Crane Truck	0.69	2.83	3.18	0.01	0.12	0.11
Bucket Truck	0.23	1.48	1.46	0.01	0.04	0.04
<b>Total</b>	<b>1.35</b>	<b>8.18</b>	<b>6.39</b>	<b>0.04</b>	<b>0.23</b>	<b>0.22</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor Trailer	3.3	0.0	3.3
Auger Truck	13.3	0.0	13.3
Boom/Crane Truck	17.0	0.0	17.0
Bucket Truck	10.0	0.0	10.0
<b>Total</b>	<b>43.7</b>	<b>0.0</b>	<b>43.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				
<b>Offsite</b>				
3/4-Ton Pick-up Truck, 4x4	2	26	N/A	30
1-Ton Crew Cab Flat Bed, 4x4	1	26	N/A	30
Extendable Flat Bed Pole Truck	1	26	N/A	30
Worker Commute	6	26	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 35**  
**115 kV Subtransmission Line Construction Emissions**  
**Guard Structure Installation**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Pick-up Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Extendable Flat Bed Pole Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Pick-up Truck, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
1-Ton Crew Cab Flat Bed, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
Extendable Flat Bed Pole Truck	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.16	1.23	0.10	0.00	0.03	0.02
<b>Offsite Total</b>	<b>0.26</b>	<b>1.90</b>	<b>0.94</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>
<b>Total</b>	<b>0.26</b>	<b>1.90</b>	<b>0.94</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Pick-up Truck, 4x4	2.0	0.0	2.0
1-Ton Crew Cab Flat Bed, 4x4	1.0	0.0	1.0
Extendable Flat Bed Pole Truck	1.5	0.0	1.5
Worker Commute	4.7	0.0	4.7
<b>Offsite Total</b>	<b>9.3</b>	<b>0.0</b>	<b>9.3</b>
<b>Total</b>	<b>9.3</b>	<b>0.0</b>	<b>9.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None							
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Pick-up Truck, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
1-Ton Crew Cab Flat Bed, 4x4	1	Paved	30	0.001	0.000	0.02	0.00
Extendable Flat Bed Pole Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	6	Paved	60	0.001	0.000	0.29	0.00
<b>Offsite Total</b>						<b>0.38</b>	<b>0.00</b>
<b>Total</b>						<b>0.38</b>	<b>0.00</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

a From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 36**  
**115 kV Subtransmission Line Construction Emissions**  
**Remove Existing Wood H-Frames and Poles**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.84	5.86	4.22	0.02	0.17	0.16	17.5
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.84</b>	<b>5.86</b>	<b>4.22</b>	<b>0.02</b>	<b>0.17</b>	<b>0.16</b>	<b>17.5</b>
Offsite Motor Vehicle Exhaust	0.24	1.72	0.75	0.01	0.07	0.05	7.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.36	0.00	
<b>Offsite Total</b>	<b>0.24</b>	<b>1.72</b>	<b>0.75</b>	<b>0.01</b>	<b>0.43</b>	<b>0.05</b>	<b>7.3</b>
<b>Total</b>	<b>1.07</b>	<b>7.58</b>	<b>4.97</b>	<b>0.02</b>	<b>0.60</b>	<b>0.20</b>	<b>24.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Rough Terrain Forklift	125	1	23	4
Boom/Crane Truck	350	1	23	6
Compressor Trailer	60	1	23	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Rough Terrain Forklift	125	0.023	0.331	0.073	0.001	0.003	0.003	56.054	0.002	Forklifts
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction = 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Rough Terrain Forklift	0.09	1.32	0.29	0.00	0.01	0.01
Boom/Crane Truck	0.51	2.12	2.39	0.01	0.09	0.08
Compressor Trailer	0.23	2.42	1.54	0.00	0.07	0.07
<b>Total</b>	<b>0.84</b>	<b>5.86</b>	<b>4.22</b>	<b>0.02</b>	<b>0.17</b>	<b>0.16</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Rough Terrain Forklift	2.3	0.0	2.3
Boom/Crane Truck	11.3	0.0	11.3
Compressor Trailer	3.9	0.0	3.9
<b>Total</b>	<b>17.5</b>	<b>0.0</b>	<b>17.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				
<b>Offsite</b>				
1-Ton Crew Cab, 4x4	2	23	N/A	30
Flat Bed Truck/Trailer	1	23	N/A	30
Worker Commute	6	23	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 36**  
**115 kV Subtransmission Line Construction Emissions**  
**Remove Existing Wood H-Frames and Poles**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Flat Bed Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
Flat Bed Truck/Trailer	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.16	1.23	0.10	0.00	0.03	0.02
<b>Offsite Total</b>	<b>0.24</b>	<b>1.72</b>	<b>0.75</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>
<b>Total</b>	<b>0.24</b>	<b>1.72</b>	<b>0.75</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1-Ton Crew Cab, 4x4	1.8	0.0	1.8
Flat Bed Truck/Trailer	1.3	0.0	1.3
Worker Commute	4.2	0.0	4.2
<b>Offsite Total</b>	<b>7.3</b>	<b>0.0</b>	<b>7.3</b>
<b>Total</b>	<b>7.3</b>	<b>0.0</b>	<b>7.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None							
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1-Ton Crew Cab, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
Flat Bed Truck/Trailer	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	6	Paved	60	0.001	0.000	0.29	0.00
<b>Offsite Total</b>						<b>0.36</b>	<b>0.00</b>
<b>Total</b>						<b>0.36</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 37**  
**115 kV Subtransmission Line Construction Emissions**  
**Remove Existing Tubular Steel/Light Weight Steel Poles**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.66	3.63	3.35	0.01	0.13	0.12	3.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.66</b>	<b>3.63</b>	<b>3.35</b>	<b>0.01</b>	<b>0.13</b>	<b>0.12</b>	<b>3.0</b>
Offsite Motor Vehicle Exhaust	0.32	2.36	0.88	0.01	0.08	0.06	2.0
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.48	0.00	
<b>Offsite Total</b>	<b>0.32</b>	<b>2.36</b>	<b>0.88</b>	<b>0.01</b>	<b>0.56</b>	<b>0.06</b>	<b>2.0</b>
<b>Total</b>	<b>0.98</b>	<b>5.99</b>	<b>4.23</b>	<b>0.02</b>	<b>0.69</b>	<b>0.18</b>	<b>5.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor Trailer	60	1	5	5
Boom/Crane Truck	350	1	5	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor Trailer	0.14	1.51	0.96	0.00	0.04	0.04
Boom/Crane Truck	0.51	2.12	2.39	0.01	0.09	0.08
<b>Total</b>	<b>0.66</b>	<b>3.63</b>	<b>3.35</b>	<b>0.01</b>	<b>0.13</b>	<b>0.12</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor Trailer	0.5	0.0	0.5
Boom/Crane Truck	2.5	0.0	2.5
<b>Total</b>	<b>3.0</b>	<b>0.0</b>	<b>3.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				
<b>Offsite</b>				
3/4-Ton Truck, 4x4	2	5	N/A	30
1-Ton Crew Cab Flat Bed, 4x4	2	5	N/A	30
Worker Commute	8	5	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 37**  
**115 kV Subtransmission Line Construction Emissions**  
**Remove Existing Tubular Steel/Light Weight Steel Poles**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
1-Ton Crew Cab Flat Bed, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
Worker Commute	0.21	1.65	0.14	0.01	0.05	0.03
<b>Offsite Total</b>	<b>0.32</b>	<b>2.36</b>	<b>0.88</b>	<b>0.01</b>	<b>0.08</b>	<b>0.06</b>
<b>Total</b>	<b>0.32</b>	<b>2.36</b>	<b>0.88</b>	<b>0.01</b>	<b>0.08</b>	<b>0.06</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	0.4	0.0	0.4
1-Ton Crew Cab Flat Bed, 4x4	0.4	0.0	0.4
Worker Commute	1.2	0.0	1.2
<b>Offsite Total</b>	<b>2.0</b>	<b>0.0</b>	<b>2.0</b>
<b>Total</b>	<b>2.0</b>	<b>0.0</b>	<b>2.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None							
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
1-Ton Crew Cab Flat Bed, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
Worker Commute	8	Paved	60	0.001	0.000	0.38	0.00
<b>Offsite Total</b>						<b>0.48</b>	<b>0.00</b>
<b>Total</b>						<b>0.48</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]



**Table 38**  
**115 kV Subtransmission Line Construction Emissions**  
**Install Tubular Steel Pole Foundations**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.11	9.18	4.06	0.03	0.16	0.15	119.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.01	0.00	0.00	0.00	0.2
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.97	0.10	
Earthwork Fugitive PM	--	--	--	--	0.03	0.01	
<b>Onsite Total</b>	<b>1.11</b>	<b>9.18</b>	<b>4.07</b>	<b>0.03</b>	<b>1.16</b>	<b>0.25</b>	<b>119.2</b>
Offsite Motor Vehicle Exhaust	0.31	2.14	1.43	0.01	0.11	0.08	40.7
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.38	0.00	
<b>Offsite Total</b>	<b>0.31</b>	<b>2.14</b>	<b>1.43</b>	<b>0.01</b>	<b>0.49</b>	<b>0.08</b>	<b>40.7</b>
<b>Total</b>	<b>1.41</b>	<b>11.32</b>	<b>5.50</b>	<b>0.05</b>	<b>1.65</b>	<b>0.33</b>	<b>159.9</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Boom/Crane Truck	350	1	96	5
Backhoe/Front Loader	125	1	96	8
Auger Truck	210	1	65	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
Auger Truck	210	0.043	0.343	0.098	0.002	0.004	0.003	188.102	0.004	Bore/Drill Rigs

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction = 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Boom/Crane Truck	0.43	1.77	1.99	0.01	0.07	0.07
Backhoe/Front Loader	0.34	4.67	1.29	0.01	0.06	0.05
Auger Truck	0.34	2.74	0.78	0.02	0.03	0.03
<b>Total</b>	<b>1.11</b>	<b>9.18</b>	<b>4.06</b>	<b>0.03</b>	<b>0.16</b>	<b>0.15</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Boom/Crane Truck	39.2	0.0	39.2
Backhoe/Front Loader	35.3	0.0	35.3
Auger Truck	44.4	0.0	44.4
<b>Total</b>	<b>118.9</b>	<b>0.0</b>	<b>119.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh.
<b>Onsite</b>				
Water Truck	1	96	8	1
<b>Offsite</b>				
1-Ton Crew Cab Flat Bed, 4x4	1	96	N/A	30
Dump Truck	1	96	N/A	30
Concrete Mixer Truck	3	65	N/A	30
Worker Commute	7	96	N/A	60

**Table 38**  
**115 kV Subtransmission Line Construction Emissions**  
**Install Tubular Steel Pole Foundations**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
<b>Offsite</b>									
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Concrete Mixer Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Water Truck	0.00	0.00	0.01	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab Flat Bed, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
Dump Truck	0.02	0.13	0.28	0.00	0.01	0.01
Concrete Mixer Truck	0.07	0.39	0.84	0.00	0.04	0.03
Worker Commute	0.18	1.44	0.12	0.00	0.04	0.03
<b>Offsite Total</b>	<b>0.31</b>	<b>2.14</b>	<b>1.43</b>	<b>0.01</b>	<b>0.11</b>	<b>0.08</b>
<b>Total</b>	<b>0.31</b>	<b>2.14</b>	<b>1.43</b>	<b>0.01</b>	<b>0.11</b>	<b>0.08</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Water Truck	0.2	0.0	0.2
<b>Onsite Total</b>	<b>0.2</b>	<b>0.0</b>	<b>0.2</b>
<b>Offsite</b>			
1-Ton Crew Cab Flat Bed, 4x4	3.8	0.0	3.8
Dump Truck	5.5	0.0	5.5
Concrete Mixer Truck	11.1	0.0	11.1
Worker Commute	20.3	0.0	20.3
<b>Offsite Total</b>	<b>40.7</b>	<b>0.0</b>	<b>40.7</b>
<b>Total</b>	<b>40.9</b>	<b>0.0</b>	<b>40.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Water Truck	1	Unpaved	1	0.965	0.097	0.97	0.10
<b>Onsite Total</b>						<b>0.97</b>	<b>0.10</b>
<b>Offsite</b>							
1-Ton Crew Cab Flat Bed, 4x4	1	Paved	30	0.001	0.000	0.02	0.00
Dump Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	7	Paved	60	0.001	0.000	0.34	0.00
<b>Offsite Total</b>						<b>0.38</b>	<b>0.00</b>
<b>Total</b>						<b>1.35</b>	<b>0.10</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	35	9.94E-04	2.07E-04	0.03	0.01
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.03</b>	<b>0.01</b>

a From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Estimate

**Table 39**  
**115 kV Subtransmission Line Construction Emissions**  
**Steel Pole Haul**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.51	2.12	2.39	0.01	0.09	0.08	62.8
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.51</b>	<b>2.12</b>	<b>2.39</b>	<b>0.01</b>	<b>0.09</b>	<b>0.08</b>	<b>62.8</b>
Offsite Motor Vehicle Exhaust	0.18	1.31	0.72	0.01	0.05	0.04	32.8
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.26	0.00	
<b>Offsite Total</b>	<b>0.18</b>	<b>1.31</b>	<b>0.72</b>	<b>0.01</b>	<b>0.32</b>	<b>0.04</b>	<b>32.8</b>
<b>Total</b>	<b>0.70</b>	<b>3.43</b>	<b>3.10</b>	<b>0.02</b>	<b>0.41</b>	<b>0.12</b>	<b>95.6</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Boom/Crane Truck	350	1	128	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Boom/Crane Truck	0.51	2.12	2.39	0.01	0.09	0.08
<b>Total</b>	<b>0.51</b>	<b>2.12</b>	<b>2.39</b>	<b>0.01</b>	<b>0.09</b>	<b>0.08</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Boom/Crane Truck	62.7	0.0	62.8
<b>Total</b>	<b>62.7</b>	<b>0.0</b>	<b>62.8</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	2	128	N/A	30
40' Flat Bed Pole Truck	1	128	N/A	30
Worker Commute	4	128	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None									
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
40' Flat Bed Pole Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 39**  
**115 kV Subtransmission Line Construction Emissions**  
**Steel Pole Haul**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
40' Flat Bed Pole Truck	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.18</b>	<b>1.31</b>	<b>0.72</b>	<b>0.01</b>	<b>0.05</b>	<b>0.04</b>
<b>Total</b>	<b>0.18</b>	<b>1.31</b>	<b>0.72</b>	<b>0.01</b>	<b>0.05</b>	<b>0.04</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	10.0	0.0	10.0
40' Flat Bed Pole Truck	7.3	0.0	7.3
Worker Commute	15.5	0.0	15.5
<b>Offsite Total</b>	<b>32.8</b>	<b>0.0</b>	<b>32.8</b>
<b>Total</b>	<b>32.8</b>	<b>0.0</b>	<b>32.8</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0						
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
40' Flat Bed Pole Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.26</b>	<b>0.00</b>
<b>Total</b>						<b>0.26</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 40**  
**115 kV Subtransmission Line Construction Emissions**  
**Steel Pole Assembly**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.66	3.63	3.35	0.01	0.13	0.12	152.3
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.66</b>	<b>3.63</b>	<b>3.35</b>	<b>0.01</b>	<b>0.13</b>	<b>0.12</b>	<b>152.3</b>
Offsite Motor Vehicle Exhaust	0.32	2.36	0.88	0.01	0.08	0.06	101.7
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.48	0.00	
<b>Offsite Total</b>	<b>0.32</b>	<b>2.36</b>	<b>0.88</b>	<b>0.01</b>	<b>0.56</b>	<b>0.06</b>	<b>101.7</b>
<b>Total</b>	<b>0.98</b>	<b>5.99</b>	<b>4.23</b>	<b>0.02</b>	<b>0.69</b>	<b>0.18</b>	<b>254.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor Trailer	60	1	255	5
Boom/Crane Truck	350	1	255	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor Trailer	0.14	1.51	0.96	0.00	0.04	0.04
Boom/Crane Truck	0.51	2.12	2.39	0.01	0.09	0.08
<b>Total</b>	<b>0.66</b>	<b>3.63</b>	<b>3.35</b>	<b>0.01</b>	<b>0.13</b>	<b>0.12</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor Trailer	27.2	0.0	27.2
Boom/Crane Truck	125.0	0.0	125.1
<b>Total</b>	<b>152.1</b>	<b>0.0</b>	<b>152.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	2	255	N/A	30
1-Ton Crew Cab Flat Bed, 4x4	2	255	N/A	30
Worker Commute	8	255	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 40**  
**115 kV Subtransmission Line Construction Emissions**  
**Steel Pole Assembly**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
1-Ton Crew Cab Flat Bed, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
Worker Commute	0.21	1.65	0.14	0.01	0.05	0.03
<b>Offsite Total</b>	<b>0.32</b>	<b>2.36</b>	<b>0.88</b>	<b>0.01</b>	<b>0.08</b>	<b>0.06</b>
<b>Total</b>	<b>0.32</b>	<b>2.36</b>	<b>0.88</b>	<b>0.01</b>	<b>0.08</b>	<b>0.06</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	20.0	0.0	20.0
1-Ton Crew Cab Flat Bed, 4x4	20.0	0.0	20.0
Worker Commute	61.7	0.0	61.7
<b>Offsite Total</b>	<b>101.7</b>	<b>0.0</b>	<b>101.7</b>
<b>Total</b>	<b>101.7</b>	<b>0.0</b>	<b>101.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0						
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
1-Ton Crew Cab Flat Bed, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
Worker Commute	8	Paved	60	0.001	0.000	0.38	0.00
<b>Offsite Total</b>						<b>0.48</b>	<b>0.00</b>
<b>Total</b>						<b>0.48</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 41**  
**115 kV Subtransmission Line Construction Emissions**  
**Steel Pole Erection**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.66	3.63	3.35	0.01	0.13	0.12	152.3
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.66</b>	<b>3.63</b>	<b>3.35</b>	<b>0.01</b>	<b>0.13</b>	<b>0.12</b>	<b>152.3</b>
Offsite Motor Vehicle Exhaust	0.32	2.36	0.88	0.01	0.08	0.06	101.7
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.48	0.00	
<b>Offsite Total</b>	<b>0.32</b>	<b>2.36</b>	<b>0.88</b>	<b>0.01</b>	<b>0.56</b>	<b>0.06</b>	<b>101.7</b>
<b>Total</b>	<b>0.98</b>	<b>5.99</b>	<b>4.23</b>	<b>0.02</b>	<b>0.69</b>	<b>0.18</b>	<b>254.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor Trailer	60	1	255	5
Boom/Crane Truck	350	1	255	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor Trailer	0.14	1.51	0.96	0.00	0.04	0.04
Boom/Crane Truck	0.51	2.12	2.39	0.01	0.09	0.08
<b>Total</b>	<b>0.66</b>	<b>3.63</b>	<b>3.35</b>	<b>0.01</b>	<b>0.13</b>	<b>0.12</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor Trailer	27.2	0.0	27.2
Boom/Crane Truck	125.0	0.0	125.1
<b>Total</b>	<b>152.1</b>	<b>0.0</b>	<b>152.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	2	255	N/A	30
1-Ton Crew Cab Flat Bed, 4x4	2	255	N/A	30
Worker Commute	8	255	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 41**  
**115 kV Subtransmission Line Construction Emissions**  
**Steel Pole Erection**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
1-Ton Crew Cab Flat Bed, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
Worker Commute	0.21	1.65	0.14	0.01	0.05	0.03
<b>Offsite Total</b>	<b>0.32</b>	<b>2.36</b>	<b>0.88</b>	<b>0.01</b>	<b>0.08</b>	<b>0.06</b>
<b>Total</b>	<b>0.32</b>	<b>2.36</b>	<b>0.88</b>	<b>0.01</b>	<b>0.08</b>	<b>0.06</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	20.0	0.0	20.0
1-Ton Crew Cab Flat Bed, 4x4	20.0	0.0	20.0
Worker Commute	61.7	0.0	61.7
<b>Offsite Total</b>	<b>101.7</b>	<b>0.0</b>	<b>101.7</b>
<b>Total</b>	<b>101.7</b>	<b>0.0</b>	<b>101.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0						
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
1-Ton Crew Cab Flat Bed, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
Worker Commute	8	Paved	60	0.001	0.000	0.38	0.00
<b>Offsite Total</b>						<b>0.48</b>	<b>0.00</b>
<b>Total</b>						<b>0.48</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]



**Table 42**  
**115 kV Subtransmission Line Construction Emissions**  
**Wire Stringing**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	4.34	23.98	22.32	0.13	0.72	0.66	458.5
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>4.34</b>	<b>23.98</b>	<b>22.32</b>	<b>0.13</b>	<b>0.72</b>	<b>0.66</b>	<b>458.5</b>
Offsite Motor Vehicle Exhaust	0.73	5.39	2.11	0.02	0.20	0.14	83.2
Offsite Motor Vehicle Fugitive PM	--	--	--	--	1.15	0.00	
<b>Offsite Total</b>	<b>0.73</b>	<b>5.39</b>	<b>2.11</b>	<b>0.02</b>	<b>1.36</b>	<b>0.14</b>	<b>83.2</b>
<b>Total</b>	<b>5.07</b>	<b>29.37</b>	<b>24.43</b>	<b>0.15</b>	<b>2.08</b>	<b>0.80</b>	<b>541.7</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Bucket Truck	250	4	89	8
Boom/Crane Truck	350	2	89	8
Splicing Rig	350	1	20	2
3 Drum Straw Line Puller	300	1	45	6
Static Truck/Tensioner	350	1	45	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Bucket Truck	250	0.058	0.371	0.366	0.002	0.011	0.010	212.856	0.005	Aerial Lifts
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Splicing Rig	350	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment
3 Drum Straw Line Puller	300	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment
Static Truck/Tensioner	350	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Bucket Truck	1.86	11.87	11.71	0.07	0.35	0.32
Boom/Crane Truck	1.37	5.66	6.36	0.03	0.23	0.21
Splicing Rig	0.16	0.92	0.61	0.00	0.02	0.02
3 Drum Straw Line Puller	0.48	2.76	1.82	0.01	0.06	0.05
Static Truck/Tensioner	0.48	2.76	1.82	0.01	0.06	0.05
<b>Total</b>	<b>4.34</b>	<b>23.98</b>	<b>22.32</b>	<b>0.13</b>	<b>0.72</b>	<b>0.66</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Bucket Truck	275.0	0.0	275.1
Boom/Crane Truck	116.3	0.0	116.4
Splicing Rig	4.6	0.0	4.6
3 Drum Straw Line Puller	31.1	0.0	31.2
Static Truck/Tensioner	31.1	0.0	31.2
<b>Total</b>	<b>458.2</b>	<b>0.0</b>	<b>458.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Table 42**  
**115 kV Subtransmission Line Construction Emissions**  
**Wire Stringing**

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	2	89	N/A	30
1-Ton Crew Cab Flat Bed, 4x4	3	89	N/A	30
Wire Truck/Trailer	2	60	N/A	30
Dump Truck	1	89	N/A	30
Worker Commute	20	89	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Wire Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
1-Ton Crew Cab Flat Bed, 4x4	0.08	0.54	0.55	0.00	0.03	0.02
Wire Truck/Trailer	0.05	0.26	0.56	0.00	0.03	0.02
Dump Truck	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.52	4.11	0.35	0.01	0.12	0.08
<b>Offsite Total</b>	<b>0.73</b>	<b>5.39</b>	<b>2.11</b>	<b>0.02</b>	<b>0.20</b>	<b>0.14</b>
<b>Total</b>	<b>0.73</b>	<b>5.39</b>	<b>2.11</b>	<b>0.02</b>	<b>0.20</b>	<b>0.14</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	7.0	0.0	7.0
1-Ton Crew Cab Flat Bed, 4x4	10.5	0.0	10.5
Wire Truck/Trailer	6.9	0.0	6.9
Dump Truck	5.1	0.0	5.1
Worker Commute	53.8	0.0	53.8
<b>Offsite Total</b>	<b>83.2</b>	<b>0.0</b>	<b>83.2</b>
<b>Total</b>	<b>83.2</b>	<b>0.0</b>	<b>83.2</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Table 42**  
**115 kV Subtransmission Line Construction Emissions**  
**Wire Stringing**

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0						
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
1-Ton Crew Cab Flat Bed, 4x4	3	Paved	30	0.001	0.000	0.07	0.00
Wire Truck/Trailer	2	Paved	30	0.001	0.000	0.05	0.00
Dump Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	20	Paved	60	0.001	0.000	0.96	0.00
<b>Offsite Total</b>						<b>1.15</b>	<b>0.00</b>
<b>Total</b>						<b>1.15</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 42b**  
**115 kV Subtransmission Line Construction Emissions**  
**Vault Installation**

Emissions Summary							
Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.92	12.58	7.81	0.05	0.29	0.27	10.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.42	0.09	
<b>Onsite Total</b>	<b>1.92</b>	<b>12.58</b>	<b>7.81</b>	<b>0.05</b>	<b>0.71</b>	<b>0.36</b>	<b>10.0</b>
Offsite Motor Vehicle Exhaust	0.70	5.00	2.80	0.02	0.23	0.17	5.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	1.10	0.00	
<b>Offsite Total</b>	<b>0.70</b>	<b>5.00</b>	<b>2.80</b>	<b>0.02</b>	<b>1.34</b>	<b>0.17</b>	<b>5.3</b>
<b>Total</b>	<b>2.63</b>	<b>17.58</b>	<b>10.62</b>	<b>0.07</b>	<b>2.05</b>	<b>0.52</b>	<b>15.3</b>

Construction Equipment Summary				
Equipment	Horse-power	Number	Days Used	Hours Used/Day
Excavator	250	1	5	10
Crane (L)	500	1	5	10
Backhoe/Front Loader	125	1	5	10

Construction Equipment Exhaust Emission Factors										
Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Excavator	250	0.065	0.321	0.222	0.002	0.007	0.007	158.683	0.006	Excavators
Crane (L)	500	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes

<sup>a</sup> From Table 53  
<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10  
 PM2.5 Fraction= 0.920  
 From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5  
 and PM 2.5 Significance Thresholds, SCAQMD, October 2006,  
[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

Construction Equipment Daily Criteria Pollutant Exhaust Emissions						
Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Excavator	0.65	3.21	2.22	0.02	0.07	0.07
Crane (L)	0.86	3.54	3.98	0.02	0.15	0.13
Backhoe/Front Loader	0.42	5.84	1.61	0.01	0.07	0.07
<b>Total</b>	<b>1.92</b>	<b>12.58</b>	<b>7.81</b>	<b>0.05</b>	<b>0.29</b>	<b>0.27</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions			
Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Excavator	3.6	0.0	3.6
Crane (L)	4.1	0.0	4.1
Backhoe/Front Loader	2.3	0.0	2.3
<b>Total</b>	<b>10.0</b>	<b>0.0</b>	<b>10.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 53  
<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Usage				
Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh.
<b>Onsite</b>				
None				
<b>Offsite</b>				
1-Ton Crew Cab, 4x4	2	5	N/A	50
Water Truck	1	5	N/A	25
Concrete Mixer Truck	3	5	N/A	25
Dump Truck	3	5	N/A	25
Lowboy Truck/Trailer	1	5	N/A	25
Flat Bed Truck/Trailer	3	5	N/A	25
Worker Commute	20	5	N/A	50

Motor Vehicle Exhaust Emission Factors									
Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None									
<b>Offsite</b>									

**Table 42b**  
**115 kV Subtransmission Line Construction Emissions**  
**Vault Installation**

1-Ton Crew Cab, 4x4	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Water Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Concrete Mixer Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Flat Bed Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None						
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab, 4x4	0.04	0.34	0.03	0.00	0.01	0.01
Water Truck	0.02	0.15	0.15	0.00	0.01	0.01
Concrete Mixer Truck	0.06	0.32	0.70	0.00	0.04	0.03
Dump Truck	0.06	0.32	0.70	0.00	0.04	0.03
Lowboy Truck/Trailer	0.02	0.11	0.23	0.00	0.01	0.01
Flat Bed Truck/Trailer	0.06	0.32	0.70	0.00	0.04	0.03
Worker Commute	0.44	3.43	0.29	0.01	0.10	0.06
<b>Offsite Total</b>	<b>0.70</b>	<b>5.00</b>	<b>2.80</b>	<b>0.02</b>	<b>0.23</b>	<b>0.17</b>
<b>Total</b>	<b>0.70</b>	<b>5.00</b>	<b>2.80</b>	<b>0.02</b>	<b>0.23</b>	<b>0.17</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None			
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1-Ton Crew Cab, 4x4	0.3	0.0	0.3
Water Truck	0.2	0.0	0.2
Concrete Mixer Truck	0.7	0.0	0.7
Dump Truck	0.7	0.0	0.7
Lowboy Truck/Trailer	0.2	0.0	0.2
Flat Bed Truck/Trailer	0.7	0.0	0.7
Worker Commute	2.5	0.0	2.5
<b>Offsite Total</b>	<b>5.3</b>	<b>0.0</b>	<b>5.3</b>
<b>Total</b>	<b>5.3</b>	<b>0.0</b>	<b>5.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None							
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1-Ton Crew Cab, 4x4	2	Paved	50	0.001	0.000	0.08	0.00
Water Truck	1	Paved	25	0.001	0.000	0.02	0.00
Concrete Mixer Truck	3	Paved	25	0.001	0.000	0.06	0.00
Dump Truck	3	Paved	25	0.001	0.000	0.06	0.00
Lowboy Truck/Trailer	1	Paved	25	0.001	0.000	0.02	0.00
Flat Bed Truck/Trailer	3	Paved	25	0.001	0.000	0.06	0.00
Worker Commute	20	Paved	50	0.001	0.000	0.80	0.00
<b>Offsite Total</b>						<b>1.10</b>	<b>0.00</b>
<b>Total</b>						<b>1.10</b>	<b>0.00</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level <sup>c</sup>	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day	49.28	9.94E-04	2.07E-04	0.05	0.01

**Table 42b**  
**115 kV Subtransmission Line Construction Emissions**  
**Vault Installation**

Bulldozing, Scraping and Grading	hr/day	0	0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres	0.017	22.0	4.58	0.37	0.08
<b>Total</b>					<b>0.42</b>	<b>0.09</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Soil handling volume based on a vault size of approximately 24 feet long, 14 feet wide, 12 feet deep. Approximately 0.33 vaults built per day. 12 feet x 14 feet x 12 feet = 4032 cubic feet x 0.33 vaults/day = 1330.56 cubic feet/day = 49.28 cubic yards/day 12 feet x 14 feet x 12 feet = 4032 cubic feet x 0.33 vaults/day = 1330.56 cubic feet/day = 49.28 cubic yards/day

Storage pile size based on a 1 vault volume of 4032 cubic feet of soil. Storage pile assumed maximum 48 feet long, 14 feet wide, 6 feet high. 48 feet x 14 feet = 720 square feet = 0.017 acres

**Table 42c**  
**115 kV Subtransmission Line Construction Emissions**  
**Duct Bank Installation**

Emissions Summary							
Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.71	8.86	3.54	0.02	0.16	0.15	10.1
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.73	0.15	
<b>Onsite Total</b>	<b>0.71</b>	<b>8.86</b>	<b>3.54</b>	<b>0.02</b>	<b>0.89</b>	<b>0.30</b>	<b>10.1</b>
Offsite Motor Vehicle Exhaust	0.68	4.89	2.57	0.02	0.22	0.16	7.5
Offsite Motor Vehicle Fugitive PM	--	--	--	--	1.08	0.00	
<b>Offsite Total</b>	<b>0.68</b>	<b>4.89</b>	<b>2.57</b>	<b>0.02</b>	<b>1.31</b>	<b>0.16</b>	<b>7.5</b>
<b>Total</b>	<b>1.39</b>	<b>13.75</b>	<b>6.11</b>	<b>0.04</b>	<b>2.20</b>	<b>0.46</b>	<b>17.6</b>

Construction Equipment Summary				
Equipment	Horse-power	Number	Days Used	Hours Used/Day
Backhoe/Front Loader	125	1	15	10
Compressor Trailer	60	1	15	10

Construction Equipment Exhaust Emission Factors										
Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors

<sup>a</sup> From Table 53  
<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10  
 PM2.5 Fraction = 0.920  
 From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5  
 and PM 2.5 Significance Thresholds, SCAQMD, October 2006.  
[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

Construction Equipment Daily Criteria Pollutant Exhaust Emissions						
Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Backhoe/Front Loader	0.42	5.84	1.61	0.01	0.07	0.07
Compressor Trailer	0.29	3.02	1.93	0.01	0.09	0.08
<b>Total</b>	<b>0.71</b>	<b>8.86</b>	<b>3.54</b>	<b>0.02</b>	<b>0.16</b>	<b>0.15</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions			
Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Backhoe/Front Loader	6.9	0.0	6.9
Compressor Trailer	3.2	0.0	3.2
<b>Total</b>	<b>10.1</b>	<b>0.0</b>	<b>10.1</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 53  
<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Usage				
Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh.
<b>Onsite</b>				
None				
<b>Offsite</b>				
Lowboy Truck/Trailer	1	15	N/A	25
1-Ton Truck, 4x4	2	15	N/A	50
Water Truck	1	15	N/A	25
Pipe Truck/Trailer	1	15	N/A	25
Concrete Mixer Truck	3	15	N/A	25
Dump Truck	3	15	N/A	25
Lowboy Truck/Trailer	1	1	N/A	25
Worker Commute	20	1	N/A	50

Motor Vehicle Exhaust Emission Factors									
Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None									
<b>Offsite</b>									
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
1-Ton Truck, 4x4	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Water Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Pipe Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Concrete Mixer Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

**Table 42c**  
**115 kV Subtransmission Line Construction Emissions**  
**Duct Bank Installation**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None						
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Lowboy Truck/Trailer	0.02	0.11	0.23	0.00	0.01	0.01
1-Ton Truck, 4x4	0.04	0.34	0.03	0.00	0.01	0.01
Water Truck	0.02	0.15	0.15	0.00	0.01	0.01
Pipe Truck/Trailer	0.02	0.11	0.23	0.00	0.01	0.01
Concrete Mixer Truck	0.06	0.32	0.70	0.00	0.04	0.03
Dump Truck	0.06	0.32	0.70	0.00	0.04	0.03
Lowboy Truck/Trailer	0.02	0.11	0.23	0.00	0.01	0.01
Worker Commute	0.44	3.43	0.29	0.01	0.10	0.06
<b>Offsite Total</b>	<b>0.68</b>	<b>4.89</b>	<b>2.57</b>	<b>0.02</b>	<b>0.22</b>	<b>0.16</b>
<b>Total</b>	<b>0.68</b>	<b>4.89</b>	<b>2.57</b>	<b>0.02</b>	<b>0.22</b>	<b>0.16</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None			
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Lowboy Truck/Trailer	0.7	0.0	0.7
1-Ton Truck, 4x4	0.8	0.0	0.8
Water Truck	0.5	0.0	0.5
Pipe Truck/Trailer	0.7	0.0	0.7
Concrete Mixer Truck	2.1	0.0	2.1
Dump Truck	2.1	0.0	2.1
Lowboy Truck/Trailer	0.0	0.0	0.0
Worker Commute	0.5	0.0	0.5
<b>Offsite Total</b>	<b>7.5</b>	<b>0.0</b>	<b>7.5</b>
<b>Total</b>	<b>7.5</b>	<b>0.0</b>	<b>7.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None							
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Lowboy Truck/Trailer	1	Paved	25	0.001	0.000	0.02	0.00
1-Ton Truck, 4x4	2	Paved	50	0.001	0.000	0.08	0.00
Water Truck	1	Paved	25	0.001	0.000	0.02	0.00
Pipe Truck/Trailer	1	Paved	25	0.001	0.000	0.02	0.00
Concrete Mixer Truck	3	Paved	25	0.001	0.000	0.06	0.00
Dump Truck	3	Paved	25	0.001	0.000	0.06	0.00
Lowboy Truck/Trailer	1	Paved	25	0.001	0.000	0.02	0.00
Worker Commute	20	Paved	50	0.001	0.000	0.80	0.00
<b>Offsite Total</b>						<b>1.08</b>	<b>0.00</b>
<b>Total</b>						<b>1.08</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level <sup>c</sup>	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day	92.28	9.94E-04	2.07E-04	0.09	0.02
Bulldozing, Scraping and Grading	hr/day	0	0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres	0.029	22.0	4.58	0.64	0.13
<b>Total</b>					<b>0.73</b>	<b>0.15</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Soil handling cubic yards/day based on approximately 250 feet of trenching per day, 24 inches wide x 60 inches deep. 83 yards x 0.867 yards x 1.667 yards = 92.28 cubic yards/day

Storage pile acres based on approximately 250 feet of trenching per day, 60 inches wide x 24 inches high. 83 yards x 1.667 yards = 138.361 square yards = 0.029 acres



**Table 42d**  
**115 kV Subtransmission Line Construction Emissions**  
**Install Underground Cable**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	2.99	15.06	12.75	0.08	0.44	0.40	90.9
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>2.99</b>	<b>15.06</b>	<b>12.75</b>	<b>0.08</b>	<b>0.44</b>	<b>0.40</b>	<b>90.9</b>
Offsite Motor Vehicle Exhaust	0.53	4.03	0.88	0.01	0.14	0.09	3.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.93	0.00	
<b>Offsite Total</b>	<b>0.53</b>	<b>4.03</b>	<b>0.88</b>	<b>0.01</b>	<b>1.06</b>	<b>0.09</b>	<b>3.3</b>
<b>Total</b>	<b>3.51</b>	<b>19.09</b>	<b>13.63</b>	<b>0.09</b>	<b>1.50</b>	<b>0.50</b>	<b>94.2</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Boom/Crane Truck	350	1	25	10
Manlift/Bucket Truck	250	1	25	10
Puller	350	1	25	10
Static Truck/Tensioner	350	1	25	10

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Manlift/Bucket Truck	250	0.054	0.232	0.271	0.001	0.009	0.009	112.159	0.005	Cranes
Puller	350	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment
Static Truck/Tensioner	350	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction = 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006.

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Boom/Crane Truck	0.86	3.54	3.98	0.02	0.15	0.13
Manlift/Bucket Truck	0.54	2.32	2.71	0.01	0.09	0.09
Puller	0.79	4.61	3.03	0.02	0.10	0.09
Static Truck/Tensioner	0.79	4.61	3.03	0.02	0.10	0.09
<b>Total</b>	<b>2.99</b>	<b>15.06</b>	<b>12.75</b>	<b>0.08</b>	<b>0.44</b>	<b>0.40</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Boom/Crane Truck	20.4	0.0	20.4
Manlift/Bucket Truck	12.7	0.0	12.7
Puller	28.8	0.0	28.8
Static Truck/Tensioner	28.8	0.0	28.8
<b>Total</b>	<b>90.8</b>	<b>0.0</b>	<b>90.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/ Veh.
<b>Onsite</b>				
None				
<b>Offsite</b>				
1-Ton Truck, 4x4	2	5	N/A	50
Wire Truck/Trailer	2	5	N/A	30
Worker Commute	20	5	N/A	50

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
1-Ton Truck, 4x4	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Wire Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						

**Table 42d**  
**115 kV Subtransmission Line Construction Emissions**  
**Install Underground Cable**

None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Truck, 4x4	0.04	0.34	0.03	0.00	0.01	0.01
Wire Truck/Trailer	0.05	0.26	0.56	0.00	0.03	0.02
Worker Commute	0.44	3.43	0.29	0.01	0.10	0.06
<b>Offsite Total</b>	<b>0.53</b>	<b>4.03</b>	<b>0.88</b>	<b>0.01</b>	<b>0.14</b>	<b>0.09</b>
<b>Total</b>	<b>0.53</b>	<b>4.03</b>	<b>0.88</b>	<b>0.01</b>	<b>0.14</b>	<b>0.09</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1-Ton Truck, 4x4	0.3	0.0	0.3
Wire Truck/Trailer	0.6	0.0	0.6
Worker Commute	2.5	0.0	2.5
<b>Offsite Total</b>	<b>3.3</b>	<b>0.0</b>	<b>3.3</b>
<b>Total</b>	<b>3.3</b>	<b>0.0</b>	<b>3.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None							
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1-Ton Truck, 4x4	2	Paved	50	0.001	0.000	0.08	0.00
Wire Truck/Trailer	2	Paved	30	0.001	0.000	0.05	0.00
Worker Commute	20	Paved	50	0.001	0.000	0.80	0.00
<b>Offsite Total</b>						<b>0.93</b>	<b>0.00</b>
<b>Total</b>						<b>0.93</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 43**  
**115 kV Subtransmission Line Construction Emissions**  
**Guard Structure Removal**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.27	7.94	6.96	0.03	0.27	0.25	23.3
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>1.27</b>	<b>7.94</b>	<b>6.96</b>	<b>0.03</b>	<b>0.27</b>	<b>0.25</b>	<b>23.3</b>
Offsite Motor Vehicle Exhaust	0.24	1.72	0.75	0.01	0.07	0.05	5.7
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.36	0.00	
<b>Offsite Total</b>	<b>0.24</b>	<b>1.72</b>	<b>0.75</b>	<b>0.01</b>	<b>0.43</b>	<b>0.05</b>	<b>5.7</b>
<b>Total</b>	<b>1.50</b>	<b>9.66</b>	<b>7.71</b>	<b>0.04</b>	<b>0.69</b>	<b>0.29</b>	<b>29.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor Trailer	60	2	18	6
Boom/Crane Truck	350	1	18	8
Bucket Truck	250	1	18	4

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Bucket Truck	250	0.058	0.371	0.366	0.002	0.011	0.010	212.856	0.005	Aerial Lifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction = 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor Trailer	0.35	3.63	2.31	0.01	0.11	0.10
Boom/Crane Truck	0.69	2.83	3.18	0.01	0.12	0.11
Bucket Truck	0.23	1.48	1.46	0.01	0.04	0.04
<b>Total</b>	<b>1.27</b>	<b>7.94</b>	<b>6.96</b>	<b>0.03</b>	<b>0.27</b>	<b>0.25</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor Trailer	4.6	0.0	4.6
Boom/Crane Truck	11.8	0.0	11.8
Bucket Truck	7.0	0.0	7.0
<b>Total</b>	<b>23.3</b>	<b>0.0</b>	<b>23.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	1	18	N/A	30
1-Ton Crew Cab Flat Bed, 4x4	1	18	N/A	30
Extendable Flat Bed Pole Truck	1	18	N/A	30
Worker Commute	6	18	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 43**  
**115 kV Subtransmission Line Construction Emissions**  
**Guard Structure Removal**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Extendable Flat Bed Pole Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	(lb/day) <sup>a</sup>	(lb/day) <sup>a</sup>	(lb/day) <sup>a</sup>	(lb/day) <sup>a</sup>	(lb/day) <sup>a</sup>	(lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
1-Ton Crew Cab Flat Bed, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
Extendable Flat Bed Pole Truck	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.16	1.23	0.10	0.00	0.03	0.02
<b>Offsite Total</b>	<b>0.24</b>	<b>1.72</b>	<b>0.75</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>
<b>Total</b>	<b>0.24</b>	<b>1.72</b>	<b>0.75</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	0.7	0.0	0.7
1-Ton Crew Cab Flat Bed, 4x4	0.7	0.0	0.7
Extendable Flat Bed Pole Truck	1.0	0.0	1.0
Worker Commute	3.3	0.0	3.3
<b>Offsite Total</b>	<b>5.7</b>	<b>0.0</b>	<b>5.7</b>
<b>Total</b>	<b>5.7</b>	<b>0.0</b>	<b>5.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0						
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	1	Paved	30	0.001	0.000	0.02	0.00
1-Ton Crew Cab Flat Bed, 4x4	1	Paved	30	0.001	0.000	0.02	0.00
Extendable Flat Bed Pole Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	6	Paved	60	0.001	0.000	0.29	0.00
<b>Offsite Total</b>						<b>0.36</b>	<b>0.00</b>
<b>Total</b>						<b>0.36</b>	<b>0.00</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

a From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 44**  
**115 kV Subtransmission Line Construction Emissions**  
**Restoration**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.96	7.91	4.75	0.02	0.20	0.19	16.3
Onsite Motor Vehicle Exhaust	0.00	0.01	0.03	0.00	0.00	0.00	0.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	2.90	0.29	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.96</b>	<b>7.93</b>	<b>4.78</b>	<b>0.02</b>	<b>3.10</b>	<b>0.48</b>	<b>16.4</b>
Offsite Motor Vehicle Exhaust	0.26	1.93	0.77	0.01	0.07	0.05	6.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.41	0.00	
<b>Offsite Total</b>	<b>0.26</b>	<b>1.93</b>	<b>0.77</b>	<b>0.01</b>	<b>0.48</b>	<b>0.05</b>	<b>6.3</b>
<b>Total</b>	<b>1.22</b>	<b>9.85</b>	<b>5.55</b>	<b>0.03</b>	<b>3.58</b>	<b>0.53</b>	<b>22.7</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Road Grader	250	1	18	6
Backhoe/Front Loader	125	1	18	6
Drum Type Compactor	100	1	18	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Road Grader	250	0.078	0.355	0.365	0.002	0.013	0.012	172.113	0.007	Graders
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
Drum Type Compactor	100	0.039	0.380	0.265	0.001	0.014	0.013	58.989	0.004	Rollers

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction = 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Road Grader	0.47	2.13	2.19	0.01	0.08	0.07
Backhoe/Front Loader	0.25	3.50	0.97	0.01	0.04	0.04
Drum Type Compactor	0.24	2.28	1.59	0.00	0.08	0.08
<b>Total</b>	<b>0.96</b>	<b>7.91</b>	<b>4.75</b>	<b>0.02</b>	<b>0.20</b>	<b>0.19</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Road Grader	8.4	0.0	8.4
Backhoe/Front Loader	5.0	0.0	5.0
Drum Type Compactor	2.9	0.0	2.9
<b>Total</b>	<b>16.3</b>	<b>0.0</b>	<b>16.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh.
<b>Onsite</b>				
Water Truck	1	18	8	3
<b>Offsite</b>				
1-Ton Crew Cab, 4x4	2	18	N/A	30
Lowboy Truck/Trailer	1	18	N/A	30
Worker Commute	7	18	N/A	60

**Table 44**  
**115 kV Subtransmission Line Construction Emissions**  
**Restoration**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Water Truck		8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
<b>Offsite</b>									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Water Truck	0.00	0.01	0.03	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.01</b>	<b>0.03</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
Lowboy Truck/Trailer	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.18	1.44	0.12	0.00	0.04	0.03
<b>Offsite Total</b>	<b>0.26</b>	<b>1.93</b>	<b>0.77</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>
<b>Total</b>	<b>0.26</b>	<b>1.94</b>	<b>0.80</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Water Truck	0.1	0.0	0.1
<b>Onsite Total</b>	<b>0.1</b>	<b>0.0</b>	<b>0.1</b>
<b>Offsite</b>			
1-Ton Crew Cab, 4x4	1.4	0.0	1.4
Lowboy Truck/Trailer	1.0	0.0	1.0
Worker Commute	3.8	0.0	3.8
<b>Offsite Total</b>	<b>6.2</b>	<b>0.0</b>	<b>6.3</b>
<b>Total</b>	<b>6.4</b>	<b>0.0</b>	<b>6.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Water Truck	1	Unpaved	3	0.965	0.097	2.90	0.29
<b>Onsite Total</b>						<b>2.90</b>	<b>0.29</b>
<b>Offsite</b>							
1-Ton Crew Cab, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
Lowboy Truck/Trailer	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	7	Paved	60	0.001	0.000	0.34	0.00
<b>Offsite Total</b>						<b>0.41</b>	<b>0.00</b>
<b>Total</b>						<b>3.30</b>	<b>0.29</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

a From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 45**  
**Telecommunications Construction**  
**Tower Foundation**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.53	6.74	3.59	0.01	0.11	0.10	2.4
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.50	0.10	
<b>Onsite Total</b>	<b>0.53</b>	<b>6.74</b>	<b>3.59</b>	<b>0.01</b>	<b>0.61</b>	<b>0.21</b>	<b>2.4</b>
Offsite Motor Vehicle Exhaust	0.18	1.31	0.72	0.01	0.05	0.04	1.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.26	0.00	
<b>Offsite Total</b>	<b>0.18</b>	<b>1.31</b>	<b>0.72</b>	<b>0.01</b>	<b>0.32</b>	<b>0.04</b>	<b>1.3</b>
<b>Total</b>	<b>0.71</b>	<b>8.05</b>	<b>4.31</b>	<b>0.02</b>	<b>0.93</b>	<b>0.25</b>	<b>3.7</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Backhoe	79	1	5	8
Concrete Mixer	120	1	5	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Backhoe	79	0.028	0.338	0.176	0.001	0.006	0.005	51.728	0.003	Tractors/Loaders/Backhoes
Concrete Mixer	120	0.038	0.504	0.273	0.001	0.009	0.008	80.859	0.003	Other Construction Equipment

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction=

0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Backhoe	0.22	2.70	1.41	0.00	0.04	0.04
Concrete Mixer	0.30	4.04	2.18	0.01	0.07	0.06
<b>Total</b>	<b>0.53</b>	<b>6.74</b>	<b>3.59</b>	<b>0.01</b>	<b>0.11</b>	<b>0.10</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Backhoe	0.9	0.0	0.9
Concrete Mixer	1.5	0.0	1.5
<b>Total</b>	<b>2.4</b>	<b>0.0</b>	<b>2.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
Crew Truck	2	5	N/A	30
Stake Truck	1	5	N/A	30
Worker Commute	4	5	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 45  
Telecommunications Construction  
Tower Foundation**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
Crew Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Stake Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Crew Truck	0.06	0.36	0.37	0.00	0.02	0.01
Stake Truck	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.18</b>	<b>1.31</b>	<b>0.72</b>	<b>0.01</b>	<b>0.05</b>	<b>0.04</b>
<b>Total</b>	<b>0.18</b>	<b>1.31</b>	<b>0.72</b>	<b>0.01</b>	<b>0.05</b>	<b>0.04</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Crew Truck	0.4	0.0	0.4
Stake Truck	0.3	0.0	0.3
Worker Commute	0.6	0.0	0.6
<b>Offsite Total</b>	<b>1.3</b>	<b>0.0</b>	<b>1.3</b>
<b>Total</b>	<b>1.3</b>	<b>0.0</b>	<b>1.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0					0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Crew Truck	2	Paved	30	0.001	0.000	0.05	0.00
Stake Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.26</b>	<b>0.00</b>
<b>Total</b>						<b>0.26</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	500	9.94E-04	2.07E-04	0.50	0.10
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.50</b>	<b>0.10</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Estimate



**Table 46  
Telecommunications Construction  
Tower Construction**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.83	4.64	4.38	0.02	0.17	0.15	23.8
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.83</b>	<b>4.64</b>	<b>4.38</b>	<b>0.02</b>	<b>0.17</b>	<b>0.15</b>	<b>23.8</b>
Offsite Motor Vehicle Exhaust	0.16	1.18	0.44	0.00	0.04	0.03	6.0
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.24	0.00	
<b>Offsite Total</b>	<b>0.16</b>	<b>1.18</b>	<b>0.44</b>	<b>0.00</b>	<b>0.28</b>	<b>0.03</b>	<b>6.0</b>
<b>Total</b>	<b>0.99</b>	<b>5.82</b>	<b>4.82</b>	<b>0.02</b>	<b>0.45</b>	<b>0.18</b>	<b>29.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
150-Foot Crane	300	1	30	8
150-Foot Lift Truck	100	1	30	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
150-Foot Crane	300	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
150-Foot Lift Truck	100	0.018	0.226	0.150	0.000	0.006	0.006	38.072	0.002	Aerial Lifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction=

0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
150-Foot Crane	0.69	2.83	3.18	0.01	0.12	0.11
150-Foot Lift Truck	0.14	1.81	1.20	0.00	0.05	0.05
<b>Total</b>	<b>0.83</b>	<b>4.64</b>	<b>4.38</b>	<b>0.02</b>	<b>0.17</b>	<b>0.15</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
150-Foot Crane	19.6	0.0	19.6
150-Foot Lift Truck	4.1	0.0	4.1
<b>Total</b>	<b>23.8</b>	<b>0.0</b>	<b>23.8</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
Crew Truck	2	30	N/A	30
Worker Commute	4	30	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
Crew Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 46**  
**Telecommunications Construction**  
**Tower Construction**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Crew Truck	0.06	0.36	0.37	0.00	0.02	0.01
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.16</b>	<b>1.18</b>	<b>0.44</b>	<b>0.00</b>	<b>0.04</b>	<b>0.03</b>
<b>Total</b>	<b>0.16</b>	<b>1.18</b>	<b>0.44</b>	<b>0.00</b>	<b>0.04</b>	<b>0.03</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Crew Truck	2.4	0.0	2.4
Worker Commute	3.6	0.0	3.6
<b>Offsite Total</b>	<b>6.0</b>	<b>0.0</b>	<b>6.0</b>
<b>Total</b>	<b>6.0</b>	<b>0.0</b>	<b>6.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0					0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Crew Truck	2	Paved	30	0.001	0.000	0.05	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.24</b>	<b>0.00</b>
<b>Total</b>						<b>0.24</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 47**  
**Telecommunications Construction**  
**Dish Installation**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.14	1.81	1.20	0.00	0.05	0.05	1.4
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.14</b>	<b>1.81</b>	<b>1.20</b>	<b>0.00</b>	<b>0.05</b>	<b>0.05</b>	<b>1.4</b>
Offsite Motor Vehicle Exhaust	0.13	1.00	0.25	0.00	0.03	0.02	1.6
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.22	0.00	
<b>Offsite Total</b>	<b>0.13</b>	<b>1.00</b>	<b>0.25</b>	<b>0.00</b>	<b>0.25</b>	<b>0.02</b>	<b>1.6</b>
<b>Total</b>	<b>0.27</b>	<b>2.81</b>	<b>1.45</b>	<b>0.01</b>	<b>0.30</b>	<b>0.07</b>	<b>3.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
150-Foot Lift Truck	100	1	10	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
150-Foot Lift Truck	100	0.018	0.226	0.150	0.000	0.006	0.006	38.072	0.002	Aerial Lifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
150-Foot Lift Truck	0.14	1.81	1.20	0.00	0.05	0.05
<b>Total</b>	<b>0.14</b>	<b>1.81</b>	<b>1.20</b>	<b>0.00</b>	<b>0.05</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
150-Foot Lift Truck	1.4	0.0	1.4
<b>Total</b>	<b>1.4</b>	<b>0.0</b>	<b>1.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
Crew Truck	1	10	N/A	30
Worker Commute	4	10	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
Crew Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 47  
Telecommunications Construction  
Dish Installation**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Crew Truck	0.03	0.18	0.18	0.00	0.01	0.01
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.13</b>	<b>1.00</b>	<b>0.25</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>
<b>Total</b>	<b>0.13</b>	<b>1.00</b>	<b>0.25</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Crew Truck	0.4	0.0	0.4
Worker Commute	1.2	0.0	1.2
<b>Offsite Total</b>	<b>1.6</b>	<b>0.0</b>	<b>1.6</b>
<b>Total</b>	<b>1.6</b>	<b>0.0</b>	<b>1.6</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0					0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Crew Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.22</b>	<b>0.00</b>
<b>Total</b>						<b>0.22</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 48  
Telecommunications Construction  
Control Building**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.46	2.97	2.93	0.02	0.09	0.08	19.3
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.46</b>	<b>2.97</b>	<b>2.93</b>	<b>0.02</b>	<b>0.09</b>	<b>0.08</b>	<b>19.3</b>
Offsite Motor Vehicle Exhaust	0.08	0.59	0.22	0.00	0.02	0.01	2.5
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.12	0.00	
<b>Offsite Total</b>	<b>0.08</b>	<b>0.59</b>	<b>0.22</b>	<b>0.00</b>	<b>0.14</b>	<b>0.01</b>	<b>2.5</b>
<b>Total</b>	<b>0.54</b>	<b>3.56</b>	<b>3.15</b>	<b>0.02</b>	<b>0.23</b>	<b>0.09</b>	<b>21.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Bucket Truck	350	1	25	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Bucket Truck	350	0.058	0.371	0.366	0.002	0.011	0.010	212.856	0.005	Aerial Lifts

a From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Bucket Truck	0.46	2.97	2.93	0.02	0.09	0.08
<b>Total</b>	<b>0.46</b>	<b>2.97</b>	<b>2.93</b>	<b>0.02</b>	<b>0.09</b>	<b>0.08</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Bucket Truck	19.3	0.0	19.3
<b>Total</b>	<b>19.3</b>	<b>0.0</b>	<b>19.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
Crew Truck	1	25	N/A	30
Worker Commute	2	25	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
Crew Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Table 48**  
**Telecommunications Construction**  
**Control Building**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Crew Truck	0.03	0.18	0.18	0.00	0.01	0.01
Worker Commute	0.05	0.41	0.03	0.00	0.01	0.01
<b>Offsite Total</b>	<b>0.08</b>	<b>0.59</b>	<b>0.22</b>	<b>0.00</b>	<b>0.02</b>	<b>0.01</b>
<b>Total</b>	<b>0.08</b>	<b>0.59</b>	<b>0.22</b>	<b>0.00</b>	<b>0.02</b>	<b>0.01</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Crew Truck	1.0	0.0	1.0
Worker Commute	1.5	0.0	1.5
<b>Offsite Total</b>	<b>2.5</b>	<b>0.0</b>	<b>2.5</b>
<b>Total</b>	<b>2.5</b>	<b>0.0</b>	<b>2.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0					0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Crew Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	2	Paved	60	0.001	0.000	0.10	0.00
<b>Offsite Total</b>						<b>0.12</b>	<b>0.00</b>
<b>Total</b>						<b>0.12</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 49**  
**Telecommunications Construction**  
**Overhead Communications Installation**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.46	2.97	2.93	0.02	0.09	0.08	24.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.46</b>	<b>2.97</b>	<b>2.93</b>	<b>0.02</b>	<b>0.09</b>	<b>0.08</b>	<b>24.0</b>
Offsite Motor Vehicle Exhaust	0.13	1.00	0.25	0.00	0.03	0.02	5.0
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.22	0.00	
<b>Offsite Total</b>	<b>0.13</b>	<b>1.00</b>	<b>0.25</b>	<b>0.00</b>	<b>0.25</b>	<b>0.02</b>	<b>5.0</b>
<b>Total</b>	<b>0.60</b>	<b>3.97</b>	<b>3.18</b>	<b>0.02</b>	<b>0.33</b>	<b>0.10</b>	<b>28.9</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Bucket Truck	350	1	31	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Bucket Truck	350	0.058	0.371	0.366	0.002	0.011	0.010	212.856	0.005	Aerial Lifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Bucket Truck	0.46	2.97	2.93	0.02	0.09	0.08
<b>Total</b>	<b>0.46</b>	<b>2.97</b>	<b>2.93</b>	<b>0.02</b>	<b>0.09</b>	<b>0.08</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Bucket Truck	23.9	0.0	24.0
<b>Total</b>	<b>23.9</b>	<b>0.0</b>	<b>24.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
Reel Truck	1	31	N/A	30
Worker Commute	4	31	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
Reel Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 49**  
**Telecommunications Construction**  
**Overhead Communications Installation**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Reel Truck	0.03	0.18	0.18	0.00	0.01	0.01
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.13</b>	<b>1.00</b>	<b>0.25</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>
<b>Total</b>	<b>0.13</b>	<b>1.00</b>	<b>0.25</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Reel Truck	1.2	0.0	1.2
Worker Commute	3.7	0.0	3.8
<b>Offsite Total</b>	<b>5.0</b>	<b>0.0</b>	<b>5.0</b>
<b>Total</b>	<b>5.0</b>	<b>0.0</b>	<b>5.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0					0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Reel Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.22</b>	<b>0.00</b>
<b>Total</b>						<b>0.22</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]



**Table 50**  
**Telecommunications Construction**  
**Substation Telecommunications Equipment Installation**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.0</b>
Offsite Motor Vehicle Exhaust	0.08	0.62	0.05	0.00	0.02	0.01	0.9
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.14	0.00	
<b>Offsite Total</b>	<b>0.08</b>	<b>0.62</b>	<b>0.05</b>	<b>0.00</b>	<b>0.16</b>	<b>0.01</b>	<b>0.9</b>
<b>Total</b>	<b>0.08</b>	<b>0.62</b>	<b>0.05</b>	<b>0.00</b>	<b>0.16</b>	<b>0.01</b>	<b>0.9</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
None				

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
None		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

a From Table 53

b Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
None	0.0	0.0	0.0
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
Van	2	10	N/A	30
Worker Commute	2	10	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
Van	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Table 50**  
**Telecommunications Construction**  
**Substation Telecommunications Equipment Installation**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Van	0.03	0.21	0.02	0.00	0.01	0.00
Worker Commute	0.05	0.41	0.03	0.00	0.01	0.01
<b>Offsite Total</b>	<b>0.08</b>	<b>0.62</b>	<b>0.05</b>	<b>0.00</b>	<b>0.02</b>	<b>0.01</b>
<b>Total</b>	<b>0.08</b>	<b>0.62</b>	<b>0.05</b>	<b>0.00</b>	<b>0.02</b>	<b>0.01</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Van	0.3	0.0	0.3
Worker Commute	0.6	0.0	0.6
<b>Offsite Total</b>	<b>0.9</b>	<b>0.0</b>	<b>0.9</b>
<b>Total</b>	<b>0.9</b>	<b>0.0</b>	<b>0.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0					0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Van	2	Paved	30	0.001	0.000	0.05	0.00
Worker Commute	2	Paved	60	0.001	0.000	0.10	0.00
<b>Offsite Total</b>						<b>0.14</b>	<b>0.00</b>
<b>Total</b>						<b>0.14</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 51**  
**Telecommunications Construction**  
**Santiago Peak Communication Site**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.32	1.84	1.21	0.01	0.04	0.04	13.8
Onsite Motor Vehicle Exhaust	0.03	0.21	0.22	0.00	0.01	0.01	1.4
Onsite Motor Vehicle Fugitive PM	--	--	--	--	15.93	1.59	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.35</b>	<b>2.05</b>	<b>1.43</b>	<b>0.01</b>	<b>15.98</b>	<b>1.64</b>	<b>15.2</b>
Offsite Motor Vehicle Exhaust	0.10	0.82	0.07	0.00	0.02	0.02	3.6
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.19	0.00	
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.22</b>	<b>0.02</b>	<b>3.6</b>
<b>Total</b>	<b>0.45</b>	<b>2.87</b>	<b>1.50</b>	<b>0.01</b>	<b>16.20</b>	<b>1.65</b>	<b>18.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
1-Ton Truck	300	1	30	4

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
1-Ton Truck	300	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
1-Ton Truck	0.32	1.84	1.21	0.01	0.04	0.04
<b>Total</b>	<b>0.32</b>	<b>1.84</b>	<b>1.21</b>	<b>0.01</b>	<b>0.04</b>	<b>0.04</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
1-Ton Truck	13.8	0.0	13.8
<b>Total</b>	<b>13.8</b>	<b>0.0</b>	<b>13.8</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
1-Ton Truck, 4x4	3	30	4	10
Van	1	30	2	5
<b>Offsite</b>				
Worker Commute	4	30	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
1-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Van	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 51**  
**Telecommunications Construction**  
**Santiago Peak Communication Site**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
1-Ton Truck, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
Van	0.00	0.03	0.03	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.03</b>	<b>0.21</b>	<b>0.22</b>	<b>0.00</b>	<b>0.01</b>	<b>0.01</b>
<b>Offsite</b>						
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>
<b>Total</b>	<b>0.14</b>	<b>1.03</b>	<b>0.28</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
1-Ton Truck, 4x4	1.2	0.0	1.2
Van	0.2	0.0	0.2
<b>Onsite Total</b>	<b>1.4</b>	<b>0.0</b>	<b>1.4</b>
<b>Offsite</b>			
Worker Commute	3.6	0.0	3.6
<b>Offsite Total</b>	<b>3.6</b>	<b>0.0</b>	<b>3.6</b>
<b>Total</b>	<b>5.0</b>	<b>0.0</b>	<b>5.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
1-Ton Truck, 4x4	3	Unpaved	10	0.455	0.046	13.66	1.37
Van	1	Unpaved	5	0.455	0.046	2.28	0.23
<b>Onsite Total</b>						<b>15.93</b>	<b>1.59</b>
<b>Offsite</b>							
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.19</b>	<b>0.00</b>
<b>Total</b>						<b>16.12</b>	<b>1.59</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Table 51b**

**Additional Substation Construction Emissions**  
**Civil**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO <sub>2</sub> e (MT)
Construction Equipment Exhaust	0.78	9.91	3.89	0.02	0.14	0.12	7.4
Onsite Motor Vehicle Exhaust	0.00	0.02	0.05	0.00	0.00	0.00	0.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	4.83	0.48	
Earthwork Fugitive PM	--	--	--	--	0.02	0.00	
<b>Onsite Total</b>	<b>0.78</b>	<b>9.93</b>	<b>3.94</b>	<b>0.02</b>	<b>4.99</b>	<b>0.61</b>	<b>7.5</b>
Offsite Motor Vehicle Exhaust	0.38	2.47	2.36	0.01	0.16	0.11	4.4
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.34	0.00	
<b>Offsite Total</b>	<b>0.38</b>	<b>2.47</b>	<b>2.36</b>	<b>0.01</b>	<b>0.49</b>	<b>0.11</b>	<b>4.4</b>
<b>Total</b>	<b>1.16</b>	<b>12.41</b>	<b>6.30</b>	<b>0.03</b>	<b>5.48</b>	<b>0.73</b>	<b>11.9</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Excavator with Auger Attachment	152	1	10	8
Backhoe	79	1	10	8
Bobcat Skid Steer	75	1	10	4
Forklift	83	1	10	4

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO <sub>2</sub> (lb/hr) <sup>a</sup>	CH <sub>4</sub> (lb/hr) <sup>a</sup>	Category
Excavator with Auger Attachment	152	0.052	0.664	0.198	0.001	0.009	0.008	112.222	0.005	Excavators
Backhoe	79	0.028	0.338	0.176	0.001	0.006	0.005	51.728	0.003	Tractors/Loaders/Backhoes
Bobcat Skid Steer	75	0.017	0.267	0.124	0.001	0.002	0.002	42.762	0.002	Skid Steer Loaders
Forklift	83	0.017	0.209	0.100	0.000	0.002	0.002	31.225	0.002	Forklifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction = 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006.

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Excavator with Auger Attachment	0.41	5.31	1.59	0.01	0.07	0.07
Backhoe	0.22	2.70	1.41	0.00	0.04	0.04
Bobcat Skid Steer	0.07	1.07	0.50	0.00	0.01	0.01
Forklift	0.07	0.83	0.40	0.00	0.01	0.01
<b>Total</b>	<b>0.78</b>	<b>9.91</b>	<b>3.89</b>	<b>0.02</b>	<b>0.14</b>	<b>0.12</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO <sub>2</sub> (MT) <sup>a</sup>	CH <sub>4</sub> (MT) <sup>a</sup>	CO <sub>2</sub> e (MT) <sup>b</sup>
Excavator with Auger Attachment	4.1	0.0	4.1
Backhoe	1.9	0.0	1.9
Bobcat Skid Steer	1.5	0.0	1.5
Forklift	0.0	0.0	0.0
<b>Total</b>	<b>7.4</b>	<b>0.0</b>	<b>7.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number <sup>b</sup>	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Dump Truck	2	5	0.5	1.25
Water Truck	1	10	1	2.5
<b>Offsite</b>				
Concrete Truck	4	5	N/A	60
Worker Commute	7	10	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

<sup>b</sup> Concrete trucks based on 15,000 CY over 90 days and 10 CY/truck = 15,000 / 90 / 10 = 16.6

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO <sub>2</sub> (lb/mi) <sup>a</sup>	CH <sub>4</sub> (lb/mi) <sup>a</sup>
<b>Onsite</b>									

**Table 51b**

**Additional Substation Construction Emissions**

**Civil**

Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05	
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05	
<b>Offsite</b>										
Concrete Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05	
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05	

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Dump Truck	0.00	0.01	0.02	0.00	0.00	0.00
Water Truck	0.00	0.01	0.02	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.02</b>	<b>0.05</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Concrete Truck	0.19	1.03	2.24	0.01	0.12	0.09
Worker Commute	0.18	1.44	0.12	0.00	0.04	0.03
<b>Offsite Total</b>	<b>0.38</b>	<b>2.47</b>	<b>2.36</b>	<b>0.01</b>	<b>0.16</b>	<b>0.11</b>
<b>Total</b>	<b>0.38</b>	<b>2.50</b>	<b>2.41</b>	<b>0.01</b>	<b>0.16</b>	<b>0.12</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Dump Truck	0.0	0.0	0.0
Water Truck	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.1</b>	<b>0.0</b>	<b>0.1</b>
<b>Offsite</b>			
Concrete Truck	2.3	0.0	2.3
Worker Commute	2.1	0.0	2.1
<b>Offsite Total</b>	<b>4.4</b>	<b>0.0</b>	<b>4.4</b>
<b>Total</b>	<b>4.5</b>	<b>0.0</b>	<b>4.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Dump Truck	2	Unpaved	1.25	0.965	0.097	2.41	0.24
Water Truck	1	Unpaved	2.5	0.965	0.097	2.41	0.24
<b>Onsite Total</b>						<b>4.83</b>	<b>0.48</b>
<b>Offsite</b>							
Concrete Truck	4	Paved	60	0.001	0.000	0.19	0.00
Worker Commute	7	Paved	60	0.001	0.000	0.34	0.00
<b>Offsite Total</b>						<b>0.34</b>	<b>0.00</b>
<b>Total</b>						<b>5.16</b>	<b>0.48</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	24	9.94E-04	2.07E-04	0.02	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.02</b>	<b>0.00</b>

a From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Peak daily estimated at 24 CY

**Table 51c**  
**Additional Substation Construction Emissions**  
**Electrical**

Emissions Summary							
Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.14	11.25	7.51	0.02	0.29	0.27	15.5
Onsite Motor Vehicle Exhaust	0.00	0.02	0.00	0.00	0.00	0.00	0.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.01	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>1.15</b>	<b>11.27</b>	<b>7.51</b>	<b>0.02</b>	<b>0.30</b>	<b>0.27</b>	<b>15.6</b>
Offsite Motor Vehicle Exhaust	0.26	2.06	0.17	0.01	0.06	0.04	9.1
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.48	0.00	
<b>Offsite Total</b>	<b>0.26</b>	<b>2.06</b>	<b>0.17</b>	<b>0.01</b>	<b>0.54</b>	<b>0.04</b>	<b>9.1</b>
<b>Total</b>	<b>1.41</b>	<b>13.32</b>	<b>7.68</b>	<b>0.03</b>	<b>0.84</b>	<b>0.31</b>	<b>24.7</b>

Construction Equipment Summary				
Equipment	Horse-power	Number	Days Used	Hours Used/Day
Manlift	43	4	30	7
Reach Manlift	87	2	30	6
15-Ton Crane	125	2	5	5

Construction Equipment Exhaust Emission Factors										
Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Scissor Lift	87	0.018	0.226	0.150	0.000	0.006	0.006	38.072	0.002	Aerial Lifts
Manlift	43	0.017	0.135	0.122	0.000	0.003	0.003	19.613	0.002	Aerial Lifts
Reach Manlift	87	0.018	0.226	0.150	0.000	0.006	0.006	38.072	0.002	Aerial Lifts
15-Ton Crane	125	0.046	0.474	0.230	0.001	0.012	0.011	80.345	0.004	Cranes

<sup>a</sup> From Table 53  
<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10  
 PM2.5 Fraction = 0.920  
 From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

Construction Equipment Daily Criteria Pollutant Exhaust Emissions						
Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Manlift	0.47	3.78	3.41	0.01	0.10	0.09
Reach Manlift	0.21	2.72	1.79	0.01	0.08	0.07
15-Ton Crane	0.46	4.74	2.30	0.01	0.12	0.11
<b>Total</b>	<b>1.14</b>	<b>11.25</b>	<b>7.51</b>	<b>0.02</b>	<b>0.29</b>	<b>0.27</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions			
Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Manlift	7.5	0.0	7.5
Reach Manlift	6.2	0.0	6.2
15-Ton Crane	1.8	0.0	1.8
<b>Total</b>	<b>15.5</b>	<b>0.0</b>	<b>15.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 53  
<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008. [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Usage				
Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Crew Truck	10	30	0.25	0.625
<b>Offsite</b>				
Worker Commute	10	30	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 51c**  
**Additional Substation Construction Emissions**  
**Electrical**

<b>Motor Vehicle Exhaust Emission Factors</b>									
Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

<b>Motor Vehicle Daily Criteria Pollutant Exhaust Emissions</b>						
Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Crew Truck	0.00	0.02	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.02</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
<b>Offsite Total</b>	<b>0.26</b>	<b>2.06</b>	<b>0.17</b>	<b>0.01</b>	<b>0.06</b>	<b>0.04</b>
<b>Total</b>	<b>0.26</b>	<b>2.08</b>	<b>0.17</b>	<b>0.01</b>	<b>0.06</b>	<b>0.04</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

<b>Motor Vehicle Total Greenhouse Gas Emissions</b>			
Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Crew Truck	0.1	0.0	0.1
<b>Onsite Total</b>	<b>0.1</b>	<b>0.0</b>	<b>0.1</b>
<b>Offsite</b>			
Worker Commute	9.1	0.0	9.1
<b>Offsite Total</b>	<b>9.1</b>	<b>0.0</b>	<b>9.1</b>
<b>Total</b>	<b>9.2</b>	<b>0.0</b>	<b>9.2</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

<b>Motor Vehicle Fugitive Particulate Matter Emissions</b>							
Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Crew Truck	10	Paved	0.625	0.001	0.000	0.01	0.00
<b>Onsite Total</b>						<b>0.01</b>	<b>0.00</b>
<b>Offsite</b>							
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
<b>Offsite Total</b>						<b>0.48</b>	<b>0.00</b>
<b>Total</b>						<b>0.49</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

<b>Earthwork Fugitive Particulate Matter Emissions</b>						
Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]



Table 51d

**Additional Substation Construction Emissions**  
**Wiring**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.17	1.90	1.38	0.00	0.05	0.05	3.6
Onsite Motor Vehicle Exhaust	0.00	0.02	0.00	0.00	0.00	0.00	0.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.17</b>	<b>1.92</b>	<b>1.39</b>	<b>0.00</b>	<b>0.06</b>	<b>0.05</b>	<b>3.7</b>
Offsite Motor Vehicle Exhaust	0.26	2.06	0.17	0.01	0.06	0.04	9.1
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.48	0.00	
<b>Offsite Total</b>	<b>0.26</b>	<b>2.06</b>	<b>0.17</b>	<b>0.01</b>	<b>0.54</b>	<b>0.04</b>	<b>9.1</b>
<b>Total</b>	<b>0.44</b>	<b>3.97</b>	<b>1.56</b>	<b>0.01</b>	<b>0.59</b>	<b>0.09</b>	<b>12.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Reach Manlift	87	2	30	3
Manlift	43	1	15	4

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Reach Manlift	87	0.018	0.226	0.150	0.000	0.006	0.006	38.072	0.002	Aerial Lifts
Manlift	43	0.017	0.135	0.122	0.000	0.003	0.003	19.613	0.002	Aerial Lifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

<http://www.aqmd.gov/ceqa/handbook/PM2.5/PM2.5.html>

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Reach Manlift	0.11	1.36	0.90	0.00	0.04	0.03
Manlift	0.07	0.54	0.49	0.00	0.01	0.01
<b>Total</b>	<b>0.17</b>	<b>1.90</b>	<b>1.38</b>	<b>0.00</b>	<b>0.05</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Reach Manlift	3.1	0.0	3.1
Manlift	0.5	0.0	0.5
<b>Total</b>	<b>3.6</b>	<b>0.0</b>	<b>3.6</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Crew Truck	8	30	0.25	0.625
<b>Offsite</b>				
Worker Commute	10	30	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 51d**  
**Additional Substation Construction Emissions**  
**Wiring**

<b>Motor Vehicle Daily Criteria Pollutant Exhaust Emissions</b>						
Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Crew Truck	0.00	0.02	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.02</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
<b>Offsite Total</b>	<b>0.26</b>	<b>2.06</b>	<b>0.17</b>	<b>0.01</b>	<b>0.06</b>	<b>0.04</b>
<b>Total</b>	<b>0.26</b>	<b>2.07</b>	<b>0.17</b>	<b>0.01</b>	<b>0.06</b>	<b>0.04</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

<b>Motor Vehicle Total Greenhouse Gas Emissions</b>			
Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Crew Truck	0.1	0.0	0.1
<b>Onsite Total</b>	<b>0.1</b>	<b>0.0</b>	<b>0.1</b>
<b>Offsite</b>			
Worker Commute	9.1	0.0	9.1
<b>Offsite Total</b>	<b>9.1</b>	<b>0.0</b>	<b>9.1</b>
<b>Total</b>	<b>9.1</b>	<b>0.0</b>	<b>9.2</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

<b>Motor Vehicle Fugitive Particulate Matter Emissions</b>							
Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Crew Truck	8	Paved	0.625	0.001	0.000	0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
<b>Offsite Total</b>						<b>0.48</b>	<b>0.00</b>
<b>Total</b>						<b>0.48</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

<b>Earthwork Fugitive Particulate Matter Emissions</b>						
Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 51e**  
**Additional Substation Construction Emissions**  
**Testing**

Emissions Summary							
Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.0</b>
Offsite Motor Vehicle Exhaust	0.10	0.82	0.07	0.00	0.02	0.02	2.4
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.19	0.00	
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.22</b>	<b>0.02</b>	<b>2.4</b>
<b>Total</b>	<b>0.11</b>	<b>0.83</b>	<b>0.07</b>	<b>0.00</b>	<b>0.22</b>	<b>0.02</b>	<b>2.4</b>

Construction Equipment Summary				
Equipment	Horse-power	Number	Days Used	Hours Used/Day
None				

Construction Equipment Exhaust Emission Factors										
Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
None										

a From Table 53  
<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10  
 PM2.5 Fraction= 0.920  
 From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5  
 and PM 2.5 Significance Thresholds, SCAQMD, October 2006,  
[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

Construction Equipment Daily Criteria Pollutant Exhaust Emissions						
Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions			
Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
None	0.0	0.0	0.0
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 53  
<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Usage				
Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Crew Truck	2	20	0.25	0.625
<b>Offsite</b>				
Worker Commute	4	20	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors									
Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 51e**  
**Additional Substation Construction Emissions**  
**Testing**

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions						
Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Crew Truck	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>
<b>Total</b>	<b>0.11</b>	<b>0.83</b>	<b>0.07</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions			
Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Crew Truck	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Worker Commute	2.4	0.0	2.4
<b>Offsite Total</b>	<b>2.4</b>	<b>0.0</b>	<b>2.4</b>
<b>Total</b>	<b>2.4</b>	<b>0.0</b>	<b>2.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Fugitive Particulate Matter Emissions							
Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Crew Truck	2	Paved	0.625	0.001	0.000	0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.19</b>	<b>0.00</b>
<b>Total</b>						<b>0.19</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions						
Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 51f

**Additional Substation Construction Emissions**  
**Civil - Demo**
**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.29	3.77	1.90	0.01	0.05	0.05	3.3
Onsite Motor Vehicle Exhaust	0.00	0.02	0.05	0.00	0.00	0.00	0.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	4.83	0.48	
Earthwork Fugitive PM	--	--	--	--	0.14	0.03	
<b>Onsite Total</b>	<b>0.30</b>	<b>3.79</b>	<b>1.95</b>	<b>0.01</b>	<b>5.02</b>	<b>0.56</b>	<b>3.4</b>
Offsite Motor Vehicle Exhaust	0.28	1.96	1.24	0.01	0.10	0.07	3.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.34	0.00	
<b>Offsite Total</b>	<b>0.28</b>	<b>1.96</b>	<b>1.24</b>	<b>0.01</b>	<b>0.44</b>	<b>0.07</b>	<b>3.3</b>
<b>Total</b>	<b>0.58</b>	<b>5.75</b>	<b>3.19</b>	<b>0.02</b>	<b>5.46</b>	<b>0.63</b>	<b>6.7</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Backhoe	79	1	10	8
Bobcat Skid Steer	75	1	10	4

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Backhoe	79	0.028	0.338	0.176	0.001	0.006	0.005	51.728	0.003	Tractors/Loaders/Backhoes
Bobcat Skid Steer	75	0.017	0.267	0.124	0.001	0.002	0.002	42.762	0.002	Skid Steer Loaders

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006.

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Backhoe	0.22	2.70	1.41	0.00	0.04	0.04
Bobcat Skid Steer	0.07	1.07	0.50	0.00	0.01	0.01
<b>Total</b>	<b>0.29</b>	<b>3.77</b>	<b>1.90</b>	<b>0.01</b>	<b>0.05</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Backhoe	1.9	0.0	1.9
Bobcat Skid Steer	1.5	0.0	1.5
<b>Total</b>	<b>3.3</b>	<b>0.0</b>	<b>3.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

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**Motor Vehicle Usage**

Vehicle	Number <sup>b</sup>	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Dump Truck	2	5	0.5	1.25
Water Truck	1	10	1	2.5
<b>Offsite</b>				
Concrete Truck	2	5	N/A	60
Worker Commute	7	10	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

<sup>b</sup> Concrete trucks based on 15,000 CY over 90 days and 10 CY/truck = 15,000 / 90 / 10 = 16.6

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
<b>Offsite</b>									
Concrete Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

**Table 51f**  
**Additional Substation Construction Emissions**  
**Civil - Demo**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Dump Truck	0.00	0.01	0.02	0.00	0.00	0.00
Water Truck	0.00	0.01	0.02	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.02</b>	<b>0.05</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Concrete Truck	0.10	0.52	1.12	0.00	0.06	0.04
Worker Commute	0.18	1.44	0.12	0.00	0.04	0.03
<b>Offsite Total</b>	<b>0.28</b>	<b>1.96</b>	<b>1.24</b>	<b>0.01</b>	<b>0.10</b>	<b>0.07</b>
<b>Total</b>	<b>0.28</b>	<b>1.98</b>	<b>1.29</b>	<b>0.01</b>	<b>0.10</b>	<b>0.07</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Dump Truck	0.0	0.0	0.0
Water Truck	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.1</b>	<b>0.0</b>	<b>0.1</b>
<b>Offsite</b>			
Concrete Truck	1.1	0.0	1.1
Worker Commute	2.1	0.0	2.1
<b>Offsite Total</b>	<b>3.3</b>	<b>0.0</b>	<b>3.3</b>
<b>Total</b>	<b>3.3</b>	<b>0.0</b>	<b>3.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Dump Truck	2	Unpaved	1.25	0.965	0.097	2.41	0.24
Water Truck	1	Unpaved	2.5	0.965	0.097	2.41	0.24
<b>Onsite Total</b>						<b>4.83</b>	<b>0.48</b>
<b>Offsite</b>							
Concrete Truck	2	Paved	60	0.001	0.000	0.10	0.00
Worker Commute	7	Paved	60	0.001	0.000	0.34	0.00
<b>Offsite Total</b>						<b>0.34</b>	<b>0.00</b>
<b>Total</b>						<b>5.16</b>	<b>0.48</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	140	9.94E-04	2.07E-04	0.14	0.03
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.14</b>	<b>0.03</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Peak daily estimated from total of 12,000 CY over 90 days

**Table 52**  
**Operational Emissions**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT/yr)
Emergency Diesel Generator	0.09	0.58	0.57	0.00	0.02	0.00	8
Motor Vehicle Exhaust	0.08	0.64	0.05	0.00	0.02	0.01	2
Motor Vehicle Fugitive PM	--	--	--	--	2.42	0.23	--
SF6 Leakage	--	--	--	--	--	--	660
<b>Total</b>	<b>0.17</b>	<b>1.22</b>	<b>0.62</b>	<b>0.01</b>	<b>2.46</b>	<b>0.24</b>	<b>670</b>

**Emergency Diesel Generator Usage**

Equipment	Horse-power	Number	Days Used/Year	Hours Used/Day
Emergency Diesel Generator	440	1	52	1

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Emergency Diesel Generator	440	0.086	0.582	0.570	0.003	0.017	0.000	336.853	0.008	Generator Sets

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Emergency Diesel Generator Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Emergency Diesel Generator	0.09	0.58	0.57	0.00	0.02	0.00
<b>Total</b>	<b>0.09</b>	<b>0.58</b>	<b>0.57</b>	<b>0.00</b>	<b>0.02</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Emergency Diesel Generator Annual Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Emergency Diesel Generator	7.9	0.0	7.9
<b>Total</b>	<b>7.9</b>	<b>0.0</b>	<b>7.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used/Year	Miles/Day/Veh.
Transmission Line Inspection	1	1	65
Subtransmission Line Inspection	1	1	62
Substation Site Visit	1	48	60

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
Transmission Line Inspection	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Subtransmission Line Inspection	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Substation Site Visit	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Transmission Line Inspection	0.03	0.22	0.02	0.00	0.01	0.00
Subtransmission Line Inspection	0.03	0.21	0.02	0.00	0.01	0.00
Substation Site Visit	0.03	0.21	0.02	0.00	0.01	0.00
<b>Total</b>	<b>0.08</b>	<b>0.64</b>	<b>0.05</b>	<b>0.00</b>	<b>0.02</b>	<b>0.01</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Annual Greenhouse Gas Emissions**

Vehicle	CO2 (MT/yr) <sup>a</sup>	CH4 (MT/yr) <sup>a</sup>	CO2e (MT/yr) <sup>b</sup>
Transmission Line Inspection	0.0	0.0	0.0
Subtransmission Line Inspection	0.0	0.0	0.0
Substation Site Visit	1.5	0.0	1.5
<b>Total</b>	<b>1.5</b>	<b>0.0</b>	<b>1.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Table 52**  
**Operational Emissions**

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
Transmission Line Inspection	1	Paved	60	0.001	0.000	0.05	0.00
Transmission Line Inspection	1	Unpaved	5	0.455	0.046	2.28	0.23
Subtransmission Line Inspection	1	Paved	62	0.001	0.000	0.05	0.00
Substation Site Visit	1	Paved	60	0.001	0.000	0.05	0.00
<b>Total</b>						<b>2.42</b>	<b>0.23</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**SF6 Leakage Greenhouse Gas Emissions**

Item	Value	Units
SF6 in 500 kV Equipment	11,515	pounds
SF6 in 115 kV Equipment	1,257	pounds
Total SF6 Added	12,772	pounds
SF6 Leakage Rate	0.5	%/year
SF6 Emissions	63.86	pounds
SF6 Global Warming Potential <sup>a</sup>	22,800	
<b>CO2e Emissions<sup>b</sup></b>	<b>660</b>	<b>MT/yr</b>

<sup>a</sup> Based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008.

