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Appendix 5.1E
Construction Data

Construction Emissions and Impact Analysis

Construction Phases

Construction of MREC is expected to last approximately 23 months. The construction will occur in the following four main phases:

- Mobilization and site preparation;
- Foundation work;
- Construction/installation of major structures; and,
- Installation of major equipment.
- Commissioning

The main site is approximately 9.8 acres in size and is essentially flat. A laydown yard will be located on the main site. The total acreage for purposes of calculating on-site emissions will be approximately 9.8 acres. The site is currently in use as a vehicle salvage/dismantling and transfer yard. The site is currently level, and as such, the site will require only minimum grading and leveling prior to construction of the power block and support systems. Site preparation includes finish grading, excavation of footings and foundations, and backfilling operations. After site preparation is finished, the construction of the foundations and structures is expected to begin. Once the foundations and structures are finished, installation and assembly of the mechanical and electrical equipment are scheduled to commence.

Fugitive dust emissions from the construction of MREC will result from:

- Dust entrained during site preparation and finish grading/excavation at the construction site;
- Dust entrained during onsite travel on paved and unpaved surfaces;
- Dust entrained during aggregate and soil loading and unloading operations; and
- Wind erosion of areas disturbed during construction activities.

Combustion emissions during construction will result from:

- Exhaust from the Diesel construction equipment used for site preparation, grading, excavation, and construction of onsite structures;
- Exhaust from water trucks used to control construction dust emissions;
- Exhaust from Diesel-powered welding machines, electric generators, air compressors, and water pumps;
- Exhaust from pickup trucks and Diesel trucks used to transport workers and materials around the construction site;
- Exhaust from Diesel trucks used to deliver concrete, fuel, and construction supplies to the construction site; and,
- Exhaust from automobiles used by workers to commute to the construction site.

To determine the potential worst-case daily construction impacts, exhaust and dust emission rates have been evaluated for each source of emissions. Worst-case daily dust emissions are expected to occur during months 2-8 of construction when site preparation occurs. The worst-case daily exhaust emissions are expected to occur during the middle of the construction schedule during the installation of the major mechanical equipment. Annual emissions are based on the average equipment mix during the 23 month construction period.

Available Mitigation Measures

The following mitigation measures are proposed to control fugitive dust and exhaust emissions from the diesel heavy equipment used during construction of MREC:

- The applicant will have an on-site construction mitigation manager who will be responsible for the implementation and compliance of the construction mitigation program. The documentation of the ongoing implementation and compliance with the proposed construction mitigations will be provided on a periodic basis.
- All unpaved roads and disturbed areas in the project and laydown construction sites will be watered as frequently as necessary to control fugitive dust. The frequency of watering will be on a minimum schedule of four (4) times during the daily construction activity period. Watering may be reduced or eliminated during periods of precipitation.
- Onsite vehicle speeds will be limited to 5 miles per hour on unpaved areas within the project construction site.
- The construction site entrance(s) will be posted with visible speed limit signs.
- All construction equipment vehicle tires will be inspected and cleaned as necessary to be free of dirt prior to leaving the construction site via paved roadways.
- Gravel ramps will be provided at the tire cleaning area.
- All unpaved exits from the construction site will be graveled or treated to reduce track-out to public roadways.
- All construction vehicles will enter the construction site through the treated entrance roadways, unless an alternative route has been provided.
- Construction areas adjacent to any paved roadway will be provided with sandbags or other similar measures as specified in the construction Storm Water Pollution Prevention Plan (SWPPP) to prevent runoff to roadways.
- All paved roads within the construction site will be cleaned on a periodic basis (or less during periods of precipitation), to prevent the accumulation of dirt and debris.
- The first 300 feet of any public roadway exiting the construction site will be cleaned on a periodic basis (or less during periods of precipitation), using wet sweepers or air filtered dry vacuum sweepers, when construction activity occurs or on any day when dirt or runoff from the construction site is visible on the public roadways.
- Any soil storage piles and/or disturbed areas that remain inactive for longer than 10 days will be covered, or shall be treated with appropriate dust suppressant compounds.
- All vehicles that are used to transport solid bulk material on public roadways and that have the potential to cause visible emissions will be covered, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to minimize fugitive dust emissions. A minimum freeboard height of two (2) feet will be required on all bulk materials transport.
- Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) will be used on all construction areas that may be disturbed. Any windbreaks installed to comply with this condition will remain in place until the soil is stabilized or permanently covered with vegetation.
- Disturbed areas will be re-vegetated as soon as practical.

To mitigate exhaust emissions from construction equipment, the applicant is proposing the following:

- The applicant will work with the construction contractor to utilize to the extent feasible, EPA-ARB Tier 2/Tier 3 engine compliant equipment for equipment over 100 horsepower.
- Insure periodic maintenance and inspections per the manufacturer's specifications.
- Reduce idling time through equipment and construction scheduling.
- Use California low sulfur diesel fuels (<=15 ppmw S).

Estimation of Emissions with Mitigation Measures

Tables 5.1E-1 through 5.1E-5 show the estimated maximum period, monthly, and daily heavy equipment exhaust and fugitive dust emissions with recommended mitigation measures. Detailed emission calculations are included in Table 5.1E-7, including estimates of PM2.5 and CO2e.

Table 5.1E-1 ONSITE CONSTRUCTION EMISSIONS SUMMARY, TONS/PERIOD

Category	NO_x	CO	VOC	SO_x	PM10	PM2.5	CO_2
Exhaust	37.59	27.49	5.55	0.08	1.74	1.74	6805.2
Fugitives	-	-	-	-	0.483	0.0883	-
Totals	37.59	27.49	5.55	0.08	2.22	1.83	6805.2

Notes: Construction period is 23 months.

Onsite const equipment exhaust, fugitive dust from earth moving activities, cut and fill activity, onsite paved road use, storage pile wind erosion, onsite unpaved road use, and track-out.

Table 5.1E-2 ONSITE CONSTRUCTION EMISSIONS SUMMARY, LBS/MONTH (Normalized for 23 months)

Category	NO_x	CO	VOC	SO_x	PM10	PM2.5	CO_2
Exhaust	3269	2390	483	7	151	151	-
Fugitives	-	-	-	-	42	7.7	-
Totals	3269	2390	483	7	193	158.7	-

Notes: Construction period is 23 months.

Onsite const equipment exhaust, fugitive dust from earth moving activities, cut and fill activity, onsite paved road use, storage pile wind erosion, onsite unpaved road use, and track-out.

Table 5.1E-3 ONSITE CONSTRUCTION EMISSIONS SUMMARY, LBS/DAY (Normalized for 506 workdays)

Category	NO_x	CO	VOC	SO_x	PM10	PM2.5	CO_2
Exhaust	148.6	108.7	21.9	0.32	6.9	6.9	-
Fugitives	-	-	-	-	1.91	0.35	-
Totals	148.6	108.7	21.9	0.32	8.81	7.25	-

Notes: 23 months @ 22 days/month = 506 days/period

Onsite const equipment exhaust, fugitive dust from earth moving activities, cut and fill activity, onsite paved road use, storage pile wind erosion, onsite unpaved road use, and track-out.

Table 5.1E-4 ONSITE CONSTRUCTION EMISSIONS SUMMARY, LBS/DAY (Estimated Maximum Day)

Category	NO_x	CO	VOC	SO_x	PM10	PM2.5	CO_2
Exhaust	217.2	145.97	31.53	0.42	9.74	9.74	-
Fugitives	-	-	-	-	2.29	0.426	-
Totals	217.2	145.97	31.53	0.42	12.03	10.17	-

Notes:

Max day for onsite fugitives would be in Phase 2 (Civil Improvements)

Max day for onsite exhaust would be in Phase 2 (Civil Improvements)

Onsite const equipment exhaust, fugitive dust from earth moving activities, cut and fill activity, onsite paved road use, storage pile wind erosion, onsite unpaved road use, and track-out.

Table 5.1E-5 OFFSITE CONSTRUCTION EMISSIONS SUMMARY, TONS/PERIOD

Category	NO_x	CO	VOC	SO_x	PM10	PM2.5	CO_2
Exhaust	3.05	5.98	0.78	0.0154	0.212	0.211	1636
Fugitives	-	-	-	-	0.48	0.08	-
Totals	3.05	5.98	0.78	0.0154	0.692	0.291	1636

Notes: Construction period is 23 months.

Delivery and hauling exhaust, const site support vehicle exhaust, worker travel exhaust, worker bus exhaust, offsite paved road fugitives.

Total CO2e emissions from all construction related activities, both on and off site is estimated to be 8,524 tons per the construction period.

Analysis of Ambient Impacts from Facility Construction

Ambient air quality impacts from emissions during the construction of MREC were estimated using an air quality dispersion modeling analysis. The modeling analysis considers the construction site location, the surrounding topography, and the sources of emissions during construction, including vehicle and equipment exhaust emissions and fugitive dust.

Existing Ambient Levels

As with the modeling analysis of project operating impacts (Section 5.1), monitoring stations delineated in Section 5.1 were used to establish the ambient background levels for the construction impact modeling analysis. Table 5.1-17 showed the maximum concentrations of NO_x, SO_2, CO, PM2.5, and PM10 recorded for 2012 through 2014 at those monitoring stations.

Dispersion Model

As in the analysis of project operating impacts, the USEPA-approved model AERMOD (version15181) was used to estimate ambient impacts from construction activities. A detailed discussion of the AERMOD dispersion model and the associated processing programs AERSURFACE, AERMET, and AERMAP is included in Section 5.1.6. As with the operational impact analysis, the El Rio air quality monitoring site meteorology were processed in accordance with USEPA guidance.

The emission sources for the construction site were grouped into two categories: exhaust emissions and dust emissions. Combustion equipment exhaust emissions were modeled as eighteen (18) 3.048 meter

high point sources (exhaust parameters of 750 Kelvins, 64.681 m/s exit velocity, and 0.1524 meter stack diameter) placed at regular 150-foot intervals around the construction area. Construction fugitive dust emissions were modeled as an area source covering the construction area with an effective plume height of 0.5 meters. Combustion and fugitive emissions were assumed to occur for 10 hours/day (7 AM to 5 PM) consistent with the expected period of onsite construction activities generating both exhaust emissions and fugitive dust. The construction impacts modeling analysis generally used the same receptor locations and meteorological data as used for the project operating impact analysis. Exceptions were that only the 10-meter fenceline and 20-meter downwash receptor grids were modeled since maximum impacts will occur in the immediate project vicinity and the FASTALL option was utilized to minimize runtimes for the area source and the larger number of point sources modeled. A detailed discussion of the receptor locations and meteorological data is included in Section 5.1.6. To determine the construction impacts on short-term ambient standards (24 hours and less), the maximum daily onsite construction emission levels shown in Table 5.1E-4 were used. For pollutants with annual average ambient standards, the normalized monthly emission levels as shown in Table 5.1E-2 were used, multiplied by 12 months/year to derive annual emissions.

Modeling Results

Based on the emission rates of NO_x, SO_2, CO, PM2.5, and PM10, the modeling options, receptor grids, and meteorological data, AERMOD calculates short-term and annual ambient impacts for each pollutant. As mentioned above, the modeled 1-hour, 3-hour 8-hour, and 24-hour ambient impacts are based on the worst-case daily emission rates of NO_x, SO_2, CO, PM2.5, and PM10 spread over the estimated daily hours of operation. The annual impacts are based on the annual emission rates of these pollutants.

The annual average concentrations of NO_2 were computed following the revised USEPA guidance for computing these concentrations (August 9, 1995 Federal Register, 60 FR 40465). The annual average was calculated using the ambient ratio method (ARM) with the national default value of 0.75 for the annual average NO_2/NO_x ratio. The 1-hour NO2 impacts were modeled using the ozone limiting method (OLM) as described in the Section 5.1.6 for the commissioning impacts.

The modeling analysis results are shown in Table 5.1E-6. Also included in the table are the maximum background levels that have occurred in the last three years and the resulting total ambient impacts. As shown in Table 5.1E-6, modeled construction impacts due to facility emissions alone for all pollutants are expected to be below the most stringent state and Federal standards.

Table 5.1E-6 Modeled Maximum Construction Impacts

Pollutant	Averaging Time	Maximum Construction Impacts (µg/m³)	Background (µg/m³)	Total Impact (µg/m³)	State Standards (µg/m³)	Federal Standards (µg/m³)
NO_2[a]	1-hour	198.0	107.2	305.2	339	-
	1-hour	75.1	60.2	135.3	-	188
	Annual	6.6	13.2	19.8	57	100
SO_2	1-hour	0.77	10.5	11.27	655	196
	3-hour	0.30	10.5	10.80	-	1300
	24-hour	0.11	5.2	5.31	105	-
CO	1-hour	268.0	4,581	4,849	23,000	40,000
	8-hour	64.7	1,260	1,325	10,000	10,000
PM10	24-hour	10.1	57	67	50	150
	Annual[b]	1.6	24.3	26	20	-

Table 5.1E-6 Modeled Maximum Construction Impacts

Pollutant	Averaging Time	Maximum Construction Impacts (µg/m³)	Background (µg/m³)	Total Impact (µg/m³)	State Standards (µg/m³)	Federal Standards (µg/m³)
PM2.5	24-hour	2.73	18	21	-	35
	Annual	0.59	9.4	10	12	12.0

Notes:
[a] ARM applied for annual average, using national default 0.75 ratio, and OLM for 1-hour averages.
[b] Annual Arithmetic Mean.

