CCNPP3COLA NPEmails

From: Quinn, Laura
Sent: Tuesday, September 29, 2009 2:10 PM
To: Bernal, Sara; Biggins, James; Caverly, Jill; Cicotte, George; Cook, John; Cushing, Jack; Dusaniwskyj, Michael; Echols, Stan; Emch, Richard; Fringer, John; Fuller, Edward; Garcia-Santos, Norma; Hair, Christopher; Hart, Michelle; Jones, Henry; kathy.anderson@usace.army.mil; Kugler, Andrew; Lee, Jay; Mazaika, Michael; Mussatti, Daniel; Nash, Harriet; Shepherd, James; Stirewalt, Gerry; Tammara, Seshagiri; Tiruneh, Nebiyu; Vrahoretis, Susan; Weiss, Eric; Williamson, Alicia; corey.duberstein@pnl.gov; Elaine Chapman; lance.vail@pnl.gov; Lissa Staven; maryann.parkhurst@pnl.gov; Michelle Niemeyer; Mike Fayer (mike.fayer@pnl.gov); paul.hendrickson@pnl.gov; Philip M Daling; roy.kropp@pnl.gov; Tara O'neil; Van Ramsdell
Cc: CCNPP3COL Resource
Subject: FW: UniStar letter UN#09-396 - RAI No. 1014, Ozone Air Emissions during Construction and Operation (E-Mail 2 of 2)
Attachments: FINAL UN#09-396 -- SIGNED (Pages 30 -59).pdf

Here are UniStar's responses to the Alternative sites RAIs. Please review and let me know if the answers provided are sufficient or not. Please get me a response as soon as you can but no later than COB Friday 10/2/2009. This is email 2 of 6.
Thanks
Laura

From: Perdomo, Federico R [mailto:Federico.Perdomo@unistarnuclear.com]
Sent: Friday, September 25, 2009 10:53 PM
To: Quinn, Laura
Cc: Stevenson, Michael; Frailer, Melanie D; Yox, Michael J; Konerth, Thomas L; Weissinger, Thomas R; Lutchenkov, Dimitri
Subject: UniStar letter UN#09-396 - RAI No. 1014, Ozone Air Emissions during Construction and Operation (E-Mail 2 of 2)

Laura,

Attached please find UniStar letter UN#09-396, "RAI No. 1014, Ozone Air Emissions during Construction and Operation." The hard copies of this letter will be distributed as normal. This E-mail copy will help in any telephone discussions that we may have near-term.

Due to file size limitations, I will sent this letter in two parts. This is the second part.

Thank You

Federico Perdomo

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Hearing Identifier: CalvertCliffs_Unit3Cola_NonPublic_EX
Email Number: 2643

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Subject: FW: UniStar letter UN#09-396 - RAI No. 1014, Ozone Air Emissions during Construction and Operation (E-Mail 2 of 2)
Sent Date: 9/29/2009 2:09:30 PM
Received Date: 9/29/2009 2:09:56 PM
From: Quinn, Laura

Created By: Laura.Quinn@nrc.gov

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Files	**Size**	**Date & Time**
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Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
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AIG recommends that the surface characteristics be determined based on the land use surrounding the site where the surface meteorological data were collected.

Since 1992, there has some conversion of the land south of the meteorological tower to native ground cover. However, that area is slated to be affected by the construction of Unit 3, will be cleared (see CPCN Technical Document, Figure 2.1-1), and will end up more like the 1992 land use characterization. Therefore, the 1992 land use characterization is reasonably representative for this application.

As recommended in the AIG for surface roughness, the 1-km radius circular area centered at the tower site can be divided into sectors for the analysis; each chosen sector has a mix of land uses that is different from that of other selected sectors. Three sectors were used for this analysis based upon visual observation of the land use about the site as shown on the land cover image (see Figure 3-4).

In AERSURFACE, the various land cover categories are linked to a set of seasonal surface characteristics. As such, AERSURFACE requires specification of the seasonal category for each month of the year. The following five seasonal categories are supported by AERSURFACE, with the applicable months of the year specified for this site.