[http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

<sup>b</sup> CO<sub>2</sub>e emissions [metric tons] = SF<sub>6</sub> emissions [lb] x

Global warming potential [lb CO<sub>2</sub>e/lb SF<sub>6</sub>] x 453.6 [g/lb] / 1,000,000 [g/MT]

Substation	Item	SF6 Volume (Pounds Each)	Quantity Added	Total SF6 Volume (Pounds)
<b>500 kV</b>				
Alberhill	Circuit Breaker	1,645	7	11,515
<b>500 kV Total</b>				<b>11,515</b>
<b>115 kV</b>				
Alberhill	Circuit Breaker	83	15	1,245
Valley	Circuit Breaker	71	(1)	(71)
Newcomb	Circuit Breaker	83	1	83
<b>115 kV Total</b>				<b>1,257</b>
<b>Total Change</b>				<b>12,772</b>



Table 53  
SCAB Fleet Average Emission Factors (Diesel)

2025		Air Basin		SC							
Equipment	MaxHP			(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
				COG	CO	NOX	SOX	PM	CO2	CH4	
Aerial Lifts	15	Aerial Lifts	Aerial Lifts0000	0.0101	0.0528	0.0831	0.0001	0.0025	8.7	0.0009	
	25	Aerial Lifts	Aerial Lifts0016	0.0132	0.0451	0.0838	0.0001	0.0032	11.0	0.0012	
	50	Aerial Lifts	Aerial Lifts0026	0.0168	0.1351	0.1218	0.0003	0.0035	19.6	0.0015	
	120	Aerial Lifts	Aerial Lifts0051	0.0176	0.2265	0.1496	0.0004	0.0063	38.1	0.0016	
	500	Aerial Lifts	Aerial Lifts0121	0.0580	0.3710	0.3660	0.0021	0.0109	213	0.0052	
	750	Aerial Lifts	Aerial Lifts0501	0.1054	0.6706	0.6753	0.0039	0.0199	385	0.0095	
Aerial Lifts Composite		Aerial Lifts	Aerial Lifts0751	0.0184	0.1646	0.1366	0.0004	0.0048	34.7	0.0017	
Air Compressors	15	Air Compressors	Air Compressors0000	0.0087	0.0444	0.0545	0.0001	0.0023	7.2	0.0008	
	25	Air Compressors	Air Compressors0016	0.0181	0.0605	0.1121	0.0002	0.0045	14.4	0.0016	
	50	Air Compressors	Air Compressors0026	0.0263	0.1911	0.1476	0.0003	0.0047	22.3	0.0024	
	120	Air Compressors	Air Compressors0051	0.0289	0.3023	0.1928	0.0006	0.0088	47.0	0.0026	
	175	Air Compressors	Air Compressors0121	0.0424	0.4998	0.2187	0.0010	0.0104	88.5	0.0038	
	250	Air Compressors	Air Compressors0176	0.0514	0.2531	0.2553	0.0015	0.0078	131	0.0046	
	500	Air Compressors	Air Compressors0251	0.0894	0.4292	0.4150	0.0023	0.0134	232	0.0081	
	750	Air Compressors	Air Compressors0501	0.1385	0.6633	0.6545	0.0036	0.0210	358	0.0125	
	1000	Air Compressors	Air Compressors0751	0.1999	0.9265	2.5439	0.0049	0.0483	486	0.0180	
	Air Compressors Composite		Air Compressors	Air Compressors1001	0.0349	0.3027	0.2104	0.0007	0.0088	63.6	0.0031
Bore/Drill Rigs	15	Bore/Drill Rigs	Bore/Drill Rigs0000	0.0120	0.0632	0.0754	0.0002	0.0029	10.3	0.0011	
	25	Bore/Drill Rigs	Bore/Drill Rigs0016	0.0193	0.0658	0.1219	0.0002	0.0046	16.0	0.0017	
	50	Bore/Drill Rigs	Bore/Drill Rigs0026	0.0190	0.2200	0.1662	0.0004	0.0009	31.0	0.0017	
	120	Bore/Drill Rigs	Bore/Drill Rigs0051	0.0252	0.4660	0.1955	0.0009	0.0020	77.1	0.0023	
	175	Bore/Drill Rigs	Bore/Drill Rigs0121	0.0324	0.7542	0.0787	0.0016	0.0030	141	0.0029	
	250	Bore/Drill Rigs	Bore/Drill Rigs0176	0.0427	0.3426	0.0981	0.0021	0.0035	188	0.0039	
	500	Bore/Drill Rigs	Bore/Drill Rigs0251	0.0706	0.6512	0.1622	0.0031	0.0058	311	0.0064	
	750	Bore/Drill Rigs	Bore/Drill Rigs0501	0.1396	1.0891	0.3204	0.0062	0.0115	615	0.0126	
	1000	Bore/Drill Rigs	Bore/Drill Rigs0751	0.2115	1.6437	3.8912	0.0093	0.0364	928	0.0191	
Bore/Drill Rigs Composite		Bore/Drill Rigs	Bore/Drill Rigs1001	0.0428	0.5007	0.2864	0.0017	0.0042	165	0.0039	
Cement and Mortar Mixers	15	Cement and Mortar Mixers	Cement and Mortar Mixers0000	0.0074	0.0386	0.0461	0.0001	0.0018	6.3	0.0007	
	25	Cement and Mortar Mixers	Cement and Mortar Mixers0016	0.0213	0.0724	0.1346	0.0002	0.0052	17.6	0.0019	
Cement and Mortar Mixers Composite		Cement and Mortar Mixers	Cement and Mortar Mixers0026	0.0085	0.0414	0.0534	0.0001	0.0021	7.2	0.0008	
Concrete/Industrial Saws	25	Concrete/Industrial Saws	Concrete/Industrial Saws0000	0.0199	0.0678	0.1256	0.0002	0.0047	16.5	0.0018	
	50	Concrete/Industrial Saws	Concrete/Industrial Saws0026	0.0279	0.2284	0.1910	0.0004	0.0053	30.2	0.0025	
	120	Concrete/Industrial Saws	Concrete/Industrial Saws0051	0.0370	0.4561	0.2840	0.0009	0.0117	74.1	0.0033	
	175	Concrete/Industrial Saws	Concrete/Industrial Saws0121	0.0623	0.8663	0.3523	0.0018	0.0160	160	0.0056	
Concrete/Industrial Saws Composite		Concrete/Industrial Saws	Concrete/Industrial Saws0176	0.0337	0.3706	0.2471	0.0007	0.0093	58.5	0.0030	
Cranes	50	Cranes	Cranes0000	0.0350	0.2256	0.1644	0.0003	0.0062	23.2	0.0032	
	120	Cranes	Cranes0051	0.0376	0.3384	0.2298	0.0006	0.0120	50.1	0.0034	
	175	Cranes	Cranes0121	0.0462	0.4744	0.2300	0.0009	0.0120	80.3	0.0042	
	250	Cranes	Cranes0176	0.0544	0.2316	0.2705	0.0013	0.0094	112	0.0049	
	500	Cranes	Cranes0251	0.0858	0.3535	0.3977	0.0018	0.0146	180	0.0077	
	750	Cranes	Cranes0501	0.1446	0.5947	0.6821	0.0030	0.0248	303	0.0130	
	9999	Cranes	Cranes0751	0.5219	1.9715	5.5760	0.0098	0.1146	971	0.0471	
Cranes Composite		Cranes	Cranes1000	0.0681	0.3738	0.4223	0.0014	0.0143	129	0.0061	
Crawler Tractors	50	Crawler Tractors	Crawler Tractors0000	0.0487	0.2566	0.1842	0.0003	0.0090	24.9	0.0044	
	120	Crawler Tractors	Crawler Tractors0051	0.0609	0.4537	0.3562	0.0008	0.0221	65.8	0.0055	
	175	Crawler Tractors	Crawler Tractors0121	0.0823	0.7265	0.4447	0.0014	0.0241	121	0.0074	
	250	Crawler Tractors	Crawler Tractors0176	0.0924	0.3662	0.5348	0.0019	0.0192	166	0.0083	
	500	Crawler Tractors	Crawler Tractors0251	0.1392	0.5877	0.7527	0.0025	0.0280	259	0.0126	
	750	Crawler Tractors	Crawler Tractors0501	0.2506	1.0528	1.3878	0.0047	0.0510	465	0.0226	
	1000	Crawler Tractors	Crawler Tractors0751	0.3749	1.5618	4.2168	0.0066	0.0656	658	0.0338	
Crawler Tractors Composite		Crawler Tractors	Crawler Tractors1001	0.0789	0.5065	0.4482	0.0013	0.0227	114	0.0071	

Table 53  
SCAB Fleet Average Emission Factors (Diesel)

2025										
Air Basin		SC								
Equipment	MaxHP			(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
				COG	CO	NOX	SOX	PM	CO2	CH4
Crushing/Proc. Equipment	50	Crushing/Proc. Equipment	Crushing/Proc. Equipment000	0.0508	0.3859	0.2899	0.0006	0.0083	44.0	0.0046
	120	Crushing/Proc. Equipment	Crushing/Proc. Equipment0051	0.0506	0.5406	0.3289	0.0010	0.0140	83.1	0.0046
	175	Crushing/Proc. Equipment	Crushing/Proc. Equipment0121	0.0795	0.9556	0.3830	0.0019	0.0177	167	0.0072
	250	Crushing/Proc. Equipment	Crushing/Proc. Equipment0176	0.0967	0.4768	0.4357	0.0028	0.0134	245	0.0087
	500	Crushing/Proc. Equipment	Crushing/Proc. Equipment0251	0.1459	0.6977	0.6163	0.0037	0.0200	374	0.0132
	750	Crushing/Proc. Equipment	Crushing/Proc. Equipment0501	0.2307	1.1003	0.9907	0.0059	0.0316	589	0.0208
	9999	Crushing/Proc. Equipment	Crushing/Proc. Equipment0751	0.6019	2.5014	6.6977	0.0131	0.1238	1,308	0.0543
Crushing/Proc. Equipment Composite		Crushing/Proc. Equipment	Crushing/Proc. Equipment10000	0.0693	0.6187	0.3763	0.0015	0.0146	132	0.0062
Dumpers/Tenders	25	Dumpers/Tenders	Dumpers/Tenders0000	0.0092	0.0314	0.0581	0.0001	0.0022	7.6	0.0008
Dumpers/Tenders Composite		Dumpers/Tenders	Dumpers/Tenders0026	0.0092	0.0314	0.0581	0.0001	0.0022	7.6	0.0008
Excavators	25	Excavators	Excavators0000	0.0198	0.0677	0.1253	0.0002	0.0047	16.4	0.0018
	50	Excavators	Excavators0026	0.0297	0.2365	0.1616	0.0003	0.0035	25.0	0.0027
	120	Excavators	Excavators0051	0.0448	0.4942	0.2638	0.0009	0.0092	73.6	0.0040
	175	Excavators	Excavators0121	0.0518	0.6636	0.1982	0.0013	0.0091	112	0.0047
	250	Excavators	Excavators0176	0.0647	0.3210	0.2222	0.0018	0.0074	159	0.0058
	500	Excavators	Excavators0251	0.0946	0.4495	0.3091	0.0023	0.0107	234	0.0085
	750	Excavators	Excavators0501	0.1569	0.7451	0.5194	0.0039	0.0178	387	0.0142
Excavators Composite		Excavators	Excavators0056	0.0559	0.5086	0.2269	0.0013	0.0086	120	0.0050
Forklifts	50	Forklifts	Forklifts0000	0.0150	0.1361	0.0904	0.0002	0.0013	14.7	0.0014
	120	Forklifts	Forklifts0051	0.0168	0.2086	0.0997	0.0004	0.0023	31.2	0.0015
	175	Forklifts	Forklifts0121	0.0228	0.3310	0.0732	0.0006	0.0029	56.1	0.0021
	250	Forklifts	Forklifts0176	0.0289	0.1551	0.0746	0.0009	0.0027	77.1	0.0026
	500	Forklifts	Forklifts0251	0.0416	0.2123	0.1038	0.0011	0.0038	111	0.0038
Forklifts Composite		Forklifts	Forklifts0501	0.0236	0.2148	0.0860	0.0006	0.0025	54.4	0.0021
Generator Sets	15	Generator Sets	Generator Sets0000	0.0109	0.0627	0.0768	0.0002	0.0032	10.2	0.0010
	25	Generator Sets	Generator Sets0016	0.0216	0.0738	0.1368	0.0002	0.0055	17.6	0.0019
	50	Generator Sets	Generator Sets0026	0.0242	0.2034	0.1881	0.0004	0.0051	30.6	0.0022
	120	Generator Sets	Generator Sets0051	0.0340	0.4585	0.3022	0.0009	0.0122	77.9	0.0031
	175	Generator Sets	Generator Sets0121	0.0469	0.7328	0.3291	0.0016	0.0136	142	0.0042
	250	Generator Sets	Generator Sets0176	0.0558	0.3746	0.3885	0.0024	0.0108	213	0.0050
	500	Generator Sets	Generator Sets0251	0.0862	0.5820	0.5697	0.0033	0.0167	337	0.0078
	750	Generator Sets	Generator Sets0501	0.1401	0.9395	0.9382	0.0055	0.0272	544	0.0126
	9999	Generator Sets	Generator Sets0751	0.3235	1.8648	5.2188	0.0105	0.0888	1,049	0.0292
Generator Sets Composite		Generator Sets	Generator Sets10000	0.0288	0.2667	0.2329	0.0007	0.0081	61.0	0.0026
Graders	50	Graders	Graders0000	0.0382	0.2599	0.1877	0.0004	0.0063	27.5	0.0034
	120	Graders	Graders0051	0.0521	0.5009	0.3219	0.0009	0.0153	75.0	0.0047
	175	Graders	Graders0121	0.0652	0.7261	0.3117	0.0014	0.0157	124	0.0059
	250	Graders	Graders0176	0.0781	0.3549	0.3652	0.0019	0.0129	172	0.0071
	500	Graders	Graders0251	0.1023	0.4610	0.4468	0.0023	0.0165	229	0.0092
	750	Graders	Graders0501	0.2167	0.9755	0.9628	0.0049	0.0353	486	0.0196
Graders Composite		Graders	Graders0751	0.0676	0.5696	0.3314	0.0015	0.0147	133	0.0061
Off-Highway Tractors	120	Off-Highway Tractors	Off-Highway Tractors0000	0.1108	0.6619	0.6362	0.0011	0.0455	93.7	0.0100
	175	Off-Highway Tractors	Off-Highway Tractors0121	0.1110	0.7932	0.6639	0.0015	0.0370	130	0.0100
	250	Off-Highway Tractors	Off-Highway Tractors0176	0.0890	0.3179	0.5983	0.0015	0.0227	130	0.0090
	750	Off-Highway Tractors	Off-Highway Tractors0251	0.3692	1.5358	2.4157	0.0057	0.0918	568	0.0333
	1000	Off-Highway Tractors	Off-Highway Tractors0751	0.5623	2.3619	6.0896	0.0082	0.1577	814	0.0507
Off-Highway Tractors Composite		Off-Highway Tractors	Off-Highway Tractors1001	0.1134	0.6101	0.7291	0.0017	0.0331	151	0.0102
Off-Highway Trucks	175	Off-Highway Trucks	Off-Highway Trucks0000	0.0622	0.7536	0.2376	0.0014	0.0112	125	0.0056
	250	Off-Highway Trucks	Off-Highway Trucks0176	0.0730	0.3435	0.2521	0.0019	0.0085	167	0.0066
	500	Off-Highway Trucks	Off-Highway Trucks0251	0.1183	0.5319	0.3878	0.0027	0.0135	272	0.0107
	750	Off-Highway Trucks	Off-Highway Trucks0501	0.1921	0.8627	0.6384	0.0044	0.0221	442	0.0173
	1000	Off-Highway Trucks	Off-Highway Trucks0751	0.2823	1.2403	3.1782	0.0063	0.0546	625	0.0255
Off-Highway Trucks Composite		Off-Highway Trucks	Off-Highway Trucks1001	0.1140	0.5385	0.4769	0.0027	0.0142	260	0.0103

Table 53  
SCAB Fleet Average Emission Factors (Diesel)

2025										
Air Basin		SC								
Equipment	MaxHP			(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
				COG	CO	NOX	SOX	PM	CO2	CH4
Other Construction Equipment	15	Other Construction Equipment	Other Construction Equipment000	0.0118	0.0617	0.0737	0.0002	0.0029	10.1	0.0011
	25	Other Construction Equipment	Other Construction Equipment0016	0.0159	0.0544	0.1008	0.0002	0.0038	13.2	0.0014
	50	Other Construction Equipment	Other Construction Equipment0026	0.0244	0.2188	0.1893	0.0004	0.0034	28.0	0.0022
	120	Other Construction Equipment	Other Construction Equipment0051	0.0379	0.5045	0.2730	0.0009	0.0087	80.9	0.0034
	175	Other Construction Equipment	Other Construction Equipment0121	0.0384	0.5858	0.1729	0.0012	0.0075	107	0.0035
500	Other Construction Equipment	Other Construction Equipment0176	0.0792	0.4606	0.3034	0.0025	0.0099	254	0.0071	
Other Construction Equipment Composite				0.0442	0.3474	0.2021	0.0013	0.0069	123	0.0040
Other General Industrial Equipmen	15	Other General Industrial Equipmen	Other General Industrial Equipmen0000	0.0066	0.0391	0.0466	0.0001	0.0018	6.4	0.0006
	25	Other General Industrial Equipmen	Other General Industrial Equipmen0016	0.0185	0.0632	0.1170	0.0002	0.0044	15.3	0.0017
	50	Other General Industrial Equipmen	Other General Industrial Equipmen0026	0.0298	0.2099	0.1491	0.0003	0.0047	21.7	0.0027
	120	Other General Industrial Equipmen	Other General Industrial Equipmen0051	0.0436	0.4189	0.2803	0.0007	0.0120	62.0	0.0039
	175	Other General Industrial Equipmen	Other General Industrial Equipmen0121	0.0519	0.5684	0.2412	0.0011	0.0115	95.9	0.0047
	250	Other General Industrial Equipmen	Other General Industrial Equipmen0176	0.0608	0.2743	0.2679	0.0015	0.0083	136	0.0055
	500	Other General Industrial Equipmen	Other General Industrial Equipmen0251	0.1174	0.5103	0.4826	0.0026	0.0157	265	0.0106
	750	Other General Industrial Equipmen	Other General Industrial Equipmen0501	0.1939	0.8411	0.8117	0.0044	0.0262	437	0.0175
	1000	Other General Industrial Equipmen	Other General Industrial Equipmen0751	0.2627	1.1060	2.9924	0.0056	0.0579	560	0.0237
	Other General Industrial Equipmen Composite				0.0747	0.4438	0.3947	0.0016	0.0130	152
Other Material Handling Equipment	50	Other Material Handling Equipment	Other Material Handling Equipment0000	0.0410	0.2893	0.2073	0.0004	0.0065	30.3	0.0037
	120	Other Material Handling Equipment	Other Material Handling Equipment0051	0.0421	0.4076	0.2541	0.0007	0.0117	60.7	0.0038
	175	Other Material Handling Equipment	Other Material Handling Equipment0121	0.0653	0.7197	0.3067	0.0014	0.0146	122	0.0059
	250	Other Material Handling Equipment	Other Material Handling Equipment0176	0.0642	0.2920	0.2863	0.0016	0.0088	145	0.0058
	500	Other Material Handling Equipment	Other Material Handling Equipment0251	0.0837	0.3670	0.3482	0.0019	0.0113	192	0.0075
	9999	Other Material Handling Equipment	Other Material Handling Equipment0501	0.3781	1.4596	3.9555	0.0073	0.0764	741	0.0341
Other Material Handling Equipment Composite				0.0696	0.4355	0.3844	0.0015	0.0124	141	0.0063
Pavers	25	Pavers	Pavers0000	0.0225	0.0768	0.1422	0.0002	0.0053	18.7	0.0020
	50	Pavers	Pavers0026	0.0574	0.2803	0.2102	0.0004	0.0114	28.0	0.0052
	120	Pavers	Pavers0051	0.0662	0.4696	0.4003	0.0008	0.0263	68.2	0.0060
	175	Pavers	Pavers0121	0.0899	0.7543	0.5238	0.0014	0.0286	128	0.0081
	250	Pavers	Pavers0176	0.1097	0.4287	0.7020	0.0022	0.0254	194	0.0099
	500	Pavers	Pavers0251	0.1263	0.5374	0.7572	0.0023	0.0284	233	0.0114
Pavers Composite				0.0717	0.4745	0.3858	0.0009	0.0220	77.9	0.0065
Paving Equipment	25	Paving Equipment	Paving Equipment0000	0.0152	0.0520	0.0963	0.0002	0.0036	12.6	0.0014
	50	Paving Equipment	Paving Equipment0026	0.0468	0.2355	0.1789	0.0003	0.0095	23.9	0.0042
	120	Paving Equipment	Paving Equipment0051	0.0503	0.3671	0.3092	0.0006	0.0200	54.5	0.0045
	175	Paving Equipment	Paving Equipment0121	0.0687	0.5900	0.4021	0.0011	0.0219	101	0.0062
	250	Paving Equipment	Paving Equipment0176	0.0672	0.2648	0.4289	0.0014	0.0154	122	0.0061
Paving Equipment Composite				0.0548	0.3993	0.3281	0.0008	0.0190	68.9	0.0049
Plate Compactors	15	Plate Compactors	Plate Compactors0000	0.0050	0.0263	0.0314	0.0001	0.0012	4.3	0.0005
		Plate Compactors	Plate Compactors0016	0.0050	0.0263	0.0314	0.0001	0.0012	4.3	0.0005
Plate Compactors Composite				0.0052	0.0301	0.0368	0.0001	0.0015	4.9	0.0005
Pressure Washers	15	Pressure Washers	Pressure Washers0000	0.0087	0.0299	0.0555	0.0001	0.0022	7.1	0.0008
	25	Pressure Washers	Pressure Washers0016	0.0079	0.0810	0.0843	0.0002	0.0019	14.3	0.0007
	50	Pressure Washers	Pressure Washers0026	0.0082	0.1351	0.0897	0.0003	0.0031	24.1	0.0007
	120	Pressure Washers	Pressure Washers0051	0.0066	0.0531	0.0561	0.0001	0.0019	9.4	0.0006
Pressure Washers Composite				0.0089	0.0456	0.0560	0.0001	0.0024	7.4	0.0008
Pumps	15	Pumps	Pumps0000	0.0244	0.0816	0.1512	0.0002	0.0061	19.5	0.0022
	25	Pumps	Pumps0016	0.0299	0.2394	0.2138	0.0004	0.0061	34.3	0.0027
	50	Pumps	Pumps0026	0.0365	0.4656	0.3062	0.0009	0.0129	77.9	0.0033
	120	Pumps	Pumps0051	0.0499	0.7342	0.3301	0.0016	0.0142	140	0.0045
	175	Pumps	Pumps0121	0.0572	0.3604	0.3745	0.0023	0.0107	201	0.0052
	250	Pumps	Pumps0176	0.0599	0.6034	0.5922	0.0034	0.0178	345	0.0087
	500	Pumps	Pumps0251	0.1593	0.9975	0.9991	0.0057	0.0297	571	0.0144
	750	Pumps	Pumps0501	0.4488	2.4388	6.8114	0.0136	0.1186	1,355	0.0405
	9999	Pumps	Pumps0751							

Table 53  
SCAB Fleet Average Emission Factors (Diesel)

2025										
Air Basin		SC								
Equipment	MaxHP			(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
				COG	CO	NOX	SOX	PM	CO2	CH4
Pumps Composite		Pumps	Pumps10000	0.0270	0.2617	0.2079	0.0006	0.0078	49.6	0.0024
Rollers	15	Rollers	Rollers0000	0.0074	0.386	0.0461	0.0001	0.0018	6.3	0.0007
	25	Rollers	Rollers0016	0.0161	0.0549	0.1017	0.0002	0.0038	13.3	0.0015
	50	Rollers	Rollers0026	0.0345	0.2258	0.1776	0.0003	0.0068	26.0	0.0031
	120	Rollers	Rollers0051	0.0392	0.3801	0.2647	0.0007	0.0137	59.0	0.0035
	175	Rollers	Rollers0121	0.0553	0.6096	0.3030	0.0012	0.0156	108	0.0050
	250	Rollers	Rollers0176	0.0656	0.3037	0.3629	0.0017	0.0127	153	0.0059
Rollers Composite	500	Rollers	Rollers0251	0.0920	0.4189	0.4752	0.0022	0.0174	219	0.0083
		Rollers	Rollers0501	0.0410	0.3763	0.2501	0.0008	0.0122	67.0	0.0037
Rough Terrain Forklifts	50	Rough Terrain Forklifts	Rough Terrain Forklifts0000	0.0381	0.3041	0.2193	0.0004	0.0054	33.9	0.0034
	120	Rough Terrain Forklifts	Rough Terrain Forklifts0051	0.0369	0.4106	0.2316	0.0007	0.0087	62.4	0.0033
	175	Rough Terrain Forklifts	Rough Terrain Forklifts0121	0.0569	0.7229	0.2450	0.0014	0.0112	125	0.0051
	250	Rough Terrain Forklifts	Rough Terrain Forklifts0176	0.0671	0.3372	0.2625	0.0019	0.0084	171	0.0061
	500	Rough Terrain Forklifts	Rough Terrain Forklifts0251	0.0999	0.4838	0.3682	0.0025	0.0123	257	0.0090
Rough Terrain Forklifts Composite		Rough Terrain Forklifts	Rough Terrain Forklifts0501	0.0396	0.4430	0.2336	0.0008	0.0090	70.3	0.0036
Rubber Tired Dozers	175	Rubber Tired Dozers	Rubber Tired Dozers0000	0.1163	0.8019	0.6895	0.0015	0.0386	129	0.0105
	250	Rubber Tired Dozers	Rubber Tired Dozers0176	0.1329	0.4624	0.8841	0.0021	0.0340	183	0.0120
	500	Rubber Tired Dozers	Rubber Tired Dozers0251	0.1817	0.7490	1.1543	0.0026	0.0448	265	0.0164
	750	Rubber Tired Dozers	Rubber Tired Dozers0501	0.2747	1.1262	1.7818	0.0040	0.0684	399	0.0248
	1000	Rubber Tired Dozers	Rubber Tired Dozers0751	0.4321	1.7954	4.5523	0.0060	0.1202	592	0.0390
Rubber Tired Dozers Composite		Rubber Tired Dozers	Rubber Tired Dozers1001	0.1672	0.6620	1.0824	0.0025	0.0419	239	0.0151
Rubber Tired Loaders	25	Rubber Tired Loaders	Rubber Tired Loaders0000	0.0204	0.0697	0.1291	0.0002	0.0048	16.9	0.0018
	50	Rubber Tired Loaders	Rubber Tired Loaders0026	0.0418	0.2904	0.2109	0.0004	0.0069	31.1	0.0038
	120	Rubber Tired Loaders	Rubber Tired Loaders0051	0.0397	0.3916	0.2476	0.0007	0.0115	58.9	0.0036
	175	Rubber Tired Loaders	Rubber Tired Loaders0121	0.0546	0.6199	0.2592	0.0012	0.0130	106	0.0049
	250	Rubber Tired Loaders	Rubber Tired Loaders0176	0.0661	0.3041	0.3040	0.0017	0.0107	149	0.0060
	500	Rubber Tired Loaders	Rubber Tired Loaders0251	0.1034	0.4654	0.4455	0.0023	0.0164	237	0.0093
	750	Rubber Tired Loaders	Rubber Tired Loaders0501	0.2119	0.9532	0.9273	0.0049	0.0338	486	0.0191
	1000	Rubber Tired Loaders	Rubber Tired Loaders0751	0.2701	1.1927	3.2272	0.0060	0.0615	594	0.0244
Rubber Tired Loaders Composite		Rubber Tired Loaders	Rubber Tired Loaders1001	0.0559	0.4311	0.2835	0.0012	0.0121	109	0.0050
Scrapers	120	Scrapers	Scrapers0000	0.0887	0.6472	0.5218	0.0011	0.0330	93.9	0.0080
	175	Scrapers	Scrapers0121	0.1025	0.8864	0.5654	0.0017	0.0307	148	0.0092
	250	Scrapers	Scrapers0176	0.1187	0.4642	0.7040	0.0024	0.0254	209	0.0107
	500	Scrapers	Scrapers0251	0.1755	0.7332	0.9727	0.0032	0.0364	321	0.0158
	750	Scrapers	Scrapers0501	0.3043	1.2657	1.7266	0.0056	0.0638	555	0.0275
Scrapers Composite		Scrapers	Scrapers0751	0.1495	0.7187	0.8387	0.0027	0.0335	262	0.0135
Signal Boards	15	Signal Boards	Signal Boards0000	0.0072	0.0377	0.0450	0.0001	0.0018	6.2	0.0006
	50	Signal Boards	Signal Boards0016	0.0332	0.2686	0.2268	0.0005	0.0063	36.2	0.0030
	120	Signal Boards	Signal Boards0051	0.0394	0.4898	0.3076	0.0009	0.0127	80.2	0.0036
	175	Signal Boards	Signal Boards0121	0.0587	0.8292	0.3433	0.0017	0.0152	155	0.0053
Signal Boards Composite	250	Signal Boards	Signal Boards0176	0.0794	0.4676	0.4435	0.0029	0.0132	255	0.0072
		Signal Boards	Signal Boards0251	0.0111	0.9909	0.0718	0.0002	0.0029	16.7	0.0010
Skid Steer Loaders	25	Skid Steer Loaders	Skid Steer Loaders0000	0.0167	0.0568	0.1055	0.0002	0.0040	13.8	0.0015
	50	Skid Steer Loaders	Skid Steer Loaders0026	0.0194	0.1977	0.1446	0.0003	0.0015	25.5	0.0017
	120	Skid Steer Loaders	Skid Steer Loaders0051	0.0175	0.2665	0.1240	0.0005	0.0022	42.8	0.0016
Skid Steer Loaders Composite		Skid Steer Loaders	Skid Steer Loaders0121	0.0186	0.2104	0.1354	0.0004	0.0019	30.3	0.0017
Surfacing Equipment	50	Surfacing Equipment	Surfacing Equipment0000	0.0171	0.1105	0.0934	0.0002	0.0035	14.1	0.0015
	120	Surfacing Equipment	Surfacing Equipment0051	0.0385	0.3950	0.2869	0.0007	0.0146	63.8	0.0035
	175	Surfacing Equipment	Surfacing Equipment0121	0.0386	0.4642	0.2429	0.0010	0.0119	85.8	0.0035
	250	Surfacing Equipment	Surfacing Equipment0176	0.0504	0.2604	0.3275	0.0015	0.0111	135	0.0045
	500	Surfacing Equipment	Surfacing Equipment0251	0.0800	0.4236	0.4893	0.0022	0.0174	221	0.0072
Surfacing Equipment Composite	750	Surfacing Equipment	Surfacing Equipment0501	0.1260	0.6643	0.7833	0.0035	0.0275	347	0.0114
		Surfacing Equipment	Surfacing Equipment0751	0.0638	0.3590	0.3924	0.0017	0.0142	166	0.0058

Table 53  
SCAB Fleet Average Emission Factors (Diesel)

2025										
Air Basin	SC									
Equipment	MaxHP			(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
				COG	CO	NOX	SOX	PM	CO2	CH4
Sweepers/Scrubbers	15	Sweepers/Scrubbers	Sweepers/Scrubbers000	0.0124	0.0729	0.0870	0.0002	0.0034	11.9	0.0011
	25	Sweepers/Scrubbers	Sweepers/Scrubbers0016	0.0237	0.0808	0.1495	0.0002	0.0056	19.6	0.0021
	50	Sweepers/Scrubbers	Sweepers/Scrubbers0026	0.0308	0.2762	0.1942	0.0004	0.0033	31.6	0.0028
	120	Sweepers/Scrubbers	Sweepers/Scrubbers0051	0.0395	0.4895	0.2530	0.0009	0.0068	75.0	0.0036
	175	Sweepers/Scrubbers	Sweepers/Scrubbers0121	0.0565	0.8005	0.2201	0.0016	0.0084	139	0.0051
250	Sweepers/Scrubbers	Sweepers/Scrubbers0176	0.0587	0.3179	0.1898	0.0018	0.0062	162	0.0053	
Sweepers/Scrubbers Composite		Sweepers/Scrubbers	Sweepers/Scrubbers0251	0.0410	0.4840	0.2255	0.0009	0.0061	78.5	0.0037
Tractors/Loaders/Backhoes	25	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0000	0.0191	0.0653	0.1209	0.0002	0.0045	15.9	0.0017
	50	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0026	0.0316	0.2678	0.1895	0.0004	0.0037	30.3	0.0029
	120	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0051	0.0281	0.3379	0.1761	0.0006	0.0055	51.7	0.0025
	175	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0121	0.0420	0.5839	0.1613	0.0011	0.0072	101	0.0038
	250	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0176	0.0633	0.3389	0.2157	0.0019	0.0073	172	0.0057
	500	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0251	0.1263	0.6506	0.4127	0.0039	0.0144	345	0.0114
750	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0501	0.1896	0.9760	0.6256	0.0058	0.0216	517	0.0171	
Tractors/Loaders/Backhoes Composite		Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0751	0.0336	0.3586	0.1857	0.0008	0.0059	66.8	0.0030
Trenchers	15	Trenchers	Trenchers0000	0.0099	0.0517	0.0617	0.0001	0.0024	8.5	0.0009
	25	Trenchers	Trenchers0016	0.0397	0.1355	0.2509	0.0004	0.0094	32.9	0.0036
	50	Trenchers	Trenchers0026	0.0687	0.3197	0.2467	0.0004	0.0140	32.9	0.0062
	120	Trenchers	Trenchers0051	0.0625	0.4341	0.3863	0.0008	0.0259	64.9	0.0056
	175	Trenchers	Trenchers0121	0.1009	0.8327	0.6152	0.0016	0.0338	144	0.0091
	250	Trenchers	Trenchers0176	0.1247	0.4925	0.8480	0.0025	0.0309	223	0.0112
	500	Trenchers	Trenchers0251	0.1661	0.7370	1.0663	0.0031	0.0400	311	0.0150
750	Trenchers	Trenchers0501	0.3147	1.3882	2.0666	0.0059	0.0766	587	0.0284	
Trenchers Composite		Trenchers	Trenchers0751	0.0674	0.4085	0.3481	0.0007	0.0215	58.7	0.0061
Welders	15	Welders	Welders0000	0.0075	0.0381	0.0468	0.0001	0.0020	6.2	0.0007
	25	Welders	Welders0016	0.0141	0.0473	0.0876	0.0001	0.0035	11.3	0.0013
	50	Welders	Welders0026	0.0280	0.2077	0.1684	0.0003	0.0053	26.0	0.0025
	120	Welders	Welders0051	0.0223	0.2476	0.1601	0.0005	0.0073	39.5	0.0020
	175	Welders	Welders0121	0.0430	0.5400	0.2396	0.0011	0.0111	98.2	0.0039
	250	Welders	Welders0176	0.0423	0.2236	0.2294	0.0013	0.0069	119	0.0038
500	Welders	Welders0251	0.0585	0.3040	0.2969	0.0016	0.0095	168	0.0053	
Welders Composite		Welders	Welders0501	0.0214	0.1745	0.1373	0.0003	0.0052	25.6	0.0019

Source: File off-road-mobile-source-emission-factors-scenario-years-2007-2025).xls, downloaded from <http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/off-road-mobile-source-emission-factors>

**Table 54**  
**Highest (Most Conservative) EMFAC2007 (version 2.3)**  
**Emission Factors for On-Road Passenger Vehicles & Delivery Trucks**  
 Projects in the SCAQMD (Scenario Years 2007 - 2026)  
 Derived from Peak Emissions Inventory (**Winter**, **Annual**, **Summer**)

**Vehicle Class:**  
**Passenger Vehicles (<8500 pounds) & Delivery Trucks (>8500 pounds)**

The following emission factors were compiled by running the California Air Resources Board's EMFAC2007 (version 2.3) Burden Model, taking the weighted average of vehicle types and simplifying into two categories: **Passenger Vehicles & Delivery Trucks.**

These emission factors can be used to calculate on-road mobile source emissions for the vehicle categories listed in the tables below, by use of the following equation:

**Emissions (pounds per day) = N x TL x EF**

where N = number of trips, TL = trip length (miles/day), and EF = emission factor (pounds per mile)

This methodology replaces the old EMFAC emission factors in Tables A-9-5-J-1 through A-9-5-L in Appendix A9 of the current SCAQMD CEQA Handbook. All the emission factors account for the emissions from start, running and idling exhaust. In addition, the ROG emission factors include diurnal, hot soak, running and resting emissions, and the PM10 & PM2.5 emission factors include tire and brake wear.

Scenario Year: 2025			
All model years in the range 1981 to 2025			
Passenger Vehicles (pounds/mile)		Delivery Trucks (pounds/mile)	
CO	0.00342738	CO	0.00595363
NOx	0.00028846	NOx	0.00615945
ROG	0.00043545	ROG	0.00092178
SOx	0.00001070	SOx	0.00002761
PM10	0.00009679	PM10	0.00028425
PM2.5	0.00006418	PM2.5	0.00020958
CO2	1.11078571	CO2	2.88143570
CH4	0.00003641	CH4	0.00003765

Source: File on-road-vehicles-(scenario-years-2007-2026).xls, downloaded from <http://www.aqmd.gov/home/rules-compliance/ceqa/>

**Table 55**  
**Highest (Most Conservative) EMFAC2007 (version 2.3)**  
**Emission Factors for On-Road Heavy-Heavy-Duty Diesel Trucks**  
 Projects in the SCAQMD (Scenario Years 2007 - 2026)  
 Derived from Peak Emissions Inventory (**Winter**, **Annual**, **Summer**)

**Vehicle Class:**  
**Heavy-Heavy-Duty Diesel Trucks (33,001 to 60,000 pounds)**

The following emission factors were compiled by running the California Air Resources Board's EMFAC2007 (version 2.3) Burden Model and extracting the **Heavy-Heavy-Duty Diesel Truck (HHDT)** Emission Factors.

These emission factors can be used to calculate on-road mobile source emissions for the vehicle/emission categories listed in the tables below, by use of the following equation:

**Emissions (pounds per day) = N x TL x EF**

where N = number of trips, TL = trip length (miles/day), and EF = emission factor (pounds per mile)

The **HHDT-DSL** vehicle/emission category accounts for all emissions from heavy-heavy-duty diesel trucks, including start, running and idling exhaust. In addition, ROG emission factors account for diurnal, hot soak, running and resting emissions, and the PM10 & PM2.5 emission factors account for tire and brake wear.

The **HHDT-DSL, Exh** vehicle/emission category includes only the exhaust portion of PM10 & PM2.5 emissions from heavy-heavy-duty diesel trucks.

Scenario Year: 2025			
All model years in the range 1981 to 2025			
HHDT-DSL (pounds/mile)	HHDT-DSL, Exh (pounds/mile)		
CO	0.00431086	PM10	0.00034397
NOx	0.00932573	PM2.5	0.00031664
ROG	0.00080206		
SOx	0.00004018		
PM10	0.00048541		
PM2.5	0.00036326		
CO2	4.19512979		
CH4	0.00003697		

Source: File heavy-heavy-duty-on-road-vehicles-(scenario-years-2007-2026).xls, downloaded from [http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/emfac-2007-\(v2-3\)-emission-factors-\(on-road\)](http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/emfac-2007-(v2-3)-emission-factors-(on-road))

**Table 56**  
**Motor Vehicle Entrained Road Dust Emission Factors**

Vehicle Type	Surface	Silt Loading (sL, g/m <sup>2</sup> ) or Silt Content (s, %) <sup>a</sup>	Average Weight (W) (tons) <sup>b</sup>	Un-controlled PM10 Emission Factor (lb/VMT) <sup>c</sup>	Un-controlled PM2.5 Emission Factor (lb/VMT) <sup>c</sup>	Control Efficiency (%) <sup>d</sup>	Controlled PM10 Emission Factor (lb/VMT) <sup>e</sup>	Controlled PM2.5 Emission Factor (lb/VMT) <sup>e</sup>
1/2-Ton Pick-up Truck, 4x4	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
1/2-Ton Pick-up Truck, 4x4	Unpaved	7.5	3.2	1.01E+00	1.01E-01	55%	4.55E-01	4.55E-02
1-Ton Truck, 4x4	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
1-Ton Truck, 4x4	Unpaved	7.5	3.2	1.01E+00	1.01E-01	55%	4.55E-01	4.55E-02
10-cu. yd. Concrete Mixer Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
10-cu. yd. Concrete Mixer Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
10-cu. yd. Dump Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
10-cu. yd. Dump Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
1-Ton Crew Cab Flat Bed, 4x4	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
1-Ton Crew Cab Flat Bed, 4x4	Unpaved	7.5	5	1.24E+00	1.24E-01	55%	5.56E-01	5.56E-02
1-Ton Crew Cab, 4x4	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
1-Ton Crew Cab, 4x4	Unpaved	7.5	5	1.24E+00	1.24E-01	55%	5.56E-01	5.56E-02
1-Ton Flat Bed, 4x4	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
1-Ton Flat Bed, 4x4	Unpaved	7.5	5	1.24E+00	1.24E-01	55%	5.56E-01	5.56E-02
3/4-Ton Pick-up Truck, 4x4	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
3/4-Ton Pick-up Truck, 4x4	Unpaved	7.5	3.2	1.01E+00	1.01E-01	55%	4.55E-01	4.55E-02
3/4-Ton Truck, 4x4	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
3/4-Ton Truck, 4x4	Unpaved	7.5	3.2	1.01E+00	1.01E-01	55%	4.55E-01	4.55E-02
40' Flat Bed Pole Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
40' Flat Bed Pole Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Asphalt Delivery Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Asphalt Delivery Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Carry-all Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Carry-all Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Concrete Mixer Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Concrete Mixer Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Concrete Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Concrete Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Crew Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Crew Truck	Unpaved	7.5	5	1.24E+00	1.24E-01	55%	5.56E-01	5.56E-02
Crew Vehicle	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Crew Vehicle	Unpaved	7.5	5	1.24E+00	1.24E-01	55%	5.56E-01	5.56E-02
Crewcab Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Crewcab Truck	Unpaved	7.5	5	1.24E+00	1.24E-01	55%	5.56E-01	5.56E-02
Crushed Rock Delivery Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Crushed Rock Delivery Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Dump Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Dump Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Dump Truck (Trash)	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Dump Truck (Trash)	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Extendable Flat Bed Pole Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Extendable Flat Bed Pole Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Flat Bed Truck/Trailer	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Flat Bed Truck/Trailer	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Flatbed Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Flatbed Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Fuel, Helicopter Support Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Fuel, Helicopter Support Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Jet A Fuel Truck	Paved	0.035	3.4	9.22E-04	0.00E+00	0%	9.22E-04	0.00E+00
Jet A Fuel Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Low Bed Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Low Bed Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Lowboy Truck/Trailer	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Lowboy Truck/Trailer	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Maintenance Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00



**Table 56**  
**Motor Vehicle Entrained Road Dust Emission Factors**

Vehicle Type	Surface	Silt Loading (sL, g/m <sup>2</sup> ) or Silt Content (s, %) <sup>a</sup>	Average Weight (W) (tons) <sup>b</sup>	Un-controlled PM10 Emission Factor (lb/VMT) <sup>c</sup>	Un-controlled PM2.5 Emission Factor (lb/VMT) <sup>c</sup>	Control Efficiency (%) <sup>d</sup>	Controlled PM10 Emission Factor (lb/VMT) <sup>e</sup>	Controlled PM2.5 Emission Factor (lb/VMT) <sup>e</sup>
Maintenance Truck	Unpaved	7.5	10	1.69E+00	1.69E-01	55%	7.60E-01	7.60E-02
Pipe Truck/Trailer	Paved	0.035	3.4	9.22E-04	0.00E+00	0%	9.22E-04	0.00E+00
Pipe Truck/Trailer	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Reel Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Reel Truck	Unpaved	7.5	10	1.69E+00	1.69E-01	55%	7.60E-01	7.60E-02
Stake Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Stake Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Stakebed Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Stakebed Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Truck, Semi Tractor	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Truck, Semi Tractor	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Van	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Van	Unpaved	7.5	3.2	1.01E+00	1.01E-01	55%	4.55E-01	4.55E-02
Water Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Water Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Wire Truck/Trailer	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Wire Truck/Trailer	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Worker Commute	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Worker Commute	Unpaved	7.5	3.2	1.01E+00	1.01E-01	55%	4.55E-01	4.55E-02
Transmission Line Inspection	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Transmission Line Inspection	Unpaved	7.5	3.2	1.01E+00	1.01E-01	55%	4.55E-01	4.55E-02
Subtransmission Line Inspection	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Subtransmission Line Inspection	Unpaved	7.5	3.2	1.01E+00	1.01E-01	55%	4.55E-01	4.55E-02
Substation Site Visit	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Substation Site Visit	Unpaved	7.5	3.2	1.01E+00	1.01E-01	55%	4.55E-01	4.55E-02
Transmission Line Inspection	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Transmission Line Inspection	Unpaved	7.5	3.2	1.01E+00	1.01E-01	55%	4.55E-01	4.55E-02
Subtransmission Line Inspection	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Subtransmission Line Inspection	Unpaved	7.5	3.2	1.01E+00	1.01E-01	55%	4.55E-01	4.55E-02
Substation Site Visit	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Substation Site Visit	Unpaved	7.5	3.2	1.01E+00	1.01E-01	55%	4.55E-01	4.55E-02

<sup>a</sup> Paved road silt loading from ARB Emission Inventory Methodology 7.9, Entrained Paved Road Dust (1997) for collector roads,

<http://www.arb.ca.gov/ei/areasrc/fullpdf/full7-9.pdf>

Unpaved road silt content from SCAQMD CEQA Handbook, (1993) Table A9-9-E-1 for overburden

<sup>b</sup> Average paved on-road vehicle weight in Riverside County from ARB Emission Inventory Methodology 7.9, Entrained Paved Road Dust (1997)

Unpaved worker commuting weight on access road assumed to be same as paved road weight

Unpaved weight for other trucks is based on upper limit of 33,000 lbs for medium heavy-duty trucks.

<sup>c</sup> Equations:

$EF(\text{paved}) = k_p (sL/2)^{0.65} (W/3)^{1.5} - C$

Ref: AP-42, Section 13.2.1, "Paved Rods," November 2006

$EF(\text{unpaved}) = k_u (s/12)^a (W/3)^b$

Ref: AP-42, Section 13.2.2, "Unpaved Rods," November 2006

Constants:

$k_p =$	0.016	(Particle size multiplier for PM10)
	0.0024	(Particle size multiplier for PM2.5)
$C =$	0.00047	(Exhaust, brake wear and tire wear adjustment, PM10)
	0.00036	(Exhaust, brake wear and tire wear adjustment, PM2.5)
$k_u =$	1.5	(Particle size multiplier for PM)
	0.15	(Particle size multiplier for PM2.5)
$a =$	0.9	for PM10
	0.9	for PM2.5
$b =$	0.45	for PM10
	0.45	for PM2.5

<sup>d</sup> Control efficiency from watering unpaved roads twice per day, from Table XI-D, Mitigation Measure Exmpales, Fugitive Dust from Unpaved Roads, [http://www.aqmd.gov/ceqa/handbook/mitigation/fugitive/MM\\_fugitive.html](http://www.aqmd.gov/ceqa/handbook/mitigation/fugitive/MM_fugitive.html)

<sup>e</sup> Controlled emission factor [lb/mi] = Uncontrolled emission factor [lb/mi] x (1 - Control efficiency [%] / 100)

**Table 57**  
**Fugitive Dust Emission Factors**  
**Soil Dropping During Excavation**

Emission Factor [lb/cu. yd] =  $0.0011 \times (\text{mean wind speed [mi/hr]} / 5)^{1.3} / (\text{moisture [\%]} / 2)^{1.4} \times (\text{number drops per ton}) \times (\text{density [ton/cu. yd]})$   
 Reference: AP-42, Equation (1), Section 13.2.4, November 2006

Parameter	Value	Basis
Mean Wind Speed	12	SCAQMD CEQA Air Quality Handbook (1993), Table 9-9-G, default
Moisture	15	SCAQMD CEQA Air Quality Handbook (1993), Table 9-9-G-1, moist soil
Number Drops	4	Assumption
Soil Density	1.215	Table 2.46, Handbook of Solid Waste Management

PM10 Emission Factor (Uncontrolled) 9.94E-04 lb/cu. yd

Reduction from Watering Twice/Day<sup>b</sup> 0%

Controlled PM10 Emission Factor 9.94E-04 lb/cu. yd

Controlled PM2.5 Emission Factor<sup>a</sup> 2.07E-04 lb/cu. yd

<sup>a</sup> PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction of PM10 in Construction Dust = 0.208 from Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006

<sup>b</sup> Watering is assumed to be used to maintain moist conditions, so no further reduction from watering is included.

Emissions [pounds per day] = Controlled emission factor [pounds per cubic yard] x Volume soil handled [cubic yards per day]

**Table 57**  
**Fugitive Dust Emission Factors**  
**Storage Pile Wind Erosion**

Emission Factor [lb/day-acre] = 0.85 x (silt content [%] / 1.5) x (365 / 235) x (percentage of time unobstructed wind exceeds 12 mph / 15)  
 Reference: SCAQMD CEQA Air Quality Handbook (1993), Table 9-9-E

Parameter	Value	Basis
Silt Content	7.5	SCAQMD CEQA Handbook, (1993) Table A9-9-E-1 for overburden
Pct. time wind > 12 mph	100	Worst-case assumption

PM10 Emission Factor (Uncontrolled) 44.0 lb/day-acre  
 Reduction from Watering Twice/Day 50%  
 Controlled PM10 Emission Factor 22.0 lb/day-acre  
 Controlled PM2.5 Emission Factor<sup>a</sup> 4.6 lb/day-acre

<sup>a</sup> PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10  
 PM2.5 Fraction of PM10 in Construction Dust = 0.208 from Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006

Emissions [pounds per day] = Controlled emission factor [pounds per acre-day] x Storage pile surface area [acres]

**Table 57**  
**Fugitive Dust Emission Factors**  
**Bulldozing, Scraping and Grading**

Emission Factor [lb/hr] = 0.75 x (silt content [%])<sup>1.5</sup> / (moisture)<sup>1.4</sup>  
 Reference: AP-42, Table 11.9-1, July 1998

Parameter	Value	Basis
Silt Content	7.5	SCAQMD CEQA Handbook, (1993) Table A9-9-E-1 for overburden
Moisture	15	SCAQMD CEQA Air Quality Handbook (1993), Table 9-9-G-1, moist soil

PM10 Emission Factor (Uncontrolled) 0.348 lb/hr  
 Reduction from Watering Twice/Day 0%  
 Controlled PM10 Emission Factor 0.348 lb/hr  
 Controlled PM2.5 Emission Factor<sup>a</sup> 0.072 lb/hr

<sup>a</sup> PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10  
 PM2.5 Fraction of PM10 in Construction Dust = 0.208 from Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5  
 and PM 2.5 Significance Thresholds, SCAQMD, October 2006

<sup>b</sup> Watering is assumed to be used to maintain moist conditions, so no further reduction from watering is included.

Emissions [pounds per day] = Controlled emission factor [pounds per hour] x Bulldozing, scraping or grading time [hours/day]

**SOIL IMPORT OPTION 2 WITHOUT PROJECT COMMITMENT J**

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## AIR QUALITY CALCULATIONS

### Construction Emissions

The following emissions were calculated for construction activities:

1. Peak daily criteria pollutant emissions for comparison with the South Coast Air Quality Management District (SCAQMD) mass daily emissions CEQA significance thresholds. The following steps were used to calculate these emissions:
  - a. Daily emissions were calculated for each construction phase for each Proposed Project Component.
 

These calculations are in Table 7 through Table 50.

Total daily emissions, including both on-site and off-site sources, are summarized by construction phase in Table 1.

Emission factors for off-road construction equipment and motor vehicle exhaust are from the SCAQMD CEQA Handbook webpage for calendar year 2025.

The exhaust emission factors are in Table 53 through Table 55.

Emission factors for fugitive PM10 and PM2.5 from vehicle travel on paved and unpaved roads were calculated using emission factor equations from AP-42 Sections 13.2.1 and 13.2.2.

These emission factors are in Table 56.

PM10 and PM2.5 emission factors for earth moving and soil handling were calculated from AP-42 sections and from the SCAQMD CEQA Handbook.

These emission factors are in Table 57.
  - b. The construction phases for each Proposed Project component that could overlap were identified, and daily emissions from overlapping phases were added together. The highest emissions that could occur on a single day during construction of each Proposed Project component were then identified. These emissions are summarized in Table 2.
  - c. Since construction of all of the Proposed Project components could occur at the same time, the maximum daily emissions during construction of the components were added together to estimate peak daily construction emissions. However, since substation site demolition and water line relocation activities would be completed prior to the start of any other construction, they were not included in the peak daily emissions calculation. The peak daily construction emissions are in Table 2.
2. Maximum daily on-site emissions during construction of each Proposed Project component for use in a Localized Significance Threshold (LST) analysis using the look-up table in Appendix C to the SCAQMD's Localized Significance Methodology. The following steps were used to calculate these emissions and to conduct the LST analysis.
  - a. Daily on-site emissions were calculated for each construction phase for each Proposed Project Component. On-site emissions for substation construction were defined as emissions that would occur on the substation site. On-site emissions for 500 kV transmission line and 115 kV subtransmission line construction were defined as emissions that would occur at a single 500 kV lattice tower or a 115 kV pole

## AIR QUALITY CALCULATIONS

location.

These calculations are in Table 9 through Table 50.

On-site daily emissions by construction phase are summarized in Table 3.

The same emission factors used to calculate total daily emission were used to calculate on-site daily emissions.

- b. Since multiple construction phases could occur at the same time at the substation site, daily on-site emissions from overlapping phases were added together to identify maximum on-site daily emissions during substation construction. Maximum daily on-site emissions during telecommunications construction were added to the maximum daily emissions during substation construction, since telecommunications construction will occur at the substation site. Maximum daily on-site emissions Table 4.
- c. Since only one construction phase could occur at a 500 kV transmission line tower location or 115 kV subtransmission line pole location, emissions from overlapping phases were not added together to calculate maximum daily on-site emissions. Maximum daily on-site emissions during 500 kV transmission line and 115 kV subtransmission line construction are in Table 4.
- d. Distances to the closest receptors were determined for the LST analysis. For the substation site, the distance to the closest commercial receptor was used for analyses for CO and NO<sub>2</sub>, since the air quality thresholds are for short-term averaging periods. The distance to the closest residential receptor was used for the PM<sub>10</sub> and PM<sub>2.5</sub> analyses, since the air quality thresholds are for 24-hour averaging periods, and an individual would probably not be located at a commercial location for 24 hours.  
The closest receptor to a 500 kV transmission tower location is a residence.  
A distance of 25 meters was assumed for the receptor distance for the analysis for 115 kV subtransmission line construction.
- e. The look-up table values for the Lake Elsinore source/receptor area were used for the LST analyses.
- f. The maximum construction area in the look-up tables of 5 acres was used for the LST analysis for the substation site, and the minimum area of 1 acre was used for the 500 kV transmission line tower and 115 kV subtransmission line pole analyses.
- g. The maximum allowable daily on-site emissions for the analyses for the substation and 500 kV transmission line towers were calculated using linear interpolation with receptor distance of the emissions in the look-up tables to calculate allowable emissions for the actual receptor distances. Interpolation was not used for the LST analyses for the 115 kV subtransmission line analyses, since the receptor distance was assumed to be 25 meters. The LST analyses are in Table 5.

3. Total greenhouse gas (GHG) emissions during construction. The following steps were used to calculate these emissions:



## AIR QUALITY CALCULATIONS

- a. Total GHG emissions were calculated for each construction phase for Each Proposed Project Component. These calculations are in Table 9 through Table 50. Total GHG emissions, including both on-site and off-site sources, are summarized by construction phase in Table 6.

Emission factors for off-road construction equipment and motor vehicle exhaust are from the SCAQMD CEQA Handbook webpage for calendar year 2025.

The exhaust emission factors are in Table 53 through Table 55.

- b. Total GHG emissions during each construction phase were added together to calculate total GHG emissions during construction. These emissions are summarized in Table 6.

### Operational Emissions

The following emissions were calculated for operational activities:

1. Peak daily criteria pollutant emissions for comparison with the South Coast Air Quality Management District (SCAQMD) mass daily emissions CEQA significance thresholds. The following steps were used to calculate these emissions:

- a. Daily emissions were calculated for each operational activity, including 500 kV transmission line inspections, 115 kV subtransmission line inspections and visits to the substation site. These calculations are in Table 52.

Emission factors for off-road construction equipment and motor vehicle exhaust are from the SCAQMD CEQA Handbook webpage for calendar year 2025.

The exhaust emission factors are in Table 53 through Table 55.

Emission factors for fugitive PM10 and PM2.5 from vehicle travel on paved and unpaved roads were calculated using emission factor equations from AP-42 Sections 13.2.1 and 13.2.2.

These emission factors are in Table 56.

- b. It was conservatively assumed that the transmission line inspections would both occur on the same day as a visit to the substation site, and daily emissions from these three activities were added together to peak daily operational emissions. These emissions are in Table 52.

2. Annual greenhouse gas (GHG) emissions during operation. The following steps were used to calculate these emissions:

- a. Annual emissions were calculated for each operational activity, including 500 kV transmission line inspections, 115 kV subtransmission line inspections and visits to the substation site. These calculations are in Table 52.

Emission factors for off-road construction equipment and motor vehicle exhaust are from the SCAQMD CEQA Handbook webpage for calendar year 2025.

## AIR QUALITY CALCULATIONS

The exhaust emission factors are in Table 53 through Table 55.

- b. Annual emissions from leakage of sulfur hexafluoride (SF6) from gas-insulated switch gear (GIS) were calculated by multiplying the total amount of SF6 in new GIS by the estimated annual leakage rate. The annual SF6 leakage rate was then multiplied by the SF6 global warming potential to calculate annual CO2-equivalent emissions from SF6 leakage. These calculations are in Table 52.
- c. Annual GHG emissions from the operational activities and from SF6 leakage were added together to calculate Annual operational GHG emissions. These emissions are summarized in Table 52.

**Table 1**  
**Construction Emissions Summary**  
**Total Daily Criteria Pollutant Emissions by Construction Phase**

Phase	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
<b>Substation Site Demolition</b>	3.42	23.90	30.16	0.12	25.15	3.40
<b>Substation Site Water Line Relocation</b>	0.65	6.60	2.80	0.01	39.81	4.08
<b>Substation Construction</b>						
Survey	0.11	0.86	0.07	0.00	12.58	1.25
Grading	6.44	42.22	49.09	0.20	178.99	22.28
Fencing	0.42	4.32	1.30	0.01	35.20	3.52
Civil	2.90	31.01	20.07	0.10	49.97	5.53
Control Building	0.17	1.32	0.20	0.00	32.50	3.24
Electrical	1.26	12.43	6.41	0.03	38.15	4.00
Wiring	0.28	2.25	0.63	0.01	25.18	2.52
Transformers	0.66	6.27	2.25	0.01	46.81	4.74
Maintenance Crew Equipment Check	0.12	0.94	0.19	0.00	34.00	3.40
Testing	0.11	0.87	0.07	0.00	18.77	1.87
Asphalting	2.41	11.86	12.23	0.05	51.66	5.51
Landscaping	1.72	11.07	15.40	0.07	43.25	4.68
<b>500 kV Transmission Line Construction</b>						
Survey	0.11	0.89	0.08	0.00	20.45	2.04
Marshalling Yard	0.63	4.65	2.81	0.02	31.55	3.22
Roads and Landing Work	2.37	19.00	10.34	0.05	54.71	6.83
Install Helicopter Platforms	0.16	1.23	0.10	0.00	0.32	0.02
Tower Removal	1.02	6.57	4.56	0.02	105.34	10.67
Foundation Removal	0.61	6.89	2.73	0.01	49.41	5.03
Tower Foundations Installation	2.01	15.93	6.66	0.06	107.57	10.97
Install Micropile Foundations	0.16	1.23	0.10	0.00	0.32	0.02
Tower Steel Haul	0.31	3.62	0.90	0.01	55.51	5.57
Tower Steel Assembly	0.98	8.03	3.96	0.02	33.29	3.44
Tower Erection	1.46	8.84	6.22	0.03	83.50	8.52
Tower Erection (Helicopter) Ground Support	0.82	6.98	2.35	0.02	94.04	9.44
Tower Helicopter Operations	46.71	56.80	577.42	32.18	12.02	12.02
Wire Stringing	20.27	61.08	38.52	1.51	383.75	39.37
Restoration	1.08	8.31	4.75	0.03	47.70	5.20
<b>115 kV Subtransmission Line Construction</b>						
Survey	0.12	0.96	0.08	0.00	0.25	0.02
Marshalling Yard	0.36	3.35	1.16	0.01	23.35	2.36
Roads and Landing Work	1.79	14.07	8.05	0.04	6.40	1.31
Guard Structure Installation	1.61	10.08	7.33	0.05	0.69	0.27
Remove Existing Wood H-Frames and Poles	1.07	7.58	4.97	0.02	0.60	0.20
Remove Existing Tubular Steel/Light Weight Steel Poles	0.98	5.99	4.23	0.02	0.69	0.18
Install Tubular Steel Pole Foundations	1.41	11.32	5.50	0.05	2.83	0.44
Steel Pole Haul	0.70	3.43	3.10	0.02	0.41	0.12
Steel Pole Assembly	0.98	5.99	4.23	0.02	0.69	0.18
Steel Pole Erection	0.98	5.99	4.23	0.02	0.69	0.18
Wire Stringing	5.07	29.37	24.43	0.15	2.08	0.80
Vault Installation	2.63	17.58	10.62	0.07	2.43	0.60
Duct Bank Installation	1.39	13.75	6.11	0.04	2.84	0.59
Install Underground Cable	3.51	19.09	13.63	0.09	1.50	0.50
Guard Structure Removal	1.50	9.66	7.71	0.04	0.69	0.29
Restoration	1.22	9.85	5.55	0.03	7.12	0.88
<b>Telecommunications Construction</b>						
Tower Foundation	0.71	8.05	4.31	0.02	0.93	0.25
Tower Construction	0.99	5.82	4.82	0.02	0.45	0.18
Dish Installation	0.27	2.81	1.45	0.01	0.30	0.07
Control Building	0.54	3.56	3.15	0.02	0.23	0.09
Overhead Communications Installation	0.60	3.97	3.18	0.02	0.33	0.10
Substation Telecommunications Equipment Installation	0.08	0.62	0.05	0.00	0.16	0.01
Santiago Peak Communication Site	0.45	2.87	1.50	0.01	35.67	3.60
<b>Additional Substation Construction</b>						

**Table 1**  
**Construction Emissions Summary**  
**Total Daily Criteria Pollutant Emissions by Construction Phase**

Phase	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
Civil	1.16	12.41	6.30	0.03	11.38	1.32
Electrical	1.41	13.32	7.68	0.03	0.84	0.31
Wiring	0.44	3.97	1.56	0.01	0.59	0.09
Testing	0.11	0.83	0.07	0.00	0.22	0.02
Civil - Demo	0.58	5.75	3.19	0.02	11.35	1.22

**Table 2**  
**Construction Emissions Summary**  
**Total Daily Criteria Pollutant Emissions for Overlapping Construction Phases**

Group <sup>a</sup>	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
<b>Substation Construction</b>						
Survey	0.11	0.86	0.07	0.00	12.58	1.25
Grading	6.44	42.22	49.09	0.20	178.99	22.28
Fencing, Control Building, Electrical, Wiring, Transformers, Maintenance Crew Equipment Check, Testing, Asphaltting	5.43	40.28	23.30	0.12	282.27	28.80
Civil	2.90	31.01	20.07	0.10	49.97	5.53
Landscaping	1.72	11.07	15.40	0.07	43.25	4.68
<b>Maximum</b>	<b>6.44</b>	<b>42.22</b>	<b>49.09</b>	<b>0.20</b>	<b>282.27</b>	<b>28.80</b>
<b>500 kV Transmission Line Construction</b>						
Survey	0.11	0.89	0.08	0.00	20.45	2.04
Marshalling Yard, Road and Landing Work, Install Helicopter Platforms	3.15	24.89	13.25	0.07	86.59	10.07
Marshalling Yard, Tower Removal, Tower Foundations Installation, Install Micropile Foundations, Tower Steel Haul, Tower Steel Assembly, Tower Erection, Tower Erection (Helicopter) Ground Support, Tower Helicopter Operations	54.09	112.65	604.98	32.37	523.14	63.88
Marshalling Yard, Foundation Removal	1.24	11.55	5.54	0.03	80.96	8.26
Marshalling Yard, Wire Stringing	20.89	65.73	41.33	1.52	415.30	42.59
Restoration	1.08	8.31	4.75	0.03	47.70	5.20
<b>Maximum</b>	<b>54.09</b>	<b>112.65</b>	<b>604.98</b>	<b>32.37</b>	<b>523.14</b>	<b>63.88</b>
<b>115 kV Subtransmission Line Construction</b>						
Survey	0.12	0.96	0.08	0.00	0.25	0.02
Marshalling Yard, Roads and Landing Work, Guard Structure Installation, Remove Existing Wood H-Frames and Poles, Remove Existing Tubular Steel/Light Weight Steel Poles, Install Tubular Steel Pole Foundations, Steel Pole Haul, Steel Pole Assembly, Steel Pole Erection, Wire Stringing, Guard Structure Removal, Vault Installation, Duct Bank Installation, Install Underground Cable	23.99	157.27	105.30	0.64	45.89	8.02
Restoration	1.22	9.85	5.55	0.03	7.12	0.88
<b>Maximum</b>	<b>23.99</b>	<b>157.27</b>	<b>105.30</b>	<b>0.64</b>	<b>45.89</b>	<b>8.02</b>
<b>Telecommunications Construction</b>						
Tower Foundation	0.71	8.05	4.31	0.02	0.93	0.25
Tower Construction	0.99	5.82	4.82	0.02	0.45	0.18
Dish Installation, Control Building, Overhead Communications Installation, Substation Telecommunications Equipment Installation	1.49	10.96	7.83	0.05	1.02	0.28
Santiago Peak Communication Site	0.45	2.87	1.50	0.01	35.67	3.60
<b>Maximum</b>	<b>1.49</b>	<b>10.96</b>	<b>7.83</b>	<b>0.05</b>	<b>35.67</b>	<b>3.60</b>
<b>Additional Substation Construction</b>						
Civil, Electrical, Wiring, Testing, Civil - Demo	3.68	36.28	18.80	0.09	24.38	2.95
<b>Maximum</b>	<b>3.68</b>	<b>36.28</b>	<b>18.80</b>	<b>0.09</b>	<b>24.38</b>	<b>2.95</b>
<b>PEAK DAILY<sup>b</sup></b>	<b>89.69</b>	<b>359.37</b>	<b>786.00</b>	<b>33.35</b>	<b>911.34</b>	<b>107.25</b>

<sup>a</sup> The construction phases within a group could all occur at the same time.

<sup>b</sup> Peak daily emissions are the sum of the maximum daily emissions during construction of the substation, the 500 kV transmission lines, the 115 kV subtransmission lines, the telecommunications facilities, and additional substation construction.

**Table 3**  
**Construction Emissions Summary**  
**Onsite Daily Criteria Pollutant Emissions by Construction Phase**

Phase	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
<b>Substation Site Demolition</b>	1.39	12.73	7.70	0.02	21.85	2.51
<b>Substation Site Water Line Relocation</b>	0.47	5.16	2.68	0.01	39.43	4.05
<b>Substation Construction</b>						
Survey	0.00	0.03	0.00	0.00	12.37	1.24
Grading	3.72	26.92	20.27	0.07	174.50	21.13
Fencing	0.16	2.27	1.13	0.00	34.66	3.48
Civil	1.69	23.53	10.30	0.04	48.67	5.11
Control Building	0.01	0.09	0.09	0.00	32.18	3.22
Electrical	0.87	9.35	6.16	0.02	37.35	3.94
Wiring	0.08	0.61	0.49	0.00	24.75	2.49
Transformers	0.40	4.21	2.08	0.01	46.27	4.70
Maintenance Crew Equipment Check	0.02	0.12	0.12	0.00	33.79	3.38
Testing	0.01	0.05	0.00	0.00	18.55	1.86
Asphalting	1.52	6.44	4.79	0.01	50.12	5.19
Landscaping	0.30	2.81	1.80	0.00	40.86	4.12
<b>500 kV Transmission Line Construction</b>						
Survey	0.00	0.00	0.00	0.00	0.00	0.00
Marshalling Yard	0.43	3.24	1.93	0.01	31.20	3.18
Roads and Landing Work	2.09	16.82	9.96	0.05	9.63	2.33
Install Helicopter Platforms	1.15	15.80	7.68	0.03	1.62	0.51
Tower Removal	0.75	4.54	3.93	0.02	0.16	0.15
Foundation Removal	0.48	5.92	2.51	0.01	0.11	0.10
Tower Foundations Installation	2.01	15.93	6.66	0.06	107.57	10.97
Install Micropile Foundations	1.15	15.80	7.68	0.03	0.24	0.22
Tower Steel Haul	0.18	2.65	0.59	0.01	0.02	0.02
Tower Steel Assembly	0.70	5.79	3.60	0.02	0.14	0.13
Tower Erection	1.07	5.93	5.55	0.02	0.21	0.20
Tower Erection (Helicopter) Ground Support	0.00	0.00	0.00	0.00	0.00	0.00
Tower Helicopter Operations	0.00	0.00	0.00	0.00	0.00	0.00
Wire Stringing	5.93	32.28	29.00	0.15	1.00	0.92
Restoration	0.87	6.75	4.42	0.02	2.77	0.71
<b>115 kV Subtransmission Line Construction</b>						
Survey	0.00	0.00	0.00	0.00	0.00	0.00
Marshalling Yard	0.26	2.53	1.09	0.01	23.13	2.35
Roads and Landing Work	1.60	12.73	7.50	0.04	6.06	1.27
Guard Structure Installation	1.35	8.18	6.39	0.04	0.23	0.22
Remove Existing Wood H-Frames and Poles	0.84	5.86	4.22	0.02	0.17	0.16
Remove Existing Tubular Steel/Light Weight Steel Poles	0.66	3.63	3.35	0.01	0.13	0.12
Install Tubular Steel Pole Foundations	1.11	9.18	4.07	0.03	2.34	0.37
Steel Pole Haul	0.51	2.12	2.39	0.01	0.09	0.08
Steel Pole Assembly	0.66	3.63	3.35	0.01	0.13	0.12
Steel Pole Erection	0.66	3.63	3.35	0.01	0.13	0.12
Wire Stringing	4.34	23.98	22.32	0.13	0.72	0.66
Vault Installation	1.92	12.58	7.81	0.05	1.09	0.43
Duct Bank Installation	0.71	8.86	3.54	0.02	1.53	0.43
Install Underground Cable	2.99	15.06	12.75	0.08	0.44	0.40
Guard Structure Removal	1.27	7.94	6.96	0.03	0.27	0.25
Restoration	0.96	7.93	4.78	0.02	6.64	0.83
<b>Telecommunications Construction</b>						
Tower Foundation	0.53	6.74	3.59	0.01	0.61	0.21
Tower Construction	0.83	4.64	4.38	0.02	0.17	0.15
Dish Installation	0.14	1.81	1.20	0.00	0.05	0.05
Control Building	0.46	2.97	2.93	0.02	0.09	0.08
Overhead Communications Installation	0.46	2.97	2.93	0.02	0.09	0.08
Substation Telecommunications Equipment Installation	0.00	0.00	0.00	0.00	0.00	0.00
Santiago Peak Communication Site	0.35	2.05	1.43	0.01	35.45	3.58
<b>Additional Substation Construction</b>						

**Table 3**  
**Construction Emissions Summary**  
**Onsite Daily Criteria Pollutant Emissions by Construction Phase**

Phase	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
Civil	0.78	9.93	3.94	0.02	10.89	1.20
Electrical	1.15	11.27	7.51	0.02	0.30	0.27
Wiring	0.17	1.92	1.39	0.00	0.06	0.05
Testing	0.00	0.00	0.00	0.00	0.00	0.00
Civil - Demo	0.30	3.79	1.95	0.01	10.92	1.15

**Table 4**  
**Construction Emissions Summary**  
**Total Daily Onsite Criteria Pollutant Emissions for Overlapping Construction Phases**

Group <sup>a</sup>	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
<b>Substation Site Demolition</b>	1.39	12.73	7.70	0.02	21.85	2.51
<b>Substation Site Water Line Relocation</b>	0.47	5.16	2.68	0.01	39.43	4.05
<b>Substation and Telecommunications Construction</b>						
Survey	0.00	0.03	0.00	0.00	12.37	1.24
Grading	3.72	26.92	20.27	0.07	174.50	21.13
Fencing, Control Building, Electrical, Wiring, Transformers, Maintenance Crew Equipment Check, Testing, Asphaltting	3.05	23.14	14.86	0.04	277.65	28.26
Civil	1.69	23.53	10.30	0.04	48.67	5.11
Landscaping	0.30	2.81	1.80	0.00	40.86	4.12
<b>Maximum Substation Construction</b>	<b>3.72</b>	<b>26.92</b>	<b>20.27</b>	<b>0.07</b>	<b>277.65</b>	<b>28.26</b>
<b>Maxim Substation plus Telecommunications</b>	<b>4.55</b>	<b>33.66</b>	<b>24.65</b>	<b>0.09</b>	<b>313.11</b>	<b>31.84</b>
<b>500 kV Transmission Line Construction</b>						
Survey	0.00	0.00	0.00	0.00	0.00	0.00
Marshalling Yard	0.43	3.24	1.93	0.01	31.20	3.18
Roads and Landing Work	2.09	16.82	9.96	0.05	9.63	2.33
Install Helicopter Platforms	1.15	15.80	7.68	0.03	1.62	0.51
Tower Removal	0.75	4.54	3.93	0.02	0.16	0.15
Foundation Removal	0.48	5.92	2.51	0.01	0.11	0.10
Tower Foundations Installation	2.01	15.93	6.66	0.06	107.57	10.97
Install Micropile Foundations	1.15	15.80	7.68	0.03	0.24	0.22
Tower Steel Haul	0.18	2.65	0.59	0.01	0.02	0.02
Tower Steel Assembly	0.70	5.79	3.60	0.02	0.14	0.13
Tower Erection	1.07	5.93	5.55	0.02	0.21	0.20
Tower Erection (Helicopter) Ground Support	0.00	0.00	0.00	0.00	0.00	0.00
Tower Helicopter Operations	0.00	0.00	0.00	0.00	0.00	0.00
Wire Stringing	5.93	32.28	29.00	0.15	1.00	0.92
Restoration	0.87	6.75	4.42	0.02	2.77	0.71
<b>Maximum</b>	<b>5.93</b>	<b>32.28</b>	<b>29.00</b>	<b>0.15</b>	<b>107.57</b>	<b>10.97</b>
<b>115 kV Subtransmission Line Construction</b>						
Survey	0.00	0.00	0.00	0.00	0.00	0.00
Marshalling Yard	0.26	2.53	1.09	0.01	23.13	2.35
Roads and Landing Work	1.60	12.73	7.50	0.04	6.06	1.27
Guard Structure Installation	1.35	8.18	6.39	0.04	0.23	0.22
Remove Existing Wood H-Frames and Poles	0.84	5.86	4.22	0.02	0.17	0.16
Remove Existing Tubular Steel/Light Weight Steel Poles	0.66	3.63	3.35	0.01	0.13	0.12
Install Tubular Steel Pole Foundations	1.11	9.18	4.07	0.03	2.34	0.37
Steel Pole Haul	0.51	2.12	2.39	0.01	0.09	0.08
Steel Pole Assembly	0.66	3.63	3.35	0.01	0.13	0.12
Steel Pole Erection	0.66	3.63	3.35	0.01	0.13	0.12
Wire Stringing	4.34	23.98	22.32	0.13	0.72	0.66
Vault Installation	1.92	12.58	7.81	0.05	1.09	0.43
Duct Bank Installation	0.71	8.86	3.54	0.02	1.53	0.43
Install Underground Cable	2.99	15.06	12.75	0.08	0.44	0.40
Guard Structure Removal	1.27	7.94	6.96	0.03	0.27	0.25
Restoration	0.96	7.93	4.78	0.02	6.64	0.83
<b>Maximum</b>	<b>4.34</b>	<b>23.98</b>	<b>22.32</b>	<b>0.13</b>	<b>23.13</b>	<b>2.35</b>
<b>Telecommunications Construction</b>						
Tower Foundation	0.53	6.74	3.59	0.01	0.61	0.21
Tower Construction	0.83	4.64	4.38	0.02	0.17	0.15
Dish Installation	0.14	1.81	1.20	0.00	0.05	0.05
Control Building	0.46	2.97	2.93	0.02	0.09	0.08
Overhead Communications Installation	0.46	2.97	2.93	0.02	0.09	0.08
Substation Telecommunications Equipment Installation	0.00	0.00	0.00	0.00	0.00	0.00
Santiago Peak Communication Site	0.35	2.05	1.43	0.01	35.45	3.58
<b>Maximum</b>	<b>0.83</b>	<b>6.74</b>	<b>4.38</b>	<b>0.02</b>	<b>35.45</b>	<b>3.58</b>
<b>Additional Substation Construction</b>						



**Table 4**  
**Construction Emissions Summary**  
**Total Daily Onsite Criteria Pollutant Emissions for Overlapping Construction Phases**

<b>Group<sup>a</sup></b>	<b>VOC (lb/day)</b>	<b>CO (lb/day)</b>	<b>NOX (lb/day)</b>	<b>SOX (lb/day)</b>	<b>PM10 (lb/day)</b>	<b>PM2.5 (lb/day)</b>
Civil	0.78	9.93	3.94	0.02	10.89	1.20
Electrical	1.15	11.27	7.51	0.02	0.30	0.27
Wiring	0.17	1.92	1.39	0.00	0.06	0.05
Testing	0.00	0.00	0.00	0.00	0.00	0.00
Civil - Demo	0.30	3.79	1.95	0.01	10.92	1.15
<b>Maximum</b>	<b>1.15</b>	<b>11.27</b>	<b>7.51</b>	<b>0.02</b>	<b>10.92</b>	<b>1.20</b>

<sup>a</sup> The construction phases within a group could all occur at the same time at the same location.

The following 115 kV Subtransmission Line construction activity emissions were divided by the following number of locations:

- Roads and Landing Work: 6 structure pads per day
- Guard Structure Installation: 4 structures per day
- Remove Existing H-Frames and Poles: 15 poles per day
- Remove Existing Tubular Steel/Light Weight Steel Poles: 2 poles per day
- Steel Pole Assembly: 2 poles per day
- Steel Pole Erection: 2 poles per day
- Guard Structure Removal: 6 structures per day
- Restoration: 6 structure pads per day

**Table 5**  
**Construction Emissions**  
**Localized Significance Threshold Analysis**

Pollutant	Maximum Daily Onsite Emissions	Receptor Distance (m)	Allowable Emissions Interpolation <sup>a</sup>				Interpolated Emissions (lb/day) <sup>b</sup>	Allowable Exceeded?
			Distance 1 (m)	Emissions 1 (lb/day)	Distance 2 (m)	Emissions 2 (lb/day)		
<b>Demolition<sup>c,d</sup></b>								
CO	13	270	200	7,535	500	25,792	11,795	No
NOx	8	270	200	672	500	1,072	765	No
PM10	22	420	200	96	500	207	177	No
PM2.5	3	420	200	31	500	105	85	No
<b>Water Line Relocation<sup>c,e</sup></b>								
CO	5	270	200	4,850	500	21,040	8,628	No
NOx	3	270	200	460	500	896	562	No
PM10	39	420	200	67	500	178	148	No
PM2.5	4	420	200	20	500	86	68	No
<b>Substation and Telecommunications Construction<sup>c</sup></b>								
CO	34	270	200	7,535	500	25,792	11,795	No
NOx	25	270	200	672	500	1,072	765	No
PM10	313	420	200	96	500	207	177	Yes
PM2.5	32	420	200	31	500	105	85	No
<b>500 kV Transmission Line Construction<sup>f</sup></b>								
CO	32	93	50	974	100	1,918	1,786	No
NOx	29	93	50	203	100	292	280	No
PM10	108	93	50	12	100	30	27	Yes
PM2.5	11	93	50	4	100	8	7	Yes
<b>115 kV Subtransmission Line Construction<sup>g</sup></b>								
CO	24	25	25	661	25	661	661	No
NOx	22	25	25	162	25	162	162	No
PM10	23	25	25	13	25	13	13	Yes
PM2.5	2	25	25	3	25	3	3	No

<sup>a</sup> Allowable emissions are from Appendix C to Final Localized Significance Methodology, SCAQMD, revised July 2008, downloaded from <http://www.aqmd.gov/ceqa/handbook/LST/LST.html>

<sup>b</sup> Interpolated emissions = Emissions 1 + (Receptor distance - Distance 1) x (Emissions 2 - Emissions 1) / (Distance 2 - Distance 1)

<sup>c</sup> CO and NOx receptor distances are closest commercial receptor; PM10 and PM2.5 are closest residential receptor. Allowable emissions are for a 5 acre site.

<sup>d</sup> Allowable emissions are for a 5 acre site.

<sup>e</sup> Allowable emissions are for a 1 acre site.

<sup>f</sup> Closest receptor to a transmission tower base is a residence at approximately 93 meters. Allowable emissions are for a 1 acre site.

<sup>g</sup> Allowable emissions for CO, NOx and PM2.5 are for a 1-acre site to represent construction at a pole location.

Maximum PM10 emissions occur at the marshalling yard, so allowable emissions are for a 5-acre site

**Table 6**  
**Construction Emissions Summary**  
**Total Greenhouse Gas Emissions by Construction Phase**

Phase	CO <sub>2</sub> e (MT)
<b>Substation Site Demolition</b>	283.31
<b>Substation Site Water Line Relocation</b>	11.84
<b>Substation Construction</b>	
Survey	1.89
Grading	561.85
Fencing	7.31
Civil	375.00
Control Building	4.02
Electrical	346.90
Wiring	71.94
Transformers	57.20
Maintenance Crew Equipment Check	8.83
Testing	25.71
Asphalting	66.81
Landscaping	144.94
<b>500 kV Transmission Line Construction</b>	
Survey	0.52
Marshalling Yard	87.79
Roads and Landing Work	53.15
Install Helicopter Platforms	32.89
Tower Removal	4.03
Foundation Removal	1.46
Tower Foundations Installation	63.63
Install Micropile Foundations	122.15
Tower Steel Haul	3.76
Tower Steel Assembly	38.82
Tower Erection	32.96
Tower Erection (Helicopter) Ground Support	6.40
Tower Helicopter Operations	1,626.43
Wire Stringing	18.53
Restoration	4.27
<b>115 kV Subtransmission Line Construction</b>	
Survey	2.54
Marshalling Yard	145.31
Roads and Landing Work	128.76
Guard Structure Installation	52.96
Remove Existing Wood H-Frames and Poles	24.84
Remove Existing Tubular Steel/Light Weight Steel Poles	4.98
Install Tubular Steel Pole Foundations	159.88
Steel Pole Haul	95.64
Steel Pole Assembly	254.01
Steel Pole Erection	254.01
Wire Stringing	541.72
Vault Installation	15.31
Duct Bank Installation	17.61
Install Underground Cable	94.21
Guard Structure Removal	29.04
Restoration	22.66
<b>Telecommunications Construction</b>	
Tower Foundation	3.69

**Table 6**  
**Construction Emissions Summary**  
**Total Greenhouse Gas Emissions by Construction Phase**

<b>Phase</b>	<b>CO<sub>2</sub>e (MT)</b>
Tower Construction	29.76
Dish Installation	2.99
Control Building	21.81
Overhead Communications Installation	28.92
Substation Telecommunications Equipment Installation	0.91
Santiago Peak Communication Site	18.85
<b>Additional Substation Construction</b>	
Civil	11.89
Electrical	24.70
Wiring	12.80
Testing	2.43
Civil - Demo	6.67
<b>Total</b>	<b>6,073.23</b>

**Table 7  
Substation Site Demolition Emissions**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.39	12.69	7.61	0.02	0.39	0.36	47.9
Onsite Motor Vehicle Exhaust	0.01	0.04	0.09	0.00	0.00	0.00	1.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	21.45	2.14	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>1.39</b>	<b>12.73</b>	<b>7.70</b>	<b>0.02</b>	<b>21.85</b>	<b>2.51</b>	<b>48.9</b>
Offsite Motor Vehicle Exhaust	2.03	11.17	22.45	0.10	1.19	0.89	234.4
Offsite Motor Vehicle Fugitive PM	--	--	--	--	2.11	0.00	
<b>Offsite Total</b>	<b>2.03</b>	<b>11.17</b>	<b>22.45</b>	<b>0.10</b>	<b>3.30</b>	<b>0.89</b>	<b>234.4</b>
<b>Total</b>	<b>3.42</b>	<b>23.90</b>	<b>30.16</b>	<b>0.12</b>	<b>25.15</b>	<b>3.40</b>	<b>283.3</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Track Loader	148	2	50	8
Bobcat	75	1	50	4

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Track Loader	148	0.082	0.727	0.445	0.001	0.024	0.022	121.188	0.007	Crawler Tractors
Bobcat	75	0.017	0.267	0.124	0.001	0.002	0.002	42.762	0.002	Skid Steer Loaders

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction=

0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Track Loader	1.32	11.62	7.11	0.02	0.39	0.35
Bobcat	0.07	1.07	0.50	0.00	0.01	0.01
<b>Total</b>	<b>1.39</b>	<b>12.69</b>	<b>7.61</b>	<b>0.02</b>	<b>0.39</b>	<b>0.36</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Track Loader	44.0	0.0	44.0
Bobcat	3.9	0.0	3.9
<b>Total</b>	<b>47.9</b>	<b>0.0</b>	<b>47.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number <sup>b</sup>	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Water Truck	1	50	4	10
<b>Offsite</b>				
Dump Truck	40	50	N/A	60
Worker Commute	4	50	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

<sup>b</sup> Dump trucks based on 20,000 CY hauled offsite over 50 days and 10 CY/truck = 20,000 / 50 / 10 = 40

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
<b>Offsite</b>									
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 7  
Substation Site Demolition Emissions**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Water Truck	0.01	0.04	0.09	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.01</b>	<b>0.04</b>	<b>0.09</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Dump Truck	1.92	10.35	22.38	0.10	1.16	0.87
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>2.03</b>	<b>11.17</b>	<b>22.45</b>	<b>0.10</b>	<b>1.19</b>	<b>0.89</b>
<b>Total</b>	<b>2.04</b>	<b>11.21</b>	<b>22.54</b>	<b>0.10</b>	<b>1.19</b>	<b>0.89</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Water Truck	1.0	0.0	1.0
<b>Onsite Total</b>	<b>1.0</b>	<b>0.0</b>	<b>1.0</b>
<b>Offsite</b>			
Dump Truck	228.3	0.0	228.4
Worker Commute	6.0	0.0	6.1
<b>Offsite Total</b>	<b>234.4</b>	<b>0.0</b>	<b>234.4</b>
<b>Total</b>	<b>235.3</b>	<b>0.0</b>	<b>235.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Water Truck	1	Unpaved	10	2.145	0.214	21.45	2.14
<b>Onsite Total</b>						<b>21.45</b>	<b>2.14</b>
<b>Offsite</b>							
Dump Truck	40	Paved	60	0.001	0.000	1.92	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>2.11</b>	<b>0.00</b>
<b>Total</b>						<b>23.56</b>	<b>2.14</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion <sup>d</sup>	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 8**  
**Substation Site Water Line Relocation Emissions**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.46	5.08	2.56	0.01	0.10	0.10	7.4
Onsite Motor Vehicle Exhaust	0.01	0.09	0.12	0.00	0.01	0.01	0.2
Onsite Motor Vehicle Fugitive PM	--	--	--	--	39.18	3.92	
Earthwork Fugitive PM	--	--	--	--	0.15	0.03	
<b>Onsite Total</b>	<b>0.47</b>	<b>5.16</b>	<b>2.68</b>	<b>0.01</b>	<b>39.43</b>	<b>4.05</b>	<b>7.6</b>
Offsite Motor Vehicle Exhaust	0.18	1.44	0.12	0.00	0.04	0.03	4.2
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.34	0.00	
<b>Offsite Total</b>	<b>0.18</b>	<b>1.44</b>	<b>0.12</b>	<b>0.00</b>	<b>0.38</b>	<b>0.03</b>	<b>4.2</b>
<b>Total</b>	<b>0.65</b>	<b>6.60</b>	<b>2.80</b>	<b>0.01</b>	<b>39.81</b>	<b>4.08</b>	<b>11.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Backhoe	79	1	20	8
Crane	125	1	20	5

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Backhoe	79	0.028	0.338	0.176	0.001	0.006	0.005	51.728	0.003	Tractors/Loaders/Backhoes
Crane	125	0.046	0.474	0.230	0.001	0.012	0.011	80.345	0.004	Cranes

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction=

0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Backhoe	0.22	2.70	1.41	0.00	0.04	0.04
Crane	0.23	2.37	1.15	0.00	0.06	0.06
<b>Total</b>	<b>0.46</b>	<b>5.08</b>	<b>2.56</b>	<b>0.01</b>	<b>0.10</b>	<b>0.10</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Backhoe	3.8	0.0	3.8
Crane	3.6	0.0	3.6
<b>Total</b>	<b>7.4</b>	<b>0.0</b>	<b>7.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number <sup>b</sup>	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Flatbed Truck	1	20	1	2.5
Stakebed Truck	2	20	2	5
Crew Vehicle	2	20	2	5
<b>Offsite</b>				
Worker Commute	7	20	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Flatbed Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Stakebed Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Crew Vehicle	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Highest (Most Conservative) EMFAC2007 (version 2.3) or Highest (Most Conservative) EMFAC2007 (version 2.3)

**Table 8**  
**Substation Site Water Line Relocation Emissions**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Flatbed Truck	0.00	0.01	0.02	0.00	0.00	0.00
Stakebed Truck	0.01	0.04	0.09	0.00	0.00	0.00
Crew Vehicle	0.00	0.03	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.01</b>	<b>0.09</b>	<b>0.12</b>	<b>0.00</b>	<b>0.01</b>	<b>0.01</b>
<b>Offsite</b>						
Worker Commute	0.18	1.44	0.12	0.00	0.04	0.03
<b>Offsite Total</b>	<b>0.18</b>	<b>1.44</b>	<b>0.12</b>	<b>0.00</b>	<b>0.04</b>	<b>0.03</b>
<b>Total</b>	<b>0.20</b>	<b>1.53</b>	<b>0.24</b>	<b>0.01</b>	<b>0.05</b>	<b>0.03</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Flatbed Truck	0.1	0.0	0.1
Crew Vehicle	0.1	0.0	0.1
<b>Onsite Total</b>	<b>0.2</b>	<b>0.0</b>	<b>0.2</b>
<b>Offsite</b>			
Worker Commute	4.2	0.0	4.2
<b>Offsite Total</b>	<b>4.2</b>	<b>0.0</b>	<b>4.2</b>
<b>Total</b>	<b>4.4</b>	<b>0.0</b>	<b>4.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Flatbed Truck	1	Unpaved	2.5	2.145	0.214	5.36	0.54
Stakebed Truck	2	Unpaved	5	2.145	0.214	21.45	2.14
Crew Vehicle	2	Unpaved	5	1.237	0.124	12.37	1.24
<b>Onsite Total</b>						<b>39.18</b>	<b>3.92</b>
<b>Offsite</b>							
Worker Commute	7	Paved	60	0.001	0.000	0.34	0.00
<b>Offsite Total</b>						<b>0.34</b>	<b>0.00</b>
<b>Total</b>						<b>39.51</b>	<b>3.92</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	147	9.94E-04	2.07E-04	0.15	0.03
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.15</b>	<b>0.03</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Based on trench 4 ft. wide x 6 ft. deep x 1,700 ft. long over 20 days x 2 = 4 ft. x 6 ft. x 1,770 ft. / 27 cu. ft. per CY / 20 days = 151 CY/day 7



**Table 9  
Substation Construction Emissions  
Survey**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.00	0.03	0.00	0.00	0.00	0.00	0.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	12.37	1.24	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.00</b>	<b>0.03</b>	<b>0.00</b>	<b>0.00</b>	<b>12.37</b>	<b>1.24</b>	<b>0.1</b>
Offsite Motor Vehicle Exhaust	0.10	0.82	0.07	0.00	0.02	0.02	1.8
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.19	0.00	
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.22</b>	<b>0.02</b>	<b>1.8</b>
<b>Total</b>	<b>0.11</b>	<b>0.86</b>	<b>0.07</b>	<b>0.00</b>	<b>12.58</b>	<b>1.25</b>	<b>1.9</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
None				

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
None		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
None	0.0	0.0	0.0
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Crew Vehicle	2	15	2	5
<b>Offsite</b>				
Worker Commute	4	15	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Crew Vehicle	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 9**  
**Substation Construction Emissions**  
**Survey**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Crew Vehicle	0.00	0.03	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.03</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>
<b>Total</b>	<b>0.11</b>	<b>0.86</b>	<b>0.07</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Crew Vehicle	0.1	0.0	0.1
<b>Onsite Total</b>	<b>0.1</b>	<b>0.0</b>	<b>0.1</b>
<b>Offsite</b>			
Worker Commute	1.8	0.0	1.8
<b>Offsite Total</b>	<b>1.8</b>	<b>0.0</b>	<b>1.8</b>
<b>Total</b>	<b>1.9</b>	<b>0.0</b>	<b>1.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Crew Vehicle	2	Unpaved	5	1.237	0.124	12.37	1.24
<b>Onsite Total</b>						<b>12.37</b>	<b>1.24</b>
<b>Offsite</b>							
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.19</b>	<b>0.00</b>
<b>Total</b>						<b>12.56</b>	<b>1.24</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 10**  
**Substation Construction Emissions**  
**Grading**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	3.67	26.54	20.08	0.07	0.79	0.73	188.2
Onsite Motor Vehicle Exhaust	0.05	0.38	0.19	0.00	0.02	0.01	4.6
Onsite Motor Vehicle Fugitive PM	--	--	--	--	145.73	14.57	
Earthwork Fugitive PM	--	--	--	--	27.96	5.82	
<b>Onsite Total</b>	<b>3.72</b>	<b>26.92</b>	<b>20.27</b>	<b>0.07</b>	<b>174.50</b>	<b>21.13</b>	<b>192.9</b>
Offsite Motor Vehicle Exhaust	2.73	15.30	28.82	0.13	1.55	1.15	369.0
Offsite Motor Vehicle Fugitive PM	--	--	--	--	2.94	0.00	
<b>Offsite Total</b>	<b>2.73</b>	<b>15.30</b>	<b>28.82</b>	<b>0.13</b>	<b>4.49</b>	<b>1.15</b>	<b>369.0</b>
<b>Total</b>	<b>6.44</b>	<b>42.22</b>	<b>49.09</b>	<b>0.20</b>	<b>178.99</b>	<b>22.28</b>	<b>561.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Dozer	305	1	60	7
Loader	147	2	60	4
Scraper	267	1	60	7
Grader	110	1	60	7
4x4 Backhoe	79	2	60	7
4x4 Tamper	174	1	60	7

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Dozer	305	0.139	0.588	0.753	0.003	0.028	0.026	259.229	0.013	Crawler Tractors
Loader	147	0.055	0.620	0.259	0.001	0.013	0.012	106.315	0.005	Rubber Tired Loaders
Scraper	267	0.176	0.733	0.973	0.003	0.036	0.034	321.428	0.016	Scrapers
Grader	110	0.052	0.501	0.322	0.001	0.015	0.014	74.965	0.005	Graders
4x4 Backhoe	79	0.028	0.338	0.176	0.001	0.006	0.005	51.728	0.003	Tractors/Loaders/Backhoes
4x4 Tamper	174	0.038	0.586	0.173	0.001	0.007	0.007	106.516	0.003	Other Construction Equipment