For maximum modeled ambient concentrations when added to background concentrations, standards are only exceeded for the state PM_{10} standards since the background concentrations already exceed the CAAQS. All other maximum modeled construction impacts when added to background concentrations are less than the applicable state or Federal standards. Modeled MREC construction particulate impacts shown are not unusual in comparison to the modeling results for most construction projects; actual impacts for construction sites that use good dust suppression techniques and low-emitting vehicles typically would not be expected to cause exceedances of air quality particulate standards. The input and output modeling files are being provided electronically to the appropriate agencies.

Attachment
Detailed Emission Calculations and Support Data

TABLE 5.1E-7 (44 Pages)

Activity	Month 1 Nov-18	Month 2 Dec-18	Month 3 Jan-19	Month 4 Feb-19	Month 5 Mar-19	Month 6 Apr-19	Month 7 May-19	Month 8 Jun-19	Month 9 Jul-19	Month 10 Aug-19	Month 11 Sep-19	Month 12 Oct-19	Month 13 Nov-19	Month 14 Dec-19	Month 15 Jan-20	Month 16 Feb-20	Month 17 Mar-20	Month 18 Apr-20	Month 19 May-20	Month 20 Jun-20	Month 21 Jul-20	Month 22 Aug-20	Month 23 Sep-20
Mobilization	X																						
Delineate and mark the boundaries of the construction zone	X																						
Install Perimeter Fencing/Gates	X																						
Stabilize construction entrance/exit and roadway; install tire wash		X																					
Establish parking and staging areas		X																					
Establish laydown area for materials storage/staging		X																					
Establish concrete washout area		X																					
Install BMPs	X	X	X										X	X	X								
Clear and grub; strip topsoil		X																					
Grading - Fill, Construct Trenches, Pilings		X	X	X	X	X	X	X															
Road & retaining wall construction						X	X																
Underground utilities - Wet					X	X																	
Underground utilities - Mechanical					X	X	X	X	X														
Underground utilities - Electrical					X	X	X																
Construct reinforced concrete foundations							X	X	X	X													
Construct equipment buildings								X	X	X	X												
Install Mechanical Equipment									X	X	X	X											
Install Electrical Equipment									X	X	X	X											
Construct and Install Auxiliary Equipment/Tanks/Structures											X	X	X	X	X								
Construct O&M Buildings													X	X	X								
Install BOP Instrumentation and CEMS															X	X	X	X					
Install BOP structure completion																X	X	X	X				
Finish Parking Area/Roadways																		X	X				
Final Completion																		X	X	X	X	X	
Equipment Firing/Testing & Initial Commissioning																	X	X	X	X	X	X	X

Project Site = 9.8 total disturbed acres
Temp laydown site = 2-5 acres Offsite
5 LM6000 simple cycle peakers
23 Month Construction and Commissioning Schedule
7 month schedule for grading entire project area, trenching and project earthwork
Increased grading during months 2-8 for mass fill operations
4500 cy cut across site (trenching/piling activities only - balanced)
110,000 cy fill across site
Fill to be imported to the project site - +/- 4 miles RT

Earthwork months 2-8 including fill, pilings, trenching, roadwork, finish grading
Balance of plant equipment completion June 2019
Balance of plant instrumentation completion April 2020
Site construction completion September 2020
First Fire commissioning May 2020
Final commissioning/COD August 2020
Grading: peak = 15,700 cy cut/fill; Typical month = 18,000 cy cut/fill
Production Rates are based on 10-hour working day/5 day week schedule
23-month continuous construction sequencing

REV: A
10/19/2015
By: M Santangelo

Construction Worker Travel Data

	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Month 13	Month 14	Month 15	Month 16	Month 17	Month 18	Month 19	Month 20	Month 21	Month 22	Month 23
	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20
Total personnel - average per day	44	62	44	32	100	116	116	140	154	114	146	122	78	78	78	78	100	118	118	60	58	58	16

Average Peak Vehicle Trips	2710	per month	123	per day based on 22 days per month
Average Vehicle Trips	1553	per month	71	per day based on 22 days per month
Peak Round Trip Truck Trips	3388	per month	154	per day based on 22 days per month
Average Workforce Onsite	88	Per day		Overall average

Notes :
Schedule based on 22 working day month
20% Carpooling rate

Mobilization Construction Phase	
Mobilization	
Site Preparation	
Clear & Grub	
Survey & Project Delineation	
Construct Parking & Staging Areas	
Set-up Temp Office & Utility Services	
Construct Concrete Wash-Out	
Post/Fencing/Gate Installation	
Soil Stabilization	

				Site Preparation, Clear & Grub, Boundaries, Staging Area, BMPs, Fencing		
				MREC		
Equipment Type	**HP**	**Fuel**	**Hours/Day per Piece of Equipment**	**Number of equipment operated each day of the month**		
				Month 1	**Month 2**	**Month 3**
				Nov-18	**Dec-18**	**Jan-19**
Generator	30	Diesel	6	1	1	1
Skip Loader	78	Diesel	4	1	1	1
Track Trencher	115	Diesel	8	1	1	1

					Site Preparation, Clear & Grub, Boundaries, Staging Area, BMPs, Fencing		
					MREC		
On-site Vehicle Type	**HP**	**Type**	**Miles/Day/ vehicle**	**Miles/ Hour/ vehicle**	**Number of equipment operated each day of the month**		
					Month 1	**Month 2**	**Month 3**
					Nov-18	**Dec-18**	**Jan-19**
On-Site Pick Up Truck	185	Diesel	20	8	3	3	3
5000 gal Water Truck	240	Diesel	10	8	2	2	3
On-Site ServiceTruck	210	Diesel	20	4	1	1	1
On-Site Flatbed Delivery Truck	280	Diesel	20	10	1	1	1
On-Site Dump Truck	280	Diesel	20	10	1	1	1

					Site Preparation, Clear & Grub, Boundaries, Staging Area, BMPs, Fencing		
					MREC		
Off-site Vehicle Type	**HP**	**Type**	**Miles/Day**	**Miles/ Hour**	**Number of equipment operated each day of the month**		
					Month 1	**Month 2**	**Month 3**
					Nov-18	**Dec-18**	**Jan-19**
Off-Site Worker Commuter Bus, Small	220	Diesel	50	55	1	1	1
Off-Site Worker Commute Car	140	Gasoline	50	55	44	62	12
Off-Site Water Delivery Truck	435	Diesel	50	55	3	3	0
Off-Site Concrete Truck	300	Diesel	50	55	0.5	0.5	0
Off-Site Equipment/Material Delivery Truck	235	Diesel	50	55	2	2	1

Earthwork		**MREC**		
Activity	**Units**	**Quantity per Month**		
		Month 1	**Month 2**	**Month 3**
		Nov-18	**Dec-18**	**Jan-19**
Quantity of Soil Cut	Cu. Yd. everyday of the month	0	5	5
Quantity of Soil Fill	Cu. Yd. everyday of the month	0	5	5
Storage Pile Exposed Area	Cu. Yd. everyday of the month	5	5	5
Quantity of Acres Paved	Acres everyday of the month	0	0	0
Quantity of area disturbed	Acres disturbed per day/clear & grub - no grading	0.5	0.5	0.5

Civil Improvements Construction Phase
Road Improvements
Retaining walls/ramp construction
Excavation
Grading - Construct Trenches
Grading - Cut & Fill
Construct Stormwater Pond
Soil Stabilization

Equipment Type	HP	Fuel	Hours/Day per Piece of Equipment	Initial Access Roads, Excavation, Grading — MREC — Number of equipment operated each day of the month						
				Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8
				Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Dozer Cat D6R	185	Diesel	8	3	3	3	3	4	4	3
Generator	30	Diesel	6	2	2	2	2	2	2	2
Scraper Cat 623	365	Diesel	8	3	3	3	3	3	3	3
Deere 210LE Skip Loader	78	Diesel	6	3	3	3	4	5	6	3
Cat 140H Grader	185	Diesel	8	3	3	3	3	3	3	3
Roller Vibrator/compactor/other	350	Diesel	6	3	3	3	3	4	4	3
Cat BG600D Paver	173	Diesel	6	0	0	0	0	2	2	0

On-site Vehicle Type	HP	Type	Miles/Day/ Vehicle	Miles/ Hour/ Vehicle	Initial Access Roads, Excavation, Grading — MREC — Number of equipment operated each day of the month						
					Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8
					Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
5000 gal Water Truck	240	Diesel	5	5	5	5	5	5	5	5	5
On-Site Heavy Duty Pick Up Truck	235	Diesel	5	10	5	5	5	5	7	7	5
On-Site ServiceTruck	210	Diesel	5	10	2	2	2	2	2	2	2
On-Site Lube/Fuel Truck	210	Diesel	5	10	1	1	1	1	1	1	1
On-Site Dump Truck	280	Diesel	5	10	2	2	2	2	3	3	2

					Initial Access Roads, Excavation, Grading						
					MREC						
Off-site Vehicle Type	**HP**	**Type**	**Miles/Day**	**Miles/ Hour**	**Number of equipment operated each day of the month**						
					Month 2	**Month 3**	**Month 4**	**Month 5**	**Month 6**	**Month 7**	**Month 8**
					Dec-18	**Jan-19**	**Feb-19**	**Mar-19**	**Apr-19**	**May-19**	**Jun-19**
Off-Site Worker Commute Car	140	Gasoline	40	55	32	32	48	48	72	72	32
Off-Site Water Delivery Truck	435	Diesel	40	55	8	8	8	8	8	8	8
Off-Site Concrete Truck	300	Diesel	40	55	0	0	0	0	2	2	0
Off-Site Rock/AC Delivery Truck	300	Diesel	40	55	0	0	0	0	4	4	0
Off-Site Equipment/Material Delivery Truck	235	Diesel	32	55	40	40	40	40	44	44	40

		MREC						
Earthwork		**Initial Access Roads, Excavation, Grading**						
Activity	**Units**	**Month 2**	**Month 3**	**Month 4**	**Month 5**	**Month 6**	**Month 7**	**Month 8**
		Dec-18	**Jan-19**	**Feb-19**	**Mar-19**	**Apr-19**	**May-19**	**Jun-19**
Quantity of Soil Cut	Cu. Yd. every day of the month	0	0	102	102	5	5	0
Quantity of Soil Fill	Cu. Yd. every day of the month	714	714	714	714	714	714	714
Storage Pile Exposed Area	Cu. Yd. every day of the month	40	40	40	40	40	40	40
Quantity of Acres Paved	Acres every day of the month	0	0	0	0	0.1	0.1	0
Quantity of acres disturbed	Acres disturbed per day/graded	0.09	0.09	0.09	0.09	0.09	0.09	0.09

Power Generation Plant Construction Phase
Underground work (utilities trenching)
Foundation work (Concrete slabs/Piers/Supports/PIP Walls)
Construction Power Plant
Construct & Install Auxiliary Equipment
Soil Stabilization

				Underground utilities, Foundations, Power Plant, Aux Equipment							
				MREC							
Equipment Type	**HP**	**Fuel**	**Hours/Day per Piece of Equipment**	**Number of equipment operated each day of the month**							
				Month 5	**Month 6**	**Month 7**	**Month 8**	**Month 9**	**Month 10**	**Month 11**	**Month 12**
				Mar-19	**Apr-19**	**May-19**	**Jun-19**	**Jul-19**	**Aug-19**	**Sep-19**	**Oct-19**
Generator	30	Diesel	8	2	2	2	2	2	2	2	2
Air Compressor	25	Diesel	8	3	3	3	3	3	3	3	3
Dozer Cat D6R	185	Diesel	4	1	1	1	1	1	1	1	1
Deere 210LE Skip Loader	78	Diesel	8	3	3	3	3	3	3	3	3
Telehandler	99	Diesel	8	4	4	4	4	4	4	4	4
Track Trencher	115	Diesel	8	2	2	2	2	2	2	2	2
Cat 583T Pipelayer	310	Diesel	6	2	2	2	2	2	2	2	2
Hyster H450HDS Lift	230	Diesel	8	1	1	1	1	1	1	1	1
Manitou M50-2 Lift	74	Diesel	8	1	1	1	1	1	1	1	1
Pettibone Carry Lift	160	Diesel	8	1	1	1	1	1	1	1	1

					Underground utilities, Foundations, Power Plant, Aux Equipment							
					MREC							
On-site Vehicle Type	**HP**	**Type**	**Miles/Day/ Vehicle**	**Miles/ Hour/ Vehicle**	**Number of vehicles operated each day of the month**							
					Month 5	**Month 6**	**Month 7**	**Month 8**	**Month 9**	**Month 10**	**Month 11**	**Month 12**
					Mar-19	**Apr-19**	**May-19**	**Jun-19**	**Jul-19**	**Aug-19**	**Sep-19**	**Oct-19**
On-Site Pick Up Truck	210	Diesel	20	6	4	4	4	4	4	4	4	4
On-Site Heavy Duty Pick Up Truck	235	Diesel	20	10	2	2	2	2	2	2	2	2
On-Site Flatbed Delivery Truck	280	Diesel	10	10	4	4	4	4	4	4	4	4
On-Site ServiceTruck	210	Diesel	10	10	3	3	3	3	3	3	3	3
On-Site Lube/Fuel Truck	210	Diesel	10	10	2	2	2	2	2	2	2	2
On-Site Dump Truck	280	Diesel	10	10	1	1	1	1	1	1	1	1
On-Site Truck Crane	190	Diesel	10	10	1	1	1	1	1	1	1	1