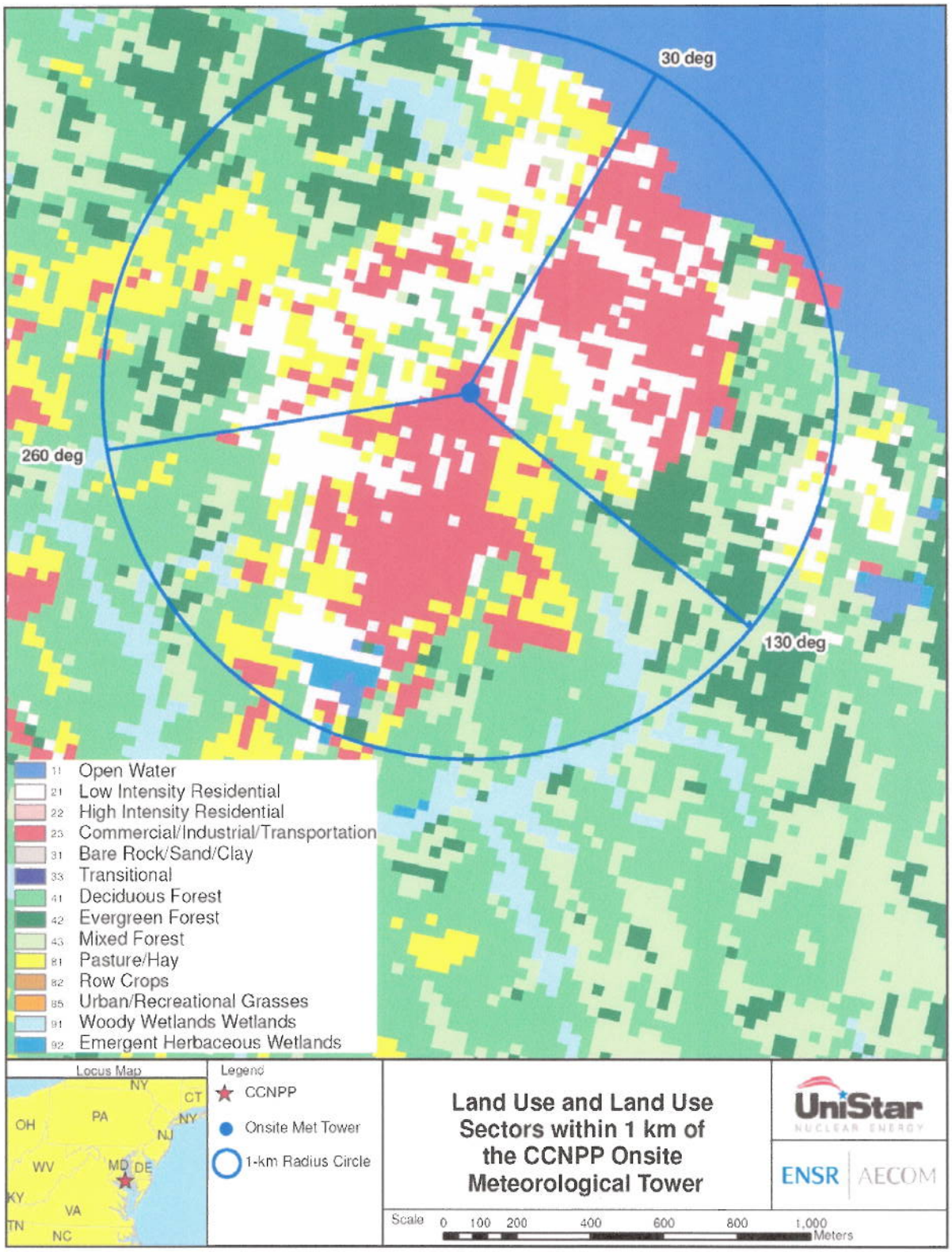
1. Midsummer with lush vegetation (May-September).
2. Autumn with un-harvested cropland (October-November).
3. Late autumn after frost and harvest, or winter with no snow (January, February, December).
4. Winter with continuous snow on ground (Not present).
5. Transitional spring with partial green coverage or short annuals (March-April).