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5  
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Dozer	0.97	4.11	5.27	0.02	0.20	0.18
Loader	0.44	4.96	2.07	0.01	0.10	0.10
Scraper	1.23	5.13	6.81	0.02	0.26	0.23
Grader	0.36	3.51	2.25	0.01	0.11	0.10
4x4 Backhoe	0.39	4.73	2.47	0.01	0.08	0.07
4x4 Tamper	0.27	4.10	1.21	0.01	0.05	0.05
<b>Total</b>	<b>3.67</b>	<b>26.54</b>	<b>20.08</b>	<b>0.07</b>	<b>0.79</b>	<b>0.73</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Dozer	49.4	0.0	49.4
Loader	23.1	0.0	23.2
Scraper	61.2	0.0	61.3
Grader	14.3	0.0	14.3
4x4 Backhoe	19.7	0.0	19.7
4x4 Tamper	20.3	0.0	20.3
<b>Total</b>	<b>188.1</b>	<b>0.0</b>	<b>188.2</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Table 10**  
**Substation Construction Emissions**  
**Grading**

**Motor Vehicle Usage**

Vehicle	Number <sup>b</sup>	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Water Truck	1	60	7	17.5
Crew Vehicle	5	60	7	17.5
<b>Offsite</b>				
Dump Truck	96	60	N/A	32
Worker Commute	10	60	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

<sup>b</sup> Dump trucks based on 8,000 CY hauled offsite over 60 days and 10 CY/truck = 8,000 / 60 / 10 = 13.3

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Crew Vehicle	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Water Truck	0.01	0.08	0.16	0.00	0.01	0.01
Crew Vehicle	0.04	0.30	0.03	0.00	0.01	0.01
<b>Onsite Total</b>	<b>0.05</b>	<b>0.38</b>	<b>0.19</b>	<b>0.00</b>	<b>0.02</b>	<b>0.01</b>
<b>Offsite</b>						
Dump Truck	2.46	13.24	28.65	0.12	1.49	1.12
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
<b>Offsite Total</b>	<b>2.73</b>	<b>15.30</b>	<b>28.82</b>	<b>0.13</b>	<b>1.55</b>	<b>1.15</b>
<b>Total</b>	<b>2.78</b>	<b>15.67</b>	<b>29.01</b>	<b>0.13</b>	<b>1.57</b>	<b>1.17</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Water Truck	2.0	0.0	2.0
Crew Vehicle	2.6	0.0	2.6
<b>Onsite Total</b>	<b>4.6</b>	<b>0.0</b>	<b>4.6</b>
<b>Offsite</b>			
Dump Truck	350.7	0.0	350.8
Worker Commute	18.1	0.0	18.2
<b>Offsite Total</b>	<b>368.9</b>	<b>0.0</b>	<b>369.0</b>
<b>Total</b>	<b>373.5</b>	<b>0.0</b>	<b>373.6</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Water Truck	1	Unpaved	17.5	2.145	0.214	37.53	3.75
Crew Vehicle	5	Unpaved	17.5	1.237	0.124	108.20	10.82
<b>Onsite Total</b>						<b>145.73</b>	<b>14.57</b>
<b>Offsite</b>							
Dump Truck	96	Paved	32	0.001	0.000	2.46	0.00
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
<b>Offsite Total</b>						<b>2.94</b>	<b>0.00</b>
<b>Total</b>						<b>148.67</b>	<b>14.57</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Table 10**  
**Substation Construction Emissions**  
**Grading**

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	3,078	9.94E-04	2.07E-04	3.06	0.64
Bulldozing, Scraping and Grading	hr/day	21	0.348	0.072	7.30	1.52
Storage Pile Wind Erosion <sup>d</sup>	acres	0.4	44.0	9.15	17.60	3.66
<b>Total</b>					<b>27.96</b>	<b>5.82</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Peak daily estimated from total of 184,700 CY over 60 days

<sup>d</sup> Based on 1,000 CY in each of two cones 9 ft. tall x 100 ft. diameter

**Table 11  
Substation Construction Emissions  
Fencing**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.14	2.13	0.99	0.00	0.02	0.02	2.3
Onsite Motor Vehicle Exhaust	0.02	0.13	0.14	0.00	0.01	0.00	0.4
Onsite Motor Vehicle Fugitive PM	--	--	--	--	34.63	3.46	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.16</b>	<b>2.27</b>	<b>1.13</b>	<b>0.00</b>	<b>34.66</b>	<b>3.48</b>	<b>2.8</b>
Offsite Motor Vehicle Exhaust	0.26	2.06	0.17	0.01	0.06	0.04	4.5
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.48	0.00	
<b>Offsite Total</b>	<b>0.26</b>	<b>2.06</b>	<b>0.17</b>	<b>0.01</b>	<b>0.54</b>	<b>0.04</b>	<b>4.5</b>
<b>Total</b>	<b>0.42</b>	<b>4.32</b>	<b>1.30</b>	<b>0.01</b>	<b>35.20</b>	<b>3.52</b>	<b>7.3</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Bobcat	75	1	15	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Bobcat	75	0.017	0.267	0.124	0.001	0.002	0.002	42.762	0.002	Skid Steer Loaders

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Bobcat	0.14	2.13	0.99	0.00	0.02	0.02
<b>Total</b>	<b>0.14</b>	<b>2.13</b>	<b>0.99</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Bobcat	2.3	0.0	2.3
<b>Total</b>	<b>2.3</b>	<b>0.0</b>	<b>2.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Flatbed Truck	1	15	3	7.5
Crewcab Truck	3	15	2	5
<b>Offsite</b>				
Worker Commute	10	15	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Flatbed Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Crewcab Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 11**  
**Substation Construction Emissions**  
**Fencing**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Flatbed Truck	0.01	0.04	0.05	0.00	0.00	0.00
Crewcab Truck	0.01	0.09	0.09	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.02</b>	<b>0.13</b>	<b>0.14</b>	<b>0.00</b>	<b>0.01</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
<b>Offsite Total</b>	<b>0.26</b>	<b>2.06</b>	<b>0.17</b>	<b>0.01</b>	<b>0.06</b>	<b>0.04</b>
<b>Total</b>	<b>0.28</b>	<b>2.19</b>	<b>0.31</b>	<b>0.01</b>	<b>0.06</b>	<b>0.04</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Flatbed Truck	0.1	0.0	0.1
Crewcab Truck	0.3	0.0	0.3
<b>Onsite Total</b>	<b>0.4</b>	<b>0.0</b>	<b>0.4</b>
<b>Offsite</b>			
Worker Commute	4.5	0.0	4.5
<b>Offsite Total</b>	<b>4.5</b>	<b>0.0</b>	<b>4.5</b>
<b>Total</b>	<b>5.0</b>	<b>0.0</b>	<b>5.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Flatbed Truck	1	Unpaved	7.5	2.145	0.214	16.09	1.61
Crewcab Truck	3	Unpaved	5	1.237	0.124	18.55	1.85
<b>Onsite Total</b>						<b>34.63</b>	<b>3.46</b>
<b>Offsite</b>							
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
<b>Offsite Total</b>						<b>0.48</b>	<b>0.00</b>
<b>Total</b>						<b>35.11</b>	<b>3.46</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 12**  
**Substation Construction Emissions**  
**Civil**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.68	23.43	10.09	0.04	0.26	0.24	155.6
Onsite Motor Vehicle Exhaust	0.02	0.10	0.21	0.00	0.01	0.01	3.9
Onsite Motor Vehicle Fugitive PM	--	--	--	--	48.26	4.83	
Earthwork Fugitive PM	--	--	--	--	0.14	0.03	
<b>Onsite Total</b>	<b>1.69</b>	<b>23.53</b>	<b>10.30</b>	<b>0.04</b>	<b>48.67</b>	<b>5.11</b>	<b>159.4</b>
Offsite Motor Vehicle Exhaust	1.21	7.48	9.77	0.05	0.58	0.43	215.6
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.72	0.00	
<b>Offsite Total</b>	<b>1.21</b>	<b>7.48</b>	<b>9.77</b>	<b>0.05</b>	<b>1.30</b>	<b>0.43</b>	<b>215.6</b>
<b>Total</b>	<b>2.90</b>	<b>31.01</b>	<b>20.07</b>	<b>0.10</b>	<b>49.97</b>	<b>5.53</b>	<b>375.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Excavator	152	2	90	4
Foundation Auger	79	2	90	7
Backhoe	79	3	90	6
Skip Loader	75	2	90	3
Bobcat Skid Steer	75	2	90	4
Forklift	83	1	90	4
17-Ton Crane	125	1	90	2

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Excavator	152	0.052	0.664	0.198	0.001	0.009	0.008	112.222	0.005	Excavators
Foundation Auger	79	0.025	0.466	0.195	0.001	0.002	0.002	77.122	0.002	Bore/Drill Rigs
Backhoe	79	0.028	0.338	0.176	0.001	0.006	0.005	51.728	0.003	Tractors/Loaders/Backhoes
Skip Loader	75	0.017	0.267	0.124	0.001	0.002	0.002	42.762	0.002	Skid Steer Loaders
Bobcat Skid Steer	75	0.017	0.267	0.124	0.001	0.002	0.002	42.762	0.002	Skid Steer Loaders
Forklift	83	0.017	0.209	0.100	0.000	0.002	0.002	31.225	0.002	Forklifts
17-Ton Crane	125	0.046	0.474	0.230	0.001	0.012	0.011	80.345	0.004	Cranes

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5  
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,  
[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Excavator	0.41	5.31	1.59	0.01	0.07	0.07
Foundation Auger	0.35	6.52	2.74	0.01	0.03	0.03
Backhoe	0.51	6.08	3.17	0.01	0.10	0.09
Skip Loader	0.10	1.60	0.74	0.00	0.01	0.01
Bobcat Skid Steer	0.14	2.13	0.99	0.00	0.02	0.02
Forklift	0.07	0.83	0.40	0.00	0.01	0.01
17-Ton Crane	0.09	0.95	0.46	0.00	0.02	0.02
<b>Total</b>	<b>1.68</b>	<b>23.43</b>	<b>10.09</b>	<b>0.04</b>	<b>0.26</b>	<b>0.24</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Excavator	36.7	0.0	36.7
Foundation Auger	44.1	0.0	44.1
Backhoe	38.0	0.0	38.1
Skip Loader	10.5	0.0	10.5
Bobcat Skid Steer	26.2	0.0	26.3
Forklift	0.0	0.0	0.0
17-Ton Crane	0.0	0.0	0.0
<b>Total</b>	<b>155.5</b>	<b>0.0</b>	<b>155.6</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)



**Table 12**  
**Substation Construction Emissions**  
**Civil**

**Motor Vehicle Usage**

Vehicle	Number <sup>b</sup>	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Dump Truck	2	90	2	5
Water Truck	1	90	5	12.5
<b>Offsite</b>				
Concrete Truck	17	90	N/A	60
Worker Commute	15	90	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

<sup>b</sup> Concrete trucks based on 15,000 CY over 90 days and 10 CY/truck = 15,000 / 90 / 10 = 16.6

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
<b>Offsite</b>									
Concrete Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Dump Truck	0.01	0.04	0.09	0.00	0.00	0.00
Water Truck	0.01	0.05	0.12	0.00	0.01	0.00
<b>Onsite Total</b>	<b>0.02</b>	<b>0.10</b>	<b>0.21</b>	<b>0.00</b>	<b>0.01</b>	<b>0.01</b>
<b>Offsite</b>						
Concrete Truck	0.82	4.40	9.51	0.04	0.50	0.37
Worker Commute	0.39	3.08	0.26	0.01	0.09	0.06
<b>Offsite Total</b>	<b>1.21</b>	<b>7.48</b>	<b>9.77</b>	<b>0.05</b>	<b>0.58</b>	<b>0.43</b>
<b>Total</b>	<b>1.23</b>	<b>7.58</b>	<b>9.98</b>	<b>0.05</b>	<b>0.59</b>	<b>0.44</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Dump Truck	1.7	0.0	1.7
Water Truck	2.1	0.0	2.1
<b>Onsite Total</b>	<b>3.9</b>	<b>0.0</b>	<b>3.9</b>
<b>Offsite</b>			
Concrete Truck	174.7	0.0	174.7
Worker Commute	40.8	0.0	40.8
<b>Offsite Total</b>	<b>215.5</b>	<b>0.0</b>	<b>215.6</b>
<b>Total</b>	<b>219.4</b>	<b>0.0</b>	<b>219.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Dump Truck	2	Unpaved	5	2.145	0.214	21.45	2.14
Water Truck	1	Unpaved	12.5	2.145	0.214	26.81	2.68
<b>Onsite Total</b>						<b>48.26</b>	<b>4.83</b>
<b>Offsite</b>							
Concrete Truck	17	Paved	60	0.001	0.000	0.82	0.00
Worker Commute	15	Paved	60	0.001	0.000	0.72	0.00
<b>Offsite Total</b>						<b>0.72</b>	<b>0.00</b>
<b>Total</b>						<b>48.98</b>	<b>4.83</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Table 12**  
**Substation Construction Emissions**  
**Civil**

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	140	9.94E-04	2.07E-04	0.14	0.03
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.14</b>	<b>0.03</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Peak daily estimated from total of 12,000 CY over 90 days

**Table 13  
Substation Construction Emissions  
Control Building**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.01	0.09	0.09	0.00	0.00	0.00	0.4
Onsite Motor Vehicle Fugitive PM	--	--	--	--	32.17	3.22	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.01</b>	<b>0.09</b>	<b>0.09</b>	<b>0.00</b>	<b>32.18</b>	<b>3.22</b>	<b>0.4</b>
Offsite Motor Vehicle Exhaust	0.16	1.23	0.10	0.00	0.03	0.02	3.6
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.29	0.00	
<b>Offsite Total</b>	<b>0.16</b>	<b>1.23</b>	<b>0.10</b>	<b>0.00</b>	<b>0.32</b>	<b>0.02</b>	<b>3.6</b>
<b>Total</b>	<b>0.17</b>	<b>1.32</b>	<b>0.20</b>	<b>0.00</b>	<b>32.50</b>	<b>3.24</b>	<b>4.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
None				

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
None		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
None	0.0	0.0	0.0
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Carry-all Truck	2	20	2	5
Stake Truck	1	20	2	5
<b>Offsite</b>				
Worker Commute	6	20	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Carry-all Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Stake Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 13**  
**Substation Construction Emissions**  
**Control Building**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Carry-all Truck	0.01	0.06	0.06	0.00	0.00	0.00
Stake Truck	0.00	0.03	0.03	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.01</b>	<b>0.09</b>	<b>0.09</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.16	1.23	0.10	0.00	0.03	0.02
<b>Offsite Total</b>	<b>0.16</b>	<b>1.23</b>	<b>0.10</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>
<b>Total</b>	<b>0.17</b>	<b>1.32</b>	<b>0.20</b>	<b>0.00</b>	<b>0.04</b>	<b>0.03</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Carry-all Truck	0.3	0.0	0.3
Stake Truck	0.1	0.0	0.1
<b>Onsite Total</b>	<b>0.4</b>	<b>0.0</b>	<b>0.4</b>
<b>Offsite</b>			
Worker Commute	3.6	0.0	3.6
<b>Offsite Total</b>	<b>3.6</b>	<b>0.0</b>	<b>3.6</b>
<b>Total</b>	<b>4.0</b>	<b>0.0</b>	<b>4.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Carry-all Truck	2	Unpaved	5	2.145	0.214	21.45	2.14
Stake Truck	1	Unpaved	5	2.145	0.214	10.72	1.07
<b>Onsite Total</b>						<b>32.17</b>	<b>3.22</b>
<b>Offsite</b>							
Worker Commute	6	Paved	60	0.001	0.000	0.29	0.00
<b>Offsite Total</b>						<b>0.29</b>	<b>0.00</b>
<b>Total</b>						<b>32.46</b>	<b>3.22</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 14**  
**Substation Construction Emissions**  
**Electrical**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.85	9.25	6.15	0.02	0.25	0.23	206.2
Onsite Motor Vehicle Exhaust	0.01	0.10	0.01	0.00	0.00	0.00	4.5
Onsite Motor Vehicle Fugitive PM	--	--	--	--	37.10	3.71	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.87</b>	<b>9.35</b>	<b>6.16</b>	<b>0.02</b>	<b>37.35</b>	<b>3.94</b>	<b>210.8</b>
Offsite Motor Vehicle Exhaust	0.39	3.08	0.26	0.01	0.09	0.06	136.1
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.72	0.00	
<b>Offsite Total</b>	<b>0.39</b>	<b>3.08</b>	<b>0.26</b>	<b>0.01</b>	<b>0.81</b>	<b>0.06</b>	<b>136.1</b>
<b>Total</b>	<b>1.26</b>	<b>12.43</b>	<b>6.41</b>	<b>0.03</b>	<b>38.15</b>	<b>4.00</b>	<b>346.9</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Scissor Lift	87	2	300	5
Manlift	43	2	300	7
Reach Manlift	87	2	300	6
15-Ton Crane	125	1	300	5

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Scissor Lift	87	0.018	0.226	0.150	0.000	0.006	0.006	38.072	0.002	Aerial Lifts
Manlift	43	0.017	0.135	0.122	0.000	0.003	0.003	19.613	0.002	Aerial Lifts
Reach Manlift	87	0.018	0.226	0.150	0.000	0.006	0.006	38.072	0.002	Aerial Lifts
15-Ton Crane	125	0.046	0.474	0.230	0.001	0.012	0.011	80.345	0.004	Cranes

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Scissor Lift	0.18	2.26	1.50	0.00	0.06	0.06
Manlift	0.23	1.89	1.71	0.00	0.05	0.04
Reach Manlift	0.21	2.72	1.79	0.01	0.08	0.07
15-Ton Crane	0.23	2.37	1.15	0.00	0.06	0.06
<b>Total</b>	<b>0.85</b>	<b>9.25</b>	<b>6.15</b>	<b>0.02</b>	<b>0.25</b>	<b>0.23</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Scissor Lift	51.8	0.0	51.9
Manlift	37.4	0.0	37.4
Reach Manlift	62.2	0.0	62.2
15-Ton Crane	54.7	0.0	54.7
<b>Total</b>	<b>206.0</b>	<b>0.0</b>	<b>206.2</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Crew Truck	6	300	2	5
<b>Offsite</b>				
Worker Commute	15	300	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 14**  
**Substation Construction Emissions**  
**Electrical**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Crew Truck	0.01	0.10	0.01	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.01</b>	<b>0.10</b>	<b>0.01</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.39	3.08	0.26	0.01	0.09	0.06
<b>Offsite Total</b>	<b>0.39</b>	<b>3.08</b>	<b>0.26</b>	<b>0.01</b>	<b>0.09</b>	<b>0.06</b>
<b>Total</b>	<b>0.40</b>	<b>3.19</b>	<b>0.27</b>	<b>0.01</b>	<b>0.09</b>	<b>0.06</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Crew Truck	4.5	0.0	4.5
<b>Onsite Total</b>	<b>4.5</b>	<b>0.0</b>	<b>4.5</b>
<b>Offsite</b>			
Worker Commute	136.0	0.0	136.1
<b>Offsite Total</b>	<b>136.0</b>	<b>0.0</b>	<b>136.1</b>
<b>Total</b>	<b>140.6</b>	<b>0.0</b>	<b>140.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Crew Truck	6	Unpaved	5	1.237	0.124	37.10	3.71
<b>Onsite Total</b>						<b>37.10</b>	<b>3.71</b>
<b>Offsite</b>							
Worker Commute	15	Paved	60	0.001	0.000	0.72	0.00
<b>Offsite Total</b>						<b>0.72</b>	<b>0.00</b>
<b>Total</b>						<b>37.82</b>	<b>3.71</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 15  
Substation Construction Emissions  
Wiring**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.07	0.54	0.49	0.00	0.01	0.01	8.9
Onsite Motor Vehicle Exhaust	0.01	0.07	0.01	0.00	0.00	0.00	2.5
Onsite Motor Vehicle Fugitive PM	--	--	--	--	24.73	2.47	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.08</b>	<b>0.61</b>	<b>0.49</b>	<b>0.00</b>	<b>24.75</b>	<b>2.49</b>	<b>11.4</b>
Offsite Motor Vehicle Exhaust	0.21	1.65	0.14	0.01	0.05	0.03	60.5
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.38	0.00	
<b>Offsite Total</b>	<b>0.21</b>	<b>1.65</b>	<b>0.14</b>	<b>0.01</b>	<b>0.43</b>	<b>0.03</b>	<b>60.5</b>
<b>Total</b>	<b>0.28</b>	<b>2.25</b>	<b>0.63</b>	<b>0.01</b>	<b>25.18</b>	<b>2.52</b>	<b>71.9</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Manlift	43	1	250	4

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Manlift	43	0.017	0.135	0.122	0.000	0.003	0.003	19.613	0.002	Aerial Lifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Manlift	0.07	0.54	0.49	0.00	0.01	0.01
<b>Total</b>	<b>0.07</b>	<b>0.54</b>	<b>0.49</b>	<b>0.00</b>	<b>0.01</b>	<b>0.01</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Manlift	8.9	0.0	8.9
<b>Total</b>	<b>8.9</b>	<b>0.0</b>	<b>8.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Crew Truck	4	250	2	5
<b>Offsite</b>				
Worker Commute	8	250	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 15**  
**Substation Construction Emissions**  
**Wiring**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Crew Truck	0.01	0.07	0.01	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.01</b>	<b>0.07</b>	<b>0.01</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.21	1.65	0.14	0.01	0.05	0.03
<b>Offsite Total</b>	<b>0.21</b>	<b>1.65</b>	<b>0.14</b>	<b>0.01</b>	<b>0.05</b>	<b>0.03</b>
<b>Total</b>	<b>0.22</b>	<b>1.71</b>	<b>0.14</b>	<b>0.01</b>	<b>0.05</b>	<b>0.03</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Crew Truck	2.5	0.0	2.5
<b>Onsite Total</b>	<b>2.5</b>	<b>0.0</b>	<b>2.5</b>
<b>Offsite</b>			
Worker Commute	60.5	0.0	60.5
<b>Offsite Total</b>	<b>60.5</b>	<b>0.0</b>	<b>60.5</b>
<b>Total</b>	<b>63.0</b>	<b>0.0</b>	<b>63.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Crew Truck	4	Unpaved	5	1.237	0.124	24.73	2.47
<b>Onsite Total</b>						<b>24.73</b>	<b>2.47</b>
<b>Offsite</b>							
Worker Commute	8	Paved	60	0.001	0.000	0.38	0.00
<b>Offsite Total</b>						<b>0.38</b>	<b>0.00</b>
<b>Total</b>						<b>25.12</b>	<b>2.47</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]



**Table 16**  
**Substation Construction Emissions**  
**Transformers**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.38	4.10	1.98	0.01	0.09	0.08	27.4
Onsite Motor Vehicle Exhaust	0.02	0.11	0.10	0.00	0.01	0.00	2.6
Onsite Motor Vehicle Fugitive PM	--	--	--	--	46.18	4.62	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.40</b>	<b>4.21</b>	<b>2.08</b>	<b>0.01</b>	<b>46.27</b>	<b>4.70</b>	<b>30.0</b>
Offsite Motor Vehicle Exhaust	0.26	2.06	0.17	0.01	0.06	0.04	27.2
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.48	0.00	
<b>Offsite Total</b>	<b>0.26</b>	<b>2.06</b>	<b>0.17</b>	<b>0.01</b>	<b>0.54</b>	<b>0.04</b>	<b>27.2</b>
<b>Total</b>	<b>0.66</b>	<b>6.27</b>	<b>2.25</b>	<b>0.01</b>	<b>46.81</b>	<b>4.74</b>	<b>57.2</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Crane	125	1	90	6
Forklift	83	1	90	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Crane	125	0.046	0.474	0.230	0.001	0.012	0.011	80.345	0.004	Cranes
Forklift	83	0.017	0.209	0.100	0.000	0.002	0.002	31.225	0.002	Forklifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction=

0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Crane	0.28	2.85	1.38	0.01	0.07	0.07
Forklift	0.10	1.25	0.60	0.00	0.01	0.01
<b>Total</b>	<b>0.38</b>	<b>4.10</b>	<b>1.98</b>	<b>0.01</b>	<b>0.09</b>	<b>0.08</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Crane	19.7	0.0	19.7
Forklift	7.6	0.0	7.7
<b>Total</b>	<b>27.3</b>	<b>0.0</b>	<b>27.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Crew Truck	4	90	2	5
Low Bed Truck	1	90	4	10
<b>Offsite</b>				
Worker Commute	10	90	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Low Bed Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 16**  
**Substation Construction Emissions**  
**Transformers**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Crew Truck	0.01	0.07	0.01	0.00	0.00	0.00
Low Bed Truck	0.01	0.04	0.09	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.02</b>	<b>0.11</b>	<b>0.10</b>	<b>0.00</b>	<b>0.01</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
<b>Offsite Total</b>	<b>0.26</b>	<b>2.06</b>	<b>0.17</b>	<b>0.01</b>	<b>0.06</b>	<b>0.04</b>
<b>Total</b>	<b>0.28</b>	<b>2.17</b>	<b>0.27</b>	<b>0.01</b>	<b>0.06</b>	<b>0.04</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Crew Truck	0.9	0.0	0.9
Low Bed Truck	1.7	0.0	1.7
<b>Onsite Total</b>	<b>2.6</b>	<b>0.0</b>	<b>2.6</b>
<b>Offsite</b>			
Worker Commute	27.2	0.0	27.2
<b>Offsite Total</b>	<b>27.2</b>	<b>0.0</b>	<b>27.2</b>
<b>Total</b>	<b>29.8</b>	<b>0.0</b>	<b>29.8</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Crew Truck	4	Unpaved	5	1.237	0.124	24.73	2.47
Low Bed Truck	1	Unpaved	10	2.145	0.214	21.45	2.14
<b>Onsite Total</b>						<b>46.18</b>	<b>4.62</b>
<b>Offsite</b>							
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
<b>Offsite Total</b>						<b>0.48</b>	<b>0.00</b>
<b>Total</b>						<b>46.66</b>	<b>4.62</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 17  
Substation Construction Emissions  
Maintenance Crew Equipment Check**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.02	0.12	0.12	0.00	0.01	0.00	1.6
Onsite Motor Vehicle Fugitive PM	--	--	--	--	33.78	3.38	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.02</b>	<b>0.12</b>	<b>0.12</b>	<b>0.00</b>	<b>33.79</b>	<b>3.38</b>	<b>1.6</b>
Offsite Motor Vehicle Exhaust	0.10	0.82	0.07	0.00	0.02	0.02	7.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.19	0.00	
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.22</b>	<b>0.02</b>	<b>7.3</b>
<b>Total</b>	<b>0.12</b>	<b>0.94</b>	<b>0.19</b>	<b>0.00</b>	<b>34.00</b>	<b>3.40</b>	<b>8.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
None				

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
None										

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
None	0.0	0.0	0.0
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Maintenance Truck	2	60	4	10
<b>Offsite</b>				
Worker Commute	4	60	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Maintenance Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 17**  
**Substation Construction Emissions**  
**Maintenance Crew Equipment Check**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Maintenance Truck	0.02	0.12	0.12	0.00	0.01	0.00
<b>Onsite Total</b>	<b>0.02</b>	<b>0.12</b>	<b>0.12</b>	<b>0.00</b>	<b>0.01</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>
<b>Total</b>	<b>0.12</b>	<b>0.94</b>	<b>0.19</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Maintenance Truck	1.6	0.0	1.6
<b>Onsite Total</b>	<b>1.6</b>	<b>0.0</b>	<b>1.6</b>
<b>Offsite</b>			
Worker Commute	7.3	0.0	7.3
<b>Offsite Total</b>	<b>7.3</b>	<b>0.0</b>	<b>7.3</b>
<b>Total</b>	<b>8.8</b>	<b>0.0</b>	<b>8.8</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Maintenance Truck	2	Unpaved	10	1.689	0.169	33.78	3.38
<b>Onsite Total</b>						<b>33.78</b>	<b>3.38</b>
<b>Offsite</b>							
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.19</b>	<b>0.00</b>
<b>Total</b>						<b>33.98</b>	<b>3.38</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 18**  
**Substation Construction Emissions**  
**Testing**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.01	0.05	0.00	0.00	0.00	0.00	1.5
Onsite Motor Vehicle Fugitive PM	--	--	--	--	18.55	1.85	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.01</b>	<b>0.05</b>	<b>0.00</b>	<b>0.00</b>	<b>18.55</b>	<b>1.86</b>	<b>1.5</b>
Offsite Motor Vehicle Exhaust	0.10	0.82	0.07	0.00	0.02	0.02	24.2
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.19	0.00	
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.22</b>	<b>0.02</b>	<b>24.2</b>
<b>Total</b>	<b>0.11</b>	<b>0.87</b>	<b>0.07</b>	<b>0.00</b>	<b>18.77</b>	<b>1.87</b>	<b>25.7</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
None				

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
None										

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
None	0.0	0.0	0.0
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Crew Truck	2	200	3	7.5
<b>Offsite</b>				
Worker Commute	4	200	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 18**  
**Substation Construction Emissions**  
**Testing**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Crew Truck	0.01	0.05	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.01</b>	<b>0.05</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>
<b>Total</b>	<b>0.11</b>	<b>0.87</b>	<b>0.07</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Crew Truck	1.5	0.0	1.5
<b>Onsite Total</b>	<b>1.5</b>	<b>0.0</b>	<b>1.5</b>
<b>Offsite</b>			
Worker Commute	24.2	0.0	24.2
<b>Offsite Total</b>	<b>24.2</b>	<b>0.0</b>	<b>24.2</b>
<b>Total</b>	<b>25.7</b>	<b>0.0</b>	<b>25.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Crew Truck	2	Unpaved	7.5	1.237	0.124	18.55	1.85
<b>Onsite Total</b>						<b>18.55</b>	<b>1.85</b>
<b>Offsite</b>							
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.19</b>	<b>0.00</b>
<b>Total</b>						<b>18.74</b>	<b>1.85</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 19**  
**Substation Construction Emissions**  
**Asphalting**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.87	6.33	4.62	0.01	0.21	0.19	12.0
Onsite Motor Vehicle Exhaust	0.02	0.11	0.17	0.00	0.01	0.01	1.2
Onsite Motor Vehicle Fugitive PM	--	--	--	--	49.90	4.99	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Asphaltic Paving VOC	0.6	--	--	--	--	--	--
<b>Onsite Total</b>	<b>1.52</b>	<b>6.44</b>	<b>4.79</b>	<b>0.01</b>	<b>50.12</b>	<b>5.19</b>	<b>13.2</b>
Offsite Motor Vehicle Exhaust	0.89	5.42	7.45	0.04	0.44	0.32	53.6
Offsite Motor Vehicle Fugitive PM	--	--	--	--	1.11	0.00	
<b>Offsite Total</b>	<b>0.89</b>	<b>5.42</b>	<b>7.45</b>	<b>0.04</b>	<b>1.54</b>	<b>0.32</b>	<b>53.6</b>
<b>Total</b>	<b>2.41</b>	<b>11.86</b>	<b>12.23</b>	<b>0.05</b>	<b>51.66</b>	<b>5.51</b>	<b>66.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Paving Roller	46	2	30	4
Asphalt Paver	152	1	30	4
Tractor	45	1	30	3
Asphalt Curb Machine	35	1	30	3

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Paving Roller	46	0.034	0.226	0.178	0.000	0.007	0.006	25.983	0.003	Rollers
Asphalt Paver	152	0.090	0.754	0.524	0.001	0.029	0.026	128.285	0.008	Pavers
Tractor	45	0.032	0.268	0.190	0.000	0.004	0.003	30.347	0.003	Tractors/Loaders/Backhoes
Asphalt Curb Machine	35	0.047	0.235	0.179	0.000	0.010	0.009	23.927	0.004	Paving Equipment

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Paving Roller	0.28	1.81	1.42	0.00	0.05	0.05
Asphalt Paver	0.36	3.02	2.10	0.01	0.11	0.11
Tractor	0.09	0.80	0.57	0.00	0.01	0.01
Asphalt Curb Machine	0.14	0.71	0.54	0.00	0.03	0.03
<b>Total</b>	<b>0.87</b>	<b>6.33</b>	<b>4.62</b>	<b>0.01</b>	<b>0.21</b>	<b>0.19</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Paving Roller	2.8	0.0	2.8
Asphalt Paver	7.0	0.0	7.0
Tractor	1.2	0.0	1.2
Asphalt Curb Machine	1.0	0.0	1.0
<b>Total</b>	<b>12.0</b>	<b>0.0</b>	<b>12.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number <sup>b</sup>	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Stake Truck	1	30	4	10
Dump Truck	1	30	3	7.5
Crew Truck	2	30	2	5
<b>Offsite</b>				
Asphalt Delivery Truck	13	30	N/A	60
Worker Commute	10	30	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

<sup>b</sup> Asphalt delivery trucks based on 3,900 CY over 30 days and 10 CY/truck = 3,900 / 30 / 10 = 13

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Stake Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05

**Table 19**  
**Substation Construction Emissions**  
**Asphalting**

Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Asphalt Delivery Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Stake Truck	0.01	0.04	0.09	0.00	0.00	0.00
Dump Truck	0.01	0.03	0.07	0.00	0.00	0.00
Crew Truck	0.00	0.03	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.02</b>	<b>0.11</b>	<b>0.17</b>	<b>0.00</b>	<b>0.01</b>	<b>0.01</b>
<b>Offsite</b>						
Asphalt Delivery Truck	0.63	3.36	7.27	0.03	0.38	0.28
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
<b>Offsite Total</b>	<b>0.89</b>	<b>5.42</b>	<b>7.45</b>	<b>0.04</b>	<b>0.44</b>	<b>0.32</b>
<b>Total</b>	<b>0.91</b>	<b>5.53</b>	<b>7.61</b>	<b>0.04</b>	<b>0.45</b>	<b>0.33</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Stake Truck	0.6	0.0	0.6
Dump Truck	0.4	0.0	0.4
Crew Truck	0.2	0.0	0.2
<b>Onsite Total</b>	<b>1.2</b>	<b>0.0</b>	<b>1.2</b>
<b>Offsite</b>			
Asphalt Delivery Truck	44.5	0.0	44.5
Worker Commute	9.1	0.0	9.1
<b>Offsite Total</b>	<b>53.6</b>	<b>0.0</b>	<b>53.6</b>
<b>Total</b>	<b>54.7</b>	<b>0.0</b>	<b>54.8</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Stake Truck	1	Unpaved	10	2.145	0.214	21.45	2.14
Dump Truck	1	Unpaved	7.5	2.145	0.214	16.09	1.61
Crew Truck	2	Unpaved	5	1.237	0.124	12.37	1.24
<b>Onsite Total</b>						<b>49.90</b>	<b>4.99</b>
<b>Offsite</b>							
Asphalt Delivery Truck	13	Paved	60	0.001	0.000	0.62	0.00
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
<b>Offsite Total</b>						<b>1.11</b>	<b>0.00</b>
<b>Total</b>						<b>51.00</b>	<b>4.99</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

a From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Asphaltic Paving VOC Emissions**

Area Paved (acre/day) <sup>a</sup>	Emission Factor (lb/acre) <sup>b</sup>	VOC (lb/day) <sup>c</sup>
0.24	2.62	0.6

<sup>a</sup> Assumed twice daily average for 156,000 ft<sup>2</sup> total in 30 days:  
2 x 156,000 ft<sup>2</sup> / 30 days / 43,560 ft<sup>2</sup> per acre = 0.24 acres

<sup>b</sup> From URBEMISS 2007 User's Guide, Appendix A, <http://www.urbemis.com/software/download.html>

<sup>c</sup> Emissions [lb/day] = Emission factor [lb/acre] x Area paved [acre/day]



**Table 20**  
**Substation Construction Emissions**  
**Landscaping**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.29	2.71	1.73	0.00	0.03	0.03	6.9
Onsite Motor Vehicle Exhaust	0.01	0.10	0.08	0.00	0.01	0.00	1.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	40.82	4.08	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.30</b>	<b>2.81</b>	<b>1.80</b>	<b>0.00</b>	<b>40.86</b>	<b>4.12</b>	<b>8.0</b>
Offsite Motor Vehicle Exhaust	1.42	8.26	13.60	0.06	0.76	0.56	136.9
Offsite Motor Vehicle Fugitive PM	--	--	--	--	1.63	0.00	
<b>Offsite Total</b>	<b>1.42</b>	<b>8.26</b>	<b>13.60</b>	<b>0.06</b>	<b>2.39</b>	<b>0.56</b>	<b>136.9</b>
<b>Total</b>	<b>1.72</b>	<b>11.07</b>	<b>15.40</b>	<b>0.07</b>	<b>43.25</b>	<b>4.68</b>	<b>144.9</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Tractor	45	1	45	7
Forklift	83	1	45	4

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Tractor	45	0.032	0.268	0.190	0.000	0.004	0.003	30.347	0.003	Tractors/Loaders/Backhoes
Forklift	83	0.017	0.209	0.100	0.000	0.002	0.002	31.225	0.002	Forklifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction=

0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Tractor	0.22	1.87	1.33	0.00	0.03	0.02
Forklift	0.07	0.83	0.40	0.00	0.01	0.01
<b>Total</b>	<b>0.29</b>	<b>2.71</b>	<b>1.73</b>	<b>0.00</b>	<b>0.03</b>	<b>0.03</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Tractor	4.3	0.0	4.3
Forklift	2.5	0.0	2.6
<b>Total</b>	<b>6.9</b>	<b>0.0</b>	<b>6.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number <sup>b</sup>	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Dump Truck	1	45	3	7.5
Crew Truck	4	45	2	5
<b>Offsite</b>				
Crushed Rock Delivery Truck	24	45	N/A	60
Worker Commute	10	45	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

<sup>b</sup> Crushed rock delivery trucks based on 10,800 CY over 45 days and 10 CY/truck = 10,800 / 45 / 10 = 24

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Crushed Rock Delivery Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 20**  
**Substation Construction Emissions**  
**Landscaping**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Dump Truck	0.01	0.03	0.07	0.00	0.00	0.00
Crew Truck	0.01	0.07	0.01	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.01</b>	<b>0.10</b>	<b>0.08</b>	<b>0.00</b>	<b>0.01</b>	<b>0.00</b>
<b>Offsite</b>						
Crushed Rock Delivery Truck	1.15	6.21	13.43	0.06	0.70	0.52
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
<b>Offsite Total</b>	<b>1.42</b>	<b>8.26</b>	<b>13.60</b>	<b>0.06</b>	<b>0.76</b>	<b>0.56</b>
<b>Total</b>	<b>1.43</b>	<b>8.36</b>	<b>13.68</b>	<b>0.06</b>	<b>0.76</b>	<b>0.57</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Dump Truck	0.6	0.0	0.6
Crew Truck	0.5	0.0	0.5
<b>Onsite Total</b>	<b>1.1</b>	<b>0.0</b>	<b>1.1</b>
<b>Offsite</b>			
Crushed Rock Delivery Truck	123.3	0.0	123.3
Worker Commute	13.6	0.0	13.6
<b>Offsite Total</b>	<b>136.9</b>	<b>0.0</b>	<b>136.9</b>
<b>Total</b>	<b>138.0</b>	<b>0.0</b>	<b>138.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Dump Truck	1	Unpaved	7.5	2.145	0.214	16.09	1.61
Crew Truck	4	Unpaved	5	1.237	0.124	24.73	2.47
<b>Onsite Total</b>						<b>40.82</b>	<b>4.08</b>
<b>Offsite</b>							
Crushed Rock Delivery Truck	24	Paved	60	0.001	0.000	1.15	0.00
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
<b>Offsite Total</b>						<b>1.63</b>	<b>0.00</b>
<b>Total</b>						<b>42.45</b>	<b>4.08</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 21**  
**500 kV Transmission Line Construction Emissions**  
**Survey**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.0</b>
Offsite Motor Vehicle Exhaust	0.11	0.89	0.08	0.00	0.03	0.02	0.5
Offsite Motor Vehicle Fugitive PM	--	--	--	--	20.42	2.02	
<b>Offsite Total</b>	<b>0.11</b>	<b>0.89</b>	<b>0.08</b>	<b>0.00</b>	<b>20.45</b>	<b>2.04</b>	<b>0.5</b>
<b>Total</b>	<b>0.11</b>	<b>0.89</b>	<b>0.08</b>	<b>0.00</b>	<b>20.45</b>	<b>2.04</b>	<b>0.5</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
None				

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
None		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5  
 and PM 2.5 Significance Thresholds, SCAQMD, October 2006,  
[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
None	0.0	0.0	0.0
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x  
 days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action  
 Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
1/2-Ton Pick-up Truck, 4x4	2	4	N/A	10
Worker Commute	4	4	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
1/2-Ton Pick-up Truck, 4x4	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 21**  
**500 kV Transmission Line Construction Emissions**  
**Survey**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1/2-Ton Pick-up Truck, 4x4	0.01	0.07	0.01	0.00	0.00	0.00
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.11</b>	<b>0.89</b>	<b>0.08</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>
<b>Total</b>	<b>0.11</b>	<b>0.89</b>	<b>0.08</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1/2-Ton Pick-up Truck, 4x4	0.0	0.0	0.0
Worker Commute	0.5	0.0	0.5
<b>Offsite Total</b>	<b>0.5</b>	<b>0.0</b>	<b>0.5</b>
<b>Total</b>	<b>0.5</b>	<b>0.0</b>	<b>0.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None							
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1/2-Ton Pick-up Truck, 4x4	2	Unpaved	10	1.012	0.101	20.23	2.02
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>20.42</b>	<b>2.02</b>
<b>Total</b>						<b>20.42</b>	<b>2.02</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 22**  
**500 kV Transmission Line Construction Emissions**  
**Marshalling Yard**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.41	3.14	1.79	0.01	0.06	0.06	55.8
Onsite Motor Vehicle Exhaust	0.02	0.10	0.14	0.00	0.01	0.01	4.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	31.13	3.11	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.43</b>	<b>3.24</b>	<b>1.93</b>	<b>0.01</b>	<b>31.20</b>	<b>3.18</b>	<b>59.9</b>
Offsite Motor Vehicle Exhaust	0.20	1.41	0.87	0.01	0.06	0.04	27.9
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.28	0.00	
<b>Offsite Total</b>	<b>0.20</b>	<b>1.41</b>	<b>0.87</b>	<b>0.01</b>	<b>0.35</b>	<b>0.04</b>	<b>27.9</b>
<b>Total</b>	<b>0.63</b>	<b>4.65</b>	<b>2.81</b>	<b>0.02</b>	<b>31.55</b>	<b>3.22</b>	<b>87.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Boom/Crane Truck	215	1	137	5
Rough Terrain Forklift	125	1	137	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Boom/Crane Truck	215	0.054	0.232	0.271	0.001	0.009	0.009	112.159	0.005	Cranes
Rough Terrain Forklift	125	0.023	0.331	0.073	0.001	0.003	0.003	56.054	0.002	Forklifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Boom/Crane Truck	0.27	1.16	1.35	0.01	0.05	0.04
Rough Terrain Forklift	0.14	1.99	0.44	0.00	0.02	0.02
<b>Total</b>	<b>0.41</b>	<b>3.14</b>	<b>1.79</b>	<b>0.01</b>	<b>0.06</b>	<b>0.06</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Boom/Crane Truck	34.8	0.0	34.9
Rough Terrain Forklift	20.9	0.0	20.9
<b>Total</b>	<b>55.7</b>	<b>0.0</b>	<b>55.8</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateaction.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateaction.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number <sup>b</sup>	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
1-Ton Crew Cab, 4x4 Truck, Semi Tractor	1	137	4	10
Jet A Fuel Truck	1	137	0.5	1.25
Water Truck	1	137	1	2.5
<b>Offsite</b>				
Flat Bed Truck/Trailer	1	10	N/A	60
Concrete Mixer Truck	1	10	N/A	10
Jet A Fuel Truck	1	137	N/A	20
Water Truck	1	137	N/A	20
Worker Commute	4	137	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

<sup>b</sup> Dump trucks based on 8,000 CY hauled offsite over 60 days and 10 CY/truck = 8,000 / 60 / 10 = 13.3

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
1-Ton Crew Cab, 4x4 Truck, Semi Tractor	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Jet A Fuel Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
<b>Offsite</b>									
Flat Bed Truck/Trailer	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Concrete Mixer Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Jet A Fuel Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05

**Table 22**  
**500 kV Transmission Line Construction Emissions**  
**Marshalling Yard**

Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
1-Ton Crew Cab, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
Truck, Semi Tractor	0.00	0.02	0.05	0.00	0.00	0.00
Jet A Fuel Truck	0.00	0.01	0.01	0.00	0.00	0.00
Water Truck	0.00	0.01	0.02	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.02</b>	<b>0.10</b>	<b>0.14</b>	<b>0.00</b>	<b>0.01</b>	<b>0.01</b>
<b>Offsite</b>						
Flat Bed Truck/Trailer	0.06	0.36	0.37	0.00	0.02	0.01
Concrete Mixer Truck	0.01	0.06	0.06	0.00	0.00	0.00
Jet A Fuel Truck	0.02	0.09	0.19	0.00	0.01	0.01
Water Truck	0.02	0.09	0.19	0.00	0.01	0.01
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.20</b>	<b>1.41</b>	<b>0.87</b>	<b>0.01</b>	<b>0.06</b>	<b>0.04</b>
<b>Total</b>	<b>0.22</b>	<b>1.51</b>	<b>1.02</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
1-Ton Crew Cab, 4x4	1.8	0.0	1.8
Truck, Semi Tractor	1.3	0.0	1.3
Jet A Fuel Truck	0.33	0.00	0.33
Water Truck	0.65	0.00	0.65
<b>Onsite Total</b>	<b>4.1</b>	<b>0.0</b>	<b>4.1</b>
<b>Offsite</b>			
Flat Bed Truck/Trailer	0.8	0.0	0.8
Concrete Mixer Truck	0.1	0.0	0.1
Jet A Fuel Truck	5.21	0.00	5.21
Water Truck	5.21	0.00	5.21
Worker Commute	16.6	0.0	16.6
<b>Offsite Total</b>	<b>27.9</b>	<b>0.0</b>	<b>27.9</b>
<b>Total</b>	<b>32.0</b>	<b>0.0</b>	<b>32.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008. [http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
1-Ton Crew Cab, 4x4	1	Unpaved	10	1.237	0.124	12.37	1.24
Truck, Semi Tractor	1	Unpaved	5	2.145	0.214	10.72	1.07
Jet A Fuel Truck	1	Unpaved	1.25	2.145	0.214	2.68	0.27
Water Truck	1	Unpaved	2.5	2.145	0.214	5.36	0.54
<b>Onsite Total</b>						<b>31.13</b>	<b>3.11</b>
<b>Offsite</b>							
Flat Bed Truck/Trailer	1	Paved	60	0.001	0.000	0.05	0.00
Concrete Mixer Truck	1	Paved	10	0.001	0.000	0.01	0.00
Jet A Fuel Truck	1	Paved	20	0.00	0.00	0.02	0.00
Water Truck	1	Paved	20	0.00	0.00	0.02	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.28</b>	<b>0.00</b>
<b>Total</b>						<b>31.42</b>	<b>3.11</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

a From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 23**  
**500 kV Transmission Line Construction Emissions**  
**Roads and Landing Work**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	2.09	16.82	9.96	0.05	0.45	0.42	44.9
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	9.17	1.91	
<b>Onsite Total</b>	<b>2.09</b>	<b>16.82</b>	<b>9.96</b>	<b>0.05</b>	<b>9.63</b>	<b>2.33</b>	<b>44.9</b>
Offsite Motor Vehicle Exhaust	0.28	2.18	0.37	0.01	0.07	0.05	8.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	45.02	4.45	
<b>Offsite Total</b>	<b>0.28</b>	<b>2.18</b>	<b>0.37</b>	<b>0.01</b>	<b>45.09</b>	<b>4.50</b>	<b>8.3</b>
<b>Total</b>	<b>2.37</b>	<b>19.00</b>	<b>10.34</b>	<b>0.05</b>	<b>54.71</b>	<b>6.83</b>	<b>53.1</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Road Grader	250	1	24	6
Backhoe/Front Loader	125	1	24	8
Drum Type Compactor	100	1	24	6
Track Type Dozer	150	1	24	8
Excavator	250	1	24	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Road Grader	250	0.078	0.355	0.365	0.002	0.013	0.012	172.113	0.007	Graders
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
Drum Type Compactor	100	0.039	0.380	0.265	0.001	0.014	0.013	58.989	0.004	Rollers
Track Type Dozer	150	0.082	0.727	0.445	0.001	0.024	0.022	121.188	0.007	Crawler Tractors
Excavator	250	0.065	0.321	0.222	0.002	0.007	0.007	158.683	0.006	Excavators

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction = 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Road Grader	0.47	2.13	2.19	0.01	0.08	0.07
Backhoe/Front Loader	0.34	4.67	1.29	0.01	0.06	0.05
Drum Type Compactor	0.24	2.28	1.59	0.00	0.08	0.08
Track Type Dozer	0.66	5.81	3.56	0.01	0.19	0.18
Excavator	0.39	1.93	1.33	0.01	0.04	0.04
<b>Total</b>	<b>2.09</b>	<b>16.82</b>	<b>9.96</b>	<b>0.05</b>	<b>0.45</b>	<b>0.42</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Road Grader	11.2	0.0	11.3
Backhoe/Front Loader	8.8	0.0	8.8
Drum Type Compactor	3.9	0.0	3.9
Track Type Dozer	10.6	0.0	10.6
Excavator	10.4	0.0	10.4
<b>Total</b>	<b>44.8</b>	<b>0.0</b>	<b>44.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Table 23**  
**500 kV Transmission Line Construction Emissions**  
**Roads and Landing Work**

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				
<b>Offsite</b>				
1-Ton Crew Cab, 4x4	2	24	N/A	5
Water Truck	2	24	N/A	5
Lowboy Truck/Trailer	1	24	N/A	5
Worker Commute	10	24	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
Water Truck	0.01	0.04	0.09	0.00	0.00	0.00
Lowboy Truck/Trailer	0.00	0.02	0.05	0.00	0.00	0.00
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
<b>Offsite Total</b>	<b>0.28</b>	<b>2.18</b>	<b>0.37</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>
<b>Total</b>	<b>0.28</b>	<b>2.18</b>	<b>0.37</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1-Ton Crew Cab, 4x4	0.3	0.0	0.3
Water Truck	0.5	0.0	0.5
Lowboy Truck/Trailer	0.2	0.0	0.2
Worker Commute	7.3	0.0	7.3
<b>Offsite Total</b>	<b>8.3</b>	<b>0.0</b>	<b>8.3</b>
<b>Total</b>	<b>8.3</b>	<b>0.0</b>	<b>8.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1-Ton Crew Cab, 4x4	2	Unpaved	5	1.237	0.124	12.37	1.24
Water Truck	2	Unpaved	5	2.145	0.214	21.45	2.14
Lowboy Truck/Trailer	1	Unpaved	5	2.145	0.214	10.72	1.07
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
<b>Offsite Total</b>						<b>45.02</b>	<b>4.45</b>
<b>Total</b>						<b>45.02</b>	<b>4.45</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**



**Table 23**  
**500 kV Transmission Line Construction Emissions**  
**Roads and Landing Work**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	4,334	9.94E-04	2.07E-04	4.31	0.90
Bulldozing, Scraping and Grading	hr/day	14	0.348	0.072	4.87	1.01
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>9.17</b>	<b>1.91</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Estimate 80,000 CY of cut plus 50,000 CY of fill yields 130,000 CY of soil handling over 30 days. Approx 4,334 CY/day.

**Table 23b**  
**500 kV Transmission Line Construction Emissions**  
**Install Helicopter Platforms**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.15	15.80	7.68	0.03	0.24	0.22	28.5
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	1.38	0.29	
<b>Onsite Total</b>	<b>1.15</b>	<b>15.80</b>	<b>7.68</b>	<b>0.03</b>	<b>1.62</b>	<b>0.51</b>	<b>28.5</b>
Offsite Motor Vehicle Exhaust	0.16	1.23	0.10	0.00	0.03	0.02	4.4
Offsite Helicopter Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.29	0.00	
<b>Offsite Total</b>	<b>0.16</b>	<b>1.23</b>	<b>0.10</b>	<b>0.00</b>	<b>0.32</b>	<b>0.02</b>	<b>4.4</b>
<b>Total</b>	<b>1.30</b>	<b>17.03</b>	<b>7.78</b>	<b>0.03</b>	<b>1.94</b>	<b>0.53</b>	<b>32.9</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor	150	1	24	8
Grout Machine	60	1	24	8
Drill Rig	75	1	24	8
Transfer Pump	60	1	24	8

Note: Helicopter use accounted for in Table 29c

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor	150	0.042	0.500	0.219	0.001	0.010	0.010	88.483	0.004	Air Compressors
Grout Machine	60	0.038	0.504	0.273	0.001	0.009	0.008	80.859	0.003	Other Construction Equipment
Drill Rig	75	0.025	0.466	0.195	0.001	0.002	0.002	77.122	0.002	Bore/Drill Rigs
Transfer Pump	60	0.038	0.504	0.273	0.001	0.009	0.008	80.859	0.003	Other Construction Equipment

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction = 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor	0.34	4.00	1.75	0.01	0.08	0.08
Grout Machine	0.30	4.04	2.18	0.01	0.07	0.06
Drill Rig	0.20	3.73	1.56	0.01	0.02	0.01
Transfer Pump	0.30	4.04	2.18	0.01	0.07	0.06
<b>Total</b>	<b>1.15</b>	<b>15.80</b>	<b>7.68</b>	<b>0.03</b>	<b>0.24</b>	<b>0.22</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor	7.7	0.0	7.7
Grout Machine	7.0	0.0	7.0
Drill Rig	6.7	0.0	6.7
Transfer Pump	7.0	0.0	7.0
<b>Total</b>	<b>28.5</b>	<b>0.0</b>	<b>28.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
Worker Commute	6	24	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 23b**  
**500 kV Transmission Line Construction Emissions**  
**Install Helicopter Platforms**

<b>Motor Vehicle Exhaust Emission Factors</b>									
Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

<b>Motor Vehicle Daily Criteria Pollutant Exhaust Emissions</b>						
Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.16	1.23	0.10	0.00	0.03	0.02
<b>Offsite Total</b>	<b>0.16</b>	<b>1.23</b>	<b>0.10</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>
<b>Total</b>	<b>0.16</b>	<b>1.23</b>	<b>0.10</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

<b>Motor Vehicle Total Greenhouse Gas Emissions</b>			
Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Worker Commute	4.4	0.0	4.4
<b>Offsite Total</b>	<b>4.4</b>	<b>0.0</b>	<b>4.4</b>
<b>Total</b>	<b>4.4</b>	<b>0.0</b>	<b>4.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

<sup>a</sup> From Table 56

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

<b>Motor Vehicle Fugitive Particulate Matter Emissions</b>							
Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Worker Commute	6	Paved	60	0.001	0.000	0.29	0.00
<b>Offsite Total</b>						<b>0.29</b>	<b>0.00</b>
<b>Total</b>						<b>0.29</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

<b>Earthwork Fugitive Particulate Matter Emissions</b>						
Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	1,388	9.94E-04	2.07E-04	1.38	0.29
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>1.38</b>	<b>0.29</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Estimate

**Table 24**  
**500 kV Transmission Line Construction Emissions**  
**Tower Removal**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.75	4.54	3.93	0.02	0.16	0.15	2.6
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.75</b>	<b>4.54</b>	<b>3.93</b>	<b>0.02</b>	<b>0.16</b>	<b>0.15</b>	<b>2.6</b>
Offsite Motor Vehicle Exhaust	0.27	2.03	0.63	0.01	0.07	0.05	1.4
Offsite Motor Vehicle Fugitive PM	--	--	--	--	105.11	10.47	
<b>Offsite Total</b>	<b>0.27</b>	<b>2.03</b>	<b>0.63</b>	<b>0.01</b>	<b>105.18</b>	<b>10.52</b>	<b>1.4</b>
<b>Total</b>	<b>1.02</b>	<b>6.57</b>	<b>4.56</b>	<b>0.02</b>	<b>105.34</b>	<b>10.67</b>	<b>4.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor Trailer	60	1	4	8
Rough Terrain Crane (L)	275	1	4	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
Rough Terrain Crane (L)	275	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction=

0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor Trailer	0.23	2.42	1.54	0.00	0.07	0.07
Rough Terrain Crane (L)	0.51	2.12	2.39	0.01	0.09	0.08
<b>Total</b>	<b>0.75</b>	<b>4.54</b>	<b>3.93</b>	<b>0.02</b>	<b>0.16</b>	<b>0.15</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor Trailer	0.7	0.0	0.7
Rough Terrain Crane (L)	2.0	0.0	2.0
<b>Total</b>	<b>2.6</b>	<b>0.0</b>	<b>2.6</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
1-Ton Crew Cab, 4x4	2	4	N/A	5
1-Ton Flat Bed, 4x4	2	4	N/A	20
Flat Bed Truck/Trailer	1	4	N/A	20
Worker Commute	8	4	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Flat Bed Truck/Trailer	HHD	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 24**  
**500 kV Transmission Line Construction Emissions**  
**Tower Removal**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
1-Ton Flat Bed, 4x4	0.04	0.24	0.25	0.00	0.01	0.01
Flat Bed Truck/Trailer	0.02	0.09	0.19	0.00	0.01	0.01
Worker Commute	0.21	1.65	0.14	0.01	0.05	0.03
<b>Offsite Total</b>	<b>0.27</b>	<b>2.03</b>	<b>0.63</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>
<b>Total</b>	<b>0.27</b>	<b>2.03</b>	<b>0.63</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1-Ton Crew Cab, 4x4	0.1	0.0	0.1
1-Ton Flat Bed, 4x4	0.2	0.0	0.2
Flat Bed Truck/Trailer	0.2	0.0	0.2
Worker Commute	1.0	0.0	1.0
<b>Offsite Total</b>	<b>1.4</b>	<b>0.0</b>	<b>1.4</b>
<b>Total</b>	<b>1.4</b>	<b>0.0</b>	<b>1.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.ciimateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.ciimateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1-Ton Crew Cab, 4x4	2	Unpaved	5	1.237	0.124	12.37	1.24
1-Ton Flat Bed, 4x4	2	Unpaved	20	1.237	0.124	49.46	4.95
Flat Bed Truck/Trailer	1	Unpaved	20	2.145	0.214	42.90	4.29
Worker Commute	8	Paved	60	0.001	0.000	0.38	0.00
<b>Offsite Total</b>						<b>105.11</b>	<b>10.47</b>
<b>Total</b>						<b>105.11</b>	<b>10.47</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 25**  
**500 kV Transmission Line Construction Emissions**  
**Foundation Removal**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.48	5.92	2.51	0.01	0.11	0.10	0.9
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.48</b>	<b>5.92</b>	<b>2.51</b>	<b>0.01</b>	<b>0.11</b>	<b>0.10</b>	<b>0.9</b>
Offsite Motor Vehicle Exhaust	0.13	0.97	0.22	0.00	0.03	0.02	0.6
Offsite Motor Vehicle Fugitive PM	--	--	--	--	49.27	4.91	
<b>Offsite Total</b>	<b>0.13</b>	<b>0.97</b>	<b>0.22</b>	<b>0.00</b>	<b>49.30</b>	<b>4.93</b>	<b>0.6</b>
<b>Total</b>	<b>0.61</b>	<b>6.89</b>	<b>2.73</b>	<b>0.01</b>	<b>49.41</b>	<b>5.03</b>	<b>1.5</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor Trailer	60	1	2	8
Backhoe/Front Loader	125	1	2	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction=

0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor Trailer	0.23	2.42	1.54	0.00	0.07	0.07
Backhoe/Front Loader	0.25	3.50	0.97	0.01	0.04	0.04
<b>Total</b>	<b>0.48</b>	<b>5.92</b>	<b>2.51</b>	<b>0.01</b>	<b>0.11</b>	<b>0.10</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor Trailer	0.3	0.0	0.3
Backhoe/Front Loader	0.6	0.0	0.6
<b>Total</b>	<b>0.9</b>	<b>0.0</b>	<b>0.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
1-Ton Crew Cab, 4x4	1	4	N/A	5
Dump Truck	1	2	N/A	20
Worker Commute	4	4	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Dump Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 25**  
**500 kV Transmission Line Construction Emissions**  
**Foundation Removal**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab, 4x4	0.00	0.03	0.03	0.00	0.00	0.00
Dump Truck	0.02	0.12	0.12	0.00	0.01	0.00
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.13</b>	<b>0.97</b>	<b>0.22</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>
<b>Total</b>	<b>0.13</b>	<b>0.97</b>	<b>0.22</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1-Ton Crew Cab, 4x4	0.0	0.0	0.0
Dump Truck	0.1	0.0	0.1
Worker Commute	0.5	0.0	0.5
<b>Offsite Total</b>	<b>0.6</b>	<b>0.0</b>	<b>0.6</b>
<b>Total</b>	<b>0.6</b>	<b>0.0</b>	<b>0.6</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1-Ton Crew Cab, 4x4	1	Unpaved	5	1.237	0.124	6.18	0.62
Dump Truck	1	Unpaved	20	2.145	0.214	42.90	4.29
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>49.27</b>	<b>4.91</b>
<b>Total</b>						<b>49.27</b>	<b>4.91</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 26**  
**500 kV Transmission Line Construction Emissions**  
**Tower Foundations Installation**

Emissions Summary							
Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.73	13.83	6.02	0.05	0.23	0.21	53.6
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	--
Earthwork Fugitive PM	--	--	--	--	0.20	0.04	--
<b>Onsite Total</b>	<b>1.73</b>	<b>13.83</b>	<b>6.02</b>	<b>0.05</b>	<b>0.43</b>	<b>0.26</b>	<b>53.6</b>
Offsite Motor Vehicle Exhaust	0.28	2.10	0.64	0.01	0.08	0.05	10.1
Offsite Motor Vehicle Fugitive PM	--	--	--	--	107.06	10.66	--
<b>Offsite Total</b>	<b>0.28</b>	<b>2.10</b>	<b>0.64</b>	<b>0.01</b>	<b>107.14</b>	<b>10.72</b>	<b>10.1</b>
<b>Total</b>	<b>2.01</b>	<b>15.93</b>	<b>6.66</b>	<b>0.06</b>	<b>107.57</b>	<b>10.97</b>	<b>63.6</b>

Construction Equipment Summary				
Equipment	Horse-power	Number	Days Used	Hours Used/Day
Boom/Crane Truck	350	1	30	7
Backhoe/Front Loader	125	1	30	10
Low Drill	385	1	16	10

Construction Equipment Exhaust Emission Factors										
Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
Low Drill	385	0.071	0.551	0.162	0.003	0.006	0.005	311.309	0.006	Bore/Drill Rigs

<sup>a</sup> From Table 53  
<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10  
 PM2.5 Fraction= 0.920  
 From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5  
 and PM 2.5 Significance Thresholds, SCAQMD, October 2006,  
[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

Construction Equipment Daily Criteria Pollutant Exhaust Emissions						
Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Boom/Crane Truck	0.60	2.47	2.78	0.01	0.10	0.09
Backhoe/Front Loader	0.42	5.84	1.61	0.01	0.07	0.07
Low Drill	0.71	5.51	1.62	0.03	0.06	0.05
<b>Total</b>	<b>1.73</b>	<b>13.83</b>	<b>6.02</b>	<b>0.05</b>	<b>0.23</b>	<b>0.21</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions			
Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Boom/Crane Truck	17.2	0.0	17.2
Backhoe/Front Loader	13.8	0.0	13.8
Low Drill	22.6	0.0	22.6
<b>Total</b>	<b>53.5</b>	<b>0.0</b>	<b>53.6</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 53  
<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Usage				
Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	2	30	N/A	5
Water Truck	1	30	N/A	5
Dump Truck	1	30	N/A	10
Concrete Mixer Truck	3	18	N/A	10
Worker Commute	9	30	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed



**Table 26**  
**500 kV Transmission Line Construction Emissions**  
**Tower Foundations Installation**

Motor Vehicle Exhaust Emission Factors									
Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Concrete Mixer Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions						
Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
Water Truck	0.00	0.02	0.05	0.00	0.00	0.00
Dump Truck	0.01	0.04	0.09	0.00	0.00	0.00
Concrete Mixer Truck	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.24	1.85	0.16	0.01	0.05	0.03
<b>Offsite Total</b>	<b>0.28</b>	<b>2.10</b>	<b>0.64</b>	<b>0.01</b>	<b>0.08</b>	<b>0.05</b>
<b>Total</b>	<b>0.28</b>	<b>2.10</b>	<b>0.64</b>	<b>0.01</b>	<b>0.08</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions			
Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	0.0	0.0	0.0
Water Truck	0.3	0.0	0.3
Dump Truck	0.6	0.0	0.6
Concrete Mixer Truck	1.0	0.0	1.0
Worker Commute	8.2	0.0	8.2
<b>Offsite Total</b>	<b>10.0</b>	<b>0.0</b>	<b>10.1</b>
<b>Total</b>	<b>10.0</b>	<b>0.0</b>	<b>10.1</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

<sup>a</sup> From Table 56

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Fugitive Particulate Matter Emissions							
Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	2	Unpaved	5	1.012	0.101	10.12	1.01
Water Truck	1	Unpaved	5	2.145	0.214	10.72	1.07
Dump Truck	1	Unpaved	10	2.145	0.214	21.45	2.14
Concrete Mixer Truck	3	Unpaved	10	2.145	0.214	64.34	6.43
Worker Commute	9	Paved	60	0.001	0.000	0.43	0.00
<b>Offsite Total</b>						<b>107.06</b>	<b>10.66</b>
<b>Total</b>						<b>107.06</b>	<b>10.66</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions						
Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	200	9.94E-04	2.07E-04	0.20	0.04
Buildozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.20</b>	<b>0.04</b>

<sup>a</sup> From Table 57

**Table 26**  
**500 kV Transmission Line Construction Emissions**  
**Tower Foundations Installation**

<sup>a</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>b</sup> Estimate

**Table 26b**  
**500 kV Transmission Line Construction Emissions**  
**Install Micropile Foundations**

Emissions Summary							
Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.15	15.80	7.68	0.03	0.24	0.22	104.7
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>1.15</b>	<b>15.80</b>	<b>7.68</b>	<b>0.03</b>	<b>0.24</b>	<b>0.22</b>	<b>104.7</b>
Offsite Motor Vehicle Exhaust	0.16	1.23	0.10	0.00	0.03	0.02	17.4
Offsite Helicopter Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.29	0.00	
<b>Offsite Total</b>	<b>0.16</b>	<b>1.23</b>	<b>0.10</b>	<b>0.00</b>	<b>0.32</b>	<b>0.02</b>	<b>17.4</b>
<b>Total</b>	<b>1.30</b>	<b>17.03</b>	<b>7.78</b>	<b>0.03</b>	<b>0.56</b>	<b>0.24</b>	<b>122.1</b>

Construction Equipment Summary				
Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor	150	1	96	8
Grout Machine	60	1	80	8
Drill Rig	75	1	96	8
Transfer Pump	60	1	80	8

Note: Helicopter use accounted for in Table 29c

Construction Equipment Exhaust Emission Factors										
Equipment	Horse-power	0.042814	0.500686	0.28637	0.001746	0.0041623	PM2.5 (lb/hr) <sup>b</sup>	164.8678	0.003863	Category
Compressor	150	0.042	0.500	0.219	0.001	0.010	0.010	88.483	0.004	Air Compressors
Grout Machine	60	0.038	0.504	0.273	0.001	0.009	0.008	80.859	0.003	Other Construction Equipment
Drill Rig	75	0.025	0.466	0.195	0.001	0.002	0.002	77.122	0.002	Bore/Drill Rigs
Transfer Pump	60	0.038	0.504	0.273	0.001	0.009	0.008	80.859	0.003	Other Construction Equipment

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction = 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

Construction Equipment Daily Criteria Pollutant Exhaust Emissions						
Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor	0.34	4.00	1.75	0.01	0.08	0.08
Grout Machine	0.30	4.04	2.18	0.01	0.07	0.06
Drill Rig	0.20	3.73	1.56	0.01	0.02	0.01
Transfer Pump	0.30	4.04	2.18	0.01	0.07	0.06
<b>Total</b>	<b>1.15</b>	<b>15.80</b>	<b>7.68</b>	<b>0.03</b>	<b>0.24</b>	<b>0.22</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions			
Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor	30.8	0.0	30.9
Grout Machine	23.5	0.0	23.5
Drill Rig	26.9	0.0	26.9
Transfer Pump	23.5	0.0	23.5
<b>Total</b>	<b>104.6</b>	<b>0.0</b>	<b>104.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Usage				
Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
Worker Commute	6	96	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 26b**  
**500 kV Transmission Line Construction Emissions**  
**Install Micropile Foundations**

<b>Motor Vehicle Exhaust Emission Factors</b>									
Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

<b>Motor Vehicle Daily Criteria Pollutant Exhaust Emissions</b>						
Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.16	1.23	0.10	0.00	0.03	0.02
<b>Offsite Total</b>	<b>0.16</b>	<b>1.23</b>	<b>0.10</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>
<b>Total</b>	<b>0.16</b>	<b>1.23</b>	<b>0.10</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

<b>Motor Vehicle Total Greenhouse Gas Emissions</b>			
Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Worker Commute	17.4	0.0	17.4
<b>Offsite Total</b>	<b>17.4</b>	<b>0.0</b>	<b>17.4</b>
<b>Total</b>	<b>17.4</b>	<b>0.0</b>	<b>17.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

<sup>a</sup> From Table 56

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

<b>Motor Vehicle Fugitive Particulate Matter Emissions</b>							
Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Worker Commute	6	Paved	60	0.001	0.000	0.29	0.00
<b>Offsite Total</b>						<b>0.29</b>	<b>0.00</b>
<b>Total</b>						<b>0.29</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

<b>Earthwork Fugitive Particulate Matter Emissions</b>						
Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Estimate

**Table 27**  
**500 kV Transmission Line Construction Emissions**  
**Tower Steel Haul**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.18	2.65	0.59	0.01	0.02	0.02	2.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.18</b>	<b>2.65</b>	<b>0.59</b>	<b>0.01</b>	<b>0.02</b>	<b>0.02</b>	<b>2.0</b>
Offsite Motor Vehicle Exhaust	0.13	0.97	0.32	0.00	0.04	0.02	1.7
Offsite Motor Vehicle Fugitive PM	--	--	--	--	55.45	5.53	
<b>Offsite Total</b>	<b>0.13</b>	<b>0.97</b>	<b>0.32</b>	<b>0.00</b>	<b>55.49</b>	<b>5.55</b>	<b>1.7</b>
<b>Total</b>	<b>0.31</b>	<b>3.62</b>	<b>0.90</b>	<b>0.01</b>	<b>55.51</b>	<b>5.57</b>	<b>3.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Rough Terrain Forklift	125	1	10	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Rough Terrain Forklift	125	0.023	0.331	0.073	0.001	0.003	0.003	56.054	0.002	Forklifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Rough Terrain Forklift	0.18	2.65	0.59	0.01	0.02	0.02
<b>Total</b>	<b>0.18</b>	<b>2.65</b>	<b>0.59</b>	<b>0.01</b>	<b>0.02</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Rough Terrain Forklift	2.0	0.0	2.0
<b>Total</b>	<b>2.0</b>	<b>0.0</b>	<b>2.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
1-Ton Crew Cab Flat Bed, 4x4	2	10	N/A	5
Flat Bed Truck/Trailer	1	10	N/A	20
Worker Commute	4	10	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Flat Bed Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 27**  
**500 kV Transmission Line Construction Emissions**  
**Tower Steel Haul**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab Flat Bed, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
Flat Bed Truck/Trailer	0.02	0.09	0.19	0.00	0.01	0.01
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.13</b>	<b>0.97</b>	<b>0.32</b>	<b>0.00</b>	<b>0.04</b>	<b>0.02</b>
<b>Total</b>	<b>0.13</b>	<b>0.97</b>	<b>0.32</b>	<b>0.00</b>	<b>0.04</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1-Ton Crew Cab Flat Bed, 4x4	0.1	0.0	0.1
Flat Bed Truck/Trailer	0.4	0.0	0.4
Worker Commute	1.2	0.0	1.2
<b>Offsite Total</b>	<b>1.7</b>	<b>0.0</b>	<b>1.7</b>
<b>Total</b>	<b>1.7</b>	<b>0.0</b>	<b>1.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1-Ton Crew Cab Flat Bed, 4x4	2	Unpaved	5	1.237	0.124	12.37	1.24
Flat Bed Truck/Trailer	1	Unpaved	20	2.145	0.214	42.90	4.29
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>55.45</b>	<b>5.53</b>
<b>Total</b>						<b>55.45</b>	<b>5.53</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 28**  
**500 kV Transmission Line Construction Emissions**  
**Tower Steel Assembly**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.70	5.79	3.60	0.02	0.14	0.13	25.2
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.70</b>	<b>5.79</b>	<b>3.60</b>	<b>0.02</b>	<b>0.14</b>	<b>0.13</b>	<b>25.2</b>
Offsite Motor Vehicle Exhaust	0.29	2.24	0.36	0.01	0.07	0.04	13.7
Offsite Motor Vehicle Fugitive PM	--	--	--	--	33.08	3.26	
<b>Offsite Total</b>	<b>0.29</b>	<b>2.24</b>	<b>0.36</b>	<b>0.01</b>	<b>33.14</b>	<b>3.30</b>	<b>13.7</b>
<b>Total</b>	<b>0.98</b>	<b>8.03</b>	<b>3.96</b>	<b>0.02</b>	<b>33.29</b>	<b>3.44</b>	<b>38.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Rough Terrain Forklift	125	1	40	6
RT Crane (M)	215	1	40	6
Compressor Trailer	60	1	40	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Rough Terrain Forklift	125	0.023	0.331	0.073	0.001	0.003	0.003	56.054	0.002	Forklifts
RT Crane (M)	215	0.054	0.232	0.271	0.001	0.009	0.009	112.159	0.005	Cranes
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction = 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Rough Terrain Forklift	0.14	1.99	0.44	0.00	0.02	0.02
RT Crane (M)	0.33	1.39	1.62	0.01	0.06	0.05
Compressor Trailer	0.23	2.42	1.54	0.00	0.07	0.07
<b>Total</b>	<b>0.70</b>	<b>5.79</b>	<b>3.60</b>	<b>0.02</b>	<b>0.14</b>	<b>0.13</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Rough Terrain Forklift	6.1	0.0	6.1
RT Crane (M)	12.2	0.0	12.2
Compressor Trailer	6.8	0.0	6.8
<b>Total</b>	<b>25.1</b>	<b>0.0</b>	<b>25.2</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	2	40	N/A	10
1-Ton Crew Cab Flat Bed, 4x4	2	40	N/A	5
Worker Commute	10	40	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 28**  
**500 kV Transmission Line Construction Emissions**  
**Tower Steel Assembly**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.02	0.12	0.12	0.00	0.01	0.00
1-Ton Crew Cab Flat Bed, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
<b>Offsite Total</b>	<b>0.29</b>	<b>2.24</b>	<b>0.36</b>	<b>0.01</b>	<b>0.07</b>	<b>0.04</b>
<b>Total</b>	<b>0.29</b>	<b>2.24</b>	<b>0.36</b>	<b>0.01</b>	<b>0.07</b>	<b>0.04</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	1.0	0.0	1.0
1-Ton Crew Cab Flat Bed, 4x4	0.5	0.0	0.5
Worker Commute	12.1	0.0	12.1
<b>Offsite Total</b>	<b>13.7</b>	<b>0.0</b>	<b>13.7</b>
<b>Total</b>	<b>13.7</b>	<b>0.0</b>	<b>13.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	2	Unpaved	10	1.012	0.101	20.23	2.02
1-Ton Crew Cab Flat Bed, 4x4	2	Unpaved	5	1.237	0.124	12.37	1.24
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
<b>Offsite Total</b>						<b>33.08</b>	<b>3.26</b>
<b>Total</b>						<b>33.08</b>	<b>3.26</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

a From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]



**Table 29**  
**500 kV Transmission Line Construction Emissions**  
**Tower Erection**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.07	5.93	5.55	0.02	0.21	0.20	17.7
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>1.07</b>	<b>5.93</b>	<b>5.55</b>	<b>0.02</b>	<b>0.21</b>	<b>0.20</b>	<b>17.7</b>
Offsite Motor Vehicle Exhaust	0.38	2.91	0.67	0.01	0.09	0.06	15.2
Offsite Motor Vehicle Fugitive PM	--	--	--	--	83.19	8.26	
<b>Offsite Total</b>	<b>0.38</b>	<b>2.91</b>	<b>0.67</b>	<b>0.01</b>	<b>83.29</b>	<b>8.32</b>	<b>15.2</b>
<b>Total</b>	<b>1.46</b>	<b>8.84</b>	<b>6.22</b>	<b>0.03</b>	<b>83.50</b>	<b>8.52</b>	<b>33.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor Trailer	60	1	33	8
RT Crane (M)	215	1	22	6
RT Crane (L)	275	1	11	6

Note: Helicopter use accounted for in Table 29c

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
RT Crane (M)	215	0.054	0.232	0.271	0.001	0.009	0.009	112.159	0.005	Cranes
RT Crane (L)	275	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor Trailer	0.23	2.42	1.54	0.00	0.07	0.07
RT Crane (M)	0.33	1.39	1.62	0.01	0.06	0.05
RT Crane (L)	0.51	2.12	2.39	0.01	0.09	0.08
<b>Total</b>	<b>1.07</b>	<b>5.93</b>	<b>5.55</b>	<b>0.02</b>	<b>0.21</b>	<b>0.20</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor Trailer	5.6	0.0	5.6
RT Crane (M)	6.7	0.0	6.7
RT Crane (L)	5.4	0.0	5.4
<b>Total</b>	<b>17.7</b>	<b>0.0</b>	<b>17.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	3	33	N/A	15
1-Ton Crew Cab Flat Bed, 4x4	2	33	N/A	15
Worker Commute	12	33	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 29**  
**500 kV Transmission Line Construction Emissions**  
**Tower Erection**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.04	0.27	0.28	0.00	0.01	0.01
1-Ton Crew Cab Flat Bed, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
Worker Commute	0.31	2.47	0.21	0.01	0.07	0.05
<b>Offsite Total</b>	<b>0.38</b>	<b>2.91</b>	<b>0.67</b>	<b>0.01</b>	<b>0.09</b>	<b>0.06</b>
<b>Total</b>	<b>0.38</b>	<b>2.91</b>	<b>0.67</b>	<b>0.01</b>	<b>0.09</b>	<b>0.06</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	1.9	0.0	1.9
1-Ton Crew Cab Flat Bed, 4x4	1.3	0.0	1.3
Worker Commute	12.0	0.0	12.0
<b>Offsite Total</b>	<b>15.2</b>	<b>0.0</b>	<b>15.2</b>
<b>Total</b>	<b>15.2</b>	<b>0.0</b>	<b>15.2</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	3	Unpaved	15	1.012	0.101	45.52	4.55
1-Ton Crew Cab Flat Bed, 4x4	2	Unpaved	15	1.237	0.124	37.10	3.71
Worker Commute	12	Paved	60	0.001	0.000	0.58	0.00
<b>Offsite Total</b>						<b>83.19</b>	<b>8.26</b>
<b>Total</b>						<b>83.19</b>	<b>8.26</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 29b

**500 kV Transmission Line Construction Emissions  
Tower Erection (Helicopter) Ground Support**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.0</b>
Offsite Motor Vehicle Exhaust	0.59	4.56	0.81	0.01	0.14	0.09	5.0
Offsite Helicopter Exhaust	0.23	2.42	1.54	0.00	0.07	0.07	1.36
Offsite Motor Vehicle Fugitive PM	--	--	--	--	93.83	9.29	
<b>Offsite Total</b>	<b>0.82</b>	<b>6.98</b>	<b>2.35</b>	<b>0.02</b>	<b>94.04</b>	<b>9.44</b>	<b>6.4</b>
<b>Total</b>	<b>0.82</b>	<b>6.98</b>	<b>2.35</b>	<b>0.02</b>	<b>94.04</b>	<b>9.44</b>	<b>6.4</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor Trailer	60	1	8	8

Note: Helicopter use accounted for in Table 29c

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor Trailer	0.23	2.42	1.54	0.00	0.07	0.07
<b>Total</b>	<b>0.23</b>	<b>2.42</b>	<b>1.54</b>	<b>0.00</b>	<b>0.07</b>	<b>0.07</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor Trailer	1.4	0.0	1.4
<b>Total</b>	<b>1.4</b>	<b>0.0</b>	<b>1.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	2	2	N/A	15
1-Ton Truck, 4x4	2	2	N/A	15
Fuel, Helicopter Support Truck	1	2	N/A	15
Worker Commute	20	8	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Fuel, Helicopter Support Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 29b**  
**500 kV Transmission Line Construction Emissions**  
**Tower Erection (Helicopter) Ground Support**

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions						
Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
1-Ton Truck, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
Fuel, Helicopter Support Truck	0.01	0.09	0.09	0.00	0.00	0.00
Worker Commute	0.52	4.11	0.35	0.01	0.12	0.08
<b>Offsite Total</b>	<b>0.59</b>	<b>4.56</b>	<b>0.81</b>	<b>0.01</b>	<b>0.14</b>	<b>0.09</b>
<b>Total</b>	<b>0.59</b>	<b>4.56</b>	<b>0.81</b>	<b>0.01</b>	<b>0.14</b>	<b>0.09</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions			
Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	0.1	0.0	0.1
1-Ton Truck, 4x4	0.1	0.0	0.1
Fuel, Helicopter Support Truck	0.0	0.0	0.0
Worker Commute	4.8	0.0	4.8
<b>Offsite Total</b>	<b>5.0</b>	<b>0.0</b>	<b>5.0</b>
<b>Total</b>	<b>5.0</b>	<b>0.0</b>	<b>5.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008. [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Fugitive Particulate Matter Emissions							
Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	2	Unpaved	15	1.012	0.101	30.35	3.03
1-Ton Truck, 4x4	2	Unpaved	15	1.012	0.101	30.35	3.03
Fuel, Helicopter Support Truck	1	Unpaved	15	2.145	0.214	32.17	3.22
Worker Commute	20	Paved	60	0.001	0.000	0.96	0.00
<b>Offsite Total</b>						<b>93.83</b>	<b>9.29</b>
<b>Total</b>						<b>93.83</b>	<b>9.29</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions						
Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 29c**  
**500 kV Transmission Line Construction Emissions**  
**Tower Helicopter Operations**

Emissions Summary							
Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.0</b>
Offsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Offsite Helicopter Exhaust	46.71	56.80	577.42	32.18	12.02	12.02	1626.43
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
<b>Offsite Total</b>	<b>46.71</b>	<b>56.80</b>	<b>577.42</b>	<b>32.18</b>	<b>12.02</b>	<b>12.02</b>	<b>1626.4</b>
<b>Total</b>	<b>46.71</b>	<b>56.80</b>	<b>577.42</b>	<b>32.18</b>	<b>12.02</b>	<b>12.02</b>	<b>1626.4</b>

Construction Equipment Summary				
Equipment	Horse-power	Number	Days Used	Hours Used/Day
Kaman K-Max	1500	1	120	8
Hughes 500E Helicopter	317	1	127	12
Sikorsky S64	9000	1	7	12

Construction Equipment Exhaust Emission Factors										
Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Kaman K-Max	1500	1.129	1.353	7.403	0.626	0.201	0.201	1978.170	0.055	See note c
Hughes 500E Helicopter	317	2.106	2.645	1.067	0.218	0.035	0.035	676.039	0.019	See note c
Sikorsky S64	9000	1.786	2.088	47.051	2.464	0.966	0.966	7788.012	0.216	See note c

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction = 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

<sup>c</sup> All except SOx, PM2.5, CO2, and CH4 from Guidance on the Determination of Helicopter Emissions, Federal Department of the Environment, Transport, Energy and Communications,

DETEC, Federal Office of Civil Aviation FOCA, Division Aviation Policy and Strategy, Swiss Confederation, March 2009.

Downloaded from <http://www.bazl.admin.ch/experten/regulation/03312/03419/03532/index.html?lang=en>

PM2.5 emissions assumed equal to PM10

SOx emissions [lb/hr] = Fuel use [kg/hr] x 1000 [g/kg] / 453.6 [g/lb] x Fuel sulfur [wt. %] / 100 x 2 [lb SO2/lbS]

K-Max Fuel use = 283.86 kg/hr from Guidance on the Determination of Helicopter Emissions

Hughes 500E Fuel use = 98.8 kg/hr from Guidance on the Determination of Helicopter Emissions

Sikorsky S64 Fuel use = 1,118 kg/hr from Guidance on the Determination of Helicopter Emissions

Fuel sulfur = 0.05% from estimated average for Jet A

CO2 emissions [lb/hr] = CO2 emission factor [kg/gal] x 1000 [g/kg] / 453.6 [g/lb] x Fuel use [kg/hr] x 1000 [g/kg] / 453.6 [g/lb] / Fuel density [lb/gal]

CO2 emission factor = 9.75 kg/gal from Table 13.1 of 2013 Climate Registry Default Emission Factors, downloaded from

<http://www.theclimaterestry.org/downloads/2013/01/2013-Climat-Registry-Default-Emissions-Factors.pdf>

CH4 emission factor = 0.27 g/gal from Table 13.7 of 2013 Climate Registry Default Emission Factors

K-Max Fuel use = 283.86 kg/hr from Guidance on the Determination of Helicopter Emissions

Hughes 500E Fuel use = 98.8 kg/hr from Guidance on the Determination of Helicopter Emissions

Sikorsky S64 Fuel use = 1,118 kg/hr from Guidance on the Determination of Helicopter Emissions

Jet-A density = 6.8 lb/gal

Construction Equipment Daily Criteria Pollutant Exhaust Emissions						
Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Kaman K-Max	9.03	10.83	59.22	5.01	1.60	1.60
Hughes 500E Helicopter	25.27	31.74	12.80	2.61	0.42	0.42
Sikorsky S64	21.44	25.06	564.62	29.57	11.60	11.60
<b>Total<sup>b</sup></b>	<b>46.71</b>	<b>56.80</b>	<b>577.42</b>	<b>32.18</b>	<b>12.02</b>	<b>12.02</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

<sup>b</sup> Total daily emissions assume that the Kaman K-Max and Sikorsky S64 would not operate on the same day.

Construction Equipment Total Greenhouse Gas Emissions			
Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Kaman K-Max	861.4	0.0	861.9
Hughes 500E Helicopter	467.3	0.0	467.6
Sikorsky S64	296.7	0.0	296.9
<b>Total</b>	<b>1,625.5</b>	<b>0.0</b>	<b>1,626.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO2-equivalent (CO2e) emission factors are CO2 emissions plus 21 x CH4 emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateestry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateestry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

**Table 29c**  
**500 kV Transmission Line Construction Emissions**  
**Tower Helicopter Operations**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				
<b>Offsite</b>				
None				

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed.

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Fuel, Helicopter Support Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 29c**  
**500 kV Transmission Line Construction Emissions**  
**Tower Helicopter Operations**

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions						
Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.00	0.00	0.00	0.00	0.00	0.00
1-Ton Truck, 4x4	0.00	0.00	0.00	0.00	0.00	0.00
Fuel, Helicopter Support Truck	0.00	0.00	0.00	0.00	0.00	0.00
Worker Commute	0.00	0.00	0.00	0.00	0.00	0.00
<b>Offsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions			
Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	0.0	0.0	0.0
1-Ton Truck, 4x4	0.0	0.0	0.0
Fuel, Helicopter Support Truck	0.0	0.0	0.0
Worker Commute	0.0	0.0	0.0
<b>Offsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

<sup>b</sup> Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008. [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Fugitive Particulate Matter Emissions							
Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
None						0.00	0.00
<b>Offsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Total</b>						<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Table 30**  
**500 kV Transmission Line Construction Emissions**  
**Wire Stringing**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	5.93	32.28	29.00	0.15	1.00	0.92	0.00
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>5.93</b>	<b>32.28</b>	<b>29.00</b>	<b>0.15</b>	<b>1.00</b>	<b>0.92</b>	<b>0.0</b>
Offsite Motor Vehicle Exhaust	1.70	12.93	3.12	0.04	0.42	0.29	18.5
Offsite Helicopter Exhaust	12.64	15.87	6.40	1.31	0.21	0.21	0.00
Offsite Motor Vehicle Fugitive PM	--	--	--	--	382.11	37.94	
<b>Offsite Total</b>	<b>14.34</b>	<b>28.80</b>	<b>9.52</b>	<b>1.35</b>	<b>382.75</b>	<b>38.45</b>	<b>18.5</b>
<b>Total</b>	<b>20.27</b>	<b>61.08</b>	<b>38.52</b>	<b>1.51</b>	<b>383.75</b>	<b>39.37</b>	<b>18.5</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Bucket Truck	250	2	9	8
RT Crane (M)	215	2	9	6
Boom/Crane Truck	350	2	9	6
Spacing Cart	10	2	3	8
Static Truck/Tensioner	350	1	9	6
3 Drum Straw Sock Puller	300	1	4	6
Bull Wheel Puller	525	1	5	6
Sag Cat w/ winches	350	2	9	4
Backhoe/Front Loader	125	1	9	4
D8 Cat	350	2	9	4
Hughes 500 E Helicopter	N/A	1	2	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Bucket Truck	250	0.058	0.371	0.366	0.002	0.011	0.010	212.856	0.005	Aerial Lifts
RT Crane (M)	215	0.054	0.232	0.271	0.001	0.009	0.009	112.159	0.005	Cranes
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Spacing Cart	10	0.012	0.062	0.074	0.000	0.003	0.003	10.107	0.001	Other Construction Equipment
Static Truck/Tensioner	350	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment
3 Drum Straw Sock Puller	300	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment
Bull Wheel Puller	525	0.044	0.347	0.202	0.001	0.007	0.006	122.505	0.004	Other Construction Equipment
Sag Cat w/ winches	350	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
D8 Cat	350	0.139	0.588	0.753	0.003	0.028	0.026	259.229	0.013	Crawler Tractors
Hughes 500 E Helicopter	317	2.106	2.645	1.067	0.218	0.035	0.035	676.039		See note c

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

<sup>c</sup> All except SOx, PM2.5 and CO2 from Guidance on the Determination of Helicopter Emissions, Federal Department of the Environment, Transport, Energy and Communications, DETEC, Federal Office of

Civil Aviation FOCA, Division Aviation Policy and Strategy, Swiss Confederation, March 2009. Downloaded from <http://www.bazl.admin.ch/fachleute/01169/01174/01628/index.html?lang=en>

PM2.5 emissions assumed equal to PM10

SOx emissions [lb/hr] = Fuel use [kg/hr] x 1000 [g/kg] / 453.6 [g/lb] x Fuel sulfur [wt. %] / 100 x 2 [lb SO2/lbS]

Fuel use = 98.8 kg/hr from Guidance on the Determination of Helicopter Emissions

Fuel sulfur = 0.05% from estimated average for Jet-A

CO2 emissions [lb/hr] = CO2 emission factor [kg/gal] x 1000 [g/kg] / 453.6 [g/lb] x Fuel use [kg/hr] x 1000 [g/kg] / 453.6 [g/lb] / Fuel density [lb/gal]

CO2 emission factor = 9.57 kg/gal from Table C.3 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008.