					Underground utilities, Foundations, Power Plant, Aux Equipment							
					MREC							
Off-site Vehicle Type	**HP**	**Type**	**Miles/Day**	**Miles/ Hour**	**Number of vehicles operated each day of the month**							
					Month 5	**Month 6**	**Month 7**	**Month 8**	**Month 9**	**Month 10**	**Month 11**	**Month 12**
					Mar-19	**Apr-19**	**May-19**	**Jun-19**	**Jul-19**	**Aug-19**	**Sep-19**	**Oct-19**
Off-Site Worker Commuter Bus, Small	220	Diesel	40	55	2	2	2	2	2	2	2	2
Off-Site Worker Commute Car	140	Gasoline	40	55	68	68	68	68	82	82	68	44
Off-Site Concrete Truck	300	Diesel	40	55	0	0	12	12	12	12	0	0
Off-Site Equipment/Material Delivery Truck	235	Diesel	40	55	6	6	6	6	6	6	6	6
Off-Site Equipment/Material Delivery Truck	235	Diesel	100	55	4	4	4	4	4	4	4	4

Earthwork		**MREC**							
Activity	**Units**	**Underground utilities, Foundations, Power Plant, Aux Equipment**							
		Month 5	**Month 6**	**Month 7**	**Month 8**	**Month 9**	**Month 10**	**Month 11**	**Month 12**
		Mar-19	**Apr-19**	**May-19**	**Jun-19**	**Jul-19**	**Aug-19**	**Sep-19**	**Oct-19**
Quantity of Soil Cut	Cu. Yd. everyday of the month	5	5	5	5	5	5	5	5
Quantity of Soil Fill	Cu. Yd. everyday of the month	5	5	5	5	5	5	5	5
Storage Pile Exposed Area	Cu. Yd. everyday of the month	2	2	2	2	2	2	2	2
Quantity of area disturbed	Acres disturbed per day/graded	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Building Construction Phase
Building Utilities
Construct Interconnection Facilities
Construct Operations and Maintenance Building, Storage, Metal Buildings & Facilities
Commissioning/pre-functional and functional testing
Soil Stabilization

				Construct Switchyard, O&M Buildings, Completion & Testing											
				MREC											
Equipment Type	HP	Fuel	Hours/Day per Piece of Equipment	Number of equipment operated each day of the month											
				Month 11	Month 12	Month 13	Month 14	Month 15	Month 16	Month 17	Month 18	Month 19	Month 20	Month 21	Month 22
				Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20
Generator	30	Diesel	8	1	1	1	1	1	1	1	1	1	1	1	1
Air Compressor	25	Diesel	8	1	1	1	1	1	1	1	1	1	1	1	1
Deere 210LE Skip Loader	78	Diesel	8	2	2	2	2	2	2	2	2	2	2	2	2
Telehandler	99	Diesel	8	1	1	1	1	1	1	1	1	1	1	1	1
Cat 583T Pipelayer	310	Diesel	6	1	1	1	1	1	1	1	1	1	1	1	1
Hyster H450HDS Lift	230	Diesel	8	1	1	1	1	1	1	1	1	1	1	1	1
Pettibone Carry Lift	160	Diesel	8	1	1	1	1	1	1	1	1	1	1	1	1

					Construct Switchyard, O&M Buildings, Completion & Testing											
					MREC											
On-site Vehicle Type	HP	Type	Miles/Day/ Vehicle	Miles/ Hour/ Vehicle	Number of equipment operated each day of the month											
					Month 11	Month 12	Month 13	Month 14	Month 15	Month 16	Month 17	Month 18	Month 19	Month 20	Month 21	Month 22
					Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20
On-Site Heavy Duty Pick Up Truck	235	Diesel	20	10	2	2	2	2	2	2	2	2	2	2	2	2
On-Site Flatbed Delivery Truck	280	Diesel	20	10	3	3	2	1	1	1	1	0	0	0	0	0
On-Site Truck Crane	190	Diesel	10	10	1	1	1	1	1	1	1	0	0	0	0	0

					Construct Switchyard, O&M Buildings, Completion & Testing											
					MREC											
Off-site Vehicle Type	HP	Type	Miles/Day	Miles/ Hour	Number of vehicles operated each day of the month											
					Month 11	Month 12	Month 13	Month 14	Month 15	Month 16	Month 17	Month 18	Month 19	Month 20	Month 21	Month 22
					Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20
Off-Site Worker Commute Car	140	Gasoline	40	55	78	78	78	78	78	78	78	96	96	42	42	42
Off-Site Equipment/Material Delivery Truck	235	Diesel	40	55	3	3	2	1	1	1	1	0	0	0	0	0

Earthwork		Construct Switchyard, O&M Buildings, Completion & Testing													
Activity	Units	MREC													
		Month 11	Month 12	Month 13	Month 14	Month 15	Month 16	Month 17	Month 18	Month 19	Month 20	Month 21	Month 22		
		Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20		
Quantity of Soil Cut	Cu. Yd. everyday of the month	0	0	0	0	0	0	0	0	0	0	0	0		
Quantity of Soil Fill	Cu. Yd. everyday of the month	0	0	0	0	0	0	0	0	0	0	0	0		
Storage Pile Exposed Area	Cu. Yd. everyday of the month	0	0	0	0	0	0	0	0	0	0	0	0		
Quantity of area disturbed	Acres disturbed per day	0	0	0	0	0	0	0	0	0	0	0	0		

Testing & Commissioning Phase
Equipment Testing
Equipment Change-Outs
Maintenance
Project Completion
Commissioning/pre-functional and functional testing

					Commissioning & Testing						
					MREC						
On-site Vehicle Type	**HP**	**Type**	**Miles/Day/ Vehicle**	**Miles/ Hour/ Vehicle**	**Number of equipment operated each day of the month**						
					Month 17	**Month 18**	**Month 19**	**Month 20**	**Month 21**	**Month 22**	**Month 23**
					Mar-20	**Apr-20**	**May-20**	**Jun-20**	**Jul-20**	**Aug-20**	**Sep-20**
On-Site Heavy Duty Pick Up Truck	235	Diesel	20	10	2	2	2	2	2	2	2
On-Site ServiceTruck	210	Diesel	10	10	1	1	1	1	1	1	1
On-Site Flatbed Delivery Truck	280	Diesel	20	10	1	1	1	1	1	1	1
Off-Site Worker Commute Car	140	Diesel	40	55	22	22	22	18	16	16	16

Equipment/Vehicle Type	Description	HP	Hours/Day/ Vehicle	Miles/Day/ vehicle Round Trip	Miles/Hour/ Vehicle	Weight	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
On-Site Construction Equip							**Nov-18**	**Dec-18**	**Jan-19**	**Feb-19**	**Mar-19**	**Apr-19**
MOBILIZATION							**Daily**					
Generator	Multiquip WshpWatt	30	6	0	0	1,000	1	1	1	0	0	0
On-Site Pick Up Truck	Ford F150	235	8	25	15	21,000	3	3	3	0	0	0
On-Site Flatbed Delivery Truck	One-Ton	28	6	25	25	30,000	1	1	1	0	0	0
Skip Loader	Deere 210LE	78	4	10	5	14,000	1	1	1	0	0	0
5000 gal Water Truck	FrtLiner 4000 gal	240	8	20	10	34,000	2	2	3	0	0	0
On-Site ServiceTruck	Ford F150	235	4	25	15	21,000	1	1	1	0	0	0
Track Trencher	HT115	115	8	10	5	12,000	1	1	1	0	0	0
On-Site Dump Truck	One Ton	280	6	20	15	30,000	1	1	1	0	0	0
CIVIL IMPROVEMENTS - GRADING/ROADS/EARTHWORK												
Dozer Cat D6R	Cat D6	185	8	10	5	42,000	0	3	3	3	3	4
Generator	Multiquip WshpWatt	30	8	0	0	1,000	0	2	2	2	2	2
Scraper Cat 623	Cat-623	365	8	10	5	83,000	0	3	3	3	3	3
Deere 210LE Skip Loader	Case 586G	78	8	10	5	14,000	0	3	3	3	4	5
Cat 140H Grader	Cat 14G	185	8	10	5	33,000	0	3	3	3	3	3
5000 gal Water Truck	FrtLiner 4000 gal	240	8	20	10	34,000	0	5	5	5	5	5
Roller Vibrator/compactor/other	Cat 826H	350	6	5	10	30,000	0	3	3	3	3	4
Cat BG600D Paver	AC Paver	173	6	5	10	64,000	0	0	0	0	0	2
On-Site Heavy Duty Pick Up Truck	Ford F150	235	6	20	10	21,000	0	5	5	5	5	7
On-Site Lube/Fuel Trucks	Ford F-150	235	6	25	15	21,000	0	1	1	1	1	1
On-Site Service Truck	One-Ton	280	6	25	15	21,000	0	2	2	2	2	2
On-Site Dump Truck	One Ton	280	6	20	15	30,000	0	2	2	2	2	3
PLANT CONSTRUCTION												
Generator	Multiquip WshpWatt	30	8	0	0	1,000	0	0	0	0	2	2
Air Compressor	Ingersol Rand - 250 CFM	25	8	0	0	500	0	0	0	0	3	3
Dozer Cat D6R	Cat D6R	185	4	10	5	42,000	0	0	0	0	1	1
Deere 210LE Skip Loader	Deere 210LE	78	8	10	5	14,000	0	0	0	0	3	3
Telehandler	Cat TL943	99	8	10	5	21,000	0	0	0	0	4	4
Track Trencher	HT115	115	8	10	5	12,000	0	0	0	0	2	2
Cat 583T Pipelayer	Cat 583T	310	6	10	5	45,000	0	0	0	0	2	2
Hyster H450HDS Lift	H450HDS	230	8	10	5	74,000	0	0	0	0	1	1
Manitou M50-2 Lift	M50-2	74	8	10	5	13,000	0	0	0	0	1	1
Pettibone Carry Lift	304	160	8	10	5	45,000	0	0	0	0	1	1
On-Site Pick Up Truck	Ford F-150	235	6	20	25	21,000	0	0	0	0	4	4
On-Site Heavy Duty Pick Up Truck	Ford F150	235	6	20	10	21,000	0	0	0	0	2	2
On-Site Flatbed Delivery Truck	One-Ton	280	6	20	25	30,000	0	0	0	0	4	4
On-Site ServiceTruck	Ford F-150	235	6	20	15	21,000	0	0	0	0	3	3
On-Site Lube/Fuel Trucks	Ford F-150	235	6	20	15	21,000	0	0	0	0	2	2
On-Site Dump Truck	One Ton	280	8	20	15	30,000	0	0	0	0	1	1
On-Site Truck Crane	Grove RT750B	190	8	10	5	73,000	0	0	0	0	1	1
O&M BLDGS-WATER TANK-AUX CONSTRUCTION												
Generator	Multiquip WshpWatt	30	8	0	0	1,000	0	0	0	0	0	0
Air Compressor	Ingersol Rand - 250 CFM	25	8	0	0	500	0	0	0	0	0	0
Skip Loader	Deere 210LE	78	8	10	5	30,000	0	0	0	0	0	0
Telehandler	Cat TL943	99	8	10	5	21,000	0	0	0	0	0	0
Cat 583T Pipelayer	Cat 583T	310	8	10	5	45,000	0	0	0	0	0	0
Hyster H450HDS Lift	H450HDS	230	8	10	5	74,000	0	0	0	0	0	0
Pettibone Carry Lift	304	160	8	10	5	45,000	0	0	0	0	0	0
On-Site Heavy Duty Pick Up Truck	Ford F150	235	8	20	10	21,000	0	0	0	0	0	0
On-Site Flatbed Delivery Truck	One-Ton	280	8	20	10	30,000	0	0	0	0	0	0
On-Site Truck Crane	Grove RT750B	190	8	10	5	73,000	0	0	0	0	0	0
Testing & Commissioning												
On-Site Heavy Duty Pick Up Truck	Ford F150	235	6	10	10	21,000	0	0	0	0	0	0
On-Site ServiceTruck	Ford F-150	235	6	10	10	21,000	0	0	0	0	0	0
On-Site Flatbed Delivery Truck	One-Ton	280	6	20	10	30,000	0	0	0	0	0	0
Subtotal							**11**	**43**	**44**	**32**	**70**	**78**

Emissions Factors from SCAQMD Off-road database for 2017.
See EF listing in this Appendix.

Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Month 13	Month 14	Month 15	Month 16	Month 17	Month 18	Month 19	Month 20	Month 21	Month 22	Month 23
May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Daily Count																
4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Daily Count																
2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0
3	3	3	3	3	3	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
3	3	3	3	3	3	0	0	0	0	0	0	0	0	0	0	0
4	4	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0
2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0
2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
4	4	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0
2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0
4	4	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0
3	3	3	3	3	3	0	0	0	0	0	0	0	0	0	0	0
2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
Daily Count																
0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	0
0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	0
0	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2	0
0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	0
0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	0
0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	0
0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	0
0	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2	0
0	0	0	0	3	3	2	1	1	1	1	0	0	0	0	0	0
0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0
Daily Count																
0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2
0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1
0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1
79	**69**	**37**	**37**	**51**	**51**	**13**	**12**	**12**	**12**	**16**	**14**	**14**	**14**	**14**	**14**	**4**

Eq Sum	Total Months	Days/mo	Max EQ #/day	Max Hrs/day	Max Hrs/mo	Max Hrs/Per'd	Emissions Factors, lbs/hr						
							ROG	CO	NOx	SOx	PM10/2.5	CO2	CH4
3	3	22	1	6	132	396	0.0236	0.0799	0.1471	0.0002	0.0073	17.6	0.0021
9	3	22	3	24	528	1584	0.0665	0.586	0.5133	0.0012	0.0252	107	0.006
3	3	22	1	6	132	396	0.0665	0.586	0.5133	0.0012	0.0252	107	0.006
3	3	22	1	4	88	264	0.0818	0.327	0.2684	0.0004	0.0195	31.1	0.0074
7	3	22	3	24	528	1584	0.1109	0.3608	0.7625	0.0019	0.0256	167	0.01
3	3	22	1	4	88	264	0.0665	0.586	0.5133	0.0012	0.0252	107	0.006
3	3	22	1	8	176	528	0.1018	0.4529	0.6266	0.0008	0.0514	64.9	0.0092
3	3	22	1	6	132	396	0.1109	0.3608	0.7625	0.0019	0.0256	167	0.01
23	7	22	4	32	704	4928	0.1347	0.7342	0.9293	0.0014	0.0522	121	0.0122
14	7	22	2	16	352	2464	0.0236	0.0799	0.1471	0.0002	0.0073	17.6	0.0021
21	7	22	3	24	528	3696	0.1805	0.5495	1.4783	0.0024	0.0552	209	0.0163
27	7	22	6	48	1056	7392	0.0818	0.327	0.2684	0.0004	0.0195	31.1	0.0074
21	7	22	3	24	528	3696	0.1135	0.7301	0.7781	0.0014	0.0429	124	0.0102
35	7	22	5	40	880	6160	0.1109	0.3608	0.7625	0.0019	0.0256	167	0.01
23	7	22	4	24	528	3696	0.1323	0.5091	1.1463	0.0022	0.0401	219	0.0119
4	7	22	2	12	264	1848	0.1443	0.7653	1.0437	0.0014	0.0582	128	0.013
39	7	22	7	42	924	6468	0.0665	0.586	0.5133	0.0012	0.0252	107	0.006
7	7	22	1	6	132	924	0.0665	0.586	0.5133	0.0012	0.0252	107	0.006
14	7	22	2	12	264	1848	0.1109	0.3608	0.7625	0.0019	0.0256	167	0.01
16	7	22	3	18	396	2772	0.1109	0.3608	0.7625	0.0019	0.0256	167	0.01
16	8	22	2	16	352	2816	0.0236	0.0799	0.1471	0.0002	0.0073	17.6	0.0021
24	8	22	3	24	528	4224	0.0212	0.0654	0.1205	0.0002	0.0062	14.4	0.0019
8	8	22	1	4	88	704	0.1347	0.7342	0.9293	0.0014	0.0522	121	0.0122
24	8	22	3	24	528	4224	0.0818	0.327	0.2684	0.0004	0.0195	31.1	0.0074
32	8	22	4	32	704	5632	0.0671	0.5141	0.5013	0.0009	0.0329	80.9	0.0061
16	8	22	2	16	352	2816	0.1018	0.4529	0.6266	0.0008	0.0514	64.9	0.0092
16	8	22	2	12	264	2112	0.1745	0.5443	1.3258	0.0026	0.0459	265	0.0157
8	8	22	1	8	176	1408	0.0467	0.1564	0.3057	0.0009	0.0103	77.1	0.0042
8	8	22	1	8	176	1408	0.0254	0.1463	0.1228	0.0002	0.0068	14.7	0.0023
8	8	22	1	8	176	1408	0.0425	0.3322	0.2685	0.0006	0.0146	56.1	0.0038
32	8	22	4	24	528	4224	0.0665	0.586	0.5133	0.0012	0.0252	107	0.006
16	8	22	2	12	264	2112	0.0665	0.586	0.5133	0.0012	0.0252	107	0.006
32	8	22	4	24	528	4224	0.1109	0.3608	0.7625	0.0019	0.0256	167	0.01
24	8	22	3	18	396	3168	0.0665	0.586	0.5133	0.0012	0.0252	107	0.006
16	8	22	2	12	264	2112	0.0665	0.586	0.5133	0.0012	0.0252	107	0.006
8	8	22	1	8	176	1408	0.1109	0.3608	0.7625	0.0019	0.0256	167	0.01
8	8	22	1	8	176	1408	0.0807	0.4774	0.5549	0.0009	0.0314	80.3	0.0073
12	12	22	1	8	176	2112	0.0236	0.0799	0.1471	0.0002	0.0073	17.6	0.0021
12	12	22	1	8	176	2112	0.0212	0.0654	0.1205	0.0002	0.0062	14.4	0.0019
24	12	22	2	16	352	4224	0.0818	0.327	0.2684	0.0004	0.0195	31.1	0.0074
12	12	22	1	8	176	2112	0.0671	0.5141	0.5013	0.0009	0.0329	80.9	0.0061
12	12	22	1	8	176	2112	0.1745	0.5443	1.3258	0.0026	0.0459	265	0.0157
12	12	22	1	8	176	2112	0.0467	0.1564	0.3057	0.0009	0.0103	77.1	0.0042
12	12	22	1	8	176	2112							
24	12	22	2	16	352	4224	0.0665	0.586	0.5133	0.0012	0.0252	107	0.006
12	12	22	3	24	528	6336	0.1109	0.3608	0.7625	0.0019	0.0256	167	0.01
7	12	22	1	8	176	2112	0.0807	0.4774	0.5549	0.0009	0.0314	80.3	0.0073
14	7	22	2	12	264	1848	0.0665	0.586	0.5133	0.0012	0.0252	107	0.006
7	7	22	1	6	132	924	0.0665	0.586	0.5133	0.0012	0.0252	107	0.006
7	7	22	1	6	132	924	0.1109	0.3608	0.7625	0.0019	0.0256	167	0.01

Emissions, lbs/day							Emissions, lbs/month						
ROG	CO	NOx	SOx	PM10/2.5	CO2	CH4	ROG	CO	NOx	SOx	PM10/2.5	CO2	CH4
0.14	0.48	0.88	0.00	0.04	105.60	0.01	3.12	10.55	19.42	0.03	0.96	2323.20	0.28
1.60	14.06	12.32	0.03	0.60	2568.00	0.14	35.11	309.41	271.02	0.63	13.31	56496.00	3.17
0.40	3.52	3.08	0.01	0.15	642.00	0.04	8.78	77.35	67.76	0.16	3.33	14124.00	0.79
0.33	1.31	1.07	0.00	0.08	124.40	0.03	7.20	28.78	23.62	0.04	1.72	2736.80	0.65
2.66	8.66	18.30	0.05	0.61	4008.00	0.24	58.56	190.50	402.60	1.00	13.52	88176.00	5.28
0.27	2.34	2.05	0.00	0.10	428.00	0.02	5.85	51.57	45.17	0.11	2.22	9416.00	0.53
0.81	3.62	5.01	0.01	0.41	519.20	0.07	17.92	79.71	110.28	0.14	9.05	11422.40	1.62
0.67	2.16	4.58	0.01	0.15	1002.00	0.06	14.64	47.63	100.65	0.25	3.38	22044.00	1.32
6.87	36.16	47.30	0.11	2.16	9397.20	0.62	151.17	795.49	1040.52	2.35	47.47	206738.40	13.64
4.31	23.49	29.74	0.04	1.67	3872.00	0.39	94.83	516.88	654.23	0.99	36.75	85184.00	8.59
0.38	1.28	2.35	0.00	0.12	281.60	0.03	8.31	28.12	51.78	0.07	2.57	6195.20	0.74
4.33	13.19	35.48	0.06	1.32	5016.00	0.39	95.30	290.14	780.54	1.27	29.15	110352.00	8.61
3.93	15.70	12.88	0.02	0.94	1492.80	0.36	86.38	345.31	283.43	0.42	20.59	32841.60	7.81
2.72	17.52	18.67	0.03	1.03	2976.00	0.24	59.93	385.49	410.84	0.74	22.65	65472.00	5.39
4.44	14.43	30.50	0.08	1.02	6680.00	0.40	97.59	317.50	671.00	1.67	22.53	146960.00	8.80
3.18	12.22	27.51	0.05	0.96	5256.00	0.29	69.85	268.80	605.25	1.16	21.17	115632.00	6.28
1.73	9.18	12.52	0.02	0.70	1536.00	0.16	38.10	202.04	275.54	0.37	15.36	33792.00	3.43
2.79	24.61	21.56	0.05	1.06	4494.00	0.25	61.45	541.46	474.29	1.11	23.28	98868.00	5.54
0.40	3.52	3.08	0.01	0.15	642.00	0.04	8.78	77.35	67.76	0.16	3.33	14124.00	0.79
1.33	4.33	9.15	0.02	0.31	2004.00	0.12	29.28	95.25	201.30	0.50	6.76	44088.00	2.64
2.00	6.49	13.73	0.03	0.46	3006.00	0.18	43.92	142.88	301.95	0.75	10.14	66132.00	3.96
31.53	145.97	217.18	0.42	9.74	37256.40	2.84	693.71	3211.23	4777.89	9.21	214.28	819640.80	62.59
0.38	1.28	2.35	0.00	0.12	281.60	0.03	8.31	28.12	51.78	0.07	2.57	6195.20	0.74
0.51	1.57	2.89	0.00	0.15	345.60	0.05	11.19	34.53	63.62	0.11	3.27	7603.20	1.00
0.54	2.94	3.72	0.01	0.21	484.00	0.05	11.85	64.61	81.78	0.12	4.59	10648.00	1.07
1.96	7.85	6.44	0.01	0.47	746.40	0.18	43.19	172.66	141.72	0.21	10.30	16420.80	3.91
2.15	16.45	16.04	0.03	1.05	2588.80	0.20	47.24	361.93	352.92	0.63	23.16	56953.60	4.29
1.63	7.25	10.03	0.01	0.82	1038.40	0.15	35.83	159.42	220.56	0.28	18.09	22844.80	3.24
2.09	6.53	15.91	0.03	0.55	3180.00	0.19	46.07	143.70	350.01	0.69	12.12	69960.00	4.14
0.37	1.25	2.45	0.01	0.08	616.80	0.03	8.22	27.53	53.80	0.16	1.81	13569.60	0.74
0.20	1.17	0.98	0.00	0.05	117.60	0.02	4.47	25.75	21.61	0.04	1.20	2587.20	0.40
0.34	2.66	2.15	0.00	0.12	448.80	0.03	7.48	58.47	47.26	0.11	2.57	9873.60	0.67
1.60	14.06	12.32	0.03	0.60	2568.00	0.14	35.11	309.41	271.02	0.63	13.31	56496.00	3.17
0.80	7.03	6.16	0.01	0.30	1284.00	0.07	17.56	154.70	135.51	0.32	6.65	28248.00	1.58
2.66	8.66	18.30	0.05	0.61	4008.00	0.24	58.56	190.50	402.60	1.00	13.52	88176.00	5.28
1.20	10.55	9.24	0.02	0.45	1926.00	0.11	26.33	232.06	203.27	0.48	9.98	42372.00	2.38
0.80	7.03	6.16	0.01	0.30	1284.00	0.07	17.56	154.70	135.51	0.32	6.65	28248.00	1.58
0.89	2.89	6.10	0.02	0.20	1336.00	0.08	19.52	63.50	134.20	0.33	4.51	29392.00	1.76
0.65	3.82	4.44	0.01	0.25	642.40	0.06	14.20	84.02	97.66	0.16	5.53	14132.80	1.28
18.76	102.98	125.67	0.26	6.36	22896.40	1.69	412.69	2265.60	2764.83	5.65	139.82	503720.80	37.25
0.19	0.64	1.18	0.00	0.06	140.80	0.02	4.15	14.06	25.89	0.04	1.28	3097.60	0.37
0.17	0.52	0.96	0.00	0.05	115.20	0.02	3.73	11.51	21.21	0.04	1.09	2534.40	0.33
1.31	5.23	4.29	0.01	0.31	497.60	0.12	28.79	115.10	94.48	0.14	6.86	10947.20	2.60
0.54	4.11	4.01	0.01	0.26	647.20	0.05	11.81	90.48	88.23	0.16	5.79	14238.40	1.07
1.40	4.35	10.61	0.02	0.37	2120.00	0.13	30.71	95.80	233.34	0.46	8.08	46640.00	2.76
0.37	1.25	2.45	0.01	0.08	616.80	0.03	8.22	27.53	53.80	0.16	1.81	13569.60	0.74
3.97	16.11	23.50	0.04	1.13	4137.60	0.36	87.42	354.48	516.95	0.99	24.92	91027.20	7.88
1.06	9.38	8.21	0.02	0.40	1712.00	0.10	23.41	206.27	180.68	0.42	8.87	37664.00	2.11
2.66	8.66	18.30	0.05	0.61	4008.00	0.24	58.56	190.50	402.60	1.00	13.52	88176.00	5.28
0.65	3.82	4.44	0.01	0.25	642.40	0.06	14.20	84.02	97.66	0.16	5.53	14132.80	1.28
4.37	21.85	30.95	0.07	1.27	6362.40	0.39	96.17	480.80	680.94	1.58	27.91	139972.80	8.68
0.80	7.03	6.16	0.01	0.30	1284.00	0.07	17.56	154.70	135.51	0.32	6.65	28248.00	1.58
0.40	3.52	3.08	0.01	0.15	642.00	0.04	8.78	77.35	67.76	0.16	3.33	14124.00	0.79
0.67	2.16	4.58	0.01	0.15	1002.00	0.06	14.64	47.63	100.65	0.25	3.38	22044.00	1.32
1.86	12.71	13.81	0.03	0.61	2928.00	0.17	40.97	279.68	303.92	0.73	13.36	64416.00	3.70

