

Mammoth TSMP Project

Environmental Impact Report

Appendix D

Provided by PCR Services Corporation

July 2011

- D-1 Construction Air Quality
- D-2 Construction Greenhouse Gases

Appendix D-1

- Construction Air Quality
 - URBEMIS2007 Output File

Mammoth TSMP Project
Construction Emissions

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: V:\ACTIVE PROJECTS\Mammoth Trails Master Plan EIR\Construction\SHARP Priority Project 1_Surface Area.urb924

Project Name: Mammoth Lakes- SHARP Priority Project 1

Project Location: California State-wide

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
Time Slice 5/2/2011-7/1/2011 Active Days: 45	2.78	25.28	12.25	0.00	45.01	1.11	46.12	9.40	1.02	10.42	2,836.16
Mass Grading 05/01/2011- 07/01/2011	2.78	25.28	12.25	0.00	45.01	1.11	46.12	9.40	1.02	10.42	2,836.16
Mass Grading Dust	0.00	0.00	0.00	0.00	45.00	0.00	45.00	9.40	0.00	9.40	0.00
Mass Grading Off Road Diesel	2.64	23.65	10.69	0.00	0.00	1.04	1.04	0.00	0.96	0.96	2,492.65
Mass Grading On Road Diesel	0.11	1.57	0.54	0.00	0.01	0.06	0.07	0.00	0.05	0.06	241.31
Mass Grading Worker Trips	0.03	0.06	1.02	0.00	0.00	0.00	0.01	0.00	0.00	0.00	102.19
Time Slice 7/4/2011-8/1/2011 Active Days: 21	3.03	26.05	13.85	0.00	45.02	1.27	46.29	9.40	1.17	10.57	2,741.65
Fine Grading 07/02/2011- 08/01/2011	3.03	26.05	13.85	0.00	45.02	1.27	46.29	9.40	1.17	10.57	2,741.65
Fine Grading Dust	0.00	0.00	0.00	0.00	45.00	0.00	45.00	9.40	0.00	9.40	0.00
Fine Grading Off Road Diesel	2.83	23.44	11.96	0.00	0.00	1.17	1.17	0.00	1.08	1.08	2,247.32
Fine Grading On Road Diesel	0.17	2.55	0.87	0.00	0.01	0.10	0.11	0.00	0.09	0.09	392.14
Fine Grading Worker Trips	0.03	0.06	1.02	0.00	0.00	0.00	0.01	0.00	0.00	0.00	102.19
Time Slice 8/2/2011-9/2/2011 Active Days: 24	1.06	5.24	3.02	0.00	0.01	0.43	0.43	0.00	0.40	0.40	474.56
Asphalt 08/02/2011-09/02/2011	1.06	5.24	3.02	0.00	0.01	0.43	0.43	0.00	0.40	0.40	474.56
Paving Off-Gas	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.76	4.50	2.51	0.00	0.00	0.40	0.40	0.00	0.37	0.37	337.12
Paving On Road Diesel	0.05	0.73	0.25	0.00	0.00	0.03	0.03	0.00	0.03	0.03	111.89
Paving Worker Trips	0.01	0.01	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.55
Time Slice 9/5/2011-9/30/2011 Active Days: 20	3.19	28.88	32.90	0.04	0.18	1.29	1.47	0.06	1.18	1.24	6,075.61
Building 09/03/2011-10/01/2011	3.19	28.88	32.90	0.04	0.18	1.29	1.47	0.06	1.18	1.24	6,075.61
Building Off Road Diesel	1.62	14.52	6.37	0.00	0.00	0.73	0.73	0.00	0.67	0.67	1,712.19

Mammoth TSMP Project Construction Emissions

Building Vendor Trips	1.04	13.44	9.75	0.02	0.10	0.52	0.62	0.03	0.47	0.51	2,680.76
Building Worker Trips	0.54	0.91	16.78	0.02	0.08	0.04	0.13	0.03	0.04	0.07	1,682.66

Phase Assumptions

Phase: Fine Grading 7/2/2011 - 8/1/2011 - Default Fine Site Grading Description

Total Acres Disturbed: 9

Maximum Daily Acreage Disturbed: 2.25

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 97.4

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 5/1/2011 - 7/1/2011 - Default Architectural Coating Description

Total Acres Disturbed: 9

Maximum Daily Acreage Disturbed: 2.25

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 59.94

Off-Road Equipment:

1 Other Equipment (190 hp) operating at a 0.62 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 8/2/2011 - 9/2/2011 - Default Paving Description

Acres to be Paved: 2.25

Off-Road Equipment:

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

Phase: Building Construction 9/3/2011 - 10/1/2011 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day