Downloaded from [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Fuel use = 98.8 kg/hr from Guidance on the Determination of Helicopter Emissions

Jet-A density = 6.8 lb/gal



**Table 30**  
**500 kV Transmission Line Construction Emissions**  
**Wire Stringing**

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Bucket Truck	0.93	5.94	5.86	0.03	0.17	0.16
RT Crane (M)	0.65	2.78	3.25	0.02	0.11	0.10
Boom/Crane Truck	1.03	4.24	4.77	0.02	0.18	0.16
Spacing Cart	0.19	0.99	1.18	0.00	0.05	0.04
Static Truck/Tensioner	0.48	2.76	1.82	0.01	0.06	0.05
3 Drum Straw Sock Puller	0.48	2.76	1.82	0.01	0.06	0.05
Bull Wheel Puller	0.27	2.08	1.21	0.01	0.04	0.04
Sag Cat w/ winches	0.63	3.68	2.43	0.02	0.08	0.07
Backhoe/Front Loader	0.17	2.34	0.65	0.00	0.03	0.03
D8 Cat	1.11	4.70	6.02	0.02	0.22	0.21
Hughes 500 E Helicopter	12.64	15.87	6.40	1.31	0.21	0.21
<b>Total</b>	<b>18.56</b>	<b>48.15</b>	<b>35.40</b>	<b>1.46</b>	<b>1.21</b>	<b>1.13</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Bucket Truck	13.9	0.0	13.9
RT Crane (M)	5.5	0.0	5.5
Boom/Crane Truck	8.8	0.0	8.8
Spacing Cart	0.2	0.0	0.2
Static Truck/Tensioner	6.2	0.0	6.2
3 Drum Straw Sock Puller	2.8	0.0	2.8
Bull Wheel Puller	1.7	0.0	1.7
Sag Cat w/ winches	8.3	0.0	8.3
Backhoe/Front Loader	1.7	0.0	1.7
D8 Cat	8.5	0.0	8.5
Hughes 500 E Helicopter	3.7	0.0	3.7
<b>Total</b>	<b>61.2</b>	<b>0.0</b>	<b>61.2</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	4	9	N/A	20
1-Ton Crew Cab, 4x4	6	9	N/A	20
Wire Truck/Trailer	4	6	N/A	5
Dump Truck	1	9	N/A	5
Lowboy Truck/Trailer	3	9	N/A	15
Fuel, Helicopter Support Truck	1	2	N/A	30
Worker Commute	55	9	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Wire Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Fuel, Helicopter Support Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 30**  
**500 kV Transmission Line Construction Emissions**  
**Wire Stringing**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.07	0.48	0.49	0.00	0.02	0.02
1-Ton Crew Cab, 4x4	0.11	0.71	0.74	0.00	0.03	0.03
Wire Truck/Trailer	0.02	0.09	0.19	0.00	0.01	0.01
Dump Truck	0.00	0.02	0.05	0.00	0.00	0.00
Lowboy Truck/Trailer	0.04	0.19	0.42	0.00	0.02	0.02
Fuel, Helicopter Support Truck	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	1.44	11.31	0.95	0.04	0.32	0.21
<b>Offsite Total</b>	<b>1.70</b>	<b>12.93</b>	<b>3.12</b>	<b>0.04</b>	<b>0.42</b>	<b>0.29</b>
<b>Total</b>	<b>1.70</b>	<b>12.93</b>	<b>3.12</b>	<b>0.04</b>	<b>0.42</b>	<b>0.29</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	0.9	0.0	0.9
1-Ton Crew Cab, 4x4	1.4	0.0	1.4
Wire Truck/Trailer	0.2	0.0	0.2
Dump Truck	0.1	0.0	0.1
Lowboy Truck/Trailer	0.8	0.0	0.8
Fuel, Helicopter Support Truck	0.1	0.0	0.1
Worker Commute	15.0	0.0	15.0
<b>Offsite Total</b>	<b>18.5</b>	<b>0.0</b>	<b>18.5</b>
<b>Total</b>	<b>18.5</b>	<b>0.0</b>	<b>18.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	4	Unpaved	20	1.012	0.101	80.93	8.09
1-Ton Crew Cab, 4x4	6	Unpaved	20	1.237	0.124	148.39	14.84
Wire Truck/Trailer	4	Unpaved	5	2.145	0.214	42.90	4.29
Dump Truck	1	Unpaved	5	2.145	0.214	10.72	1.07
Lowboy Truck/Trailer	3	Unpaved	15	2.145	0.214	96.51	9.65
Fuel, Helicopter Support Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	55	Paved	60	0.001	0.000	2.64	0.00
<b>Offsite Total</b>						<b>382.11</b>	<b>37.94</b>
<b>Total</b>						<b>382.11</b>	<b>37.94</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 31**  
**500 kV Transmission Line Construction Emissions**  
**Restoration**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.87	6.75	4.42	0.02	0.19	0.17	3.3
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	2.58	0.54	
<b>Onsite Total</b>	<b>0.87</b>	<b>6.75</b>	<b>4.42</b>	<b>0.02</b>	<b>2.77</b>	<b>0.71</b>	<b>3.3</b>
Offsite Motor Vehicle Exhaust	0.20	1.56	0.32	0.01	0.05	0.03	1.0
Offsite Motor Vehicle Fugitive PM	--	--	--	--	44.87	4.45	
<b>Offsite Total</b>	<b>0.20</b>	<b>1.56</b>	<b>0.32</b>	<b>0.01</b>	<b>44.92</b>	<b>4.49</b>	<b>1.0</b>
<b>Total</b>	<b>1.08</b>	<b>8.31</b>	<b>4.75</b>	<b>0.03</b>	<b>47.70</b>	<b>5.20</b>	<b>4.3</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Road Grader	250	1	4	6
Backhoe/Front Loader	125	1	4	4
Drum Type Compactor	100	1	4	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Road Grader	250	0.078	0.355	0.365	0.002	0.013	0.012	172.113	0.007	Graders
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
Drum Type Compactor	100	0.039	0.380	0.265	0.001	0.014	0.013	58.989	0.004	Rollers

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Road Grader	0.47	2.13	2.19	0.01	0.08	0.07
Backhoe/Front Loader	0.17	2.34	0.65	0.00	0.03	0.03
Drum Type Compactor	0.24	2.28	1.59	0.00	0.08	0.08
<b>Total</b>	<b>0.87</b>	<b>6.75</b>	<b>4.42</b>	<b>0.02</b>	<b>0.19</b>	<b>0.17</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Road Grader	1.9	0.0	1.9
Backhoe/Front Loader	0.7	0.0	0.7
Drum Type Compactor	0.6	0.0	0.6
<b>Total</b>	<b>3.3</b>	<b>0.0</b>	<b>3.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
1-Ton Crew Cab, 4x4	2	4	N/A	5
Water Truck	1	4	N/A	5
Lowboy Truck/Trailer	1	4	N/A	10
Worker Commute	7	4	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 31**  
**500 kV Transmission Line Construction Emissions**  
**Restoration**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
Water Truck	0.00	0.02	0.05	0.00	0.00	0.00
Lowboy Truck/Trailer	0.01	0.04	0.09	0.00	0.00	0.00
Worker Commute	0.18	1.44	0.12	0.00	0.04	0.03
<b>Offsite Total</b>	<b>0.20</b>	<b>1.56</b>	<b>0.32</b>	<b>0.01</b>	<b>0.05</b>	<b>0.03</b>
<b>Total</b>	<b>0.20</b>	<b>1.56</b>	<b>0.32</b>	<b>0.01</b>	<b>0.05</b>	<b>0.03</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1-Ton Crew Cab, 4x4	0.1	0.0	0.1
Water Truck	0.0	0.0	0.0
Lowboy Truck/Trailer	0.1	0.0	0.1
Worker Commute	0.8	0.0	0.8
<b>Offsite Total</b>	<b>1.0</b>	<b>0.0</b>	<b>1.0</b>
<b>Total</b>	<b>1.0</b>	<b>0.0</b>	<b>1.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1-Ton Crew Cab, 4x4	2	Unpaved	5	1.237	0.124	12.37	1.24
Water Truck	1	Unpaved	5	2.145	0.214	10.72	1.07
Lowboy Truck/Trailer	1	Unpaved	10	2.145	0.214	21.45	2.14
Worker Commute	7	Paved	60	0.001	0.000	0.34	0.00
<b>Offsite Total</b>						<b>44.87</b>	<b>4.45</b>
<b>Total</b>						<b>44.87</b>	<b>4.45</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	500	9.94E-04	2.07E-04	0.50	0.10
Bulldozing, Scraping and Grading	hr/day	6	0.348	0.072	2.09	0.43
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>2.58</b>	<b>0.54</b>

a From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Estimate

**Table 32**  
**115 kV Subtransmission Line Construction Emissions**  
**Survey**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.0</b>
Offsite Motor Vehicle Exhaust	0.12	0.96	0.08	0.00	0.03	0.02	2.5
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.22	0.00	
<b>Offsite Total</b>	<b>0.12</b>	<b>0.96</b>	<b>0.08</b>	<b>0.00</b>	<b>0.25</b>	<b>0.02</b>	<b>2.5</b>
<b>Total</b>	<b>0.12</b>	<b>0.96</b>	<b>0.08</b>	<b>0.00</b>	<b>0.25</b>	<b>0.02</b>	<b>2.5</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
None				

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
None		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
None	0.0	0.0	0.0
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				
<b>Offsite</b>				
1-Ton Truck, 4x4	2	18	8	20
Worker Commute	4	18	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
1-Ton Truck, 4x4	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 32**  
**115 kV Subtransmission Line Construction Emissions**  
**Survey**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Truck, 4x4	0.02	0.14	0.01	0.00	0.00	0.00
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.12</b>	<b>0.96</b>	<b>0.08</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>
<b>Total</b>	<b>0.12</b>	<b>0.96</b>	<b>0.08</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1-Ton Truck, 4x4	0.4	0.0	0.4
Worker Commute	2.2	0.0	2.2
<b>Offsite Total</b>	<b>2.5</b>	<b>0.0</b>	<b>2.5</b>
<b>Total</b>	<b>2.5</b>	<b>0.0</b>	<b>2.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None							
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1-Ton Truck, 4x4	2	Paved	20	0.001	0.000	0.03	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.22</b>	<b>0.00</b>
<b>Total</b>						<b>0.22</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 33**  
**115 kV Subtransmission Line Construction Emissions**  
**Marshalling Yard**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.25	2.45	0.98	0.01	0.04	0.03	92.9
Onsite Motor Vehicle Exhaust	0.01	0.08	0.11	0.00	0.01	0.00	8.2
Onsite Motor Vehicle Fugitive PM	--	--	--	--	23.09	2.31	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.26</b>	<b>2.53</b>	<b>1.09</b>	<b>0.01</b>	<b>23.13</b>	<b>2.35</b>	<b>101.1</b>
Offsite Motor Vehicle Exhaust	0.10	0.82	0.07	0.00	0.02	0.02	44.2
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.19	0.00	
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.22</b>	<b>0.02</b>	<b>44.2</b>
<b>Total</b>	<b>0.36</b>	<b>3.35</b>	<b>1.16</b>	<b>0.01</b>	<b>23.35</b>	<b>2.36</b>	<b>145.3</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Boom/Crane Truck	215	1	365	2
Rough Terrain Forklift	125	1	365	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Boom/Crane Truck	215	0.054	0.232	0.271	0.001	0.009	0.009	112.159	0.005	Cranes
Rough Terrain Forklift	125	0.023	0.331	0.073	0.001	0.003	0.003	56.054	0.002	Forklifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction=

0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Boom/Crane Truck	0.11	0.46	0.54	0.00	0.02	0.02
Rough Terrain Forklift	0.14	1.99	0.44	0.00	0.02	0.02
<b>Total</b>	<b>0.25</b>	<b>2.45</b>	<b>0.98</b>	<b>0.01</b>	<b>0.04</b>	<b>0.03</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Boom/Crane Truck	37.1	0.0	37.2
Rough Terrain Forklift	55.7	0.0	55.7
<b>Total</b>	<b>92.8</b>	<b>0.0</b>	<b>92.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
1-Ton Crew Cab, 4x4	1	365	4	10
Truck, Semi Tractor	1	365	2	5
<b>Offsite</b>				
Worker Commute	4	365	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Truck, Semi Tractor	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 33**  
**115 kV Subtransmission Line Construction Emissions**  
**Marshalling Yard**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
1-Ton Crew Cab, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
Truck, Semi Tractor	0.00	0.02	0.05	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.01</b>	<b>0.08</b>	<b>0.11</b>	<b>0.00</b>	<b>0.01</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>
<b>Total</b>	<b>0.12</b>	<b>0.90</b>	<b>0.18</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
1-Ton Crew Cab, 4x4	4.8	0.0	4.8
Truck, Semi Tractor	3.5	0.0	3.5
<b>Onsite Total</b>	<b>8.2</b>	<b>0.0</b>	<b>8.2</b>
<b>Offsite</b>			
Worker Commute	44.1	0.0	44.2
<b>Offsite Total</b>	<b>44.1</b>	<b>0.0</b>	<b>44.2</b>
<b>Total</b>	<b>52.4</b>	<b>0.0</b>	<b>52.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
1-Ton Crew Cab, 4x4	1	Unpaved	10	1.237	0.124	12.37	1.24
Truck, Semi Tractor	1	Unpaved	5	2.145	0.214	10.72	1.07
<b>Onsite Total</b>						<b>23.09</b>	<b>2.31</b>
<b>Offsite</b>							
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.19</b>	<b>0.00</b>
<b>Total</b>						<b>23.28</b>	<b>2.31</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]



**Table 34**  
**115 kV Subtransmission Line Construction Emissions**  
**Roads and Landing Work**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.60	12.73	7.49	0.04	0.34	0.31	109.3
Onsite Motor Vehicle Exhaust	0.00	0.00	0.01	0.00	0.00	0.00	0.2
Onsite Motor Vehicle Fugitive PM	--	--	--	--	2.14	0.21	
Earthwork Fugitive PM	--	--	--	--	3.58	0.74	
<b>Onsite Total</b>	<b>1.60</b>	<b>12.73</b>	<b>7.50</b>	<b>0.04</b>	<b>6.06</b>	<b>1.27</b>	<b>109.5</b>
Offsite Motor Vehicle Exhaust	0.18	1.34	0.55	0.01	0.05	0.04	19.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.29	0.00	
<b>Offsite Total</b>	<b>0.18</b>	<b>1.34</b>	<b>0.55</b>	<b>0.01</b>	<b>0.34</b>	<b>0.04</b>	<b>19.3</b>
<b>Total</b>	<b>1.79</b>	<b>14.07</b>	<b>8.05</b>	<b>0.04</b>	<b>6.40</b>	<b>1.31</b>	<b>128.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Road Grader	250	1	88	4
Backhoe/Front Loader	125	1	88	6
Drum Type Compactor	100	1	88	4
Track Type Dozer	150	1	88	6
Excavator	250	1	44	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Road Grader	250	0.078	0.355	0.365	0.002	0.013	0.012	172.113	0.007	Graders
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
Drum Type Compactor	100	0.039	0.380	0.265	0.001	0.014	0.013	58.989	0.004	Rollers
Track Type Dozer	150	0.082	0.727	0.445	0.001	0.024	0.022	121.188	0.007	Crawler Tractors
Excavator	250	0.065	0.321	0.222	0.002	0.007	0.007	158.683	0.006	Excavators

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Road Grader	0.31	1.42	1.46	0.01	0.05	0.05
Backhoe/Front Loader	0.25	3.50	0.97	0.01	0.04	0.04
Drum Type Compactor	0.16	1.52	1.06	0.00	0.05	0.05
Track Type Dozer	0.49	4.36	2.67	0.01	0.14	0.13
Excavator	0.39	1.93	1.33	0.01	0.04	0.04
<b>Total</b>	<b>1.60</b>	<b>12.73</b>	<b>7.49</b>	<b>0.04</b>	<b>0.34</b>	<b>0.31</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Road Grader	27.5	0.0	27.5
Backhoe/Front Loader	24.3	0.0	24.3
Drum Type Compactor	9.4	0.0	9.4
Track Type Dozer	29.0	0.0	29.1
Excavator	19.0	0.0	19.0
<b>Total</b>	<b>109.2</b>	<b>0.0</b>	<b>109.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh.
<b>Onsite</b>				
Water Truck	1	88	8	1
<b>Offsite</b>				
1-Ton Crew Cab, 4x4	1	88	N/A	30
Lowboy Truck/Trailer	1	44	N/A	30
Worker Commute	5	88	N/A	60

**Table 34**  
**115 kV Subtransmission Line Construction Emissions**  
**Roads and Landing Work**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
<b>Offsite</b>									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Water Truck	0.00	0.00	0.01	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
Lowboy Truck/Trailer	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.13	1.03	0.09	0.00	0.03	0.02
<b>Offsite Total</b>	<b>0.18</b>	<b>1.34</b>	<b>0.55</b>	<b>0.01</b>	<b>0.05</b>	<b>0.04</b>
<b>Total</b>	<b>0.18</b>	<b>1.34</b>	<b>0.56</b>	<b>0.01</b>	<b>0.05</b>	<b>0.04</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Water Truck	0.2	0.0	0.2
<b>Onsite Total</b>	<b>0.2</b>	<b>0.0</b>	<b>0.2</b>
<b>Offsite</b>			
1-Ton Crew Cab, 4x4	3.5	0.0	3.5
Lowboy Truck/Trailer	2.5	0.0	2.5
Worker Commute	13.3	0.0	13.3
<b>Offsite Total</b>	<b>19.3</b>	<b>0.0</b>	<b>19.3</b>
<b>Total</b>	<b>19.4</b>	<b>0.0</b>	<b>19.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Water Truck	1	Unpaved	1	2.145	0.214	2.14	0.21
<b>Onsite Total</b>						<b>2.14</b>	<b>0.21</b>
<b>Offsite</b>							
1-Ton Crew Cab, 4x4	1	Paved	30	0.001	0.000	0.02	0.00
Lowboy Truck/Trailer	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	5	Paved	60	0.001	0.000	0.24	0.00
<b>Offsite Total</b>						<b>0.29</b>	<b>0.00</b>
<b>Total</b>						<b>2.43</b>	<b>0.21</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	100	9.94E-04	2.07E-04	0.10	0.02
Bulldozing, Scraping and Grading	hr/day	10	0.348	0.072	3.48	0.72
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>3.58</b>	<b>0.74</b>

a From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Estimate

**Table 35**  
**115 kV Subtransmission Line Construction Emissions**  
**Guard Structure Installation**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.35	8.18	6.39	0.04	0.23	0.22	43.7
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>1.35</b>	<b>8.18</b>	<b>6.39</b>	<b>0.04</b>	<b>0.23</b>	<b>0.22</b>	<b>43.7</b>
Offsite Motor Vehicle Exhaust	0.26	1.90	0.94	0.01	0.07	0.05	9.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.38	0.00	
<b>Offsite Total</b>	<b>0.26</b>	<b>1.90</b>	<b>0.94</b>	<b>0.01</b>	<b>0.46</b>	<b>0.05</b>	<b>9.3</b>
<b>Total</b>	<b>1.61</b>	<b>10.08</b>	<b>7.33</b>	<b>0.05</b>	<b>0.69</b>	<b>0.27</b>	<b>53.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor Trailer	60	1	26	6
Auger Truck	210	1	26	6
Boom/Crane Truck	350	1	26	8
Bucket Truck	250	1	26	4

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
Auger Truck	210	0.043	0.343	0.098	0.002	0.004	0.003	188.102	0.004	Bore/Drill Rigs
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Bucket Truck	250	0.058	0.371	0.366	0.002	0.011	0.010	212.856	0.005	Aerial Lifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor Trailer	0.17	1.81	1.16	0.00	0.05	0.05
Auger Truck	0.26	2.06	0.59	0.01	0.02	0.02
Boom/Crane Truck	0.69	2.83	3.18	0.01	0.12	0.11
Bucket Truck	0.23	1.48	1.46	0.01	0.04	0.04
<b>Total</b>	<b>1.35</b>	<b>8.18</b>	<b>6.39</b>	<b>0.04</b>	<b>0.23</b>	<b>0.22</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor Trailer	3.3	0.0	3.3
Auger Truck	13.3	0.0	13.3
Boom/Crane Truck	17.0	0.0	17.0
Bucket Truck	10.0	0.0	10.0
<b>Total</b>	<b>43.7</b>	<b>0.0</b>	<b>43.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				
<b>Offsite</b>				
3/4-Ton Pick-up Truck, 4x4	2	26	N/A	30
1-Ton Crew Cab Flat Bed, 4x4	1	26	N/A	30
Extendable Flat Bed Pole Truck	1	26	N/A	30
Worker Commute	6	26	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 35**  
**115 kV Subtransmission Line Construction Emissions**  
**Guard Structure Installation**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Pick-up Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Extendable Flat Bed Pole Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Pick-up Truck, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
1-Ton Crew Cab Flat Bed, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
Extendable Flat Bed Pole Truck	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.16	1.23	0.10	0.00	0.03	0.02
<b>Offsite Total</b>	<b>0.26</b>	<b>1.90</b>	<b>0.94</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>
<b>Total</b>	<b>0.26</b>	<b>1.90</b>	<b>0.94</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Pick-up Truck, 4x4	2.0	0.0	2.0
1-Ton Crew Cab Flat Bed, 4x4	1.0	0.0	1.0
Extendable Flat Bed Pole Truck	1.5	0.0	1.5
Worker Commute	4.7	0.0	4.7
<b>Offsite Total</b>	<b>9.3</b>	<b>0.0</b>	<b>9.3</b>
<b>Total</b>	<b>9.3</b>	<b>0.0</b>	<b>9.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None							
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Pick-up Truck, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
1-Ton Crew Cab Flat Bed, 4x4	1	Paved	30	0.001	0.000	0.02	0.00
Extendable Flat Bed Pole Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	6	Paved	60	0.001	0.000	0.29	0.00
<b>Offsite Total</b>						<b>0.38</b>	<b>0.00</b>
<b>Total</b>						<b>0.38</b>	<b>0.00</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

a From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 36**  
**115 kV Subtransmission Line Construction Emissions**  
**Remove Existing Wood H-Frames and Poles**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.84	5.86	4.22	0.02	0.17	0.16	17.5
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.84</b>	<b>5.86</b>	<b>4.22</b>	<b>0.02</b>	<b>0.17</b>	<b>0.16</b>	<b>17.5</b>
Offsite Motor Vehicle Exhaust	0.24	1.72	0.75	0.01	0.07	0.05	7.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.36	0.00	
<b>Offsite Total</b>	<b>0.24</b>	<b>1.72</b>	<b>0.75</b>	<b>0.01</b>	<b>0.43</b>	<b>0.05</b>	<b>7.3</b>
<b>Total</b>	<b>1.07</b>	<b>7.58</b>	<b>4.97</b>	<b>0.02</b>	<b>0.60</b>	<b>0.20</b>	<b>24.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Rough Terrain Forklift	125	1	23	4
Boom/Crane Truck	350	1	23	6
Compressor Trailer	60	1	23	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Rough Terrain Forklift	125	0.023	0.331	0.073	0.001	0.003	0.003	56.054	0.002	Forklifts
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction = 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Rough Terrain Forklift	0.09	1.32	0.29	0.00	0.01	0.01
Boom/Crane Truck	0.51	2.12	2.39	0.01	0.09	0.08
Compressor Trailer	0.23	2.42	1.54	0.00	0.07	0.07
<b>Total</b>	<b>0.84</b>	<b>5.86</b>	<b>4.22</b>	<b>0.02</b>	<b>0.17</b>	<b>0.16</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Rough Terrain Forklift	2.3	0.0	2.3
Boom/Crane Truck	11.3	0.0	11.3
Compressor Trailer	3.9	0.0	3.9
<b>Total</b>	<b>17.5</b>	<b>0.0</b>	<b>17.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				
<b>Offsite</b>				
1-Ton Crew Cab, 4x4	2	23	N/A	30
Flat Bed Truck/Trailer	1	23	N/A	30
Worker Commute	6	23	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 36**  
**115 kV Subtransmission Line Construction Emissions**  
**Remove Existing Wood H-Frames and Poles**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Flat Bed Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
Flat Bed Truck/Trailer	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.16	1.23	0.10	0.00	0.03	0.02
<b>Offsite Total</b>	<b>0.24</b>	<b>1.72</b>	<b>0.75</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>
<b>Total</b>	<b>0.24</b>	<b>1.72</b>	<b>0.75</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1-Ton Crew Cab, 4x4	1.8	0.0	1.8
Flat Bed Truck/Trailer	1.3	0.0	1.3
Worker Commute	4.2	0.0	4.2
<b>Offsite Total</b>	<b>7.3</b>	<b>0.0</b>	<b>7.3</b>
<b>Total</b>	<b>7.3</b>	<b>0.0</b>	<b>7.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None							
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1-Ton Crew Cab, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
Flat Bed Truck/Trailer	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	6	Paved	60	0.001	0.000	0.29	0.00
<b>Offsite Total</b>						<b>0.36</b>	<b>0.00</b>
<b>Total</b>						<b>0.36</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 37**  
**115 kV Subtransmission Line Construction Emissions**  
**Remove Existing Tubular Steel/Light Weight Steel Poles**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.66	3.63	3.35	0.01	0.13	0.12	3.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.66</b>	<b>3.63</b>	<b>3.35</b>	<b>0.01</b>	<b>0.13</b>	<b>0.12</b>	<b>3.0</b>
Offsite Motor Vehicle Exhaust	0.32	2.36	0.88	0.01	0.08	0.06	2.0
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.48	0.00	
<b>Offsite Total</b>	<b>0.32</b>	<b>2.36</b>	<b>0.88</b>	<b>0.01</b>	<b>0.56</b>	<b>0.06</b>	<b>2.0</b>
<b>Total</b>	<b>0.98</b>	<b>5.99</b>	<b>4.23</b>	<b>0.02</b>	<b>0.69</b>	<b>0.18</b>	<b>5.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor Trailer	60	1	5	5
Boom/Crane Truck	350	1	5	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor Trailer	0.14	1.51	0.96	0.00	0.04	0.04
Boom/Crane Truck	0.51	2.12	2.39	0.01	0.09	0.08
<b>Total</b>	<b>0.66</b>	<b>3.63</b>	<b>3.35</b>	<b>0.01</b>	<b>0.13</b>	<b>0.12</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor Trailer	0.5	0.0	0.5
Boom/Crane Truck	2.5	0.0	2.5
<b>Total</b>	<b>3.0</b>	<b>0.0</b>	<b>3.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				
<b>Offsite</b>				
3/4-Ton Truck, 4x4	2	5	N/A	30
1-Ton Crew Cab Flat Bed, 4x4	2	5	N/A	30
Worker Commute	8	5	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 37**  
**115 kV Subtransmission Line Construction Emissions**  
**Remove Existing Tubular Steel/Light Weight Steel Poles**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
1-Ton Crew Cab Flat Bed, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
Worker Commute	0.21	1.65	0.14	0.01	0.05	0.03
<b>Offsite Total</b>	<b>0.32</b>	<b>2.36</b>	<b>0.88</b>	<b>0.01</b>	<b>0.08</b>	<b>0.06</b>
<b>Total</b>	<b>0.32</b>	<b>2.36</b>	<b>0.88</b>	<b>0.01</b>	<b>0.08</b>	<b>0.06</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	0.4	0.0	0.4
1-Ton Crew Cab Flat Bed, 4x4	0.4	0.0	0.4
Worker Commute	1.2	0.0	1.2
<b>Offsite Total</b>	<b>2.0</b>	<b>0.0</b>	<b>2.0</b>
<b>Total</b>	<b>2.0</b>	<b>0.0</b>	<b>2.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None							
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
1-Ton Crew Cab Flat Bed, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
Worker Commute	8	Paved	60	0.001	0.000	0.38	0.00
<b>Offsite Total</b>						<b>0.48</b>	<b>0.00</b>
<b>Total</b>						<b>0.48</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]



**Table 38**  
**115 kV Subtransmission Line Construction Emissions**  
**Install Tubular Steel Pole Foundations**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.11	9.18	4.06	0.03	0.16	0.15	119.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.01	0.00	0.00	0.00	0.2
Onsite Motor Vehicle Fugitive PM	--	--	--	--	2.14	0.21	
Earthwork Fugitive PM	--	--	--	--	0.03	0.01	
<b>Onsite Total</b>	<b>1.11</b>	<b>9.18</b>	<b>4.07</b>	<b>0.03</b>	<b>2.34</b>	<b>0.37</b>	<b>119.2</b>
Offsite Motor Vehicle Exhaust	0.31	2.14	1.43	0.01	0.11	0.08	40.7
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.38	0.00	
<b>Offsite Total</b>	<b>0.31</b>	<b>2.14</b>	<b>1.43</b>	<b>0.01</b>	<b>0.49</b>	<b>0.08</b>	<b>40.7</b>
<b>Total</b>	<b>1.41</b>	<b>11.32</b>	<b>5.50</b>	<b>0.05</b>	<b>2.83</b>	<b>0.44</b>	<b>159.9</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Boom/Crane Truck	350	1	96	5
Backhoe/Front Loader	125	1	96	8
Auger Truck	210	1	65	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
Auger Truck	210	0.043	0.343	0.098	0.002	0.004	0.003	188.102	0.004	Bore/Drill Rigs

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction = 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Boom/Crane Truck	0.43	1.77	1.99	0.01	0.07	0.07
Backhoe/Front Loader	0.34	4.67	1.29	0.01	0.06	0.05
Auger Truck	0.34	2.74	0.78	0.02	0.03	0.03
<b>Total</b>	<b>1.11</b>	<b>9.18</b>	<b>4.06</b>	<b>0.03</b>	<b>0.16</b>	<b>0.15</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Boom/Crane Truck	39.2	0.0	39.2
Backhoe/Front Loader	35.3	0.0	35.3
Auger Truck	44.4	0.0	44.4
<b>Total</b>	<b>118.9</b>	<b>0.0</b>	<b>119.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh.
<b>Onsite</b>				
Water Truck	1	96	8	1
<b>Offsite</b>				
1-Ton Crew Cab Flat Bed, 4x4	1	96	N/A	30
Dump Truck	1	96	N/A	30
Concrete Mixer Truck	3	65	N/A	30
Worker Commute	7	96	N/A	60

**Table 38**  
**115 kV Subtransmission Line Construction Emissions**  
**Install Tubular Steel Pole Foundations**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
<b>Offsite</b>									
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Dump Truck		8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Concrete Mixer Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Water Truck	0.00	0.00	0.01	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab Flat Bed, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
Dump Truck	0.02	0.13	0.28	0.00	0.01	0.01
Concrete Mixer Truck	0.07	0.39	0.84	0.00	0.04	0.03
Worker Commute	0.18	1.44	0.12	0.00	0.04	0.03
<b>Offsite Total</b>	<b>0.31</b>	<b>2.14</b>	<b>1.43</b>	<b>0.01</b>	<b>0.11</b>	<b>0.08</b>
<b>Total</b>	<b>0.31</b>	<b>2.14</b>	<b>1.43</b>	<b>0.01</b>	<b>0.11</b>	<b>0.08</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Water Truck	0.2	0.0	0.2
<b>Onsite Total</b>	<b>0.2</b>	<b>0.0</b>	<b>0.2</b>
<b>Offsite</b>			
1-Ton Crew Cab Flat Bed, 4x4	3.8	0.0	3.8
Dump Truck	5.5	0.0	5.5
Concrete Mixer Truck	11.1	0.0	11.1
Worker Commute	20.3	0.0	20.3
<b>Offsite Total</b>	<b>40.7</b>	<b>0.0</b>	<b>40.7</b>
<b>Total</b>	<b>40.9</b>	<b>0.0</b>	<b>40.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Water Truck	1	Unpaved	1	2.145	0.214	2.14	0.21
<b>Onsite Total</b>						<b>2.14</b>	<b>0.21</b>
<b>Offsite</b>							
1-Ton Crew Cab Flat Bed, 4x4	1	Paved	30	0.001	0.000	0.02	0.00
Dump Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	7	Paved	60	0.001	0.000	0.34	0.00
<b>Offsite Total</b>						<b>0.38</b>	<b>0.00</b>
<b>Total</b>						<b>2.53</b>	<b>0.21</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	35	9.94E-04	2.07E-04	0.03	0.01
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.03</b>	<b>0.01</b>

a From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Estimate

**Table 39**  
**115 kV Subtransmission Line Construction Emissions**  
**Steel Pole Haul**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.51	2.12	2.39	0.01	0.09	0.08	62.8
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.51</b>	<b>2.12</b>	<b>2.39</b>	<b>0.01</b>	<b>0.09</b>	<b>0.08</b>	<b>62.8</b>
Offsite Motor Vehicle Exhaust	0.18	1.31	0.72	0.01	0.05	0.04	32.8
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.26	0.00	
<b>Offsite Total</b>	<b>0.18</b>	<b>1.31</b>	<b>0.72</b>	<b>0.01</b>	<b>0.32</b>	<b>0.04</b>	<b>32.8</b>
<b>Total</b>	<b>0.70</b>	<b>3.43</b>	<b>3.10</b>	<b>0.02</b>	<b>0.41</b>	<b>0.12</b>	<b>95.6</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Boom/Crane Truck	350	1	128	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Boom/Crane Truck	0.51	2.12	2.39	0.01	0.09	0.08
<b>Total</b>	<b>0.51</b>	<b>2.12</b>	<b>2.39</b>	<b>0.01</b>	<b>0.09</b>	<b>0.08</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Boom/Crane Truck	62.7	0.0	62.8
<b>Total</b>	<b>62.7</b>	<b>0.0</b>	<b>62.8</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	2	128	N/A	30
40' Flat Bed Pole Truck	1	128	N/A	30
Worker Commute	4	128	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None									
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
40' Flat Bed Pole Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 39**  
**115 kV Subtransmission Line Construction Emissions**  
**Steel Pole Haul**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
40' Flat Bed Pole Truck	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.18</b>	<b>1.31</b>	<b>0.72</b>	<b>0.01</b>	<b>0.05</b>	<b>0.04</b>
<b>Total</b>	<b>0.18</b>	<b>1.31</b>	<b>0.72</b>	<b>0.01</b>	<b>0.05</b>	<b>0.04</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	10.0	0.0	10.0
40' Flat Bed Pole Truck	7.3	0.0	7.3
Worker Commute	15.5	0.0	15.5
<b>Offsite Total</b>	<b>32.8</b>	<b>0.0</b>	<b>32.8</b>
<b>Total</b>	<b>32.8</b>	<b>0.0</b>	<b>32.8</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0						
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
40' Flat Bed Pole Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.26</b>	<b>0.00</b>
<b>Total</b>						<b>0.26</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 40**  
**115 kV Subtransmission Line Construction Emissions**  
**Steel Pole Assembly**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.66	3.63	3.35	0.01	0.13	0.12	152.3
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.66</b>	<b>3.63</b>	<b>3.35</b>	<b>0.01</b>	<b>0.13</b>	<b>0.12</b>	<b>152.3</b>
Offsite Motor Vehicle Exhaust	0.32	2.36	0.88	0.01	0.08	0.06	101.7
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.48	0.00	
<b>Offsite Total</b>	<b>0.32</b>	<b>2.36</b>	<b>0.88</b>	<b>0.01</b>	<b>0.56</b>	<b>0.06</b>	<b>101.7</b>
<b>Total</b>	<b>0.98</b>	<b>5.99</b>	<b>4.23</b>	<b>0.02</b>	<b>0.69</b>	<b>0.18</b>	<b>254.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor Trailer	60	1	255	5
Boom/Crane Truck	350	1	255	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor Trailer	0.14	1.51	0.96	0.00	0.04	0.04
Boom/Crane Truck	0.51	2.12	2.39	0.01	0.09	0.08
<b>Total</b>	<b>0.66</b>	<b>3.63</b>	<b>3.35</b>	<b>0.01</b>	<b>0.13</b>	<b>0.12</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor Trailer	27.2	0.0	27.2
Boom/Crane Truck	125.0	0.0	125.1
<b>Total</b>	<b>152.1</b>	<b>0.0</b>	<b>152.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	2	255	N/A	30
1-Ton Crew Cab Flat Bed, 4x4	2	255	N/A	30
Worker Commute	8	255	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 40**  
**115 kV Subtransmission Line Construction Emissions**  
**Steel Pole Assembly**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
1-Ton Crew Cab Flat Bed, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
Worker Commute	0.21	1.65	0.14	0.01	0.05	0.03
<b>Offsite Total</b>	<b>0.32</b>	<b>2.36</b>	<b>0.88</b>	<b>0.01</b>	<b>0.08</b>	<b>0.06</b>
<b>Total</b>	<b>0.32</b>	<b>2.36</b>	<b>0.88</b>	<b>0.01</b>	<b>0.08</b>	<b>0.06</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	20.0	0.0	20.0
1-Ton Crew Cab Flat Bed, 4x4	20.0	0.0	20.0
Worker Commute	61.7	0.0	61.7
<b>Offsite Total</b>	<b>101.7</b>	<b>0.0</b>	<b>101.7</b>
<b>Total</b>	<b>101.7</b>	<b>0.0</b>	<b>101.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0						
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
1-Ton Crew Cab Flat Bed, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
Worker Commute	8	Paved	60	0.001	0.000	0.38	0.00
<b>Offsite Total</b>						<b>0.48</b>	<b>0.00</b>
<b>Total</b>						<b>0.48</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 41**  
**115 kV Subtransmission Line Construction Emissions**  
**Steel Pole Erection**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.66	3.63	3.35	0.01	0.13	0.12	152.3
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.66</b>	<b>3.63</b>	<b>3.35</b>	<b>0.01</b>	<b>0.13</b>	<b>0.12</b>	<b>152.3</b>
Offsite Motor Vehicle Exhaust	0.32	2.36	0.88	0.01	0.08	0.06	101.7
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.48	0.00	
<b>Offsite Total</b>	<b>0.32</b>	<b>2.36</b>	<b>0.88</b>	<b>0.01</b>	<b>0.56</b>	<b>0.06</b>	<b>101.7</b>
<b>Total</b>	<b>0.98</b>	<b>5.99</b>	<b>4.23</b>	<b>0.02</b>	<b>0.69</b>	<b>0.18</b>	<b>254.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor Trailer	60	1	255	5
Boom/Crane Truck	350	1	255	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor Trailer	0.14	1.51	0.96	0.00	0.04	0.04
Boom/Crane Truck	0.51	2.12	2.39	0.01	0.09	0.08
<b>Total</b>	<b>0.66</b>	<b>3.63</b>	<b>3.35</b>	<b>0.01</b>	<b>0.13</b>	<b>0.12</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor Trailer	27.2	0.0	27.2
Boom/Crane Truck	125.0	0.0	125.1
<b>Total</b>	<b>152.1</b>	<b>0.0</b>	<b>152.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	2	255	N/A	30
1-Ton Crew Cab Flat Bed, 4x4	2	255	N/A	30
Worker Commute	8	255	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 41**  
**115 kV Subtransmission Line Construction Emissions**  
**Steel Pole Erection**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
1-Ton Crew Cab Flat Bed, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
Worker Commute	0.21	1.65	0.14	0.01	0.05	0.03
<b>Offsite Total</b>	<b>0.32</b>	<b>2.36</b>	<b>0.88</b>	<b>0.01</b>	<b>0.08</b>	<b>0.06</b>
<b>Total</b>	<b>0.32</b>	<b>2.36</b>	<b>0.88</b>	<b>0.01</b>	<b>0.08</b>	<b>0.06</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	20.0	0.0	20.0
1-Ton Crew Cab Flat Bed, 4x4	20.0	0.0	20.0
Worker Commute	61.7	0.0	61.7
<b>Offsite Total</b>	<b>101.7</b>	<b>0.0</b>	<b>101.7</b>
<b>Total</b>	<b>101.7</b>	<b>0.0</b>	<b>101.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0						
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
1-Ton Crew Cab Flat Bed, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
Worker Commute	8	Paved	60	0.001	0.000	0.38	0.00
<b>Offsite Total</b>						<b>0.48</b>	<b>0.00</b>
<b>Total</b>						<b>0.48</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]



**Table 42**  
**115 kV Subtransmission Line Construction Emissions**  
**Wire Stringing**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	4.34	23.98	22.32	0.13	0.72	0.66	458.5
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>4.34</b>	<b>23.98</b>	<b>22.32</b>	<b>0.13</b>	<b>0.72</b>	<b>0.66</b>	<b>458.5</b>
Offsite Motor Vehicle Exhaust	0.73	5.39	2.11	0.02	0.20	0.14	83.2
Offsite Motor Vehicle Fugitive PM	--	--	--	--	1.15	0.00	
<b>Offsite Total</b>	<b>0.73</b>	<b>5.39</b>	<b>2.11</b>	<b>0.02</b>	<b>1.36</b>	<b>0.14</b>	<b>83.2</b>
<b>Total</b>	<b>5.07</b>	<b>29.37</b>	<b>24.43</b>	<b>0.15</b>	<b>2.08</b>	<b>0.80</b>	<b>541.7</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Bucket Truck	250	4	89	8
Boom/Crane Truck	350	2	89	8
Splicing Rig	350	1	20	2
3 Drum Straw Line Puller	300	1	45	6
Static Truck/Tensioner	350	1	45	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Bucket Truck	250	0.058	0.371	0.366	0.002	0.011	0.010	212.856	0.005	Aerial Lifts
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Splicing Rig	350	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment
3 Drum Straw Line Puller	300	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment
Static Truck/Tensioner	350	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Bucket Truck	1.86	11.87	11.71	0.07	0.35	0.32
Boom/Crane Truck	1.37	5.66	6.36	0.03	0.23	0.21
Splicing Rig	0.16	0.92	0.61	0.00	0.02	0.02
3 Drum Straw Line Puller	0.48	2.76	1.82	0.01	0.06	0.05
Static Truck/Tensioner	0.48	2.76	1.82	0.01	0.06	0.05
<b>Total</b>	<b>4.34</b>	<b>23.98</b>	<b>22.32</b>	<b>0.13</b>	<b>0.72</b>	<b>0.66</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Bucket Truck	275.0	0.0	275.1
Boom/Crane Truck	116.3	0.0	116.4
Splicing Rig	4.6	0.0	4.6
3 Drum Straw Line Puller	31.1	0.0	31.2
Static Truck/Tensioner	31.1	0.0	31.2
<b>Total</b>	<b>458.2</b>	<b>0.0</b>	<b>458.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Table 42**  
**115 kV Subtransmission Line Construction Emissions**  
**Wire Stringing**

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	2	89	N/A	30
1-Ton Crew Cab Flat Bed, 4x4	3	89	N/A	30
Wire Truck/Trailer	2	60	N/A	30
Dump Truck	1	89	N/A	30
Worker Commute	20	89	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Wire Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
1-Ton Crew Cab Flat Bed, 4x4	0.08	0.54	0.55	0.00	0.03	0.02
Wire Truck/Trailer	0.05	0.26	0.56	0.00	0.03	0.02
Dump Truck	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.52	4.11	0.35	0.01	0.12	0.08
<b>Offsite Total</b>	<b>0.73</b>	<b>5.39</b>	<b>2.11</b>	<b>0.02</b>	<b>0.20</b>	<b>0.14</b>
<b>Total</b>	<b>0.73</b>	<b>5.39</b>	<b>2.11</b>	<b>0.02</b>	<b>0.20</b>	<b>0.14</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	7.0	0.0	7.0
1-Ton Crew Cab Flat Bed, 4x4	10.5	0.0	10.5
Wire Truck/Trailer	6.9	0.0	6.9
Dump Truck	5.1	0.0	5.1
Worker Commute	53.8	0.0	53.8
<b>Offsite Total</b>	<b>83.2</b>	<b>0.0</b>	<b>83.2</b>
<b>Total</b>	<b>83.2</b>	<b>0.0</b>	<b>83.2</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Table 42**  
**115 kV Subtransmission Line Construction Emissions**  
**Wire Stringing**

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0						
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
1-Ton Crew Cab Flat Bed, 4x4	3	Paved	30	0.001	0.000	0.07	0.00
Wire Truck/Trailer	2	Paved	30	0.001	0.000	0.05	0.00
Dump Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	20	Paved	60	0.001	0.000	0.96	0.00
<b>Offsite Total</b>						<b>1.15</b>	<b>0.00</b>
<b>Total</b>						<b>1.15</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 42b**  
**115 kV Subtransmission Line Construction Emissions**  
**Vault Installation**

Emissions Summary							
Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.92	12.58	7.81	0.05	0.29	0.27	10.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.80	0.17	
<b>Onsite Total</b>	<b>1.92</b>	<b>12.58</b>	<b>7.81</b>	<b>0.05</b>	<b>1.09</b>	<b>0.43</b>	<b>10.0</b>
Offsite Motor Vehicle Exhaust	0.70	5.00	2.80	0.02	0.23	0.17	5.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	1.10	0.00	
<b>Offsite Total</b>	<b>0.70</b>	<b>5.00</b>	<b>2.80</b>	<b>0.02</b>	<b>1.34</b>	<b>0.17</b>	<b>5.3</b>
<b>Total</b>	<b>2.63</b>	<b>17.58</b>	<b>10.62</b>	<b>0.07</b>	<b>2.43</b>	<b>0.60</b>	<b>15.3</b>

Construction Equipment Summary				
Equipment	Horse-power	Number	Days Used	Hours Used/Day
Excavator	250	1	5	10
Crane (L)	500	1	5	10
Backhoe/Front Loader	125	1	5	10

Construction Equipment Exhaust Emission Factors										
Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Excavator	250	0.065	0.321	0.222	0.002	0.007	0.007	158.683	0.006	Excavators
Crane (L)	500	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes

<sup>a</sup> From Table 53  
<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10  
 PM2.5 Fraction= 0.920  
 From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5  
 and PM 2.5 Significance Thresholds, SCAQMD, October 2006,  
[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

Construction Equipment Daily Criteria Pollutant Exhaust Emissions						
Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Excavator	0.65	3.21	2.22	0.02	0.07	0.07
Crane (L)	0.86	3.54	3.98	0.02	0.15	0.13
Backhoe/Front Loader	0.42	5.84	1.61	0.01	0.07	0.07
<b>Total</b>	<b>1.92</b>	<b>12.58</b>	<b>7.81</b>	<b>0.05</b>	<b>0.29</b>	<b>0.27</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions			
Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Excavator	3.6	0.0	3.6
Crane (L)	4.1	0.0	4.1
Backhoe/Front Loader	2.3	0.0	2.3
<b>Total</b>	<b>10.0</b>	<b>0.0</b>	<b>10.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 53  
<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Usage				
Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh.
<b>Onsite</b>				
None				
<b>Offsite</b>				
1-Ton Crew Cab, 4x4	2	5	N/A	50
Water Truck	1	5	N/A	25
Concrete Mixer Truck	3	5	N/A	25
Dump Truck	3	5	N/A	25
Lowboy Truck/Trailer	1	5	N/A	25
Flat Bed Truck/Trailer	3	5	N/A	25
Worker Commute	20	5	N/A	50

Motor Vehicle Exhaust Emission Factors									
Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None									
<b>Offsite</b>									

**Table 42b**  
**115 kV Subtransmission Line Construction Emissions**  
**Vault Installation**

1-Ton Crew Cab, 4x4	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Water Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Concrete Mixer Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Flat Bed Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None						
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab, 4x4	0.04	0.34	0.03	0.00	0.01	0.01
Water Truck	0.02	0.15	0.15	0.00	0.01	0.01
Concrete Mixer Truck	0.06	0.32	0.70	0.00	0.04	0.03
Dump Truck	0.06	0.32	0.70	0.00	0.04	0.03
Lowboy Truck/Trailer	0.02	0.11	0.23	0.00	0.01	0.01
Flat Bed Truck/Trailer	0.06	0.32	0.70	0.00	0.04	0.03
Worker Commute	0.44	3.43	0.29	0.01	0.10	0.06
<b>Offsite Total</b>	<b>0.70</b>	<b>5.00</b>	<b>2.80</b>	<b>0.02</b>	<b>0.23</b>	<b>0.17</b>
<b>Total</b>	<b>0.70</b>	<b>5.00</b>	<b>2.80</b>	<b>0.02</b>	<b>0.23</b>	<b>0.17</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None			
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1-Ton Crew Cab, 4x4	0.3	0.0	0.3
Water Truck	0.2	0.0	0.2
Concrete Mixer Truck	0.7	0.0	0.7
Dump Truck	0.7	0.0	0.7
Lowboy Truck/Trailer	0.2	0.0	0.2
Flat Bed Truck/Trailer	0.7	0.0	0.7
Worker Commute	2.5	0.0	2.5
<b>Offsite Total</b>	<b>5.3</b>	<b>0.0</b>	<b>5.3</b>
<b>Total</b>	<b>5.3</b>	<b>0.0</b>	<b>5.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None							
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1-Ton Crew Cab, 4x4	2	Paved	50	0.001	0.000	0.08	0.00
Water Truck	1	Paved	25	0.001	0.000	0.02	0.00
Concrete Mixer Truck	3	Paved	25	0.001	0.000	0.06	0.00
Dump Truck	3	Paved	25	0.001	0.000	0.06	0.00
Lowboy Truck/Trailer	1	Paved	25	0.001	0.000	0.02	0.00
Flat Bed Truck/Trailer	3	Paved	25	0.001	0.000	0.06	0.00
Worker Commute	20	Paved	50	0.001	0.000	0.80	0.00
<b>Offsite Total</b>						<b>1.10</b>	<b>0.00</b>
<b>Total</b>						<b>1.10</b>	<b>0.00</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level <sup>c</sup>	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day	49.28	9.94E-04	2.07E-04	0.05	0.01

**Table 42b**  
**115 kV Subtransmission Line Construction Emissions**  
**Vault Installation**

Bulldozing, Scraping and Grading	hr/day	0	0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres	0.017	44.0	9.15	0.75	0.16
<b>Total</b>					<b>0.80</b>	<b>0.17</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Soil handling volume based on a vault size of approximately 24 feet long, 14 feet wide, 12 feet deep. Approximately 0.33 vaults built per day. 12 feet x 14 feet x 12 feet = 4032 cubic feet x 0.33 vaults/day = 1330.56 cubic feet/day = 49.28 cubic yards/day 12 feet x 14 feet x 12 feet = 4032 cubic feet x 0.33 vaults/day = 1330.56 cubic feet/day = 49.28 cubic yards/day

Storage pile size based on a 1 vault volume of 4032 cubic feet of soil. Storage pile assumed maximum 48 feet long, 14 feet wide, 6 feet high. 48 feet x 14 feet = 720 square feet = 0.017 acres

**Table 42c**  
**115 kV Subtransmission Line Construction Emissions**  
**Duct Bank Installation**

Emissions Summary							
Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.71	8.86	3.54	0.02	0.16	0.15	10.1
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	1.37	0.28	
<b>Onsite Total</b>	<b>0.71</b>	<b>8.86</b>	<b>3.54</b>	<b>0.02</b>	<b>1.53</b>	<b>0.43</b>	<b>10.1</b>
Offsite Motor Vehicle Exhaust	0.68	4.89	2.57	0.02	0.22	0.16	7.5
Offsite Motor Vehicle Fugitive PM	--	--	--	--	1.08	0.00	
<b>Offsite Total</b>	<b>0.68</b>	<b>4.89</b>	<b>2.57</b>	<b>0.02</b>	<b>1.31</b>	<b>0.16</b>	<b>7.5</b>
<b>Total</b>	<b>1.39</b>	<b>13.75</b>	<b>6.11</b>	<b>0.04</b>	<b>2.84</b>	<b>0.59</b>	<b>17.6</b>

Construction Equipment Summary				
Equipment	Horse-power	Number	Days Used	Hours Used/Day
Backhoe/Front Loader	125	1	15	10
Compressor Trailer	60	1	15	10

Construction Equipment Exhaust Emission Factors										
Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors

<sup>a</sup> From Table 53  
<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10  
 PM2.5 Fraction = 0.920  
 From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5  
 and PM 2.5 Significance Thresholds, SCAQMD, October 2006.  
[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

Construction Equipment Daily Criteria Pollutant Exhaust Emissions						
Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Backhoe/Front Loader	0.42	5.84	1.61	0.01	0.07	0.07
Compressor Trailer	0.29	3.02	1.93	0.01	0.09	0.08
<b>Total</b>	<b>0.71</b>	<b>8.86</b>	<b>3.54</b>	<b>0.02</b>	<b>0.16</b>	<b>0.15</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions			
Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Backhoe/Front Loader	6.9	0.0	6.9
Compressor Trailer	3.2	0.0	3.2
<b>Total</b>	<b>10.1</b>	<b>0.0</b>	<b>10.1</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 53  
<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Usage				
Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh.
<b>Onsite</b>				
None				
<b>Offsite</b>				
Lowboy Truck/Trailer	1	15	N/A	25
1-Ton Truck, 4x4	2	15	N/A	50
Water Truck	1	15	N/A	25
Pipe Truck/Trailer	1	15	N/A	25
Concrete Mixer Truck	3	15	N/A	25
Dump Truck	3	15	N/A	25
Lowboy Truck/Trailer	1	1	N/A	25
Worker Commute	20	1	N/A	50

Motor Vehicle Exhaust Emission Factors									
Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None									
<b>Offsite</b>									
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
1-Ton Truck, 4x4	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Water Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Pipe Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Concrete Mixer Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions									
--	--	--	--	--	--	--	--	--	--

**Table 42c**  
**115 kV Subtransmission Line Construction Emissions**  
**Duct Bank Installation**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None						
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Lowboy Truck/Trailer	0.02	0.11	0.23	0.00	0.01	0.01
1-Ton Truck, 4x4	0.04	0.34	0.03	0.00	0.01	0.01
Water Truck	0.02	0.15	0.15	0.00	0.01	0.01
Pipe Truck/Trailer	0.02	0.11	0.23	0.00	0.01	0.01
Concrete Mixer Truck	0.06	0.32	0.70	0.00	0.04	0.03
Dump Truck	0.06	0.32	0.70	0.00	0.04	0.03
Lowboy Truck/Trailer	0.02	0.11	0.23	0.00	0.01	0.01
Worker Commute	0.44	3.43	0.29	0.01	0.10	0.06
<b>Offsite Total</b>	<b>0.68</b>	<b>4.89</b>	<b>2.57</b>	<b>0.02</b>	<b>0.22</b>	<b>0.16</b>
<b>Total</b>	<b>0.68</b>	<b>4.89</b>	<b>2.57</b>	<b>0.02</b>	<b>0.22</b>	<b>0.16</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None			
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Lowboy Truck/Trailer	0.7	0.0	0.7
1-Ton Truck, 4x4	0.8	0.0	0.8
Water Truck	0.5	0.0	0.5
Pipe Truck/Trailer	0.7	0.0	0.7
Concrete Mixer Truck	2.1	0.0	2.1
Dump Truck	2.1	0.0	2.1
Lowboy Truck/Trailer	0.0	0.0	0.0
Worker Commute	0.5	0.0	0.5
<b>Offsite Total</b>	<b>7.5</b>	<b>0.0</b>	<b>7.5</b>
<b>Total</b>	<b>7.5</b>	<b>0.0</b>	<b>7.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

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**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None							
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Lowboy Truck/Trailer	1	Paved	25	0.001	0.000	0.02	0.00
1-Ton Truck, 4x4	2	Paved	50	0.001	0.000	0.08	0.00
Water Truck	1	Paved	25	0.001	0.000	0.02	0.00
Pipe Truck/Trailer	1	Paved	25	0.001	0.000	0.02	0.00
Concrete Mixer Truck	3	Paved	25	0.001	0.000	0.06	0.00
Dump Truck	3	Paved	25	0.001	0.000	0.06	0.00
Lowboy Truck/Trailer	1	Paved	25	0.001	0.000	0.02	0.00
Worker Commute	20	Paved	50	0.001	0.000	0.80	0.00
<b>Offsite Total</b>						<b>1.08</b>	<b>0.00</b>
<b>Total</b>						<b>1.08</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level <sup>c</sup>	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day	92.28	9.94E-04	2.07E-04	0.09	0.02
Bulldozing, Scraping and Grading	hr/day	0	0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres	0.029	44.0	9.15	1.28	0.27
<b>Total</b>					<b>1.37</b>	<b>0.28</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Soil handling cubic yards/day based on approximately 250 feet of trenching per day, 24 inches wide x 60 inches deep. 83 yards x 0.867 yards x 1.667 yards = 92.28 cubic yards/day

Storage pile acres based on approximately 250 feet of trenching per day, 60 inches wide x 24 inches high. 83 yards x 1.667 yards = 138.361 square yards = 0.029 acres



**Table 42d**  
**115 kV Subtransmission Line Construction Emissions**  
**Install Underground Cable**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	2.99	15.06	12.75	0.08	0.44	0.40	90.9
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>2.99</b>	<b>15.06</b>	<b>12.75</b>	<b>0.08</b>	<b>0.44</b>	<b>0.40</b>	<b>90.9</b>
Offsite Motor Vehicle Exhaust	0.53	4.03	0.88	0.01	0.14	0.09	3.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.93	0.00	
<b>Offsite Total</b>	<b>0.53</b>	<b>4.03</b>	<b>0.88</b>	<b>0.01</b>	<b>1.06</b>	<b>0.09</b>	<b>3.3</b>
<b>Total</b>	<b>3.51</b>	<b>19.09</b>	<b>13.63</b>	<b>0.09</b>	<b>1.50</b>	<b>0.50</b>	<b>94.2</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Boom/Crane Truck	350	1	25	10
Manlift/Bucket Truck	250	1	25	10
Puller	350	1	25	10
Static Truck/Tensioner	350	1	25	10

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Manlift/Bucket Truck	250	0.054	0.232	0.271	0.001	0.009	0.009	112.159	0.005	Cranes
Puller	350	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment
Static Truck/Tensioner	350	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006.

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Boom/Crane Truck	0.86	3.54	3.98	0.02	0.15	0.13
Manlift/Bucket Truck	0.54	2.32	2.71	0.01	0.09	0.09
Puller	0.79	4.61	3.03	0.02	0.10	0.09
Static Truck/Tensioner	0.79	4.61	3.03	0.02	0.10	0.09
<b>Total</b>	<b>2.99</b>	<b>15.06</b>	<b>12.75</b>	<b>0.08</b>	<b>0.44</b>	<b>0.40</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Boom/Crane Truck	20.4	0.0	20.4
Manlift/Bucket Truck	12.7	0.0	12.7
Puller	28.8	0.0	28.8
Static Truck/Tensioner	28.8	0.0	28.8
<b>Total</b>	<b>90.8</b>	<b>0.0</b>	<b>90.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/ Veh.
<b>Onsite</b>				
None				
<b>Offsite</b>				
1-Ton Truck, 4x4	2	5	N/A	50
Wire Truck/Trailer	2	5	N/A	30
Worker Commute	20	5	N/A	50

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
1-Ton Truck, 4x4	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Wire Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						

**Table 42d**  
**115 kV Subtransmission Line Construction Emissions**  
**Install Underground Cable**

None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Truck, 4x4	0.04	0.34	0.03	0.00	0.01	0.01
Wire Truck/Trailer	0.05	0.26	0.56	0.00	0.03	0.02
Worker Commute	0.44	3.43	0.29	0.01	0.10	0.06
<b>Offsite Total</b>	<b>0.53</b>	<b>4.03</b>	<b>0.88</b>	<b>0.01</b>	<b>0.14</b>	<b>0.09</b>
<b>Total</b>	<b>0.53</b>	<b>4.03</b>	<b>0.88</b>	<b>0.01</b>	<b>0.14</b>	<b>0.09</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1-Ton Truck, 4x4	0.3	0.0	0.3
Wire Truck/Trailer	0.6	0.0	0.6
Worker Commute	2.5	0.0	2.5
<b>Offsite Total</b>	<b>3.3</b>	<b>0.0</b>	<b>3.3</b>
<b>Total</b>	<b>3.3</b>	<b>0.0</b>	<b>3.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

<sup>b</sup> Emission factors are in Table 54 and Table 55

<sup>c</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None							
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1-Ton Truck, 4x4	2	Paved	50	0.001	0.000	0.08	0.00
Wire Truck/Trailer	2	Paved	30	0.001	0.000	0.05	0.00
Worker Commute	20	Paved	50	0.001	0.000	0.80	0.00
<b>Offsite Total</b>						<b>0.93</b>	<b>0.00</b>
<b>Total</b>						<b>0.93</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 43**  
**115 kV Subtransmission Line Construction Emissions**  
**Guard Structure Removal**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.27	7.94	6.96	0.03	0.27	0.25	23.3
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>1.27</b>	<b>7.94</b>	<b>6.96</b>	<b>0.03</b>	<b>0.27</b>	<b>0.25</b>	<b>23.3</b>
Offsite Motor Vehicle Exhaust	0.24	1.72	0.75	0.01	0.07	0.05	5.7
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.36	0.00	
<b>Offsite Total</b>	<b>0.24</b>	<b>1.72</b>	<b>0.75</b>	<b>0.01</b>	<b>0.43</b>	<b>0.05</b>	<b>5.7</b>
<b>Total</b>	<b>1.50</b>	<b>9.66</b>	<b>7.71</b>	<b>0.04</b>	<b>0.69</b>	<b>0.29</b>	<b>29.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor Trailer	60	2	18	6
Boom/Crane Truck	350	1	18	8
Bucket Truck	250	1	18	4

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Bucket Truck	250	0.058	0.371	0.366	0.002	0.011	0.010	212.856	0.005	Aerial Lifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction = 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor Trailer	0.35	3.63	2.31	0.01	0.11	0.10
Boom/Crane Truck	0.69	2.83	3.18	0.01	0.12	0.11
Bucket Truck	0.23	1.48	1.46	0.01	0.04	0.04
<b>Total</b>	<b>1.27</b>	<b>7.94</b>	<b>6.96</b>	<b>0.03</b>	<b>0.27</b>	<b>0.25</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor Trailer	4.6	0.0	4.6
Boom/Crane Truck	11.8	0.0	11.8
Bucket Truck	7.0	0.0	7.0
<b>Total</b>	<b>23.3</b>	<b>0.0</b>	<b>23.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	1	18	N/A	30
1-Ton Crew Cab Flat Bed, 4x4	1	18	N/A	30
Extendable Flat Bed Pole Truck	1	18	N/A	30
Worker Commute	6	18	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 43**  
**115 kV Subtransmission Line Construction Emissions**  
**Guard Structure Removal**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Extendable Flat Bed Pole Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	(lb/day) <sup>a</sup>	(lb/day) <sup>a</sup>	(lb/day) <sup>a</sup>	(lb/day) <sup>a</sup>	(lb/day) <sup>a</sup>	(lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
1-Ton Crew Cab Flat Bed, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
Extendable Flat Bed Pole Truck	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.16	1.23	0.10	0.00	0.03	0.02
<b>Offsite Total</b>	<b>0.24</b>	<b>1.72</b>	<b>0.75</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>
<b>Total</b>	<b>0.24</b>	<b>1.72</b>	<b>0.75</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	0.7	0.0	0.7
1-Ton Crew Cab Flat Bed, 4x4	0.7	0.0	0.7
Extendable Flat Bed Pole Truck	1.0	0.0	1.0
Worker Commute	3.3	0.0	3.3
<b>Offsite Total</b>	<b>5.7</b>	<b>0.0</b>	<b>5.7</b>
<b>Total</b>	<b>5.7</b>	<b>0.0</b>	<b>5.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0						
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	1	Paved	30	0.001	0.000	0.02	0.00
1-Ton Crew Cab Flat Bed, 4x4	1	Paved	30	0.001	0.000	0.02	0.00
Extendable Flat Bed Pole Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	6	Paved	60	0.001	0.000	0.29	0.00
<b>Offsite Total</b>						<b>0.36</b>	<b>0.00</b>
<b>Total</b>						<b>0.36</b>	<b>0.00</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

a From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 44**  
**115 kV Subtransmission Line Construction Emissions**  
**Restoration**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.96	7.91	4.75	0.02	0.20	0.19	16.3
Onsite Motor Vehicle Exhaust	0.00	0.01	0.03	0.00	0.00	0.00	0.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	6.43	0.64	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.96</b>	<b>7.93</b>	<b>4.78</b>	<b>0.02</b>	<b>6.64</b>	<b>0.83</b>	<b>16.4</b>
Offsite Motor Vehicle Exhaust	0.26	1.93	0.77	0.01	0.07	0.05	6.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.41	0.00	
<b>Offsite Total</b>	<b>0.26</b>	<b>1.93</b>	<b>0.77</b>	<b>0.01</b>	<b>0.48</b>	<b>0.05</b>	<b>6.3</b>
<b>Total</b>	<b>1.22</b>	<b>9.85</b>	<b>5.55</b>	<b>0.03</b>	<b>7.12</b>	<b>0.88</b>	<b>22.7</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Road Grader	250	1	18	6
Backhoe/Front Loader	125	1	18	6
Drum Type Compactor	100	1	18	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Road Grader	250	0.078	0.355	0.365	0.002	0.013	0.012	172.113	0.007	Graders
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
Drum Type Compactor	100	0.039	0.380	0.265	0.001	0.014	0.013	58.989	0.004	Rollers

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction = 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Road Grader	0.47	2.13	2.19	0.01	0.08	0.07
Backhoe/Front Loader	0.25	3.50	0.97	0.01	0.04	0.04
Drum Type Compactor	0.24	2.28	1.59	0.00	0.08	0.08
<b>Total</b>	<b>0.96</b>	<b>7.91</b>	<b>4.75</b>	<b>0.02</b>	<b>0.20</b>	<b>0.19</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Road Grader	8.4	0.0	8.4
Backhoe/Front Loader	5.0	0.0	5.0
Drum Type Compactor	2.9	0.0	2.9
<b>Total</b>	<b>16.3</b>	<b>0.0</b>	<b>16.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh.
<b>Onsite</b>				
Water Truck	1	18	8	3
<b>Offsite</b>				
1-Ton Crew Cab, 4x4	2	18	N/A	30
Lowboy Truck/Trailer	1	18	N/A	30
Worker Commute	7	18	N/A	60

**Table 44**  
**115 kV Subtransmission Line Construction Emissions**  
**Restoration**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Water Truck		8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
<b>Offsite</b>									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Water Truck	0.00	0.01	0.03	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.01</b>	<b>0.03</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
Lowboy Truck/Trailer	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.18	1.44	0.12	0.00	0.04	0.03
<b>Offsite Total</b>	<b>0.26</b>	<b>1.93</b>	<b>0.77</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>
<b>Total</b>	<b>0.26</b>	<b>1.94</b>	<b>0.80</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Water Truck	0.1	0.0	0.1
<b>Onsite Total</b>	<b>0.1</b>	<b>0.0</b>	<b>0.1</b>
<b>Offsite</b>			
1-Ton Crew Cab, 4x4	1.4	0.0	1.4
Lowboy Truck/Trailer	1.0	0.0	1.0
Worker Commute	3.8	0.0	3.8
<b>Offsite Total</b>	<b>6.2</b>	<b>0.0</b>	<b>6.3</b>
<b>Total</b>	<b>6.4</b>	<b>0.0</b>	<b>6.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Water Truck	1	Unpaved	3	2.145	0.214	6.43	0.64
<b>Onsite Total</b>						<b>6.43</b>	<b>0.64</b>
<b>Offsite</b>							
1-Ton Crew Cab, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
Lowboy Truck/Trailer	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	7	Paved	60	0.001	0.000	0.34	0.00
<b>Offsite Total</b>						<b>0.41</b>	<b>0.00</b>
<b>Total</b>						<b>6.84</b>	<b>0.64</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

a From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 45**  
**Telecommunications Construction**  
**Tower Foundation**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.53	6.74	3.59	0.01	0.11	0.10	2.4
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.50	0.10	
<b>Onsite Total</b>	<b>0.53</b>	<b>6.74</b>	<b>3.59</b>	<b>0.01</b>	<b>0.61</b>	<b>0.21</b>	<b>2.4</b>
Offsite Motor Vehicle Exhaust	0.18	1.31	0.72	0.01	0.05	0.04	1.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.26	0.00	
<b>Offsite Total</b>	<b>0.18</b>	<b>1.31</b>	<b>0.72</b>	<b>0.01</b>	<b>0.32</b>	<b>0.04</b>	<b>1.3</b>
<b>Total</b>	<b>0.71</b>	<b>8.05</b>	<b>4.31</b>	<b>0.02</b>	<b>0.93</b>	<b>0.25</b>	<b>3.7</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Backhoe	79	1	5	8
Concrete Mixer	120	1	5	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Backhoe	79	0.028	0.338	0.176	0.001	0.006	0.005	51.728	0.003	Tractors/Loaders/Backhoes
Concrete Mixer	120	0.038	0.504	0.273	0.001	0.009	0.008	80.859	0.003	Other Construction Equipment

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction=

0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Backhoe	0.22	2.70	1.41	0.00	0.04	0.04
Concrete Mixer	0.30	4.04	2.18	0.01	0.07	0.06
<b>Total</b>	<b>0.53</b>	<b>6.74</b>	<b>3.59</b>	<b>0.01</b>	<b>0.11</b>	<b>0.10</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Backhoe	0.9	0.0	0.9
Concrete Mixer	1.5	0.0	1.5
<b>Total</b>	<b>2.4</b>	<b>0.0</b>	<b>2.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateaction.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateaction.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
Crew Truck	2	5	N/A	30
Stake Truck	1	5	N/A	30
Worker Commute	4	5	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 45  
Telecommunications Construction  
Tower Foundation**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
Crew Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Stake Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Crew Truck	0.06	0.36	0.37	0.00	0.02	0.01
Stake Truck	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.18</b>	<b>1.31</b>	<b>0.72</b>	<b>0.01</b>	<b>0.05</b>	<b>0.04</b>
<b>Total</b>	<b>0.18</b>	<b>1.31</b>	<b>0.72</b>	<b>0.01</b>	<b>0.05</b>	<b>0.04</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Crew Truck	0.4	0.0	0.4
Stake Truck	0.3	0.0	0.3
Worker Commute	0.6	0.0	0.6
<b>Offsite Total</b>	<b>1.3</b>	<b>0.0</b>	<b>1.3</b>
<b>Total</b>	<b>1.3</b>	<b>0.0</b>	<b>1.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0					0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Crew Truck	2	Paved	30	0.001	0.000	0.05	0.00
Stake Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.26</b>	<b>0.00</b>
<b>Total</b>						<b>0.26</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	500	9.94E-04	2.07E-04	0.50	0.10
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.50</b>	<b>0.10</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Estimate



**Table 46  
Telecommunications Construction  
Tower Construction**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.83	4.64	4.38	0.02	0.17	0.15	23.8
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.83</b>	<b>4.64</b>	<b>4.38</b>	<b>0.02</b>	<b>0.17</b>	<b>0.15</b>	<b>23.8</b>
Offsite Motor Vehicle Exhaust	0.16	1.18	0.44	0.00	0.04	0.03	6.0
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.24	0.00	
<b>Offsite Total</b>	<b>0.16</b>	<b>1.18</b>	<b>0.44</b>	<b>0.00</b>	<b>0.28</b>	<b>0.03</b>	<b>6.0</b>
<b>Total</b>	<b>0.99</b>	<b>5.82</b>	<b>4.82</b>	<b>0.02</b>	<b>0.45</b>	<b>0.18</b>	<b>29.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
150-Foot Crane	300	1	30	8
150-Foot Lift Truck	100	1	30	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
150-Foot Crane	300	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
150-Foot Lift Truck	100	0.018	0.226	0.150	0.000	0.006	0.006	38.072	0.002	Aerial Lifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction=

0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
150-Foot Crane	0.69	2.83	3.18	0.01	0.12	0.11
150-Foot Lift Truck	0.14	1.81	1.20	0.00	0.05	0.05
<b>Total</b>	<b>0.83</b>	<b>4.64</b>	<b>4.38</b>	<b>0.02</b>	<b>0.17</b>	<b>0.15</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
150-Foot Crane	19.6	0.0	19.6
150-Foot Lift Truck	4.1	0.0	4.1
<b>Total</b>	<b>23.8</b>	<b>0.0</b>	<b>23.8</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateaction.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateaction.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
Crew Truck	2	30	N/A	30
Worker Commute	4	30	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
Crew Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 46**  
**Telecommunications Construction**  
**Tower Construction**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Crew Truck	0.06	0.36	0.37	0.00	0.02	0.01
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.16</b>	<b>1.18</b>	<b>0.44</b>	<b>0.00</b>	<b>0.04</b>	<b>0.03</b>
<b>Total</b>	<b>0.16</b>	<b>1.18</b>	<b>0.44</b>	<b>0.00</b>	<b>0.04</b>	<b>0.03</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Crew Truck	2.4	0.0	2.4
Worker Commute	3.6	0.0	3.6
<b>Offsite Total</b>	<b>6.0</b>	<b>0.0</b>	<b>6.0</b>
<b>Total</b>	<b>6.0</b>	<b>0.0</b>	<b>6.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0					0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Crew Truck	2	Paved	30	0.001	0.000	0.05	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.24</b>	<b>0.00</b>
<b>Total</b>						<b>0.24</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 47**  
**Telecommunications Construction**  
**Dish Installation**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.14	1.81	1.20	0.00	0.05	0.05	1.4
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.14</b>	<b>1.81</b>	<b>1.20</b>	<b>0.00</b>	<b>0.05</b>	<b>0.05</b>	<b>1.4</b>
Offsite Motor Vehicle Exhaust	0.13	1.00	0.25	0.00	0.03	0.02	1.6
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.22	0.00	
<b>Offsite Total</b>	<b>0.13</b>	<b>1.00</b>	<b>0.25</b>	<b>0.00</b>	<b>0.25</b>	<b>0.02</b>	<b>1.6</b>
<b>Total</b>	<b>0.27</b>	<b>2.81</b>	<b>1.45</b>	<b>0.01</b>	<b>0.30</b>	<b>0.07</b>	<b>3.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
150-Foot Lift Truck	100	1	10	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
150-Foot Lift Truck	100	0.018	0.226	0.150	0.000	0.006	0.006	38.072	0.002	Aerial Lifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
150-Foot Lift Truck	0.14	1.81	1.20	0.00	0.05	0.05
<b>Total</b>	<b>0.14</b>	<b>1.81</b>	<b>1.20</b>	<b>0.00</b>	<b>0.05</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
150-Foot Lift Truck	1.4	0.0	1.4
<b>Total</b>	<b>1.4</b>	<b>0.0</b>	<b>1.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
Crew Truck	1	10	N/A	30
Worker Commute	4	10	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
Crew Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 47**  
**Telecommunications Construction**  
**Dish Installation**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Crew Truck	0.03	0.18	0.18	0.00	0.01	0.01
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.13</b>	<b>1.00</b>	<b>0.25</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>
<b>Total</b>	<b>0.13</b>	<b>1.00</b>	<b>0.25</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Crew Truck	0.4	0.0	0.4
Worker Commute	1.2	0.0	1.2
<b>Offsite Total</b>	<b>1.6</b>	<b>0.0</b>	<b>1.6</b>
<b>Total</b>	<b>1.6</b>	<b>0.0</b>	<b>1.6</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0					0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Crew Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.22</b>	<b>0.00</b>
<b>Total</b>						<b>0.22</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 48**  
**Telecommunications Construction**  
**Control Building**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.46	2.97	2.93	0.02	0.09	0.08	19.3
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.46</b>	<b>2.97</b>	<b>2.93</b>	<b>0.02</b>	<b>0.09</b>	<b>0.08</b>	<b>19.3</b>
Offsite Motor Vehicle Exhaust	0.08	0.59	0.22	0.00	0.02	0.01	2.5
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.12	0.00	
<b>Offsite Total</b>	<b>0.08</b>	<b>0.59</b>	<b>0.22</b>	<b>0.00</b>	<b>0.14</b>	<b>0.01</b>	<b>2.5</b>
<b>Total</b>	<b>0.54</b>	<b>3.56</b>	<b>3.15</b>	<b>0.02</b>	<b>0.23</b>	<b>0.09</b>	<b>21.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Bucket Truck	350	1	25	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Bucket Truck	350	0.058	0.371	0.366	0.002	0.011	0.010	212.856	0.005	Aerial Lifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Bucket Truck	0.46	2.97	2.93	0.02	0.09	0.08
<b>Total</b>	<b>0.46</b>	<b>2.97</b>	<b>2.93</b>	<b>0.02</b>	<b>0.09</b>	<b>0.08</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Bucket Truck	19.3	0.0	19.3
<b>Total</b>	<b>19.3</b>	<b>0.0</b>	<b>19.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
Crew Truck	1	25	N/A	30
Worker Commute	2	25	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
Crew Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 48**  
**Telecommunications Construction**  
**Control Building**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Crew Truck	0.03	0.18	0.18	0.00	0.01	0.01
Worker Commute	0.05	0.41	0.03	0.00	0.01	0.01
<b>Offsite Total</b>	<b>0.08</b>	<b>0.59</b>	<b>0.22</b>	<b>0.00</b>	<b>0.02</b>	<b>0.01</b>
<b>Total</b>	<b>0.08</b>	<b>0.59</b>	<b>0.22</b>	<b>0.00</b>	<b>0.02</b>	<b>0.01</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Crew Truck	1.0	0.0	1.0
Worker Commute	1.5	0.0	1.5
<b>Offsite Total</b>	<b>2.5</b>	<b>0.0</b>	<b>2.5</b>
<b>Total</b>	<b>2.5</b>	<b>0.0</b>	<b>2.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0					0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Crew Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	2	Paved	60	0.001	0.000	0.10	0.00
<b>Offsite Total</b>						<b>0.12</b>	<b>0.00</b>
<b>Total</b>						<b>0.12</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 49**  
**Telecommunications Construction**  
**Overhead Communications Installation**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.46	2.97	2.93	0.02	0.09	0.08	24.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.46</b>	<b>2.97</b>	<b>2.93</b>	<b>0.02</b>	<b>0.09</b>	<b>0.08</b>	<b>24.0</b>
Offsite Motor Vehicle Exhaust	0.13	1.00	0.25	0.00	0.03	0.02	5.0
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.22	0.00	
<b>Offsite Total</b>	<b>0.13</b>	<b>1.00</b>	<b>0.25</b>	<b>0.00</b>	<b>0.25</b>	<b>0.02</b>	<b>5.0</b>
<b>Total</b>	<b>0.60</b>	<b>3.97</b>	<b>3.18</b>	<b>0.02</b>	<b>0.33</b>	<b>0.10</b>	<b>28.9</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Bucket Truck	350	1	31	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Bucket Truck	350	0.058	0.371	0.366	0.002	0.011	0.010	212.856	0.005	Aerial Lifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Bucket Truck	0.46	2.97	2.93	0.02	0.09	0.08
<b>Total</b>	<b>0.46</b>	<b>2.97</b>	<b>2.93</b>	<b>0.02</b>	<b>0.09</b>	<b>0.08</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Bucket Truck	23.9	0.0	24.0
<b>Total</b>	<b>23.9</b>	<b>0.0</b>	<b>24.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
Reel Truck	1	31	N/A	30
Worker Commute	4	31	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
Reel Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 49**  
**Telecommunications Construction**  
**Overhead Communications Installation**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Reel Truck	0.03	0.18	0.18	0.00	0.01	0.01
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.13</b>	<b>1.00</b>	<b>0.25</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>
<b>Total</b>	<b>0.13</b>	<b>1.00</b>	<b>0.25</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Reel Truck	1.2	0.0	1.2
Worker Commute	3.7	0.0	3.8
<b>Offsite Total</b>	<b>5.0</b>	<b>0.0</b>	<b>5.0</b>
<b>Total</b>	<b>5.0</b>	<b>0.0</b>	<b>5.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0					0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Reel Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.22</b>	<b>0.00</b>
<b>Total</b>						<b>0.22</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]



**Table 50**  
**Telecommunications Construction**  
**Substation Telecommunications Equipment Installation**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.0</b>
Offsite Motor Vehicle Exhaust	0.08	0.62	0.05	0.00	0.02	0.01	0.9
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.14	0.00	
<b>Offsite Total</b>	<b>0.08</b>	<b>0.62</b>	<b>0.05</b>	<b>0.00</b>	<b>0.16</b>	<b>0.01</b>	<b>0.9</b>
<b>Total</b>	<b>0.08</b>	<b>0.62</b>	<b>0.05</b>	<b>0.00</b>	<b>0.16</b>	<b>0.01</b>	<b>0.9</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
None				

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
None		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

a From Table 53

b Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
None	0.0	0.0	0.0
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
Van	2	10	N/A	30
Worker Commute	2	10	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
Van	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Table 50**  
**Telecommunications Construction**  
**Substation Telecommunications Equipment Installation**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Van	0.03	0.21	0.02	0.00	0.01	0.00
Worker Commute	0.05	0.41	0.03	0.00	0.01	0.01
<b>Offsite Total</b>	<b>0.08</b>	<b>0.62</b>	<b>0.05</b>	<b>0.00</b>	<b>0.02</b>	<b>0.01</b>
<b>Total</b>	<b>0.08</b>	<b>0.62</b>	<b>0.05</b>	<b>0.00</b>	<b>0.02</b>	<b>0.01</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Van	0.3	0.0	0.3
Worker Commute	0.6	0.0	0.6
<b>Offsite Total</b>	<b>0.9</b>	<b>0.0</b>	<b>0.9</b>
<b>Total</b>	<b>0.9</b>	<b>0.0</b>	<b>0.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0					0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Van	2	Paved	30	0.001	0.000	0.05	0.00
Worker Commute	2	Paved	60	0.001	0.000	0.10	0.00
<b>Offsite Total</b>						<b>0.14</b>	<b>0.00</b>
<b>Total</b>						<b>0.14</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 51**  
**Telecommunications Construction**  
**Santiago Peak Communication Site**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.32	1.84	1.21	0.01	0.04	0.04	13.8
Onsite Motor Vehicle Exhaust	0.03	0.21	0.22	0.00	0.01	0.01	1.4
Onsite Motor Vehicle Fugitive PM	--	--	--	--	35.40	3.54	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.35</b>	<b>2.05</b>	<b>1.43</b>	<b>0.01</b>	<b>35.45</b>	<b>3.58</b>	<b>15.2</b>
Offsite Motor Vehicle Exhaust	0.10	0.82	0.07	0.00	0.02	0.02	3.6
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.19	0.00	
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.22</b>	<b>0.02</b>	<b>3.6</b>
<b>Total</b>	<b>0.45</b>	<b>2.87</b>	<b>1.50</b>	<b>0.01</b>	<b>35.67</b>	<b>3.60</b>	<b>18.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
1-Ton Truck	300	1	30	4

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
1-Ton Truck	300	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
1-Ton Truck	0.32	1.84	1.21	0.01	0.04	0.04
<b>Total</b>	<b>0.32</b>	<b>1.84</b>	<b>1.21</b>	<b>0.01</b>	<b>0.04</b>	<b>0.04</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
1-Ton Truck	13.8	0.0	13.8
<b>Total</b>	<b>13.8</b>	<b>0.0</b>	<b>13.8</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
1-Ton Truck, 4x4	3	30	4	10
Van	1	30	2	5
<b>Offsite</b>				
Worker Commute	4	30	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
1-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Van	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 51**  
**Telecommunications Construction**  
**Santiago Peak Communication Site**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
1-Ton Truck, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
Van	0.00	0.03	0.03	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.03</b>	<b>0.21</b>	<b>0.22</b>	<b>0.00</b>	<b>0.01</b>	<b>0.01</b>
<b>Offsite</b>						
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>
<b>Total</b>	<b>0.14</b>	<b>1.03</b>	<b>0.28</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
1-Ton Truck, 4x4	1.2	0.0	1.2
Van	0.2	0.0	0.2
<b>Onsite Total</b>	<b>1.4</b>	<b>0.0</b>	<b>1.4</b>
<b>Offsite</b>			
Worker Commute	3.6	0.0	3.6
<b>Offsite Total</b>	<b>3.6</b>	<b>0.0</b>	<b>3.6</b>
<b>Total</b>	<b>5.0</b>	<b>0.0</b>	<b>5.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
1-Ton Truck, 4x4	3	Unpaved	10	1.012	0.101	30.35	3.03
Van	1	Unpaved	5	1.012	0.101	5.06	0.51
<b>Onsite Total</b>						<b>35.40</b>	<b>3.54</b>
<b>Offsite</b>							
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.19</b>	<b>0.00</b>
<b>Total</b>						<b>35.60</b>	<b>3.54</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Table 51b**

**Additional Substation Construction Emissions**

**Civil**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO <sub>2</sub> e (MT)
Construction Equipment Exhaust	0.78	9.91	3.89	0.02	0.14	0.12	7.4
Onsite Motor Vehicle Exhaust	0.00	0.02	0.05	0.00	0.00	0.00	0.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	10.72	1.07	
Earthwork Fugitive PM	--	--	--	--	0.02	0.00	
<b>Onsite Total</b>	<b>0.78</b>	<b>9.93</b>	<b>3.94</b>	<b>0.02</b>	<b>10.89</b>	<b>1.20</b>	<b>7.5</b>
Offsite Motor Vehicle Exhaust	0.38	2.47	2.36	0.01	0.16	0.11	4.4
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.34	0.00	
<b>Offsite Total</b>	<b>0.38</b>	<b>2.47</b>	<b>2.36</b>	<b>0.01</b>	<b>0.49</b>	<b>0.11</b>	<b>4.4</b>
<b>Total</b>	<b>1.16</b>	<b>12.41</b>	<b>6.30</b>	<b>0.03</b>	<b>11.38</b>	<b>1.32</b>	<b>11.9</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Excavator with Auger Attachment	152	1	10	8
Backhoe	79	1	10	8
Bobcat Skid Steer	75	1	10	4
Forklift	83	1	10	4

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO <sub>2</sub> (lb/hr) <sup>a</sup>	CH <sub>4</sub> (lb/hr) <sup>a</sup>	Category
Excavator with Auger Attachment	152	0.052	0.664	0.198	0.001	0.009	0.008	112.222	0.005	Excavators
Backhoe	79	0.028	0.338	0.176	0.001	0.006	0.005	51.728	0.003	Tractors/Loaders/Backhoes
Bobcat Skid Steer	75	0.017	0.267	0.124	0.001	0.002	0.002	42.762	0.002	Skid Steer Loaders
Forklift	83	0.017	0.209	0.100	0.000	0.002	0.002	31.225	0.002	Forklifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006.

