Appendix J

AIR QUALITY ANALYSIS

Assumptions for Emissions - Construction Commuter and Trucking (on-road)					
Source	Fuel Type	Number of Vehicles	Miles Traveled per Day	Days of Travel per Year	Miles Traveled per Year
Passenger Cars	Gasoline	60	20	260	312,000
Passenger Trucks	Gasoline	60	20	260	312,000
Light Commercial Trucks	Gasoline	3	20	260	15,600
Light Commercial Trucks	Diesel	5	40	260	52,000
Short-Haul Trucks	Diesel	20	40	260	208,000
Long-Haul Trucks	Diesel	4	80	260	83,200

Short-Haul Trucks includes dump trucks and cement trucks
Long-Haul Trucks include semi-trailers

Construction Commuter and Trucking (on-road) Emissions (lbs/year) - Moves 2014a							
Source	**VOC**	**CO**	**NO_x**	**PM-10**	**PM-2.5**	**SO_2**	**CO_2 and CO_2 Equivalents**
Passenger Cars	3550	24861	2925	39	35	2	280889
Passenger Trucks	5791	41311	4865	49	43	2	316321
Light Commercial Trucks	447	3536	395	4	3	0	28670
Short-Haul Trucks	15	3770	335	13	12	1	85992
Long-Haul Trucks	10	2008	166	8	7	1	59523
Total	9813	75486	8686	113	100	6	771395

Construction Commuter and Trucking (on-road) Emissions (tons/year) - Moves 2014a							
Source	**VOC**	**CO**	**NO_x**	**PM-10**	**PM-2.5**	**SO_2**	**CO_2 and CO_2 Equivalents**
Passenger Cars	1.775	12.4305	1.4625	0.0195	0.0175	0.001	140.4445
Passenger Trucks	2.8955	20.6555	2.4325	0.0245	0.0215	0.001	158.1605
Light Commercial Trucks	0.2235	1.768	0.1975	0.002	0.0015	0	14.335
Short-Haul Trucks	0.0075	1.885	0.1675	0.0065	0.006	0.0005	42.996
Long-Haul Trucks	0.005	1.004	0.083	0.004	0.0035	0.0005	29.7615
Total	4.9065	37.743	4.343	0.0565	0.05	0.003	385.6975

Combustion Emissions (off-road) (tons/year) - Moves 2014a							
	VOC	**CO**	**$N0_x$**	**$S0_2$**	**$C0_2$**	**PM-10**	**PM-2.5**
lbs/day	2.883951	12.6451366	22.91798	0.031292	5550.409	1.897855	1.840919
lbs/year	720.9877	3161.284151	5729.494	7.822945	1387602	474.4636	460.2296
tons/year	0.360494	1.580642075	2.864747	0.003911	693.8011	0.237232	0.230115

Fugitive Dust Emissions (off-Road) (tons/year)				
	PM-10 uncontrolled	PM-10 controlled	PM-2.5 uncontrolled	PM-2.5 controlled
Construction Area (0.19 ton PM-10/acre)	11.4	5.7	1.14	0.57
Staging Areas	29.6	14.82	2.96	1.48
Total	**41**	**20.52**	**4.1**	**2.05**

Air Emissions Results							
	Criteria Pollutants (tons per year)						
Emission Source	**VOC**	**CO**	**$N0_x$**	**PM-10**	**PM-2.5**	**SO_2**	**CO_2 and CO_2 Equivalents**
Combustion Emissions (off-road)	0.360494	1.580642075	2.864747	0.237232	0.230115	0.003911	693.8011
Construction Site-Fugitive Dust	NA	NA	NA	20.52	2.05	NA	NA
Construction Commuter & Trucking (on-road)	4.9065	37.743	4.343	0.0565	0.05	0.003	385.6975
Total Emissions	**5.266994**	**39.32364208**	**7.207747**	**20.813732**	**2.330115**	**0.006911**	**1079.4986**
De Minimis Threshold (1)	100	100	100	100	100	100	25,000

(1) Summers County is in attainment for all NAAQS; 40 CFR 93 Part 153 defines de minimis levels or the minimum threshold for which a conformity must be performed for various criteria pollutant.

On-road and off-road emissions were generated by USEPA preferred model MOVES2014a. MOVES simulates daily motor vehicle operations and produces emissions rates. MOVES emission rates include sources from engine combustion, tire wear, brake wear, evaporative fuel permeation, vapor venting and leaking (running and parking), and crankcase loss. Emissions rates are averages from a combination of vehicle operations such as: stop and go, highway travel, acceleration at on-ramps, parking, start-up, extended idle, etc. Emissions for nonroad equipment were modeled for the 2014 year. The VOC Emission Factors includes exhaust and evaporative emissions.

Data for some MOVES modeling inputs were gathered from West Virginia Department of Environmental Protection emissions inventory technical documentation (WVDEP 2011).