1 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

Mammoth TSMP Project
Construction Emissions

- 1 Other Equipment (190 hp) operating at a 0.62 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
Time Slice 5/2/2011-7/1/2011 Active Days: 45	2.78	25.28	12.25	0.00	25.46	1.11	26.57	5.32	1.02	6.34	2,836.16
Mass Grading 05/01/2011- 07/01/2011	2.78	25.28	12.25	0.00	25.46	1.11	26.57	5.32	1.02	6.34	2,836.16
Mass Grading Dust	0.00	0.00	0.00	0.00	25.45	0.00	25.45	5.31	0.00	5.31	0.00
Mass Grading Off Road Diesel	2.64	23.65	10.69	0.00	0.00	1.04	1.04	0.00	0.96	0.96	2,492.65
Mass Grading On Road Diesel	0.11	1.57	0.54	0.00	0.01	0.06	0.07	0.00	0.05	0.06	241.31
Mass Grading Worker Trips	0.03	0.06	1.02	0.00	0.00	0.00	0.01	0.00	0.00	0.00	102.19
Time Slice 7/4/2011-8/1/2011 Active Days: 21	3.03	26.05	13.85	0.00	<u>25.47</u>	1.27	<u>26.74</u>	<u>5.32</u>	1.17	<u>6.49</u>	2,741.65
Fine Grading 07/02/2011- 08/01/2011	3.03	26.05	13.85	0.00	25.47	1.27	26.74	5.32	1.17	6.49	2,741.65
Fine Grading Dust	0.00	0.00	0.00	0.00	25.45	0.00	25.45	5.31	0.00	5.31	0.00
Fine Grading Off Road Diesel	2.83	23.44	11.96	0.00	0.00	1.17	1.17	0.00	1.08	1.08	2,247.32
Fine Grading On Road Diesel	0.17	2.55	0.87	0.00	0.01	0.10	0.11	0.00	0.09	0.09	392.14
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Time Slice 8/2/2011-9/2/2011 Active Days: 24	1.06	5.24	3.02	0.00	0.01	0.43	0.43	0.00	0.40	0.40	474.56
Asphalt 08/02/2011-09/02/2011	1.06	5.24	3.02	0.00	0.01	0.43	0.43	0.00	0.40	0.40	474.56
Paving Off-Gas	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.76	4.50	2.51	0.00	0.00	0.40	0.40	0.00	0.37	0.37	337.12
Paving On Road Diesel	0.05	0.73	0.25	0.00	0.00	0.03	0.03	0.00	0.03	0.03	111.89
Paving Worker Trips	0.01	0.01	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.55
Time Slice 9/5/2011-9/30/2011 Active Days: 20	<u>3.19</u>	<u>28.88</u>	<u>32.90</u>	<u>0.04</u>	0.18	<u>1.29</u>	1.47	0.06	<u>1.18</u>	1.24	<u>6,075.61</u>
Building 09/03/2011-10/01/2011	3.19	28.88	32.90	0.04	0.18	1.29	1.47	0.06	1.18	1.24	6,075.61
Building Off Road Diesel	1.62	14.52	6.37	0.00	0.00	0.73	0.73	0.00	0.67	0.67	1,712.19
Building Vendor Trips	1.04	13.44	9.75	0.02	0.10	0.52	0.62	0.03	0.47	0.51	2,680.76
Building Worker Trips	0.54	0.91	16.78	0.02	0.08	0.04	0.13	0.03	0.04	0.07	1,682.66

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 7/2/2011 - 8/1/2011 - Default Fine Site Grading Description
For Soil Stabilizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

Mammoth TSMP Project
Construction Emissions

PM10: 55% PM25: 55%

The following mitigation measures apply to Phase: Mass Grading 5/1/2011 - 7/1/2011 - Default Architectural Coating Description

For Soil Stabilizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

Appendix D-2

- Construction Greenhouse Gases
 - URBEMIS2007 Output File
 - Construction GHG Emissions Calculations

Mammoth TSMP Project
Construction GHG Emissions

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: V:\ACTIVE PROJECTS\Mammoth Trails Master Plan EIR\GHGs\annual GHG equipment mix.urb924

Project Name: Mammoth Lakes- equipment mix mitigation analysis

Project Location: California State-wide

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	<u>CO2</u>
2012 TOTALS (tons/year unmitigated)	830.28
2012 TOTALS (tons/year mitigated)	830.28
Percent Reduction	0.00

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	<u>CO2</u>
2012	830.28
Fine Grading 03/01/2012- 09/01/2012	830.28
Fine Grading Dust	0.00
Fine Grading Off Road Diesel	728.15
Fine Grading On Road Diesel	63.53
Fine Grading Worker Trips	38.60

Phase Assumptions

Mammoth TSMP Project
Construction GHG Emissions

Phase: Fine Grading 3/1/2012 - 9/1/2012 - Default Fine Site Grading Description

Total Acres Disturbed: 10

Maximum Daily Acreage Disturbed: 5

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 198.48

Off-Road Equipment:

5 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

3 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

4 Rubber Tired Loaders (164 hp) operating at a 0.54 load factor for 8 hours per day

7 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Mammoth TSMP Project
Construction GHG Emissions Calculations

CO ₂ e ^d (Metric Tons)			
Emission Source	Project-Level Projects (2011)	Program-Level Projects (2012)	Total
CO ₂ Emissions	159	99	258
CH ₄ Emissions	0	0	1
N ₂ O Emissions	0	0	1
CO₂e Emissions	160	100	260
Amortized (30 years)	5	3	9
2004 Statewide Total ^c	479,740,000	479,740,001	479,740,001
Net Increase as Percentage of 2004 Statewide Inventory	0.00003%	0.00002%	0.00005%
^a Mobile source values were derived using EMFAC2007 in addition to the California Climate Action Registry General Reporting Protocol; Version 3.0, April 2008. ^b On site construction equipment values were derived using OFFROAD2007 in addition to the California Climate Action Registry General Reporting Protocol; Version 3.0, April 2008. ^c Statewide totals were derived from the CARB Draft California GHG Inventory. ^d All CO ₂ e factors were derived using the California Climate Action Registry General Reporting Protocol; Version 3.0, April 2008. Source: PCR Services Corporation, 2011.			