For Bowen ratio, the land use values are linked to three categories of surface moisture corresponding to average, wet and dry conditions. The surface moisture condition for the site may vary depending on the meteorological data period for which the surface characteristics will be applied. AERSURFACE applies the surface moisture condition for the entire data period. Therefore, if the surface moisture condition varies significantly across the data period, then AERSURFACE can be applied multiple times to account for those variations. As recommended in AERSURFACE User's Guide, the surface moisture condition for each month were determined by comparing precipitation for the period of data to be processed to the 30-year climatological record (for this application Washington Reagan Airport was used), selecting "wet" conditions if precipitation is in the upper 30th-percentile, "dry" conditions if precipitation is in the lower 30th-percentile, and "average" conditions if precipitation is in the middle 40th-percentile. The monthly designations of surface moisture input to AERSURFACE are also summarized in Table 5-1.

Table 3-1 AERSURFACE Bowen Ratio Condition Designations

Month	Bowen Ratio Category				
	2001	2002	2003	2004	2005
January	Dry	Dry	Average	Dry	Wet
February	Average	Dry	Wet	Average	Dry
March	Average	Average	Average	Dry	Wet
April	Dry	Average	Average	Wet	Wet
May	Average	Dry	Wet	Average	Wet
June	Wet	Wet	Wet	Average	Average
July	Wet	Dry	Wet	Wet	Average
August	Average	Dry	Wet	Wet	Average
September	Dry	Average	Wet	Average	Dry
October	Dry	Wet	Wet	Dry	Wet
November	Dry	Average	Average	Wet	Dry
December	Dry	Wet	Wet	Average	Average

Figure 3-4 Land-Use Sectors within 1 km of On-Site Meteorological Tower



3.5 Modeling Approach

Unit 3 construction activities were divided into seven area sources based on their location and they are shown in Figure 2-1. Emissions from activities on the paved access road were modeled as a line source. Each area source represented emissions from several types of activities. For activities that will occur less than a 24 hours per day, such as grading and compaction, dirt excavation and moving, unpaved road construction, barge to concrete plant deliveries, and dewatering and earthwork, the modeling assumed emissions only for hours between 6 AM and 6 PM. Emissions for all other activities were assumed to occur for all hours of the day.

The short-term emissions for all modeled pollutants were based on the 250 days of operation and annual emissions were based on 365 days of operations. The short-term PM_{10} emissions for the seven years of construction are listed in Appendix A in Tables A-1 through A-7 and annual PM_{10} emissions are listed in Tables A-8 through A-14. Modeling of PM_{10} emissions was conducted for the individual seven years of construction (years 2010 through 2016) due to large variations in activities relating to PM_{10} emissions from year to year. The second year of construction (year 2011) would result in the highest overall emissions from combustion sources. Therefore, modeling of SO_2, NOx, and CO was conducted using the 2011 year emissions. The short-term SO_2 and CO emissions are listed in Table A-15 and annual SO_2 and NOx emissions are listed in Table A-16.

3.5.1 $PM_{2.5}$ NAAQS Compliance Analysis

After the promulgation of the $PM_{2.5}$ National AAQS in 1997, USEPA determined that it does not have a suitable technical approach for modeling $PM_{2.5}$ concentrations. Therefore, USEPA established a policy to use the implementation of the New Source Review program for PM_{10} as a surrogate for $PM_{2.5}$ compliance until the necessary tools are in place to model $PM_{2.5}$ concentrations. This policy was articulated in a memorandum (Interim Implementation of New Source Review for $PM_{2.5}$) from John S. Seitz (Director of US EPA's Office of Air Quality Planning and Standards) to Regional Air Directors on October 23, 1997. This policy is still in effect (reaffirmed on April 5, 2005 in "Implementation of New Source Review Requirements in $PM_{2.5}$ Non-attainment Areas," by Stephen D. Page, Director, EPA Office of Air Quality Planning & Standards. The Co-Applicants are using compliance with the NAAQS for PM_{10} as a surrogate for compliance with the $PM_{2.5}$ NAAQS. Mr. William Harnett, Director of EPA's Air Quality Policy Division, has indicated (2007) that the PM_{10} surrogate policy remains in effect for attainment areas until the $PM_{2.5}$ New Source Review State Implementation Rule is promulgated and the required State Implementation Plan for Maryland is adopted by EPA.