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Excavator with Auger Attachment	0.41	5.31	1.59	0.01	0.07	0.07
Backhoe	0.22	2.70	1.41	0.00	0.04	0.04
Bobcat Skid Steer	0.07	1.07	0.50	0.00	0.01	0.01
Forklift	0.07	0.83	0.40	0.00	0.01	0.01
<b>Total</b>	<b>0.78</b>	<b>9.91</b>	<b>3.89</b>	<b>0.02</b>	<b>0.14</b>	<b>0.12</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO <sub>2</sub> (MT) <sup>a</sup>	CH <sub>4</sub> (MT) <sup>a</sup>	CO <sub>2</sub> e (MT) <sup>b</sup>
Excavator with Auger Attachment	4.1	0.0	4.1
Backhoe	1.9	0.0	1.9
Bobcat Skid Steer	1.5	0.0	1.5
Forklift	0.0	0.0	0.0
<b>Total</b>	<b>7.4</b>	<b>0.0</b>	<b>7.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number <sup>b</sup>	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Dump Truck	2	5	0.5	1.25
Water Truck	1	10	1	2.5
<b>Offsite</b>				
Concrete Truck	4	5	N/A	60
Worker Commute	7	10	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

<sup>b</sup> Concrete trucks based on 15,000 CY over 90 days and 10 CY/truck = 15,000 / 90 / 10 = 16.6

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO <sub>2</sub> (lb/mi) <sup>a</sup>	CH <sub>4</sub> (lb/mi) <sup>a</sup>
<b>Onsite</b>									

Table 51b

**Additional Substation Construction Emissions**

**Civil**

Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05	
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05	
<b>Offsite</b>										
Concrete Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05	
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05	

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Dump Truck	0.00	0.01	0.02	0.00	0.00	0.00
Water Truck	0.00	0.01	0.02	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.02</b>	<b>0.05</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Concrete Truck	0.19	1.03	2.24	0.01	0.12	0.09
Worker Commute	0.18	1.44	0.12	0.00	0.04	0.03
<b>Offsite Total</b>	<b>0.38</b>	<b>2.47</b>	<b>2.36</b>	<b>0.01</b>	<b>0.16</b>	<b>0.11</b>
<b>Total</b>	<b>0.38</b>	<b>2.50</b>	<b>2.41</b>	<b>0.01</b>	<b>0.16</b>	<b>0.12</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Dump Truck	0.0	0.0	0.0
Water Truck	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.1</b>	<b>0.0</b>	<b>0.1</b>
<b>Offsite</b>			
Concrete Truck	2.3	0.0	2.3
Worker Commute	2.1	0.0	2.1
<b>Offsite Total</b>	<b>4.4</b>	<b>0.0</b>	<b>4.4</b>
<b>Total</b>	<b>4.5</b>	<b>0.0</b>	<b>4.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Dump Truck	2	Unpaved	1.25	2.145	0.214	5.36	0.54
Water Truck	1	Unpaved	2.5	2.145	0.214	5.36	0.54
<b>Onsite Total</b>						<b>10.72</b>	<b>1.07</b>
<b>Offsite</b>							
Concrete Truck	4	Paved	60	0.001	0.000	0.19	0.00
Worker Commute	7	Paved	60	0.001	0.000	0.34	0.00
<b>Offsite Total</b>						<b>0.34</b>	<b>0.00</b>
<b>Total</b>						<b>11.06</b>	<b>1.07</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	24	9.94E-04	2.07E-04	0.02	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.02</b>	<b>0.00</b>

a From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Peak daily estimated at 24 CY

**Table 51c**  
**Additional Substation Construction Emissions**  
**Electrical**

Emissions Summary							
Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.14	11.25	7.51	0.02	0.29	0.27	15.5
Onsite Motor Vehicle Exhaust	0.00	0.02	0.00	0.00	0.00	0.00	0.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.01	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>1.15</b>	<b>11.27</b>	<b>7.51</b>	<b>0.02</b>	<b>0.30</b>	<b>0.27</b>	<b>15.6</b>
Offsite Motor Vehicle Exhaust	0.26	2.06	0.17	0.01	0.06	0.04	9.1
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.48	0.00	
<b>Offsite Total</b>	<b>0.26</b>	<b>2.06</b>	<b>0.17</b>	<b>0.01</b>	<b>0.54</b>	<b>0.04</b>	<b>9.1</b>
<b>Total</b>	<b>1.41</b>	<b>13.32</b>	<b>7.68</b>	<b>0.03</b>	<b>0.84</b>	<b>0.31</b>	<b>24.7</b>

Construction Equipment Summary				
Equipment	Horse-power	Number	Days Used	Hours Used/Day
Manlift	43	4	30	7
Reach Manlift	87	2	30	6
15-Ton Crane	125	2	5	5

Construction Equipment Exhaust Emission Factors										
Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Scissor Lift	87	0.018	0.226	0.150	0.000	0.006	0.006	38.072	0.002	Aerial Lifts
Manlift	43	0.017	0.135	0.122	0.000	0.003	0.003	19.613	0.002	Aerial Lifts
Reach Manlift	87	0.018	0.226	0.150	0.000	0.006	0.006	38.072	0.002	Aerial Lifts
15-Ton Crane	125	0.046	0.474	0.230	0.001	0.012	0.011	80.345	0.004	Cranes

<sup>a</sup> From Table 53  
<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10  
 PM2.5 Fraction = 0.920  
 From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5  
 and PM 2.5 Significance Thresholds, SCAQMD, October 2006,  
[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

Construction Equipment Daily Criteria Pollutant Exhaust Emissions						
Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Manlift	0.47	3.78	3.41	0.01	0.10	0.09
Reach Manlift	0.21	2.72	1.79	0.01	0.08	0.07
15-Ton Crane	0.46	4.74	2.30	0.01	0.12	0.11
<b>Total</b>	<b>1.14</b>	<b>11.25</b>	<b>7.51</b>	<b>0.02</b>	<b>0.29</b>	<b>0.27</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions			
Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Manlift	7.5	0.0	7.5
Reach Manlift	6.2	0.0	6.2
15-Ton Crane	1.8	0.0	1.8
<b>Total</b>	<b>15.5</b>	<b>0.0</b>	<b>15.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 53  
<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008. [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Usage				
Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Crew Truck	10	30	0.25	0.625
<b>Offsite</b>				
Worker Commute	10	30	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 51c**  
**Additional Substation Construction Emissions**  
**Electrical**

<b>Motor Vehicle Exhaust Emission Factors</b>									
Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

<b>Motor Vehicle Daily Criteria Pollutant Exhaust Emissions</b>						
Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Crew Truck	0.00	0.02	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.02</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
<b>Offsite Total</b>	<b>0.26</b>	<b>2.06</b>	<b>0.17</b>	<b>0.01</b>	<b>0.06</b>	<b>0.04</b>
<b>Total</b>	<b>0.26</b>	<b>2.08</b>	<b>0.17</b>	<b>0.01</b>	<b>0.06</b>	<b>0.04</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

<b>Motor Vehicle Total Greenhouse Gas Emissions</b>			
Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Crew Truck	0.1	0.0	0.1
<b>Onsite Total</b>	<b>0.1</b>	<b>0.0</b>	<b>0.1</b>
<b>Offsite</b>			
Worker Commute	9.1	0.0	9.1
<b>Offsite Total</b>	<b>9.1</b>	<b>0.0</b>	<b>9.1</b>
<b>Total</b>	<b>9.2</b>	<b>0.0</b>	<b>9.2</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

<b>Motor Vehicle Fugitive Particulate Matter Emissions</b>							
Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Crew Truck	10	Paved	0.625	0.001	0.000	0.01	0.00
<b>Onsite Total</b>						<b>0.01</b>	<b>0.00</b>
<b>Offsite</b>							
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
<b>Offsite Total</b>						<b>0.48</b>	<b>0.00</b>
<b>Total</b>						<b>0.49</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

<b>Earthwork Fugitive Particulate Matter Emissions</b>						
Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]



Table 51d

**Additional Substation Construction Emissions**  
**Wiring**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.17	1.90	1.38	0.00	0.05	0.05	3.6
Onsite Motor Vehicle Exhaust	0.00	0.02	0.00	0.00	0.00	0.00	0.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.17</b>	<b>1.92</b>	<b>1.39</b>	<b>0.00</b>	<b>0.06</b>	<b>0.05</b>	<b>3.7</b>
Offsite Motor Vehicle Exhaust	0.26	2.06	0.17	0.01	0.06	0.04	9.1
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.48	0.00	
<b>Offsite Total</b>	<b>0.26</b>	<b>2.06</b>	<b>0.17</b>	<b>0.01</b>	<b>0.54</b>	<b>0.04</b>	<b>9.1</b>
<b>Total</b>	<b>0.44</b>	<b>3.97</b>	<b>1.56</b>	<b>0.01</b>	<b>0.59</b>	<b>0.09</b>	<b>12.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Reach Manlift	87	2	30	3
Manlift	43	1	15	4

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Reach Manlift	87	0.018	0.226	0.150	0.000	0.006	0.006	38.072	0.002	Aerial Lifts
Manlift	43	0.017	0.135	0.122	0.000	0.003	0.003	19.613	0.002	Aerial Lifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

<http://www.aqmd.gov/ceqa/handbook/PM2.5/PM2.5.html>

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Reach Manlift	0.11	1.36	0.90	0.00	0.04	0.03
Manlift	0.07	0.54	0.49	0.00	0.01	0.01
<b>Total</b>	<b>0.17</b>	<b>1.90</b>	<b>1.38</b>	<b>0.00</b>	<b>0.05</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Reach Manlift	3.1	0.0	3.1
Manlift	0.5	0.0	0.5
<b>Total</b>	<b>3.6</b>	<b>0.0</b>	<b>3.6</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Crew Truck	8	30	0.25	0.625
<b>Offsite</b>				
Worker Commute	10	30	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 51d**  
**Additional Substation Construction Emissions**  
**Wiring**

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions						
Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Crew Truck	0.00	0.02	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.02</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
<b>Offsite Total</b>	<b>0.26</b>	<b>2.06</b>	<b>0.17</b>	<b>0.01</b>	<b>0.06</b>	<b>0.04</b>
<b>Total</b>	<b>0.26</b>	<b>2.07</b>	<b>0.17</b>	<b>0.01</b>	<b>0.06</b>	<b>0.04</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions			
Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Crew Truck	0.1	0.0	0.1
<b>Onsite Total</b>	<b>0.1</b>	<b>0.0</b>	<b>0.1</b>
<b>Offsite</b>			
Worker Commute	9.1	0.0	9.1
<b>Offsite Total</b>	<b>9.1</b>	<b>0.0</b>	<b>9.1</b>
<b>Total</b>	<b>9.1</b>	<b>0.0</b>	<b>9.2</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Fugitive Particulate Matter Emissions							
Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Crew Truck	8	Paved	0.625	0.001	0.000	0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
<b>Offsite Total</b>						<b>0.48</b>	<b>0.00</b>
<b>Total</b>						<b>0.48</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions						
Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 51e**  
**Additional Substation Construction Emissions**  
**Testing**

<b>Emissions Summary</b>							
Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.0</b>
Offsite Motor Vehicle Exhaust	0.10	0.82	0.07	0.00	0.02	0.02	2.4
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.19	0.00	
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.22</b>	<b>0.02</b>	<b>2.4</b>
<b>Total</b>	<b>0.11</b>	<b>0.83</b>	<b>0.07</b>	<b>0.00</b>	<b>0.22</b>	<b>0.02</b>	<b>2.4</b>

<b>Construction Equipment Summary</b>				
Equipment	Horse-power	Number	Days Used	Hours Used/Day
None				

<b>Construction Equipment Exhaust Emission Factors</b>										
Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
None										

a From Table 53  
 b Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10  
 PM2.5 Fraction= 0.920  
 From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5  
 and PM 2.5 Significance Thresholds, SCAQMD, October 2006,  
[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

<b>Construction Equipment Daily Criteria Pollutant Exhaust Emissions</b>						
Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

<b>Construction Equipment Total Greenhouse Gas Emissions</b>			
Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
None	0.0	0.0	0.0
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 53  
<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

<b>Motor Vehicle Usage</b>				
Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Crew Truck	2	20	0.25	0.625
<b>Offsite</b>				
Worker Commute	4	20	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

<b>Motor Vehicle Exhaust Emission Factors</b>									
Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 51e**  
**Additional Substation Construction Emissions**  
**Testing**

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions						
Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Crew Truck	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>
<b>Total</b>	<b>0.11</b>	<b>0.83</b>	<b>0.07</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions			
Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Crew Truck	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Worker Commute	2.4	0.0	2.4
<b>Offsite Total</b>	<b>2.4</b>	<b>0.0</b>	<b>2.4</b>
<b>Total</b>	<b>2.4</b>	<b>0.0</b>	<b>2.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Fugitive Particulate Matter Emissions							
Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Crew Truck	2	Paved	0.625	0.001	0.000	0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.19</b>	<b>0.00</b>
<b>Total</b>						<b>0.19</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions						
Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 51f**  
**Additional Substation Construction Emissions**  
**Civil - Demo**

Emissions Summary							
Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.29	3.77	1.90	0.01	0.05	0.05	3.3
Onsite Motor Vehicle Exhaust	0.00	0.02	0.05	0.00	0.00	0.00	0.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	10.72	1.07	
Earthwork Fugitive PM	--	--	--	--	0.14	0.03	
<b>Onsite Total</b>	<b>0.30</b>	<b>3.79</b>	<b>1.95</b>	<b>0.01</b>	<b>10.92</b>	<b>1.15</b>	<b>3.4</b>
Offsite Motor Vehicle Exhaust	0.28	1.96	1.24	0.01	0.10	0.07	3.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.34	0.00	
<b>Offsite Total</b>	<b>0.28</b>	<b>1.96</b>	<b>1.24</b>	<b>0.01</b>	<b>0.44</b>	<b>0.07</b>	<b>3.3</b>
<b>Total</b>	<b>0.58</b>	<b>5.75</b>	<b>3.19</b>	<b>0.02</b>	<b>11.35</b>	<b>1.22</b>	<b>6.7</b>

Construction Equipment Summary				
Equipment	Horse-power	Number	Days Used	Hours Used/Day
Backhoe	79	1	10	8
Bobcat Skid Steer	75	1	10	4

Construction Equipment Exhaust Emission Factors										
Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Backhoe	79	0.028	0.338	0.176	0.001	0.006	0.005	51.728	0.003	Tractors/Loaders/Backhoes
Bobcat Skid Steer	75	0.017	0.267	0.124	0.001	0.002	0.002	42.762	0.002	Skid Steer Loaders

<sup>a</sup> From Table 53  
<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10  
 PM2.5 Fraction= 0.920  
 From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5  
 and PM 2.5 Significance Thresholds, SCAQMD, October 2006,  
[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

Construction Equipment Daily Criteria Pollutant Exhaust Emissions						
Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Backhoe	0.22	2.70	1.41	0.00	0.04	0.04
Bobcat Skid Steer	0.07	1.07	0.50	0.00	0.01	0.01
<b>Total</b>	<b>0.29</b>	<b>3.77</b>	<b>1.90</b>	<b>0.01</b>	<b>0.05</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions			
Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Backhoe	1.9	0.0	1.9
Bobcat Skid Steer	1.5	0.0	1.5
<b>Total</b>	<b>3.3</b>	<b>0.0</b>	<b>3.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 53  
<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Usage				
Vehicle	Number <sup>b</sup>	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Dump Truck	2	5	0.5	1.25
Water Truck	1	10	1	2.5
<b>Offsite</b>				
Concrete Truck	2	5	N/A	60
Worker Commute	7	10	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed  
<sup>b</sup> Concrete trucks based on 15,000 CY over 90 days and 10 CY/truck = 15,000 / 90 / 10 = 16.6

Motor Vehicle Exhaust Emission Factors									
Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
<b>Offsite</b>									
Concrete Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

**Table 51f**  
**Additional Substation Construction Emissions**  
**Civil - Demo**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Dump Truck	0.00	0.01	0.02	0.00	0.00	0.00
Water Truck	0.00	0.01	0.02	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.02</b>	<b>0.05</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Concrete Truck	0.10	0.52	1.12	0.00	0.06	0.04
Worker Commute	0.18	1.44	0.12	0.00	0.04	0.03
<b>Offsite Total</b>	<b>0.28</b>	<b>1.96</b>	<b>1.24</b>	<b>0.01</b>	<b>0.10</b>	<b>0.07</b>
<b>Total</b>	<b>0.28</b>	<b>1.98</b>	<b>1.29</b>	<b>0.01</b>	<b>0.10</b>	<b>0.07</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Dump Truck	0.0	0.0	0.0
Water Truck	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.1</b>	<b>0.0</b>	<b>0.1</b>
<b>Offsite</b>			
Concrete Truck	1.1	0.0	1.1
Worker Commute	2.1	0.0	2.1
<b>Offsite Total</b>	<b>3.3</b>	<b>0.0</b>	<b>3.3</b>
<b>Total</b>	<b>3.3</b>	<b>0.0</b>	<b>3.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Dump Truck	2	Unpaved	1.25	2.145	0.214	5.36	0.54
Water Truck	1	Unpaved	2.5	2.145	0.214	5.36	0.54
<b>Onsite Total</b>						<b>10.72</b>	<b>1.07</b>
<b>Offsite</b>							
Concrete Truck	2	Paved	60	0.001	0.000	0.10	0.00
Worker Commute	7	Paved	60	0.001	0.000	0.34	0.00
<b>Offsite Total</b>						<b>0.34</b>	<b>0.00</b>
<b>Total</b>						<b>11.06</b>	<b>1.07</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	140	9.94E-04	2.07E-04	0.14	0.03
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
<b>Total</b>					<b>0.14</b>	<b>0.03</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Peak daily estimated from total of 12,000 CY over 90 days

**Table 52**  
**Operational Emissions**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT/yr)
Emergency Diesel Generator	0.09	0.58	0.57	0.00	0.02	0.00	8
Motor Vehicle Exhaust	0.08	0.64	0.05	0.00	0.02	0.01	2
Motor Vehicle Fugitive PM	--	--	--	--	5.20	0.51	--
SF6 Leakage	--	--	--	--	--	--	660
<b>Total</b>	<b>0.17</b>	<b>1.22</b>	<b>0.62</b>	<b>0.01</b>	<b>5.24</b>	<b>0.52</b>	<b>670</b>

**Emergency Diesel Generator Usage**

Equipment	Horse-power	Number	Days Used/Year	Hours Used/Day
Emergency Diesel Generator	440	1	52	1

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Emergency Diesel Generator	440	0.086	0.582	0.570	0.003	0.017	0.000	336.853	0.008	Generator Sets

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction = 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Emergency Diesel Generator Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Emergency Diesel Generator	0.09	0.58	0.57	0.00	0.02	0.00
<b>Total</b>	<b>0.09</b>	<b>0.58</b>	<b>0.57</b>	<b>0.00</b>	<b>0.02</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Emergency Diesel Generator Annual Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Emergency Diesel Generator	7.9	0.0	7.9
<b>Total</b>	<b>7.9</b>	<b>0.0</b>	<b>7.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used/Year	Miles/Day/Veh.
Transmission Line Inspection	1	1	65
Subtransmission Line Inspection	1	1	62
Substation Site Visit	1	48	60

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
Transmission Line Inspection	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Subtransmission Line Inspection	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Substation Site Visit	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Transmission Line Inspection	0.03	0.22	0.02	0.00	0.01	0.00
Subtransmission Line Inspection	0.03	0.21	0.02	0.00	0.01	0.00
Substation Site Visit	0.03	0.21	0.02	0.00	0.01	0.00
<b>Total</b>	<b>0.08</b>	<b>0.64</b>	<b>0.05</b>	<b>0.00</b>	<b>0.02</b>	<b>0.01</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Annual Greenhouse Gas Emissions**

Vehicle	CO2 (MT/yr) <sup>a</sup>	CH4 (MT/yr) <sup>a</sup>	CO2e (MT/yr) <sup>b</sup>
Transmission Line Inspection	0.0	0.0	0.0
Subtransmission Line Inspection	0.0	0.0	0.0
Substation Site Visit	1.5	0.0	1.5
<b>Total</b>	<b>1.5</b>	<b>0.0</b>	<b>1.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Table 52**  
**Operational Emissions**

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
Transmission Line Inspection	1	Paved	60	0.001	0.000	0.05	0.00
Transmission Line Inspection	1	Unpaved	5	1.012	0.101	5.06	0.51
Subtransmission Line Inspection	1	Paved	62	0.001	0.000	0.05	0.00
Substation Site Visit	1	Paved	60	0.001	0.000	0.05	0.00
<b>Total</b>						<b>5.20</b>	<b>0.51</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**SF6 Leakage Greenhouse Gas Emissions**

Item	Value	Units
SF6 in 500 kV Equipment	11,515	pounds
SF6 in 115 kV Equipment	1,257	pounds
Total SF6 Added	12,772	pounds
SF6 Leakage Rate	0.5	%/year
SF6 Emissions	63.86	pounds
SF6 Global Warming Potential <sup>a</sup>	22,800	
<b>CO2e Emissions<sup>b</sup></b>	<b>660</b>	<b>MT/yr</b>

<sup>a</sup> Based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008.

[http://www.climateaction.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateaction.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

<sup>b</sup> CO<sub>2</sub>e emissions [metric tons] = SF<sub>6</sub> emissions [lb] x

Global warming potential [lb CO<sub>2</sub>e/lb SF<sub>6</sub>] x 453.6 [g/lb] / 1,000,000 [g/MT]

Substation	Item	SF6 Volume (Pounds Each)	Quantity Added	Total SF6 Volume (Pounds)
<b>500 kV</b>				
Alberhill	Circuit Breaker	1,645	7	11,515
<b>500 kV Total</b>				<b>11,515</b>
<b>115 kV</b>				
Alberhill	Circuit Breaker	83	15	1,245
Valley	Circuit Breaker	71	(1)	(71)
Newcomb	Circuit Breaker	83	1	83
<b>115 kV Total</b>				<b>1,257</b>
<b>Total Change</b>				<b>12,772</b>



Table 53  
SCAB Fleet Average Emission Factors (Diesel)

2025										
Air Basin	SC			(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Equipment	MaxHP			COG	CO	NOX	SOX	PM	CO2	CH4
Aerial Lifts	15	Aerial Lifts	Aerial Lifts0000	0.0101	0.0528	0.0831	0.0001	0.0025	8.7	0.0009
	25	Aerial Lifts	Aerial Lifts0016	0.0132	0.0451	0.0838	0.0001	0.0032	11.0	0.0012
	50	Aerial Lifts	Aerial Lifts0026	0.0168	0.1351	0.1218	0.0003	0.0035	19.6	0.0015
	120	Aerial Lifts	Aerial Lifts0051	0.0176	0.2265	0.1496	0.0004	0.0063	38.1	0.0016
	500	Aerial Lifts	Aerial Lifts0121	0.0580	0.3710	0.3660	0.0021	0.0109	213	0.0052
	750	Aerial Lifts	Aerial Lifts0501	0.1054	0.6706	0.6753	0.0039	0.0199	385	0.0095
Aerial Lifts Composite		Aerial Lifts	Aerial Lifts0751	0.0184	0.1646	0.1366	0.0004	0.0048	34.7	0.0017
Air Compressors	15	Air Compressors	Air Compressors0000	0.0087	0.0444	0.0545	0.0001	0.0023	7.2	0.0008
	25	Air Compressors	Air Compressors0016	0.0181	0.0605	0.1121	0.0002	0.0045	14.4	0.0016
	50	Air Compressors	Air Compressors0026	0.0263	0.1911	0.1476	0.0003	0.0047	22.3	0.0024
	120	Air Compressors	Air Compressors0051	0.0289	0.3023	0.1928	0.0006	0.0088	47.0	0.0026
	175	Air Compressors	Air Compressors0121	0.0424	0.4998	0.2187	0.0010	0.0104	88.5	0.0038
	250	Air Compressors	Air Compressors0176	0.0514	0.2531	0.2553	0.0015	0.0078	131	0.0046
	500	Air Compressors	Air Compressors0251	0.0894	0.4292	0.4150	0.0023	0.0134	232	0.0081
	750	Air Compressors	Air Compressors0501	0.1385	0.6633	0.6545	0.0036	0.0210	358	0.0125
	1000	Air Compressors	Air Compressors0751	0.1999	0.9265	2.5439	0.0049	0.0483	486	0.0180
	Air Compressors Composite		Air Compressors	Air Compressors1001	0.0349	0.3027	0.2104	0.0007	0.0088	63.6
Bore/Drill Rigs	15	Bore/Drill Rigs	Bore/Drill Rigs0000	0.0120	0.0632	0.0754	0.0002	0.0029	10.3	0.0011
	25	Bore/Drill Rigs	Bore/Drill Rigs0016	0.0193	0.0658	0.1219	0.0002	0.0046	16.0	0.0017
	50	Bore/Drill Rigs	Bore/Drill Rigs0026	0.0190	0.2200	0.1662	0.0004	0.0009	31.0	0.0017
	120	Bore/Drill Rigs	Bore/Drill Rigs0051	0.0252	0.4660	0.1955	0.0009	0.0020	77.1	0.0023
	175	Bore/Drill Rigs	Bore/Drill Rigs0121	0.0324	0.7542	0.0787	0.0016	0.0030	141	0.0029
	250	Bore/Drill Rigs	Bore/Drill Rigs0176	0.0427	0.3426	0.0981	0.0021	0.0035	188	0.0039
	500	Bore/Drill Rigs	Bore/Drill Rigs0251	0.0706	0.5512	0.1622	0.0031	0.0058	311	0.0064
	750	Bore/Drill Rigs	Bore/Drill Rigs0501	0.1396	1.0891	0.3204	0.0062	0.0115	615	0.0126
	1000	Bore/Drill Rigs	Bore/Drill Rigs0751	0.2115	1.6437	3.8912	0.0093	0.0364	928	0.0191
Bore/Drill Rigs Composite		Bore/Drill Rigs	Bore/Drill Rigs1001	0.0428	0.5007	0.2864	0.0017	0.0042	165	0.0039
Cement and Mortar Mixers	15	Cement and Mortar Mixers	Cement and Mortar Mixers0000	0.0074	0.0386	0.0461	0.0001	0.0018	6.3	0.0007
	25	Cement and Mortar Mixers	Cement and Mortar Mixers0016	0.0213	0.0724	0.1346	0.0002	0.0052	17.6	0.0019
Cement and Mortar Mixers Composite		Cement and Mortar Mixers	Cement and Mortar Mixers0026	0.0085	0.0414	0.0534	0.0001	0.0021	7.2	0.0008
Concrete/Industrial Saws	25	Concrete/Industrial Saws	Concrete/Industrial Saws0000	0.0199	0.0678	0.1256	0.0002	0.0047	16.5	0.0018
	50	Concrete/Industrial Saws	Concrete/Industrial Saws0026	0.0279	0.2284	0.1910	0.0004	0.0053	30.2	0.0025
	120	Concrete/Industrial Saws	Concrete/Industrial Saws0051	0.0370	0.4561	0.2840	0.0009	0.0117	74.1	0.0033
	175	Concrete/Industrial Saws	Concrete/Industrial Saws0121	0.0623	0.8663	0.3523	0.0018	0.0160	160	0.0056
Concrete/Industrial Saws Composite		Concrete/Industrial Saws	Concrete/Industrial Saws0176	0.0337	0.3706	0.2471	0.0007	0.0093	58.5	0.0030
Cranes	50	Cranes	Cranes0000	0.0350	0.2256	0.1644	0.0003	0.0062	23.2	0.0032
	120	Cranes	Cranes0051	0.0376	0.3384	0.2298	0.0006	0.0120	50.1	0.0034
	175	Cranes	Cranes0121	0.0462	0.4744	0.2300	0.0009	0.0120	80.3	0.0042
	250	Cranes	Cranes0176	0.0544	0.2316	0.2705	0.0013	0.0094	112	0.0049
	500	Cranes	Cranes0251	0.0858	0.3535	0.3977	0.0018	0.0146	180	0.0077
	750	Cranes	Cranes0501	0.1446	0.5947	0.6821	0.0030	0.0248	303	0.0130
	9999	Cranes	Cranes0751	0.5219	1.9715	5.5760	0.0098	0.1146	971	0.0471
Cranes Composite		Cranes	Cranes1000	0.0681	0.3738	0.4223	0.0014	0.0143	129	0.0061
Crawler Tractors	50	Crawler Tractors	Crawler Tractors0000	0.0487	0.2566	0.1842	0.0003	0.0090	24.9	0.0044
	120	Crawler Tractors	Crawler Tractors0051	0.0609	0.4537	0.3562	0.0008	0.0221	65.8	0.0055
	175	Crawler Tractors	Crawler Tractors0121	0.0823	0.7265	0.4447	0.0014	0.0241	121	0.0074
	250	Crawler Tractors	Crawler Tractors0176	0.0924	0.3662	0.5348	0.0019	0.0192	166	0.0083
	500	Crawler Tractors	Crawler Tractors0251	0.1392	0.5877	0.7527	0.0025	0.0280	259	0.0126
	750	Crawler Tractors	Crawler Tractors0501	0.2506	1.0528	1.3878	0.0047	0.0510	465	0.0226
	1000	Crawler Tractors	Crawler Tractors0751	0.3749	1.5618	4.2168	0.0066	0.0656	658	0.0338
Crawler Tractors Composite		Crawler Tractors	Crawler Tractors1001	0.0789	0.5065	0.4482	0.0013	0.0227	114	0.0071

Table 53  
SCAB Fleet Average Emission Factors (Diesel)

2025										
Air Basin		SC								
Equipment	MaxHP			(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
				COG	CO	NOX	SOX	PM	CO2	CH4
Crushing/Proc. Equipment	50	Crushing/Proc. Equipment	Crushing/Proc. Equipment000	0.0508	0.3859	0.2899	0.0006	0.0083	44.0	0.0046
	120	Crushing/Proc. Equipment	Crushing/Proc. Equipment0051	0.0506	0.5406	0.3289	0.0010	0.0140	83.1	0.0046
	175	Crushing/Proc. Equipment	Crushing/Proc. Equipment0121	0.0795	0.9556	0.3830	0.0019	0.0177	167	0.0072
	250	Crushing/Proc. Equipment	Crushing/Proc. Equipment0176	0.0967	0.4768	0.4357	0.0028	0.0134	245	0.0087
	500	Crushing/Proc. Equipment	Crushing/Proc. Equipment0251	0.1459	0.6977	0.6163	0.0037	0.0200	374	0.0132
	750	Crushing/Proc. Equipment	Crushing/Proc. Equipment0501	0.2307	1.1003	0.9907	0.0059	0.0316	589	0.0208
9999	Crushing/Proc. Equipment	Crushing/Proc. Equipment0751	0.6019	2.5014	6.6977	0.0131	0.1238	1,308	0.0543	
Crushing/Proc. Equipment Composite		Crushing/Proc. Equipment	Crushing/Proc. Equipment10000	0.0693	0.6187	0.3763	0.0015	0.0146	132	0.0062
Dumpers/Tenders	25	Dumpers/Tenders	Dumpers/Tenders0000	0.0092	0.0314	0.0581	0.0001	0.0022	7.6	0.0008
Dumpers/Tenders Composite		Dumpers/Tenders	Dumpers/Tenders0026	0.0092	0.0314	0.0581	0.0001	0.0022	7.6	0.0008
Excavators	25	Excavators	Excavators0000	0.0198	0.0677	0.1253	0.0002	0.0047	16.4	0.0018
	50	Excavators	Excavators0026	0.0297	0.2365	0.1616	0.0003	0.0035	25.0	0.0027
	120	Excavators	Excavators0051	0.0448	0.4942	0.2638	0.0009	0.0092	73.6	0.0040
	175	Excavators	Excavators0121	0.0518	0.6636	0.1982	0.0013	0.0091	112	0.0047
	250	Excavators	Excavators0176	0.0647	0.3210	0.2222	0.0018	0.0074	159	0.0058
	500	Excavators	Excavators0251	0.0946	0.4495	0.3091	0.0023	0.0107	234	0.0085
750	Excavators	Excavators0501	0.1569	0.7451	0.5194	0.0039	0.0178	387	0.0142	
Excavators Composite		Excavators	Excavators0056	0.0559	0.5086	0.2269	0.0013	0.0086	120	0.0050
Forklifts	50	Forklifts	Forklifts0000	0.0150	0.1361	0.0904	0.0002	0.0013	14.7	0.0014
	120	Forklifts	Forklifts0051	0.0168	0.2086	0.0997	0.0004	0.0023	31.2	0.0015
	175	Forklifts	Forklifts0121	0.0228	0.3310	0.0732	0.0006	0.0029	56.1	0.0021
	250	Forklifts	Forklifts0176	0.0289	0.1551	0.0746	0.0009	0.0027	77.1	0.0026
	500	Forklifts	Forklifts0251	0.0416	0.2123	0.1038	0.0011	0.0038	111	0.0038
Forklifts Composite		Forklifts	Forklifts0501	0.0236	0.2148	0.0860	0.0006	0.0025	54.4	0.0021
Generator Sets	15	Generator Sets	Generator Sets0000	0.0109	0.0627	0.0768	0.0002	0.0032	10.2	0.0010
	25	Generator Sets	Generator Sets0016	0.0216	0.0738	0.1368	0.0002	0.0055	17.6	0.0019
	50	Generator Sets	Generator Sets0026	0.0242	0.2034	0.1881	0.0004	0.0051	30.6	0.0022
	120	Generator Sets	Generator Sets0051	0.0340	0.4585	0.3022	0.0009	0.0122	77.9	0.0031
	175	Generator Sets	Generator Sets0121	0.0469	0.7328	0.3291	0.0016	0.0136	142	0.0042
	250	Generator Sets	Generator Sets0176	0.0558	0.3746	0.3885	0.0024	0.0108	213	0.0050
	500	Generator Sets	Generator Sets0251	0.0862	0.5820	0.5697	0.0033	0.0167	337	0.0078
	750	Generator Sets	Generator Sets0501	0.1401	0.9395	0.9382	0.0055	0.0272	544	0.0126
9999	Generator Sets	Generator Sets0751	0.3235	1.8648	5.2188	0.0105	0.0888	1,049	0.0292	
Generator Sets Composite		Generator Sets	Generator Sets10000	0.0288	0.2667	0.2329	0.0007	0.0081	61.0	0.0026
Graders	50	Graders	Graders0000	0.0382	0.2599	0.1877	0.0004	0.0063	27.5	0.0034
	120	Graders	Graders0051	0.0521	0.5009	0.3219	0.0009	0.0153	75.0	0.0047
	175	Graders	Graders0121	0.0652	0.7261	0.3117	0.0014	0.0157	124	0.0059
	250	Graders	Graders0176	0.0781	0.3549	0.3652	0.0019	0.0129	172	0.0071
	500	Graders	Graders0251	0.1023	0.4610	0.4468	0.0023	0.0165	229	0.0092
	750	Graders	Graders0501	0.2167	0.9755	0.9628	0.0049	0.0353	486	0.0196
Graders Composite		Graders	Graders0751	0.0676	0.5696	0.3314	0.0015	0.0147	133	0.0061
Off-Highway Tractors	120	Off-Highway Tractors	Off-Highway Tractors0000	0.1108	0.6619	0.6362	0.0011	0.0455	93.7	0.0100
	175	Off-Highway Tractors	Off-Highway Tractors0121	0.1110	0.7932	0.6639	0.0015	0.0370	130	0.0100
	250	Off-Highway Tractors	Off-Highway Tractors0176	0.0890	0.3179	0.5983	0.0015	0.0227	130	0.0090
	750	Off-Highway Tractors	Off-Highway Tractors0251	0.3692	1.5358	2.4157	0.0057	0.0918	568	0.0333
	1000	Off-Highway Tractors	Off-Highway Tractors0751	0.5623	2.3619	6.0896	0.0082	0.1577	814	0.0507
Off-Highway Tractors Composite		Off-Highway Tractors	Off-Highway Tractors1001	0.1134	0.6101	0.7291	0.0017	0.0331	151	0.0102
Off-Highway Trucks	175	Off-Highway Trucks	Off-Highway Trucks0000	0.0622	0.7536	0.2376	0.0014	0.0112	125	0.0056
	250	Off-Highway Trucks	Off-Highway Trucks0176	0.0730	0.3435	0.2521	0.0019	0.0085	167	0.0066
	500	Off-Highway Trucks	Off-Highway Trucks0251	0.1183	0.5319	0.3878	0.0027	0.0135	272	0.0107
	750	Off-Highway Trucks	Off-Highway Trucks0501	0.1921	0.8627	0.6384	0.0044	0.0221	442	0.0173
	1000	Off-Highway Trucks	Off-Highway Trucks0751	0.2823	1.2403	3.1782	0.0063	0.0546	625	0.0255
Off-Highway Trucks Composite		Off-Highway Trucks	Off-Highway Trucks1001	0.1140	0.5385	0.4769	0.0027	0.0142	260	0.0103

**Table 53**  
**SCAB Fleet Average Emission Factors (Diesel)**

2025				(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Air Basin	SC			COG	CO	NOX	SOX	PM	CO2	CH4
Equipment	MaxHP									
Other Construction Equipment	15	Other Construction Equipment	Other Construction Equipment000	0.0118	0.0617	0.0737	0.0002	0.0029	10.1	0.0011
	25	Other Construction Equipment	Other Construction Equipment0016	0.0159	0.0544	0.1008	0.0002	0.0038	13.2	0.0014
	50	Other Construction Equipment	Other Construction Equipment0026	0.0244	0.2188	0.1893	0.0004	0.0034	28.0	0.0022
	120	Other Construction Equipment	Other Construction Equipment0051	0.0379	0.5045	0.2730	0.0009	0.0087	80.9	0.0034
	175	Other Construction Equipment	Other Construction Equipment0121	0.0384	0.5858	0.1729	0.0012	0.0075	107	0.0035
500	Other Construction Equipment	Other Construction Equipment0176	0.0792	0.4606	0.3034	0.0025	0.0099	254	0.0071	
Other Construction Equipment Composite		Other Construction Equipment	Other Construction Equipment0501	0.0442	0.3474	0.2021	0.0013	0.0069	123	0.0040
Other General Industrial Equipmen	15	Other General Industrial Equipmen	Other General Industrial Equipmen0000	0.0066	0.0391	0.0466	0.0001	0.0018	6.4	0.0006
	25	Other General Industrial Equipmen	Other General Industrial Equipmen0016	0.0185	0.0632	0.1170	0.0002	0.0044	15.3	0.0017
	50	Other General Industrial Equipmen	Other General Industrial Equipmen0026	0.0298	0.2099	0.1491	0.0003	0.0047	21.7	0.0027
	120	Other General Industrial Equipmen	Other General Industrial Equipmen0051	0.0436	0.4189	0.2803	0.0007	0.0120	62.0	0.0039
	175	Other General Industrial Equipmen	Other General Industrial Equipmen0121	0.0519	0.5684	0.2412	0.0011	0.0115	95.9	0.0047
	250	Other General Industrial Equipmen	Other General Industrial Equipmen0176	0.0608	0.2743	0.2679	0.0015	0.0083	136	0.0055
	500	Other General Industrial Equipmen	Other General Industrial Equipmen0251	0.1174	0.5103	0.4826	0.0026	0.0157	265	0.0106
	750	Other General Industrial Equipmen	Other General Industrial Equipmen0501	0.1939	0.8411	0.8117	0.0044	0.0262	437	0.0175
	1000	Other General Industrial Equipmen	Other General Industrial Equipmen0751	0.2627	1.1060	2.9924	0.0056	0.0579	560	0.0237
	Other General Industrial Equipmen Composite		Other General Industrial Equipmen	Other General Industrial Equipmen1001	0.0747	0.4438	0.3947	0.0016	0.0130	152
Other Material Handling Equipment	50	Other Material Handling Equipment	Other Material Handling Equipment0000	0.0410	0.2893	0.2073	0.0004	0.0065	30.3	0.0037
	120	Other Material Handling Equipment	Other Material Handling Equipment0051	0.0421	0.4076	0.2541	0.0007	0.0117	60.7	0.0038
	175	Other Material Handling Equipment	Other Material Handling Equipment0121	0.0653	0.7197	0.3067	0.0014	0.0146	122	0.0059
	250	Other Material Handling Equipment	Other Material Handling Equipment0176	0.0642	0.2920	0.2863	0.0016	0.0088	145	0.0058
	500	Other Material Handling Equipment	Other Material Handling Equipment0251	0.0837	0.3670	0.3482	0.0019	0.0113	192	0.0075
9999	Other Material Handling Equipment	Other Material Handling Equipment0501	0.3781	1.4596	3.9555	0.0073	0.0764	741	0.0341	
Other Material Handling Equipment Composite		Other Material Handling Equipment	Other Material Handling Equipment1000	0.0696	0.4355	0.3844	0.0015	0.0124	141	0.0063
Pavers	25	Pavers	Pavers0000	0.0225	0.0768	0.1422	0.0002	0.0053	18.7	0.0020
	50	Pavers	Pavers0026	0.0574	0.2803	0.2102	0.0004	0.0114	28.0	0.0052
	120	Pavers	Pavers0051	0.0662	0.4696	0.4003	0.0008	0.0263	68.2	0.0060
	175	Pavers	Pavers0121	0.0899	0.7543	0.5238	0.0014	0.0286	128	0.0081
	250	Pavers	Pavers0176	0.1097	0.4287	0.7020	0.0022	0.0254	194	0.0099
	500	Pavers	Pavers0251	0.1263	0.5374	0.7572	0.0023	0.0284	233	0.0114
Pavers Composite		Pavers	Pavers0501	0.0717	0.4745	0.3858	0.0009	0.0220	77.9	0.0065
Paving Equipment	25	Paving Equipment	Paving Equipment0000	0.0152	0.0520	0.0963	0.0002	0.0036	12.6	0.0014
	50	Paving Equipment	Paving Equipment0026	0.0468	0.2355	0.1789	0.0003	0.0095	23.9	0.0042
	120	Paving Equipment	Paving Equipment0051	0.0503	0.3671	0.3092	0.0006	0.0200	54.5	0.0045
	175	Paving Equipment	Paving Equipment0121	0.0687	0.5900	0.4021	0.0011	0.0219	101	0.0062
	250	Paving Equipment	Paving Equipment0176	0.0672	0.2648	0.4289	0.0014	0.0154	122	0.0061
Paving Equipment Composite		Paving Equipment	Paving Equipment0251	0.0548	0.3993	0.3281	0.0008	0.0190	68.9	0.0049
Plate Compactors		Plate Compactors	Plate Compactors0000	0.0050	0.0263	0.0314	0.0001	0.0012	4.3	0.0005
Plate Compactors Composite		Plate Compactors	Plate Compactors0016	0.0050	0.0263	0.0314	0.0001	0.0012	4.3	0.0005
Pressure Washers	15	Pressure Washers	Pressure Washers0000	0.0052	0.0301	0.0368	0.0001	0.0015	4.9	0.0005
	25	Pressure Washers	Pressure Washers0016	0.0087	0.0299	0.0555	0.0001	0.0022	7.1	0.0008
	50	Pressure Washers	Pressure Washers0026	0.0079	0.0810	0.0843	0.0002	0.0019	14.3	0.0007
	120	Pressure Washers	Pressure Washers0051	0.0082	0.1351	0.0897	0.0003	0.0031	24.1	0.0007
Pressure Washers Composite		Pressure Washers	Pressure Washers0121	0.0066	0.0531	0.0561	0.0001	0.0019	9.4	0.0006
Pumps	15	Pumps	Pumps0000	0.0089	0.0456	0.0560	0.0001	0.0024	7.4	0.0008
	25	Pumps	Pumps0016	0.0244	0.0816	0.1512	0.0002	0.0061	19.5	0.0022
	50	Pumps	Pumps0026	0.0299	0.2394	0.2138	0.0004	0.0061	34.3	0.0027
	120	Pumps	Pumps0051	0.0365	0.4656	0.3062	0.0009	0.0129	77.9	0.0033
	175	Pumps	Pumps0121	0.0499	0.7342	0.3301	0.0016	0.0142	140	0.0045
	250	Pumps	Pumps0176	0.0572	0.3604	0.3745	0.0023	0.0107	201	0.0052
	500	Pumps	Pumps0251	0.0959	0.6034	0.5922	0.0034	0.0178	345	0.0087
	750	Pumps	Pumps0501	0.1593	0.9975	0.9991	0.0057	0.0297	571	0.0144
	9999	Pumps	Pumps0751	0.4488	2.4388	6.8114	0.0136	0.1186	1,355	0.0405

Table 53  
SCAB Fleet Average Emission Factors (Diesel)

2025											
Air Basin		SC									
Equipment	MaxHP			(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	
				COG	CO	NOX	SOX	PM	CO2	CH4	
Pumps Composite		Pumps	Pumps10000	0.0270	0.2617	0.2079	0.0006	0.0078	49.6	0.0024	
Rollers	15	Rollers	Rollers0000	0.0074	0.386	0.0461	0.0001	0.0018	6.3	0.0007	
	25	Rollers	Rollers0016	0.0161	0.0549	0.1017	0.0002	0.0038	13.3	0.0015	
	50	Rollers	Rollers0026	0.0345	0.2258	0.1776	0.0003	0.0068	26.0	0.0031	
	120	Rollers	Rollers0051	0.0392	0.3801	0.2847	0.0007	0.0137	59.0	0.0035	
	175	Rollers	Rollers0121	0.0553	0.6096	0.3030	0.0012	0.0156	108	0.0050	
	250	Rollers	Rollers0176	0.0656	0.3037	0.3629	0.0017	0.0127	153	0.0059	
Rollers Composite	500	Rollers	Rollers0251	0.0920	0.4189	0.4752	0.0022	0.0174	219	0.0083	
		Rollers	Rollers0501	0.0410	0.3763	0.2501	0.0008	0.0122	67.0	0.0037	
Rough Terrain Forklifts	50	Rough Terrain Forklifts	Rough Terrain Forklifts0000	0.0381	0.3041	0.2193	0.0004	0.0054	33.9	0.0034	
	120	Rough Terrain Forklifts	Rough Terrain Forklifts0051	0.0369	0.4106	0.2316	0.0007	0.0087	62.4	0.0033	
	175	Rough Terrain Forklifts	Rough Terrain Forklifts0121	0.0569	0.7229	0.2450	0.0014	0.0112	125	0.0051	
	250	Rough Terrain Forklifts	Rough Terrain Forklifts0176	0.0671	0.3372	0.2625	0.0019	0.0084	171	0.0061	
	Rough Terrain Forklifts Composite	500	Rough Terrain Forklifts	Rough Terrain Forklifts0251	0.0999	0.4838	0.3682	0.0025	0.0123	257	0.0090
			Rough Terrain Forklifts	Rough Terrain Forklifts0501	0.0396	0.4430	0.2336	0.0008	0.0090	70.3	0.0036
Rubber Tired Dozers	175	Rubber Tired Dozers	Rubber Tired Dozers0000	0.1163	0.8019	0.6895	0.0015	0.0386	129	0.0105	
	250	Rubber Tired Dozers	Rubber Tired Dozers0176	0.1329	0.4624	0.8841	0.0021	0.0340	183	0.0120	
	500	Rubber Tired Dozers	Rubber Tired Dozers0251	0.1817	0.7490	1.1543	0.0026	0.0448	265	0.0164	
	750	Rubber Tired Dozers	Rubber Tired Dozers0501	0.2747	1.1262	1.7818	0.0040	0.0684	399	0.0248	
	Rubber Tired Dozers Composite	1000	Rubber Tired Dozers	Rubber Tired Dozers0751	0.4321	1.7954	4.5523	0.0060	0.1202	592	0.0390
			Rubber Tired Dozers	Rubber Tired Dozers1001	0.1672	0.6620	1.0824	0.0025	0.0419	239	0.0151
Rubber Tired Loaders	25	Rubber Tired Loaders	Rubber Tired Loaders0000	0.0204	0.0697	0.1291	0.0002	0.0048	16.9	0.0018	
	50	Rubber Tired Loaders	Rubber Tired Loaders0026	0.0418	0.2904	0.2109	0.0004	0.0069	31.1	0.0038	
	120	Rubber Tired Loaders	Rubber Tired Loaders0051	0.0397	0.3916	0.2476	0.0007	0.0115	58.9	0.0036	
	175	Rubber Tired Loaders	Rubber Tired Loaders0121	0.0546	0.6199	0.2592	0.0012	0.0130	106	0.0049	
	250	Rubber Tired Loaders	Rubber Tired Loaders0176	0.0661	0.3041	0.3040	0.0017	0.0107	149	0.0060	
	500	Rubber Tired Loaders	Rubber Tired Loaders0251	0.1034	0.4654	0.4455	0.0023	0.0164	237	0.0093	
	750	Rubber Tired Loaders	Rubber Tired Loaders0501	0.2119	0.9532	0.9273	0.0049	0.0338	486	0.0191	
	Rubber Tired Loaders Composite	1000	Rubber Tired Loaders	Rubber Tired Loaders0751	0.2701	1.1927	3.2272	0.0060	0.0615	594	0.0244
			Rubber Tired Loaders	Rubber Tired Loaders1001	0.0559	0.4311	0.2835	0.0012	0.0121	109	0.0050
	Scrapers	120	Scrapers	Scrapers0000	0.0887	0.6472	0.5218	0.0011	0.0330	93.9	0.0080
175		Scrapers	Scrapers0121	0.1025	0.8864	0.5654	0.0017	0.0307	148	0.0092	
250		Scrapers	Scrapers0176	0.1187	0.4642	0.7040	0.0024	0.0254	209	0.0107	
500		Scrapers	Scrapers0251	0.1755	0.7332	0.9727	0.0032	0.0364	321	0.0158	
Scrapers Composite		750	Scrapers	Scrapers0501	0.3043	1.2657	1.7266	0.0056	0.0638	555	0.0275
			Scrapers	Scrapers0751	0.1495	0.7187	0.8387	0.0027	0.0335	262	0.0135
Signal Boards	15	Signal Boards	Signal Boards0000	0.0072	0.0377	0.0450	0.0001	0.0018	6.2	0.0006	
	50	Signal Boards	Signal Boards0016	0.0332	0.2686	0.2268	0.0005	0.0063	36.2	0.0030	
	120	Signal Boards	Signal Boards0051	0.0394	0.4898	0.3076	0.0009	0.0127	80.2	0.0036	
	175	Signal Boards	Signal Boards0121	0.0587	0.8292	0.3433	0.0017	0.0152	155	0.0053	
	250	Signal Boards	Signal Boards0176	0.0794	0.4676	0.4435	0.0029	0.0132	255	0.0072	
Signal Boards Composite		Signal Boards	Signal Boards0251	0.0111	0.9909	0.0718	0.0002	0.0029	16.7	0.0010	
Skid Steer Loaders	25	Skid Steer Loaders	Skid Steer Loaders0000	0.0167	0.0568	0.1055	0.0002	0.0040	13.8	0.0015	
	50	Skid Steer Loaders	Skid Steer Loaders0026	0.0194	0.1977	0.1446	0.0003	0.0015	25.5	0.0017	
	120	Skid Steer Loaders	Skid Steer Loaders0051	0.0175	0.2665	0.1240	0.0005	0.0022	42.8	0.0016	
Skid Steer Loaders Composite		Skid Steer Loaders	Skid Steer Loaders0121	0.0186	0.2104	0.1354	0.0004	0.0019	30.3	0.0017	
Surfacing Equipment	50	Surfacing Equipment	Surfacing Equipment0000	0.0171	0.1105	0.0934	0.0002	0.0035	14.1	0.0015	
	120	Surfacing Equipment	Surfacing Equipment0051	0.0385	0.3950	0.2869	0.0007	0.0146	63.8	0.0035	
	175	Surfacing Equipment	Surfacing Equipment0121	0.0386	0.4642	0.2429	0.0010	0.0119	85.8	0.0035	
	250	Surfacing Equipment	Surfacing Equipment0176	0.0504	0.2804	0.3275	0.0015	0.0111	135	0.0045	
	500	Surfacing Equipment	Surfacing Equipment0251	0.0800	0.4236	0.4893	0.0022	0.0174	221	0.0072	
	750	Surfacing Equipment	Surfacing Equipment0501	0.1260	0.6643	0.7833	0.0035	0.0275	347	0.0114	
Surfacing Equipment Composite		Surfacing Equipment	Surfacing Equipment0751	0.0638	0.3590	0.3924	0.0017	0.0142	166	0.0058	

Table 53  
SCAB Fleet Average Emission Factors (Diesel)

		2025								
Air Basin		SC								
Equipment	MaxHP			(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
				ROG	CO	NOx	SOx	PM	CO2	CH4
Sweepers/Scrubbers	15	Sweepers/Scrubbers	Sweepers/Scrubbers000	0.0124	0.0729	0.0870	0.0002	0.0034	11.9	0.0011
	25	Sweepers/Scrubbers	Sweepers/Scrubbers0016	0.0237	0.0808	0.1495	0.0002	0.0056	19.6	0.0021
	50	Sweepers/Scrubbers	Sweepers/Scrubbers0026	0.0308	0.2762	0.1942	0.0004	0.0033	31.6	0.0028
	120	Sweepers/Scrubbers	Sweepers/Scrubbers0051	0.0395	0.4895	0.2530	0.0009	0.0068	75.0	0.0036
	175	Sweepers/Scrubbers	Sweepers/Scrubbers0121	0.0565	0.8005	0.2201	0.0016	0.0084	139	0.0051
	250	Sweepers/Scrubbers	Sweepers/Scrubbers0176	0.0587	0.3179	0.1898	0.0018	0.0062	162	0.0053
Sweepers/Scrubbers Composite			Sweepers/Scrubbers0251	0.0410	0.4840	0.2255	0.0009	0.0061	78.5	0.0037
Tractors/Loaders/Backhoes	25	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0000	0.0191	0.0653	0.1209	0.0002	0.0045	15.9	0.0017
	50	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0026	0.0316	0.2678	0.1895	0.0004	0.0037	30.3	0.0029
	120	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0051	0.0281	0.3379	0.1761	0.0006	0.0055	51.7	0.0025
	175	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0121	0.0420	0.5839	0.1613	0.0011	0.0072	101	0.0038
	250	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0176	0.0633	0.3389	0.2157	0.0019	0.0073	172	0.0057
	500	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0251	0.1263	0.6506	0.4127	0.0039	0.0144	345	0.0114
	750	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0501	0.1896	0.9760	0.6256	0.0058	0.0216	517	0.0171
Tractors/Loaders/Backhoes Composite			Tractors/Loaders/Backhoes0751	0.0336	0.3586	0.1857	0.0008	0.0059	66.8	0.0030
Trenchers	15	Trenchers	Trenchers0000	0.0099	0.0517	0.0617	0.0001	0.0024	8.5	0.0009
	25	Trenchers	Trenchers0016	0.0397	0.1355	0.2509	0.0004	0.0094	32.9	0.0036
	50	Trenchers	Trenchers0026	0.0687	0.3197	0.2467	0.0004	0.0140	32.9	0.0062
	120	Trenchers	Trenchers0051	0.0625	0.4341	0.3863	0.0008	0.0259	64.9	0.0056
	175	Trenchers	Trenchers0121	0.1009	0.8327	0.6152	0.0016	0.0338	144	0.0091
	250	Trenchers	Trenchers0176	0.1247	0.4925	0.8480	0.0025	0.0309	223	0.0112
	500	Trenchers	Trenchers0251	0.1661	0.7370	1.0663	0.0031	0.0400	311	0.0150
	750	Trenchers	Trenchers0501	0.3147	1.3882	2.0666	0.0059	0.0766	587	0.0284
Trenchers Composite			Trenchers0751	0.0674	0.4085	0.3481	0.0007	0.0215	58.7	0.0061
Welders	15	Welders	Welders0000	0.0075	0.0381	0.0468	0.0001	0.0020	6.2	0.0007
	25	Welders	Welders0016	0.0141	0.0473	0.0876	0.0001	0.0035	11.3	0.0013
	50	Welders	Welders0026	0.0280	0.2077	0.1684	0.0003	0.0053	26.0	0.0025
	120	Welders	Welders0051	0.0223	0.2476	0.1601	0.0005	0.0073	39.5	0.0020
	175	Welders	Welders0121	0.0430	0.5400	0.2396	0.0011	0.0111	98.2	0.0039
	250	Welders	Welders0176	0.0423	0.2236	0.2294	0.0013	0.0069	119	0.0038
	500	Welders	Welders0251	0.0585	0.3040	0.2969	0.0016	0.0095	168	0.0053
Welders Composite				0.0214	0.1745	0.1373	0.0003	0.0052	25.6	0.0019

Source: File off-road-mobile-source-emission-factors-scenario-years-2007-2025).xls, downloaded from <http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/off-road-mobile-source-emission-factors>

**Table 54**  
**Highest (Most Conservative) EMFAC2007 (version 2.3)**  
**Emission Factors for On-Road Passenger Vehicles & Delivery Trucks**  
 Projects in the SCAQMD (Scenario Years 2007 - 2026)  
 Derived from Peak Emissions Inventory (**Winter**, **Annual**, **Summer**)

**Vehicle Class:**  
**Passenger Vehicles (<8500 pounds) & Delivery Trucks (>8500 pounds)**

The following emission factors were compiled by running the California Air Resources Board's EMFAC2007 (version 2.3) Burden Model, taking the weighted average of vehicle types and simplifying into two categories: **Passenger Vehicles & Delivery Trucks.**

These emission factors can be used to calculate on-road mobile source emissions for the vehicle categories listed in the tables below, by use of the following equation:

**Emissions (pounds per day) = N x TL x EF**

where N = number of trips, TL = trip length (miles/day), and EF = emission factor (pounds per mile)

This methodology replaces the old EMFAC emission factors in Tables A-9-5-J-1 through A-9-5-L in Appendix A9 of the current SCAQMD CEQA Handbook. All the emission factors account for the emissions from start, running and idling exhaust. In addition, the ROG emission factors include diurnal, hot soak, running and resting emissions, and the PM10 & PM2.5 emission factors include tire and brake wear.

Scenario Year: 2025			
All model years in the range 1981 to 2025			
Passenger Vehicles (pounds/mile)		Delivery Trucks (pounds/mile)	
CO	0.00342738	CO	0.00595363
NOx	0.00028846	NOx	0.00615945
ROG	0.00043545	ROG	0.00092178
SOx	0.00001070	SOx	0.00002761
PM10	0.00009679	PM10	0.00028425
PM2.5	0.00006418	PM2.5	0.00020958
CO2	1.11078571	CO2	2.88143570
CH4	0.00003641	CH4	0.00003765

Source: File on-road-vehicles-(scenario-years-2007-2026).xls, downloaded from <http://www.aqmd.gov/home/rules-compliance/ceqa/>

**Table 55**  
**Highest (Most Conservative) EMFAC2007 (version 2.3)**  
**Emission Factors for On-Road Heavy-Heavy-Duty Diesel Trucks**  
 Projects in the SCAQMD (Scenario Years 2007 - 2026)  
 Derived from Peak Emissions Inventory (**Winter**, **Annual**, **Summer**)

**Vehicle Class:**  
**Heavy-Heavy-Duty Diesel Trucks (33,001 to 60,000 pounds)**

The following emission factors were compiled by running the California Air Resources Board's EMFAC2007 (version 2.3) Burden Model and extracting the **Heavy-Heavy-Duty Diesel Truck (HHDT)** Emission Factors.

These emission factors can be used to calculate on-road mobile source emissions for the vehicle/emission categories listed in the tables below, by use of the following equation:

**Emissions (pounds per day) = N x TL x EF**

where N = number of trips, TL = trip length (miles/day), and EF = emission factor (pounds per mile)

The **HHDT-DSL** vehicle/emission category accounts for all emissions from heavy-heavy-duty diesel trucks, including start, running and idling exhaust. In addition, ROG emission factors account for diurnal, hot soak, running and resting emissions, and the PM10 & PM2.5 emission factors account for tire and brake wear.

The **HHDT-DSL, Exh** vehicle/emission category includes only the exhaust portion of PM10 & PM2.5 emissions from heavy-heavy-duty diesel trucks.

Scenario Year: 2025			
All model years in the range 1981 to 2025			
HHDT-DSL (pounds/mile)	HHDT-DSL, Exh (pounds/mile)		
CO	0.00431086	PM10	0.00034397
NOx	0.00932573	PM2.5	0.00031664
ROG	0.00080206		
SOx	0.00004018		
PM10	0.00048541		
PM2.5	0.00036326		
CO2	4.19512979		
CH4	0.00003697		

Source: File heavy-heavy-duty-on-road-vehicles-(scenario-years-2007-2026).xls, downloaded from [http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/emfac-2007-\(v2-3\)-emission-factors-\(on-road\)](http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/emfac-2007-(v2-3)-emission-factors-(on-road))

**Table 56**  
**Motor Vehicle Entrained Road Dust Emission Factors**

Vehicle Type	Surface	Silt Loading (sL, g/m <sup>2</sup> ) or Silt Content (s, %) <sup>a</sup>	Average Weight (W) (tons) <sup>b</sup>	Un-controlled PM10 Emission Factor (lb/VMT) <sup>c</sup>	Un-controlled PM2.5 Emission Factor (lb/VMT) <sup>c</sup>	Control Efficiency (%) <sup>d</sup>	Controlled PM10 Emission Factor (lb/VMT) <sup>e</sup>	Controlled PM2.5 Emission Factor (lb/VMT) <sup>e</sup>
1/2-Ton Pick-up Truck, 4x4	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
1/2-Ton Pick-up Truck, 4x4	Unpaved	7.5	3.2	1.01E+00	1.01E-01	0%	1.01E+00	1.01E-01
1-Ton Truck, 4x4	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
1-Ton Truck, 4x4	Unpaved	7.5	3.2	1.01E+00	1.01E-01	0%	1.01E+00	1.01E-01
10-cu. yd. Concrete Mixer Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
10-cu. yd. Concrete Mixer Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
10-cu. yd. Dump Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
10-cu. yd. Dump Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
1-Ton Crew Cab Flat Bed, 4x4	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
1-Ton Crew Cab Flat Bed, 4x4	Unpaved	7.5	5	1.24E+00	1.24E-01	0%	1.24E+00	1.24E-01
1-Ton Crew Cab, 4x4	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
1-Ton Crew Cab, 4x4	Unpaved	7.5	5	1.24E+00	1.24E-01	0%	1.24E+00	1.24E-01
1-Ton Flat Bed, 4x4	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
1-Ton Flat Bed, 4x4	Unpaved	7.5	5	1.24E+00	1.24E-01	0%	1.24E+00	1.24E-01
3/4-Ton Pick-up Truck, 4x4	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
3/4-Ton Pick-up Truck, 4x4	Unpaved	7.5	3.2	1.01E+00	1.01E-01	0%	1.01E+00	1.01E-01
3/4-Ton Truck, 4x4	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
3/4-Ton Truck, 4x4	Unpaved	7.5	3.2	1.01E+00	1.01E-01	0%	1.01E+00	1.01E-01
40' Flat Bed Pole Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
40' Flat Bed Pole Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Asphalt Delivery Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Asphalt Delivery Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Carry-all Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Carry-all Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Concrete Mixer Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Concrete Mixer Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Concrete Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Concrete Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Crew Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Crew Truck	Unpaved	7.5	5	1.24E+00	1.24E-01	0%	1.24E+00	1.24E-01
Crew Vehicle	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Crew Vehicle	Unpaved	7.5	5	1.24E+00	1.24E-01	0%	1.24E+00	1.24E-01
Crewcab Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Crewcab Truck	Unpaved	7.5	5	1.24E+00	1.24E-01	0%	1.24E+00	1.24E-01
Crushed Rock Delivery Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Crushed Rock Delivery Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Dump Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Dump Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Dump Truck (Trash)	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Dump Truck (Trash)	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Extendable Flat Bed Pole Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Extendable Flat Bed Pole Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Flat Bed Truck/Trailer	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Flat Bed Truck/Trailer	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Flatbed Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Flatbed Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Fuel, Helicopter Support Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Fuel, Helicopter Support Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Jet A Fuel Truck	Paved	0.035	3.4	9.22E-04	0.00E+00	0%	9.22E-04	0.00E+00
Jet A Fuel Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Low Bed Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Low Bed Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Lowboy Truck/Trailer	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Lowboy Truck/Trailer	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Maintenance Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00



**Table 56**  
**Motor Vehicle Entrained Road Dust Emission Factors**

Vehicle Type	Surface	Silt Loading (sL, g/m <sup>2</sup> ) or Silt Content (s, %) <sup>a</sup>	Average Weight (W) (tons) <sup>b</sup>	Un-controlled PM10 Emission Factor (lb/VMT) <sup>c</sup>	Un-controlled PM2.5 Emission Factor (lb/VMT) <sup>c</sup>	Control Efficiency (%) <sup>d</sup>	Controlled PM10 Emission Factor (lb/VMT) <sup>e</sup>	Controlled PM2.5 Emission Factor (lb/VMT) <sup>e</sup>
Maintenance Truck	Unpaved	7.5	10	1.69E+00	1.69E-01	0%	1.69E+00	1.69E-01
Pipe Truck/Trailer	Paved	0.035	3.4	9.22E-04	0.00E+00	0%	9.22E-04	0.00E+00
Pipe Truck/Trailer	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Reel Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Reel Truck	Unpaved	7.5	10	1.69E+00	1.69E-01	0%	1.69E+00	1.69E-01
Stake Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Stake Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Stakebed Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Stakebed Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Truck, Semi Tractor	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Truck, Semi Tractor	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Van	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Van	Unpaved	7.5	3.2	1.01E+00	1.01E-01	0%	1.01E+00	1.01E-01
Water Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Water Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Wire Truck/Trailer	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Wire Truck/Trailer	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Worker Commute	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Worker Commute	Unpaved	7.5	3.2	1.01E+00	1.01E-01	0%	1.01E+00	1.01E-01
Transmission Line Inspection	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Transmission Line Inspection	Unpaved	7.5	3.2	1.01E+00	1.01E-01	0%	1.01E+00	1.01E-01
Subtransmission Line Inspection	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Subtransmission Line Inspection	Unpaved	7.5	3.2	1.01E+00	1.01E-01	0%	1.01E+00	1.01E-01
Substation Site Visit	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Substation Site Visit	Unpaved	7.5	3.2	1.01E+00	1.01E-01	0%	1.01E+00	1.01E-01
Transmission Line Inspection	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Transmission Line Inspection	Unpaved	7.5	3.2	1.01E+00	1.01E-01	0%	1.01E+00	1.01E-01
Subtransmission Line Inspection	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Subtransmission Line Inspection	Unpaved	7.5	3.2	1.01E+00	1.01E-01	0%	1.01E+00	1.01E-01
Substation Site Visit	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Substation Site Visit	Unpaved	7.5	3.2	1.01E+00	1.01E-01	0%	1.01E+00	1.01E-01

<sup>a</sup> Paved road silt loading from ARB Emission Inventory Methodology 7.9, Entrained Paved Road Dust (1997) for collector roads,

<http://www.arb.ca.gov/ei/areasrc/fullpdf/full7-9.pdf>

Unpaved road silt content from SCAQMD CEQA Handbook, (1993) Table A9-9-E-1 for overburden

<sup>b</sup> Average paved on-road vehicle weight in Riverside County from ARB Emission Inventory Methodology 7.9, Entrained Paved Road Dust (1997)

Unpaved worker commuting weight on access road assumed to be same as paved road weight

Unpaved weight for other trucks is based on upper limit of 33,000 lbs for medium heavy-duty trucks.

<sup>c</sup> Equations:

$EF(\text{paved}) = k_p (sL/2)^{0.65} (W/3)^{1.5} - C$

Ref: AP-42, Section 13.2.1, "Paved Rods," November 2006

$EF(\text{unpaved}) = k_u (s/12)^a (W/3)^b$

Ref: AP-42, Section 13.2.2, "Unpaved Rods," November 2006

Constants:

$k_p =$	0.016	(Particle size multiplier for PM10)
	0.0024	(Particle size multiplier for PM2.5)
$C =$	0.00047	(Exhaust, brake wear and tire wear adjustment, PM10)
	0.00036	(Exhaust, brake wear and tire wear adjustment, PM2.5)
$k_u =$	1.5	(Particle size multiplier for PM)
	0.15	(Particle size multiplier for PM2.5)
$a =$	0.9	for PM10
	0.9	for PM2.5
$b =$	0.45	for PM10
	0.45	for PM2.5

<sup>d</sup> Control efficiency from watering unpaved roads twice per day, from Table XI-D, Mitigation Measure Exmples,

Fugitive Dust from Unpaved Roads, [http://www.aqmd.gov/ceqa/handbook/mitigation/fugitive/MM\\_fugitive.html](http://www.aqmd.gov/ceqa/handbook/mitigation/fugitive/MM_fugitive.html)

<sup>e</sup> Controlled emission factor [lb/mi] = Uncontrolled emission factor [lb/mi] x (1 - Control efficiency [%] / 100)

**Table 57**  
**Fugitive Dust Emission Factors**  
**Soil Dropping During Excavation**

Emission Factor [lb/cu. yd] = 0.0011 x (mean wind speed [mi/hr] / 5)<sup>1.3</sup> / (moisture [%] / 2)<sup>1.4</sup> x (number drops per ton) x (density [ton/cu. yd])  
 Reference: AP-42, Equation (1), Section 13.2.4, November 2006

Parameter	Value	Basis
Mean Wind Speed	12	SCAQMD CEQA Air Quality Handbook (1993), Table 9-9-G, default
Moisture	15	SCAQMD CEQA Air Quality Handbook (1993), Table 9-9-G-1, moist soil
Number Drops	4	Assumption
Soil Density	1.215	Table 2.46, Handbook of Solid Waste Management

PM10 Emission Factor (Uncontrolled) 9.94E-04 lb/cu. yd  
 Reduction from Watering Twice/Day<sup>b</sup> 0%  
 Controlled PM10 Emission Factor 9.94E-04 lb/cu. yd  
 Controlled PM2.5 Emission Factor<sup>a</sup> 2.07E-04 lb/cu. yd

<sup>a</sup> PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10  
 PM2.5 Fraction of PM10 in Construction Dust = 0.208 from Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006

<sup>b</sup> Watering is assumed to be used to maintain moist conditions, so no further reduction from watering is included.

Emissions [pounds per day] = Controlled emission factor [pounds per cubic yard] x Volume soil handled [cubic yards per day]

**Table 57**  
**Fugitive Dust Emission Factors**  
**Storage Pile Wind Erosion**

Emission Factor [lb/day-acre] = 0.85 x (silt content [%] / 1.5) x (365 / 235) x (percentage of time unobstructed wind exceeds 12 mph / 15)  
 Reference: SCAQMD CEQA Air Quality Handbook (1993), Table 9-9-E

Parameter	Value	Basis
Silt Content	7.5	SCAQMD CEQA Handbook, (1993) Table A9-9-E-1 for overburden
Pct. time wind > 12 mph	100	Worst-case assumption

PM10 Emission Factor (Uncontrolled) 44.0 lb/day-acre  
 Reduction from Watering Twice/Day 0%  
 Controlled PM10 Emission Factor 44.0 lb/day-acre  
 Controlled PM2.5 Emission Factor<sup>a</sup> 9.2 lb/day-acre

<sup>a</sup> PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10  
 PM2.5 Fraction of PM10 in Construction Dust = 0.208 from Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006

Emissions [pounds per day] = Controlled emission factor [pounds per acre-day] x Storage pile surface area [acres]

**Table 57**  
**Fugitive Dust Emission Factors**  
**Bulldozing, Scraping and Grading**

Emission Factor [lb/hr] = 0.75 x (silt content [%])<sup>1.5</sup> / (moisture)<sup>1.4</sup>  
 Reference: AP-42, Table 11.9-1, July 1998

Parameter	Value	Basis
Silt Content	7.5	SCAQMD CEQA Handbook, (1993) Table A9-9-E-1 for overburden
Moisture	15	SCAQMD CEQA Air Quality Handbook (1993), Table 9-9-G-1, moist soil

PM10 Emission Factor (Uncontrolled) 0.348 lb/hr  
 Reduction from Watering Twice/Day 0%  
 Controlled PM10 Emission Factor 0.348 lb/hr  
 Controlled PM2.5 Emission Factor<sup>a</sup> 0.072 lb/hr

<sup>a</sup> PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10  
 PM2.5 Fraction of PM10 in Construction Dust = 0.208 from Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5  
 and PM 2.5 Significance Thresholds, SCAQMD, October 2006

<sup>b</sup> Watering is assumed to be used to maintain moist conditions, so no further reduction from watering is included.

Emissions [pounds per day] = Controlled emission factor [pounds per hour] x Bulldozing, scraping or grading time [hours/day]

**SOIL IMPORT OPTION 2 WITH PROJECT COMMITMENT J**

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## AIR QUALITY CALCULATIONS

### Construction Emissions

The following emissions were calculated for construction activities:

1. Peak daily criteria pollutant emissions for comparison with the South Coast Air Quality Management District (SCAQMD) mass daily emissions CEQA significance thresholds. The following steps were used to calculate these emissions:
  - a. Daily emissions were calculated for each construction phase for each Proposed Project Component.
 

These calculations are in Table 7 through Table 50.

Total daily emissions, including both on-site and off-site sources, are summarized by construction phase in Table 1.

Emission factors for off-road construction equipment and motor vehicle exhaust are from the SCAQMD CEQA Handbook webpage for calendar year 2025.

The exhaust emission factors are in Table 53 through Table 55.

Emission factors for fugitive PM10 and PM2.5 from vehicle travel on paved and unpaved roads were calculated using emission factor equations from AP-42 Sections 13.2.1 and 13.2.2.

These emission factors are in Table 56.

PM10 and PM2.5 emission factors for earth moving and soil handling were calculated from AP-42 sections and from the SCAQMD CEQA Handbook.

These emission factors are in Table 57.
  - b. The construction phases for each Proposed Project component that could overlap were identified, and daily emissions from overlapping phases were added together. The highest emissions that could occur on a single day during construction of each Proposed Project component were then identified. These emissions are summarized in Table 2.
  - c. Since construction of all of the Proposed Project components could occur at the same time, the maximum daily emissions during construction of the components were added together to estimate peak daily construction emissions. However, since substation site demolition and water line relocation activities would be completed prior to the start of any other construction, they were not included in the peak daily emissions calculation. The peak daily construction emissions are in Table 2.
2. Maximum daily on-site emissions during construction of each Proposed Project component for use in a Localized Significance Threshold (LST) analysis using the look-up table in Appendix C to the SCAQMD's Localized Significance Methodology. The following steps were used to calculate these emissions and to conduct the LST analysis.
  - a. Daily on-site emissions were calculated for each construction phase for each Proposed Project Component. On-site emissions for substation construction were defined as emissions that would occur on the substation site. On-site emissions for 500 kV transmission line and 115 kV subtransmission line construction were defined as emissions that would occur at a single 500 kV lattice tower or a 115 kV pole

## AIR QUALITY CALCULATIONS

location.

These calculations are in Table 9 through Table 50.

On-site daily emissions by construction phase are summarized in Table 3.

The same emission factors used to calculate total daily emission were used to calculate on-site daily emissions.

- b. Since multiple construction phases could occur at the same time at the substation site, daily on-site emissions from overlapping phases were added together to identify maximum on-site daily emissions during substation construction. Maximum daily on-site emissions during telecommunications construction were added to the maximum daily emissions during substation construction, since telecommunications construction will occur at the substation site. Maximum daily on-site emissions Table 4.
- c. Since only one construction phase could occur at a 500 kV transmission line tower location or 115 kV subtransmission line pole location, emissions from overlapping phases were not added together to calculate maximum daily on-site emissions. Maximum daily on-site emissions during 500 kV transmission line and 115 kV subtransmission line construction are in Table 4.
- d. Distances to the closest receptors were determined for the LST analysis. For the substation site, the distance to the closest commercial receptor was used for analyses for CO and NO<sub>2</sub>, since the air quality thresholds are for short-term averaging periods. The distance to the closest residential receptor was used for the PM<sub>10</sub> and PM<sub>2.5</sub> analyses, since the air quality thresholds are for 24-hour averaging periods, and an individual would probably not be located at a commercial location for 24 hours.  
The closest receptor to a 500 kV transmission tower location is a residence.  
A distance of 25 meters was assumed for the receptor distance for the analysis for 115 kV subtransmission line construction.
- e. The look-up table values for the Lake Elsinore source/receptor area were used for the LST analyses.
- f. The maximum construction area in the look-up tables of 5 acres was used for the LST analysis for the substation site, and the minimum area of 1 acre was used for the 500 kV transmission line tower and 115 kV subtransmission line pole analyses.
- g. The maximum allowable daily on-site emissions for the analyses for the substation and 500 kV transmission line towers were calculated using linear interpolation with receptor distance of the emissions in the look-up tables to calculate allowable emissions for the actual receptor distances. Interpolation was not used for the LST analyses for the 115 kV subtransmission line analyses, since the receptor distance was assumed to be 25 meters. The LST analyses are in Table 5.

3. Total greenhouse gas (GHG) emissions during construction. The following steps were used to calculate these emissions:



## AIR QUALITY CALCULATIONS

- a. Total GHG emissions were calculated for each construction phase for Each Proposed Project Component. These calculations are in Table 9 through Table 50. Total GHG emissions, including both on-site and off-site sources, are summarized by construction phase in Table 6.

Emission factors for off-road construction equipment and motor vehicle exhaust are from the SCAQMD CEQA Handbook webpage for calendar year 2025.

The exhaust emission factors are in Table 53 through Table 55.

- b. Total GHG emissions during each construction phase were added together to calculate total GHG emissions during construction. These emissions are summarized in Table 6.

### Operational Emissions

The following emissions were calculated for operational activities:

1. Peak daily criteria pollutant emissions for comparison with the South Coast Air Quality Management District (SCAQMD) mass daily emissions CEQA significance thresholds. The following steps were used to calculate these emissions:

- a. Daily emissions were calculated for each operational activity, including 500 kV transmission line inspections, 115 kV subtransmission line inspections and visits to the substation site. These calculations are in Table 52.

Emission factors for off-road construction equipment and motor vehicle exhaust are from the SCAQMD CEQA Handbook webpage for calendar year 2025.

The exhaust emission factors are in Table 53 through Table 55.

Emission factors for fugitive PM10 and PM2.5 from vehicle travel on paved and unpaved roads were calculated using emission factor equations from AP-42 Sections 13.2.1 and 13.2.2.

These emission factors are in Table 56.

- b. It was conservatively assumed that the transmission line inspections would both occur on the same day as a visit to the substation site, and daily emissions from these three activities were added together to peak daily operational emissions. These emissions are in Table 52.

2. Annual greenhouse gas (GHG) emissions during operation. The following steps were used to calculate these emissions:

- a. Annual emissions were calculated for each operational activity, including 500 kV transmission line inspections, 115 kV subtransmission line inspections and visits to the substation site. These calculations are in Table 52.

Emission factors for off-road construction equipment and motor vehicle exhaust are from the SCAQMD CEQA Handbook webpage for calendar year 2025.

## AIR QUALITY CALCULATIONS

The exhaust emission factors are in Table 53 through Table 55.

- b. Annual emissions from leakage of sulfur hexafluoride (SF6) from gas-insulated switch gear (GIS) were calculated by multiplying the total amount of SF6 in new GIS by the estimated annual leakage rate. The annual SF6 leakage rate was then multiplied by the SF6 global warming potential to calculate annual CO2-equivalent emissions from SF6 leakage. These calculations are in Table 52.
- c. Annual GHG emissions from the operational activities and from SF6 leakage were added together to calculate Annual operational GHG emissions. These emissions are summarized in Table 52.

**Table 1**  
**Construction Emissions Summary**  
**Total Daily Criteria Pollutant Emissions by Construction Phase**

Phase	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
<b>Substation Site Demolition</b>	3.42	23.90	30.16	0.12	13.35	2.22
<b>Substation Site Water Line Relocation</b>	0.65	6.60	2.80	0.01	18.26	1.92
<b>Substation Construction</b>						
Survey	0.11	0.86	0.07	0.00	5.78	0.57
Grading	6.44	42.22	49.09	0.20	90.04	12.44
Fencing	0.42	4.32	1.30	0.01	16.15	1.62
Civil	2.90	31.01	20.07	0.10	23.43	2.88
Control Building	0.17	1.32	0.20	0.00	14.80	1.47
Electrical	1.26	12.43	6.41	0.03	17.75	1.96
Wiring	0.28	2.25	0.63	0.01	11.58	1.16
Transformers	0.66	6.27	2.25	0.01	21.41	2.20
Maintenance Crew Equipment Check	0.12	0.94	0.19	0.00	15.42	1.54
Testing	0.11	0.87	0.07	0.00	8.56	0.85
Asphalting	2.41	11.86	12.23	0.05	24.21	2.77
Landscaping	1.72	11.07	15.40	0.07	20.80	2.43
<b>500 kV Transmission Line Construction</b>						
Survey	0.11	0.89	0.08	0.00	9.32	0.93
Marshalling Yard	0.63	4.65	2.81	0.02	14.43	1.51
Roads and Landing Work	2.37	19.00	10.34	0.05	30.22	4.38
Install Helicopter Platforms	0.16	1.23	0.10	0.00	0.32	0.02
Tower Removal	1.02	6.57	4.56	0.02	47.74	4.91
Foundation Removal	0.61	6.89	2.73	0.01	22.42	2.33
Tower Foundations Installation	2.01	15.93	6.66	0.06	48.92	5.11
Install Micropile Foundations	0.16	1.23	0.10	0.00	0.32	0.02
Tower Steel Haul	0.31	3.62	0.90	0.01	25.12	2.53
Tower Steel Assembly	0.98	8.03	3.96	0.02	15.36	1.64
Tower Erection	1.46	8.84	6.22	0.03	38.06	3.98
Tower Erection (Helicopter) Ground Support	0.82	6.98	2.35	0.02	42.96	4.34
Tower Helicopter Operations	46.71	56.80	577.42	32.18	12.02	12.02
Wire Stringing	20.27	61.08	38.52	1.51	175.06	18.50
Restoration	1.08	8.31	4.75	0.03	23.20	2.75
<b>115 kV Subtransmission Line Construction</b>						
Survey	0.12	0.96	0.08	0.00	0.25	0.02
Marshalling Yard	0.36	3.35	1.16	0.01	10.65	1.09
Roads and Landing Work	1.79	14.07	8.05	0.04	5.22	1.19
Guard Structure Installation	1.61	10.08	7.33	0.05	0.69	0.27
Remove Existing Wood H-Frames and Poles	1.07	7.58	4.97	0.02	0.60	0.20
Remove Existing Tubular Steel/Light Weight Steel Poles	0.98	5.99	4.23	0.02	0.69	0.18
Install Tubular Steel Pole Foundations	1.41	11.32	5.50	0.05	1.65	0.33
Steel Pole Haul	0.70	3.43	3.10	0.02	0.41	0.12
Steel Pole Assembly	0.98	5.99	4.23	0.02	0.69	0.18
Steel Pole Erection	0.98	5.99	4.23	0.02	0.69	0.18
Wire Stringing	5.07	29.37	24.43	0.15	2.08	0.80
Vault Installation	2.63	17.58	10.62	0.07	2.05	0.52
Duct Bank Installation	1.39	13.75	6.11	0.04	2.20	0.46
Install Underground Cable	3.51	19.09	13.63	0.09	1.50	0.50
Guard Structure Removal	1.50	9.66	7.71	0.04	0.69	0.29
Restoration	1.22	9.85	5.55	0.03	3.58	0.53
<b>Telecommunications Construction</b>						
Tower Foundation	0.71	8.05	4.31	0.02	0.93	0.25
Tower Construction	0.99	5.82	4.82	0.02	0.45	0.18
Dish Installation	0.27	2.81	1.45	0.01	0.30	0.07
Control Building	0.54	3.56	3.15	0.02	0.23	0.09
Overhead Communications Installation	0.60	3.97	3.18	0.02	0.33	0.10
Substation Telecommunications Equipment Installation	0.08	0.62	0.05	0.00	0.16	0.01
Santiago Peak Communication Site	0.45	2.87	1.50	0.01	16.20	1.65
<b>Additional Substation Construction</b>						

**Table 1**  
**Construction Emissions Summary**  
**Total Daily Criteria Pollutant Emissions by Construction Phase**

Phase	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
Civil	1.16	12.41	6.30	0.03	5.48	0.73
Electrical	1.41	13.32	7.68	0.03	0.84	0.31
Wiring	0.44	3.97	1.56	0.01	0.59	0.09
Testing	0.11	0.83	0.07	0.00	0.22	0.02
Civil - Demo	0.58	5.75	3.19	0.02	5.46	0.63

**Table 2**  
**Construction Emissions Summary**  
**Total Daily Criteria Pollutant Emissions for Overlapping Construction Phases**

Group <sup>a</sup>	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
<b>Substation Construction</b>						
Survey	0.11	0.86	0.07	0.00	5.78	0.57
Grading	6.44	42.22	49.09	0.20	90.04	12.44
Fencing, Control Building, Electrical, Wiring, Transformers, Maintenance Crew Equipment Check, Testing, Asphaltting	5.43	40.28	23.30	0.12	129.89	13.56
Civil	2.90	31.01	20.07	0.10	23.43	2.88
Landscaping	1.72	11.07	15.40	0.07	20.80	2.43
<b>Maximum</b>	<b>6.44</b>	<b>42.22</b>	<b>49.09</b>	<b>0.20</b>	<b>129.89</b>	<b>13.56</b>
<b>500 kV Transmission Line Construction</b>						
Survey	0.11	0.89	0.08	0.00	9.32	0.93
Marshalling Yard, Road and Landing Work, Install Helicopter Platforms	3.15	24.89	13.25	0.07	44.97	5.91
Marshalling Yard, Tower Removal, Tower Foundations Installation, Install Micropile Foundations, Tower Steel Haul, Tower Steel Assembly, Tower Erection, Tower Erection (Helicopter) Ground Support, Tower Helicopter Operations	54.09	112.65	604.98	32.37	244.93	36.06
Marshalling Yard, Foundation Removal	1.24	11.55	5.54	0.03	36.85	3.84
Marshalling Yard, Wire Stringing	20.89	65.73	41.33	1.52	189.48	20.01
Restoration	1.08	8.31	4.75	0.03	23.20	2.75
<b>Maximum</b>	<b>54.09</b>	<b>112.65</b>	<b>604.98</b>	<b>32.37</b>	<b>244.93</b>	<b>36.06</b>
<b>115 kV Subtransmission Line Construction</b>						
Survey	0.12	0.96	0.08	0.00	0.25	0.02
Marshalling Yard, Roads and Landing Work, Guard Structure Installation, Remove Existing Wood H-Frames and Poles, Remove Existing Tubular Steel/Light Weight Steel Poles, Install Tubular Steel Pole Foundations, Steel Pole Haul, Steel Pole Assembly, Steel Pole Erection, Wire Stringing, Guard Structure Removal, Vault Installation, Duct Bank Installation, Install Underground Cable	23.99	157.27	105.30	0.64	29.82	6.30
Restoration	1.22	9.85	5.55	0.03	3.58	0.53
<b>Maximum</b>	<b>23.99</b>	<b>157.27</b>	<b>105.30</b>	<b>0.64</b>	<b>29.82</b>	<b>6.30</b>
<b>Telecommunications Construction</b>						
Tower Foundation	0.71	8.05	4.31	0.02	0.93	0.25
Tower Construction	0.99	5.82	4.82	0.02	0.45	0.18
Dish Installation, Control Building, Overhead Communications Installation, Substation Telecommunications Equipment Installation	1.49	10.96	7.83	0.05	1.02	0.28
Santiago Peak Communication Site	0.45	2.87	1.50	0.01	16.20	1.65
<b>Maximum</b>	<b>1.49</b>	<b>10.96</b>	<b>7.83</b>	<b>0.05</b>	<b>16.20</b>	<b>1.65</b>
<b>Additional Substation Construction</b>						
Civil, Electrical, Wiring, Testing, Civil - Demo	3.68	36.28	18.80	0.09	12.58	1.77
<b>Maximum</b>	<b>3.68</b>	<b>36.28</b>	<b>18.80</b>	<b>0.09</b>	<b>12.58</b>	<b>1.77</b>
<b>PEAK DAILY<sup>b</sup></b>	<b>89.69</b>	<b>359.37</b>	<b>786.00</b>	<b>33.35</b>	<b>433.42</b>	<b>59.34</b>

<sup>a</sup> The construction phases within a group could all occur at the same time.

<sup>b</sup> Peak daily emissions are the sum of the maximum daily emissions during construction of the substation, the 500 kV transmission lines, the 115 kV subtransmission lines, the telecommunications facilities, and additional substation construction.

**Table 3**  
**Construction Emissions Summary**  
**Onsite Daily Criteria Pollutant Emissions by Construction Phase**

Phase	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
<b>Substation Site Demolition</b>	1.39	12.73	7.70	0.02	10.05	1.33
<b>Substation Site Water Line Relocation</b>	0.47	5.16	2.68	0.01	17.89	1.89
<b>Substation Construction</b>						
Survey	0.00	0.03	0.00	0.00	5.57	0.56
Grading	3.72	26.92	20.27	0.07	85.55	11.28
Fencing	0.16	2.27	1.13	0.00	15.61	1.58
Civil	1.69	23.53	10.30	0.04	22.13	2.45
Control Building	0.01	0.09	0.09	0.00	14.48	1.45
Electrical	0.87	9.35	6.16	0.02	16.94	1.90
Wiring	0.08	0.61	0.49	0.00	11.14	1.13
Transformers	0.40	4.21	2.08	0.01	20.87	2.16
Maintenance Crew Equipment Check	0.02	0.12	0.12	0.00	15.21	1.52
Testing	0.01	0.05	0.00	0.00	8.35	0.84
Asphalting	1.52	6.44	4.79	0.01	22.67	2.44
Landscaping	0.30	2.81	1.80	0.00	18.41	1.87
<b>500 kV Transmission Line Construction</b>						
Survey	0.00	0.00	0.00	0.00	0.00	0.00
Marshalling Yard	0.43	3.24	1.93	0.01	14.08	1.47
Roads and Landing Work	2.09	16.82	9.96	0.05	9.63	2.33
Install Helicopter Platforms	1.15	15.80	7.68	0.03	1.62	0.51
Tower Removal	0.75	4.54	3.93	0.02	0.16	0.15
Foundation Removal	0.48	5.92	2.51	0.01	0.11	0.10
Tower Foundations Installation	2.01	15.93	6.66	0.06	48.92	5.11
Install Micropile Foundations	1.15	15.80	7.68	0.03	0.24	0.22
Tower Steel Haul	0.18	2.65	0.59	0.01	0.02	0.02
Tower Steel Assembly	0.70	5.79	3.60	0.02	0.14	0.13
Tower Erection	1.07	5.93	5.55	0.02	0.21	0.20
Tower Erection (Helicopter) Ground Support	0.00	0.00	0.00	0.00	0.00	0.00
Tower Helicopter Operations	0.00	0.00	0.00	0.00	0.00	0.00
Wire Stringing	5.93	32.28	29.00	0.15	1.00	0.92
Restoration	0.87	6.75	4.42	0.02	2.77	0.71
<b>115 kV Subtransmission Line Construction</b>						
Survey	0.00	0.00	0.00	0.00	0.00	0.00
Marshalling Yard	0.26	2.53	1.09	0.01	10.43	1.08
Roads and Landing Work	1.60	12.73	7.50	0.04	4.88	1.15
Guard Structure Installation	1.35	8.18	6.39	0.04	0.23	0.22
Remove Existing Wood H-Frames and Poles	0.84	5.86	4.22	0.02	0.17	0.16
Remove Existing Tubular Steel/Light Weight Steel Poles	0.66	3.63	3.35	0.01	0.13	0.12
Install Tubular Steel Pole Foundations	1.11	9.18	4.07	0.03	1.16	0.25
Steel Pole Haul	0.51	2.12	2.39	0.01	0.09	0.08
Steel Pole Assembly	0.66	3.63	3.35	0.01	0.13	0.12
Steel Pole Erection	0.66	3.63	3.35	0.01	0.13	0.12
Wire Stringing	4.34	23.98	22.32	0.13	0.72	0.66
Vault Installation	1.92	12.58	7.81	0.05	0.71	0.36
Duct Bank Installation	0.71	8.86	3.54	0.02	0.89	0.30
Install Underground Cable	2.99	15.06	12.75	0.08	0.44	0.40
Guard Structure Removal	1.27	7.94	6.96	0.03	0.27	0.25
Restoration	0.96	7.93	4.78	0.02	3.10	0.48
<b>Telecommunications Construction</b>						
Tower Foundation	0.53	6.74	3.59	0.01	0.61	0.21
Tower Construction	0.83	4.64	4.38	0.02	0.17	0.15
Dish Installation	0.14	1.81	1.20	0.00	0.05	0.05
Control Building	0.46	2.97	2.93	0.02	0.09	0.08
Overhead Communications Installation	0.46	2.97	2.93	0.02	0.09	0.08
Substation Telecommunications Equipment Installation	0.00	0.00	0.00	0.00	0.00	0.00
Santiago Peak Communication Site	0.35	2.05	1.43	0.01	15.98	1.64
<b>Additional Substation Construction</b>						

**Table 3**  
**Construction Emissions Summary**  
**Onsite Daily Criteria Pollutant Emissions by Construction Phase**

Phase	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
Civil	0.78	9.93	3.94	0.02	4.99	0.61
Electrical	1.15	11.27	7.51	0.02	0.30	0.27
Wiring	0.17	1.92	1.39	0.00	0.06	0.05
Testing	0.00	0.00	0.00	0.00	0.00	0.00
Civil - Demo	0.30	3.79	1.95	0.01	5.02	0.56

**Table 4**  
**Construction Emissions Summary**  
**Total Daily Onsite Criteria Pollutant Emissions for Overlapping Construction Phases**

Group <sup>a</sup>	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
<b>Substation Site Demolition</b>	1.39	12.73	7.70	0.02	10.05	1.33
<b>Substation Site Water Line Relocation</b>	0.47	5.16	2.68	0.01	17.89	1.89
<b>Substation and Telecommunications Construction</b>						
Survey	0.00	0.03	0.00	0.00	5.57	0.56
Grading	3.72	26.92	20.27	0.07	85.55	11.28
Fencing, Control Building, Electrical, Wiring, Transformers, Maintenance Crew Equipment Check, Testing, Asphaltting	3.05	23.14	14.86	0.04	125.28	13.02
Civil	1.69	23.53	10.30	0.04	22.13	2.45
Landscaping	0.30	2.81	1.80	0.00	18.41	1.87
<b>Maximum Substation Construction</b>	<b>3.72</b>	<b>26.92</b>	<b>20.27</b>	<b>0.07</b>	<b>125.28</b>	<b>13.02</b>
<b>Maxim Substation plus Telecommunications</b>	<b>4.55</b>	<b>33.66</b>	<b>24.65</b>	<b>0.09</b>	<b>141.26</b>	<b>14.66</b>
<b>500 kV Transmission Line Construction</b>						
Survey	0.00	0.00	0.00	0.00	0.00	0.00
Marshalling Yard	0.43	3.24	1.93	0.01	14.08	1.47
Roads and Landing Work	2.09	16.82	9.96	0.05	9.63	2.33
Install Helicopter Platforms	1.15	15.80	7.68	0.03	1.62	0.51
Tower Removal	0.75	4.54	3.93	0.02	0.16	0.15
Foundation Removal	0.48	5.92	2.51	0.01	0.11	0.10
Tower Foundations Installation	2.01	15.93	6.66	0.06	48.92	5.11
Install Micropile Foundations	1.15	15.80	7.68	0.03	0.24	0.22
Tower Steel Haul	0.18	2.65	0.59	0.01	0.02	0.02
Tower Steel Assembly	0.70	5.79	3.60	0.02	0.14	0.13
Tower Erection	1.07	5.93	5.55	0.02	0.21	0.20
Tower Erection (Helicopter) Ground Support	0.00	0.00	0.00	0.00	0.00	0.00
Tower Helicopter Operations	0.00	0.00	0.00	0.00	0.00	0.00
Wire Stringing	5.93	32.28	29.00	0.15	1.00	0.92
Restoration	0.87	6.75	4.42	0.02	2.77	0.71
<b>Maximum</b>	<b>5.93</b>	<b>32.28</b>	<b>29.00</b>	<b>0.15</b>	<b>48.92</b>	<b>5.11</b>
<b>115 kV Subtransmission Line Construction</b>						
Survey	0.00	0.00	0.00	0.00	0.00	0.00
Marshalling Yard	0.26	2.53	1.09	0.01	10.43	1.08
Roads and Landing Work	1.60	12.73	7.50	0.04	4.88	1.15
Guard Structure Installation	1.35	8.18	6.39	0.04	0.23	0.22
Remove Existing Wood H-Frames and Poles	0.84	5.86	4.22	0.02	0.17	0.16
Remove Existing Tubular Steel/Light Weight Steel Poles	0.66	3.63	3.35	0.01	0.13	0.12
Install Tubular Steel Pole Foundations	1.11	9.18	4.07	0.03	1.16	0.25
Steel Pole Haul	0.51	2.12	2.39	0.01	0.09	0.08
Steel Pole Assembly	0.66	3.63	3.35	0.01	0.13	0.12
Steel Pole Erection	0.66	3.63	3.35	0.01	0.13	0.12
Wire Stringing	4.34	23.98	22.32	0.13	0.72	0.66
Vault Installation	1.92	12.58	7.81	0.05	0.71	0.36
Duct Bank Installation	0.71	8.86	3.54	0.02	0.89	0.30
Install Underground Cable	2.99	15.06	12.75	0.08	0.44	0.40
Guard Structure Removal	1.27	7.94	6.96	0.03	0.27	0.25
Restoration	0.96	7.93	4.78	0.02	3.10	0.48
<b>Maximum</b>	<b>4.34</b>	<b>23.98</b>	<b>22.32</b>	<b>0.13</b>	<b>10.43</b>	<b>1.15</b>
<b>Telecommunications Construction</b>						
Tower Foundation	0.53	6.74	3.59	0.01	0.61	0.21
Tower Construction	0.83	4.64	4.38	0.02	0.17	0.15
Dish Installation	0.14	1.81	1.20	0.00	0.05	0.05
Control Building	0.46	2.97	2.93	0.02	0.09	0.08
Overhead Communications Installation	0.46	2.97	2.93	0.02	0.09	0.08
Substation Telecommunications Equipment Installation	0.00	0.00	0.00	0.00	0.00	0.00
Santiago Peak Communication Site	0.35	2.05	1.43	0.01	15.98	1.64
<b>Maximum</b>	<b>0.83</b>	<b>6.74</b>	<b>4.38</b>	<b>0.02</b>	<b>15.98</b>	<b>1.64</b>
<b>Additional Substation Construction</b>						



**Table 4**  
**Construction Emissions Summary**  
**Total Daily Onsite Criteria Pollutant Emissions for Overlapping Construction Phases**

<b>Group<sup>a</sup></b>	<b>VOC (lb/day)</b>	<b>CO (lb/day)</b>	<b>NOX (lb/day)</b>	<b>SOX (lb/day)</b>	<b>PM10 (lb/day)</b>	<b>PM2.5 (lb/day)</b>
Civil	0.78	9.93	3.94	0.02	4.99	0.61
Electrical	1.15	11.27	7.51	0.02	0.30	0.27
Wiring	0.17	1.92	1.39	0.00	0.06	0.05
Testing	0.00	0.00	0.00	0.00	0.00	0.00
Civil - Demo	0.30	3.79	1.95	0.01	5.02	0.56
<b>Maximum</b>	<b>1.15</b>	<b>11.27</b>	<b>7.51</b>	<b>0.02</b>	<b>5.02</b>	<b>0.61</b>

<sup>a</sup> The construction phases within a group could all occur at the same time at the same location.