ROG	CO	NOx	SOx	PM10/2.5	CO2	CH4	ROG	CO	NOx	SOx	PM10/2.5	CO2	CH4
Estimated lbs/day							**Estimated lbs/month**						
67.37	**335.79**	**458.41**	**0.93**	**21.26**	**82978.00**	**6.08**	**1482.12**	**7387.29**	**10085.05**	**20.51**	**467.77**	**1825516**	**133.73**

Emissions, lbs/phase							Summary
ROG	CO	NOx	SOx	PM10/2.5	CO2	CH4	
9.35	31.64	58.25	0.08	2.89	6969.60	0.83	
105.34	928.22	813.07	1.90	39.92	169488.00	9.50	
26.33	232.06	203.27	0.48	9.98	42372.00	2.38	
21.60	86.33	70.86	0.11	5.15	8210.40	1.95	
175.67	571.51	1207.80	3.01	40.55	264528.00	15.84	
17.56	154.70	135.51	0.32	6.65	28248.00	1.58	
53.75	239.13	330.84	0.42	27.14	34267.20	4.86	
43.92	142.88	301.95	0.75	10.14	66132.00	3.96	
453.50	2386.47	3121.55	7.06	142.41	620215.20	40.91	
663.80	3618.14	4579.59	6.90	257.24	596288.00	60.12	
58.15	196.87	362.45	0.49	17.99	43366.40	5.17	
667.13	2030.95	5463.80	8.87	204.02	772464.00	60.24	
604.67	2417.18	1984.01	2.96	144.14	229891.20	54.70	
419.50	2698.45	2875.86	5.17	158.56	458304.00	37.70	
683.14	2222.53	4697.00	11.70	157.70	1028720.00	61.60	
488.98	1881.63	4236.72	8.13	148.21	809424.00	43.98	
266.67	1414.27	1928.76	2.59	107.55	236544.00	24.02	
430.12	3790.25	3320.02	7.76	162.99	692076.00	38.81	
61.45	541.46	474.29	1.11	23.28	98868.00	5.54	
204.94	666.76	1409.10	3.51	47.31	308616.00	18.48	
307.41	1000.14	2113.65	5.27	70.96	462924.00	27.72	
4855.96	22478.64	33445.26	64.46	1499.96	5737485.60	438.10	
66.46	225.00	414.23	0.56	20.56	49561.60	5.91	
89.55	276.25	508.99	0.84	26.19	60825.60	8.03	
94.83	516.88	654.23	0.99	36.75	85184.00	8.59	
345.52	1381.25	1133.72	1.69	82.37	131366.40	31.26	
377.91	2895.41	2823.32	5.07	185.29	455628.80	34.36	
286.67	1275.37	1764.51	2.25	144.74	182758.40	25.91	
368.54	1149.56	2800.09	5.49	96.94	559680.00	33.16	
65.75	220.21	430.43	1.27	14.50	108556.80	5.91	
35.76	205.99	172.90	0.28	9.57	20697.60	3.24	
59.84	467.74	378.05	0.84	20.56	78988.80	5.35	
280.90	2475.26	2168.18	5.07	106.44	451968.00	25.34	
140.45	1237.63	1084.09	2.53	53.22	225984.00	12.67	
468.44	1524.02	3220.80	8.03	108.13	705408.00	42.24	
210.67	1856.45	1626.13	3.80	79.83	338976.00	19.01	
140.45	1237.63	1084.09	2.53	53.22	225984.00	12.67	
156.15	508.01	1073.60	2.68	36.04	235136.00	14.08	
113.63	672.18	781.30	1.27	44.21	113062.40	10.28	
3301.51	18124.83	22118.66	45.20	1118.59	4029766.40	298.00	
49.84	168.75	310.68	0.42	15.42	37171.20	4.44	
44.77	138.12	254.50	0.42	13.09	30412.80	4.01	
345.52	1381.25	1133.72	1.69	82.37	131366.40	31.26	
141.72	1085.78	1058.75	1.90	69.48	170860.80	12.88	
368.54	1149.56	2800.09	5.49	96.94	559680.00	33.16	
98.63	330.32	645.64	1.90	21.75	162835.20	8.87	
1049.03	4253.78	6203.37	11.83	299.06	1092326.40	94.62	
280.90	2475.26	2168.18	5.07	106.44	451968.00	25.34	
702.66	2286.03	4831.20	12.04	162.20	1058112.00	63.36	
170.44	1008.27	1171.95	1.90	66.32	169593.60	15.42	
1154.00	5769.56	8171.33	19.01	334.96	1679673.60	104.12	
122.89	1082.93	948.58	2.22	46.57	197736.00	11.09	
61.45	541.46	474.29	1.11	23.28	98868.00	5.54	
102.47	333.38	704.55	1.76	23.65	154308.00	9.24	
286.81	1957.77	2127.42	5.08	93.51	450912.00	25.87	
11100.81	**54971.05**	**75187.58**	**152.64**	**3488.49**	**13610379**	**1001.62**	**lbs/period**
5.55	**27.49**	**37.59**	**0.08**	**1.74**	**6805.19**	**0.50**	**tons/period**
2.90	**14.34**	**19.61**	**0.04**	**0.91**	**3549.92**	**0.26**	**Annualized**
ROG	CO	NOx	SOx	PM10/2.5	CO2	CH4	**Tons**

Calpine Mission Energy Center
Earthwork Quantities Estimate

Civil Grading - entire site	9.79	Total Acres	4,500	Total CY Cut	110,000	Total CY Fill
5 months/22 days per month	0.09	acres per day	102	CY cut per day	714	CY fll per day

Cut and Fill during Civil Improvement Phase = 7 months

Total Grading Impact

2,250	Max cut/month	384	Average cut/month (use total number of months of grading construction)
15,714	Max fill/month	2,683	Average fill/month (use total number of months of grading construction)
17,964	**Total max cut/fill**	**3,067**	**Total average max cut/fill**

Waste Streams	Hazardous	Total Weight (lbs)	Annual Weight	Non-Hazardous	Total Weight (lbs)	Annual Weight Offhaul	Notes:
Construction	150 cy + 2800 gallons	20,200	4,040	2880 cy + 75500 gallons	155,520	77,760	1, 3
Operations	0	0	0	52 cy/year + 20000 gallons	142,808	142,808	1, 2

Hauling	Hazardous	Vehicle	Schedule	Non-Hazardous	Vehicle	Schedule	Notes:
Construction	15,200 lbs	F650, 40,000, 300HP	6 mos = 4,000 lbs	587,328 lbs	F650, 40,000, 300HP	90 days = 42,000 lbs	4
Operations	0	N/A	N/A	145,616 lbs	F650, 40,000, 300HP	Annually = 145, 616 lbs	2, 4

Notes:
1. calculated at 4#/cubic foot; 7#/gallon
2. annual estimate
3. weight calculated on overall construction, 24 impacted months total (2 years)
4. Schedule indicates frequency and weight at each offhaul

Equipment/Vehicle Type	Description	HP	Gross Weight (lbs)
Generator	Multiquip WshpWatt	30	1,000
Pick Up Truck	Ford F150	235	21,000
Flatbed Delivery Truck	One-Ton	280	30,000
Skip Loader	Deere 210LE	78	14,000
ServiceTruck	Ford F150	235	21,000
Lube/Fuel Trucks	Ford F-150	235	21,000
Track Trencher	HT115	115	12,000
Dozer Cat D6R	Cat D6	185	42,000
Scraper Cat 623	Cat-623	365	83,000
Deere 210LE Skip Loader	Case 586G	78	14,000
Cat 140H Grader	Cat 14G	185	33,000
5000 gal Water Truck	FrtLiner 5000 gal	240	34,000
Roller Vibrator/compactor/other	Cat 826H	350	30,000
Cat BG600D Paver	AC Paver	173	64,000
Dump Truck	One Ton	280	30,000
Air Compressor	Ingersol Rand - 250 CFM	25	500
Telehandler	Cat TL943	99	21,000
Cat 583T Pipelayer	Cat 583T	310	45,000
Heavy Duty Pick Up Truck	Ford F150	235	21,000
Crane - Boom Truck	Grove RT750B	190	73,000
Hyster H450HDS Lift	Forklift	230	74,000
Manitou M50-2 Lift	Forklift	74	13,000
Pettibone Carry Lift	Forklift	160	45,000

Item	Description:	Qty.	Vendor:	Design Criteria:	Equip Weight	Length	Width	Volume (ft^3)
1	LM6000 PG - SPRINT GAS TURBINE	5	GE			270	60	18000
2	GT LUBE OIL COOLER SKID	5	GE	SUPPLIED WITH TURBINE	12000	21	16	1280
3	GAS TURBINE FIRE PROTECTION SKID	5	GE	SUPPLIED WITH TURBINE	10000	8	6	180
4	GT ANTI-ICING SKID	5	GE		50000	10	20	2000
12	SCR/\CO CATALYSTS	5	SCR/CO	SCR AND OXIDATION CATALYST, INCLUDING RELATED SKIDS AND STACK, NOX 2 PPMVD AT 15%O2, CO NTE 2 PPMVD AT 15%O2, VOC 2 PPMVD AT15%O2, NH3 SLIP 5 PMVD AT 15%O2		10	20	2000
14	TEMPERING AIR FANS	10	SCR/CO	SUPPLIED WITH SCR/CO	15000	6	6	360
15	PURGE AIR FANS	10	SCR/CO	SUPPLIED WITH SCR/CO	15000	6	6	360
16	AMMONIA FLOW CONTROL UNIT DILUTION FANS	10	SCR/CO	SUPPLIED WITH SCR/CO	15000	6	6	360
17	WASTE HEAT VAPORIZER	5	SCR/CO	SUPPLIED WITH SCR/CO	15000	6	6	180
18	AMMONIA VAPORIZATION SKID (GT)	5	SCR/CO	SUPPLIED WITH SCR/CO	50000	10	20	2000
19	CEMS	5	CEMS		15000	10	8	320
20	CHILLER PACAKGE	2	CHILLER	TBD - INPUT FROM TAS	50000	8	12	288
21	PRIMARY CHILLED WATER PUMPS	4	CHILLER	TBD - INPUT FROM TAS	10000	15	15	900
22	CONDENSER WATER PUMPS	4	CHILLER	TBD - INPUT FROM TAS	6000	4	4	64
23	COOLING TOWER CHEMICAL TREATMENT SYSTEM	2	CHILLER	TBD - INPUT FROM TAS		120	75	11250
24	COOLING TOWER	2	CHILLER	TBD - INPUT FROM TAS	_	520	46	4232
25	TES TANK	1	CHILLER	TBD - INPUT FROM TAS	600000	30	30	900
26	SECONDARY CHILLED WATER PUMPS	2	CHILLER	TBD - INPUT FROM TAS	6000	4	4	32
27	DEMIN FORWARDING PUMPS	2		400 GPM (50 GPM FOR NOX CONTROL, 30 GPM FOR SPRINT PER TURBINE), 75 FT. TDH (ASSUMED), 25 BHP	2000	10	8	128

28	DEMINIRALIZED WATER STORAGE TANK	1		576,000 GAL TANK.	600000	30	30	900
29	SERVICE WATER PUMPS	2		TBD	50000	12	8	128
30	SERVICE WATER / FIRE WATER STORAGE TANK	1		TBD		75	45	2025
31	FIRE PUMP HOUSE	1		TBD	10000	20	36	1296
35	OIL WATER SEPARATOR	1		TBD	50000	10	10	100
40	GT WATER WASH AND FALSE START DRAINS TANK	5		TBD	25000	6	12	720
41	19% AQUEOUS AMMONIA FORWARDING PUMPS	2	AMMONIA STORAGE	1.5 GPM (0.3 GPM PER TURBINE)	30000	20	10	200
42	AMMONIA TRUCK UNLOADING STATION	1	AMMONIA STORAGE	TBD	80000	45	15	225
43	19% AQUEOUS AMMONIA STORAGE TANK	1	AMMONIA STORAGE	TBD	51500	60	25	625
44	AIR COMPRESSORS	2	AIR COMRESSOR	1000 SCFM, AT 125 PSIG DISCH, 250 HP (150 SCFM PER TURBINE AND ASSUMED 50 SCFM FOR BOP)	450000	430	165	54450
51	FUEL GAS COMPRESSOR	5	FGC	24,000 LB/HR, SG=0.60, 325 PSIG SUCTION, 725 PSIG DISCHARGE, EST 600 BHP, 5KV MOTOR, INCLUDES SUCTION SCRUBBER & DISCH COALESCER	228000	135	25	3125
53	COALESCING OIL SEPARATOR	5	FGC		50000	10	10	500
54	FUEL GAS COMPRESSOR AIR COOLED OIL COOLER	5	FGC		25000	40	10	500
55	FG INLET SCRUBBER SKID	1	FGC		50000	10	10	100
56	BULK OIL SEPARATOR	5	FGC		50000	10	10	500
57	FUEL GAS COMPRESSOR SKID	5	FGC		25000	10	20	2000
58	FUEL GAS DRAIN TANK	1	MISC		25000	10	20	400