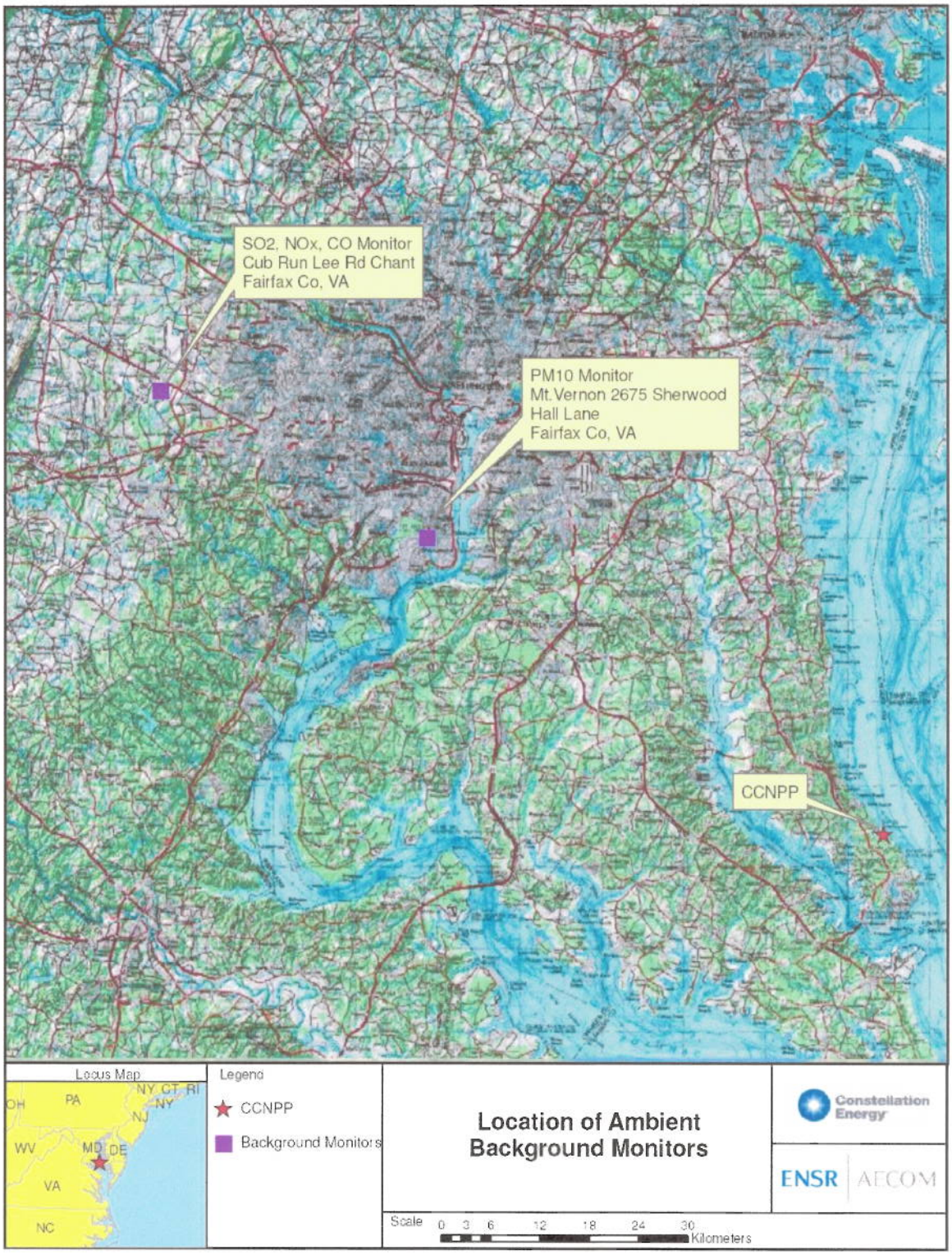
3.6 Background Air Quality

For the NAAQS compliance analysis, the modeled impacts are summed with representative background concentrations that account for distant or small local sources not explicitly modeled. The nearest available site of PM_{10} measurements is located in Virginia, about 66 km northwest of the CCNPP. The nearest available site of SO_2, CO, and NOx measurements is also located in Virginia, about 100 km northwest of the CCNPP. The latest three years of background monitoring data was used. The representative monitoring location is plotted in Figure 3-5 and the monitored values are summarized in Table 3-2.