The following 115 kV Subtransmission Line construction activity emissions were divided by the following number of locations:

- Roads and Landing Work: 6 structure pads per day
- Guard Structure Installation: 4 structures per day
- Remove Existing H-Frames and Poles: 15 poles per day
- Remove Existing Tubular Steel/Light Weight Steel Poles: 2 poles per day
- Steel Pole Assembly: 2 poles per day
- Steel Pole Erection: 2 poles per day
- Guard Structure Removal: 6 structures per day
- Restoration: 6 structure pads per day

**Table 5**  
**Construction Emissions**  
**Localized Significance Threshold Analysis**

Pollutant	Maximum Daily Onsite Emissions	Receptor Distance (m)	Allowable Emissions Interpolation <sup>a</sup>				Interpolated Emissions (lb/day) <sup>b</sup>	Allowable Exceeded?
			Distance 1 (m)	Emissions 1 (lb/day)	Distance 2 (m)	Emissions 2 (lb/day)		
<b>Demolition<sup>c,d</sup></b>								
CO	13	270	200	7,535	500	25,792	11,795	No
NOx	8	270	200	672	500	1,072	765	No
PM10	10	420	200	96	500	207	177	No
PM2.5	1	420	200	31	500	105	85	No
<b>Water Line Relocation<sup>c,e</sup></b>								
CO	5	270	200	4,850	500	21,040	8,628	No
NOx	3	270	200	460	500	896	562	No
PM10	18	420	200	67	500	178	148	No
PM2.5	2	420	200	20	500	86	68	No
<b>Substation and Telecommunications Construction<sup>c</sup></b>								
CO	34	270	200	7,535	500	25,792	11,795	No
NOx	25	270	200	672	500	1,072	765	No
PM10	141	420	200	96	500	207	177	No
PM2.5	15	420	200	31	500	105	85	No
<b>500 kV Transmission Line Construction<sup>f</sup></b>								
CO	32	93	50	974	100	1,918	1,786	No
NOx	29	93	50	203	100	292	280	No
PM10	49	93	50	12	100	30	27	Yes
PM2.5	5	93	50	4	100	8	7	No
<b>115 kV Subtransmission Line Construction<sup>g</sup></b>								
CO	24	25	25	661	25	661	661	No
NOx	22	25	25	162	25	162	162	No
PM10	10	25	25	13	25	13	13	No
PM2.5	1	25	25	3	25	3	3	No

<sup>a</sup> Allowable emissions are from Appendix C to Final Localized Significance Methodology, SCAQMD, revised July 2008, downloaded from <http://www.aqmd.gov/ceqa/handbook/LST/LST.html>

<sup>b</sup> Interpolated emissions = Emissions 1 + (Receptor distance - Distance 1) x (Emissions 2 - Emissions 1) / (Distance 2 - Distance 1)

<sup>c</sup> CO and NOx receptor distances are closest commercial receptor; PM10 and PM2.5 are closest residential receptor. Allowable emissions are for a 5 acre site.

<sup>d</sup> Allowable emissions are for a 5 acre site.

<sup>e</sup> Allowable emissions are for a 1 acre site.

<sup>f</sup> Closest receptor to a transmission tower base is a residence at approximately 93 meters. Allowable emissions are for a 1 acre site.

<sup>g</sup> Allowable emissions for CO, NOx and PM2.5 are for a 1-acre site to represent construction at a pole location.

Maximum PM10 emissions occur at the marshalling yard, so allowable emissions are for a 5-acre site

**Table 6**  
**Construction Emissions Summary**  
**Total Greenhouse Gas Emissions by Construction Phase**

Phase	CO <sub>2</sub> e (MT)
<b>Substation Site Demolition</b>	283.31
<b>Substation Site Water Line Relocation</b>	11.84
<b>Substation Construction</b>	
Survey	1.89
Grading	561.85
Fencing	7.31
Civil	375.00
Control Building	4.02
Electrical	346.90
Wiring	71.94
Transformers	57.20
Maintenance Crew Equipment Check	8.83
Testing	25.71
Asphalting	66.81
Landscaping	144.94
<b>500 kV Transmission Line Construction</b>	
Survey	0.52
Marshalling Yard	87.79
Roads and Landing Work	53.15
Install Helicopter Platforms	32.89
Tower Removal	4.03
Foundation Removal	1.46
Tower Foundations Installation	63.63
Install Micropile Foundations	122.15
Tower Steel Haul	3.76
Tower Steel Assembly	38.82
Tower Erection	32.96
Tower Erection (Helicopter) Ground Support	6.40
Tower Helicopter Operations	1,626.43
Wire Stringing	18.53
Restoration	4.27
<b>115 kV Subtransmission Line Construction</b>	
Survey	2.54
Marshalling Yard	145.31
Roads and Landing Work	128.76
Guard Structure Installation	52.96
Remove Existing Wood H-Frames and Poles	24.84
Remove Existing Tubular Steel/Light Weight Steel Poles	4.98
Install Tubular Steel Pole Foundations	159.88
Steel Pole Haul	95.64
Steel Pole Assembly	254.01
Steel Pole Erection	254.01
Wire Stringing	541.72
Vault Installation	15.31
Duct Bank Installation	17.61
Install Underground Cable	94.21
Guard Structure Removal	29.04
Restoration	22.66
<b>Telecommunications Construction</b>	
Tower Foundation	3.69

**Table 6**  
**Construction Emissions Summary**  
**Total Greenhouse Gas Emissions by Construction Phase**

<b>Phase</b>	<b>CO<sub>2</sub>e (MT)</b>
Tower Construction	29.76
Dish Installation	2.99
Control Building	21.81
Overhead Communications Installation	28.92
Substation Telecommunications Equipment Installation	0.91
Santiago Peak Communication Site	18.85
<b>Additional Substation Construction</b>	
Civil	11.89
Electrical	24.70
Wiring	12.80
Testing	2.43
Civil - Demo	6.67
<b>Total</b>	<b>6,073.23</b>

**Table 7  
Substation Site Demolition Emissions**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.39	12.69	7.61	0.02	0.39	0.36	47.9
Onsite Motor Vehicle Exhaust	0.01	0.04	0.09	0.00	0.00	0.00	1.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	9.65	0.97	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>1.39</b>	<b>12.73</b>	<b>7.70</b>	<b>0.02</b>	<b>10.05</b>	<b>1.33</b>	<b>48.9</b>
Offsite Motor Vehicle Exhaust	2.03	11.17	22.45	0.10	1.19	0.89	234.4
Offsite Motor Vehicle Fugitive PM	--	--	--	--	2.11	0.00	
<b>Offsite Total</b>	<b>2.03</b>	<b>11.17</b>	<b>22.45</b>	<b>0.10</b>	<b>3.30</b>	<b>0.89</b>	<b>234.4</b>
<b>Total</b>	<b>3.42</b>	<b>23.90</b>	<b>30.16</b>	<b>0.12</b>	<b>13.35</b>	<b>2.22</b>	<b>283.3</b>

**Construction Equipment Summary**

Equipment	Horsepower	Number	Days Used	Hours Used/Day
Track Loader	148	2	50	8
Bobcat	75	1	50	4

**Construction Equipment Exhaust Emission Factors**

Equipment	Horsepower	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Track Loader	148	0.082	0.727	0.445	0.001	0.024	0.022	121.188	0.007	Crawler Tractors
Bobcat	75	0.017	0.267	0.124	0.001	0.002	0.002	42.762	0.002	Skid Steer Loaders

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Track Loader	1.32	11.62	7.11	0.02	0.39	0.35
Bobcat	0.07	1.07	0.50	0.00	0.01	0.01
<b>Total</b>	<b>1.39</b>	<b>12.69</b>	<b>7.61</b>	<b>0.02</b>	<b>0.39</b>	<b>0.36</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Track Loader	44.0	0.0	44.0
Bobcat	3.9	0.0	3.9
<b>Total</b>	<b>47.9</b>	<b>0.0</b>	<b>47.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number <sup>b</sup>	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Water Truck	1	50	4	10
<b>Offsite</b>				
Dump Truck	40	50	N/A	60
Worker Commute	4	50	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

<sup>b</sup> Dump trucks based on 20,000 CY hauled offsite over 50 days and 10 CY/truck = 20,000 / 50 / 10 = 40

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
<b>Offsite</b>									
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 7**  
**Substation Site Demolition Emissions**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Water Truck	0.01	0.04	0.09	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.01</b>	<b>0.04</b>	<b>0.09</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Dump Truck	1.92	10.35	22.38	0.10	1.16	0.87
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>2.03</b>	<b>11.17</b>	<b>22.45</b>	<b>0.10</b>	<b>1.19</b>	<b>0.89</b>
<b>Total</b>	<b>2.04</b>	<b>11.21</b>	<b>22.54</b>	<b>0.10</b>	<b>1.19</b>	<b>0.89</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Water Truck	1.0	0.0	1.0
<b>Onsite Total</b>	<b>1.0</b>	<b>0.0</b>	<b>1.0</b>
<b>Offsite</b>			
Dump Truck	228.3	0.0	228.4
Worker Commute	6.0	0.0	6.1
<b>Offsite Total</b>	<b>234.4</b>	<b>0.0</b>	<b>234.4</b>
<b>Total</b>	<b>235.3</b>	<b>0.0</b>	<b>235.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Water Truck	1	Unpaved	10	0.965	0.097	9.65	0.97
<b>Onsite Total</b>						<b>9.65</b>	<b>0.97</b>
<b>Offsite</b>							
Dump Truck	40	Paved	60	0.001	0.000	1.92	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>2.11</b>	<b>0.00</b>
<b>Total</b>						<b>11.77</b>	<b>0.97</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion <sup>d</sup>	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 8**  
**Substation Site Water Line Relocation Emissions**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.46	5.08	2.56	0.01	0.10	0.10	7.4
Onsite Motor Vehicle Exhaust	0.01	0.09	0.12	0.00	0.01	0.01	0.2
Onsite Motor Vehicle Fugitive PM	--	--	--	--	17.63	1.76	
Earthwork Fugitive PM	--	--	--	--	0.15	0.03	
<b>Onsite Total</b>	<b>0.47</b>	<b>5.16</b>	<b>2.68</b>	<b>0.01</b>	<b>17.89</b>	<b>1.89</b>	<b>7.6</b>
Offsite Motor Vehicle Exhaust	0.18	1.44	0.12	0.00	0.04	0.03	4.2
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.34	0.00	
<b>Offsite Total</b>	<b>0.18</b>	<b>1.44</b>	<b>0.12</b>	<b>0.00</b>	<b>0.38</b>	<b>0.03</b>	<b>4.2</b>
<b>Total</b>	<b>0.65</b>	<b>6.60</b>	<b>2.80</b>	<b>0.01</b>	<b>18.26</b>	<b>1.92</b>	<b>11.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Backhoe	79	1	20	8
Crane	125	1	20	5

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Backhoe	79	0.028	0.338	0.176	0.001	0.006	0.005	51.728	0.003	Tractors/Loaders/Backhoes
Crane	125	0.046	0.474	0.230	0.001	0.012	0.011	80.345	0.004	Cranes

a From Table 53

b Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction=

0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Backhoe	0.22	2.70	1.41	0.00	0.04	0.04
Crane	0.23	2.37	1.15	0.00	0.06	0.06
<b>Total</b>	<b>0.46</b>	<b>5.08</b>	<b>2.56</b>	<b>0.01</b>	<b>0.10</b>	<b>0.10</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Backhoe	3.8	0.0	3.8
Crane	3.6	0.0	3.6
<b>Total</b>	<b>7.4</b>	<b>0.0</b>	<b>7.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number <sup>b</sup>	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Flatbed Truck	1	20	1	2.5
Stakebed Truck	2	20	2	5
Crew Vehicle	2	20	2	5
<b>Offsite</b>				
Worker Commute	7	20	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Flatbed Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Stakebed Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Crew Vehicle	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Highest (Most Conservative) EMFAC2007 (version 2.3) or Highest (Most Conservative) EMFAC2007 (version 2.3)

**Table 8**  
**Substation Site Water Line Relocation Emissions**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Flatbed Truck	0.00	0.01	0.02	0.00	0.00	0.00
Stakebed Truck	0.01	0.04	0.09	0.00	0.00	0.00
Crew Vehicle	0.00	0.03	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.01</b>	<b>0.09</b>	<b>0.12</b>	<b>0.00</b>	<b>0.01</b>	<b>0.01</b>
<b>Offsite</b>						
Worker Commute	0.18	1.44	0.12	0.00	0.04	0.03
<b>Offsite Total</b>	<b>0.18</b>	<b>1.44</b>	<b>0.12</b>	<b>0.00</b>	<b>0.04</b>	<b>0.03</b>
<b>Total</b>	<b>0.20</b>	<b>1.53</b>	<b>0.24</b>	<b>0.01</b>	<b>0.05</b>	<b>0.03</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Flatbed Truck	0.1	0.0	0.1
Crew Vehicle	0.1	0.0	0.1
<b>Onsite Total</b>	<b>0.2</b>	<b>0.0</b>	<b>0.2</b>
<b>Offsite</b>			
Worker Commute	4.2	0.0	4.2
<b>Offsite Total</b>	<b>4.2</b>	<b>0.0</b>	<b>4.2</b>
<b>Total</b>	<b>4.4</b>	<b>0.0</b>	<b>4.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Flatbed Truck	1	Unpaved	2.5	0.965	0.097	2.41	0.24
Stakebed Truck	2	Unpaved	5	0.965	0.097	9.65	0.97
Crew Vehicle	2	Unpaved	5	0.556	0.056	5.56	0.56
<b>Onsite Total</b>						<b>17.63</b>	<b>1.76</b>
<b>Offsite</b>							
Worker Commute	7	Paved	60	0.001	0.000	0.34	0.00
<b>Offsite Total</b>						<b>0.34</b>	<b>0.00</b>
<b>Total</b>						<b>17.97</b>	<b>1.76</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	147	9.94E-04	2.07E-04	0.15	0.03
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.15</b>	<b>0.03</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Based on trench 4 ft. wide x 6 ft. deep x 1,700 ft. long over 20 days x 2 = 4 ft. x 6 ft. x 1,770 ft. / 27 cu. ft. per CY / 20 days = 151 CY/day 7



**Table 9  
Substation Construction Emissions  
Survey**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.00	0.03	0.00	0.00	0.00	0.00	0.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	5.56	0.56	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.00</b>	<b>0.03</b>	<b>0.00</b>	<b>0.00</b>	<b>5.57</b>	<b>0.56</b>	<b>0.1</b>
Offsite Motor Vehicle Exhaust	0.10	0.82	0.07	0.00	0.02	0.02	1.8
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.19	0.00	
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.22</b>	<b>0.02</b>	<b>1.8</b>
<b>Total</b>	<b>0.11</b>	<b>0.86</b>	<b>0.07</b>	<b>0.00</b>	<b>5.78</b>	<b>0.57</b>	<b>1.9</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
None				

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
None		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
None	0.0	0.0	0.0
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Crew Vehicle	2	15	2	5
<b>Offsite</b>				
Worker Commute	4	15	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Crew Vehicle	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 9  
Substation Construction Emissions  
Survey**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Crew Vehicle	0.00	0.03	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.03</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>
<b>Total</b>	<b>0.11</b>	<b>0.86</b>	<b>0.07</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Crew Vehicle	0.1	0.0	0.1
<b>Onsite Total</b>	<b>0.1</b>	<b>0.0</b>	<b>0.1</b>
<b>Offsite</b>			
Worker Commute	1.8	0.0	1.8
<b>Offsite Total</b>	<b>1.8</b>	<b>0.0</b>	<b>1.8</b>
<b>Total</b>	<b>1.9</b>	<b>0.0</b>	<b>1.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Crew Vehicle	2	Unpaved	5	0.556	0.056	5.56	0.56
<b>Onsite Total</b>						<b>5.56</b>	<b>0.56</b>
<b>Offsite</b>							
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.19</b>	<b>0.00</b>
<b>Total</b>						<b>5.76</b>	<b>0.56</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 10**  
**Substation Construction Emissions**  
**Grading**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	3.67	26.54	20.08	0.07	0.79	0.73	188.2
Onsite Motor Vehicle Exhaust	0.05	0.38	0.19	0.00	0.02	0.01	4.6
Onsite Motor Vehicle Fugitive PM	--	--	--	--	65.58	6.56	
Earthwork Fugitive PM	--	--	--	--	19.16	3.99	
<b>Onsite Total</b>	<b>3.72</b>	<b>26.92</b>	<b>20.27</b>	<b>0.07</b>	<b>85.55</b>	<b>11.28</b>	<b>192.9</b>
Offsite Motor Vehicle Exhaust	2.73	15.30	28.82	0.13	1.55	1.15	369.0
Offsite Motor Vehicle Fugitive PM	--	--	--	--	2.94	0.00	
<b>Offsite Total</b>	<b>2.73</b>	<b>15.30</b>	<b>28.82</b>	<b>0.13</b>	<b>4.49</b>	<b>1.15</b>	<b>369.0</b>
<b>Total</b>	<b>6.44</b>	<b>42.22</b>	<b>49.09</b>	<b>0.20</b>	<b>90.04</b>	<b>12.44</b>	<b>561.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Dozer	305	1	60	7
Loader	147	2	60	4
Scraper	267	1	60	7
Grader	110	1	60	7
4x4 Backhoe	79	2	60	7
4x4 Tamper	174	1	60	7

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Dozer	305	0.139	0.588	0.753	0.003	0.028	0.026	259.229	0.013	Crawler Tractors
Loader	147	0.055	0.620	0.259	0.001	0.013	0.012	106.315	0.005	Rubber Tired Loaders
Scraper	267	0.176	0.733	0.973	0.003	0.036	0.034	321.428	0.016	Scrapers
Grader	110	0.052	0.501	0.322	0.001	0.015	0.014	74.965	0.005	Graders
4x4 Backhoe	79	0.028	0.338	0.176	0.001	0.006	0.005	51.728	0.003	Tractors/Loaders/Backhoes
4x4 Tamper	174	0.038	0.586	0.173	0.001	0.007	0.007	106.516	0.003	Other Construction Equipment

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Dozer	0.97	4.11	5.27	0.02	0.20	0.18
Loader	0.44	4.96	2.07	0.01	0.10	0.10
Scraper	1.23	5.13	6.81	0.02	0.26	0.23
Grader	0.36	3.51	2.25	0.01	0.11	0.10
4x4 Backhoe	0.39	4.73	2.47	0.01	0.08	0.07
4x4 Tamper	0.27	4.10	1.21	0.01	0.05	0.05
<b>Total</b>	<b>3.67</b>	<b>26.54</b>	<b>20.08</b>	<b>0.07</b>	<b>0.79</b>	<b>0.73</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Dozer	49.4	0.0	49.4
Loader	23.1	0.0	23.2
Scraper	61.2	0.0	61.3
Grader	14.3	0.0	14.3
4x4 Backhoe	19.7	0.0	19.7
4x4 Tamper	20.3	0.0	20.3
<b>Total</b>	<b>188.1</b>	<b>0.0</b>	<b>188.2</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Table 10**  
**Substation Construction Emissions**  
**Grading**

**Motor Vehicle Usage**

Vehicle	Number <sup>b</sup>	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Water Truck	1	60	7	17.5
Crew Vehicle	5	60	7	17.5
<b>Offsite</b>				
Dump Truck	96	60	N/A	32
Worker Commute	10	60	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

<sup>b</sup> Dump trucks based on 8,000 CY hauled offsite over 60 days and 10 CY/truck = 8,000 / 60 / 10 = 13.3

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Crew Vehicle	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Water Truck	0.01	0.08	0.16	0.00	0.01	0.01
Crew Vehicle	0.04	0.30	0.03	0.00	0.01	0.01
<b>Onsite Total</b>	<b>0.05</b>	<b>0.38</b>	<b>0.19</b>	<b>0.00</b>	<b>0.02</b>	<b>0.01</b>
<b>Offsite</b>						
Dump Truck	2.46	13.24	28.65	0.12	1.49	1.12
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
<b>Offsite Total</b>	<b>2.73</b>	<b>15.30</b>	<b>28.82</b>	<b>0.13</b>	<b>1.55</b>	<b>1.15</b>
<b>Total</b>	<b>2.78</b>	<b>15.67</b>	<b>29.01</b>	<b>0.13</b>	<b>1.57</b>	<b>1.17</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Water Truck	2.0	0.0	2.0
Crew Vehicle	2.6	0.0	2.6
<b>Onsite Total</b>	<b>4.6</b>	<b>0.0</b>	<b>4.6</b>
<b>Offsite</b>			
Dump Truck	350.7	0.0	350.8
Worker Commute	18.1	0.0	18.2
<b>Offsite Total</b>	<b>368.9</b>	<b>0.0</b>	<b>369.0</b>
<b>Total</b>	<b>373.5</b>	<b>0.0</b>	<b>373.6</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Water Truck	1	Unpaved	17.5	0.965	0.097	16.89	1.69
Crew Vehicle	5	Unpaved	17.5	0.556	0.056	48.69	4.87
<b>Onsite Total</b>						<b>65.58</b>	<b>6.56</b>
<b>Offsite</b>							
Dump Truck	96	Paved	32	0.001	0.000	2.46	0.00
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
<b>Offsite Total</b>						<b>2.94</b>	<b>0.00</b>
<b>Total</b>						<b>68.52</b>	<b>6.56</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Table 10**  
**Substation Construction Emissions**  
**Grading**

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	3,078	9.94E-04	2.07E-04	3.06	0.64
Bulldozing, Scraping and Grading	hr/day	21	0.348	0.072	7.30	1.52
Storage Pile Wind Erosion <sup>d</sup>	acres	0.4	22.0	4.58	8.80	1.83
<b>Total</b>					<b>19.16</b>	<b>3.99</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Peak daily estimated from total of 184,700 CY over 60 days

<sup>d</sup> Based on 1,000 CY in each of two cones 9 ft. tall x 100 ft. diameter

**Table 11  
Substation Construction Emissions  
Fencing**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.14	2.13	0.99	0.00	0.02	0.02	2.3
Onsite Motor Vehicle Exhaust	0.02	0.13	0.14	0.00	0.01	0.00	0.4
Onsite Motor Vehicle Fugitive PM	--	--	--	--	15.59	1.56	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.16</b>	<b>2.27</b>	<b>1.13</b>	<b>0.00</b>	<b>15.61</b>	<b>1.58</b>	<b>2.8</b>
Offsite Motor Vehicle Exhaust	0.26	2.06	0.17	0.01	0.06	0.04	4.5
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.48	0.00	
<b>Offsite Total</b>	<b>0.26</b>	<b>2.06</b>	<b>0.17</b>	<b>0.01</b>	<b>0.54</b>	<b>0.04</b>	<b>4.5</b>
<b>Total</b>	<b>0.42</b>	<b>4.32</b>	<b>1.30</b>	<b>0.01</b>	<b>16.15</b>	<b>1.62</b>	<b>7.3</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Bobcat	75	1	15	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Bobcat	75	0.017	0.267	0.124	0.001	0.002	0.002	42.762	0.002	Skid Steer Loaders

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Bobcat	0.14	2.13	0.99	0.00	0.02	0.02
<b>Total</b>	<b>0.14</b>	<b>2.13</b>	<b>0.99</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Bobcat	2.3	0.0	2.3
<b>Total</b>	<b>2.3</b>	<b>0.0</b>	<b>2.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Flatbed Truck	1	15	3	7.5
Crewcab Truck	3	15	2	5
<b>Offsite</b>				
Worker Commute	10	15	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Flatbed Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Crewcab Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 11  
Substation Construction Emissions  
Fencing**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Flatbed Truck	0.01	0.04	0.05	0.00	0.00	0.00
Crewcab Truck	0.01	0.09	0.09	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.02</b>	<b>0.13</b>	<b>0.14</b>	<b>0.00</b>	<b>0.01</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
<b>Offsite Total</b>	<b>0.26</b>	<b>2.06</b>	<b>0.17</b>	<b>0.01</b>	<b>0.06</b>	<b>0.04</b>
<b>Total</b>	<b>0.28</b>	<b>2.19</b>	<b>0.31</b>	<b>0.01</b>	<b>0.06</b>	<b>0.04</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Flatbed Truck	0.1	0.0	0.1
Crewcab Truck	0.3	0.0	0.3
<b>Onsite Total</b>	<b>0.4</b>	<b>0.0</b>	<b>0.4</b>
<b>Offsite</b>			
Worker Commute	4.5	0.0	4.5
<b>Offsite Total</b>	<b>4.5</b>	<b>0.0</b>	<b>4.5</b>
<b>Total</b>	<b>5.0</b>	<b>0.0</b>	<b>5.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Flatbed Truck	1	Unpaved	7.5	0.965	0.097	7.24	0.72
Crewcab Truck	3	Unpaved	5	0.556	0.056	8.35	0.83
<b>Onsite Total</b>						<b>15.59</b>	<b>1.56</b>
<b>Offsite</b>							
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
<b>Offsite Total</b>						<b>0.48</b>	<b>0.00</b>
<b>Total</b>						<b>16.07</b>	<b>1.56</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 12**  
**Substation Construction Emissions**  
**Civil**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.68	23.43	10.09	0.04	0.26	0.24	155.6
Onsite Motor Vehicle Exhaust	0.02	0.10	0.21	0.00	0.01	0.01	3.9
Onsite Motor Vehicle Fugitive PM	--	--	--	--	21.72	2.17	
Earthwork Fugitive PM	--	--	--	--	0.14	0.03	
<b>Onsite Total</b>	<b>1.69</b>	<b>23.53</b>	<b>10.30</b>	<b>0.04</b>	<b>22.13</b>	<b>2.45</b>	<b>159.4</b>
Offsite Motor Vehicle Exhaust	1.21	7.48	9.77	0.05	0.58	0.43	215.6
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.72	0.00	
<b>Offsite Total</b>	<b>1.21</b>	<b>7.48</b>	<b>9.77</b>	<b>0.05</b>	<b>1.30</b>	<b>0.43</b>	<b>215.6</b>
<b>Total</b>	<b>2.90</b>	<b>31.01</b>	<b>20.07</b>	<b>0.10</b>	<b>23.43</b>	<b>2.88</b>	<b>375.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Excavator	152	2	90	4
Foundation Auger	79	2	90	7
Backhoe	79	3	90	6
Skip Loader	75	2	90	3
Bobcat Skid Steer	75	2	90	4
Forklift	83	1	90	4
17-Ton Crane	125	1	90	2

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Excavator	152	0.052	0.664	0.198	0.001	0.009	0.008	112.222	0.005	Excavators
Foundation Auger	79	0.025	0.466	0.195	0.001	0.002	0.002	77.122	0.002	Bore/Drill Rigs
Backhoe	79	0.028	0.338	0.176	0.001	0.006	0.005	51.728	0.003	Tractors/Loaders/Backhoes
Skip Loader	75	0.017	0.267	0.124	0.001	0.002	0.002	42.762	0.002	Skid Steer Loaders
Bobcat Skid Steer	75	0.017	0.267	0.124	0.001	0.002	0.002	42.762	0.002	Skid Steer Loaders
Forklift	83	0.017	0.209	0.100	0.000	0.002	0.002	31.225	0.002	Forklifts
17-Ton Crane	125	0.046	0.474	0.230	0.001	0.012	0.011	80.345	0.004	Cranes

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5  
 and PM 2.5 Significance Thresholds, SCAQMD, October 2006,  
[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Excavator	0.41	5.31	1.59	0.01	0.07	0.07
Foundation Auger	0.35	6.52	2.74	0.01	0.03	0.03
Backhoe	0.51	6.08	3.17	0.01	0.10	0.09
Skip Loader	0.10	1.60	0.74	0.00	0.01	0.01
Bobcat Skid Steer	0.14	2.13	0.99	0.00	0.02	0.02
Forklift	0.07	0.83	0.40	0.00	0.01	0.01
17-Ton Crane	0.09	0.95	0.46	0.00	0.02	0.02
<b>Total</b>	<b>1.68</b>	<b>23.43</b>	<b>10.09</b>	<b>0.04</b>	<b>0.26</b>	<b>0.24</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Excavator	36.7	0.0	36.7
Foundation Auger	44.1	0.0	44.1
Backhoe	38.0	0.0	38.1
Skip Loader	10.5	0.0	10.5
Bobcat Skid Steer	26.2	0.0	26.3
Forklift	0.0	0.0	0.0
17-Ton Crane	0.0	0.0	0.0
<b>Total</b>	<b>155.5</b>	<b>0.0</b>	<b>155.6</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)



**Table 12**  
**Substation Construction Emissions**  
**Civil**

**Motor Vehicle Usage**

Vehicle	Number <sup>b</sup>	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Dump Truck	2	90	2	5
Water Truck	1	90	5	12.5
<b>Offsite</b>				
Concrete Truck	17	90	N/A	60
Worker Commute	15	90	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

<sup>b</sup> Concrete trucks based on 15,000 CY over 90 days and 10 CY/truck = 15,000 / 90 / 10 = 16.6

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
<b>Offsite</b>									
Concrete Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Dump Truck	0.01	0.04	0.09	0.00	0.00	0.00
Water Truck	0.01	0.05	0.12	0.00	0.01	0.00
<b>Onsite Total</b>	<b>0.02</b>	<b>0.10</b>	<b>0.21</b>	<b>0.00</b>	<b>0.01</b>	<b>0.01</b>
<b>Offsite</b>						
Concrete Truck	0.82	4.40	9.51	0.04	0.50	0.37
Worker Commute	0.39	3.08	0.26	0.01	0.09	0.06
<b>Offsite Total</b>	<b>1.21</b>	<b>7.48</b>	<b>9.77</b>	<b>0.05</b>	<b>0.58</b>	<b>0.43</b>
<b>Total</b>	<b>1.23</b>	<b>7.58</b>	<b>9.98</b>	<b>0.05</b>	<b>0.59</b>	<b>0.44</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Dump Truck	1.7	0.0	1.7
Water Truck	2.1	0.0	2.1
<b>Onsite Total</b>	<b>3.9</b>	<b>0.0</b>	<b>3.9</b>
<b>Offsite</b>			
Concrete Truck	174.7	0.0	174.7
Worker Commute	40.8	0.0	40.8
<b>Offsite Total</b>	<b>215.5</b>	<b>0.0</b>	<b>215.6</b>
<b>Total</b>	<b>219.4</b>	<b>0.0</b>	<b>219.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Dump Truck	2	Unpaved	5	0.965	0.097	9.65	0.97
Water Truck	1	Unpaved	12.5	0.965	0.097	12.06	1.21
<b>Onsite Total</b>						<b>21.72</b>	<b>2.17</b>
<b>Offsite</b>							
Concrete Truck	17	Paved	60	0.001	0.000	0.82	0.00
Worker Commute	15	Paved	60	0.001	0.000	0.72	0.00
<b>Offsite Total</b>						<b>0.72</b>	<b>0.00</b>
<b>Total</b>						<b>22.44</b>	<b>2.17</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Table 12**  
**Substation Construction Emissions**  
**Civil**

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	140	9.94E-04	2.07E-04	0.14	0.03
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.14</b>	<b>0.03</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Peak daily estimated from total of 12,000 CY over 90 days

**Table 13  
Substation Construction Emissions  
Control Building**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.01	0.09	0.09	0.00	0.00	0.00	0.4
Onsite Motor Vehicle Fugitive PM	--	--	--	--	14.48	1.45	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.01</b>	<b>0.09</b>	<b>0.09</b>	<b>0.00</b>	<b>14.48</b>	<b>1.45</b>	<b>0.4</b>
Offsite Motor Vehicle Exhaust	0.16	1.23	0.10	0.00	0.03	0.02	3.6
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.29	0.00	
<b>Offsite Total</b>	<b>0.16</b>	<b>1.23</b>	<b>0.10</b>	<b>0.00</b>	<b>0.32</b>	<b>0.02</b>	<b>3.6</b>
<b>Total</b>	<b>0.17</b>	<b>1.32</b>	<b>0.20</b>	<b>0.00</b>	<b>14.80</b>	<b>1.47</b>	<b>4.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
None				

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
None		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
None	0.0	0.0	0.0
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Carry-all Truck	2	20	2	5
Stake Truck	1	20	2	5
<b>Offsite</b>				
Worker Commute	6	20	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Carry-all Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Stake Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 13  
Substation Construction Emissions  
Control Building**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Carry-all Truck	0.01	0.06	0.06	0.00	0.00	0.00
Stake Truck	0.00	0.03	0.03	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.01</b>	<b>0.09</b>	<b>0.09</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.16	1.23	0.10	0.00	0.03	0.02
<b>Offsite Total</b>	<b>0.16</b>	<b>1.23</b>	<b>0.10</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>
<b>Total</b>	<b>0.17</b>	<b>1.32</b>	<b>0.20</b>	<b>0.00</b>	<b>0.04</b>	<b>0.03</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Carry-all Truck	0.3	0.0	0.3
Stake Truck	0.1	0.0	0.1
<b>Onsite Total</b>	<b>0.4</b>	<b>0.0</b>	<b>0.4</b>
<b>Offsite</b>			
Worker Commute	3.6	0.0	3.6
<b>Offsite Total</b>	<b>3.6</b>	<b>0.0</b>	<b>3.6</b>
<b>Total</b>	<b>4.0</b>	<b>0.0</b>	<b>4.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Carry-all Truck	2	Unpaved	5	0.965	0.097	9.65	0.97
Stake Truck	1	Unpaved	5	0.965	0.097	4.83	0.48
<b>Onsite Total</b>						<b>14.48</b>	<b>1.45</b>
<b>Offsite</b>							
Worker Commute	6	Paved	60	0.001	0.000	0.29	0.00
<b>Offsite Total</b>						<b>0.29</b>	<b>0.00</b>
<b>Total</b>						<b>14.77</b>	<b>1.45</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 14**  
**Substation Construction Emissions**  
**Electrical**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.85	9.25	6.15	0.02	0.25	0.23	206.2
Onsite Motor Vehicle Exhaust	0.01	0.10	0.01	0.00	0.00	0.00	4.5
Onsite Motor Vehicle Fugitive PM	--	--	--	--	16.69	1.67	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.87</b>	<b>9.35</b>	<b>6.16</b>	<b>0.02</b>	<b>16.94</b>	<b>1.90</b>	<b>210.8</b>
Offsite Motor Vehicle Exhaust	0.39	3.08	0.26	0.01	0.09	0.06	136.1
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.72	0.00	
<b>Offsite Total</b>	<b>0.39</b>	<b>3.08</b>	<b>0.26</b>	<b>0.01</b>	<b>0.81</b>	<b>0.06</b>	<b>136.1</b>
<b>Total</b>	<b>1.26</b>	<b>12.43</b>	<b>6.41</b>	<b>0.03</b>	<b>17.75</b>	<b>1.96</b>	<b>346.9</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Scissor Lift	87	2	300	5
Manlift	43	2	300	7
Reach Manlift	87	2	300	6
15-Ton Crane	125	1	300	5

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Scissor Lift	87	0.018	0.226	0.150	0.000	0.006	0.006	38.072	0.002	Aerial Lifts
Manlift	43	0.017	0.135	0.122	0.000	0.003	0.003	19.613	0.002	Aerial Lifts
Reach Manlift	87	0.018	0.226	0.150	0.000	0.006	0.006	38.072	0.002	Aerial Lifts
15-Ton Crane	125	0.046	0.474	0.230	0.001	0.012	0.011	80.345	0.004	Cranes

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Scissor Lift	0.18	2.26	1.50	0.00	0.06	0.06
Manlift	0.23	1.89	1.71	0.00	0.05	0.04
Reach Manlift	0.21	2.72	1.79	0.01	0.08	0.07
15-Ton Crane	0.23	2.37	1.15	0.00	0.06	0.06
<b>Total</b>	<b>0.85</b>	<b>9.25</b>	<b>6.15</b>	<b>0.02</b>	<b>0.25</b>	<b>0.23</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Scissor Lift	51.8	0.0	51.9
Manlift	37.4	0.0	37.4
Reach Manlift	62.2	0.0	62.2
15-Ton Crane	54.7	0.0	54.7
<b>Total</b>	<b>206.0</b>	<b>0.0</b>	<b>206.2</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Crew Truck	6	300	2	5
<b>Offsite</b>				
Worker Commute	15	300	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 14**  
**Substation Construction Emissions**  
**Electrical**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Crew Truck	0.01	0.10	0.01	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.01</b>	<b>0.10</b>	<b>0.01</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.39	3.08	0.26	0.01	0.09	0.06
<b>Offsite Total</b>	<b>0.39</b>	<b>3.08</b>	<b>0.26</b>	<b>0.01</b>	<b>0.09</b>	<b>0.06</b>
<b>Total</b>	<b>0.40</b>	<b>3.19</b>	<b>0.27</b>	<b>0.01</b>	<b>0.09</b>	<b>0.06</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Crew Truck	4.5	0.0	4.5
<b>Onsite Total</b>	<b>4.5</b>	<b>0.0</b>	<b>4.5</b>
<b>Offsite</b>			
Worker Commute	136.0	0.0	136.1
<b>Offsite Total</b>	<b>136.0</b>	<b>0.0</b>	<b>136.1</b>
<b>Total</b>	<b>140.6</b>	<b>0.0</b>	<b>140.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Crew Truck	6	Unpaved	5	0.556	0.056	16.69	1.67
<b>Onsite Total</b>						<b>16.69</b>	<b>1.67</b>
<b>Offsite</b>							
Worker Commute	15	Paved	60	0.001	0.000	0.72	0.00
<b>Offsite Total</b>						<b>0.72</b>	<b>0.00</b>
<b>Total</b>						<b>17.41</b>	<b>1.67</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 15  
Substation Construction Emissions  
Wiring**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.07	0.54	0.49	0.00	0.01	0.01	8.9
Onsite Motor Vehicle Exhaust	0.01	0.07	0.01	0.00	0.00	0.00	2.5
Onsite Motor Vehicle Fugitive PM	--	--	--	--	11.13	1.11	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.08</b>	<b>0.61</b>	<b>0.49</b>	<b>0.00</b>	<b>11.14</b>	<b>1.13</b>	<b>11.4</b>
Offsite Motor Vehicle Exhaust	0.21	1.65	0.14	0.01	0.05	0.03	60.5
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.38	0.00	
<b>Offsite Total</b>	<b>0.21</b>	<b>1.65</b>	<b>0.14</b>	<b>0.01</b>	<b>0.43</b>	<b>0.03</b>	<b>60.5</b>
<b>Total</b>	<b>0.28</b>	<b>2.25</b>	<b>0.63</b>	<b>0.01</b>	<b>11.58</b>	<b>1.16</b>	<b>71.9</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Manlift	43	1	250	4

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Manlift	43	0.017	0.135	0.122	0.000	0.003	0.003	19.613	0.002	Aerial Lifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Manlift	0.07	0.54	0.49	0.00	0.01	0.01
<b>Total</b>	<b>0.07</b>	<b>0.54</b>	<b>0.49</b>	<b>0.00</b>	<b>0.01</b>	<b>0.01</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Manlift	8.9	0.0	8.9
<b>Total</b>	<b>8.9</b>	<b>0.0</b>	<b>8.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Crew Truck	4	250	2	5
<b>Offsite</b>				
Worker Commute	8	250	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 15**  
**Substation Construction Emissions**  
**Wiring**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Crew Truck	0.01	0.07	0.01	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.01</b>	<b>0.07</b>	<b>0.01</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.21	1.65	0.14	0.01	0.05	0.03
<b>Offsite Total</b>	<b>0.21</b>	<b>1.65</b>	<b>0.14</b>	<b>0.01</b>	<b>0.05</b>	<b>0.03</b>
<b>Total</b>	<b>0.22</b>	<b>1.71</b>	<b>0.14</b>	<b>0.01</b>	<b>0.05</b>	<b>0.03</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Crew Truck	2.5	0.0	2.5
<b>Onsite Total</b>	<b>2.5</b>	<b>0.0</b>	<b>2.5</b>
<b>Offsite</b>			
Worker Commute	60.5	0.0	60.5
<b>Offsite Total</b>	<b>60.5</b>	<b>0.0</b>	<b>60.5</b>
<b>Total</b>	<b>63.0</b>	<b>0.0</b>	<b>63.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Crew Truck	4	Unpaved	5	0.556	0.056	11.13	1.11
<b>Onsite Total</b>						<b>11.13</b>	<b>1.11</b>
<b>Offsite</b>							
Worker Commute	8	Paved	60	0.001	0.000	0.38	0.00
<b>Offsite Total</b>						<b>0.38</b>	<b>0.00</b>
<b>Total</b>						<b>11.51</b>	<b>1.11</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]



**Table 16  
Substation Construction Emissions  
Transformers**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.38	4.10	1.98	0.01	0.09	0.08	27.4
Onsite Motor Vehicle Exhaust	0.02	0.11	0.10	0.00	0.01	0.00	2.6
Onsite Motor Vehicle Fugitive PM	--	--	--	--	20.78	2.08	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.40</b>	<b>4.21</b>	<b>2.08</b>	<b>0.01</b>	<b>20.87</b>	<b>2.16</b>	<b>30.0</b>
Offsite Motor Vehicle Exhaust	0.26	2.06	0.17	0.01	0.06	0.04	27.2
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.48	0.00	
<b>Offsite Total</b>	<b>0.26</b>	<b>2.06</b>	<b>0.17</b>	<b>0.01</b>	<b>0.54</b>	<b>0.04</b>	<b>27.2</b>
<b>Total</b>	<b>0.66</b>	<b>6.27</b>	<b>2.25</b>	<b>0.01</b>	<b>21.41</b>	<b>2.20</b>	<b>57.2</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Crane	125	1	90	6
Forklift	83	1	90	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Crane	125	0.046	0.474	0.230	0.001	0.012	0.011	80.345	0.004	Cranes
Forklift	83	0.017	0.209	0.100	0.000	0.002	0.002	31.225	0.002	Forklifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction=

0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Crane	0.28	2.85	1.38	0.01	0.07	0.07
Forklift	0.10	1.25	0.60	0.00	0.01	0.01
<b>Total</b>	<b>0.38</b>	<b>4.10</b>	<b>1.98</b>	<b>0.01</b>	<b>0.09</b>	<b>0.08</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Crane	19.7	0.0	19.7
Forklift	7.6	0.0	7.7
<b>Total</b>	<b>27.3</b>	<b>0.0</b>	<b>27.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Crew Truck	4	90	2	5
Low Bed Truck	1	90	4	10
<b>Offsite</b>				
Worker Commute	10	90	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Low Bed Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 16  
Substation Construction Emissions  
Transformers**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Crew Truck	0.01	0.07	0.01	0.00	0.00	0.00
Low Bed Truck	0.01	0.04	0.09	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.02</b>	<b>0.11</b>	<b>0.10</b>	<b>0.00</b>	<b>0.01</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
<b>Offsite Total</b>	<b>0.26</b>	<b>2.06</b>	<b>0.17</b>	<b>0.01</b>	<b>0.06</b>	<b>0.04</b>
<b>Total</b>	<b>0.28</b>	<b>2.17</b>	<b>0.27</b>	<b>0.01</b>	<b>0.06</b>	<b>0.04</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Crew Truck	0.9	0.0	0.9
Low Bed Truck	1.7	0.0	1.7
<b>Onsite Total</b>	<b>2.6</b>	<b>0.0</b>	<b>2.6</b>
<b>Offsite</b>			
Worker Commute	27.2	0.0	27.2
<b>Offsite Total</b>	<b>27.2</b>	<b>0.0</b>	<b>27.2</b>
<b>Total</b>	<b>29.8</b>	<b>0.0</b>	<b>29.8</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Crew Truck	4	Unpaved	5	0.556	0.056	11.13	1.11
Low Bed Truck	1	Unpaved	10	0.965	0.097	9.65	0.97
<b>Onsite Total</b>						<b>20.78</b>	<b>2.08</b>
<b>Offsite</b>							
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
<b>Offsite Total</b>						<b>0.48</b>	<b>0.00</b>
<b>Total</b>						<b>21.26</b>	<b>2.08</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 17  
Substation Construction Emissions  
Maintenance Crew Equipment Check**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.02	0.12	0.12	0.00	0.01	0.00	1.6
Onsite Motor Vehicle Fugitive PM	--	--	--	--	15.20	1.52	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.02</b>	<b>0.12</b>	<b>0.12</b>	<b>0.00</b>	<b>15.21</b>	<b>1.52</b>	<b>1.6</b>
Offsite Motor Vehicle Exhaust	0.10	0.82	0.07	0.00	0.02	0.02	7.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.19	0.00	
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.22</b>	<b>0.02</b>	<b>7.3</b>
<b>Total</b>	<b>0.12</b>	<b>0.94</b>	<b>0.19</b>	<b>0.00</b>	<b>15.42</b>	<b>1.54</b>	<b>8.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
None				

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
None										

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
None	0.0	0.0	0.0
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Maintenance Truck	2	60	4	10
<b>Offsite</b>				
Worker Commute	4	60	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Maintenance Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 17  
Substation Construction Emissions  
Maintenance Crew Equipment Check**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Maintenance Truck	0.02	0.12	0.12	0.00	0.01	0.00
<b>Onsite Total</b>	<b>0.02</b>	<b>0.12</b>	<b>0.12</b>	<b>0.00</b>	<b>0.01</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>
<b>Total</b>	<b>0.12</b>	<b>0.94</b>	<b>0.19</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Maintenance Truck	1.6	0.0	1.6
<b>Onsite Total</b>	<b>1.6</b>	<b>0.0</b>	<b>1.6</b>
<b>Offsite</b>			
Worker Commute	7.3	0.0	7.3
<b>Offsite Total</b>	<b>7.3</b>	<b>0.0</b>	<b>7.3</b>
<b>Total</b>	<b>8.8</b>	<b>0.0</b>	<b>8.8</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Maintenance Truck	2	Unpaved	10	0.760	0.076	15.20	1.52
<b>Onsite Total</b>						<b>15.20</b>	<b>1.52</b>
<b>Offsite</b>							
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.19</b>	<b>0.00</b>
<b>Total</b>						<b>15.39</b>	<b>1.52</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 18**  
**Substation Construction Emissions**  
**Testing**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.01	0.05	0.00	0.00	0.00	0.00	1.5
Onsite Motor Vehicle Fugitive PM	--	--	--	--	8.35	0.83	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.01</b>	<b>0.05</b>	<b>0.00</b>	<b>0.00</b>	<b>8.35</b>	<b>0.84</b>	<b>1.5</b>
Offsite Motor Vehicle Exhaust	0.10	0.82	0.07	0.00	0.02	0.02	24.2
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.19	0.00	
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.22</b>	<b>0.02</b>	<b>24.2</b>
<b>Total</b>	<b>0.11</b>	<b>0.87</b>	<b>0.07</b>	<b>0.00</b>	<b>8.56</b>	<b>0.85</b>	<b>25.7</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
None				

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
None										

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
None	0.0	0.0	0.0
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Crew Truck	2	200	3	7.5
<b>Offsite</b>				
Worker Commute	4	200	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 18**  
**Substation Construction Emissions**  
**Testing**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Crew Truck	0.01	0.05	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.01</b>	<b>0.05</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>
<b>Total</b>	<b>0.11</b>	<b>0.87</b>	<b>0.07</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Crew Truck	1.5	0.0	1.5
<b>Onsite Total</b>	<b>1.5</b>	<b>0.0</b>	<b>1.5</b>
<b>Offsite</b>			
Worker Commute	24.2	0.0	24.2
<b>Offsite Total</b>	<b>24.2</b>	<b>0.0</b>	<b>24.2</b>
<b>Total</b>	<b>25.7</b>	<b>0.0</b>	<b>25.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Crew Truck	2	Unpaved	7.5	0.556	0.056	8.35	0.83
<b>Onsite Total</b>						<b>8.35</b>	<b>0.83</b>
<b>Offsite</b>							
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.19</b>	<b>0.00</b>
<b>Total</b>						<b>8.54</b>	<b>0.83</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 19  
Substation Construction Emissions  
Asphalting**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.87	6.33	4.62	0.01	0.21	0.19	12.0
Onsite Motor Vehicle Exhaust	0.02	0.11	0.17	0.00	0.01	0.01	1.2
Onsite Motor Vehicle Fugitive PM	--	--	--	--	22.45	2.25	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Asphaltic Paving VOC	0.6	--	--	--	--	--	--
<b>Onsite Total</b>	<b>1.52</b>	<b>6.44</b>	<b>4.79</b>	<b>0.01</b>	<b>22.67</b>	<b>2.44</b>	<b>13.2</b>
Offsite Motor Vehicle Exhaust	0.89	5.42	7.45	0.04	0.44	0.32	53.6
Offsite Motor Vehicle Fugitive PM	--	--	--	--	1.11	0.00	
<b>Offsite Total</b>	<b>0.89</b>	<b>5.42</b>	<b>7.45</b>	<b>0.04</b>	<b>1.54</b>	<b>0.32</b>	<b>53.6</b>
<b>Total</b>	<b>2.41</b>	<b>11.86</b>	<b>12.23</b>	<b>0.05</b>	<b>24.21</b>	<b>2.77</b>	<b>66.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Paving Roller	46	2	30	4
Asphalt Paver	152	1	30	4
Tractor	45	1	30	3
Asphalt Curb Machine	35	1	30	3

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Paving Roller	46	0.034	0.226	0.178	0.000	0.007	0.006	25.983	0.003	Rollers
Asphalt Paver	152	0.090	0.754	0.524	0.001	0.029	0.026	128.285	0.008	Pavers
Tractor	45	0.032	0.268	0.190	0.000	0.004	0.003	30.347	0.003	Tractors/Loaders/Backhoes
Asphalt Curb Machine	35	0.047	0.235	0.179	0.000	0.010	0.009	23.927	0.004	Paving Equipment

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Paving Roller	0.28	1.81	1.42	0.00	0.05	0.05
Asphalt Paver	0.36	3.02	2.10	0.01	0.11	0.11
Tractor	0.09	0.80	0.57	0.00	0.01	0.01
Asphalt Curb Machine	0.14	0.71	0.54	0.00	0.03	0.03
<b>Total</b>	<b>0.87</b>	<b>6.33</b>	<b>4.62</b>	<b>0.01</b>	<b>0.21</b>	<b>0.19</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Paving Roller	2.8	0.0	2.8
Asphalt Paver	7.0	0.0	7.0
Tractor	1.2	0.0	1.2
Asphalt Curb Machine	1.0	0.0	1.0
<b>Total</b>	<b>12.0</b>	<b>0.0</b>	<b>12.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number <sup>b</sup>	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Stake Truck	1	30	4	10
Dump Truck	1	30	3	7.5
Crew Truck	2	30	2	5
<b>Offsite</b>				
Asphalt Delivery Truck	13	30	N/A	60
Worker Commute	10	30	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

<sup>b</sup> Asphalt delivery trucks based on 3,900 CY over 30 days and 10 CY/truck = 3,900 / 30 / 10 = 13

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Stake Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05

**Table 19**  
**Substation Construction Emissions**  
**Asphalting**

Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Asphalt Delivery Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Stake Truck	0.01	0.04	0.09	0.00	0.00	0.00
Dump Truck	0.01	0.03	0.07	0.00	0.00	0.00
Crew Truck	0.00	0.03	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.02</b>	<b>0.11</b>	<b>0.17</b>	<b>0.00</b>	<b>0.01</b>	<b>0.01</b>
<b>Offsite</b>						
Asphalt Delivery Truck	0.63	3.36	7.27	0.03	0.38	0.28
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
<b>Offsite Total</b>	<b>0.89</b>	<b>5.42</b>	<b>7.45</b>	<b>0.04</b>	<b>0.44</b>	<b>0.32</b>
<b>Total</b>	<b>0.91</b>	<b>5.53</b>	<b>7.61</b>	<b>0.04</b>	<b>0.45</b>	<b>0.33</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Stake Truck	0.6	0.0	0.6
Dump Truck	0.4	0.0	0.4
Crew Truck	0.2	0.0	0.2
<b>Onsite Total</b>	<b>1.2</b>	<b>0.0</b>	<b>1.2</b>
<b>Offsite</b>			
Asphalt Delivery Truck	44.5	0.0	44.5
Worker Commute	9.1	0.0	9.1
<b>Offsite Total</b>	<b>53.6</b>	<b>0.0</b>	<b>53.6</b>
<b>Total</b>	<b>54.7</b>	<b>0.0</b>	<b>54.8</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Stake Truck	1	Unpaved	10	0.965	0.097	9.65	0.97
Dump Truck	1	Unpaved	7.5	0.965	0.097	7.24	0.72
Crew Truck	2	Unpaved	5	0.556	0.056	5.56	0.56
<b>Onsite Total</b>						<b>22.45</b>	<b>2.25</b>
<b>Offsite</b>							
Asphalt Delivery Truck	13	Paved	60	0.001	0.000	0.62	0.00
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
<b>Offsite Total</b>						<b>1.11</b>	<b>0.00</b>
<b>Total</b>						<b>23.56</b>	<b>2.25</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

a From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Asphaltic Paving VOC Emissions**

Area Paved (acre/day) <sup>a</sup>	Emission Factor (lb/acre) <sup>b</sup>	VOC (lb/day) <sup>c</sup>
0.24	2.62	0.6

<sup>a</sup> Assumed twice daily average for 156,000 ft<sup>2</sup> total in 30 days:  
2 x 156,000 ft<sup>2</sup> / 30 days / 43,560 ft<sup>2</sup> per acre = 0.24 acres

<sup>b</sup> From URBEMISS 2007 User's Guide, Appendix A,  
<http://www.urbemis.com/software/download.html>

<sup>c</sup> Emissions [lb/day] = Emission factor [lb/acre] x Area paved [acre/day]



**Table 20**  
**Substation Construction Emissions**  
**Landscaping**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.29	2.71	1.73	0.00	0.03	0.03	6.9
Onsite Motor Vehicle Exhaust	0.01	0.10	0.08	0.00	0.01	0.00	1.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	18.37	1.84	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.30</b>	<b>2.81</b>	<b>1.80</b>	<b>0.00</b>	<b>18.41</b>	<b>1.87</b>	<b>8.0</b>
Offsite Motor Vehicle Exhaust	1.42	8.26	13.60	0.06	0.76	0.56	136.9
Offsite Motor Vehicle Fugitive PM	--	--	--	--	1.63	0.00	
<b>Offsite Total</b>	<b>1.42</b>	<b>8.26</b>	<b>13.60</b>	<b>0.06</b>	<b>2.39</b>	<b>0.56</b>	<b>136.9</b>
<b>Total</b>	<b>1.72</b>	<b>11.07</b>	<b>15.40</b>	<b>0.07</b>	<b>20.80</b>	<b>2.43</b>	<b>144.9</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Tractor	45	1	45	7
Forklift	83	1	45	4

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Tractor	45	0.032	0.268	0.190	0.000	0.004	0.003	30.347	0.003	Tractors/Loaders/Backhoes
Forklift	83	0.017	0.209	0.100	0.000	0.002	0.002	31.225	0.002	Forklifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction=

0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Tractor	0.22	1.87	1.33	0.00	0.03	0.02
Forklift	0.07	0.83	0.40	0.00	0.01	0.01
<b>Total</b>	<b>0.29</b>	<b>2.71</b>	<b>1.73</b>	<b>0.00</b>	<b>0.03</b>	<b>0.03</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Tractor	4.3	0.0	4.3
Forklift	2.5	0.0	2.6
<b>Total</b>	<b>6.9</b>	<b>0.0</b>	<b>6.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number <sup>b</sup>	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Dump Truck	1	45	3	7.5
Crew Truck	4	45	2	5
<b>Offsite</b>				
Crushed Rock Delivery Truck	24	45	N/A	60
Worker Commute	10	45	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

<sup>b</sup> Crushed rock delivery trucks based on 10,800 CY over 45 days and 10 CY/truck = 10,800 / 45 / 10 = 24

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Crushed Rock Delivery Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 20**  
**Substation Construction Emissions**  
**Landscaping**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Dump Truck	0.01	0.03	0.07	0.00	0.00	0.00
Crew Truck	0.01	0.07	0.01	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.01</b>	<b>0.10</b>	<b>0.08</b>	<b>0.00</b>	<b>0.01</b>	<b>0.00</b>
<b>Offsite</b>						
Crushed Rock Delivery Truck	1.15	6.21	13.43	0.06	0.70	0.52
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
<b>Offsite Total</b>	<b>1.42</b>	<b>8.26</b>	<b>13.60</b>	<b>0.06</b>	<b>0.76</b>	<b>0.56</b>
<b>Total</b>	<b>1.43</b>	<b>8.36</b>	<b>13.68</b>	<b>0.06</b>	<b>0.76</b>	<b>0.57</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Dump Truck	0.6	0.0	0.6
Crew Truck	0.5	0.0	0.5
<b>Onsite Total</b>	<b>1.1</b>	<b>0.0</b>	<b>1.1</b>
<b>Offsite</b>			
Crushed Rock Delivery Truck	123.3	0.0	123.3
Worker Commute	13.6	0.0	13.6
<b>Offsite Total</b>	<b>136.9</b>	<b>0.0</b>	<b>136.9</b>
<b>Total</b>	<b>138.0</b>	<b>0.0</b>	<b>138.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Dump Truck	1	Unpaved	7.5	0.965	0.097	7.24	0.72
Crew Truck	4	Unpaved	5	0.556	0.056	11.13	1.11
<b>Onsite Total</b>						<b>18.37</b>	<b>1.84</b>
<b>Offsite</b>							
Crushed Rock Delivery Truck	24	Paved	60	0.001	0.000	1.15	0.00
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
<b>Offsite Total</b>						<b>1.63</b>	<b>0.00</b>
<b>Total</b>						<b>20.00</b>	<b>1.84</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 21**  
**500 kV Transmission Line Construction Emissions**  
**Survey**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.0</b>
Offsite Motor Vehicle Exhaust	0.11	0.89	0.08	0.00	0.03	0.02	0.5
Offsite Motor Vehicle Fugitive PM	--	--	--	--	9.30	0.91	
<b>Offsite Total</b>	<b>0.11</b>	<b>0.89</b>	<b>0.08</b>	<b>0.00</b>	<b>9.32</b>	<b>0.93</b>	<b>0.5</b>
<b>Total</b>	<b>0.11</b>	<b>0.89</b>	<b>0.08</b>	<b>0.00</b>	<b>9.32</b>	<b>0.93</b>	<b>0.5</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
None				

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
None		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
None	0.0	0.0	0.0
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
1/2-Ton Pick-up Truck, 4x4	2	4	N/A	10
Worker Commute	4	4	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
1/2-Ton Pick-up Truck, 4x4	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 21**  
**500 kV Transmission Line Construction Emissions**  
**Survey**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1/2-Ton Pick-up Truck, 4x4	0.01	0.07	0.01	0.00	0.00	0.00
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.11</b>	<b>0.89</b>	<b>0.08</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>
<b>Total</b>	<b>0.11</b>	<b>0.89</b>	<b>0.08</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1/2-Ton Pick-up Truck, 4x4	0.0	0.0	0.0
Worker Commute	0.5	0.0	0.5
<b>Offsite Total</b>	<b>0.5</b>	<b>0.0</b>	<b>0.5</b>
<b>Total</b>	<b>0.5</b>	<b>0.0</b>	<b>0.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None							
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1/2-Ton Pick-up Truck, 4x4	2	Unpaved	10	0.455	0.046	9.10	0.91
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>9.30</b>	<b>0.91</b>
<b>Total</b>						<b>9.30</b>	<b>0.91</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 22**  
**500 kV Transmission Line Construction Emissions**  
**Marshalling Yard**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.41	3.14	1.79	0.01	0.06	0.06	55.8
Onsite Motor Vehicle Exhaust	0.02	0.10	0.14	0.00	0.01	0.01	4.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	14.01	1.40	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.43</b>	<b>3.24</b>	<b>1.93</b>	<b>0.01</b>	<b>14.08</b>	<b>1.47</b>	<b>59.9</b>
Offsite Motor Vehicle Exhaust	0.20	1.41	0.87	0.01	0.06	0.04	27.9
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.28	0.00	
<b>Offsite Total</b>	<b>0.20</b>	<b>1.41</b>	<b>0.87</b>	<b>0.01</b>	<b>0.35</b>	<b>0.04</b>	<b>27.9</b>
<b>Total</b>	<b>0.63</b>	<b>4.65</b>	<b>2.81</b>	<b>0.02</b>	<b>14.43</b>	<b>1.51</b>	<b>87.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Boom/Crane Truck	215	1	137	5
Rough Terrain Forklift	125	1	137	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Boom/Crane Truck	215	0.054	0.232	0.271	0.001	0.009	0.009	112.159	0.005	Cranes
Rough Terrain Forklift	125	0.023	0.331	0.073	0.001	0.003	0.003	56.054	0.002	Forklifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Boom/Crane Truck	0.27	1.16	1.35	0.01	0.05	0.04
Rough Terrain Forklift	0.14	1.99	0.44	0.00	0.02	0.02
<b>Total</b>	<b>0.41</b>	<b>3.14</b>	<b>1.79</b>	<b>0.01</b>	<b>0.06</b>	<b>0.06</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Boom/Crane Truck	34.8	0.0	34.9
Rough Terrain Forklift	20.9	0.0	20.9
<b>Total</b>	<b>55.7</b>	<b>0.0</b>	<b>55.8</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number <sup>b</sup>	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
1-Ton Crew Cab, 4x4 Truck, Semi Tractor	1	137	4	10
Jet A Fuel Truck	1	137	0.5	1.25
Water Truck	1	137	1	2.5
<b>Offsite</b>				
Flat Bed Truck/Trailer	1	10	N/A	60
Concrete Mixer Truck	1	10	N/A	10
Jet A Fuel Truck	1	137	N/A	20
Water Truck	1	137	N/A	20
Worker Commute	4	137	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

<sup>b</sup> Dump trucks based on 8,000 CY hauled offsite over 60 days and 10 CY/truck = 8,000 / 60 / 10 = 13.3

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
1-Ton Crew Cab, 4x4 Truck, Semi Tractor	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Jet A Fuel Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
<b>Offsite</b>									
Flat Bed Truck/Trailer	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Concrete Mixer Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Jet A Fuel Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05

**Table 22**  
**500 kV Transmission Line Construction Emissions**  
**Marshalling Yard**

Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
1-Ton Crew Cab, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
Truck, Semi Tractor	0.00	0.02	0.05	0.00	0.00	0.00
Jet A Fuel Truck	0.00	0.01	0.01	0.00	0.00	0.00
Water Truck	0.00	0.01	0.02	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.02</b>	<b>0.10</b>	<b>0.14</b>	<b>0.00</b>	<b>0.01</b>	<b>0.01</b>
<b>Offsite</b>						
Flat Bed Truck/Trailer	0.06	0.36	0.37	0.00	0.02	0.01
Concrete Mixer Truck	0.01	0.06	0.06	0.00	0.00	0.00
Jet A Fuel Truck	0.02	0.09	0.19	0.00	0.01	0.01
Water Truck	0.02	0.09	0.19	0.00	0.01	0.01
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.20</b>	<b>1.41</b>	<b>0.87</b>	<b>0.01</b>	<b>0.06</b>	<b>0.04</b>
<b>Total</b>	<b>0.22</b>	<b>1.51</b>	<b>1.02</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
1-Ton Crew Cab, 4x4	1.8	0.0	1.8
Truck, Semi Tractor	1.3	0.0	1.3
Jet A Fuel Truck	0.33	0.00	0.33
Water Truck	0.65	0.00	0.65
<b>Onsite Total</b>	<b>4.1</b>	<b>0.0</b>	<b>4.1</b>
<b>Offsite</b>			
Flat Bed Truck/Trailer	0.8	0.0	0.8
Concrete Mixer Truck	0.1	0.0	0.1
Jet A Fuel Truck	5.21	0.00	5.21
Water Truck	5.21	0.00	5.21
Worker Commute	16.6	0.0	16.6
<b>Offsite Total</b>	<b>27.9</b>	<b>0.0</b>	<b>27.9</b>
<b>Total</b>	<b>32.0</b>	<b>0.0</b>	<b>32.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008. [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
1-Ton Crew Cab, 4x4	1	Unpaved	10	0.556	0.056	5.56	0.56
Truck, Semi Tractor	1	Unpaved	5	0.965	0.097	4.83	0.48
Jet A Fuel Truck	1	Unpaved	1.25	0.965	0.097	1.21	0.12
Water Truck	1	Unpaved	2.5	0.965	0.097	2.41	0.24
<b>Onsite Total</b>						<b>14.01</b>	<b>1.40</b>
<b>Offsite</b>							
Flat Bed Truck/Trailer	1	Paved	60	0.001	0.000	0.05	0.00
Concrete Mixer Truck	1	Paved	10	0.001	0.000	0.01	0.00
Jet A Fuel Truck	1	Paved	20	0.00	0.00	0.02	0.00
Water Truck	1	Paved	20	0.00	0.00	0.02	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.28</b>	<b>0.00</b>
<b>Total</b>						<b>14.29</b>	<b>1.40</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

a From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 23**  
**500 kV Transmission Line Construction Emissions**  
**Roads and Landing Work**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	2.09	16.82	9.96	0.05	0.45	0.42	44.9
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	9.17	1.91	
<b>Onsite Total</b>	<b>2.09</b>	<b>16.82</b>	<b>9.96</b>	<b>0.05</b>	<b>9.63</b>	<b>2.33</b>	<b>44.9</b>
Offsite Motor Vehicle Exhaust	0.28	2.18	0.37	0.01	0.07	0.05	8.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	20.52	2.00	
<b>Offsite Total</b>	<b>0.28</b>	<b>2.18</b>	<b>0.37</b>	<b>0.01</b>	<b>20.59</b>	<b>2.05</b>	<b>8.3</b>
<b>Total</b>	<b>2.37</b>	<b>19.00</b>	<b>10.34</b>	<b>0.05</b>	<b>30.22</b>	<b>4.38</b>	<b>53.1</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Road Grader	250	1	24	6
Backhoe/Front Loader	125	1	24	8
Drum Type Compactor	100	1	24	6
Track Type Dozer	150	1	24	8
Excavator	250	1	24	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Road Grader	250	0.078	0.355	0.365	0.002	0.013	0.012	172.113	0.007	Graders
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
Drum Type Compactor	100	0.039	0.380	0.265	0.001	0.014	0.013	58.989	0.004	Rollers
Track Type Dozer	150	0.082	0.727	0.445	0.001	0.024	0.022	121.188	0.007	Crawler Tractors
Excavator	250	0.065	0.321	0.222	0.002	0.007	0.007	158.683	0.006	Excavators

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction = 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Road Grader	0.47	2.13	2.19	0.01	0.08	0.07
Backhoe/Front Loader	0.34	4.67	1.29	0.01	0.06	0.05
Drum Type Compactor	0.24	2.28	1.59	0.00	0.08	0.08
Track Type Dozer	0.66	5.81	3.56	0.01	0.19	0.18
Excavator	0.39	1.93	1.33	0.01	0.04	0.04
<b>Total</b>	<b>2.09</b>	<b>16.82</b>	<b>9.96</b>	<b>0.05</b>	<b>0.45</b>	<b>0.42</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Road Grader	11.2	0.0	11.3
Backhoe/Front Loader	8.8	0.0	8.8
Drum Type Compactor	3.9	0.0	3.9
Track Type Dozer	10.6	0.0	10.6
Excavator	10.4	0.0	10.4
<b>Total</b>	<b>44.8</b>	<b>0.0</b>	<b>44.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

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**Table 23**  
**500 kV Transmission Line Construction Emissions**  
**Roads and Landing Work**

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				
<b>Offsite</b>				
1-Ton Crew Cab, 4x4	2	24	N/A	5
Water Truck	2	24	N/A	5
Lowboy Truck/Trailer	1	24	N/A	5
Worker Commute	10	24	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
Water Truck	0.01	0.04	0.09	0.00	0.00	0.00
Lowboy Truck/Trailer	0.00	0.02	0.05	0.00	0.00	0.00
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
<b>Offsite Total</b>	<b>0.28</b>	<b>2.18</b>	<b>0.37</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>
<b>Total</b>	<b>0.28</b>	<b>2.18</b>	<b>0.37</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1-Ton Crew Cab, 4x4	0.3	0.0	0.3
Water Truck	0.5	0.0	0.5
Lowboy Truck/Trailer	0.2	0.0	0.2
Worker Commute	7.3	0.0	7.3
<b>Offsite Total</b>	<b>8.3</b>	<b>0.0</b>	<b>8.3</b>
<b>Total</b>	<b>8.3</b>	<b>0.0</b>	<b>8.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1-Ton Crew Cab, 4x4	2	Unpaved	5	0.556	0.056	5.56	0.56
Water Truck	2	Unpaved	5	0.965	0.097	9.65	0.97
Lowboy Truck/Trailer	1	Unpaved	5	0.965	0.097	4.83	0.48
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
<b>Offsite Total</b>						<b>20.52</b>	<b>2.00</b>
<b>Total</b>						<b>20.52</b>	<b>2.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**



**Table 23**  
**500 kV Transmission Line Construction Emissions**  
**Roads and Landing Work**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	4,334	9.94E-04	2.07E-04	4.31	0.90
Bulldozing, Scraping and Grading	hr/day	14	0.348	0.072	4.87	1.01
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>9.17</b>	<b>1.91</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Estimate 80,000 CY of cut plus 50,000 CY of fill yields 130,000 CY of soil handling over 30 days. Approx 4,334 CY/day.

**Table 23b**  
**500 kV Transmission Line Construction Emissions**  
**Install Helicopter Platforms**

Emissions Summary							
Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.15	15.80	7.68	0.03	0.24	0.22	28.5
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	--
Earthwork Fugitive PM	--	--	--	--	1.38	0.29	--
<b>Onsite Total</b>	<b>1.15</b>	<b>15.80</b>	<b>7.68</b>	<b>0.03</b>	<b>1.62</b>	<b>0.51</b>	<b>28.5</b>
Offsite Motor Vehicle Exhaust	0.16	1.23	0.10	0.00	0.03	0.02	4.4
Offsite Helicopter Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.29	0.00	--
<b>Offsite Total</b>	<b>0.16</b>	<b>1.23</b>	<b>0.10</b>	<b>0.00</b>	<b>0.32</b>	<b>0.02</b>	<b>4.4</b>
<b>Total</b>	<b>1.30</b>	<b>17.03</b>	<b>7.78</b>	<b>0.03</b>	<b>1.94</b>	<b>0.53</b>	<b>32.9</b>

Construction Equipment Summary				
Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor	150	1	24	8
Grout Machine	60	1	24	8
Drill Rig	75	1	24	8
Transfer Pump	60	1	24	8

Note: Helicopter use accounted for in Table 29c

Construction Equipment Exhaust Emission Factors										
Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor	150	0.042	0.500	0.219	0.001	0.010	0.010	88.483	0.004	Air Compressors
Grout Machine	60	0.038	0.504	0.273	0.001	0.009	0.008	80.859	0.003	Other Construction Equipment
Drill Rig	75	0.025	0.466	0.195	0.001	0.002	0.002	77.122	0.002	Bore/Drill Rigs
Transfer Pump	60	0.038	0.504	0.273	0.001	0.009	0.008	80.859	0.003	Other Construction Equipment

<sup>a</sup> From Table 53  
<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10  
 PM2.5 Fraction = 0.920  
 From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

Construction Equipment Daily Criteria Pollutant Exhaust Emissions						
Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor	0.34	4.00	1.75	0.01	0.08	0.08
Grout Machine	0.30	4.04	2.18	0.01	0.07	0.06
Drill Rig	0.20	3.73	1.56	0.01	0.02	0.01
Transfer Pump	0.30	4.04	2.18	0.01	0.07	0.06
<b>Total</b>	<b>1.15</b>	<b>15.80</b>	<b>7.68</b>	<b>0.03</b>	<b>0.24</b>	<b>0.22</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions			
Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor	7.7	0.0	7.7
Grout Machine	7.0	0.0	7.0
Drill Rig	6.7	0.0	6.7
Transfer Pump	7.0	0.0	7.0
<b>Total</b>	<b>28.5</b>	<b>0.0</b>	<b>28.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]. Emission factors are in Table 53  
<sup>b</sup> CO2-equivalent (CO2e) emission factors are CO2 emissions plus 21 x CH4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Usage				
Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
Worker Commute	6	24	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 23b**  
**500 kV Transmission Line Construction Emissions**  
**Install Helicopter Platforms**

Motor Vehicle Exhaust Emission Factors									
Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions						
Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.16	1.23	0.10	0.00	0.03	0.02
<b>Offsite Total</b>	<b>0.16</b>	<b>1.23</b>	<b>0.10</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>
<b>Total</b>	<b>0.16</b>	<b>1.23</b>	<b>0.10</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions			
Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Worker Commute	4.4	0.0	4.4
<b>Offsite Total</b>	<b>4.4</b>	<b>0.0</b>	<b>4.4</b>
<b>Total</b>	<b>4.4</b>	<b>0.0</b>	<b>4.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

<sup>a</sup> From Table 56

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Fugitive Particulate Matter Emissions							
Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Worker Commute	6	Paved	60	0.001	0.000	0.29	0.00
<b>Offsite Total</b>						<b>0.29</b>	<b>0.00</b>
<b>Total</b>						<b>0.29</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions						
Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	1,388	9.94E-04	2.07E-04	1.38	0.29
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>1.38</b>	<b>0.29</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Estimate

**Table 24**  
**500 kV Transmission Line Construction Emissions**  
**Tower Removal**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.75	4.54	3.93	0.02	0.16	0.15	2.6
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.75</b>	<b>4.54</b>	<b>3.93</b>	<b>0.02</b>	<b>0.16</b>	<b>0.15</b>	<b>2.6</b>
Offsite Motor Vehicle Exhaust	0.27	2.03	0.63	0.01	0.07	0.05	1.4
Offsite Motor Vehicle Fugitive PM	--	--	--	--	47.51	4.71	
<b>Offsite Total</b>	<b>0.27</b>	<b>2.03</b>	<b>0.63</b>	<b>0.01</b>	<b>47.58</b>	<b>4.76</b>	<b>1.4</b>
<b>Total</b>	<b>1.02</b>	<b>6.57</b>	<b>4.56</b>	<b>0.02</b>	<b>47.74</b>	<b>4.91</b>	<b>4.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor Trailer	60	1	4	8
Rough Terrain Crane (L)	275	1	4	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
Rough Terrain Crane (L)	275	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor Trailer	0.23	2.42	1.54	0.00	0.07	0.07
Rough Terrain Crane (L)	0.51	2.12	2.39	0.01	0.09	0.08
<b>Total</b>	<b>0.75</b>	<b>4.54</b>	<b>3.93</b>	<b>0.02</b>	<b>0.16</b>	<b>0.15</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor Trailer	0.7	0.0	0.7
Rough Terrain Crane (L)	2.0	0.0	2.0
<b>Total</b>	<b>2.6</b>	<b>0.0</b>	<b>2.6</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
1-Ton Crew Cab, 4x4	2	4	N/A	5
1-Ton Flat Bed, 4x4	2	4	N/A	20
Flat Bed Truck/Trailer	1	4	N/A	20
Worker Commute	8	4	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Flat Bed Truck/Trailer	HHV	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 24**  
**500 kV Transmission Line Construction Emissions**  
**Tower Removal**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
1-Ton Flat Bed, 4x4	0.04	0.24	0.25	0.00	0.01	0.01
Flat Bed Truck/Trailer	0.02	0.09	0.19	0.00	0.01	0.01
Worker Commute	0.21	1.65	0.14	0.01	0.05	0.03
<b>Offsite Total</b>	<b>0.27</b>	<b>2.03</b>	<b>0.63</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>
<b>Total</b>	<b>0.27</b>	<b>2.03</b>	<b>0.63</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1-Ton Crew Cab, 4x4	0.1	0.0	0.1
1-Ton Flat Bed, 4x4	0.2	0.0	0.2
Flat Bed Truck/Trailer	0.2	0.0	0.2
Worker Commute	1.0	0.0	1.0
<b>Offsite Total</b>	<b>1.4</b>	<b>0.0</b>	<b>1.4</b>
<b>Total</b>	<b>1.4</b>	<b>0.0</b>	<b>1.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.ciimateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.ciimateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1-Ton Crew Cab, 4x4	2	Unpaved	5	0.556	0.056	5.56	0.56
1-Ton Flat Bed, 4x4	2	Unpaved	20	0.556	0.056	22.26	2.23
Flat Bed Truck/Trailer	1	Unpaved	20	0.965	0.097	19.30	1.93
Worker Commute	8	Paved	60	0.001	0.000	0.38	0.00
<b>Offsite Total</b>						<b>47.51</b>	<b>4.71</b>
<b>Total</b>						<b>47.51</b>	<b>4.71</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 25**  
**500 kV Transmission Line Construction Emissions**  
**Foundation Removal**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.48	5.92	2.51	0.01	0.11	0.10	0.9
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.48</b>	<b>5.92</b>	<b>2.51</b>	<b>0.01</b>	<b>0.11</b>	<b>0.10</b>	<b>0.9</b>
Offsite Motor Vehicle Exhaust	0.13	0.97	0.22	0.00	0.03	0.02	0.6
Offsite Motor Vehicle Fugitive PM	--	--	--	--	22.28	2.21	
<b>Offsite Total</b>	<b>0.13</b>	<b>0.97</b>	<b>0.22</b>	<b>0.00</b>	<b>22.31</b>	<b>2.23</b>	<b>0.6</b>
<b>Total</b>	<b>0.61</b>	<b>6.89</b>	<b>2.73</b>	<b>0.01</b>	<b>22.42</b>	<b>2.33</b>	<b>1.5</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor Trailer	60	1	2	8
Backhoe/Front Loader	125	1	2	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor Trailer	0.23	2.42	1.54	0.00	0.07	0.07
Backhoe/Front Loader	0.25	3.50	0.97	0.01	0.04	0.04
<b>Total</b>	<b>0.48</b>	<b>5.92</b>	<b>2.51</b>	<b>0.01</b>	<b>0.11</b>	<b>0.10</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor Trailer	0.3	0.0	0.3
Backhoe/Front Loader	0.6	0.0	0.6
<b>Total</b>	<b>0.9</b>	<b>0.0</b>	<b>0.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
1-Ton Crew Cab, 4x4	1	4	N/A	5
Dump Truck	1	2	N/A	20
Worker Commute	4	4	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Dump Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 25**  
**500 kV Transmission Line Construction Emissions**  
**Foundation Removal**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab, 4x4	0.00	0.03	0.03	0.00	0.00	0.00
Dump Truck	0.02	0.12	0.12	0.00	0.01	0.00
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.13</b>	<b>0.97</b>	<b>0.22</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>
<b>Total</b>	<b>0.13</b>	<b>0.97</b>	<b>0.22</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1-Ton Crew Cab, 4x4	0.0	0.0	0.0
Dump Truck	0.1	0.0	0.1
Worker Commute	0.5	0.0	0.5
<b>Offsite Total</b>	<b>0.6</b>	<b>0.0</b>	<b>0.6</b>
<b>Total</b>	<b>0.6</b>	<b>0.0</b>	<b>0.6</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1-Ton Crew Cab, 4x4	1	Unpaved	5	0.556	0.056	2.78	0.28
Dump Truck	1	Unpaved	20	0.965	0.097	19.30	1.93
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>22.28</b>	<b>2.21</b>
<b>Total</b>						<b>22.28</b>	<b>2.21</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 26**  
**500 kV Transmission Line Construction Emissions**  
**Tower Foundations Installation**

Emissions Summary							
Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.73	13.83	6.02	0.05	0.23	0.21	53.6
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	--
Earthwork Fugitive PM	--	--	--	--	0.20	0.04	--
<b>Onsite Total</b>	<b>1.73</b>	<b>13.83</b>	<b>6.02</b>	<b>0.05</b>	<b>0.43</b>	<b>0.26</b>	<b>53.6</b>
Offsite Motor Vehicle Exhaust	0.28	2.10	0.64	0.01	0.08	0.05	10.1
Offsite Motor Vehicle Fugitive PM	--	--	--	--	48.42	4.80	--
<b>Offsite Total</b>	<b>0.28</b>	<b>2.10</b>	<b>0.64</b>	<b>0.01</b>	<b>48.49</b>	<b>4.85</b>	<b>10.1</b>
<b>Total</b>	<b>2.01</b>	<b>15.93</b>	<b>6.66</b>	<b>0.06</b>	<b>48.92</b>	<b>5.11</b>	<b>63.6</b>

Construction Equipment Summary				
Equipment	Horse-power	Number	Days Used	Hours Used/Day
Boom/Crane Truck	350	1	30	7
Backhoe/Front Loader	125	1	30	10
Low Drill	385	1	16	10

Construction Equipment Exhaust Emission Factors										
Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
Low Drill	385	0.071	0.551	0.162	0.003	0.006	0.005	311.309	0.006	Bore/Drill Rigs

<sup>a</sup> From Table 53  
<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10  
 PM2.5 Fraction= 0.920  
 From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5  
 and PM 2.5 Significance Thresholds, SCAQMD, October 2006,  
[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

Construction Equipment Daily Criteria Pollutant Exhaust Emissions						
Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Boom/Crane Truck	0.60	2.47	2.78	0.01	0.10	0.09
Backhoe/Front Loader	0.42	5.84	1.61	0.01	0.07	0.07
Low Drill	0.71	5.51	1.62	0.03	0.06	0.05
<b>Total</b>	<b>1.73</b>	<b>13.83</b>	<b>6.02</b>	<b>0.05</b>	<b>0.23</b>	<b>0.21</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions			
Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Boom/Crane Truck	17.2	0.0	17.2
Backhoe/Front Loader	13.8	0.0	13.8
Low Drill	22.6	0.0	22.6
<b>Total</b>	<b>53.5</b>	<b>0.0</b>	<b>53.6</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 53  
<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Usage				
Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	2	30	N/A	5
Water Truck	1	30	N/A	5
Dump Truck	1	30	N/A	10
Concrete Mixer Truck	3	18	N/A	10
Worker Commute	9	30	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed



**Table 26**  
**500 kV Transmission Line Construction Emissions**  
**Tower Foundations Installation**

Motor Vehicle Exhaust Emission Factors									
Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Concrete Mixer Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions						
Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
Water Truck	0.00	0.02	0.05	0.00	0.00	0.00
Dump Truck	0.01	0.04	0.09	0.00	0.00	0.00
Concrete Mixer Truck	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.24	1.85	0.16	0.01	0.05	0.03
<b>Offsite Total</b>	<b>0.28</b>	<b>2.10</b>	<b>0.64</b>	<b>0.01</b>	<b>0.08</b>	<b>0.05</b>
<b>Total</b>	<b>0.28</b>	<b>2.10</b>	<b>0.64</b>	<b>0.01</b>	<b>0.08</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions			
Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	0.0	0.0	0.0
Water Truck	0.3	0.0	0.3
Dump Truck	0.6	0.0	0.6
Concrete Mixer Truck	1.0	0.0	1.0
Worker Commute	8.2	0.0	8.2
<b>Offsite Total</b>	<b>10.0</b>	<b>0.0</b>	<b>10.1</b>
<b>Total</b>	<b>10.0</b>	<b>0.0</b>	<b>10.1</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

<sup>a</sup> From Table 56

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Fugitive Particulate Matter Emissions							
Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	2	Unpaved	5	0.455	0.046	4.55	0.46
Water Truck	1	Unpaved	5	0.965	0.097	4.83	0.48
Dump Truck	1	Unpaved	10	0.965	0.097	9.65	0.97
Concrete Mixer Truck	3	Unpaved	10	0.965	0.097	28.95	2.90
Worker Commute	9	Paved	60	0.001	0.000	0.43	0.00
<b>Offsite Total</b>						<b>48.42</b>	<b>4.80</b>
<b>Total</b>						<b>48.42</b>	<b>4.80</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions						
Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	200	9.94E-04	2.07E-04	0.20	0.04
Buildozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.20</b>	<b>0.04</b>

<sup>a</sup> From Table 57

**Table 26**  
**500 kV Transmission Line Construction Emissions**  
**Tower Foundations Installation**

<sup>a</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]  
<sup>b</sup> Estimate

**Table 26b**  
**500 kV Transmission Line Construction Emissions**  
**Install Micropile Foundations**

Emissions Summary							
Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.15	15.80	7.68	0.03	0.24	0.22	104.7
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>1.15</b>	<b>15.80</b>	<b>7.68</b>	<b>0.03</b>	<b>0.24</b>	<b>0.22</b>	<b>104.7</b>
Offsite Motor Vehicle Exhaust	0.16	1.23	0.10	0.00	0.03	0.02	17.4
Offsite Helicopter Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.29	0.00	
<b>Offsite Total</b>	<b>0.16</b>	<b>1.23</b>	<b>0.10</b>	<b>0.00</b>	<b>0.32</b>	<b>0.02</b>	<b>17.4</b>
<b>Total</b>	<b>1.30</b>	<b>17.03</b>	<b>7.78</b>	<b>0.03</b>	<b>0.56</b>	<b>0.24</b>	<b>122.1</b>

Construction Equipment Summary				
Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor	150	1	96	8
Grout Machine	60	1	80	8
Drill Rig	75	1	96	8
Transfer Pump	60	1	80	8

Note: Helicopter use accounted for in Table 29c

Construction Equipment Exhaust Emission Factors										
Equipment	Horse-power	0.042814	0.500686	0.28637	0.001746	0.0041623	PM2.5 (lb/hr) <sup>b</sup>	164.8678	0.003863	Category
Compressor	150	0.042	0.500	0.219	0.001	0.010	0.010	88.483	0.004	Air Compressors
Grout Machine	60	0.038	0.504	0.273	0.001	0.009	0.008	80.859	0.003	Other Construction Equipment
Drill Rig	75	0.025	0.466	0.195	0.001	0.002	0.002	77.122	0.002	Bore/Drill Rigs
Transfer Pump	60	0.038	0.504	0.273	0.001	0.009	0.008	80.859	0.003	Other Construction Equipment

<sup>a</sup> From Table 53  
<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10  
 PM2.5 Fraction = 0.920  
 From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006,  
[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

Construction Equipment Daily Criteria Pollutant Exhaust Emissions						
Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor	0.34	4.00	1.75	0.01	0.08	0.08
Grout Machine	0.30	4.04	2.18	0.01	0.07	0.06
Drill Rig	0.20	3.73	1.56	0.01	0.02	0.01
Transfer Pump	0.30	4.04	2.18	0.01	0.07	0.06
<b>Total</b>	<b>1.15</b>	<b>15.80</b>	<b>7.68</b>	<b>0.03</b>	<b>0.24</b>	<b>0.22</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions			
Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor	30.8	0.0	30.9
Grout Machine	23.5	0.0	23.5
Drill Rig	26.9	0.0	26.9
Transfer Pump	23.5	0.0	23.5
<b>Total</b>	<b>104.6</b>	<b>0.0</b>	<b>104.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 53  
<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Usage				
Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
Worker Commute	6	96	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 26b**  
**500 kV Transmission Line Construction Emissions**  
**Install Micropile Foundations**

Motor Vehicle Exhaust Emission Factors									
Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions						
Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.16	1.23	0.10	0.00	0.03	0.02
<b>Offsite Total</b>	<b>0.16</b>	<b>1.23</b>	<b>0.10</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>
<b>Total</b>	<b>0.16</b>	<b>1.23</b>	<b>0.10</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions			
Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Worker Commute	17.4	0.0	17.4
<b>Offsite Total</b>	<b>17.4</b>	<b>0.0</b>	<b>17.4</b>
<b>Total</b>	<b>17.4</b>	<b>0.0</b>	<b>17.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

<sup>a</sup> From Table 56

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Fugitive Particulate Matter Emissions							
Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Worker Commute	6	Paved	60	0.001	0.000	0.29	0.00
<b>Offsite Total</b>						<b>0.29</b>	<b>0.00</b>
<b>Total</b>						<b>0.29</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions						
Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Estimate

**Table 27**  
**500 kV Transmission Line Construction Emissions**  
**Tower Steel Haul**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.18	2.65	0.59	0.01	0.02	0.02	2.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.18</b>	<b>2.65</b>	<b>0.59</b>	<b>0.01</b>	<b>0.02</b>	<b>0.02</b>	<b>2.0</b>
Offsite Motor Vehicle Exhaust	0.13	0.97	0.32	0.00	0.04	0.02	1.7
Offsite Motor Vehicle Fugitive PM	--	--	--	--	25.06	2.49	
<b>Offsite Total</b>	<b>0.13</b>	<b>0.97</b>	<b>0.32</b>	<b>0.00</b>	<b>25.10</b>	<b>2.51</b>	<b>1.7</b>
<b>Total</b>	<b>0.31</b>	<b>3.62</b>	<b>0.90</b>	<b>0.01</b>	<b>25.12</b>	<b>2.53</b>	<b>3.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Rough Terrain Forklift	125	1	10	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Rough Terrain Forklift	125	0.023	0.331	0.073	0.001	0.003	0.003	56.054	0.002	Forklifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Rough Terrain Forklift	0.18	2.65	0.59	0.01	0.02	0.02
<b>Total</b>	<b>0.18</b>	<b>2.65</b>	<b>0.59</b>	<b>0.01</b>	<b>0.02</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Rough Terrain Forklift	2.0	0.0	2.0
<b>Total</b>	<b>2.0</b>	<b>0.0</b>	<b>2.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
1-Ton Crew Cab Flat Bed, 4x4	2	10	N/A	5
Flat Bed Truck/Trailer	1	10	N/A	20
Worker Commute	4	10	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Flat Bed Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 27**  
**500 kV Transmission Line Construction Emissions**  
**Tower Steel Haul**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab Flat Bed, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
Flat Bed Truck/Trailer	0.02	0.09	0.19	0.00	0.01	0.01
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.13</b>	<b>0.97</b>	<b>0.32</b>	<b>0.00</b>	<b>0.04</b>	<b>0.02</b>
<b>Total</b>	<b>0.13</b>	<b>0.97</b>	<b>0.32</b>	<b>0.00</b>	<b>0.04</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1-Ton Crew Cab Flat Bed, 4x4	0.1	0.0	0.1
Flat Bed Truck/Trailer	0.4	0.0	0.4
Worker Commute	1.2	0.0	1.2
<b>Offsite Total</b>	<b>1.7</b>	<b>0.0</b>	<b>1.7</b>
<b>Total</b>	<b>1.7</b>	<b>0.0</b>	<b>1.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1-Ton Crew Cab Flat Bed, 4x4	2	Unpaved	5	0.556	0.056	5.56	0.56
Flat Bed Truck/Trailer	1	Unpaved	20	0.965	0.097	19.30	1.93
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>25.06</b>	<b>2.49</b>
<b>Total</b>						<b>25.06</b>	<b>2.49</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 28**  
**500 kV Transmission Line Construction Emissions**  
**Tower Steel Assembly**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.70	5.79	3.60	0.02	0.14	0.13	25.2
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.70</b>	<b>5.79</b>	<b>3.60</b>	<b>0.02</b>	<b>0.14</b>	<b>0.13</b>	<b>25.2</b>
Offsite Motor Vehicle Exhaust	0.29	2.24	0.36	0.01	0.07	0.04	13.7
Offsite Motor Vehicle Fugitive PM	--	--	--	--	15.15	1.47	
<b>Offsite Total</b>	<b>0.29</b>	<b>2.24</b>	<b>0.36</b>	<b>0.01</b>	<b>15.22</b>	<b>1.51</b>	<b>13.7</b>
<b>Total</b>	<b>0.98</b>	<b>8.03</b>	<b>3.96</b>	<b>0.02</b>	<b>15.36</b>	<b>1.64</b>	<b>38.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Rough Terrain Forklift	125	1	40	6
RT Crane (M)	215	1	40	6
Compressor Trailer	60	1	40	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Rough Terrain Forklift	125	0.023	0.331	0.073	0.001	0.003	0.003	56.054	0.002	Forklifts
RT Crane (M)	215	0.054	0.232	0.271	0.001	0.009	0.009	112.159	0.005	Cranes
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Rough Terrain Forklift	0.14	1.99	0.44	0.00	0.02	0.02
RT Crane (M)	0.33	1.39	1.62	0.01	0.06	0.05
Compressor Trailer	0.23	2.42	1.54	0.00	0.07	0.07
<b>Total</b>	<b>0.70</b>	<b>5.79</b>	<b>3.60</b>	<b>0.02</b>	<b>0.14</b>	<b>0.13</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Rough Terrain Forklift	6.1	0.0	6.1
RT Crane (M)	12.2	0.0	12.2
Compressor Trailer	6.8	0.0	6.8
<b>Total</b>	<b>25.1</b>	<b>0.0</b>	<b>25.2</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	2	40	N/A	10
1-Ton Crew Cab Flat Bed, 4x4	2	40	N/A	5
Worker Commute	10	40	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 28**  
**500 kV Transmission Line Construction Emissions**  
**Tower Steel Assembly**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.02	0.12	0.12	0.00	0.01	0.00
1-Ton Crew Cab Flat Bed, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
<b>Offsite Total</b>	<b>0.29</b>	<b>2.24</b>	<b>0.36</b>	<b>0.01</b>	<b>0.07</b>	<b>0.04</b>
<b>Total</b>	<b>0.29</b>	<b>2.24</b>	<b>0.36</b>	<b>0.01</b>	<b>0.07</b>	<b>0.04</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	1.0	0.0	1.0
1-Ton Crew Cab Flat Bed, 4x4	0.5	0.0	0.5
Worker Commute	12.1	0.0	12.1
<b>Offsite Total</b>	<b>13.7</b>	<b>0.0</b>	<b>13.7</b>
<b>Total</b>	<b>13.7</b>	<b>0.0</b>	<b>13.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	2	Unpaved	10	0.455	0.046	9.10	0.91
1-Ton Crew Cab Flat Bed, 4x4	2	Unpaved	5	0.556	0.056	5.56	0.56
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
<b>Offsite Total</b>						<b>15.15</b>	<b>1.47</b>
<b>Total</b>						<b>15.15</b>	<b>1.47</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

a From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]



**Table 29**  
**500 kV Transmission Line Construction Emissions**  
**Tower Erection**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.07	5.93	5.55	0.02	0.21	0.20	17.7
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>1.07</b>	<b>5.93</b>	<b>5.55</b>	<b>0.02</b>	<b>0.21</b>	<b>0.20</b>	<b>17.7</b>
Offsite Motor Vehicle Exhaust	0.38	2.91	0.67	0.01	0.09	0.06	15.2
Offsite Motor Vehicle Fugitive PM	--	--	--	--	37.75	3.72	
<b>Offsite Total</b>	<b>0.38</b>	<b>2.91</b>	<b>0.67</b>	<b>0.01</b>	<b>37.85</b>	<b>3.78</b>	<b>15.2</b>
<b>Total</b>	<b>1.46</b>	<b>8.84</b>	<b>6.22</b>	<b>0.03</b>	<b>38.06</b>	<b>3.98</b>	<b>33.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor Trailer	60	1	33	8
RT Crane (M)	215	1	22	6
RT Crane (L)	275	1	11	6

Note: Helicopter use accounted for in Table 29c

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
RT Crane (M)	215	0.054	0.232	0.271	0.001	0.009	0.009	112.159	0.005	Cranes
RT Crane (L)	275	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor Trailer	0.23	2.42	1.54	0.00	0.07	0.07
RT Crane (M)	0.33	1.39	1.62	0.01	0.06	0.05
RT Crane (L)	0.51	2.12	2.39	0.01	0.09	0.08
<b>Total</b>	<b>1.07</b>	<b>5.93</b>	<b>5.55</b>	<b>0.02</b>	<b>0.21</b>	<b>0.20</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor Trailer	5.6	0.0	5.6
RT Crane (M)	6.7	0.0	6.7
RT Crane (L)	5.4	0.0	5.4
<b>Total</b>	<b>17.7</b>	<b>0.0</b>	<b>17.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateaction.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateaction.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	3	33	N/A	15
1-Ton Crew Cab Flat Bed, 4x4	2	33	N/A	15
Worker Commute	12	33	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 29**  
**500 kV Transmission Line Construction Emissions**  
**Tower Erection**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.04	0.27	0.28	0.00	0.01	0.01
1-Ton Crew Cab Flat Bed, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
Worker Commute	0.31	2.47	0.21	0.01	0.07	0.05
<b>Offsite Total</b>	<b>0.38</b>	<b>2.91</b>	<b>0.67</b>	<b>0.01</b>	<b>0.09</b>	<b>0.06</b>
<b>Total</b>	<b>0.38</b>	<b>2.91</b>	<b>0.67</b>	<b>0.01</b>	<b>0.09</b>	<b>0.06</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	1.9	0.0	1.9
1-Ton Crew Cab Flat Bed, 4x4	1.3	0.0	1.3
Worker Commute	12.0	0.0	12.0
<b>Offsite Total</b>	<b>15.2</b>	<b>0.0</b>	<b>15.2</b>
<b>Total</b>	<b>15.2</b>	<b>0.0</b>	<b>15.2</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	3	Unpaved	15	0.455	0.046	20.48	2.05
1-Ton Crew Cab Flat Bed, 4x4	2	Unpaved	15	0.556	0.056	16.69	1.67
Worker Commute	12	Paved	60	0.001	0.000	0.58	0.00
<b>Offsite Total</b>						<b>37.75</b>	<b>3.72</b>
<b>Total</b>						<b>37.75</b>	<b>3.72</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 29b

**500 kV Transmission Line Construction Emissions  
Tower Erection (Helicopter) Ground Support**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.0</b>
Offsite Motor Vehicle Exhaust	0.59	4.56	0.81	0.01	0.14	0.09	5.0
Offsite Helicopter Exhaust	0.23	2.42	1.54	0.00	0.07	0.07	1.36
Offsite Motor Vehicle Fugitive PM	--	--	--	--	42.75	4.18	
<b>Offsite Total</b>	<b>0.82</b>	<b>6.98</b>	<b>2.35</b>	<b>0.02</b>	<b>42.96</b>	<b>4.34</b>	<b>6.4</b>
<b>Total</b>	<b>0.82</b>	<b>6.98</b>	<b>2.35</b>	<b>0.02</b>	<b>42.96</b>	<b>4.34</b>	<b>6.4</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor Trailer	60	1	8	8

Note: Helicopter use accounted for in Table 29c

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor Trailer	0.23	2.42	1.54	0.00	0.07	0.07
<b>Total</b>	<b>0.23</b>	<b>2.42</b>	<b>1.54</b>	<b>0.00</b>	<b>0.07</b>	<b>0.07</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor Trailer	1.4	0.0	1.4
<b>Total</b>	<b>1.4</b>	<b>0.0</b>	<b>1.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	2	2	N/A	15
1-Ton Truck, 4x4	2	2	N/A	15
Fuel, Helicopter Support Truck	1	2	N/A	15
Worker Commute	20	8	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Fuel, Helicopter Support Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 29b**  
**500 kV Transmission Line Construction Emissions**  
**Tower Erection (Helicopter) Ground Support**

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions						
Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
1-Ton Truck, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
Fuel, Helicopter Support Truck	0.01	0.09	0.09	0.00	0.00	0.00
Worker Commute	0.52	4.11	0.35	0.01	0.12	0.08
<b>Offsite Total</b>	<b>0.59</b>	<b>4.56</b>	<b>0.81</b>	<b>0.01</b>	<b>0.14</b>	<b>0.09</b>
<b>Total</b>	<b>0.59</b>	<b>4.56</b>	<b>0.81</b>	<b>0.01</b>	<b>0.14</b>	<b>0.09</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions			
Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	0.1	0.0	0.1
1-Ton Truck, 4x4	0.1	0.0	0.1
Fuel, Helicopter Support Truck	0.0	0.0	0.0
Worker Commute	4.8	0.0	4.8
<b>Offsite Total</b>	<b>5.0</b>	<b>0.0</b>	<b>5.0</b>
<b>Total</b>	<b>5.0</b>	<b>0.0</b>	<b>5.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008. [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Fugitive Particulate Matter Emissions							
Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	2	Unpaved	15	0.455	0.046	13.66	1.37
1-Ton Truck, 4x4	2	Unpaved	15	0.455	0.046	13.66	1.37
Fuel, Helicopter Support Truck	1	Unpaved	15	0.965	0.097	14.48	1.45
Worker Commute	20	Paved	60	0.001	0.000	0.96	0.00
<b>Offsite Total</b>						<b>42.75</b>	<b>4.18</b>
<b>Total</b>						<b>42.75</b>	<b>4.18</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions						
Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 29c

**500 kV Transmission Line Construction Emissions  
Tower Helicopter Operations**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.0</b>
Offsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Offsite Helicopter Exhaust	46.71	56.80	577.42	32.18	12.02	12.02	1626.43
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
<b>Offsite Total</b>	<b>46.71</b>	<b>56.80</b>	<b>577.42</b>	<b>32.18</b>	<b>12.02</b>	<b>12.02</b>	<b>1626.4</b>
<b>Total</b>	<b>46.71</b>	<b>56.80</b>	<b>577.42</b>	<b>32.18</b>	<b>12.02</b>	<b>12.02</b>	<b>1626.4</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Kaman K-Max	1500	1	120	8
Hughes 500E Helicopter	317	1	127	12
Sikorsky S64	9000	1	7	12

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Kaman K-Max	1500	1.129	1.353	7.403	0.626	0.201	0.201	1978.170	0.055	See note c
Hughes 500E Helicopter	317	2.106	2.645	1.067	0.218	0.035	0.035	676.039	0.019	See note c
Sikorsky S64	9000	1.786	2.088	47.051	2.464	0.966	0.966	7788.012	0.216	See note c

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction = 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

<sup>c</sup> All except SOx, PM2.5, CO2, and CH4 from Guidance on the Determination of Helicopter Emissions, Federal Department of the Environment, Transport, Energy and Communications,

DETEC, Federal Office of Civil Aviation FOCA, Division Aviation Policy and Strategy, Swiss Confederation, March 2009.

