



APPENDIX B

Project Construction Emissions

Lost Hills Construction Emissions for 11 Steam Generators

Description

The project proponent is CHEVRON U.S.A. INC. (Chevron). The project involves the construction of eleven steam generators and supporting water treatment facilities. In order to provide conservative emissions estimates, construction emissions are based on a 10 month construction period in 2011. (Actual construction will occur after 2011.) The location of the project is in Section 29, Township 26S, Range 21E. The nearest town is Lost Hills approximately 3 miles to the southeast. The construction activities include site preparation, installation of eleven steam generators, water treatment equipment, piping and electrical systems.

Analysis

The Sacramento Metropolitan Air Quality Management District Road Construction Emissions Model was used to determine the project emissions.

<http://airquality.org/ceqa/RoadConstructionModelVer6.3-2.xls>

The type of equipment used and hours of use for construction equipment was developed from Chevron's engineering estimates.

The horsepower defaults in the model were used except where specific equipment for the project was significantly different than the defaults.

The number of commute trips used the default method in the model for construction equipment and project specific man hours for other workers.

Annual Emissions Full Scale Water Treatment Plant in 2011

Component	Emissions (tons/year)			
	NO _x	PM ₁₀	VOC	CO
Commute	0.3	0.03	0.2	3.5
Fugitive Dust	-	0.9	-	-
Water Truck	0.08	0.00	0.01	0.04
Construction	1.4	0.2	0.3	1.0
Total	1.8	1.1	0.5	4.5

Annual Emissions Eleven Steam Generators in 2011

Component	Emissions (tons/year)			
	NO _x	PM ₁₀	VOC	CO
Commute	0.15	0.02	0.1	1.6
Fugitive Dust	-	0.9	-	-
Water Truck	0.05	0.00	0.00	0.03
Construction	1.7	0.1	0.3	1.0
Total	1.9	1.0	0.4	2.6

Total Annual Emissions Water Plant and Steam Generators in 2011

Component	Emissions (tons/year)			
	NO _x	PM ₁₀	VOC	CO
Commute	0.45	0.05	0.3	5.1
Fugitive Dust	-	1.8	-	-
Water Truck	0.13	0.00	0.01	0.07
Construction	3.1	0.3	0.6	2.0
Total	3.7	2.2	0.9	7.2

Note: Soil hauling emissions are negligible

Road Construction Emissions Model, Version 6.3.2

Emission Estimates for → LH Full Scale Water Plant											
Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	CO2 (lbs/day)	
Grubbing/Land Clearing	4.6	41.2	16.5	11.2	1.2	10.0	3.0	0.9	2.1	6,203.1	
Grading/Excavation	4.6	41.8	16.9	11.2	1.2	10.0	3.0	0.9	2.1	6,252.7	
Drainage/Utilities/Sub-Grade	4.6	41.2	16.5	11.2	1.2	10.0	3.0	0.9	2.1	6,203.1	
Paving	4.5	40.6	15.4	1.1	1.1	-	0.8	0.8	-	6,039.0	
Maximum (pounds/day)	4.6	41.8	16.9	11.2	1.2	10.0	3.0	0.9	2.1	6,252.7	
Total (tons/construction project)	0.5	4.5	1.8	1.1	0.1	0.9	0.3	0.1	0.2	679.3	

Notes: Project Start Year → 2011
 Project Length (months) → 10
 Total Project Area (acres) → 6
 Maximum Area Disturbed/Day (acres) → 1
 Total Soil Imported/Exported (yd³/day) → 8

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified. Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for → LH Full Scale Water Plant											
Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	PM10 (kgs/day)	Exhaust PM10 (kgs/day)	Fugitive Dust PM10 (kgs/day)	Total PM2.5 (kgs/day)	Exhaust PM2.5 (kgs/day)	Fugitive Dust PM2.5 (kgs/day)	CO2 (kgs/day)	
Grubbing/Land Clearing	2.1	18.7	7.5	5.1	0.5	4.5	1.3	0.4	0.9	2,819.6	
Grading/Excavation	2.1	19.0	7.7	5.1	0.5	4.5	1.4	0.4	0.9	2,842.1	
Drainage/Utilities/Sub-Grade	2.1	18.7	7.5	5.1	0.5	4.5	1.3	0.4	0.9	2,819.6	
Paving	2.0	18.5	7.0	0.5	0.5	-	0.4	0.4	-	2,745.0	
Maximum (kilograms/day)	2.1	19.0	7.7	5.1	0.5	4.5	1.4	0.4	0.9	2,842.1	
Total (megagrams/construction project)	0.5	4.1	1.6	1.0	0.1	0.8	0.3	0.1	0.2	616.1	

Notes: Project Start Year → 2011
 Project Length (months) → 10
 Total Project Area (hectares) → 2
 Maximum Area Disturbed/Day (hectares) → 0
 Total Soil Imported/Exported (meters³/day) → 6

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified. Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Road Construction Emissions Model, Version 6.3.2

Emission Estimates for -> Lost Hills 11 SGs											
Project Phases (English Units)		ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	CO2 (lbs/day)
Grubbing/Land Clearing		3.4	23.6	17.2	11.0	1.0	10.0	2.9	0.9	2.1	3,746.5
Grading/Excavation		3.4	24.1	17.6	11.0	1.0	10.0	3.0	0.9	2.1	3,796.1
Drainage/Utilities/Sub-Grade		3.4	23.6	17.2	11.0	1.0	10.0	2.9	0.9	2.1	3,746.5
Paving		3.3	23.0	16.1	1.0	1.0	-	0.8	0.8	-	3,582.5
Maximum (pounds/day)		3.4	24.1	17.6	11.0	1.0	10.0	3.0	0.9	2.1	3,796.1
Total (tons/construction project)		0.4	2.6	1.9	1.0	0.1	0.9	0.3	0.1	0.2	417.9

Notes: Project Start Year -> 2011

- Project Length (months) -> 10
- Total Project Area (acres) -> 6
- Maximum Area Disturbed/Day (acres) -> 1
- Total Soil Imported/Exported (yd³/day) -> 8

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified. Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> Lost Hills 11 SGs											
Project Phases (Metric Units)		ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	PM10 (kgs/day)	Exhaust PM10 (kgs/day)	Fugitive Dust PM10 (kgs/day)	Total PM2.5 (kgs/day)	Exhaust PM2.5 (kgs/day)	Fugitive Dust PM2.5 (kgs/day)	CO2 (kgs/day)
Grubbing/Land Clearing		1.5	10.7	7.8	5.0	0.5	4.5	1.3	0.4	0.9	1,703.0
Grading/Excavation		1.6	11.0	8.0	5.0	0.5	4.5	1.3	0.4	0.9	1,725.5
Drainage/Utilities/Sub-Grade		1.5	10.7	7.8	5.0	0.5	4.5	1.3	0.4	0.9	1,703.0
Paving		1.5	10.5	7.3	0.4	0.4	-	0.4	0.4	-	1,628.4
Maximum (kilograms/day)		1.6	11.0	8.0	5.0	0.5	4.5	1.3	0.4	0.9	1,725.5
Total (megagrams/construction project)		0.3	2.4	1.8	1.0	0.1	0.8	0.3	0.1	0.2	379.1

Notes: Project Start Year -> 2011

- Project Length (months) -> 10
- Total Project Area (hectares) -> 2
- Maximum Area Disturbed/Day (hectares) -> 0
- Total Soil Imported/Exported (meters³/day) -> 6

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified. Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.