Table 3-2 Ambient Monitoring Background Concentrations

Pollutant	Averaging Period	Ranking	Year	Concentration ($\mu g/m^3$)	Monitor ID	Monitor Address	County	State
PM_{10}	24-hour	H2H	2005	38.0	510590018	Mt.Vernon 2675 Sherwood Hall Lane	Fairfax Co	VA
		H2H	2006	40.0	510590018	Mt.Vernon 2675 Sherwood Hall Lane	Fairfax Co	VA
		H2H	2007	36.0	510590018	Mt.Vernon 2675 Sherwood Hall Lane	Fairfax Co	VA
		3-Year Average Value		**38.0**				
	Annual	H	2005	21.0	510590018	Mt.Vernon 2675 Sherwood Hall Lane	Fairfax Co	VA
		H	2006	21.0	510590018	Mt.Vernon 2675 Sherwood Hall Lane	Fairfax Co	VA
		H	2007	20.0	510590018	Mt.Vernon 2675 Sherwood Hall Lane	Fairfax Co	VA
		3-Year Average Value		**20.7**				
SO_2	3-hour	H2H	2005	65.5	510590005	Cub Run Lee Rd Chant	Fairfax Co	VA
		H2H	2006	52.4	510590005	Cub Run Lee Rd Chant	Fairfax Co	VA
		H2H	2007	49.8	510590005	Cub Run Lee Rd Chant	Fairfax Co	VA
		3-Year Average Value		**55.9**				
	24-hour	H2H	2005	31.4	510590005	Cub Run Lee Rd Chant	Fairfax Co	VA
		H2H	2006	26.2	510590005	Cub Run Lee Rd Chant	Fairfax Co	VA
		H2H	2007	21.0	510590005	Cub Run Lee Rd Chant	Fairfax Co	VA
		3-Year Average Value		**26.2**				
	Annual	H	2005	7.9	510590005	Cub Run Lee Rd Chant	Fairfax Co	VA
		H	2006	7.9	510590005	Cub Run Lee Rd Chant	Fairfax Co	VA
		H	2007	7.9	510590005	Cub Run Lee Rd Chant	Fairfax Co	VA
		3-Year Average Value		**7.9**				
NOx	Annual	H	2005	18.8	510590005	Cub Run Lee Rd Chant	Fairfax Co	VA
		H	2006	15.0	510590005	Cub Run Lee Rd Chant	Fairfax Co	VA
		H	2007	15.0	510590005	Cub Run Lee Rd Chant	Fairfax Co	VA
		3-Year Average Value		**16.3**				
CO	1-hour	H2H	2005	1,955	510590005	Cub Run Lee Rd Chant	Fairfax Co	VA
		H2H	2006	1,610	510590005	Cub Run Lee Rd Chant	Fairfax Co	VA
		H2H	2007	1,610	510590005	Cub Run Lee Rd Chant	Fairfax Co	VA
		3-Year Average Value		**1725.0**				
	8-hour	H2H	2005	1,725	510590005	Cub Run Lee Rd Chant	Fairfax Co	VA
		H2H	2006	1,380	510590005	Cub Run Lee Rd Chant	Fairfax Co	VA
		H2H	2007	1,495	510590005	Cub Run Lee Rd Chant	Fairfax Co	VA
		3-Year Average Value		**1533.3**				

Figure 3-5 Location of the Ambient Background Monitors



4.0 Modeling Results for the Unit 3 Construction Emissions

NAAQS compliance modeling results for PM_{10}, SO_2, CO, and NOx are presented in Tables 4-1 through 4-4, respectively. The short-term impacts were estimated by adding the highest, second-high impact to the monitoring background value and annual impacts were estimated by adding the highest impact to the monitoring background value.

The PM_{10} modeling results are presented for the seven years of constructions and they indicate that the second year of constructions (year 2011) would result in the highest PM_{10} concentrations. Modeling of SO_2, CO, and NOx emissions was conducted only for year 2011 since it would result in the highest combustion-related emissions over the seven years of construction activity.

The predicted short-term and annual impacts of PM_{10}, SO_2, CO, and NOx are well below their respective NAAQS, so compliance with the NAAQS is demonstrated.