Downloaded from <http://www.bazl.admin.ch/experten/regulation/03312/03419/03532/index.html?lang=en>

PM2.5 emissions assumed equal to PM10

SOx emissions [lb/hr] = Fuel use [kg/hr] x 1000 [g/kg] / 453.6 [g/lb] x Fuel sulfur [wt. %] / 100 x 2 [lb SO2/lbS]

K-Max Fuel use = 283.86 kg/hr from Guidance on the Determination of Helicopter Emissions

Hughes 500E Fuel use = 98.8 kg/hr from Guidance on the Determination of Helicopter Emissions

Sikorsky S64 Fuel use = 1,118 kg/hr from Guidance on the Determination of Helicopter Emissions

Fuel sulfur = 0.05% from estimated average for Jet A

CO2 emissions [lb/hr] = CO2 emission factor [kg/gal] x 1000 [g/kg] / 453.6 [g/lb] x Fuel use [kg/hr] x 1000 [g/kg] / 453.6 [g/lb] / Fuel density [lb/gal]

CO2 emission factor = 9.75 kg/gal from Table 13.1 of 2013 Climate Registry Default Emission Factors, downloaded from

<http://www.theclimaterestry.org/downloads/2013/01/2013-Climat-Registry-Default-Emissions-Factors.pdf>

CH4 emission factor = 0.27 g/gal from Table 13.7 of 2013 Climate Registry Default Emission Factors

K-Max Fuel use = 283.86 kg/hr from Guidance on the Determination of Helicopter Emissions

Hughes 500E Fuel use = 98.8 kg/hr from Guidance on the Determination of Helicopter Emissions

Sikorsky S64 Fuel use = 1,118 kg/hr from Guidance on the Determination of Helicopter Emissions

Jet-A density = 6.8 lb/gal

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Kaman K-Max	9.03	10.83	59.22	5.01	1.60	1.60
Hughes 500E Helicopter	25.27	31.74	12.80	2.61	0.42	0.42
Sikorsky S64	21.44	25.06	564.62	29.57	11.60	11.60
<b>Total<sup>b</sup></b>	<b>46.71</b>	<b>56.80</b>	<b>577.42</b>	<b>32.18</b>	<b>12.02</b>	<b>12.02</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

<sup>b</sup> Total daily emissions assume that the Kaman K-Max and Sikorsky S64 would not operate on the same day.

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Kaman K-Max	861.4	0.0	861.9
Hughes 500E Helicopter	467.3	0.0	467.6
Sikorsky S64	296.7	0.0	296.9
<b>Total</b>	<b>1,625.5</b>	<b>0.0</b>	<b>1,626.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO2-equivalent (CO2e) emission factors are CO2 emissions plus 21 x CH4 emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateestry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateestry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

**Table 29c**  
**500 kV Transmission Line Construction Emissions**  
**Tower Helicopter Operations**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				
<b>Offsite</b>				
None				

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed.

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Fuel, Helicopter Support Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 29c**  
**500 kV Transmission Line Construction Emissions**  
**Tower Helicopter Operations**

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions						
Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.00	0.00	0.00	0.00	0.00	0.00
1-Ton Truck, 4x4	0.00	0.00	0.00	0.00	0.00	0.00
Fuel, Helicopter Support Truck	0.00	0.00	0.00	0.00	0.00	0.00
Worker Commute	0.00	0.00	0.00	0.00	0.00	0.00
<b>Offsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions			
Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	0.0	0.0	0.0
1-Ton Truck, 4x4	0.0	0.0	0.0
Fuel, Helicopter Support Truck	0.0	0.0	0.0
Worker Commute	0.0	0.0	0.0
<b>Offsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008. [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Fugitive Particulate Matter Emissions							
Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
None						0.00	0.00
<b>Offsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Total</b>						<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Table 30**  
**500 kV Transmission Line Construction Emissions**  
**Wire Stringing**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	5.93	32.28	29.00	0.15	1.00	0.92	0.00
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>5.93</b>	<b>32.28</b>	<b>29.00</b>	<b>0.15</b>	<b>1.00</b>	<b>0.92</b>	<b>0.0</b>
Offsite Motor Vehicle Exhaust	1.70	12.93	3.12	0.04	0.42	0.29	18.5
Offsite Helicopter Exhaust	12.64	15.87	6.40	1.31	0.21	0.21	0.00
Offsite Motor Vehicle Fugitive PM	--	--	--	--	173.42	17.08	
<b>Offsite Total</b>	<b>14.34</b>	<b>28.80</b>	<b>9.52</b>	<b>1.35</b>	<b>174.06</b>	<b>17.58</b>	<b>18.5</b>
<b>Total</b>	<b>20.27</b>	<b>61.08</b>	<b>38.52</b>	<b>1.51</b>	<b>175.06</b>	<b>18.50</b>	<b>18.5</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Bucket Truck	250	2	9	8
RT Crane (M)	215	2	9	6
Boom/Crane Truck	350	2	9	6
Spacing Cart	10	2	3	8
Static Truck/Tensioner	350	1	9	6
3 Drum Straw Sock Puller	300	1	4	6
Bull Wheel Puller	525	1	5	6
Sag Cat w/ winches	350	2	9	4
Backhoe/Front Loader	125	1	9	4
D8 Cat	350	2	9	4
Hughes 500 E Helicopter	N/A	1	2	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Bucket Truck	250	0.058	0.371	0.366	0.002	0.011	0.010	212.856	0.005	Aerial Lifts
RT Crane (M)	215	0.054	0.232	0.271	0.001	0.009	0.009	112.159	0.005	Cranes
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Spacing Cart	10	0.012	0.062	0.074	0.000	0.003	0.003	10.107	0.001	Other Construction Equipment
Static Truck/Tensioner	350	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment
3 Drum Straw Sock Puller	300	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment
Bull Wheel Puller	525	0.044	0.347	0.202	0.001	0.007	0.006	122.505	0.004	Other Construction Equipment
Sag Cat w/ winches	350	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
D8 Cat	350	0.139	0.588	0.753	0.003	0.028	0.026	259.229	0.013	Crawler Tractors
Hughes 500 E Helicopter	317	2.106	2.645	1.067	0.218	0.035	0.035	676.039		See note c

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

<sup>c</sup> All except SOx, PM2.5 and CO2 from Guidance on the Determination of Helicopter Emissions, Federal Department of the Environment, Transport, Energy and Communications, DETEC, Federal Office of

Civil Aviation FOCA, Division Aviation Policy and Strategy, Swiss Confederation, March 2009. Downloaded from <http://www.bazl.admin.ch/fachleute/01169/01174/01628/index.html?lang=en>

PM2.5 emissions assumed equal to PM10

SOx emissions [lb/hr] = Fuel use [kg/hr] x 1000 [g/kg] / 453.6 [g/lb] x Fuel sulfur [wt. %] / 100 x 2 [lb SO2/lbS]

Fuel use = 98.8 kg/hr from Guidance on the Determination of Helicopter Emissions

Fuel sulfur = 0.05% from estimated average for Jet-A

CO2 emissions [lb/hr] = CO2 emission factor [kg/gal] x 1000 [g/kg] / 453.6 [g/lb] x Fuel use [kg/hr] x 1000 [g/kg] / 453.6 [g/lb] / Fuel density [lb/gal]

CO2 emission factor = 9.57 kg/gal from Table C.3 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008.

Downloaded from [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Fuel use = 98.8 kg/hr from Guidance on the Determination of Helicopter Emissions

Jet-A density = 6.8 lb/gal



**Table 30**  
**500 kV Transmission Line Construction Emissions**  
**Wire Stringing**

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Bucket Truck	0.93	5.94	5.86	0.03	0.17	0.16
RT Crane (M)	0.65	2.78	3.25	0.02	0.11	0.10
Boom/Crane Truck	1.03	4.24	4.77	0.02	0.18	0.16
Spacing Cart	0.19	0.99	1.18	0.00	0.05	0.04
Static Truck/Tensioner	0.48	2.76	1.82	0.01	0.06	0.05
3 Drum Straw Sock Puller	0.48	2.76	1.82	0.01	0.06	0.05
Bull Wheel Puller	0.27	2.08	1.21	0.01	0.04	0.04
Sag Cat w/ winches	0.63	3.68	2.43	0.02	0.08	0.07
Backhoe/Front Loader	0.17	2.34	0.65	0.00	0.03	0.03
D8 Cat	1.11	4.70	6.02	0.02	0.22	0.21
Hughes 500 E Helicopter	12.64	15.87	6.40	1.31	0.21	0.21
<b>Total</b>	<b>18.56</b>	<b>48.15</b>	<b>35.40</b>	<b>1.46</b>	<b>1.21</b>	<b>1.13</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Bucket Truck	13.9	0.0	13.9
RT Crane (M)	5.5	0.0	5.5
Boom/Crane Truck	8.8	0.0	8.8
Spacing Cart	0.2	0.0	0.2
Static Truck/Tensioner	6.2	0.0	6.2
3 Drum Straw Sock Puller	2.8	0.0	2.8
Bull Wheel Puller	1.7	0.0	1.7
Sag Cat w/ winches	8.3	0.0	8.3
Backhoe/Front Loader	1.7	0.0	1.7
D8 Cat	8.5	0.0	8.5
Hughes 500 E Helicopter	3.7	0.0	3.7
<b>Total</b>	<b>61.2</b>	<b>0.0</b>	<b>61.2</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	4	9	N/A	20
1-Ton Crew Cab, 4x4	6	9	N/A	20
Wire Truck/Trailer	4	6	N/A	5
Dump Truck	1	9	N/A	5
Lowboy Truck/Trailer	3	9	N/A	15
Fuel, Helicopter Support Truck	1	2	N/A	30
Worker Commute	55	9	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Wire Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Fuel, Helicopter Support Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 30**  
**500 kV Transmission Line Construction Emissions**  
**Wire Stringing**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.07	0.48	0.49	0.00	0.02	0.02
1-Ton Crew Cab, 4x4	0.11	0.71	0.74	0.00	0.03	0.03
Wire Truck/Trailer	0.02	0.09	0.19	0.00	0.01	0.01
Dump Truck	0.00	0.02	0.05	0.00	0.00	0.00
Lowboy Truck/Trailer	0.04	0.19	0.42	0.00	0.02	0.02
Fuel, Helicopter Support Truck	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	1.44	11.31	0.95	0.04	0.32	0.21
<b>Offsite Total</b>	<b>1.70</b>	<b>12.93</b>	<b>3.12</b>	<b>0.04</b>	<b>0.42</b>	<b>0.29</b>
<b>Total</b>	<b>1.70</b>	<b>12.93</b>	<b>3.12</b>	<b>0.04</b>	<b>0.42</b>	<b>0.29</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	0.9	0.0	0.9
1-Ton Crew Cab, 4x4	1.4	0.0	1.4
Wire Truck/Trailer	0.2	0.0	0.2
Dump Truck	0.1	0.0	0.1
Lowboy Truck/Trailer	0.8	0.0	0.8
Fuel, Helicopter Support Truck	0.1	0.0	0.1
Worker Commute	15.0	0.0	15.0
<b>Offsite Total</b>	<b>18.5</b>	<b>0.0</b>	<b>18.5</b>
<b>Total</b>	<b>18.5</b>	<b>0.0</b>	<b>18.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	4	Unpaved	20	0.455	0.046	36.42	3.64
1-Ton Crew Cab, 4x4	6	Unpaved	20	0.556	0.056	66.77	6.68
Wire Truck/Trailer	4	Unpaved	5	0.965	0.097	19.30	1.93
Dump Truck	1	Unpaved	5	0.965	0.097	4.83	0.48
Lowboy Truck/Trailer	3	Unpaved	15	0.965	0.097	43.43	4.34
Fuel, Helicopter Support Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	55	Paved	60	0.001	0.000	2.64	0.00
<b>Offsite Total</b>						<b>173.42</b>	<b>17.08</b>
<b>Total</b>						<b>173.42</b>	<b>17.08</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 31**  
**500 kV Transmission Line Construction Emissions**  
**Restoration**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.87	6.75	4.42	0.02	0.19	0.17	3.3
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	2.58	0.54	
<b>Onsite Total</b>	<b>0.87</b>	<b>6.75</b>	<b>4.42</b>	<b>0.02</b>	<b>2.77</b>	<b>0.71</b>	<b>3.3</b>
Offsite Motor Vehicle Exhaust	0.20	1.56	0.32	0.01	0.05	0.03	1.0
Offsite Motor Vehicle Fugitive PM	--	--	--	--	20.38	2.00	
<b>Offsite Total</b>	<b>0.20</b>	<b>1.56</b>	<b>0.32</b>	<b>0.01</b>	<b>20.43</b>	<b>2.04</b>	<b>1.0</b>
<b>Total</b>	<b>1.08</b>	<b>8.31</b>	<b>4.75</b>	<b>0.03</b>	<b>23.20</b>	<b>2.75</b>	<b>4.3</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Road Grader	250	1	4	6
Backhoe/Front Loader	125	1	4	4
Drum Type Compactor	100	1	4	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Road Grader	250	0.078	0.355	0.365	0.002	0.013	0.012	172.113	0.007	Graders
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
Drum Type Compactor	100	0.039	0.380	0.265	0.001	0.014	0.013	58.989	0.004	Rollers

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Road Grader	0.47	2.13	2.19	0.01	0.08	0.07
Backhoe/Front Loader	0.17	2.34	0.65	0.00	0.03	0.03
Drum Type Compactor	0.24	2.28	1.59	0.00	0.08	0.08
<b>Total</b>	<b>0.87</b>	<b>6.75</b>	<b>4.42</b>	<b>0.02</b>	<b>0.19</b>	<b>0.17</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Road Grader	1.9	0.0	1.9
Backhoe/Front Loader	0.7	0.0	0.7
Drum Type Compactor	0.6	0.0	0.6
<b>Total</b>	<b>3.3</b>	<b>0.0</b>	<b>3.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
1-Ton Crew Cab, 4x4	2	4	N/A	5
Water Truck	1	4	N/A	5
Lowboy Truck/Trailer	1	4	N/A	10
Worker Commute	7	4	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 31**  
**500 kV Transmission Line Construction Emissions**  
**Restoration**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
Water Truck	0.00	0.02	0.05	0.00	0.00	0.00
Lowboy Truck/Trailer	0.01	0.04	0.09	0.00	0.00	0.00
Worker Commute	0.18	1.44	0.12	0.00	0.04	0.03
<b>Offsite Total</b>	<b>0.20</b>	<b>1.56</b>	<b>0.32</b>	<b>0.01</b>	<b>0.05</b>	<b>0.03</b>
<b>Total</b>	<b>0.20</b>	<b>1.56</b>	<b>0.32</b>	<b>0.01</b>	<b>0.05</b>	<b>0.03</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1-Ton Crew Cab, 4x4	0.1	0.0	0.1
Water Truck	0.0	0.0	0.0
Lowboy Truck/Trailer	0.1	0.0	0.1
Worker Commute	0.8	0.0	0.8
<b>Offsite Total</b>	<b>1.0</b>	<b>0.0</b>	<b>1.0</b>
<b>Total</b>	<b>1.0</b>	<b>0.0</b>	<b>1.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None						0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1-Ton Crew Cab, 4x4	2	Unpaved	5	0.556	0.056	5.56	0.56
Water Truck	1	Unpaved	5	0.965	0.097	4.83	0.48
Lowboy Truck/Trailer	1	Unpaved	10	0.965	0.097	9.65	0.97
Worker Commute	7	Paved	60	0.001	0.000	0.34	0.00
<b>Offsite Total</b>						<b>20.38</b>	<b>2.00</b>
<b>Total</b>						<b>20.38</b>	<b>2.00</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	500	9.94E-04	2.07E-04	0.50	0.10
Bulldozing, Scraping and Grading	hr/day	6	0.348	0.072	2.09	0.43
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>2.58</b>	<b>0.54</b>

a From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Estimate

**Table 32**  
**115 kV Subtransmission Line Construction Emissions**  
**Survey**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.0</b>
Offsite Motor Vehicle Exhaust	0.12	0.96	0.08	0.00	0.03	0.02	2.5
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.22	0.00	
<b>Offsite Total</b>	<b>0.12</b>	<b>0.96</b>	<b>0.08</b>	<b>0.00</b>	<b>0.25</b>	<b>0.02</b>	<b>2.5</b>
<b>Total</b>	<b>0.12</b>	<b>0.96</b>	<b>0.08</b>	<b>0.00</b>	<b>0.25</b>	<b>0.02</b>	<b>2.5</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
None				

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
None		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
None	0.0	0.0	0.0
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				
<b>Offsite</b>				
1-Ton Truck, 4x4	2	18	8	20
Worker Commute	4	18	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
1-Ton Truck, 4x4	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 32**  
**115 kV Subtransmission Line Construction Emissions**  
**Survey**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Truck, 4x4	0.02	0.14	0.01	0.00	0.00	0.00
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.12</b>	<b>0.96</b>	<b>0.08</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>
<b>Total</b>	<b>0.12</b>	<b>0.96</b>	<b>0.08</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1-Ton Truck, 4x4	0.4	0.0	0.4
Worker Commute	2.2	0.0	2.2
<b>Offsite Total</b>	<b>2.5</b>	<b>0.0</b>	<b>2.5</b>
<b>Total</b>	<b>2.5</b>	<b>0.0</b>	<b>2.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None							
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1-Ton Truck, 4x4	2	Paved	20	0.001	0.000	0.03	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.22</b>	<b>0.00</b>
<b>Total</b>						<b>0.22</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 33**  
**115 kV Subtransmission Line Construction Emissions**  
**Marshalling Yard**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.25	2.45	0.98	0.01	0.04	0.03	92.9
Onsite Motor Vehicle Exhaust	0.01	0.08	0.11	0.00	0.01	0.00	8.2
Onsite Motor Vehicle Fugitive PM	--	--	--	--	10.39	1.04	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.26</b>	<b>2.53</b>	<b>1.09</b>	<b>0.01</b>	<b>10.43</b>	<b>1.08</b>	<b>101.1</b>
Offsite Motor Vehicle Exhaust	0.10	0.82	0.07	0.00	0.02	0.02	44.2
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.19	0.00	
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.22</b>	<b>0.02</b>	<b>44.2</b>
<b>Total</b>	<b>0.36</b>	<b>3.35</b>	<b>1.16</b>	<b>0.01</b>	<b>10.65</b>	<b>1.09</b>	<b>145.3</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Boom/Crane Truck	215	1	365	2
Rough Terrain Forklift	125	1	365	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Boom/Crane Truck	215	0.054	0.232	0.271	0.001	0.009	0.009	112.159	0.005	Cranes
Rough Terrain Forklift	125	0.023	0.331	0.073	0.001	0.003	0.003	56.054	0.002	Forklifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction=

0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Boom/Crane Truck	0.11	0.46	0.54	0.00	0.02	0.02
Rough Terrain Forklift	0.14	1.99	0.44	0.00	0.02	0.02
<b>Total</b>	<b>0.25</b>	<b>2.45</b>	<b>0.98</b>	<b>0.01</b>	<b>0.04</b>	<b>0.03</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Boom/Crane Truck	37.1	0.0	37.2
Rough Terrain Forklift	55.7	0.0	55.7
<b>Total</b>	<b>92.8</b>	<b>0.0</b>	<b>92.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
1-Ton Crew Cab, 4x4	1	365	4	10
Truck, Semi Tractor	1	365	2	5
<b>Offsite</b>				
Worker Commute	4	365	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Truck, Semi Tractor	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 33**  
**115 kV Subtransmission Line Construction Emissions**  
**Marshalling Yard**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
1-Ton Crew Cab, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
Truck, Semi Tractor	0.00	0.02	0.05	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.01</b>	<b>0.08</b>	<b>0.11</b>	<b>0.00</b>	<b>0.01</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>
<b>Total</b>	<b>0.12</b>	<b>0.90</b>	<b>0.18</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
1-Ton Crew Cab, 4x4	4.8	0.0	4.8
Truck, Semi Tractor	3.5	0.0	3.5
<b>Onsite Total</b>	<b>8.2</b>	<b>0.0</b>	<b>8.2</b>
<b>Offsite</b>			
Worker Commute	44.1	0.0	44.2
<b>Offsite Total</b>	<b>44.1</b>	<b>0.0</b>	<b>44.2</b>
<b>Total</b>	<b>52.4</b>	<b>0.0</b>	<b>52.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
1-Ton Crew Cab, 4x4	1	Unpaved	10	0.556	0.056	5.56	0.56
Truck, Semi Tractor	1	Unpaved	5	0.965	0.097	4.83	0.48
<b>Onsite Total</b>						<b>10.39</b>	<b>1.04</b>
<b>Offsite</b>							
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.19</b>	<b>0.00</b>
<b>Total</b>						<b>10.58</b>	<b>1.04</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]



**Table 34**  
**115 kV Subtransmission Line Construction Emissions**  
**Roads and Landing Work**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.60	12.73	7.49	0.04	0.34	0.31	109.3
Onsite Motor Vehicle Exhaust	0.00	0.00	0.01	0.00	0.00	0.00	0.2
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.97	0.10	
Earthwork Fugitive PM	--	--	--	--	3.58	0.74	
<b>Onsite Total</b>	<b>1.60</b>	<b>12.73</b>	<b>7.50</b>	<b>0.04</b>	<b>4.88</b>	<b>1.15</b>	<b>109.5</b>
Offsite Motor Vehicle Exhaust	0.18	1.34	0.55	0.01	0.05	0.04	19.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.29	0.00	
<b>Offsite Total</b>	<b>0.18</b>	<b>1.34</b>	<b>0.55</b>	<b>0.01</b>	<b>0.34</b>	<b>0.04</b>	<b>19.3</b>
<b>Total</b>	<b>1.79</b>	<b>14.07</b>	<b>8.05</b>	<b>0.04</b>	<b>5.22</b>	<b>1.19</b>	<b>128.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Road Grader	250	1	88	4
Backhoe/Front Loader	125	1	88	6
Drum Type Compactor	100	1	88	4
Track Type Dozer	150	1	88	6
Excavator	250	1	44	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Road Grader	250	0.078	0.355	0.365	0.002	0.013	0.012	172.113	0.007	Graders
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
Drum Type Compactor	100	0.039	0.380	0.265	0.001	0.014	0.013	58.989	0.004	Rollers
Track Type Dozer	150	0.082	0.727	0.445	0.001	0.024	0.022	121.188	0.007	Crawler Tractors
Excavator	250	0.065	0.321	0.222	0.002	0.007	0.007	158.683	0.006	Excavators

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Road Grader	0.31	1.42	1.46	0.01	0.05	0.05
Backhoe/Front Loader	0.25	3.50	0.97	0.01	0.04	0.04
Drum Type Compactor	0.16	1.52	1.06	0.00	0.05	0.05
Track Type Dozer	0.49	4.36	2.67	0.01	0.14	0.13
Excavator	0.39	1.93	1.33	0.01	0.04	0.04
<b>Total</b>	<b>1.60</b>	<b>12.73</b>	<b>7.49</b>	<b>0.04</b>	<b>0.34</b>	<b>0.31</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Road Grader	27.5	0.0	27.5
Backhoe/Front Loader	24.3	0.0	24.3
Drum Type Compactor	9.4	0.0	9.4
Track Type Dozer	29.0	0.0	29.1
Excavator	19.0	0.0	19.0
<b>Total</b>	<b>109.2</b>	<b>0.0</b>	<b>109.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh.
<b>Onsite</b>				
Water Truck	1	88	8	1
<b>Offsite</b>				
1-Ton Crew Cab, 4x4	1	88	N/A	30
Lowboy Truck/Trailer	1	44	N/A	30
Worker Commute	5	88	N/A	60

**Table 34**  
**115 kV Subtransmission Line Construction Emissions**  
**Roads and Landing Work**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
<b>Offsite</b>									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Water Truck	0.00	0.00	0.01	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
Lowboy Truck/Trailer	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.13	1.03	0.09	0.00	0.03	0.02
<b>Offsite Total</b>	<b>0.18</b>	<b>1.34</b>	<b>0.55</b>	<b>0.01</b>	<b>0.05</b>	<b>0.04</b>
<b>Total</b>	<b>0.18</b>	<b>1.34</b>	<b>0.56</b>	<b>0.01</b>	<b>0.05</b>	<b>0.04</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Water Truck	0.2	0.0	0.2
<b>Onsite Total</b>	<b>0.2</b>	<b>0.0</b>	<b>0.2</b>
<b>Offsite</b>			
1-Ton Crew Cab, 4x4	3.5	0.0	3.5
Lowboy Truck/Trailer	2.5	0.0	2.5
Worker Commute	13.3	0.0	13.3
<b>Offsite Total</b>	<b>19.3</b>	<b>0.0</b>	<b>19.3</b>
<b>Total</b>	<b>19.4</b>	<b>0.0</b>	<b>19.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Water Truck	1	Unpaved	1	0.965	0.097	0.97	0.10
<b>Onsite Total</b>						<b>0.97</b>	<b>0.10</b>
<b>Offsite</b>							
1-Ton Crew Cab, 4x4	1	Paved	30	0.001	0.000	0.02	0.00
Lowboy Truck/Trailer	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	5	Paved	60	0.001	0.000	0.24	0.00
<b>Offsite Total</b>						<b>0.29</b>	<b>0.00</b>
<b>Total</b>						<b>1.25</b>	<b>0.10</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	100	9.94E-04	2.07E-04	0.10	0.02
Bulldozing, Scraping and Grading	hr/day	10	0.348	0.072	3.48	0.72
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>3.58</b>	<b>0.74</b>

a From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Estimate

**Table 35**  
**115 kV Subtransmission Line Construction Emissions**  
**Guard Structure Installation**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.35	8.18	6.39	0.04	0.23	0.22	43.7
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>1.35</b>	<b>8.18</b>	<b>6.39</b>	<b>0.04</b>	<b>0.23</b>	<b>0.22</b>	<b>43.7</b>
Offsite Motor Vehicle Exhaust	0.26	1.90	0.94	0.01	0.07	0.05	9.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.38	0.00	
<b>Offsite Total</b>	<b>0.26</b>	<b>1.90</b>	<b>0.94</b>	<b>0.01</b>	<b>0.46</b>	<b>0.05</b>	<b>9.3</b>
<b>Total</b>	<b>1.61</b>	<b>10.08</b>	<b>7.33</b>	<b>0.05</b>	<b>0.69</b>	<b>0.27</b>	<b>53.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor Trailer	60	1	26	6
Auger Truck	210	1	26	6
Boom/Crane Truck	350	1	26	8
Bucket Truck	250	1	26	4

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
Auger Truck	210	0.043	0.343	0.098	0.002	0.004	0.003	188.102	0.004	Bore/Drill Rigs
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Bucket Truck	250	0.058	0.371	0.366	0.002	0.011	0.010	212.856	0.005	Aerial Lifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor Trailer	0.17	1.81	1.16	0.00	0.05	0.05
Auger Truck	0.26	2.06	0.59	0.01	0.02	0.02
Boom/Crane Truck	0.69	2.83	3.18	0.01	0.12	0.11
Bucket Truck	0.23	1.48	1.46	0.01	0.04	0.04
<b>Total</b>	<b>1.35</b>	<b>8.18</b>	<b>6.39</b>	<b>0.04</b>	<b>0.23</b>	<b>0.22</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor Trailer	3.3	0.0	3.3
Auger Truck	13.3	0.0	13.3
Boom/Crane Truck	17.0	0.0	17.0
Bucket Truck	10.0	0.0	10.0
<b>Total</b>	<b>43.7</b>	<b>0.0</b>	<b>43.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				
<b>Offsite</b>				
3/4-Ton Pick-up Truck, 4x4	2	26	N/A	30
1-Ton Crew Cab Flat Bed, 4x4	1	26	N/A	30
Extendable Flat Bed Pole Truck	1	26	N/A	30
Worker Commute	6	26	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 35**  
**115 kV Subtransmission Line Construction Emissions**  
**Guard Structure Installation**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Pick-up Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Extendable Flat Bed Pole Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Pick-up Truck, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
1-Ton Crew Cab Flat Bed, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
Extendable Flat Bed Pole Truck	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.16	1.23	0.10	0.00	0.03	0.02
<b>Offsite Total</b>	<b>0.26</b>	<b>1.90</b>	<b>0.94</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>
<b>Total</b>	<b>0.26</b>	<b>1.90</b>	<b>0.94</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Pick-up Truck, 4x4	2.0	0.0	2.0
1-Ton Crew Cab Flat Bed, 4x4	1.0	0.0	1.0
Extendable Flat Bed Pole Truck	1.5	0.0	1.5
Worker Commute	4.7	0.0	4.7
<b>Offsite Total</b>	<b>9.3</b>	<b>0.0</b>	<b>9.3</b>
<b>Total</b>	<b>9.3</b>	<b>0.0</b>	<b>9.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None							
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Pick-up Truck, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
1-Ton Crew Cab Flat Bed, 4x4	1	Paved	30	0.001	0.000	0.02	0.00
Extendable Flat Bed Pole Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	6	Paved	60	0.001	0.000	0.29	0.00
<b>Offsite Total</b>						<b>0.38</b>	<b>0.00</b>
<b>Total</b>						<b>0.38</b>	<b>0.00</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

a From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 36**  
**115 kV Subtransmission Line Construction Emissions**  
**Remove Existing Wood H-Frames and Poles**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.84	5.86	4.22	0.02	0.17	0.16	17.5
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.84</b>	<b>5.86</b>	<b>4.22</b>	<b>0.02</b>	<b>0.17</b>	<b>0.16</b>	<b>17.5</b>
Offsite Motor Vehicle Exhaust	0.24	1.72	0.75	0.01	0.07	0.05	7.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.36	0.00	
<b>Offsite Total</b>	<b>0.24</b>	<b>1.72</b>	<b>0.75</b>	<b>0.01</b>	<b>0.43</b>	<b>0.05</b>	<b>7.3</b>
<b>Total</b>	<b>1.07</b>	<b>7.58</b>	<b>4.97</b>	<b>0.02</b>	<b>0.60</b>	<b>0.20</b>	<b>24.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Rough Terrain Forklift	125	1	23	4
Boom/Crane Truck	350	1	23	6
Compressor Trailer	60	1	23	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Rough Terrain Forklift	125	0.023	0.331	0.073	0.001	0.003	0.003	56.054	0.002	Forklifts
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction = 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Rough Terrain Forklift	0.09	1.32	0.29	0.00	0.01	0.01
Boom/Crane Truck	0.51	2.12	2.39	0.01	0.09	0.08
Compressor Trailer	0.23	2.42	1.54	0.00	0.07	0.07
<b>Total</b>	<b>0.84</b>	<b>5.86</b>	<b>4.22</b>	<b>0.02</b>	<b>0.17</b>	<b>0.16</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Rough Terrain Forklift	2.3	0.0	2.3
Boom/Crane Truck	11.3	0.0	11.3
Compressor Trailer	3.9	0.0	3.9
<b>Total</b>	<b>17.5</b>	<b>0.0</b>	<b>17.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				
<b>Offsite</b>				
1-Ton Crew Cab, 4x4	2	23	N/A	30
Flat Bed Truck/Trailer	1	23	N/A	30
Worker Commute	6	23	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 36**  
**115 kV Subtransmission Line Construction Emissions**  
**Remove Existing Wood H-Frames and Poles**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Flat Bed Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
Flat Bed Truck/Trailer	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.16	1.23	0.10	0.00	0.03	0.02
<b>Offsite Total</b>	<b>0.24</b>	<b>1.72</b>	<b>0.75</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>
<b>Total</b>	<b>0.24</b>	<b>1.72</b>	<b>0.75</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1-Ton Crew Cab, 4x4	1.8	0.0	1.8
Flat Bed Truck/Trailer	1.3	0.0	1.3
Worker Commute	4.2	0.0	4.2
<b>Offsite Total</b>	<b>7.3</b>	<b>0.0</b>	<b>7.3</b>
<b>Total</b>	<b>7.3</b>	<b>0.0</b>	<b>7.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None							
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1-Ton Crew Cab, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
Flat Bed Truck/Trailer	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	6	Paved	60	0.001	0.000	0.29	0.00
<b>Offsite Total</b>						<b>0.36</b>	<b>0.00</b>
<b>Total</b>						<b>0.36</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 37**  
**115 kV Subtransmission Line Construction Emissions**  
**Remove Existing Tubular Steel/Light Weight Steel Poles**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.66	3.63	3.35	0.01	0.13	0.12	3.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.66</b>	<b>3.63</b>	<b>3.35</b>	<b>0.01</b>	<b>0.13</b>	<b>0.12</b>	<b>3.0</b>
Offsite Motor Vehicle Exhaust	0.32	2.36	0.88	0.01	0.08	0.06	2.0
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.48	0.00	
<b>Offsite Total</b>	<b>0.32</b>	<b>2.36</b>	<b>0.88</b>	<b>0.01</b>	<b>0.56</b>	<b>0.06</b>	<b>2.0</b>
<b>Total</b>	<b>0.98</b>	<b>5.99</b>	<b>4.23</b>	<b>0.02</b>	<b>0.69</b>	<b>0.18</b>	<b>5.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor Trailer	60	1	5	5
Boom/Crane Truck	350	1	5	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor Trailer	0.14	1.51	0.96	0.00	0.04	0.04
Boom/Crane Truck	0.51	2.12	2.39	0.01	0.09	0.08
<b>Total</b>	<b>0.66</b>	<b>3.63</b>	<b>3.35</b>	<b>0.01</b>	<b>0.13</b>	<b>0.12</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor Trailer	0.5	0.0	0.5
Boom/Crane Truck	2.5	0.0	2.5
<b>Total</b>	<b>3.0</b>	<b>0.0</b>	<b>3.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				
<b>Offsite</b>				
3/4-Ton Truck, 4x4	2	5	N/A	30
1-Ton Crew Cab Flat Bed, 4x4	2	5	N/A	30
Worker Commute	8	5	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 37**  
**115 kV Subtransmission Line Construction Emissions**  
**Remove Existing Tubular Steel/Light Weight Steel Poles**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
1-Ton Crew Cab Flat Bed, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
Worker Commute	0.21	1.65	0.14	0.01	0.05	0.03
<b>Offsite Total</b>	<b>0.32</b>	<b>2.36</b>	<b>0.88</b>	<b>0.01</b>	<b>0.08</b>	<b>0.06</b>
<b>Total</b>	<b>0.32</b>	<b>2.36</b>	<b>0.88</b>	<b>0.01</b>	<b>0.08</b>	<b>0.06</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	0.4	0.0	0.4
1-Ton Crew Cab Flat Bed, 4x4	0.4	0.0	0.4
Worker Commute	1.2	0.0	1.2
<b>Offsite Total</b>	<b>2.0</b>	<b>0.0</b>	<b>2.0</b>
<b>Total</b>	<b>2.0</b>	<b>0.0</b>	<b>2.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None							
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
1-Ton Crew Cab Flat Bed, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
Worker Commute	8	Paved	60	0.001	0.000	0.38	0.00
<b>Offsite Total</b>						<b>0.48</b>	<b>0.00</b>
<b>Total</b>						<b>0.48</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]



**Table 38**  
**115 kV Subtransmission Line Construction Emissions**  
**Install Tubular Steel Pole Foundations**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.11	9.18	4.06	0.03	0.16	0.15	119.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.01	0.00	0.00	0.00	0.2
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.97	0.10	
Earthwork Fugitive PM	--	--	--	--	0.03	0.01	
<b>Onsite Total</b>	<b>1.11</b>	<b>9.18</b>	<b>4.07</b>	<b>0.03</b>	<b>1.16</b>	<b>0.25</b>	<b>119.2</b>
Offsite Motor Vehicle Exhaust	0.31	2.14	1.43	0.01	0.11	0.08	40.7
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.38	0.00	
<b>Offsite Total</b>	<b>0.31</b>	<b>2.14</b>	<b>1.43</b>	<b>0.01</b>	<b>0.49</b>	<b>0.08</b>	<b>40.7</b>
<b>Total</b>	<b>1.41</b>	<b>11.32</b>	<b>5.50</b>	<b>0.05</b>	<b>1.65</b>	<b>0.33</b>	<b>159.9</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Boom/Crane Truck	350	1	96	5
Backhoe/Front Loader	125	1	96	8
Auger Truck	210	1	65	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
Auger Truck	210	0.043	0.343	0.098	0.002	0.004	0.003	188.102	0.004	Bore/Drill Rigs

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction = 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Boom/Crane Truck	0.43	1.77	1.99	0.01	0.07	0.07
Backhoe/Front Loader	0.34	4.67	1.29	0.01	0.06	0.05
Auger Truck	0.34	2.74	0.78	0.02	0.03	0.03
<b>Total</b>	<b>1.11</b>	<b>9.18</b>	<b>4.06</b>	<b>0.03</b>	<b>0.16</b>	<b>0.15</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Boom/Crane Truck	39.2	0.0	39.2
Backhoe/Front Loader	35.3	0.0	35.3
Auger Truck	44.4	0.0	44.4
<b>Total</b>	<b>118.9</b>	<b>0.0</b>	<b>119.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh.
<b>Onsite</b>				
Water Truck	1	96	8	1
<b>Offsite</b>				
1-Ton Crew Cab Flat Bed, 4x4	1	96	N/A	30
Dump Truck	1	96	N/A	30
Concrete Mixer Truck	3	65	N/A	30
Worker Commute	7	96	N/A	60

**Table 38**  
**115 kV Subtransmission Line Construction Emissions**  
**Install Tubular Steel Pole Foundations**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
<b>Offsite</b>									
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Dump Truck		8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Concrete Mixer Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Water Truck	0.00	0.00	0.01	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab Flat Bed, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
Dump Truck	0.02	0.13	0.28	0.00	0.01	0.01
Concrete Mixer Truck	0.07	0.39	0.84	0.00	0.04	0.03
Worker Commute	0.18	1.44	0.12	0.00	0.04	0.03
<b>Offsite Total</b>	<b>0.31</b>	<b>2.14</b>	<b>1.43</b>	<b>0.01</b>	<b>0.11</b>	<b>0.08</b>
<b>Total</b>	<b>0.31</b>	<b>2.14</b>	<b>1.43</b>	<b>0.01</b>	<b>0.11</b>	<b>0.08</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Water Truck	0.2	0.0	0.2
<b>Onsite Total</b>	<b>0.2</b>	<b>0.0</b>	<b>0.2</b>
<b>Offsite</b>			
1-Ton Crew Cab Flat Bed, 4x4	3.8	0.0	3.8
Dump Truck	5.5	0.0	5.5
Concrete Mixer Truck	11.1	0.0	11.1
Worker Commute	20.3	0.0	20.3
<b>Offsite Total</b>	<b>40.7</b>	<b>0.0</b>	<b>40.7</b>
<b>Total</b>	<b>40.9</b>	<b>0.0</b>	<b>40.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Water Truck	1	Unpaved	1	0.965	0.097	0.97	0.10
<b>Onsite Total</b>						<b>0.97</b>	<b>0.10</b>
<b>Offsite</b>							
1-Ton Crew Cab Flat Bed, 4x4	1	Paved	30	0.001	0.000	0.02	0.00
Dump Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	7	Paved	60	0.001	0.000	0.34	0.00
<b>Offsite Total</b>						<b>0.38</b>	<b>0.00</b>
<b>Total</b>						<b>1.35</b>	<b>0.10</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	35	9.94E-04	2.07E-04	0.03	0.01
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.03</b>	<b>0.01</b>

a From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Estimate

**Table 39**  
**115 kV Subtransmission Line Construction Emissions**  
**Steel Pole Haul**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.51	2.12	2.39	0.01	0.09	0.08	62.8
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.51</b>	<b>2.12</b>	<b>2.39</b>	<b>0.01</b>	<b>0.09</b>	<b>0.08</b>	<b>62.8</b>
Offsite Motor Vehicle Exhaust	0.18	1.31	0.72	0.01	0.05	0.04	32.8
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.26	0.00	
<b>Offsite Total</b>	<b>0.18</b>	<b>1.31</b>	<b>0.72</b>	<b>0.01</b>	<b>0.32</b>	<b>0.04</b>	<b>32.8</b>
<b>Total</b>	<b>0.70</b>	<b>3.43</b>	<b>3.10</b>	<b>0.02</b>	<b>0.41</b>	<b>0.12</b>	<b>95.6</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Boom/Crane Truck	350	1	128	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Boom/Crane Truck	0.51	2.12	2.39	0.01	0.09	0.08
<b>Total</b>	<b>0.51</b>	<b>2.12</b>	<b>2.39</b>	<b>0.01</b>	<b>0.09</b>	<b>0.08</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Boom/Crane Truck	62.7	0.0	62.8
<b>Total</b>	<b>62.7</b>	<b>0.0</b>	<b>62.8</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	2	128	N/A	30
40' Flat Bed Pole Truck	1	128	N/A	30
Worker Commute	4	128	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None									
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
40' Flat Bed Pole Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 39**  
**115 kV Subtransmission Line Construction Emissions**  
**Steel Pole Haul**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
40' Flat Bed Pole Truck	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.18</b>	<b>1.31</b>	<b>0.72</b>	<b>0.01</b>	<b>0.05</b>	<b>0.04</b>
<b>Total</b>	<b>0.18</b>	<b>1.31</b>	<b>0.72</b>	<b>0.01</b>	<b>0.05</b>	<b>0.04</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	10.0	0.0	10.0
40' Flat Bed Pole Truck	7.3	0.0	7.3
Worker Commute	15.5	0.0	15.5
<b>Offsite Total</b>	<b>32.8</b>	<b>0.0</b>	<b>32.8</b>
<b>Total</b>	<b>32.8</b>	<b>0.0</b>	<b>32.8</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0						
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
40' Flat Bed Pole Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.26</b>	<b>0.00</b>
<b>Total</b>						<b>0.26</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 40**  
**115 kV Subtransmission Line Construction Emissions**  
**Steel Pole Assembly**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.66	3.63	3.35	0.01	0.13	0.12	152.3
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.66</b>	<b>3.63</b>	<b>3.35</b>	<b>0.01</b>	<b>0.13</b>	<b>0.12</b>	<b>152.3</b>
Offsite Motor Vehicle Exhaust	0.32	2.36	0.88	0.01	0.08	0.06	101.7
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.48	0.00	
<b>Offsite Total</b>	<b>0.32</b>	<b>2.36</b>	<b>0.88</b>	<b>0.01</b>	<b>0.56</b>	<b>0.06</b>	<b>101.7</b>
<b>Total</b>	<b>0.98</b>	<b>5.99</b>	<b>4.23</b>	<b>0.02</b>	<b>0.69</b>	<b>0.18</b>	<b>254.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor Trailer	60	1	255	5
Boom/Crane Truck	350	1	255	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor Trailer	0.14	1.51	0.96	0.00	0.04	0.04
Boom/Crane Truck	0.51	2.12	2.39	0.01	0.09	0.08
<b>Total</b>	<b>0.66</b>	<b>3.63</b>	<b>3.35</b>	<b>0.01</b>	<b>0.13</b>	<b>0.12</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor Trailer	27.2	0.0	27.2
Boom/Crane Truck	125.0	0.0	125.1
<b>Total</b>	<b>152.1</b>	<b>0.0</b>	<b>152.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	2	255	N/A	30
1-Ton Crew Cab Flat Bed, 4x4	2	255	N/A	30
Worker Commute	8	255	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 40**  
**115 kV Subtransmission Line Construction Emissions**  
**Steel Pole Assembly**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
1-Ton Crew Cab Flat Bed, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
Worker Commute	0.21	1.65	0.14	0.01	0.05	0.03
<b>Offsite Total</b>	<b>0.32</b>	<b>2.36</b>	<b>0.88</b>	<b>0.01</b>	<b>0.08</b>	<b>0.06</b>
<b>Total</b>	<b>0.32</b>	<b>2.36</b>	<b>0.88</b>	<b>0.01</b>	<b>0.08</b>	<b>0.06</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	20.0	0.0	20.0
1-Ton Crew Cab Flat Bed, 4x4	20.0	0.0	20.0
Worker Commute	61.7	0.0	61.7
<b>Offsite Total</b>	<b>101.7</b>	<b>0.0</b>	<b>101.7</b>
<b>Total</b>	<b>101.7</b>	<b>0.0</b>	<b>101.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0						
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
1-Ton Crew Cab Flat Bed, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
Worker Commute	8	Paved	60	0.001	0.000	0.38	0.00
<b>Offsite Total</b>						<b>0.48</b>	<b>0.00</b>
<b>Total</b>						<b>0.48</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 41**  
**115 kV Subtransmission Line Construction Emissions**  
**Steel Pole Erection**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.66	3.63	3.35	0.01	0.13	0.12	152.3
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.66</b>	<b>3.63</b>	<b>3.35</b>	<b>0.01</b>	<b>0.13</b>	<b>0.12</b>	<b>152.3</b>
Offsite Motor Vehicle Exhaust	0.32	2.36	0.88	0.01	0.08	0.06	101.7
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.48	0.00	
<b>Offsite Total</b>	<b>0.32</b>	<b>2.36</b>	<b>0.88</b>	<b>0.01</b>	<b>0.56</b>	<b>0.06</b>	<b>101.7</b>
<b>Total</b>	<b>0.98</b>	<b>5.99</b>	<b>4.23</b>	<b>0.02</b>	<b>0.69</b>	<b>0.18</b>	<b>254.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor Trailer	60	1	255	5
Boom/Crane Truck	350	1	255	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor Trailer	0.14	1.51	0.96	0.00	0.04	0.04
Boom/Crane Truck	0.51	2.12	2.39	0.01	0.09	0.08
<b>Total</b>	<b>0.66</b>	<b>3.63</b>	<b>3.35</b>	<b>0.01</b>	<b>0.13</b>	<b>0.12</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor Trailer	27.2	0.0	27.2
Boom/Crane Truck	125.0	0.0	125.1
<b>Total</b>	<b>152.1</b>	<b>0.0</b>	<b>152.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	2	255	N/A	30
1-Ton Crew Cab Flat Bed, 4x4	2	255	N/A	30
Worker Commute	8	255	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 41**  
**115 kV Subtransmission Line Construction Emissions**  
**Steel Pole Erection**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
1-Ton Crew Cab Flat Bed, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
Worker Commute	0.21	1.65	0.14	0.01	0.05	0.03
<b>Offsite Total</b>	<b>0.32</b>	<b>2.36</b>	<b>0.88</b>	<b>0.01</b>	<b>0.08</b>	<b>0.06</b>
<b>Total</b>	<b>0.32</b>	<b>2.36</b>	<b>0.88</b>	<b>0.01</b>	<b>0.08</b>	<b>0.06</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	20.0	0.0	20.0
1-Ton Crew Cab Flat Bed, 4x4	20.0	0.0	20.0
Worker Commute	61.7	0.0	61.7
<b>Offsite Total</b>	<b>101.7</b>	<b>0.0</b>	<b>101.7</b>
<b>Total</b>	<b>101.7</b>	<b>0.0</b>	<b>101.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0						
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
1-Ton Crew Cab Flat Bed, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
Worker Commute	8	Paved	60	0.001	0.000	0.38	0.00
<b>Offsite Total</b>						<b>0.48</b>	<b>0.00</b>
<b>Total</b>						<b>0.48</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]



**Table 42**  
**115 kV Subtransmission Line Construction Emissions**  
**Wire Stringing**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	4.34	23.98	22.32	0.13	0.72	0.66	458.5
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>4.34</b>	<b>23.98</b>	<b>22.32</b>	<b>0.13</b>	<b>0.72</b>	<b>0.66</b>	<b>458.5</b>
Offsite Motor Vehicle Exhaust	0.73	5.39	2.11	0.02	0.20	0.14	83.2
Offsite Motor Vehicle Fugitive PM	--	--	--	--	1.15	0.00	
<b>Offsite Total</b>	<b>0.73</b>	<b>5.39</b>	<b>2.11</b>	<b>0.02</b>	<b>1.36</b>	<b>0.14</b>	<b>83.2</b>
<b>Total</b>	<b>5.07</b>	<b>29.37</b>	<b>24.43</b>	<b>0.15</b>	<b>2.08</b>	<b>0.80</b>	<b>541.7</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Bucket Truck	250	4	89	8
Boom/Crane Truck	350	2	89	8
Splicing Rig	350	1	20	2
3 Drum Straw Line Puller	300	1	45	6
Static Truck/Tensioner	350	1	45	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Bucket Truck	250	0.058	0.371	0.366	0.002	0.011	0.010	212.856	0.005	Aerial Lifts
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Splicing Rig	350	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment
3 Drum Straw Line Puller	300	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment
Static Truck/Tensioner	350	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Bucket Truck	1.86	11.87	11.71	0.07	0.35	0.32
Boom/Crane Truck	1.37	5.66	6.36	0.03	0.23	0.21
Splicing Rig	0.16	0.92	0.61	0.00	0.02	0.02
3 Drum Straw Line Puller	0.48	2.76	1.82	0.01	0.06	0.05
Static Truck/Tensioner	0.48	2.76	1.82	0.01	0.06	0.05
<b>Total</b>	<b>4.34</b>	<b>23.98</b>	<b>22.32</b>	<b>0.13</b>	<b>0.72</b>	<b>0.66</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Bucket Truck	275.0	0.0	275.1
Boom/Crane Truck	116.3	0.0	116.4
Splicing Rig	4.6	0.0	4.6
3 Drum Straw Line Puller	31.1	0.0	31.2
Static Truck/Tensioner	31.1	0.0	31.2
<b>Total</b>	<b>458.2</b>	<b>0.0</b>	<b>458.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Table 42**  
**115 kV Subtransmission Line Construction Emissions**  
**Wire Stringing**

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	2	89	N/A	30
1-Ton Crew Cab Flat Bed, 4x4	3	89	N/A	30
Wire Truck/Trailer	2	60	N/A	30
Dump Truck	1	89	N/A	30
Worker Commute	20	89	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Wire Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
1-Ton Crew Cab Flat Bed, 4x4	0.08	0.54	0.55	0.00	0.03	0.02
Wire Truck/Trailer	0.05	0.26	0.56	0.00	0.03	0.02
Dump Truck	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.52	4.11	0.35	0.01	0.12	0.08
<b>Offsite Total</b>	<b>0.73</b>	<b>5.39</b>	<b>2.11</b>	<b>0.02</b>	<b>0.20</b>	<b>0.14</b>
<b>Total</b>	<b>0.73</b>	<b>5.39</b>	<b>2.11</b>	<b>0.02</b>	<b>0.20</b>	<b>0.14</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	7.0	0.0	7.0
1-Ton Crew Cab Flat Bed, 4x4	10.5	0.0	10.5
Wire Truck/Trailer	6.9	0.0	6.9
Dump Truck	5.1	0.0	5.1
Worker Commute	53.8	0.0	53.8
<b>Offsite Total</b>	<b>83.2</b>	<b>0.0</b>	<b>83.2</b>
<b>Total</b>	<b>83.2</b>	<b>0.0</b>	<b>83.2</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Table 42**  
**115 kV Subtransmission Line Construction Emissions**  
**Wire Stringing**

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0						
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
1-Ton Crew Cab Flat Bed, 4x4	3	Paved	30	0.001	0.000	0.07	0.00
Wire Truck/Trailer	2	Paved	30	0.001	0.000	0.05	0.00
Dump Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	20	Paved	60	0.001	0.000	0.96	0.00
<b>Offsite Total</b>						<b>1.15</b>	<b>0.00</b>
<b>Total</b>						<b>1.15</b>	<b>0.00</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

a From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 42b**  
**115 kV Subtransmission Line Construction Emissions**  
**Vault Installation**

Emissions Summary							
Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.92	12.58	7.81	0.05	0.29	0.27	10.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.42	0.09	
<b>Onsite Total</b>	<b>1.92</b>	<b>12.58</b>	<b>7.81</b>	<b>0.05</b>	<b>0.71</b>	<b>0.36</b>	<b>10.0</b>
Offsite Motor Vehicle Exhaust	0.70	5.00	2.80	0.02	0.23	0.17	5.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	1.10	0.00	
<b>Offsite Total</b>	<b>0.70</b>	<b>5.00</b>	<b>2.80</b>	<b>0.02</b>	<b>1.34</b>	<b>0.17</b>	<b>5.3</b>
<b>Total</b>	<b>2.63</b>	<b>17.58</b>	<b>10.62</b>	<b>0.07</b>	<b>2.05</b>	<b>0.52</b>	<b>15.3</b>

Construction Equipment Summary				
Equipment	Horse-power	Number	Days Used	Hours Used/Day
Excavator	250	1	5	10
Crane (L)	500	1	5	10
Backhoe/Front Loader	125	1	5	10

Construction Equipment Exhaust Emission Factors										
Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Excavator	250	0.065	0.321	0.222	0.002	0.007	0.007	158.683	0.006	Excavators
Crane (L)	500	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes

<sup>a</sup> From Table 53  
<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10  
 PM2.5 Fraction= 0.920  
 From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5  
 and PM 2.5 Significance Thresholds, SCAQMD, October 2006,  
[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

Construction Equipment Daily Criteria Pollutant Exhaust Emissions						
Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Excavator	0.65	3.21	2.22	0.02	0.07	0.07
Crane (L)	0.86	3.54	3.98	0.02	0.15	0.13
Backhoe/Front Loader	0.42	5.84	1.61	0.01	0.07	0.07
<b>Total</b>	<b>1.92</b>	<b>12.58</b>	<b>7.81</b>	<b>0.05</b>	<b>0.29</b>	<b>0.27</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions			
Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Excavator	3.6	0.0	3.6
Crane (L)	4.1	0.0	4.1
Backhoe/Front Loader	2.3	0.0	2.3
<b>Total</b>	<b>10.0</b>	<b>0.0</b>	<b>10.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 53  
<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Usage				
Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh.
<b>Onsite</b>				
None				
<b>Offsite</b>				
1-Ton Crew Cab, 4x4	2	5	N/A	50
Water Truck	1	5	N/A	25
Concrete Mixer Truck	3	5	N/A	25
Dump Truck	3	5	N/A	25
Lowboy Truck/Trailer	1	5	N/A	25
Flat Bed Truck/Trailer	3	5	N/A	25
Worker Commute	20	5	N/A	50

Motor Vehicle Exhaust Emission Factors									
Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None									
<b>Offsite</b>									

**Table 42b**  
**115 kV Subtransmission Line Construction Emissions**  
**Vault Installation**

1-Ton Crew Cab, 4x4	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Water Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Concrete Mixer Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Flat Bed Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None						
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab, 4x4	0.04	0.34	0.03	0.00	0.01	0.01
Water Truck	0.02	0.15	0.15	0.00	0.01	0.01
Concrete Mixer Truck	0.06	0.32	0.70	0.00	0.04	0.03
Dump Truck	0.06	0.32	0.70	0.00	0.04	0.03
Lowboy Truck/Trailer	0.02	0.11	0.23	0.00	0.01	0.01
Flat Bed Truck/Trailer	0.06	0.32	0.70	0.00	0.04	0.03
Worker Commute	0.44	3.43	0.29	0.01	0.10	0.06
<b>Offsite Total</b>	<b>0.70</b>	<b>5.00</b>	<b>2.80</b>	<b>0.02</b>	<b>0.23</b>	<b>0.17</b>
<b>Total</b>	<b>0.70</b>	<b>5.00</b>	<b>2.80</b>	<b>0.02</b>	<b>0.23</b>	<b>0.17</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None			
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1-Ton Crew Cab, 4x4	0.3	0.0	0.3
Water Truck	0.2	0.0	0.2
Concrete Mixer Truck	0.7	0.0	0.7
Dump Truck	0.7	0.0	0.7
Lowboy Truck/Trailer	0.2	0.0	0.2
Flat Bed Truck/Trailer	0.7	0.0	0.7
Worker Commute	2.5	0.0	2.5
<b>Offsite Total</b>	<b>5.3</b>	<b>0.0</b>	<b>5.3</b>
<b>Total</b>	<b>5.3</b>	<b>0.0</b>	<b>5.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

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**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None							
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1-Ton Crew Cab, 4x4	2	Paved	50	0.001	0.000	0.08	0.00
Water Truck	1	Paved	25	0.001	0.000	0.02	0.00
Concrete Mixer Truck	3	Paved	25	0.001	0.000	0.06	0.00
Dump Truck	3	Paved	25	0.001	0.000	0.06	0.00
Lowboy Truck/Trailer	1	Paved	25	0.001	0.000	0.02	0.00
Flat Bed Truck/Trailer	3	Paved	25	0.001	0.000	0.06	0.00
Worker Commute	20	Paved	50	0.001	0.000	0.80	0.00
<b>Offsite Total</b>						<b>1.10</b>	<b>0.00</b>
<b>Total</b>						<b>1.10</b>	<b>0.00</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level <sup>c</sup>	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day	49.28	9.94E-04	2.07E-04	0.05	0.01

**Table 42b**  
**115 kV Subtransmission Line Construction Emissions**  
**Vault Installation**

Bulldozing, Scraping and Grading	hr/day	0	0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres	0.017	22.0	4.58	0.37	0.08
<b>Total</b>					<b>0.42</b>	<b>0.09</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Soil handling volume based on a vault size of approximately 24 feet long, 14 feet wide, 12 feet deep. Approximately 0.33 vaults built per day. 12 feet x 14 feet x 12 feet = 4032 cubic feet x 0.33 vaults/day = 1330.56 cubic feet/day = 49.28 cubic yards/day 12 feet x 14 feet x 12 feet = 4032 cubic feet x 0.33 vaults/day = 1330.56 cubic feet/day = 49.28 cubic yards/day

Storage pile size based on a 1 vault volume of 4032 cubic feet of soil. Storage pile assumed maximum 48 feet long, 14 feet wide, 6 feet high. 48 feet x 14 feet = 720 square feet = 0.017 acres

**Table 42c**  
**115 kV Subtransmission Line Construction Emissions**  
**Duct Bank Installation**

Emissions Summary							
Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.71	8.86	3.54	0.02	0.16	0.15	10.1
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.73	0.15	
<b>Onsite Total</b>	<b>0.71</b>	<b>8.86</b>	<b>3.54</b>	<b>0.02</b>	<b>0.89</b>	<b>0.30</b>	<b>10.1</b>
Offsite Motor Vehicle Exhaust	0.68	4.89	2.57	0.02	0.22	0.16	7.5
Offsite Motor Vehicle Fugitive PM	--	--	--	--	1.08	0.00	
<b>Offsite Total</b>	<b>0.68</b>	<b>4.89</b>	<b>2.57</b>	<b>0.02</b>	<b>1.31</b>	<b>0.16</b>	<b>7.5</b>
<b>Total</b>	<b>1.39</b>	<b>13.75</b>	<b>6.11</b>	<b>0.04</b>	<b>2.20</b>	<b>0.46</b>	<b>17.6</b>

Construction Equipment Summary				
Equipment	Horse-power	Number	Days Used	Hours Used/Day
Backhoe/Front Loader	125	1	15	10
Compressor Trailer	60	1	15	10

Construction Equipment Exhaust Emission Factors										
Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors

<sup>a</sup> From Table 53  
<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10  
 PM2.5 Fraction = 0.920  
 From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5  
 and PM 2.5 Significance Thresholds, SCAQMD, October 2006.  
[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

Construction Equipment Daily Criteria Pollutant Exhaust Emissions						
Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Backhoe/Front Loader	0.42	5.84	1.61	0.01	0.07	0.07
Compressor Trailer	0.29	3.02	1.93	0.01	0.09	0.08
<b>Total</b>	<b>0.71</b>	<b>8.86</b>	<b>3.54</b>	<b>0.02</b>	<b>0.16</b>	<b>0.15</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions			
Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Backhoe/Front Loader	6.9	0.0	6.9
Compressor Trailer	3.2	0.0	3.2
<b>Total</b>	<b>10.1</b>	<b>0.0</b>	<b>10.1</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 53  
<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Usage				
Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh.
<b>Onsite</b>				
None				
<b>Offsite</b>				
Lowboy Truck/Trailer	1	15	N/A	25
1-Ton Truck, 4x4	2	15	N/A	50
Water Truck	1	15	N/A	25
Pipe Truck/Trailer	1	15	N/A	25
Concrete Mixer Truck	3	15	N/A	25
Dump Truck	3	15	N/A	25
Lowboy Truck/Trailer	1	1	N/A	25
Worker Commute	20	1	N/A	50

Motor Vehicle Exhaust Emission Factors									
Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None									
<b>Offsite</b>									
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
1-Ton Truck, 4x4	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Water Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Pipe Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Concrete Mixer Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

**Table 42c**  
**115 kV Subtransmission Line Construction Emissions**  
**Duct Bank Installation**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None						
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Lowboy Truck/Trailer	0.02	0.11	0.23	0.00	0.01	0.01
1-Ton Truck, 4x4	0.04	0.34	0.03	0.00	0.01	0.01
Water Truck	0.02	0.15	0.15	0.00	0.01	0.01
Pipe Truck/Trailer	0.02	0.11	0.23	0.00	0.01	0.01
Concrete Mixer Truck	0.06	0.32	0.70	0.00	0.04	0.03
Dump Truck	0.06	0.32	0.70	0.00	0.04	0.03
Lowboy Truck/Trailer	0.02	0.11	0.23	0.00	0.01	0.01
Worker Commute	0.44	3.43	0.29	0.01	0.10	0.06
<b>Offsite Total</b>	<b>0.68</b>	<b>4.89</b>	<b>2.57</b>	<b>0.02</b>	<b>0.22</b>	<b>0.16</b>
<b>Total</b>	<b>0.68</b>	<b>4.89</b>	<b>2.57</b>	<b>0.02</b>	<b>0.22</b>	<b>0.16</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None			
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Lowboy Truck/Trailer	0.7	0.0	0.7
1-Ton Truck, 4x4	0.8	0.0	0.8
Water Truck	0.5	0.0	0.5
Pipe Truck/Trailer	0.7	0.0	0.7
Concrete Mixer Truck	2.1	0.0	2.1
Dump Truck	2.1	0.0	2.1
Lowboy Truck/Trailer	0.0	0.0	0.0
Worker Commute	0.5	0.0	0.5
<b>Offsite Total</b>	<b>7.5</b>	<b>0.0</b>	<b>7.5</b>
<b>Total</b>	<b>7.5</b>	<b>0.0</b>	<b>7.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

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**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None							
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Lowboy Truck/Trailer	1	Paved	25	0.001	0.000	0.02	0.00
1-Ton Truck, 4x4	2	Paved	50	0.001	0.000	0.08	0.00
Water Truck	1	Paved	25	0.001	0.000	0.02	0.00
Pipe Truck/Trailer	1	Paved	25	0.001	0.000	0.02	0.00
Concrete Mixer Truck	3	Paved	25	0.001	0.000	0.06	0.00
Dump Truck	3	Paved	25	0.001	0.000	0.06	0.00
Lowboy Truck/Trailer	1	Paved	25	0.001	0.000	0.02	0.00
Worker Commute	20	Paved	50	0.001	0.000	0.80	0.00
<b>Offsite Total</b>						<b>1.08</b>	<b>0.00</b>
<b>Total</b>						<b>1.08</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level <sup>c</sup>	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day	92.28	9.94E-04	2.07E-04	0.09	0.02
Bulldozing, Scraping and Grading	hr/day	0	0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres	0.029	22.0	4.58	0.64	0.13
<b>Total</b>					<b>0.73</b>	<b>0.15</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Soil handling cubic yards/day based on approximately 250 feet of trenching per day, 24 inches wide x 60 inches deep. 83 yards x 0.867 yards x 1.667 yards = 92.28 cubic yards/day

Storage pile acres based on approximately 250 feet of trenching per day, 60 inches wide x 24 inches high. 83 yards x 1.667 yards = 138.361 square yards = 0.029 acres



**Table 42d**  
**115 kV Subtransmission Line Construction Emissions**  
**Install Underground Cable**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	2.99	15.06	12.75	0.08	0.44	0.40	90.9
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>2.99</b>	<b>15.06</b>	<b>12.75</b>	<b>0.08</b>	<b>0.44</b>	<b>0.40</b>	<b>90.9</b>
Offsite Motor Vehicle Exhaust	0.53	4.03	0.88	0.01	0.14	0.09	3.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.93	0.00	
<b>Offsite Total</b>	<b>0.53</b>	<b>4.03</b>	<b>0.88</b>	<b>0.01</b>	<b>1.06</b>	<b>0.09</b>	<b>3.3</b>
<b>Total</b>	<b>3.51</b>	<b>19.09</b>	<b>13.63</b>	<b>0.09</b>	<b>1.50</b>	<b>0.50</b>	<b>94.2</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Boom/Crane Truck	350	1	25	10
Manlift/Bucket Truck	250	1	25	10
Puller	350	1	25	10
Static Truck/Tensioner	350	1	25	10

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Manlift/Bucket Truck	250	0.054	0.232	0.271	0.001	0.009	0.009	112.159	0.005	Cranes
Puller	350	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment
Static Truck/Tensioner	350	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction = 0.920

<sup>c</sup> From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006.