OFFSITE EQUIPMENT DATA SUMMARY

Mobilization Phase

Off-site Vehicle Type	HP	Type	Miles/Day	Miles/ Hour	Boundaries, Staging Area, BMPs, Fencing — MREC — each day of the month: Month 1 Nov-18	Month 2 Dec-18	Month 3 Jan-19	Total Period Trips	Total VMT
Off-Site Worker Commuter Bus,	220	Diesel	50	55	1	1	1	66	3300
Off-Site Worker Commute Car	140	Gasoline	50	55	44	62	12	2596	129800
Off-Site Water Delivery Truck	435	Diesel	50	55	3	3	0	132	6600
Off-Site Concrete Truck	300	Diesel	50	55	0.5	0.5	0	22	1100
Off-Site Equipment/Material Delivery	235	Diesel	50	55	2	2	1	110	5500
							SUM	2926	146300

Civil Improvement Phase

Off-site Vehicle Type	HP	Type	Miles/Day	Miles/ Hour	Initial Access Roads, Excavation, Grading — MREC — Number of equipment operated each day of the month: Month 2 Dec-18	Month 3 Jan-19	Month 4 Feb-19	Month 5 Mar-19	Month 6 Apr-19	Month 7 May-19	Month 8 Jun-19	Total Period Trips	Total VMT
Off-Site Worker Commute Car	140	Gasoline	40	55	32	32	48	48	72	72	32	7392	295680
Off-Site Water Delivery Truck	435	Diesel	40	55	8	8	8	8	8	8	8	1232	49280
Off-Site Concrete Truck	300	Diesel	40	55	0	0	0	0	2	2	0	88	3520
Off-Site Rock/AC Delivery Truck	300	Diesel	40	55	0	0	0	0	4	4	0	176	7040
Off-Site Equipment/Material Delivery Truck	235	Diesel	32	55	2	3	4	4	44	44	5	2319	74194
											SUM	11207	429714

Plant Construction Phase

Off-site Vehicle Type	HP	Type	Miles/Day	Miles/ Hour	Underground utilities, Foundations, Power Plant, Aux Equipment — MREC — Number of vehicles operated each day of the month: Month 5 Mar-19	Month 6 Apr-19	Month 7 May-19	Month 8 Jun-19	Month 9 Jul-19	Month 10 Aug-19	Month 11 Sep-19	Month 12 Oct-19	Total Period Trips	Total VMT
Off-Site Worker Commuter Bus, Small	220	Diesel	40	55	2	2	2	2	2	2	2	2	352	14080
Off-Site Worker Commute Car	140	Gasoline	40	55	68	68	68	68	82	82	68	44	12056	482240
Off-Site Concrete Truck	300	Diesel	40	55	0	0	12	12	12	12	0	0	1056	42240
Off-Site Equipment/Material Delivery Truck	235	Diesel	40	55	6	6	6	6	6	6	6	6	1056	42240
Off-Site Equipment/Material Delivery Truck	235	Diesel	100	55	4	4	4	4	4	4	4	4	704	70400
												SUM	15224	651200

B&S Construction Phase

Off-site Vehicle Type	HP	Type	Miles/Day	Miles/ Hour	Construct Switchyard, O&M Buildings, Completion & Testing — MREC — Number of vehicles operated each day of the month: Month 11 Sep-19	Month 12 Oct-19	Month 13 Nov-19	Month 14 Dec-19	Month 15 Jan-20	Month 16 Feb-20	Month 17 Mar-20	Month 18 Apr-20	Month 19 May-20	Month 20 Jun-20	Month 21 Jul-20	Month 22 Aug-20	Total Period Trips	Total VMT
Off-Site Worker Commute Car	140	Gasoline	40	55	78	78	78	78	78	78	78	96	96	42	42	42	19932	797280
Off-Site Equipment/Material Delivery Truck	235	Diesel	40	55	3	3	2	1	1	1	1	0	0	0	0	0	264	10560
																SUM	20196	807840

Offsite Equipment Totals		Trips	VMT
Off-Site Worker Commute Car	Gasoline	41976	1705000
Off-Site Worker Commuter Bus	Diesel	418	17380
Off-site Equipment, Materials, Concrete, Rock, Water, Deliveries (All)	Diesel	7159	312674

CONSTRUCTION PHASE - Mobilization Phase
MRI Level 2 Analysis (Refs 1, 3-7)

Acres Subject to Construction Disturbance Activites:		9.8	
Max Acres Subject to Construction Disturbance Activites on any day of this phase:		2	note (11)
Emissions Factor for PM10 Uncontrolled, tons/acre/month:		0.0144	
PM2.5 fraction of PM10 (per CARB CEIDARS Profiles):		0.21	
Activity Levels:	Hrs/Day:	10	
	Days/Wk:	5	
	Days/Month:	22	
Phase Const Period, Months:		3	0.3 years
Phase Const Period, Days:		66	
Wet Season Adjustment:	(Per AP-42, Section 13.2.2, Figure 13.2.2-1, 12/03)		
Mean # days/year with rain >= 0.01 inch:		40	
Mean # months/yr with rain >= 0.01 inch:		1.33	
Adjusted Const Period, Months:		2.67	
Adjusted Const Period, Days:		56	

Controls for Fugitive Dust:	Proposed watering cycle:	3	times per day

SCAQMD Mitigation Measures, Table XI-A, 4/07
3 watering cycles/10 hour construction shift yields a 61% reduction, 2 watering cycles/10 hour shift should yield a 40%+ reduction.
Speed control of onsite const traffic from 35 to 15 mph yields a 57% reduction (use 50% control as conservative for site).

Calculated % control based on mitigations proposed:		81	% control
Conservative control % used for emissions estimates:		80	% control
		0.2	release fraction

Emissions: Controlled	PM10	PM2.5
tons/month	0.006	0.001
tons/period	0.015	0.003
Max lbs/day	0.524	0.110

Soil Handling Emissions (Cut and Fill): (2)

Total cu.yds of soil handled:		440	Mean annual wind speed, mph:		5.6
Total tons of soil handled:		2275.7	Avg. Soil moisture, %:		5
Total days soil handled:		56	Avg. Soil density, tons/cu.yd:		1.3
Tons soil/day:		41	k factor for PM10:		0.35
Control Eff, watering, %		80	Number of Drops per ton:		4
Release Fraction:		0.2	Calc 1	wind	1.159
			Calc 2	moisture	3.607
Emissions:	PM10	PM2.5	Calc 3	int	0.321
tons/period	0.000	0.000	Calc 4	PM10 lb/ton	0.0004
tons/month	0.000	0.000	PM2.5 fraction of PM10:		0.210
max lbs/day	0.003	0.001			

Emissions Totals:	**PM10**	**PM2.5**
tons/period	**0.0154**	**0.0032**
tons/month	**0.0058**	**0.0012**
max lbs/day	**0.527**	**0.111**

Methodology References:

(1) MRI Report, South Coast AQMD Project No. 95040, March 1996, Level 2 Analysis Procedure.
MRI Report factor of 0.011 tons/acre/month is based on 168 hours per month of const activity.
For an activity rate of 220 hrs/month, the adjusted EF would be 0.0144 tons/acre/month.
(2) Soil Handling (Cut and Fill), EPA, AP-42, Section 13.2.4., 11/06.
(3) URBEMIS, Version 9.2.4, User's Manual Appendix A, page A-6.
(4) CARB Area Source Methodology, Section 7.7, 9/02.
(5) WRAP Fugitive Dust Handbook, 9/06.
(6) USEPA, AP-42, Section 13.2.3, 2/10.
(7) Estimating PM Emissions from Construction Operations, USEPA, MRI, 9/99.
(8) Wind speed data for El Rio met station. Annual avg wind speed = 5.6 mph, % calms = 5.04.
(9) Soil data: USDA-Pico-Metz-Anacapa Association, http://ceventura.ucanr.edu/files/14524.jpg
(10) Soil Moisture; 5% avg, USGS, OFR-02-348, ADRS, 2002.
(11) adjusted applicant value

CONSTRUCTION PHASE - Civil Improvement Phase
MRI Level 2 Analysis (Refs 1, 3-7)

Acres Subject to Construction Disturbance Activites:		9.8	
Max Acres Subject to Construction Disturbance Activites on any day of this phase:		5	note (11)
Emissions Factor for PM10 Uncontrolled, tons/acre/month:		0.0144	
PM2.5 fraction of PM10 (per CARB CEIDARS Profiles):		0.21	
Activity Levels:	Hrs/Day:	10	
	Days/Wk:	5	
	Days/Month:	22	
Phase Const Period, Months:		7	0.6 years
Phase Const Period, Days:		154	
Wet Season Adjustment:	(Per AP-42, Section 13.2.2, Figure 13.2.2-1, 12/03)		
Mean # days/year with rain >= 0.01 inch:		40	
Mean # months/yr with rain >= 0.01 inch:		1.33	
Adjusted Const Period, Months:		6.22	
Adjusted Const Period, Days:		131	

Controls for Fugitive Dust: Proposed watering cycle: 3 times per day

SCAQMD Mitigation Measures, Table XI-A, 4/07
3 watering cycles/10 hour construction shift yields a 61% reduction, 2 watering cycles/10 hour shift should yield a 40%+ reduction.
Speed control of onsite const traffic from 35 to 15 mph yields a 57% reduction (use 50% control as conservative for site).

Calculated % control based on mitigations proposed:	81	% control
Conservative control % used for emissions estimates:	80	% control
	0.2	release fraction

Emissions: Controlled	PM10	PM2.5
tons/month	0.014	0.003
tons/period	0.090	0.019
Max lbs/day	1.309	0.275

Soil Handling Emissions (Cut and Fill): (2)

Total cu.yds of soil handled:	114664	Mean annual wind speed, mph:		5.6
Total tons of soil handled:	593042.2	Avg. Soil moisture, %:		5
Total days soil handled:	131	Avg. Soil density, tons/cu.yd:		1.3
Tons soil/day:	4539	k factor for PM10:		0.35
Control Eff, watering, %	80	Number of Drops per ton:		4
Release Fraction:	0.2	Calc 1	wind	1.159
		Calc 2	moisture	3.607
		Calc 3	int	0.321
		Calc 4	PM10 lb/ton	0.0004
		PM2.5 fraction of PM10:		0.210

Emissions:	PM10	PM2.5
tons/period	0.022	0.005
tons/month	0.004	0.001
max lbs/day	0.327	0.069

Emissions Totals:	**PM10**	**PM2.5**
tons/period	**0.1120**	**0.0235**
tons/month	**0.0180**	**0.0038**
max lbs/day	**1.636**	**0.343**

Methodology References:

(1) MRI Report, South Coast AQMD Project No. 95040, March 1996, Level 2 Analysis Procedure.
MRI Report factor of 0.011 tons/acre/month is based on 168 hours per month of const activity.
For an activity rate of 220 hrs/month, the adjusted EF would be 0.0144 tons/acre/month.
(2) Soil Handling (Cut and Fill), EPA, AP-42, Section 13.2.4., 11/06.
(3) URBEMIS, Version 9.2.4, User's Manual Appendix A, page A-6.
(4) CARB Area Source Methodology, Section 7.7, 9/02.
(5) WRAP Fugitive Dust Handbook, 9/06.
(6) USEPA, AP-42, Section 13.2.3, 2/10.
(7) Estimating PM Emissions from Construction Operations, USEPA, MRI, 9/99.
(8) Wind speed data for El Rio met station. Annual avg wind speed = 5.6 mph, % calms = 5.04.
(9) Soil data: USDA-Pico-Metz-Anacapa Association, http://ceventura.ucanr.edu/files/14524.jpg
(10) Soil Moisture; 5% avg, USGS, OFR-02-348, ADRS, 2002.
(11) adjusted applicant value

CONSTRUCTION PHASE - Power Plant Const Phase
MRI Level 2 Analysis (Refs 1, 3-7)

Acres Subject to Construction Disturbance Activites:		9.8	
Max Acres Subject to Construction Disturbance Activites on any day of this phase:		4.00	note (11)
Emissions Factor for PM10 Uncontrolled, tons/acre/month:		0.0144	
PM2.5 fraction of PM10 (per CARB CEIDARS Profiles):		0.21	
Activity Levels:	Hrs/Day:	10	
	Days/Wk:	5	
	Days/Month:	22	
Phase Const Period, Months:		8	0.7 years
Phase Const Period, Days:		176	
Wet Season Adjustment:	(Per AP-42, Section 13.2.2, Figure 13.2.2-1, 12/03)		
Mean # days/year with rain >= 0.01 inch:		40	
Mean # months/yr with rain >= 0.01 inch:		1.33	
Adjusted Const Period, Months:		7.11	
Adjusted Const Period, Days:		149	
Controls for Fugitive Dust:			
Proposed watering cycle:		3	times per day

SCAQMD Mitigation Measures, Table XI-A, 4/07
3 watering cycles/10 hour construction shift yields a 61% reduction, 2 watering cycles/10 hour shift should yield a 40%+ reduction.
Speed control of onsite const traffic from 35 to 15 mph yields a 57% reduction (use 50% control as conservative for site).