Table 4-1 PM_{10} Modeling Results of Unit 3 Construction Emission Sources

Pollutant	Averaging Period	Unit 3 Construction Year	2001-2005 Modeled Concentration[1]	Ambient Monitoring Background	Total	NAAQS
			($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)
PM_{10}	24-hr	2010	70.6	38	108.6	150
	24-hr	2011	88.4	38	126.4	150
	24-hr	2012	56.3	38	94.3	150
	24-hr	2013	52.2	38	90.2	150
	24-hr	2014	20.7	38	58.7	150
	24-hr	2015	10.0	38	48.0	150
	24-hr	2016	9.9	38	47.9	150
	Annual	2010	4.8	21	25.5	50
	Annual	2011	6.4	21	27.1	50
	Annual	2012	5.0	21	25.7	50
	Annual	2013	5.4	21	26.1	50
	Annual	2014	2.6	21	23.3	50
	Annual	2015	1.3	21	22.0	50
	Annual	2016	1.3	21	22.0	50

1 The reported concentration is the highest, second-highest for 24-hr periods, and the highest for annual periods.

Table 4-2 SO_2 Modeling Results of Unit 3 Construction Emission Sources

Pollutant	Averaging Period	Unit 3 Construction Year	2001-2005 Modeled Concentration[1]	Ambient Monitoring Background	Total	NAAQS
			($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)
SO_2	3-hour	2011	18.9	55.9	74.8	1,300
	24-hr	2011	3.9	26.2	30.1	365
	Annual	2011	0.5	7.9	8.4	80

1 The reported concentration is the highest, second-highest for 24-hr periods, and the highest for annual periods.

Table 4-3 CO Modeling Results of Unit 3 Construction Emission Sources

Pollutant	Averaging Period	Unit 3 Construction Year	2001-2005 H2H Modeled Concentration	Ambient Monitoring Background	Total	NAAQS
			($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)
CO	1-hour	2011	691.9	1,725.0	2,416.9	40,000
	8-hour	2011	137.7	1,533.3	1,671.0	10,000

Table 4-4 NOx Modeling Results of Unit 3 Construction Emission Sources

Pollutant	Averaging Period	Unit 3 Construction Year	2001-2005 Max Modeled Concentration	Ambient Monitoring Background	Total	NAAQS
			($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)
NOx	Annual	2011	12.9	16.3	29.2	100

5.0 References

Technical Report in Support of Application of UNISTAR Nuclear Energy, LLC and UNISTAR Nuclear Operating Services, LLC for Certificate of Public Convenience and Necessity Before the Maryland Public Service Commission for Authorization to Construct Unit 3 at Calvert Cliffs Nuclear Power Plant and Associated Transmission Lines. Available at http://webapp.psc.state.md.us/intranet/Casenum/submit.cfm?DirPath=C:\Casenum\9100-9199\9127\Item_001\&CaseN=9127\Item_001.

U.S. EPA 2004. User's Guide for the AERMOD Meteorological Processor (AERMET) EPA Document No. EPA-454/B-03-002. Office of Air Quality Planning and Standards, Research Triangle Park, NC. November.

U.S. EPA 2005a. Guideline on Air Quality Models (Revised). Codified in the Appendix W to 40 CFR Part 51. Office of Air Quality Planning and Standards, Research Triangle Park, NC. November.

U.S. EPA 2005a. Implementation of New Source Review Requirements in PM-2.5 Nonattainment Areas. Memo by Stephen Page, available at http://www.epa.gov/nsr/documents/nsrmemo.pdf.

U.S. EPA 2008. AERMOD Implementation Guide. Office of Air Quality Planning and Standards, Research Triangle Park, NC. Revised January 9, 2008.