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Boom/Crane Truck	0.86	3.54	3.98	0.02	0.15	0.13
Manlift/Bucket Truck	0.54	2.32	2.71	0.01	0.09	0.09
Puller	0.79	4.61	3.03	0.02	0.10	0.09
Static Truck/Tensioner	0.79	4.61	3.03	0.02	0.10	0.09
<b>Total</b>	<b>2.99</b>	<b>15.06</b>	<b>12.75</b>	<b>0.08</b>	<b>0.44</b>	<b>0.40</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Boom/Crane Truck	20.4	0.0	20.4
Manlift/Bucket Truck	12.7	0.0	12.7
Puller	28.8	0.0	28.8
Static Truck/Tensioner	28.8	0.0	28.8
<b>Total</b>	<b>90.8</b>	<b>0.0</b>	<b>90.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/ Veh.
<b>Onsite</b>				
None				
<b>Offsite</b>				
1-Ton Truck, 4x4	2	5	N/A	50
Wire Truck/Trailer	2	5	N/A	30
Worker Commute	20	5	N/A	50

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
1-Ton Truck, 4x4	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Wire Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						

**Table 42d**  
**115 kV Subtransmission Line Construction Emissions**  
**Install Underground Cable**

None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Truck, 4x4	0.04	0.34	0.03	0.00	0.01	0.01
Wire Truck/Trailer	0.05	0.26	0.56	0.00	0.03	0.02
Worker Commute	0.44	3.43	0.29	0.01	0.10	0.06
<b>Offsite Total</b>	<b>0.53</b>	<b>4.03</b>	<b>0.88</b>	<b>0.01</b>	<b>0.14</b>	<b>0.09</b>
<b>Total</b>	<b>0.53</b>	<b>4.03</b>	<b>0.88</b>	<b>0.01</b>	<b>0.14</b>	<b>0.09</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
1-Ton Truck, 4x4	0.3	0.0	0.3
Wire Truck/Trailer	0.6	0.0	0.6
Worker Commute	2.5	0.0	2.5
<b>Offsite Total</b>	<b>3.3</b>	<b>0.0</b>	<b>3.3</b>
<b>Total</b>	<b>3.3</b>	<b>0.0</b>	<b>3.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

<sup>b</sup> Emission factors are in Table 54 and Table 55

<sup>c</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None							
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
1-Ton Truck, 4x4	2	Paved	50	0.001	0.000	0.08	0.00
Wire Truck/Trailer	2	Paved	30	0.001	0.000	0.05	0.00
Worker Commute	20	Paved	50	0.001	0.000	0.80	0.00
<b>Offsite Total</b>						<b>0.93</b>	<b>0.00</b>
<b>Total</b>						<b>0.93</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 43**  
**115 kV Subtransmission Line Construction Emissions**  
**Guard Structure Removal**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.27	7.94	6.96	0.03	0.27	0.25	23.3
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>1.27</b>	<b>7.94</b>	<b>6.96</b>	<b>0.03</b>	<b>0.27</b>	<b>0.25</b>	<b>23.3</b>
Offsite Motor Vehicle Exhaust	0.24	1.72	0.75	0.01	0.07	0.05	5.7
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.36	0.00	
<b>Offsite Total</b>	<b>0.24</b>	<b>1.72</b>	<b>0.75</b>	<b>0.01</b>	<b>0.43</b>	<b>0.05</b>	<b>5.7</b>
<b>Total</b>	<b>1.50</b>	<b>9.66</b>	<b>7.71</b>	<b>0.04</b>	<b>0.69</b>	<b>0.29</b>	<b>29.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Compressor Trailer	60	2	18	6
Boom/Crane Truck	350	1	18	8
Bucket Truck	250	1	18	4

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Bucket Truck	250	0.058	0.371	0.366	0.002	0.011	0.010	212.856	0.005	Aerial Lifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction = 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Compressor Trailer	0.35	3.63	2.31	0.01	0.11	0.10
Boom/Crane Truck	0.69	2.83	3.18	0.01	0.12	0.11
Bucket Truck	0.23	1.48	1.46	0.01	0.04	0.04
<b>Total</b>	<b>1.27</b>	<b>7.94</b>	<b>6.96</b>	<b>0.03</b>	<b>0.27</b>	<b>0.25</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Compressor Trailer	4.6	0.0	4.6
Boom/Crane Truck	11.8	0.0	11.8
Bucket Truck	7.0	0.0	7.0
<b>Total</b>	<b>23.3</b>	<b>0.0</b>	<b>23.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
3/4-Ton Truck, 4x4	1	18	N/A	30
1-Ton Crew Cab Flat Bed, 4x4	1	18	N/A	30
Extendable Flat Bed Pole Truck	1	18	N/A	30
Worker Commute	6	18	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 43**  
**115 kV Subtransmission Line Construction Emissions**  
**Guard Structure Removal**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Extendable Flat Bed Pole Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	(lb/day) <sup>a</sup>	(lb/day) <sup>a</sup>	(lb/day) <sup>a</sup>	(lb/day) <sup>a</sup>	(lb/day) <sup>a</sup>	(lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
3/4-Ton Truck, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
1-Ton Crew Cab Flat Bed, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
Extendable Flat Bed Pole Truck	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.16	1.23	0.10	0.00	0.03	0.02
<b>Offsite Total</b>	<b>0.24</b>	<b>1.72</b>	<b>0.75</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>
<b>Total</b>	<b>0.24</b>	<b>1.72</b>	<b>0.75</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
3/4-Ton Truck, 4x4	0.7	0.0	0.7
1-Ton Crew Cab Flat Bed, 4x4	0.7	0.0	0.7
Extendable Flat Bed Pole Truck	1.0	0.0	1.0
Worker Commute	3.3	0.0	3.3
<b>Offsite Total</b>	<b>5.7</b>	<b>0.0</b>	<b>5.7</b>
<b>Total</b>	<b>5.7</b>	<b>0.0</b>	<b>5.7</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0						
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
3/4-Ton Truck, 4x4	1	Paved	30	0.001	0.000	0.02	0.00
1-Ton Crew Cab Flat Bed, 4x4	1	Paved	30	0.001	0.000	0.02	0.00
Extendable Flat Bed Pole Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	6	Paved	60	0.001	0.000	0.29	0.00
<b>Offsite Total</b>						<b>0.36</b>	<b>0.00</b>
<b>Total</b>						<b>0.36</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 44**  
**115 kV Subtransmission Line Construction Emissions**  
**Restoration**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.96	7.91	4.75	0.02	0.20	0.19	16.3
Onsite Motor Vehicle Exhaust	0.00	0.01	0.03	0.00	0.00	0.00	0.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	2.90	0.29	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.96</b>	<b>7.93</b>	<b>4.78</b>	<b>0.02</b>	<b>3.10</b>	<b>0.48</b>	<b>16.4</b>
Offsite Motor Vehicle Exhaust	0.26	1.93	0.77	0.01	0.07	0.05	6.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.41	0.00	
<b>Offsite Total</b>	<b>0.26</b>	<b>1.93</b>	<b>0.77</b>	<b>0.01</b>	<b>0.48</b>	<b>0.05</b>	<b>6.3</b>
<b>Total</b>	<b>1.22</b>	<b>9.85</b>	<b>5.55</b>	<b>0.03</b>	<b>3.58</b>	<b>0.53</b>	<b>22.7</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Road Grader	250	1	18	6
Backhoe/Front Loader	125	1	18	6
Drum Type Compactor	100	1	18	6

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Road Grader	250	0.078	0.355	0.365	0.002	0.013	0.012	172.113	0.007	Graders
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
Drum Type Compactor	100	0.039	0.380	0.265	0.001	0.014	0.013	58.989	0.004	Rollers

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction = 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Road Grader	0.47	2.13	2.19	0.01	0.08	0.07
Backhoe/Front Loader	0.25	3.50	0.97	0.01	0.04	0.04
Drum Type Compactor	0.24	2.28	1.59	0.00	0.08	0.08
<b>Total</b>	<b>0.96</b>	<b>7.91</b>	<b>4.75</b>	<b>0.02</b>	<b>0.20</b>	<b>0.19</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Road Grader	8.4	0.0	8.4
Backhoe/Front Loader	5.0	0.0	5.0
Drum Type Compactor	2.9	0.0	2.9
<b>Total</b>	<b>16.3</b>	<b>0.0</b>	<b>16.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh.
<b>Onsite</b>				
Water Truck	1	18	8	3
<b>Offsite</b>				
1-Ton Crew Cab, 4x4	2	18	N/A	30
Lowboy Truck/Trailer	1	18	N/A	30
Worker Commute	7	18	N/A	60

**Table 44**  
**115 kV Subtransmission Line Construction Emissions**  
**Restoration**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Water Truck		8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
<b>Offsite</b>									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Water Truck	0.00	0.01	0.03	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.01</b>	<b>0.03</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
1-Ton Crew Cab, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
Lowboy Truck/Trailer	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.18	1.44	0.12	0.00	0.04	0.03
<b>Offsite Total</b>	<b>0.26</b>	<b>1.93</b>	<b>0.77</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>
<b>Total</b>	<b>0.26</b>	<b>1.94</b>	<b>0.80</b>	<b>0.01</b>	<b>0.07</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Water Truck	0.1	0.0	0.1
<b>Onsite Total</b>	<b>0.1</b>	<b>0.0</b>	<b>0.1</b>
<b>Offsite</b>			
1-Ton Crew Cab, 4x4	1.4	0.0	1.4
Lowboy Truck/Trailer	1.0	0.0	1.0
Worker Commute	3.8	0.0	3.8
<b>Offsite Total</b>	<b>6.2</b>	<b>0.0</b>	<b>6.3</b>
<b>Total</b>	<b>6.4</b>	<b>0.0</b>	<b>6.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Water Truck	1	Unpaved	3	0.965	0.097	2.90	0.29
<b>Onsite Total</b>						<b>2.90</b>	<b>0.29</b>
<b>Offsite</b>							
1-Ton Crew Cab, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
Lowboy Truck/Trailer	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	7	Paved	60	0.001	0.000	0.34	0.00
<b>Offsite Total</b>						<b>0.41</b>	<b>0.00</b>
<b>Total</b>						<b>3.30</b>	<b>0.29</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 45**  
**Telecommunications Construction**  
**Tower Foundation**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.53	6.74	3.59	0.01	0.11	0.10	2.4
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.50	0.10	
<b>Onsite Total</b>	<b>0.53</b>	<b>6.74</b>	<b>3.59</b>	<b>0.01</b>	<b>0.61</b>	<b>0.21</b>	<b>2.4</b>
Offsite Motor Vehicle Exhaust	0.18	1.31	0.72	0.01	0.05	0.04	1.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.26	0.00	
<b>Offsite Total</b>	<b>0.18</b>	<b>1.31</b>	<b>0.72</b>	<b>0.01</b>	<b>0.32</b>	<b>0.04</b>	<b>1.3</b>
<b>Total</b>	<b>0.71</b>	<b>8.05</b>	<b>4.31</b>	<b>0.02</b>	<b>0.93</b>	<b>0.25</b>	<b>3.7</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Backhoe	79	1	5	8
Concrete Mixer	120	1	5	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Backhoe	79	0.028	0.338	0.176	0.001	0.006	0.005	51.728	0.003	Tractors/Loaders/Backhoes
Concrete Mixer	120	0.038	0.504	0.273	0.001	0.009	0.008	80.859	0.003	Other Construction Equipment

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction=

0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Backhoe	0.22	2.70	1.41	0.00	0.04	0.04
Concrete Mixer	0.30	4.04	2.18	0.01	0.07	0.06
<b>Total</b>	<b>0.53</b>	<b>6.74</b>	<b>3.59</b>	<b>0.01</b>	<b>0.11</b>	<b>0.10</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Backhoe	0.9	0.0	0.9
Concrete Mixer	1.5	0.0	1.5
<b>Total</b>	<b>2.4</b>	<b>0.0</b>	<b>2.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
Crew Truck	2	5	N/A	30
Stake Truck	1	5	N/A	30
Worker Commute	4	5	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 45  
Telecommunications Construction  
Tower Foundation**

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
Crew Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Stake Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Crew Truck	0.06	0.36	0.37	0.00	0.02	0.01
Stake Truck	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.18</b>	<b>1.31</b>	<b>0.72</b>	<b>0.01</b>	<b>0.05</b>	<b>0.04</b>
<b>Total</b>	<b>0.18</b>	<b>1.31</b>	<b>0.72</b>	<b>0.01</b>	<b>0.05</b>	<b>0.04</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Crew Truck	0.4	0.0	0.4
Stake Truck	0.3	0.0	0.3
Worker Commute	0.6	0.0	0.6
<b>Offsite Total</b>	<b>1.3</b>	<b>0.0</b>	<b>1.3</b>
<b>Total</b>	<b>1.3</b>	<b>0.0</b>	<b>1.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0					0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Crew Truck	2	Paved	30	0.001	0.000	0.05	0.00
Stake Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.26</b>	<b>0.00</b>
<b>Total</b>						<b>0.26</b>	<b>0.00</b>

a From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	500	9.94E-04	2.07E-04	0.50	0.10
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.50</b>	<b>0.10</b>

a From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Estimate



**Table 46  
Telecommunications Construction  
Tower Construction**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.83	4.64	4.38	0.02	0.17	0.15	23.8
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.83</b>	<b>4.64</b>	<b>4.38</b>	<b>0.02</b>	<b>0.17</b>	<b>0.15</b>	<b>23.8</b>
Offsite Motor Vehicle Exhaust	0.16	1.18	0.44	0.00	0.04	0.03	6.0
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.24	0.00	
<b>Offsite Total</b>	<b>0.16</b>	<b>1.18</b>	<b>0.44</b>	<b>0.00</b>	<b>0.28</b>	<b>0.03</b>	<b>6.0</b>
<b>Total</b>	<b>0.99</b>	<b>5.82</b>	<b>4.82</b>	<b>0.02</b>	<b>0.45</b>	<b>0.18</b>	<b>29.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
150-Foot Crane	300	1	30	8
150-Foot Lift Truck	100	1	30	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
150-Foot Crane	300	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
150-Foot Lift Truck	100	0.018	0.226	0.150	0.000	0.006	0.006	38.072	0.002	Aerial Lifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction=

0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
150-Foot Crane	0.69	2.83	3.18	0.01	0.12	0.11
150-Foot Lift Truck	0.14	1.81	1.20	0.00	0.05	0.05
<b>Total</b>	<b>0.83</b>	<b>4.64</b>	<b>4.38</b>	<b>0.02</b>	<b>0.17</b>	<b>0.15</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
150-Foot Crane	19.6	0.0	19.6
150-Foot Lift Truck	4.1	0.0	4.1
<b>Total</b>	<b>23.8</b>	<b>0.0</b>	<b>23.8</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
Crew Truck	2	30	N/A	30
Worker Commute	4	30	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
Crew Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 46  
Telecommunications Construction  
Tower Construction**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Crew Truck	0.06	0.36	0.37	0.00	0.02	0.01
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.16</b>	<b>1.18</b>	<b>0.44</b>	<b>0.00</b>	<b>0.04</b>	<b>0.03</b>
<b>Total</b>	<b>0.16</b>	<b>1.18</b>	<b>0.44</b>	<b>0.00</b>	<b>0.04</b>	<b>0.03</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Crew Truck	2.4	0.0	2.4
Worker Commute	3.6	0.0	3.6
<b>Offsite Total</b>	<b>6.0</b>	<b>0.0</b>	<b>6.0</b>
<b>Total</b>	<b>6.0</b>	<b>0.0</b>	<b>6.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0					0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Crew Truck	2	Paved	30	0.001	0.000	0.05	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.24</b>	<b>0.00</b>
<b>Total</b>						<b>0.24</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 47  
Telecommunications Construction  
Dish Installation**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.14	1.81	1.20	0.00	0.05	0.05	1.4
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.14</b>	<b>1.81</b>	<b>1.20</b>	<b>0.00</b>	<b>0.05</b>	<b>0.05</b>	<b>1.4</b>
Offsite Motor Vehicle Exhaust	0.13	1.00	0.25	0.00	0.03	0.02	1.6
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.22	0.00	
<b>Offsite Total</b>	<b>0.13</b>	<b>1.00</b>	<b>0.25</b>	<b>0.00</b>	<b>0.25</b>	<b>0.02</b>	<b>1.6</b>
<b>Total</b>	<b>0.27</b>	<b>2.81</b>	<b>1.45</b>	<b>0.01</b>	<b>0.30</b>	<b>0.07</b>	<b>3.0</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
150-Foot Lift Truck	100	1	10	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
150-Foot Lift Truck	100	0.018	0.226	0.150	0.000	0.006	0.006	38.072	0.002	Aerial Lifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
150-Foot Lift Truck	0.14	1.81	1.20	0.00	0.05	0.05
<b>Total</b>	<b>0.14</b>	<b>1.81</b>	<b>1.20</b>	<b>0.00</b>	<b>0.05</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
150-Foot Lift Truck	1.4	0.0	1.4
<b>Total</b>	<b>1.4</b>	<b>0.0</b>	<b>1.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
Crew Truck	1	10	N/A	30
Worker Commute	4	10	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
Crew Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 47**  
**Telecommunications Construction**  
**Dish Installation**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Crew Truck	0.03	0.18	0.18	0.00	0.01	0.01
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.13</b>	<b>1.00</b>	<b>0.25</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>
<b>Total</b>	<b>0.13</b>	<b>1.00</b>	<b>0.25</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Crew Truck	0.4	0.0	0.4
Worker Commute	1.2	0.0	1.2
<b>Offsite Total</b>	<b>1.6</b>	<b>0.0</b>	<b>1.6</b>
<b>Total</b>	<b>1.6</b>	<b>0.0</b>	<b>1.6</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0					0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Crew Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.22</b>	<b>0.00</b>
<b>Total</b>						<b>0.22</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 48  
Telecommunications Construction  
Control Building**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.46	2.97	2.93	0.02	0.09	0.08	19.3
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.46</b>	<b>2.97</b>	<b>2.93</b>	<b>0.02</b>	<b>0.09</b>	<b>0.08</b>	<b>19.3</b>
Offsite Motor Vehicle Exhaust	0.08	0.59	0.22	0.00	0.02	0.01	2.5
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.12	0.00	
<b>Offsite Total</b>	<b>0.08</b>	<b>0.59</b>	<b>0.22</b>	<b>0.00</b>	<b>0.14</b>	<b>0.01</b>	<b>2.5</b>
<b>Total</b>	<b>0.54</b>	<b>3.56</b>	<b>3.15</b>	<b>0.02</b>	<b>0.23</b>	<b>0.09</b>	<b>21.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Bucket Truck	350	1	25	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Bucket Truck	350	0.058	0.371	0.366	0.002	0.011	0.010	212.856	0.005	Aerial Lifts

a From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Bucket Truck	0.46	2.97	2.93	0.02	0.09	0.08
<b>Total</b>	<b>0.46</b>	<b>2.97</b>	<b>2.93</b>	<b>0.02</b>	<b>0.09</b>	<b>0.08</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Bucket Truck	19.3	0.0	19.3
<b>Total</b>	<b>19.3</b>	<b>0.0</b>	<b>19.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
Crew Truck	1	25	N/A	30
Worker Commute	2	25	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
Crew Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Table 48**  
**Telecommunications Construction**  
**Control Building**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Crew Truck	0.03	0.18	0.18	0.00	0.01	0.01
Worker Commute	0.05	0.41	0.03	0.00	0.01	0.01
<b>Offsite Total</b>	<b>0.08</b>	<b>0.59</b>	<b>0.22</b>	<b>0.00</b>	<b>0.02</b>	<b>0.01</b>
<b>Total</b>	<b>0.08</b>	<b>0.59</b>	<b>0.22</b>	<b>0.00</b>	<b>0.02</b>	<b>0.01</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Crew Truck	1.0	0.0	1.0
Worker Commute	1.5	0.0	1.5
<b>Offsite Total</b>	<b>2.5</b>	<b>0.0</b>	<b>2.5</b>
<b>Total</b>	<b>2.5</b>	<b>0.0</b>	<b>2.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0					0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Crew Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	2	Paved	60	0.001	0.000	0.10	0.00
<b>Offsite Total</b>						<b>0.12</b>	<b>0.00</b>
<b>Total</b>						<b>0.12</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 49**  
**Telecommunications Construction**  
**Overhead Communications Installation**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.46	2.97	2.93	0.02	0.09	0.08	24.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.46</b>	<b>2.97</b>	<b>2.93</b>	<b>0.02</b>	<b>0.09</b>	<b>0.08</b>	<b>24.0</b>
Offsite Motor Vehicle Exhaust	0.13	1.00	0.25	0.00	0.03	0.02	5.0
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.22	0.00	
<b>Offsite Total</b>	<b>0.13</b>	<b>1.00</b>	<b>0.25</b>	<b>0.00</b>	<b>0.25</b>	<b>0.02</b>	<b>5.0</b>
<b>Total</b>	<b>0.60</b>	<b>3.97</b>	<b>3.18</b>	<b>0.02</b>	<b>0.33</b>	<b>0.10</b>	<b>28.9</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Bucket Truck	350	1	31	8

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Bucket Truck	350	0.058	0.371	0.366	0.002	0.011	0.010	212.856	0.005	Aerial Lifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Bucket Truck	0.46	2.97	2.93	0.02	0.09	0.08
<b>Total</b>	<b>0.46</b>	<b>2.97</b>	<b>2.93</b>	<b>0.02</b>	<b>0.09</b>	<b>0.08</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Bucket Truck	23.9	0.0	24.0
<b>Total</b>	<b>23.9</b>	<b>0.0</b>	<b>24.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
Reel Truck	1	31	N/A	30
Worker Commute	4	31	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
Reel Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 49**  
**Telecommunications Construction**  
**Overhead Communications Installation**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Reel Truck	0.03	0.18	0.18	0.00	0.01	0.01
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.13</b>	<b>1.00</b>	<b>0.25</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>
<b>Total</b>	<b>0.13</b>	<b>1.00</b>	<b>0.25</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Reel Truck	1.2	0.0	1.2
Worker Commute	3.7	0.0	3.8
<b>Offsite Total</b>	<b>5.0</b>	<b>0.0</b>	<b>5.0</b>
<b>Total</b>	<b>5.0</b>	<b>0.0</b>	<b>5.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0					0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Reel Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.22</b>	<b>0.00</b>
<b>Total</b>						<b>0.22</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]



**Table 50**  
**Telecommunications Construction**  
**Substation Telecommunications Equipment Installation**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.0</b>
Offsite Motor Vehicle Exhaust	0.08	0.62	0.05	0.00	0.02	0.01	0.9
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.14	0.00	
<b>Offsite Total</b>	<b>0.08</b>	<b>0.62</b>	<b>0.05</b>	<b>0.00</b>	<b>0.16</b>	<b>0.01</b>	<b>0.9</b>
<b>Total</b>	<b>0.08</b>	<b>0.62</b>	<b>0.05</b>	<b>0.00</b>	<b>0.16</b>	<b>0.01</b>	<b>0.9</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
None				

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
None		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

a From Table 53

b Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
None	0.0	0.0	0.0
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
None				0
<b>Offsite</b>				
Van	2	10	N/A	30
Worker Commute	2	10	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Offsite</b>									
Van	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

**Table 50**  
**Telecommunications Construction**  
**Substation Telecommunications Equipment Installation**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Van	0.03	0.21	0.02	0.00	0.01	0.00
Worker Commute	0.05	0.41	0.03	0.00	0.01	0.01
<b>Offsite Total</b>	<b>0.08</b>	<b>0.62</b>	<b>0.05</b>	<b>0.00</b>	<b>0.02</b>	<b>0.01</b>
<b>Total</b>	<b>0.08</b>	<b>0.62</b>	<b>0.05</b>	<b>0.00</b>	<b>0.02</b>	<b>0.01</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
None	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Van	0.3	0.0	0.3
Worker Commute	0.6	0.0	0.6
<b>Offsite Total</b>	<b>0.9</b>	<b>0.0</b>	<b>0.9</b>
<b>Total</b>	<b>0.9</b>	<b>0.0</b>	<b>0.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
None	0					0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Van	2	Paved	30	0.001	0.000	0.05	0.00
Worker Commute	2	Paved	60	0.001	0.000	0.10	0.00
<b>Offsite Total</b>						<b>0.14</b>	<b>0.00</b>
<b>Total</b>						<b>0.14</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 51**  
**Telecommunications Construction**  
**Santiago Peak Communication Site**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.32	1.84	1.21	0.01	0.04	0.04	13.8
Onsite Motor Vehicle Exhaust	0.03	0.21	0.22	0.00	0.01	0.01	1.4
Onsite Motor Vehicle Fugitive PM	--	--	--	--	15.93	1.59	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.35</b>	<b>2.05</b>	<b>1.43</b>	<b>0.01</b>	<b>15.98</b>	<b>1.64</b>	<b>15.2</b>
Offsite Motor Vehicle Exhaust	0.10	0.82	0.07	0.00	0.02	0.02	3.6
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.19	0.00	
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.22</b>	<b>0.02</b>	<b>3.6</b>
<b>Total</b>	<b>0.45</b>	<b>2.87</b>	<b>1.50</b>	<b>0.01</b>	<b>16.20</b>	<b>1.65</b>	<b>18.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
1-Ton Truck	300	1	30	4

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
1-Ton Truck	300	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
1-Ton Truck	0.32	1.84	1.21	0.01	0.04	0.04
<b>Total</b>	<b>0.32</b>	<b>1.84</b>	<b>1.21</b>	<b>0.01</b>	<b>0.04</b>	<b>0.04</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
1-Ton Truck	13.8	0.0	13.8
<b>Total</b>	<b>13.8</b>	<b>0.0</b>	<b>13.8</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
1-Ton Truck, 4x4	3	30	4	10
Van	1	30	2	5
<b>Offsite</b>				
Worker Commute	4	30	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
1-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Van	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 51**  
**Telecommunications Construction**  
**Santiago Peak Communication Site**

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
1-Ton Truck, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
Van	0.00	0.03	0.03	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.03</b>	<b>0.21</b>	<b>0.22</b>	<b>0.00</b>	<b>0.01</b>	<b>0.01</b>
<b>Offsite</b>						
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>
<b>Total</b>	<b>0.14</b>	<b>1.03</b>	<b>0.28</b>	<b>0.00</b>	<b>0.03</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
1-Ton Truck, 4x4	1.2	0.0	1.2
Van	0.2	0.0	0.2
<b>Onsite Total</b>	<b>1.4</b>	<b>0.0</b>	<b>1.4</b>
<b>Offsite</b>			
Worker Commute	3.6	0.0	3.6
<b>Offsite Total</b>	<b>3.6</b>	<b>0.0</b>	<b>3.6</b>
<b>Total</b>	<b>5.0</b>	<b>0.0</b>	<b>5.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
1-Ton Truck, 4x4	3	Unpaved	10	0.455	0.046	13.66	1.37
Van	1	Unpaved	5	0.455	0.046	2.28	0.23
<b>Onsite Total</b>						<b>15.93</b>	<b>1.59</b>
<b>Offsite</b>							
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.19</b>	<b>0.00</b>
<b>Total</b>						<b>16.12</b>	<b>1.59</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Table 51b**

**Additional Substation Construction Emissions**  
**Civil**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.78	9.91	3.89	0.02	0.14	0.12	7.4
Onsite Motor Vehicle Exhaust	0.00	0.02	0.05	0.00	0.00	0.00	0.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	4.83	0.48	
Earthwork Fugitive PM	--	--	--	--	0.02	0.00	
<b>Onsite Total</b>	<b>0.78</b>	<b>9.93</b>	<b>3.94</b>	<b>0.02</b>	<b>4.99</b>	<b>0.61</b>	<b>7.5</b>
Offsite Motor Vehicle Exhaust	0.38	2.47	2.36	0.01	0.16	0.11	4.4
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.34	0.00	
<b>Offsite Total</b>	<b>0.38</b>	<b>2.47</b>	<b>2.36</b>	<b>0.01</b>	<b>0.49</b>	<b>0.11</b>	<b>4.4</b>
<b>Total</b>	<b>1.16</b>	<b>12.41</b>	<b>6.30</b>	<b>0.03</b>	<b>5.48</b>	<b>0.73</b>	<b>11.9</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Excavator with Auger Attachment	152	1	10	8
Backhoe	79	1	10	8
Bobcat Skid Steer	75	1	10	4
Forklift	83	1	10	4

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Excavator with Auger Attachment	152	0.052	0.664	0.198	0.001	0.009	0.008	112.222	0.005	Excavators
Backhoe	79	0.028	0.338	0.176	0.001	0.006	0.005	51.728	0.003	Tractors/Loaders/Backhoes
Bobcat Skid Steer	75	0.017	0.267	0.124	0.001	0.002	0.002	42.762	0.002	Skid Steer Loaders
Forklift	83	0.017	0.209	0.100	0.000	0.002	0.002	31.225	0.002	Forklifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction = 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006.

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Excavator with Auger Attachment	0.41	5.31	1.59	0.01	0.07	0.07
Backhoe	0.22	2.70	1.41	0.00	0.04	0.04
Bobcat Skid Steer	0.07	1.07	0.50	0.00	0.01	0.01
Forklift	0.07	0.83	0.40	0.00	0.01	0.01
<b>Total</b>	<b>0.78</b>	<b>9.91</b>	<b>3.89</b>	<b>0.02</b>	<b>0.14</b>	<b>0.12</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Excavator with Auger Attachment	4.1	0.0	4.1
Backhoe	1.9	0.0	1.9
Bobcat Skid Steer	1.5	0.0	1.5
Forklift	0.0	0.0	0.0
<b>Total</b>	<b>7.4</b>	<b>0.0</b>	<b>7.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number <sup>b</sup>	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Dump Truck	2	5	0.5	1.25
Water Truck	1	10	1	2.5
<b>Offsite</b>				
Concrete Truck	4	5	N/A	60
Worker Commute	7	10	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

<sup>b</sup> Concrete trucks based on 15,000 CY over 90 days and 10 CY/truck = 15,000 / 90 / 10 = 16.6

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									

**Table 51b**

**Additional Substation Construction Emissions**

**Civil**

Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05	
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05	
<b>Offsite</b>										
Concrete Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05	
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05	

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Dump Truck	0.00	0.01	0.02	0.00	0.00	0.00
Water Truck	0.00	0.01	0.02	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.02</b>	<b>0.05</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Concrete Truck	0.19	1.03	2.24	0.01	0.12	0.09
Worker Commute	0.18	1.44	0.12	0.00	0.04	0.03
<b>Offsite Total</b>	<b>0.38</b>	<b>2.47</b>	<b>2.36</b>	<b>0.01</b>	<b>0.16</b>	<b>0.11</b>
<b>Total</b>	<b>0.38</b>	<b>2.50</b>	<b>2.41</b>	<b>0.01</b>	<b>0.16</b>	<b>0.12</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Dump Truck	0.0	0.0	0.0
Water Truck	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.1</b>	<b>0.0</b>	<b>0.1</b>
<b>Offsite</b>			
Concrete Truck	2.3	0.0	2.3
Worker Commute	2.1	0.0	2.1
<b>Offsite Total</b>	<b>4.4</b>	<b>0.0</b>	<b>4.4</b>
<b>Total</b>	<b>4.5</b>	<b>0.0</b>	<b>4.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/ Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Dump Truck	2	Unpaved	1.25	0.965	0.097	2.41	0.24
Water Truck	1	Unpaved	2.5	0.965	0.097	2.41	0.24
<b>Onsite Total</b>						<b>4.83</b>	<b>0.48</b>
<b>Offsite</b>							
Concrete Truck	4	Paved	60	0.001	0.000	0.19	0.00
Worker Commute	7	Paved	60	0.001	0.000	0.34	0.00
<b>Offsite Total</b>						<b>0.34</b>	<b>0.00</b>
<b>Total</b>						<b>5.16</b>	<b>0.48</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	24	9.94E-04	2.07E-04	0.02	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.02</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Peak daily estimated at 24 CY

**Table 51c**  
**Additional Substation Construction Emissions**  
**Electrical**

Emissions Summary							
Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.14	11.25	7.51	0.02	0.29	0.27	15.5
Onsite Motor Vehicle Exhaust	0.00	0.02	0.00	0.00	0.00	0.00	0.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.01	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>1.15</b>	<b>11.27</b>	<b>7.51</b>	<b>0.02</b>	<b>0.30</b>	<b>0.27</b>	<b>15.6</b>
Offsite Motor Vehicle Exhaust	0.26	2.06	0.17	0.01	0.06	0.04	9.1
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.48	0.00	
<b>Offsite Total</b>	<b>0.26</b>	<b>2.06</b>	<b>0.17</b>	<b>0.01</b>	<b>0.54</b>	<b>0.04</b>	<b>9.1</b>
<b>Total</b>	<b>1.41</b>	<b>13.32</b>	<b>7.68</b>	<b>0.03</b>	<b>0.84</b>	<b>0.31</b>	<b>24.7</b>

Construction Equipment Summary				
Equipment	Horse-power	Number	Days Used	Hours Used/Day
Manlift	43	4	30	7
Reach Manlift	87	2	30	6
15-Ton Crane	125	2	5	5

Construction Equipment Exhaust Emission Factors										
Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Scissor Lift	87	0.018	0.226	0.150	0.000	0.006	0.006	38.072	0.002	Aerial Lifts
Manlift	43	0.017	0.135	0.122	0.000	0.003	0.003	19.613	0.002	Aerial Lifts
Reach Manlift	87	0.018	0.226	0.150	0.000	0.006	0.006	38.072	0.002	Aerial Lifts
15-Ton Crane	125	0.046	0.474	0.230	0.001	0.012	0.011	80.345	0.004	Cranes

<sup>a</sup> From Table 53  
<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10  
 PM2.5 Fraction = 0.920  
 From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

Construction Equipment Daily Criteria Pollutant Exhaust Emissions						
Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Manlift	0.47	3.78	3.41	0.01	0.10	0.09
Reach Manlift	0.21	2.72	1.79	0.01	0.08	0.07
15-Ton Crane	0.46	4.74	2.30	0.01	0.12	0.11
<b>Total</b>	<b>1.14</b>	<b>11.25</b>	<b>7.51</b>	<b>0.02</b>	<b>0.29</b>	<b>0.27</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions			
Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Manlift	7.5	0.0	7.5
Reach Manlift	6.2	0.0	6.2
15-Ton Crane	1.8	0.0	1.8
<b>Total</b>	<b>15.5</b>	<b>0.0</b>	<b>15.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]  
 Emission factors are in Table 53  
<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008. [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Usage				
Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Crew Truck	10	30	0.25	0.625
<b>Offsite</b>				
Worker Commute	10	30	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Table 51c**  
**Additional Substation Construction Emissions**  
**Electrical**

<b>Motor Vehicle Exhaust Emission Factors</b>									
Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

<b>Motor Vehicle Daily Criteria Pollutant Exhaust Emissions</b>						
Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Crew Truck	0.00	0.02	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.02</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
<b>Offsite Total</b>	<b>0.26</b>	<b>2.06</b>	<b>0.17</b>	<b>0.01</b>	<b>0.06</b>	<b>0.04</b>
<b>Total</b>	<b>0.26</b>	<b>2.08</b>	<b>0.17</b>	<b>0.01</b>	<b>0.06</b>	<b>0.04</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

<b>Motor Vehicle Total Greenhouse Gas Emissions</b>			
Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Crew Truck	0.1	0.0	0.1
<b>Onsite Total</b>	<b>0.1</b>	<b>0.0</b>	<b>0.1</b>
<b>Offsite</b>			
Worker Commute	9.1	0.0	9.1
<b>Offsite Total</b>	<b>9.1</b>	<b>0.0</b>	<b>9.1</b>
<b>Total</b>	<b>9.2</b>	<b>0.0</b>	<b>9.2</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

<b>Motor Vehicle Fugitive Particulate Matter Emissions</b>							
Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Crew Truck	10	Paved	0.625	0.001	0.000	0.01	0.00
<b>Onsite Total</b>						<b>0.01</b>	<b>0.00</b>
<b>Offsite</b>							
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
<b>Offsite Total</b>						<b>0.48</b>	<b>0.00</b>
<b>Total</b>						<b>0.49</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

<b>Earthwork Fugitive Particulate Matter Emissions</b>						
Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]



Table 51d

**Additional Substation Construction Emissions**  
**Wiring**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.17	1.90	1.38	0.00	0.05	0.05	3.6
Onsite Motor Vehicle Exhaust	0.00	0.02	0.00	0.00	0.00	0.00	0.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.17</b>	<b>1.92</b>	<b>1.39</b>	<b>0.00</b>	<b>0.06</b>	<b>0.05</b>	<b>3.7</b>
Offsite Motor Vehicle Exhaust	0.26	2.06	0.17	0.01	0.06	0.04	9.1
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.48	0.00	
<b>Offsite Total</b>	<b>0.26</b>	<b>2.06</b>	<b>0.17</b>	<b>0.01</b>	<b>0.54</b>	<b>0.04</b>	<b>9.1</b>
<b>Total</b>	<b>0.44</b>	<b>3.97</b>	<b>1.56</b>	<b>0.01</b>	<b>0.59</b>	<b>0.09</b>	<b>12.8</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Reach Manlift	87	2	30	3
Manlift	43	1	15	4

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Reach Manlift	87	0.018	0.226	0.150	0.000	0.006	0.006	38.072	0.002	Aerial Lifts
Manlift	43	0.017	0.135	0.122	0.000	0.003	0.003	19.613	0.002	Aerial Lifts

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

<http://www.aqmd.gov/ceqa/handbook/PM2.5/PM2.5.html>

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Reach Manlift	0.11	1.36	0.90	0.00	0.04	0.03
Manlift	0.07	0.54	0.49	0.00	0.01	0.01
<b>Total</b>	<b>0.17</b>	<b>1.90</b>	<b>1.38</b>	<b>0.00</b>	<b>0.05</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Reach Manlift	3.1	0.0	3.1
Manlift	0.5	0.0	0.5
<b>Total</b>	<b>3.6</b>	<b>0.0</b>	<b>3.6</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Crew Truck	8	30	0.25	0.625
<b>Offsite</b>				
Worker Commute	10	30	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 51d**  
**Additional Substation Construction Emissions**  
**Wiring**

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions						
Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Crew Truck	0.00	0.02	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.02</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
<b>Offsite Total</b>	<b>0.26</b>	<b>2.06</b>	<b>0.17</b>	<b>0.01</b>	<b>0.06</b>	<b>0.04</b>
<b>Total</b>	<b>0.26</b>	<b>2.07</b>	<b>0.17</b>	<b>0.01</b>	<b>0.06</b>	<b>0.04</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions			
Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Crew Truck	0.1	0.0	0.1
<b>Onsite Total</b>	<b>0.1</b>	<b>0.0</b>	<b>0.1</b>
<b>Offsite</b>			
Worker Commute	9.1	0.0	9.1
<b>Offsite Total</b>	<b>9.1</b>	<b>0.0</b>	<b>9.1</b>
<b>Total</b>	<b>9.1</b>	<b>0.0</b>	<b>9.2</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Fugitive Particulate Matter Emissions							
Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Crew Truck	8	Paved	0.625	0.001	0.000	0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
<b>Offsite Total</b>						<b>0.48</b>	<b>0.00</b>
<b>Total</b>						<b>0.48</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions						
Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 51e

**Additional Substation Construction Emissions**

**Testing**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.0</b>
Offsite Motor Vehicle Exhaust	0.10	0.82	0.07	0.00	0.02	0.02	2.4
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.19	0.00	
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.22</b>	<b>0.02</b>	<b>2.4</b>
<b>Total</b>	<b>0.11</b>	<b>0.83</b>	<b>0.07</b>	<b>0.00</b>	<b>0.22</b>	<b>0.02</b>	<b>2.4</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
None				

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
None										

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
None	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
None	0.0	0.0	0.0
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Crew Truck	2	20	0.25	0.625
<b>Offsite</b>				
Worker Commute	4	20	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
<b>Offsite</b>									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Table 51e**  
**Additional Substation Construction Emissions**  
**Testing**

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions						
Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Crew Truck	0.00	0.00	0.00	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
<b>Offsite Total</b>	<b>0.10</b>	<b>0.82</b>	<b>0.07</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>
<b>Total</b>	<b>0.11</b>	<b>0.83</b>	<b>0.07</b>	<b>0.00</b>	<b>0.02</b>	<b>0.02</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions			
Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Crew Truck	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Offsite</b>			
Worker Commute	2.4	0.0	2.4
<b>Offsite Total</b>	<b>2.4</b>	<b>0.0</b>	<b>2.4</b>
<b>Total</b>	<b>2.4</b>	<b>0.0</b>	<b>2.4</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

Motor Vehicle Fugitive Particulate Matter Emissions							
Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Crew Truck	2	Paved	0.625	0.001	0.000	0.00	0.00
<b>Onsite Total</b>						<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>							
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
<b>Offsite Total</b>						<b>0.19</b>	<b>0.00</b>
<b>Total</b>						<b>0.19</b>	<b>0.00</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions						
Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.00</b>	<b>0.00</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

**Table 51f**

**Additional Substation Construction Emissions  
Civil - Demo**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.29	3.77	1.90	0.01	0.05	0.05	3.3
Onsite Motor Vehicle Exhaust	0.00	0.02	0.05	0.00	0.00	0.00	0.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	4.83	0.48	
Earthwork Fugitive PM	--	--	--	--	0.14	0.03	
<b>Onsite Total</b>	<b>0.30</b>	<b>3.79</b>	<b>1.95</b>	<b>0.01</b>	<b>5.02</b>	<b>0.56</b>	<b>3.4</b>
Offsite Motor Vehicle Exhaust	0.28	1.96	1.24	0.01	0.10	0.07	3.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.34	0.00	
<b>Offsite Total</b>	<b>0.28</b>	<b>1.96</b>	<b>1.24</b>	<b>0.01</b>	<b>0.44</b>	<b>0.07</b>	<b>3.3</b>
<b>Total</b>	<b>0.58</b>	<b>5.75</b>	<b>3.19</b>	<b>0.02</b>	<b>5.46</b>	<b>0.63</b>	<b>6.7</b>

**Construction Equipment Summary**

Equipment	Horse-power	Number	Days Used	Hours Used/Day
Backhoe	79	1	10	8
Bobcat Skid Steer	75	1	10	4

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Backhoe	79	0.028	0.338	0.176	0.001	0.006	0.005	51.728	0.003	Tractors/Loaders/Backhoes
Bobcat Skid Steer	75	0.017	0.267	0.124	0.001	0.002	0.002	42.762	0.002	Skid Steer Loaders

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Construction Equipment Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Backhoe	0.22	2.70	1.41	0.00	0.04	0.04
Bobcat Skid Steer	0.07	1.07	0.50	0.00	0.01	0.01
<b>Total</b>	<b>0.29</b>	<b>3.77</b>	<b>1.90</b>	<b>0.01</b>	<b>0.05</b>	<b>0.05</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Construction Equipment Total Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Backhoe	1.9	0.0	1.9
Bobcat Skid Steer	1.5	0.0	1.5
<b>Total</b>	<b>3.3</b>	<b>0.0</b>	<b>3.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number <sup>b</sup>	Days Used	Hours Used/Day	Miles/Day/Veh. <sup>a</sup>
<b>Onsite</b>				
Dump Truck	2	5	0.5	1.25
Water Truck	1	10	1	2.5
<b>Offsite</b>				
Concrete Truck	2	5	N/A	60
Worker Commute	7	10	N/A	60

<sup>a</sup> Onsite travel based on 25% use at 10 mph average speed

<sup>b</sup> Concrete trucks based on 15,000 CY over 90 days and 10 CY/truck = 15,000 / 90 / 10 = 16.6

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
<b>Onsite</b>									
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
<b>Offsite</b>									
Concrete Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

**Table 51f**  
**Additional Substation Construction Emissions**  
**Civil - Demo**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
<b>Onsite</b>						
Dump Truck	0.00	0.01	0.02	0.00	0.00	0.00
Water Truck	0.00	0.01	0.02	0.00	0.00	0.00
<b>Onsite Total</b>	<b>0.00</b>	<b>0.02</b>	<b>0.05</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Offsite</b>						
Concrete Truck	0.10	0.52	1.12	0.00	0.06	0.04
Worker Commute	0.18	1.44	0.12	0.00	0.04	0.03
<b>Offsite Total</b>	<b>0.28</b>	<b>1.96</b>	<b>1.24</b>	<b>0.01</b>	<b>0.10</b>	<b>0.07</b>
<b>Total</b>	<b>0.28</b>	<b>1.98</b>	<b>1.29</b>	<b>0.01</b>	<b>0.10</b>	<b>0.07</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Total Greenhouse Gas Emissions**

Vehicle	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
<b>Onsite</b>			
Dump Truck	0.0	0.0	0.0
Water Truck	0.0	0.0	0.0
<b>Onsite Total</b>	<b>0.1</b>	<b>0.0</b>	<b>0.1</b>
<b>Offsite</b>			
Concrete Truck	1.1	0.0	1.1
Worker Commute	2.1	0.0	2.1
<b>Offsite Total</b>	<b>3.3</b>	<b>0.0</b>	<b>3.3</b>
<b>Total</b>	<b>3.3</b>	<b>0.0</b>	<b>3.3</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climateregistry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
<b>Onsite</b>							
Dump Truck	2	Unpaved	1.25	0.965	0.097	2.41	0.24
Water Truck	1	Unpaved	2.5	0.965	0.097	2.41	0.24
<b>Onsite Total</b>						<b>4.83</b>	<b>0.48</b>
<b>Offsite</b>							
Concrete Truck	2	Paved	60	0.001	0.000	0.10	0.00
Worker Commute	7	Paved	60	0.001	0.000	0.34	0.00
<b>Offsite Total</b>						<b>0.34</b>	<b>0.00</b>
<b>Total</b>						<b>5.16</b>	<b>0.48</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Earthwork Fugitive Particulate Matter Emissions**

Activity	Activity Units	Activity Level	PM10 Emission Factor <sup>a</sup>	PM2.5 Emission Factor <sup>a</sup>	PM10 (lb/day) <sup>b</sup>	PM2.5 (lb/day) <sup>b</sup>
Soil Handling <sup>c</sup>	CY/day	140	9.94E-04	2.07E-04	0.14	0.03
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		22.0	4.58	0.00	0.00
<b>Total</b>					<b>0.14</b>	<b>0.03</b>

<sup>a</sup> From Table 57

<sup>b</sup> Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

<sup>c</sup> Peak daily estimated from total of 12,000 CY over 90 days

**Table 52**  
**Operational Emissions**

**Emissions Summary**

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT/yr)
Emergency Diesel Generator	0.09	0.58	0.57	0.00	0.02	0.00	8
Motor Vehicle Exhaust	0.08	0.64	0.05	0.00	0.02	0.01	2
Motor Vehicle Fugitive PM	--	--	--	--	2.42	0.23	--
SF6 Leakage	--	--	--	--	--	--	660
<b>Total</b>	<b>0.17</b>	<b>1.22</b>	<b>0.62</b>	<b>0.01</b>	<b>2.46</b>	<b>0.24</b>	<b>670</b>

**Emergency Diesel Generator Usage**

Equipment	Horse-power	Number	Days Used/Year	Hours Used/Day
Emergency Diesel Generator	440	1	52	1

**Construction Equipment Exhaust Emission Factors**

Equipment	Horse-power	VOC (lb/hr) <sup>a</sup>	CO (lb/hr) <sup>a</sup>	NOX (lb/hr) <sup>a</sup>	SOX (lb/hr) <sup>a</sup>	PM10 (lb/hr) <sup>a</sup>	PM2.5 (lb/hr) <sup>b</sup>	CO2 (lb/hr) <sup>a</sup>	CH4 (lb/hr) <sup>a</sup>	Category
Emergency Diesel Generator	440	0.086	0.582	0.570	0.003	0.017	0.000	336.853	0.008	Generator Sets

<sup>a</sup> From Table 53

<sup>b</sup> Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction=

0.920

From Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5

and PM 2.5 Significance Thresholds, SCAQMD, October 2006,

[http://www.aqmd.gov/ceqa/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html)

**Emergency Diesel Generator Daily Criteria Pollutant Exhaust Emissions**

Equipment	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Emergency Diesel Generator	0.09	0.58	0.57	0.00	0.02	0.00
<b>Total</b>	<b>0.09</b>	<b>0.58</b>	<b>0.57</b>	<b>0.00</b>	<b>0.02</b>	<b>0.00</b>

<sup>a</sup> Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

**Emergency Diesel Generator Annual Greenhouse Gas Emissions**

Equipment	CO2 (MT) <sup>a</sup>	CH4 (MT) <sup>a</sup>	CO2e (MT) <sup>b</sup>
Emergency Diesel Generator	7.9	0.0	7.9
<b>Total</b>	<b>7.9</b>	<b>0.0</b>	<b>7.9</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Motor Vehicle Usage**

Vehicle	Number	Days Used/Year	Miles/Day/Veh.
Transmission Line Inspection	1	1	65
Subtransmission Line Inspection	1	1	62
Substation Site Visit	1	48	60

**Motor Vehicle Exhaust Emission Factors**

Vehicle	Category	VOC (lb/mi) <sup>a</sup>	CO (lb/mi) <sup>a</sup>	NOX (lb/mi) <sup>a</sup>	SOX (lb/mi) <sup>a</sup>	PM10 (lb/mi) <sup>a</sup>	PM2.5 (lb/mi) <sup>b</sup>	CO2 (lb/mi) <sup>a</sup>	CH4 (lb/mi) <sup>a</sup>
Transmission Line Inspection	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Subtransmission Line Inspection	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Substation Site Visit	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

<sup>a</sup> From Table 54 or Table 55

**Motor Vehicle Daily Criteria Pollutant Exhaust Emissions**

Vehicle	VOC (lb/day) <sup>a</sup>	CO (lb/day) <sup>a</sup>	NOX (lb/day) <sup>a</sup>	SOX (lb/day) <sup>a</sup>	PM10 (lb/day) <sup>a</sup>	PM2.5 (lb/day) <sup>a</sup>
Transmission Line Inspection	0.03	0.22	0.02	0.00	0.01	0.00
Subtransmission Line Inspection	0.03	0.21	0.02	0.00	0.01	0.00
Substation Site Visit	0.03	0.21	0.02	0.00	0.01	0.00
<b>Total</b>	<b>0.08</b>	<b>0.64</b>	<b>0.05</b>	<b>0.00</b>	<b>0.02</b>	<b>0.01</b>

<sup>a</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**Motor Vehicle Annual Greenhouse Gas Emissions**

Vehicle	CO2 (MT/yr) <sup>a</sup>	CH4 (MT/yr) <sup>a</sup>	CO2e (MT/yr) <sup>b</sup>
Transmission Line Inspection	0.0	0.0	0.0
Subtransmission Line Inspection	0.0	0.0	0.0
Substation Site Visit	1.5	0.0	1.5
<b>Total</b>	<b>1.5</b>	<b>0.0</b>	<b>1.5</b>

<sup>a</sup> Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x

days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 54 and Table 55

<sup>b</sup> CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emission factors are CO<sub>2</sub> emissions plus 21 x CH<sub>4</sub> emissions, based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0, April 2008, [http://www.climate registry.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climate registry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

**Table 52**  
**Operational Emissions**

**Motor Vehicle Fugitive Particulate Matter Emissions**

Vehicle	Number	Road Type	Miles/Day/Vehicle	PM10 Emission Factor (lb/mi) <sup>a</sup>	PM2.5 Emission Factor (lb/mi) <sup>a</sup>	PM10 Emissions (lb/day) <sup>b</sup>	PM2.5 Emissions (lb/day) <sup>b</sup>
Transmission Line Inspection	1	Paved	60	0.001	0.000	0.05	0.00
Transmission Line Inspection	1	Unpaved	5	0.455	0.046	2.28	0.23
Subtransmission Line Inspection	1	Paved	62	0.001	0.000	0.05	0.00
Substation Site Visit	1	Paved	60	0.001	0.000	0.05	0.00
<b>Total</b>						<b>2.42</b>	<b>0.23</b>

<sup>a</sup> From Table 56

<sup>b</sup> Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

**SF6 Leakage Greenhouse Gas Emissions**

Item	Value	Units
SF6 in 500 kV Equipment	11,515	pounds
SF6 in 115 kV Equipment	1,257	pounds
Total SF6 Added	12,772	pounds
SF6 Leakage Rate	0.5	%/year
SF6 Emissions	63.86	pounds
SF6 Global Warming Potential <sup>a</sup>	22,800	
<b>CO2e Emissions<sup>b</sup></b>	<b>660</b>	<b>MT/yr</b>

<sup>a</sup> Based on Table C.1 from California Climate Action

Registry General Reporting Protocol, Version 3.0,

April 2008.

[http://www.climateaction.org/resources/docs/protocols/grp/GRP\\_V3\\_April2008\\_FINAL.pdf](http://www.climateaction.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf)

<sup>b</sup> CO<sub>2</sub>e emissions [metric tons] = SF<sub>6</sub> emissions [lb] x

Global warming potential [lb CO<sub>2</sub>e/lb SF<sub>6</sub>] x 453.6 [g/lb] /

1,000,000 [g/MT]

Substation	Item	SF6 Volume (Pounds Each)	Quantity Added	Total SF6 Volume (Pounds)
<b>500 kV</b>				
Alberhill	Circuit Breaker	1,645	7	11,515
<b>500 kV Total</b>				<b>11,515</b>
<b>115 kV</b>				
Alberhill	Circuit Breaker	83	15	1,245
Valley	Circuit Breaker	71	(1)	(71)
Newcomb	Circuit Breaker	83	1	83
<b>115 kV Total</b>				<b>1,257</b>
<b>Total Change</b>				<b>12,772</b>



**Table 53**  
**SCAB Fleet Average Emission Factors (Diesel)**

2025										
Air Basin		SC								
Equipment	MaxHP			(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
				COG	CO	NOX	SOX	PM	CO2	CH4
Aerial Lifts	15	Aerial Lifts	Aerial Lifts0000	0.0101	0.0528	0.0831	0.0001	0.0025	8.7	0.0009
	25	Aerial Lifts	Aerial Lifts0016	0.0132	0.0451	0.0838	0.0001	0.0032	11.0	0.0012
	50	Aerial Lifts	Aerial Lifts0026	0.0168	0.1351	0.1218	0.0003	0.0035	19.6	0.0015
	120	Aerial Lifts	Aerial Lifts0051	0.0176	0.2265	0.1496	0.0004	0.0063	38.1	0.0016
	500	Aerial Lifts	Aerial Lifts0121	0.0580	0.3710	0.3660	0.0021	0.0109	213	0.0052
	750	Aerial Lifts	Aerial Lifts0501	0.1054	0.6706	0.6753	0.0039	0.0199	385	0.0095
Aerial Lifts Composite		Aerial Lifts	Aerial Lifts0751	0.0184	0.1646	0.1366	0.0004	0.0048	34.7	0.0017
Air Compressors	15	Air Compressors	Air Compressors0000	0.0087	0.0444	0.0545	0.0001	0.0023	7.2	0.0008
	25	Air Compressors	Air Compressors0016	0.0181	0.0605	0.1121	0.0002	0.0045	14.4	0.0016
	50	Air Compressors	Air Compressors0026	0.0263	0.1911	0.1476	0.0003	0.0047	22.3	0.0024
	120	Air Compressors	Air Compressors0051	0.0289	0.3023	0.1928	0.0006	0.0088	47.0	0.0026
	175	Air Compressors	Air Compressors0121	0.0424	0.4998	0.2187	0.0010	0.0104	88.5	0.0038
	250	Air Compressors	Air Compressors0176	0.0514	0.2531	0.2553	0.0015	0.0078	131	0.0046
	500	Air Compressors	Air Compressors0251	0.0894	0.4292	0.4150	0.0023	0.0134	232	0.0081
	750	Air Compressors	Air Compressors0501	0.1385	0.6633	0.6545	0.0036	0.0210	358	0.0125
	1000	Air Compressors	Air Compressors0751	0.1999	0.9265	2.5439	0.0049	0.0483	486	0.0180
	Air Compressors Composite		Air Compressors	Air Compressors1001	0.0349	0.3027	0.2104	0.0007	0.0088	63.6
Bore/Drill Rigs	15	Bore/Drill Rigs	Bore/Drill Rigs0000	0.0120	0.0632	0.0754	0.0002	0.0029	10.3	0.0011
	25	Bore/Drill Rigs	Bore/Drill Rigs0016	0.0193	0.0658	0.1219	0.0002	0.0046	16.0	0.0017
	50	Bore/Drill Rigs	Bore/Drill Rigs0026	0.0190	0.2200	0.1662	0.0004	0.0009	31.0	0.0017
	120	Bore/Drill Rigs	Bore/Drill Rigs0051	0.0252	0.4660	0.1955	0.0009	0.0020	77.1	0.0023
	175	Bore/Drill Rigs	Bore/Drill Rigs0121	0.0324	0.7542	0.0787	0.0016	0.0030	141	0.0029
	250	Bore/Drill Rigs	Bore/Drill Rigs0176	0.0427	0.3426	0.0981	0.0021	0.0035	188	0.0039
	500	Bore/Drill Rigs	Bore/Drill Rigs0251	0.0706	0.6512	0.1622	0.0031	0.0058	311	0.0064
	750	Bore/Drill Rigs	Bore/Drill Rigs0501	0.1396	1.0891	0.3204	0.0062	0.0115	615	0.0126
	1000	Bore/Drill Rigs	Bore/Drill Rigs0751	0.2115	1.6437	3.8912	0.0093	0.0364	928	0.0191
Bore/Drill Rigs Composite		Bore/Drill Rigs	Bore/Drill Rigs1001	0.0428	0.5007	0.2864	0.0017	0.0042	165	0.0039
Cement and Mortar Mixers	15	Cement and Mortar Mixers	Cement and Mortar Mixers0000	0.0074	0.0386	0.0461	0.0001	0.0018	6.3	0.0007
	25	Cement and Mortar Mixers	Cement and Mortar Mixers0016	0.0213	0.0724	0.1346	0.0002	0.0052	17.6	0.0019
Cement and Mortar Mixers Composite		Cement and Mortar Mixers	Cement and Mortar Mixers0026	0.0085	0.0414	0.0534	0.0001	0.0021	7.2	0.0008
Concrete/Industrial Saws	25	Concrete/Industrial Saws	Concrete/Industrial Saws0000	0.0199	0.0678	0.1256	0.0002	0.0047	16.5	0.0018
	50	Concrete/Industrial Saws	Concrete/Industrial Saws0026	0.0279	0.2284	0.1910	0.0004	0.0053	30.2	0.0025
	120	Concrete/Industrial Saws	Concrete/Industrial Saws0051	0.0370	0.4561	0.2840	0.0009	0.0117	74.1	0.0033
	175	Concrete/Industrial Saws	Concrete/Industrial Saws0121	0.0623	0.8663	0.3523	0.0018	0.0160	160	0.0056
Concrete/Industrial Saws Composite		Concrete/Industrial Saws	Concrete/Industrial Saws0176	0.0337	0.3706	0.2471	0.0007	0.0093	58.5	0.0030
Cranes	50	Cranes	Cranes0000	0.0350	0.2256	0.1644	0.0003	0.0062	23.2	0.0032
	120	Cranes	Cranes0051	0.0376	0.3384	0.2298	0.0006	0.0120	50.1	0.0034
	175	Cranes	Cranes0121	0.0462	0.4744	0.2300	0.0009	0.0120	80.3	0.0042
	250	Cranes	Cranes0176	0.0544	0.2316	0.2705	0.0013	0.0094	112	0.0049
	500	Cranes	Cranes0251	0.0858	0.3535	0.3977	0.0018	0.0146	180	0.0077
	750	Cranes	Cranes0501	0.1446	0.5947	0.6821	0.0030	0.0248	303	0.0130
	9999	Cranes	Cranes0751	0.5219	1.9715	5.5760	0.0098	0.1146	971	0.0471
Cranes Composite		Cranes	Cranes1000	0.0681	0.3738	0.4223	0.0014	0.0143	129	0.0061
Crawler Tractors	50	Crawler Tractors	Crawler Tractors0000	0.0487	0.2566	0.1842	0.0003	0.0090	24.9	0.0044
	120	Crawler Tractors	Crawler Tractors0051	0.0609	0.4537	0.3562	0.0008	0.0221	65.8	0.0055
	175	Crawler Tractors	Crawler Tractors0121	0.0823	0.7265	0.4447	0.0014	0.0241	121	0.0074
	250	Crawler Tractors	Crawler Tractors0176	0.0924	0.3662	0.5348	0.0019	0.0192	166	0.0083
	500	Crawler Tractors	Crawler Tractors0251	0.1392	0.5877	0.7527	0.0025	0.0280	259	0.0126
	750	Crawler Tractors	Crawler Tractors0501	0.2506	1.0528	1.3878	0.0047	0.0510	465	0.0226
	1000	Crawler Tractors	Crawler Tractors0751	0.3749	1.5618	4.2168	0.0066	0.0856	658	0.0338
Crawler Tractors Composite		Crawler Tractors	Crawler Tractors1001	0.0789	0.5065	0.4482	0.0013	0.0227	114	0.0071

**Table 53**  
**SCAB Fleet Average Emission Factors (Diesel)**

2025										
Air Basin		SC								
Equipment	MaxHP			(lb/hr) ROG	(lb/hr) CO	(lb/hr) NOx	(lb/hr) SOx	(lb/hr) PM	(lb/hr) CO2	(lb/hr) CH4
Crushing/Proc. Equipment	50	Crushing/Proc. Equipment	Crushing/Proc. Equipment000	0.0508	0.3859	0.2899	0.0006	0.0083	44.0	0.0046
	120	Crushing/Proc. Equipment	Crushing/Proc. Equipment0051	0.0506	0.5406	0.3289	0.0010	0.0140	83.1	0.0046
	175	Crushing/Proc. Equipment	Crushing/Proc. Equipment0121	0.0795	0.9556	0.3830	0.0019	0.0177	167	0.0072
	250	Crushing/Proc. Equipment	Crushing/Proc. Equipment0176	0.0967	0.4768	0.4357	0.0028	0.0134	245	0.0087
	500	Crushing/Proc. Equipment	Crushing/Proc. Equipment0251	0.1459	0.6977	0.6163	0.0037	0.0200	374	0.0132
	750	Crushing/Proc. Equipment	Crushing/Proc. Equipment0501	0.2307	1.1003	0.9907	0.0059	0.0316	589	0.0208
9999	Crushing/Proc. Equipment	Crushing/Proc. Equipment0751	0.6019	2.5014	6.6977	0.0131	0.1238	1,308	0.0543	
Crushing/Proc. Equipment Composite		Crushing/Proc. Equipment	Crushing/Proc. Equipment10000	0.0693	0.6187	0.3763	0.0015	0.0146	132	0.0062
Dumpers/Tenders	25	Dumpers/Tenders	Dumpers/Tenders0000	0.0092	0.0314	0.0581	0.0001	0.0022	7.6	0.0008
Dumpers/Tenders Composite		Dumpers/Tenders	Dumpers/Tenders0026	0.0092	0.0314	0.0581	0.0001	0.0022	7.6	0.0008
Excavators	25	Excavators	Excavators0000	0.0198	0.0677	0.1253	0.0002	0.0047	16.4	0.0018
	50	Excavators	Excavators0026	0.0297	0.2365	0.1616	0.0003	0.0035	25.0	0.0027
	120	Excavators	Excavators0051	0.0448	0.4942	0.2638	0.0009	0.0092	73.6	0.0040
	175	Excavators	Excavators0121	0.0518	0.6636	0.1982	0.0013	0.0091	112	0.0047
	250	Excavators	Excavators0176	0.0647	0.3210	0.2222	0.0018	0.0074	159	0.0058
	500	Excavators	Excavators0251	0.0946	0.4495	0.3091	0.0023	0.0107	234	0.0085
750	Excavators	Excavators0501	0.1569	0.7451	0.5194	0.0039	0.0178	387	0.0142	
Excavators Composite		Excavators	Excavators0056	0.0559	0.5086	0.2269	0.0013	0.0086	120	0.0050
Forklifts	50	Forklifts	Forklifts0000	0.0150	0.1361	0.0904	0.0002	0.0013	14.7	0.0014
	120	Forklifts	Forklifts0051	0.0168	0.2086	0.0997	0.0004	0.0023	31.2	0.0015
	175	Forklifts	Forklifts0121	0.0228	0.3310	0.0732	0.0006	0.0029	56.1	0.0021
	250	Forklifts	Forklifts0176	0.0289	0.1551	0.0746	0.0009	0.0027	77.1	0.0026
	500	Forklifts	Forklifts0251	0.0416	0.2123	0.1038	0.0011	0.0038	111	0.0038
Forklifts Composite		Forklifts	Forklifts0501	0.0236	0.2148	0.0860	0.0006	0.0025	54.4	0.0021
Generator Sets	15	Generator Sets	Generator Sets0000	0.0109	0.0627	0.0768	0.0002	0.0032	10.2	0.0010
	25	Generator Sets	Generator Sets0016	0.0216	0.0738	0.1368	0.0002	0.0055	17.6	0.0019
	50	Generator Sets	Generator Sets0026	0.0242	0.2034	0.1881	0.0004	0.0051	30.6	0.0022
	120	Generator Sets	Generator Sets0051	0.0340	0.4585	0.3022	0.0009	0.0122	77.9	0.0031
	175	Generator Sets	Generator Sets0121	0.0469	0.7328	0.3291	0.0016	0.0136	142	0.0042
	250	Generator Sets	Generator Sets0176	0.0558	0.3746	0.3885	0.0024	0.0108	213	0.0050
	500	Generator Sets	Generator Sets0251	0.0862	0.5820	0.5697	0.0033	0.0167	337	0.0078
	750	Generator Sets	Generator Sets0501	0.1401	0.9395	0.9382	0.0055	0.0272	544	0.0126
	9999	Generator Sets	Generator Sets0751	0.3235	1.8648	5.2188	0.0105	0.0888	1,049	0.0292
Generator Sets Composite		Generator Sets	Generator Sets10000	0.0288	0.2667	0.2329	0.0007	0.0081	61.0	0.0026
Graders	50	Graders	Graders0000	0.0382	0.2599	0.1877	0.0004	0.0063	27.5	0.0034
	120	Graders	Graders0051	0.0521	0.5009	0.3219	0.0009	0.0153	75.0	0.0047
	175	Graders	Graders0121	0.0652	0.7261	0.3117	0.0014	0.0157	124	0.0059
	250	Graders	Graders0176	0.0781	0.3549	0.3652	0.0019	0.0129	172	0.0071
	500	Graders	Graders0251	0.1023	0.4610	0.4468	0.0023	0.0165	229	0.0092
	750	Graders	Graders0501	0.2167	0.9755	0.9628	0.0049	0.0353	486	0.0196
Graders Composite		Graders	Graders0751	0.0676	0.5696	0.3314	0.0015	0.0147	133	0.0061
Off-Highway Tractors	120	Off-Highway Tractors	Off-Highway Tractors0000	0.1108	0.6619	0.6362	0.0011	0.0455	93.7	0.0100
	175	Off-Highway Tractors	Off-Highway Tractors0121	0.1110	0.7932	0.6639	0.0015	0.0370	130	0.0100
	250	Off-Highway Tractors	Off-Highway Tractors0176	0.0890	0.3179	0.5983	0.0015	0.0227	130	0.0090
	750	Off-Highway Tractors	Off-Highway Tractors0251	0.3692	1.5358	2.4157	0.0057	0.0918	568	0.0333
	1000	Off-Highway Tractors	Off-Highway Tractors0751	0.5623	2.3619	6.0896	0.0082	0.1577	814	0.0507
Off-Highway Tractors Composite		Off-Highway Tractors	Off-Highway Tractors1001	0.1134	0.6101	0.7291	0.0017	0.0331	151	0.0102
Off-Highway Trucks	175	Off-Highway Trucks	Off-Highway Trucks0000	0.0622	0.7536	0.2376	0.0014	0.0112	125	0.0056
	250	Off-Highway Trucks	Off-Highway Trucks0176	0.0730	0.3435	0.2521	0.0019	0.0085	167	0.0066
	500	Off-Highway Trucks	Off-Highway Trucks0251	0.1183	0.5319	0.3878	0.0027	0.0135	272	0.0107
	750	Off-Highway Trucks	Off-Highway Trucks0501	0.1921	0.8627	0.6384	0.0044	0.0221	442	0.0173
	1000	Off-Highway Trucks	Off-Highway Trucks0751	0.2823	1.2403	3.1782	0.0063	0.0546	625	0.0255
Off-Highway Trucks Composite		Off-Highway Trucks	Off-Highway Trucks1001	0.1140	0.5385	0.4769	0.0027	0.0142	260	0.0103

**Table 53**  
**SCAB Fleet Average Emission Factors (Diesel)**

2025				(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Air Basin	SC			COG	CO	NOX	SOX	PM	CO2	CH4
Equipment	MaxHP									
Other Construction Equipment	15	Other Construction Equipment	Other Construction Equipment000	0.0118	0.0617	0.0737	0.0002	0.0029	10.1	0.0011
	25	Other Construction Equipment	Other Construction Equipment0016	0.0159	0.0544	0.1008	0.0002	0.0038	13.2	0.0014
	50	Other Construction Equipment	Other Construction Equipment0026	0.0244	0.2188	0.1893	0.0004	0.0034	28.0	0.0022
	120	Other Construction Equipment	Other Construction Equipment0051	0.0379	0.5045	0.2730	0.0009	0.0087	80.9	0.0034
	175	Other Construction Equipment	Other Construction Equipment0121	0.0384	0.5858	0.1729	0.0012	0.0075	107	0.0035
500	Other Construction Equipment	Other Construction Equipment0176	0.0792	0.4606	0.3034	0.0025	0.0099	254	0.0071	
Other Construction Equipment Composite		Other Construction Equipment	Other Construction Equipment0501	0.0442	0.3474	0.2021	0.0013	0.0069	123	0.0040
Other General Industrial Equipmen	15	Other General Industrial Equipmen	Other General Industrial Equipmen0000	0.0066	0.0391	0.0466	0.0001	0.0018	6.4	0.0006
	25	Other General Industrial Equipmen	Other General Industrial Equipmen0016	0.0185	0.0632	0.1170	0.0002	0.0044	15.3	0.0017
	50	Other General Industrial Equipmen	Other General Industrial Equipmen0026	0.0298	0.2099	0.1491	0.0003	0.0047	21.7	0.0027
	120	Other General Industrial Equipmen	Other General Industrial Equipmen0051	0.0436	0.4189	0.2803	0.0007	0.0120	62.0	0.0039
	175	Other General Industrial Equipmen	Other General Industrial Equipmen0121	0.0519	0.5684	0.2412	0.0011	0.0115	95.9	0.0047
	250	Other General Industrial Equipmen	Other General Industrial Equipmen0176	0.0608	0.2743	0.2679	0.0015	0.0083	136	0.0055
	500	Other General Industrial Equipmen	Other General Industrial Equipmen0251	0.1174	0.5103	0.4826	0.0026	0.0157	265	0.0106
	750	Other General Industrial Equipmen	Other General Industrial Equipmen0501	0.1939	0.8411	0.8117	0.0044	0.0262	437	0.0175
	1000	Other General Industrial Equipmen	Other General Industrial Equipmen0751	0.2627	1.1060	2.9924	0.0056	0.0579	560	0.0237
	Other General Industrial Equipmen Composite		Other General Industrial Equipmen	Other General Industrial Equipmen1001	0.0747	0.4438	0.3947	0.0016	0.0130	152
Other Material Handling Equipment	50	Other Material Handling Equipment	Other Material Handling Equipment0000	0.0410	0.2893	0.2073	0.0004	0.0065	30.3	0.0037
	120	Other Material Handling Equipment	Other Material Handling Equipment0051	0.0421	0.4076	0.2541	0.0007	0.0117	60.7	0.0038
	175	Other Material Handling Equipment	Other Material Handling Equipment0121	0.0653	0.7197	0.3067	0.0014	0.0146	122	0.0059
	250	Other Material Handling Equipment	Other Material Handling Equipment0176	0.0642	0.2920	0.2863	0.0016	0.0088	145	0.0058
	500	Other Material Handling Equipment	Other Material Handling Equipment0251	0.0837	0.3670	0.3482	0.0019	0.0113	192	0.0075
	9999	Other Material Handling Equipment	Other Material Handling Equipment0501	0.3781	1.4596	3.9555	0.0073	0.0764	741	0.0341
Other Material Handling Equipment Composite		Other Material Handling Equipment	Other Material Handling Equipment1000	0.0696	0.4355	0.3844	0.0015	0.0124	141	0.0063
Pavers	25	Pavers	Pavers0000	0.0225	0.0768	0.1422	0.0002	0.0053	18.7	0.0020
	50	Pavers	Pavers0026	0.0574	0.2803	0.2102	0.0004	0.0114	28.0	0.0052
	120	Pavers	Pavers0051	0.0662	0.4696	0.4003	0.0008	0.0263	68.2	0.0060
	175	Pavers	Pavers0121	0.0899	0.7543	0.5238	0.0014	0.0286	128	0.0081
	250	Pavers	Pavers0176	0.1097	0.4287	0.7020	0.0022	0.0254	194	0.0099
	500	Pavers	Pavers0251	0.1263	0.5374	0.7572	0.0023	0.0284	233	0.0114
Pavers Composite		Pavers	Pavers0501	0.0717	0.4745	0.3858	0.0009	0.0220	77.9	0.0065
Paving Equipment	25	Paving Equipment	Paving Equipment0000	0.0152	0.0520	0.0963	0.0002	0.0036	12.6	0.0014
	50	Paving Equipment	Paving Equipment0026	0.0468	0.2355	0.1789	0.0003	0.0095	23.9	0.0042
	120	Paving Equipment	Paving Equipment0051	0.0503	0.3671	0.3092	0.0006	0.0200	54.5	0.0045
	175	Paving Equipment	Paving Equipment0121	0.0687	0.5900	0.4021	0.0011	0.0219	101	0.0062
	250	Paving Equipment	Paving Equipment0176	0.0672	0.2648	0.4289	0.0014	0.0154	122	0.0061
Paving Equipment Composite		Paving Equipment	Paving Equipment0251	0.0548	0.3993	0.3281	0.0008	0.0190	68.9	0.0049
Plate Compactors	15	Plate Compactors	Plate Compactors0000	0.0050	0.0263	0.0314	0.0001	0.0012	4.3	0.0005
		Plate Compactors	Plate Compactors0016	0.0050	0.0263	0.0314	0.0001	0.0012	4.3	0.0005
Plate Compactors Composite		Plate Compactors	Plate Compactors0016	0.0050	0.0263	0.0314	0.0001	0.0012	4.3	0.0005
Pressure Washers	15	Pressure Washers	Pressure Washers0000	0.0052	0.0301	0.0368	0.0001	0.0015	4.9	0.0005
	25	Pressure Washers	Pressure Washers0016	0.0087	0.0299	0.0555	0.0001	0.0022	7.1	0.0008
	50	Pressure Washers	Pressure Washers0026	0.0079	0.0810	0.0843	0.0002	0.0019	14.3	0.0007
	120	Pressure Washers	Pressure Washers0051	0.0082	0.1351	0.0897	0.0003	0.0031	24.1	0.0007
Pressure Washers Composite		Pressure Washers	Pressure Washers0121	0.0066	0.0531	0.0561	0.0001	0.0019	9.4	0.0006
Pumps	15	Pumps	Pumps0000	0.0089	0.0466	0.0560	0.0001	0.0024	7.4	0.0008
	25	Pumps	Pumps0016	0.0244	0.0816	0.1512	0.0002	0.0061	19.5	0.0022
	50	Pumps	Pumps0026	0.0299	0.2394	0.2138	0.0004	0.0061	34.3	0.0027
	120	Pumps	Pumps0051	0.0365	0.4656	0.3062	0.0009	0.0129	77.9	0.0033
	175	Pumps	Pumps0121	0.0499	0.7342	0.3301	0.0016	0.0142	140	0.0045
	250	Pumps	Pumps0176	0.0572	0.3604	0.3745	0.0023	0.0107	201	0.0052
	500	Pumps	Pumps0251	0.0959	0.6034	0.5922	0.0034	0.0178	345	0.0087
	750	Pumps	Pumps0501	0.1593	0.9975	0.9991	0.0057	0.0297	571	0.0144
	9999	Pumps	Pumps0751	0.4488	2.4388	6.8114	0.0136	0.1186	1,355	0.0405

Table 53  
SCAB Fleet Average Emission Factors (Diesel)

				2025						
Air Basin	SC			(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Equipment	MaxHP			COG	CO	NOX	SOX	PM	CO2	CH4
Pumps Composite		Pumps	Pumps10000	0.0270	0.2617	0.2079	0.0006	0.0078	49.6	0.0024
Rollers	15	Rollers	Rollers0000	0.0074	0.386	0.0461	0.0001	0.0018	6.3	0.0007
	25	Rollers	Rollers0016	0.0161	0.0549	0.1017	0.0002	0.0038	13.3	0.0015
	50	Rollers	Rollers0026	0.0345	0.2258	0.1776	0.0003	0.0068	26.0	0.0031
	120	Rollers	Rollers0051	0.0392	0.3801	0.2647	0.0007	0.0137	59.0	0.0035
	175	Rollers	Rollers0121	0.0553	0.6096	0.3030	0.0012	0.0156	108	0.0050
	250	Rollers	Rollers0176	0.0656	0.3037	0.3629	0.0017	0.0127	153	0.0059
Rollers Composite	500	Rollers	Rollers0251	0.0920	0.4189	0.4752	0.0022	0.0174	219	0.0083
		Rollers	Rollers0501	0.0410	0.3763	0.2501	0.0008	0.0122	67.0	0.0037
Rough Terrain Forklifts	50	Rough Terrain Forklifts	Rough Terrain Forklifts0000	0.0381	0.3041	0.2193	0.0004	0.0054	33.9	0.0034
	120	Rough Terrain Forklifts	Rough Terrain Forklifts0051	0.0369	0.4106	0.2316	0.0007	0.0087	62.4	0.0033
	175	Rough Terrain Forklifts	Rough Terrain Forklifts0121	0.0569	0.7229	0.2450	0.0014	0.0112	125	0.0051
	250	Rough Terrain Forklifts	Rough Terrain Forklifts0176	0.0671	0.3372	0.2625	0.0019	0.0084	171	0.0061
	500	Rough Terrain Forklifts	Rough Terrain Forklifts0251	0.0999	0.4838	0.3682	0.0025	0.0123	257	0.0090
		Rough Terrain Forklifts	Rough Terrain Forklifts0501	0.0396	0.4430	0.2336	0.0008	0.0090	70.3	0.0036
Rubber Tired Dozers	175	Rubber Tired Dozers	Rubber Tired Dozers0000	0.1163	0.8019	0.6895	0.0015	0.0386	129	0.0105
	250	Rubber Tired Dozers	Rubber Tired Dozers0176	0.1329	0.4624	0.8841	0.0021	0.0340	183	0.0120
	500	Rubber Tired Dozers	Rubber Tired Dozers0251	0.1817	0.7490	1.1543	0.0026	0.0448	265	0.0164
	750	Rubber Tired Dozers	Rubber Tired Dozers0501	0.2747	1.1262	1.7818	0.0040	0.0684	399	0.0248
	1000	Rubber Tired Dozers	Rubber Tired Dozers0751	0.4321	1.7954	4.5523	0.0060	0.1202	592	0.0390
		Rubber Tired Dozers	Rubber Tired Dozers1001	0.1672	0.6620	1.0824	0.0025	0.0419	239	0.0151
Rubber Tired Loaders	25	Rubber Tired Loaders	Rubber Tired Loaders0000	0.0204	0.0697	0.1291	0.0002	0.0048	16.9	0.0018
	50	Rubber Tired Loaders	Rubber Tired Loaders0026	0.0418	0.2904	0.2109	0.0004	0.0069	31.1	0.0038
	120	Rubber Tired Loaders	Rubber Tired Loaders0051	0.0397	0.3916	0.2476	0.0007	0.0115	58.9	0.0036
	175	Rubber Tired Loaders	Rubber Tired Loaders0121	0.0546	0.6199	0.2592	0.0012	0.0130	106	0.0049
	250	Rubber Tired Loaders	Rubber Tired Loaders0176	0.0661	0.3041	0.3040	0.0017	0.0107	149	0.0060
	500	Rubber Tired Loaders	Rubber Tired Loaders0251	0.1034	0.4654	0.4455	0.0023	0.0164	237	0.0093
	750	Rubber Tired Loaders	Rubber Tired Loaders0501	0.2119	0.9532	0.9273	0.0049	0.0338	486	0.0191
	1000	Rubber Tired Loaders	Rubber Tired Loaders0751	0.2701	1.1927	3.2272	0.0060	0.0615	594	0.0244
		Rubber Tired Loaders	Rubber Tired Loaders1001	0.0559	0.4311	0.2835	0.0012	0.0121	109	0.0050
	Scrapers	120	Scrapers	Scrapers0000	0.0887	0.6472	0.5218	0.0011	0.0330	93.9
175		Scrapers	Scrapers0121	0.1025	0.8864	0.5654	0.0017	0.0307	148	0.0092
250		Scrapers	Scrapers0176	0.1187	0.4642	0.7040	0.0024	0.0254	209	0.0107
500		Scrapers	Scrapers0251	0.1755	0.7332	0.9727	0.0032	0.0364	321	0.0158
750		Scrapers	Scrapers0501	0.3043	1.2657	1.7266	0.0056	0.0638	555	0.0275
		Scrapers	Scrapers0751	0.1495	0.7187	0.8387	0.0027	0.0335	262	0.0135
Signal Boards	15	Signal Boards	Signal Boards0000	0.0072	0.0377	0.0450	0.0001	0.0018	6.2	0.0006
	50	Signal Boards	Signal Boards0016	0.0332	0.2686	0.2268	0.0005	0.0063	36.2	0.0030
	120	Signal Boards	Signal Boards0051	0.0394	0.4898	0.3076	0.0009	0.0127	80.2	0.0036
	175	Signal Boards	Signal Boards0121	0.0587	0.8292	0.3433	0.0017	0.0152	155	0.0053
	250	Signal Boards	Signal Boards0176	0.0794	0.4676	0.4435	0.0029	0.0132	255	0.0072
Signal Boards Composite		Signal Boards	Signal Boards0251	0.0111	0.9909	0.0718	0.0002	0.0029	16.7	0.0010
		Signal Boards	Signal Boards0501	0.0167	0.0568	0.1055	0.0002	0.0040	13.8	0.0015
Skid Steer Loaders	25	Skid Steer Loaders	Skid Steer Loaders0000	0.0194	0.1977	0.1446	0.0003	0.0015	25.5	0.0017
	50	Skid Steer Loaders	Skid Steer Loaders0026	0.0175	0.2665	0.1240	0.0005	0.0022	42.8	0.0016
	120	Skid Steer Loaders	Skid Steer Loaders0121	0.0186	0.2104	0.1354	0.0004	0.0019	30.3	0.0017
Skid Steer Loaders Composite		Skid Steer Loaders	Skid Steer Loaders0176	0.0171	0.1105	0.0934	0.0002	0.0035	14.1	0.0015
		Skid Steer Loaders	Skid Steer Loaders0501	0.0385	0.3950	0.2869	0.0007	0.0146	63.8	0.0035
Surfacing Equipment	120	Surfacing Equipment	Surfacing Equipment0051	0.0386	0.4642	0.2429	0.0010	0.0119	85.8	0.0035
	175	Surfacing Equipment	Surfacing Equipment0121	0.0504	0.2804	0.3275	0.0015	0.0111	135	0.0045
	250	Surfacing Equipment	Surfacing Equipment0176	0.0800	0.4236	0.4893	0.0022	0.0174	221	0.0072
	500	Surfacing Equipment	Surfacing Equipment0251	0.1260	0.6643	0.7833	0.0035	0.0275	347	0.0114
	750	Surfacing Equipment	Surfacing Equipment0501	0.1633	0.3590	0.3924	0.0017	0.0142	166	0.0058
	Surfacing Equipment Composite		Surfacing Equipment	Surfacing Equipment0751	0.0638	0.3590	0.3924	0.0017	0.0142	166

Table 53  
SCAB Fleet Average Emission Factors (Diesel)

2025										
Air Basin	SC									
Equipment	MaxHP			(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
				COG	CO	NOx	SOx	PM	CO2	CH4
Sweepers/Scrubbers	15	Sweepers/Scrubbers	Sweepers/Scrubbers000	0.0124	0.0729	0.0870	0.0002	0.0034	11.9	0.0011
	25	Sweepers/Scrubbers	Sweepers/Scrubbers0016	0.0237	0.0808	0.1495	0.0002	0.0056	19.6	0.0021
	50	Sweepers/Scrubbers	Sweepers/Scrubbers0026	0.0308	0.2762	0.1942	0.0004	0.0033	31.6	0.0028
	120	Sweepers/Scrubbers	Sweepers/Scrubbers0051	0.0395	0.4895	0.2530	0.0009	0.0068	75.0	0.0036
	175	Sweepers/Scrubbers	Sweepers/Scrubbers0121	0.0565	0.8005	0.2201	0.0016	0.0084	139	0.0051
250	Sweepers/Scrubbers	Sweepers/Scrubbers0176	0.0587	0.3179	0.1898	0.0018	0.0062	162	0.0053	
Sweepers/Scrubbers Composite		Sweepers/Scrubbers	Sweepers/Scrubbers0251	0.0410	0.4840	0.2255	0.0009	0.0061	78.5	0.0037
Tractors/Loaders/Backhoes	25	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0000	0.0191	0.0653	0.1209	0.0002	0.0045	15.9	0.0017
	50	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0026	0.0316	0.2678	0.1895	0.0004	0.0037	30.3	0.0029
	120	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0051	0.0281	0.3379	0.1761	0.0006	0.0055	51.7	0.0025
	175	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0121	0.0420	0.5839	0.1613	0.0011	0.0072	101	0.0038
	250	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0176	0.0633	0.3389	0.2157	0.0019	0.0073	172	0.0057
	500	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0251	0.1263	0.6506	0.4127	0.0039	0.0144	345	0.0114
750	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0501	0.1896	0.9760	0.6256	0.0058	0.0216	517	0.0171	
Tractors/Loaders/Backhoes Composite		Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0751	0.0336	0.3586	0.1857	0.0008	0.0059	66.8	0.0030
Trenchers	15	Trenchers	Trenchers0000	0.0099	0.0517	0.0617	0.0001	0.0024	8.5	0.0009
	25	Trenchers	Trenchers0016	0.0397	0.1355	0.2509	0.0004	0.0094	32.9	0.0036
	50	Trenchers	Trenchers0026	0.0687	0.3197	0.2467	0.0004	0.0140	32.9	0.0062
	120	Trenchers	Trenchers0051	0.0625	0.4341	0.3863	0.0008	0.0259	64.9	0.0056
	175	Trenchers	Trenchers0121	0.1009	0.8327	0.6152	0.0016	0.0338	144	0.0091
	250	Trenchers	Trenchers0176	0.1247	0.4925	0.8480	0.0025	0.0309	223	0.0112
	500	Trenchers	Trenchers0251	0.1661	0.7370	1.0663	0.0031	0.0400	311	0.0150
750	Trenchers	Trenchers0501	0.3147	1.3882	2.0666	0.0059	0.0766	587	0.0284	
Trenchers Composite		Trenchers	Trenchers0751	0.0674	0.4085	0.3481	0.0007	0.0215	58.7	0.0061
Welders	15	Welders	Welders0000	0.0075	0.0381	0.0468	0.0001	0.0020	6.2	0.0007
	25	Welders	Welders0016	0.0141	0.0473	0.0876	0.0001	0.0035	11.3	0.0013
	50	Welders	Welders0026	0.0280	0.2077	0.1684	0.0003	0.0053	26.0	0.0025
	120	Welders	Welders0051	0.0223	0.2476	0.1601	0.0005	0.0073	39.5	0.0020
	175	Welders	Welders0121	0.0430	0.5400	0.2396	0.0011	0.0111	98.2	0.0039
	250	Welders	Welders0176	0.0423	0.2236	0.2294	0.0013	0.0069	119	0.0038
500	Welders	Welders0251	0.0585	0.3040	0.2969	0.0016	0.0095	168	0.0053	
Welders Composite		Welders	Welders0501	0.0214	0.1745	0.1373	0.0003	0.0052	25.6	0.0019

Source: File off-road-mobile-source-emission-factors-scenario-years-2007-2025).xls, downloaded from <http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/off-road-mobile-source-emission-factors>

**Table 54**  
**Highest (Most Conservative) EMFAC2007 (version 2.3)**  
**Emission Factors for On-Road Passenger Vehicles & Delivery Trucks**  
 Projects in the SCAQMD (Scenario Years 2007 - 2026)  
 Derived from Peak Emissions Inventory (**Winter**, **Annual**, **Summer**)

**Vehicle Class:**  
**Passenger Vehicles (<8500 pounds) & Delivery Trucks (>8500 pounds)**

The following emission factors were compiled by running the California Air Resources Board's EMFAC2007 (version 2.3) Burden Model, taking the weighted average of vehicle types and simplifying into two categories: **Passenger Vehicles & Delivery Trucks.**

These emission factors can be used to calculate on-road mobile source emissions for the vehicle categories listed in the tables below, by use of the following equation:

**Emissions (pounds per day) = N x TL x EF**

where N = number of trips, TL = trip length (miles/day), and EF = emission factor (pounds per mile)

This methodology replaces the old EMFAC emission factors in Tables A-9-5-J-1 through A-9-5-L in Appendix A9 of the current SCAQMD CEQA Handbook. All the emission factors account for the emissions from start, running and idling exhaust. In addition, the ROG emission factors include diurnal, hot soak, running and resting emissions, and the PM10 & PM2.5 emission factors include tire and brake wear.

Scenario Year: 2025			
All model years in the range 1981 to 2025			
Passenger Vehicles (pounds/mile)		Delivery Trucks (pounds/mile)	
CO	0.00342738	CO	0.00595363
NOx	0.00028846	NOx	0.00615945
ROG	0.00043545	ROG	0.00092178
SOx	0.00001070	SOx	0.00002761
PM10	0.00009679	PM10	0.00028425
PM2.5	0.00006418	PM2.5	0.00020958
CO2	1.11078571	CO2	2.88143570
CH4	0.00003641	CH4	0.00003765

Source: File on-road-vehicles-(scenario-years-2007-2026).xls, downloaded from <http://www.aqmd.gov/home/rules-compliance/ceqa/>

**Table 55**  
**Highest (Most Conservative) EMFAC2007 (version 2.3)**  
**Emission Factors for On-Road Heavy-Heavy-Duty Diesel Trucks**  
 Projects in the SCAQMD (Scenario Years 2007 - 2026)  
 Derived from Peak Emissions Inventory (**Winter**, **Annual**, **Summer**)

**Vehicle Class:**  
**Heavy-Heavy-Duty Diesel Trucks (33,001 to 60,000 pounds)**

The following emission factors were compiled by running the California Air Resources Board's EMFAC2007 (version 2.3) Burden Model and extracting the **Heavy-Heavy-Duty Diesel Truck (HHDT)** Emission Factors.

These emission factors can be used to calculate on-road mobile source emissions for the vehicle/emission categories listed in the tables below, by use of the following equation:

$$\text{Emissions (pounds per day)} = N \times TL \times EF$$

where N = number of trips, TL = trip length (miles/day), and EF = emission factor (pounds per mile)

The **HHDT-DSL** vehicle/emission category accounts for all emissions from heavy-heavy-duty diesel trucks, including start, running and idling exhaust. In addition, ROG emission factors account for diurnal, hot soak, running and resting emissions, and the PM10 & PM2.5 emission factors account for tire and brake wear.

The **HHDT-DSL, Exh** vehicle/emission category includes only the exhaust portion of PM10 & PM2.5 emissions from heavy-heavy-duty diesel trucks.

Scenario Year: 2025		All model years in the range 1981 to 2025	
<b>HHDT-DSL (pounds/mile)</b>		<b>HHDT-DSL, Exh (pounds/mile)</b>	
CO	0.00431086	PM10	0.00034397
NOx	0.00932573	PM2.5	0.00031664
ROG	0.00080206		
SOx	0.00004018		
PM10	0.00048541		
PM2.5	0.00036326		
CO2	4.19512979		
CH4	0.00003697		

Source: File heavy-heavy-duty-on-road-vehicles-(scenario-years-2007-2026).xls, downloaded from [http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/emfac-2007-\(v2-3\)-emission-factors-\(on-road\)](http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/emfac-2007-(v2-3)-emission-factors-(on-road))

**Table 56**  
**Motor Vehicle Entrained Road Dust Emission Factors**

Vehicle Type	Surface	Silt Loading (sL, g/m <sup>2</sup> ) or Silt Content (s, %) <sup>a</sup>	Average Weight (W) (tons) <sup>b</sup>	Un-controlled PM10 Emission Factor (lb/VMT) <sup>c</sup>	Un-controlled PM2.5 Emission Factor (lb/VMT) <sup>c</sup>	Control Efficiency (%) <sup>d</sup>	Controlled PM10 Emission Factor (lb/VMT) <sup>e</sup>	Controlled PM2.5 Emission Factor (lb/VMT) <sup>e</sup>
1/2-Ton Pick-up Truck, 4x4	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
1/2-Ton Pick-up Truck, 4x4	Unpaved	7.5	3.2	1.01E+00	1.01E-01	55%	4.55E-01	4.55E-02
1-Ton Truck, 4x4	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
1-Ton Truck, 4x4	Unpaved	7.5	3.2	1.01E+00	1.01E-01	55%	4.55E-01	4.55E-02
10-cu. yd. Concrete Mixer Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
10-cu. yd. Concrete Mixer Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
10-cu. yd. Dump Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
10-cu. yd. Dump Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
1-Ton Crew Cab Flat Bed, 4x4	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
1-Ton Crew Cab Flat Bed, 4x4	Unpaved	7.5	5	1.24E+00	1.24E-01	55%	5.56E-01	5.56E-02
1-Ton Crew Cab, 4x4	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
1-Ton Crew Cab, 4x4	Unpaved	7.5	5	1.24E+00	1.24E-01	55%	5.56E-01	5.56E-02
1-Ton Flat Bed, 4x4	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
1-Ton Flat Bed, 4x4	Unpaved	7.5	5	1.24E+00	1.24E-01	55%	5.56E-01	5.56E-02
3/4-Ton Pick-up Truck, 4x4	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
3/4-Ton Pick-up Truck, 4x4	Unpaved	7.5	3.2	1.01E+00	1.01E-01	55%	4.55E-01	4.55E-02
3/4-Ton Truck, 4x4	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
3/4-Ton Truck, 4x4	Unpaved	7.5	3.2	1.01E+00	1.01E-01	55%	4.55E-01	4.55E-02
40' Flat Bed Pole Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
40' Flat Bed Pole Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Asphalt Delivery Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Asphalt Delivery Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Carry-all Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Carry-all Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Concrete Mixer Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Concrete Mixer Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Concrete Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Concrete Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Crew Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Crew Truck	Unpaved	7.5	5	1.24E+00	1.24E-01	55%	5.56E-01	5.56E-02
Crew Vehicle	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Crew Vehicle	Unpaved	7.5	5	1.24E+00	1.24E-01	55%	5.56E-01	5.56E-02
Crewcab Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Crewcab Truck	Unpaved	7.5	5	1.24E+00	1.24E-01	55%	5.56E-01	5.56E-02
Crushed Rock Delivery Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Crushed Rock Delivery Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Dump Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Dump Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Dump Truck (Trash)	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Dump Truck (Trash)	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Extendable Flat Bed Pole Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Extendable Flat Bed Pole Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Flat Bed Truck/Trailer	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Flat Bed Truck/Trailer	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Flatbed Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Flatbed Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Fuel, Helicopter Support Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Fuel, Helicopter Support Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Jet A Fuel Truck	Paved	0.035	3.4	9.22E-04	0.00E+00	0%	9.22E-04	0.00E+00
Jet A Fuel Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Low Bed Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Low Bed Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Lowboy Truck/Trailer	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Lowboy Truck/Trailer	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Maintenance Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00



**Table 56**  
**Motor Vehicle Entrained Road Dust Emission Factors**

Vehicle Type	Surface	Silt Loading (sL, g/m <sup>2</sup> ) or Silt Content (s, %) <sup>a</sup>	Average Weight (W) (tons) <sup>b</sup>	Un-controlled PM10 Emission Factor (lb/VMT) <sup>c</sup>	Un-controlled PM2.5 Emission Factor (lb/VMT) <sup>c</sup>	Control Efficiency (%) <sup>d</sup>	Controlled PM10 Emission Factor (lb/VMT) <sup>e</sup>	Controlled PM2.5 Emission Factor (lb/VMT) <sup>e</sup>
Maintenance Truck	Unpaved	7.5	10	1.69E+00	1.69E-01	55%	7.60E-01	7.60E-02
Pipe Truck/Trailer	Paved	0.035	3.4	9.22E-04	0.00E+00	0%	9.22E-04	0.00E+00
Pipe Truck/Trailer	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Reel Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Reel Truck	Unpaved	7.5	10	1.69E+00	1.69E-01	55%	7.60E-01	7.60E-02
Stake Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Stake Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Stakebed Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Stakebed Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Truck, Semi Tractor	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Truck, Semi Tractor	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Van	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Van	Unpaved	7.5	3.2	1.01E+00	1.01E-01	55%	4.55E-01	4.55E-02
Water Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Water Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Wire Truck/Trailer	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Wire Truck/Trailer	Unpaved	7.5	17	2.14E+00	2.14E-01	55%	9.65E-01	9.65E-02
Worker Commute	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Worker Commute	Unpaved	7.5	3.2	1.01E+00	1.01E-01	55%	4.55E-01	4.55E-02
Transmission Line Inspection	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Transmission Line Inspection	Unpaved	7.5	3.2	1.01E+00	1.01E-01	55%	4.55E-01	4.55E-02
Subtransmission Line Inspection	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Subtransmission Line Inspection	Unpaved	7.5	3.2	1.01E+00	1.01E-01	55%	4.55E-01	4.55E-02
Substation Site Visit	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Substation Site Visit	Unpaved	7.5	3.2	1.01E+00	1.01E-01	55%	4.55E-01	4.55E-02
Transmission Line Inspection	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Transmission Line Inspection	Unpaved	7.5	3.2	1.01E+00	1.01E-01	55%	4.55E-01	4.55E-02
Subtransmission Line Inspection	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Subtransmission Line Inspection	Unpaved	7.5	3.2	1.01E+00	1.01E-01	55%	4.55E-01	4.55E-02
Substation Site Visit	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Substation Site Visit	Unpaved	7.5	3.2	1.01E+00	1.01E-01	55%	4.55E-01	4.55E-02

<sup>a</sup> Paved road silt loading from ARB Emission Inventory Methodology 7.9, Entrained Paved Road Dust (1997) for collector roads,

<http://www.arb.ca.gov/ei/areasrc/fullpdf/full7-9.pdf>

Unpaved road silt content from SCAQMD CEQA Handbook, (1993) Table A9-9-E-1 for overburden

<sup>b</sup> Average paved on-road vehicle weight in Riverside County from ARB Emission Inventory Methodology 7.9, Entrained Paved Road Dust (1997)

Unpaved worker commuting weight on access road assumed to be same as paved road weight

Unpaved weight for other trucks is based on upper limit of 33,000 lbs for medium heavy-duty trucks.

<sup>c</sup> Equations:

$EF(\text{paved}) = k_p (sL/2)^{0.65} (W/3)^{1.5} - C$

Ref: AP-42, Section 13.2.1, "Paved Rods," November 2006

$EF(\text{unpaved}) = k_u (s/12)^a (W/3)^b$

Ref: AP-42, Section 13.2.2, "Unpaved Rods," November 2006

Constants:

$k_p =$	0.016	(Particle size multiplier for PM10)
	0.0024	(Particle size multiplier for PM2.5)
$C =$	0.00047	(Exhaust, brake wear and tire wear adjustment, PM10)
	0.00036	(Exhaust, brake wear and tire wear adjustment, PM2.5)
$k_u =$	1.5	(Particle size multiplier for PM)
	0.15	(Particle size multiplier for PM2.5)
$a =$	0.9	for PM10
	0.9	for PM2.5
$b =$	0.45	for PM10
	0.45	for PM2.5

<sup>d</sup> Control efficiency from watering unpaved roads twice per day, from Table XI-D, Mitigation Measure Examples, Fugitive Dust from Unpaved Roads, [http://www.aqmd.gov/ceqa/handbook/mitigation/fugitive/MM\\_fugitive.html](http://www.aqmd.gov/ceqa/handbook/mitigation/fugitive/MM_fugitive.html)

<sup>e</sup> Controlled emission factor [lb/mi] = Uncontrolled emission factor [lb/mi] x (1 - Control efficiency [%] / 100)

**Table 57**  
**Fugitive Dust Emission Factors**  
**Soil Dropping During Excavation**

Emission Factor [lb/cu. yd] =  $0.0011 \times (\text{mean wind speed [mi/hr]} / 5)^{1.3} / (\text{moisture [\%]} / 2)^{1.4} \times (\text{number drops per ton}) \times (\text{density [ton/cu. yd]})$   
 Reference: AP-42, Equation (1), Section 13.2.4, November 2006

Parameter	Value	Basis
Mean Wind Speed	12	SCAQMD CEQA Air Quality Handbook (1993), Table 9-9-G, default
Moisture	15	SCAQMD CEQA Air Quality Handbook (1993), Table 9-9-G-1, moist soil
Number Drops	4	Assumption
Soil Density	1.215	Table 2.46, Handbook of Solid Waste Management

PM10 Emission Factor (Uncontrolled) 9.94E-04 lb/cu. yd

Reduction from Watering Twice/Day<sup>b</sup> 0%

Controlled PM10 Emission Factor 9.94E-04 lb/cu. yd

Controlled PM2.5 Emission Factor<sup>a</sup> 2.07E-04 lb/cu. yd

<sup>a</sup> PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction of PM10 in Construction Dust = 0.208 from Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006

<sup>b</sup> Watering is assumed to be used to maintain moist conditions, so no further reduction from watering is included.

Emissions [pounds per day] = Controlled emission factor [pounds per cubic yard] x Volume soil handled [cubic yards per day]

**Table 57**  
**Fugitive Dust Emission Factors**  
**Storage Pile Wind Erosion**

Emission Factor [lb/day-acre] =  $0.85 \times (\text{silt content } [\%] / 1.5) \times (365 / 235) \times (\text{percentage of time unobstructed wind exceeds } 12 \text{ mph} / 15)$   
 Reference: SCAQMD CEQA Air Quality Handbook (1993), Table 9-9-E

Parameter	Value	Basis
Silt Content	7.5	SCAQMD CEQA Handbook, (1993) Table A9-9-E-1 for overburden
Pct. time wind > 12 mph	100	Worst-case assumption

PM10 Emission Factor (Uncontrolled) 44.0 lb/day-acre  
 Reduction from Watering Twice/Day 50%  
 Controlled PM10 Emission Factor 22.0 lb/day-acre  
 Controlled PM2.5 Emission Factor<sup>a</sup> 4.6 lb/day-acre

<sup>a</sup> PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction of PM10 in Construction Dust = 0.208 from Appendix A, Final-Methodology to Calculate Particulate Matter (PM) 2.5  
 and PM 2.5 Significance Thresholds, SCAQMD, October 2006

Emissions [pounds per day] = Controlled emission factor [pounds per acre-day] x Storage pile surface area [acres]

**Table 57**  
**Fugitive Dust Emission Factors**  
**Bulldozing, Scraping and Grading**

Emission Factor [lb/hr] = 0.75 x (silt content [%])<sup>1.5</sup> / (moisture)<sup>1.4</sup>  
 Reference: AP-42, Table 11.9-1, July 1998

Parameter	Value	Basis
Silt Content	7.5	SCAQMD CEQA Handbook, (1993) Table A9-9-E-1 for overburden
Moisture	15	SCAQMD CEQA Air Quality Handbook (1993), Table 9-9-G-1, moist soil

PM10 Emission Factor (Uncontrolled) 0.348 lb/hr  
 Reduction from Watering Twice/Day 0%  
 Controlled PM10 Emission Factor 0.348 lb/hr  
 Controlled PM2.5 Emission Factor<sup>a</sup> 0.072 lb/hr

<sup>a</sup> PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10  
 PM2.5 Fraction of PM10 in Construction Dust = 0.208 from Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5  
 and PM 2.5 Significance Thresholds, SCAQMD, October 2006

<sup>b</sup> Watering is assumed to be used to maintain moist conditions, so no further reduction from watering is included.

Emissions [pounds per day] = Controlled emission factor [pounds per hour] x Bulldozing, scraping or grading time [hours/day]