Calculated % control based on mitigations proposed:	81	% control
Conservative control % used for emissions estimates:	80	% control
	0.2	release fraction

Emissions: Controlled	PM10	PM2.5
tons/month	0.012	0.002
tons/period	0.082	0.017
Max lbs/day	1.047	0.220

Soil Handling Emissions (Cut and Fill): (2)

Total cu.yds of soil handled:	1760	Mean annual wind speed, mph:		5.6
Total tons of soil handled:	9102.7	Avg. Soil moisture, %:		5
Total days soil handled:	149	Avg. Soil density, tons/cu.yd:		1.3
Tons soil/day:	61	k factor for PM10:		0.35
Control Eff, watering, %	80	Number of Drops per ton:		4
Release Fraction:	0.2	Calc 1	wind	1.159
		Calc 2	moisture	3.607
		Calc 3	int	0.321
		Calc 4	PM10 lb/ton	0.0004
		PM2.5 fraction of PM10:		0.210

Emissions:	PM10	PM2.5
tons/period	0.000	0.000
tons/month	0.000	0.000
max lbs/day	0.004	0.001

Emissions Totals:	**PM10**	**PM2.5**
tons/period	**0.0823**	**0.0173**
tons/month	**0.0116**	**0.0024**
max lbs/day	**1.052**	**0.221**

Methodology References:

(1) MRI Report, South Coast AQMD Project No. 95040, March 1996, Level 2 Analysis Procedure.
MRI Report factor of 0.011 tons/acre/month is based on 168 hours per month of const activity.
For an activity rate of 220 hrs/month, the adjusted EF would be 0.0144 tons/acre/month.
(2) Soil Handling (Cut and Fill), EPA, AP-42, Section 13.2.4., 11/06.
(3) URBEMIS, Version 9.2.4, User's Manual Appendix A, page A-6.
(4) CARB Area Source Methodology, Section 7.7, 9/02.
(5) WRAP Fugitive Dust Handbook, 9/06.
(6) USEPA, AP-42, Section 13.2.3, 2/10.
(7) Estimating PM Emissions from Construction Operations, USEPA, MRI, 9/99.
(8) Wind speed data for El Rio met station. Annual avg wind speed = 5.6 mph, % calms = 5.04.
(9) Soil data: USDA-Pico-Metz-Anacapa Association, http://ceventura.ucanr.edu/files/14524.jpg
(10) Soil Moisture; 5% avg, USGS, OFR-02-348, ADRS, 2002.
(11) adjusted applicant value

CONSTRUCTION PHASE - O&M Bldg Phase
MRI Level 2 Analysis (Refs 1, 3-7)

Acres Subject to Construction Grading/Earthwork Disturbance Activites:		9.8	
Max Acres Subject to Construction Disturbance Activites on any day of this phase:		4	note (11)
Emissions Factor for PM10 Uncontrolled, tons/acre/month:		0.0144	
PM2.5 fraction of PM10 (per CARB CEIDARS Profiles):		0.21	
Activity Levels:	Hrs/Day:	10	
	Days/Wk:	5	
	Days/Month:	22	
Phase Const Period, Months:		12	1.0 years
Phase Const Period, Days:		264	
Wet Season Adjustment:	(Per AP-42, Section 13.2.2, Figure 13.2.2-1, 12/03)		
Mean # days/year with rain >= 0.01 inch:		40	
Mean # months/yr with rain >= 0.01 inch:		1.33	
Adjusted Const Period, Months:		10.67	
Adjusted Const Period, Days:		224	

Controls for Fugitive Dust: Proposed watering cycle: 3 times per day

SCAQMD Mitigation Measures, Table XI-A, 4/07
3 watering cycles/10 hour construction shift yields a 61% reduction, 2 watering cycles/10 hour shift should yield a 40%+ reduction.
Speed control of onsite const traffic from 35 to 15 mph yields a 57% reduction (use 50% control as conservative for site).

Calculated % control based on mitigations proposed:	81	% control
Conservative control % used for emissions estimates:	80	% control
	0.2	release fraction

Emissions: Controlled	PM10	PM2.5
tons/month	0.012	0.002
tons/period	0.123	0.026
Max lbs/day	1.047	0.220

Soil Handling Emissions (Cut and Fill): (2)

Total cu.yds of soil handled:		0	Mean annual wind speed, mph:		5.6
Total tons of soil handled:		0	Avg. Soil moisture, %:		5
Total days soil handled:		224	Avg. Soil density, tons/cu.yd:		1.3
Tons soil/day:		0	k factor for PM10:		0.35
Control Eff, watering, %		80	Number of Drops per ton:		2
	Release Fraction:	0.2	Calc 1	wind	1.159
			Calc 2	moisture	3.607
Emissions:	PM10	PM2.5	Calc 3	int	0.321
tons/period	0.00	0.00	Calc 4	PM10 lb/ton	0.0004
tons/month	0.00	0.00	PM2.5 fraction of PM10:		0.210
max lbs/day	0.00	0.00			

Emissions Totals:	**PM10**	**PM2.5**
tons/period	**0.1229**	**0.0258**
tons/month	**0.0115**	**0.0024**
max lbs/day	**1.047**	**0.220**

Methodology References:

(1) MRI Report, South Coast AQMD Project No. 95040, March 1996, Level 2 Analysis Procedure.
MRI Report factor of 0.011 tons/acre/month is based on 168 hours per month of const activity.
For an activity rate of 220 hrs/month, the adjusted EF would be 0.0144 tons/acre/month.
(2) Soil Handling (Cut and Fill), EPA, AP-42, Section 13.2.4., 11/06.
(3) URBEMIS, Version 9.2.4, User's Manual Appendix A, page A-6.
(4) CARB Area Source Methodology, Section 7.7, 9/02.
(5) WRAP Fugitive Dust Handbook, 9/06.
(6) USEPA, AP-42, Section 13.2.3, 2/10.
(7) Estimating PM Emissions from Construction Operations, USEPA, MRI, 9/99.
(8) Wind speed data for El Rio met station. Annual avg wind speed = 5.6 mph, % calms = 5.04.
(9) Soil data: USDA-Pico-Metz-Anacapa Association, http://ceventura.ucanr.edu/files/14524.jpg
(10) Soil Moisture; 5% avg, USGS, OFR-02-348, ADRS, 2002.

OFFSITE PAVED ROAD FUGITIVE DUST EMISSIONS
(associated with delivery truck and worker vehicle traffic on I-10 and plant access road)

Average mileage for construction related vehicles:		20	miles, roundtrip distance***
Avg weight of vehicular equipment on road:		7.6	tons (range 2 - 42 tons)
Road surface silt loading factor:		0.03	g/m2 (range 0.03 - 400 g/m2)
			Limited Access Freeway >10,000 ADT **(Hwy 126)**
Particle size multiplier factors:	PM10	0.016	lb/VMT
	PM2.5	0.0024	lb/VMT
C factors (brake and tire wear):	PM10	0.00047	lb/VMT
	PM2.5	0.00036	lb/VMT
Avg vehicle speed on road:		55	mph
Number of vehicles per day:		154	*
Number of work days per month:		22	
Total vehicles per month:		3388	
Number of work months:		20.44	adjusted for precip events
Total vehicles per const period:		69250.72	

VMT/day: 3080
VMT/month: 67760
VMT/period: 1385014.4

	PM10	
Calc 1	0.035	
Calc 2	2.104	
Calc 3	0.0007	lb/VMT

Emissions	PM10	PM2.5
lbs/day	2.15	0.36
lbs/month	47.39	8.01
lbs/period	968.62	163.70
tons/period	0.48	0.08

*see vehicle total on Weight tab
EPA, AP-42, Section 13.2.1, March 2006, updated 9/2008.
PM2.5 fraction of PM10 per CARB CEIDARs is 0.169
*** Note: avg roundtrip distance traveled by delivery or worker vehicles on limited access freeways (Hwy 126)
Delivery Route: from Ventura = 20 miles roundtrip

ONSITE PAVED ROAD FUGITIVE DUST EMISSIONS
(associated with construction equipment traffic)

Length of Paved Road used for/by Construction Access:		0.1	miles*	
Avg weight of construction vehicular equipment on road:		7.6	tons (range 2 - 42 tons)	
Road surface silt loading factor:		0.06	g/m2 (range 0.03 - 400 g/m2)	
Particle size multiplier factors:	PM10	0.016	lb/VMT	
	PM2.5	0.0024	lb/VMT	
C factors (brake and tire wear):	PM10	0.00047	lb/VMT	
	PM2.5	0.00036	lb/VMT	
Avg construction vehicle speed on onsite road:		15	mph (range 10-55 mph)	
Number of construction vehicles per day:		64	**	VMT/day: 6.4
				VMT/month: 140.8
Number of construction work days per month:		22		VMT/period: 2877.952
	Total vehicles per month:	1408		
Number of construction work months:		20.44	adjusted for precip events	
	Total vehicles per const period:	28779.52		

	PM10	
Calc 1	0.060	
Calc 2	2.104	
Calc 3	0.0016	lb/VMT

Emissions	PM10	PM2.5
lbs/day	0.010	0.002
lbs/month	0.220	0.037
lbs/period	4.51	0.76
tons/period	0.002	0.000

*total mileage of onsite paved roads. Since these roads will be used to access the power block areas and portions of the site under construction, it was assumed that all of these roads would be used on an average daily basis.
** delivery vehicles plus onsite const support equipment for largest phase (Plant Const) : 22+37+5 = 64
EPA, AP-42, Section 13.2.1, March 2006, updated 9/2008.
PM2.5 fraction of PM10 per CARB CEIDARs is 0.169

Fugitive Dust from Wind Erosion of Soil Storage Piles

Mobilization, Civil, Const Phases only (Months 1 - 21)

Avg acres of soil storage piles exposed per day:	0.1	*	
Soil silt content, %:	30		0.3
Number of days/year with precipitation >0.01 inches:	40		
Annual % of time wind speed greater than 12 mph:	20.6		0.206
Watering control efficiency, %:	80		0.8
PM10 aerodynamic factor:	0.5		
PM2.5 aerodynamic factor:	0.2		
Total construction period exposure time, days:	630		

	lb/acre-day	lbs/day	lbs/period	tons/period
PM10	0.170	0.0170	10.734	0.0054
PM2.5	0.068	0.0068	4.294	0.0021

MDAQMD, Emissions Inventory Guidance, Mineral Handling and Processing Industries, April 2000.
USEPA, AP-42, Section 13.2.2, Unpaved Roads, Figure 13.2.2-1, Thornethwaite Precipitation Data.
*soil storage areas only, open cut and fill areas are not soil storage areas.
max open pile volume = 440 yd3

ONSITE UNPAVED ROAD FUGITIVE DUST

Length of Unpaved Road used for/by Construction Access:		0.1	miles*			
Avg weight of construction vehicular equipment on road:		22.7	tons (range 2 - 42 tons)			
Road surface silt content:		18	% (range 1.8 - 35%)			
Road surface material moisture content:		5	% (range 0.03 - 13%)			
		k	a	c	d	
Particle size multiplier factors:	PM10	1.8	1	0.2	0.5	
	PM2.5	0.18	1	0.2	0.5	
C factors (brake and tire wear):	PM10	0.00047	lb/VMT			
	PM2.5	0.00036	lb/VMT			
Avg construction vehicle speed on road:		5	mph (range 5-55 mph)			
Avg number of construction vehicles per day:		33	**	VMT/day:	3.3	
				VMT/month:	72.6	
Number of construction work days per month:		22		VMT/period:	1483.944	
Total vehicles per month:		726				
Number of construction work months:		20.44	adjusted for precipitation events			
Total vehicles per const period:		14839.44				
Control reduction due to watering, speed control, etc. =		80				
		0.8				
Release Fraction =		0.2				

	PM10	PM2.5				
Calc 1	1.500	1.500	**Emissions**	PM10	PM2.5	
Calc 2	0.408	0.408	lbs/day	0.459	0.046	
Calc 3	1.585	1.585	lbs/month	10.09	1.00	
Calc 4	0.695	0.070	lbs/period	206.27	20.53	
Uncontrolled lb/VMT	0.695	0.069	tons/period	0.103	0.010	

EPA, AP-42, Section 13.2.2, March 2006
Soil Moisture; 5% avg, USGS, OFR-02-348, ADRS, 2002.
Soil data: AECOM BSPP, App E.2, 8/09. DR-Air-3, 1-6-10, Silt content-18% avg, for road sfc used 8.5% per EPA-AP42
*total mileage of onsite unpaved roads is estimated to be less than 0.1 miles