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Construction Fugitive Dust Emissions

Construction Fugitive Dust Emission Factors

	Emission Factor	Units	Source
General Construction Activities	0.19	ton PM-10/acre-month	MRI 1996; EPA 2001; EPA 2006
New Road Construction	0.42	ton PM-10/acre-month	MRI 1996; EPA 2001; EPA 2006

PM2.5 Emissions

PM2.5 Multiplier	0.10	(10% of PM-10 emissions Assumed to be PM-2.5)	EPA 2001; EPA 2006
Control Efficiency	0.50	(assume 50% control Efficiency for PM-10 and PM-2.5 emissions)	EPA 2001; EPA 2006

Construction Area (0.19 ton PM10/acre-month)

Duration of Soil Disturbance in Project Area	12	months
Area	5	acres

Conversion Factors

0.000022957	acres per sq. feet

Staging Areas

Duration of Soil Disturbance in Project Area	12	months
Area	13	acres

Project Emissions (tons/year)

	PM-10 uncontrolled	PM-10 controlled	PM-2.5 uncontrolled	PM-2.5 controlled
Construction Area (0.19 ton PM 10/acre-month)	11.4	5.7	1.14	0.57
Staging Area	29.6	14.82	2.96	1.48
Total	**41**	**20.52**	**4.1**	**2.05**

References:

EPA 2001. *Procedures Document for National Emissions Inventory, Criteria Air Pollutants*, 1985-1999. EPA-454/R-01-006. Office of Air Quality Planning and Standards, United States Environmental Protection Agency. March 2001.

EPA 2006. *Documentation for the Final 2002 Nonpoint Sector (Feb. 2006 version) National Emission Inventory for Criteria and Hazardous Air Pollutants.* Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.

MRI 1996. *Improvement of Specific Emission Factors (BACM Project No. 1).* Midwest Research Institute (MRI). Prepared for the California South Coast Air Quality Management District, March 29, 1996.

Construction Fugitive Dust Emission Factors

General Construction Activities Emission Factor

0.19 ton PM10/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The area-based emission factor for construction activities is based on a study completed by the Midwest Research Institute (MRI) Improvement of Specific Emission Factors (BACM Project No.1), March 29, 1996. The MRI study evaluated seven construction projects in Nevada and California (Las Vegas, Coachella Valley, South Coast Air Basin, and the San Joaquin Valley). The study determined an average emission factor of 0.11 ton PM10/acre-month for sites without large-scale cut/fill operations. A worst-case emission factor of 0.42 ton PM10/acre-month was calculated for sites with active large-scale earth moving operations. The monthly emission factors are based on 168 work-hours per month (MRI 1996). A subsequent MRI Report in 1999, Estimating Particulate Matter Emissions from Construction Operations, calculated the 0.19 ton PM10/acre-month emission factor by applying 25% of the large-scale earthmoving emission factor (0.42 ton PM10/acre-month) and 75% of the average emission factor (0.11 ton PM10/acre-month).

The 0.19 ton PM10/acre-month emission factor is referenced by the EPA for non-residential construction activities in recent procedures documents for the National Emission Inventory (EPA 2001; EPA 2006). The 0.19 ton PM10/acre-month emission factor represents a refinement of EPA's original AP-42 area-based total suspended particle (TSP) emission factor in Section 13.2.3 Heavy Construction Operations. In addition to the EPA, this methodology is also supported by the South Coast Air Quality Management District and the Western Regional Air Partnership (WRAP) which is funded by the EPA and is administered jointly by the Western Governor's Association and the National Tribal Environmental Council. The emission factor is assumed to encompass a variety of non-residential construction activities including building construction (commercial, industrial, institutional, governmental), public works, and travel on unpaved roads. The EPA National Emission Inventory documentation assumes that the emission factors are uncontrolled and recommends a control efficiency of 50% for PM10 and PM2.5 in PM nonattainment areas.

PM2.5 Multiplier **0.10**

PM2.5 emissions are estimated by applying a particle size multiplier of 0.10 to PM10 emissions. This methodology is consistent with the procedures documents for the National Emission Inventory (EPA 2006).

Control Efficiency for PM10 and PM2.5 **0.50**

The EPA National Emission Inventory documentation recommends a control efficiency of 50% for PM10 and PM2.5 in PM nonattainment areas. Wetting controls will be applied during project construction (EPA 2006).

References:

EPA 2001. Procedures Document for National Emissions Inventory, Criteria Air Pollutants, 1985-1999. EPA-454/R-01-006. Office of Air Quality Planning and Standards, United States Environmental Protection Agency. March 2001.

EPA 2006. Documentation for the Final 2002 Nonpoint Sector (Feb 06 version) National Emission Inventory for Criteria and Hazardous Air Pollutants. Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.

MRI 1996. Improvement of Specific Emission Factors (BACM Project No. 1). Midwest Research Institute (MRI). Prepared for the California South Coast Air Quality Management District, March
29, 1996.