OFFSITE UNPAVED ROAD FUGITIVE DUST ***no offsite unpaved roads will be used during construction**

Length of Unpaved Road used for/by Construction Access:		0	miles*				
Avg weight of construction vehicular equipment on road:		0	tons (range 2 - 42 tons)				
Road surface silt content:		18	% (range 1.8 - 35%), rolled gravel surface				
Road surface material moisture content:		5	% (range 0.03 - 13%)				
		k	a	c	d		
Particle size multiplier factors:	PM10	1.8	1	0.2	0.5		
	PM2.5	0.18	1	0.2	0.5		
C factors (brake and tire wear):	PM10	0.00047	lb/VMT				
	PM2.5	0.00036	lb/VMT				
Avg construction vehicle speed on road:		15	mph (range 10-55 mph)				
Number of construction vehicles per day:		0	**	VMT/day:	0		
				VMT/month:	0		
Number of construction work days per month:		0		VMT/period:	0		
Total vehicles per month:		0					
Number of construction work months:		0					
Total vehicles per const period:		0					
Control reduction due to watering, speed control, etc. =		80					
		0.8					
Release Fraction =		0.2					

	PM10	PM2.5	**Emissions**	PM10	PM2.5
Calc 1	1.500	1.500	lbs/day	0.00	0.00
Calc 2	0.707	0.707	lbs/month	0.00	0.00
Calc 3	1.585	1.585	lbs/period	0.00	0.00
Calc 4	1.205	0.120	tons/period	0.00	0.00
Uncontrolled lb/VMT	1.204	0.120			

EPA, AP-42, Section 13.2.2, March 2006
Soil Moisture; 5% avg, USGS, OFR-02-348, ADRS, 2002.
Soil data: AECOM BSPP, App E.2, 8/09. DR-Air-3, 1-6-10, Silt content-18% avg

CONSTRUCTION PHASE - Truck Hauling/Delivery and Site Support Vehicle Emissions
All Phases

Delivery/Hauling Vehicle Use Rates			Emissions Factors (lbs/vmt)							
Delivery Roundtrip Distance:	20	miles	NOx	CO	VOC	SOx	PM10	CO2		
Const Days per Period:	506		0.0169	0.00651	0.00145	0.0000403	0.000849	4.208	HDDT	
Avg Deliveries per Day:	22		0.0107	0.00998	0.0015	0.0000272	0.000431	2.84	MDGT	
Fraction of Deliveries-Diesel:	0.85	HDDT			Daily Emissions (lbs)					
Fraction of Deliveries-Gas:	0.15	MDGT	**NOx**	**CO**	**VOC**	**SOx**	**PM10**	**CO2**	**PM2.5**	
Total Delivery VMT:	312674	per Applicant	**8.877**	**3.419**	**0.762**	**0.021**	**0.446**	**2210.222**	**0.442**	HDDT
Total Daily VMT-Diesel	525		0.992	0.925	0.139	0.003	0.040	263.239	0.040	MDGT
Total Daily VMT-Gasoline	93				Tons per Const Period					
Total Period VMT-Diesel	265772.9		2.246	0.865	0.193	0.005	0.113	559.2	0.112	HDDT
Total Period VMT-Gasoline	46901.1		0.251	0.234	0.035	0.001	0.010	66.6	0.010	MDGT

Construction Site Support Vehicle Use Rates (LDTs)			Daily Emissions, lbs								
Gasoline Vehicle VMT Period:	75900		**NOx**	**CO**	**VOC**	**SOx**	**PM10**	**CO2**			**PM2.5**
Avg Daily Gasoline VMT:	150		0.000513	0.00538	0.000601	0.0000108	0.0000945	1.106	lbs/vmt*	LDT gasoline	
Diesel Vehicle VMT Period:	0		0	0	0	0	0	0	lbs/vmt*	LDT diesel	
Avg Daily Diesel VMT:	0		**0.0770**	**0.8070**	**0.0902**	**0.0016**	**0.0142**	**165.9000**	**lbs/day**	**gasoline**	**0.0141**
Total Phase Const Days:	506		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**lbs/day**	**diesel**	**0.0000**
					Tons per Const Period						
Ref: SCAQMD EMFAC 2007 Ver 2.3			0.0195	0.2042	0.0228	0.0004	0.0036	42.0	**tons/period**	**gasoline**	0.0036
See EFs in this Appendix.			0.0000	0.0000	0.0000	0.0000	0.0000	0.0	**tons/period**	**diesel**	0.0000
HDDT, MDGT, LDT											
Scenario Year 2017											

Notes***
VMT for delivery/hauling for all vehicles includes: (1) materials deliveries to site, (2) materials removal from site, other VMT as specified below.
Support Vehicle VMT: best estimate at time of filing, 5 LDT (gasoline) at 30 VMT/day
Delivery Route: from Ventura = 20 miles roundtrip
CARB-CEIDARS, Updated Fractions for PM Profiles: PM2.5 = 0.991 of PM10 for Diesel Exhaust, and 0.998 for Gasoline Vehicles.
Const days per period: 22 days per month at 23 months = 506

CONSTRUCTION PHASE - Worker Travel - Emissions
All Phases
Worker Travel to Site

Avg Occupancy/Vehicle:	1
Avg Roundtrip Distance, miles:	14.0
Avg # of Worker Vehicles, per day:	123
Avg Daily Worker VMT:	3370
Max # of Worker Vehicles, per day:	154
Max Daily Worker VMT:	NA
Total Const Days:	506
Total Const Period Worker VMT:	1705000

VMT per Applicants engineer.

Ref: SCAQMD EMFAC 2007 (Ver 2.3)
On Road Vehicles (1973-2017)
LDP/LDT (Highest-Most Conservative Efs)

Emissions Factors (lbs/VMT)

NOx	CO	VOC	SOx	PM10	CO2
0.000513	0.00538	0.000601	0.000011	0.0000945	1.1063

Daily Emissions (lbs)

	NOx	CO	VOC	SOx	PM10	CO2	PM2.5
Avg	1.73	18.13	2.03	0.04	0.32	3727.75	0.32

Tons per Const Period

Avg	0.437	4.586	0.512	0.009	0.081	943.1	0.080

Worker Travel by Busing from Staging Area

Total Bus VMT/Const Period:	17380
Avg Bus VMT/Const Day:	40
Max Bus VMT/Const Day:	50

Bus Round Trips/Day:	0	max
Bus Occupancy/Trip:	0	

Ref: SCAQMD EMFAC 2007 (Ver 2.3)
On Road Vehicles (1973-2017)
Delivery Truck type vehicle (>8500 lbs)

VMT data supplied by Applicant.
buses supplied by Applicant.
Assumes worker residences are 50/50 split between
Ventura and Santa Paula = avg 14 miles roundtrip.
Site to mid Santa Paula is 4 miles or 8 miles roundtrip
Site to mid Ventura is 10 miles or 20 miles roundtrip

Emissions Factors (lbs/VMT)

NOx	CO	VOC	SOx	PM10	CO2
0.0107	0.00998	0.001502	0.0000272	0.0004313	2.84

Daily Emissions (lbs)

	NOx	**CO**	**VOC**	**SOx**	**PM10**	**CO2**	**PM2.5**
Avg	0.43	0.40	0.06	0.00	0.02	113.60	0.02
Max	0.54	0.50	0.08	0.00	0.02	142.00	0.02

Tons per Const Period

Avg	0.093	0.087	0.013	0.000	0.004	24.680	0.004

CONSTRUCTION PHASE - Trackout Emissions

Paved Road Length (miles):	0.1	estimated roundtrip trackout distance				
Daily # of Vehicles:	29					
Avg Vehicle Weight (tons):	22.7			**PM10**	**PM2.5***	
Total Unadjusted VMT/day	2.9			0.361		
Particle Size Multipliers	PM10			5.048		
lb/VMT	0.023			0.008	0.0014	lb/VMT
C factor, lb/VMT	0.00047			0.168	0.0285	**lbs/day**
Road Sfc Silt Loading (g/m^2):	0.56	local X 2		0.002	0.0003	**tons/month**
# of Active Trackout Points:	1	**		0.04	0.0064	**tons/period**
Added Trackout Miles:	PM10					
Trackout VMT/day:	17		*Default Silt Load Values for Paved Road Types*			
Final Adjusted VMT/day	20			Freeway	0.02 g/m2	
Final Adjusted VMT/month	447			Arterial	0.036 g/m2	
Final Adjusted VMT/period	9129			Collector	0.036 g/m2	
Construction days/month:	22			Local	0.28 g/m2	
Adj. Construction months/period:	20.44			Rural	1.6 g/m2	
Control Applied to Trackout:	Sweeping and Cleaning (water washing)					
Control Efficiency, %	80	0.8	Release Factor =		0.2	

* PM2.5 fraction of PM10 assumed to be 0.169 (CARB CEIDARS updated fraction values) for paved roads.
** 1 controlled ingress/egress point is planned for site construction
EPA, AP-42, Section 13.2.1, Proposed revisions dated 9/2008.
Use silt loading factor from default values for road type if no site specific data is available.
Trackout effects approximately 0.05 mi. of roadway arriving and departing from the site access point.
Plant access road is already paved.
Vehicle count = delivery trucks plus 10% for conservative estimate.
Worker vehicles not counted for trackout, they will park on the site perimeter.

CO2e Emissions Estimates

Total All Construction Phases-On and Off Site

For CO2 Estimated Emissions Only

Total CO2 emisisons from diesel combustion:	7364.4	tons/period
Total CO2 emissions from gasoline combustion:	1076.4	tons/period
Approximate methane fraction of CO2 for diesel combustion:		0.00007248
Approximate N2O fraction of CO2 for diesel combustion:		0.00002547
Approximate methane fraction of CO2 for gasoline combustion:		0.00000683
Approximate N2O fraction of CO2 for gasoline combustion:		0.00004442
Estimated methane from diesel combustion:	0.53	tons/period
Estimated N2O from diesel combustion:	0.19	tons/period
Estimated methane from gasoline combustion:	0.01	tons/period
Estimated N2O from diesel combustion:	0.05	tons/period
Estimated methane CO2e from diesel combustion:	13.34	tons/period
Estimated N2O CO2e from diesel combustion:	55.89	tons/period
Estimated methane CO2e from gasoline combustion:	0.18	tons/period
Estimated N2O CO2e from gasoline combustion:	14.25	tons/period
Estimated Total CO2e	**8524**	**tons/period**
	7750	MT/period

GWP Values: 40 CFR 98, Subpart A, Table A-1, 2014.

CH4 and N2O Fraction Estimation Data
The Climate Registry, 2012 Climate Registry Default Emissions Factors
Transportation Fuel Values

		#2 Diesel	Gasoline
CO2	kg/gallon	10.21	8.78
CH4	g/gallon	0.74	0.06
N2O	g/gallon	0.26	0.39
CH4	kg/gallon	0.00074	0.00006
N2O	kg/gallon	0.00026	0.00039
CH4	frac of CO2	0.00007248	0.00000683
N2O	frac of CO2	0.00002547	0.00004442

Average Vehicle Weight Estimate for Construction Period

Vehicle Type	Weight tons	# Vehicles per day	Frac. of total vehicles	
Passenger LDP/LDT	1.5	128	0.711	Worker and support travel vehicles (123+5)
HDD Loaded	35	22	0.122	
HDD Unloaded	15	22	0.122	Materials delivery trucks, service
MDGT Loaded	15	4	0.022	trucks, fuel trucks, concrete trucks, etc.
MDGT Unloaded	5	4	0.022	
		180	1.000	
Vehicle Total		154		

Weighted Avg Vehicle Weight, tons: **7.6**

HDDT/MDGT Delivery Vehicle Weight Data

Passenger LDP/LDT	2.5	0	0.000	
HDD Loaded	35	22	0.423	
HDD Unloaded	15	22	0.423	Materials delivery trucks, service
MDGT Loaded	15	4	0.077	trucks, fuel trucks, concrete trucks, etc.
MDGT Unloaded	5	4	0.077	
		52	1.000	
Vehicle Total		26		

Weighted Avg Vehicle Weight, tons: **22.7**

Soil Data for Ventura County

Ref: USDA, Soil Survey of the Ventura Area, California, J.W. Nelson, et.al.
Bureau of Soils, 1920

Silt Data

1. Approximately 23 soil types are delineated in the soil survey.
2. The surface silt content ranges from 3% to 48.4% wt.
3. The average surface silt content is ~30.3% wt.
4. The subsurface silt content ranges from 9.4% to 50% wt.
5. The average subsurface silt content is ~29.99% wt.
6. The site lies on soils classified as "Old Valley Filling and Coastal Plains Soils"
   These soils have substantial silt contents.
7. The value used for the site is the average of the surface and subsurface silt values noted above, i.e., 30% wt (rounded).

Soil Moisture Data

1. Table 9-9-G-1, SCAQMD 1993 CEQA Handbook, indicates a value of 15% for moist conditions.
2. AP-42, Section 11.9, Table 11.9-3 states a moisture content for "overburden" materials of 7.9% (geometric mean).
3. The value used for the site was 5% where required. This value will tend not to under-estimate emissions.