Appendix A

Construction Emissions

Table A-1 PM_{10} Short-Term Emissions for Year 2010

Modeled Area ID	Modeled Area (m^2)	Assigned Acreage	Emissions Distribution (TPY)														TOTAL ($g/m^2/s$)	TOTAL ($g/m^2/s$)	Commuter/Commercial Traffic ($g/m^2/s$)
			VEHICLE TRAVEL EMISSIONS						GRADING/EXCAVATION				Diesel & Gasoline Emissions						
			Commuter and Commercial Traffic	Barge to Concrete Plant	Unpaved road construction	Concrete Plant to Applic. Site	Excavated Dirt to Map Area 5	Batch Plant Operations	Earth Moving / Excavation	Grading and Compaction	Sand and Aggregate at Barge	Wind Erosion	Dewatering & Earthwork	Batch Plant	Concrete	Others (incl. gasoline)			
Hours of Operations (hour ending)			1-24	7-18	7-18	1-24	7-18	1-24	7-18	7-18	7-18	1-24	7-18	1-24	1-24	7-18	1-24	7-18	1-24
U3AREA	126,360	31			0.01	0.05	1.74		2.51	4.66		0.95	0.16		0.023	0.03	4.104E-07	7.358E-06	
AREA2	178,435	44	0.96		0.01	0.05	1.74		3.54	6.58		1.34	0.16		0.021	0.03	4.016E-07	6.900E-06	2.731E-07
AREA3	95,106	23	0.96		0.01	0.05	1.74		1.89	3.51		0.71	0.16		0.018	0.03	4.170E-07	7.873E-06	5.124E-07
AREA4	235,625	58	0.96	0.19	0.01	0.05	2.90		4.67	8.69		1.77	0.16	0.0098	0.018	0.03	3.984E-07	7.215E-06	2.068E-07
AREA5	245,982	61	0.96	0.19	0.01	0.05	3.49		4.88	9.08		1.84	0.16	0.0098	0.015	0.03	3.971E-07	7.396E-06	1.981E-07
AREA6	99,198	24.5	0.96	0.19	0.01	0.05		0.12		3.66		0.50	0.16	0.08	0.015	0.03	3.910E-07	4.163E-06	4.912E-07
AREA7	6,000	1.48		0.05							0.22		0.04	0.0147			1.250E-07	5.127E-06	
AREA7	6,000	1.48		0.05									0.04					1.470E-06	
AREA7	6,000	1.48		0.05									0.04					1.470E-06	
AREA7	6,000	1.48		0.05									0.04					1.470E-06	
Paved Road	Line		0.081																4.113E-03
TOTAL ALL AREAS (TPY)		244	4.86	0.75	0.05	0.28	11.62	0.12	17.49	36.19	0.22	7.10	1.11	0.11	0.11	0.19			
															Total =	80.2			

Table A-2 PM_{10} Short-Term Emissions for Year 2011

Modeled Area ID	Modeled Area (m^2)	Assigned Acreage	Emissions Distribution (TPY)														TOTAL ($g/m^2/s$)	TOTAL ($g/m^2/s$)	Commuter/Commercial Traffic ($g/m^2/s$)
			VEHICLE TRAVEL EMISSIONS						GRADING/EXCAVATION				Diesel & Gasoline Emissions						
			Commuter and Commercial Traffic	Barge to Concrete Plant	Unpaved road construction	Concrete Plant to Applic. Site	Excavated Dirt to Map Area 5	Batch Plant Operations	Earth Moving / Excavation	Grading and Compaction	Sand and Aggregate at Barge	Wind Erosion	Dewatering & Earthwork	Batch Plant	Concrete	Others (incl. gasoline)			
Hours of Operations (hour ending)			1-24/ Vary	7-18	7-18	1-24	7-18	1-24	7-18	7-18	7-18	1-24	7-18	1-24	1-24	7-18	1-24	7-18	1-24
U3AREA	126,360	31			0.01	0.12	1.18		2.66	4.77		0.95	0.17		0.059	0.06	4.550E-07	7.145E-06	
AREA2	178,435	44	3.03		0.01	0.12	1.18		3.75	6.73		1.34	0.17		0.053	0.06	4.319E-07	6.809E-06	8.676E-07
AREA3	95,106	23	3.03		0.01	0.12	1.18		2.00	3.59		0.71	0.17		0.043	0.06	4.702E-07	7.523E-06	1.628E-06
AREA4	235,625	58	3.03	0.31	0.01	0.12	1.97		4.95	8.89		1.77	0.17	0.0375	0.043	0.06	4.259E-07	7.087E-06	6.570E-07
AREA5	245,982	61	3.03	0.31	0.01	0.12	2.37		5.17	9.28		1.84	0.17	0.0375	0.033	0.06	4.220E-07	7.205E-06	6.294E-07
AREA6	99,198	24.5	3.03	0.31	0.01	0.12		0.38		3.74		0.79	0.17	0.29	0.033	0.06	8.304E-07	4.418E-06	1.561E-06
AREA7	6,000	1		0.08							0.43		0.04	0.0562			4.781E-07	9.347E-06	
AREA7	6,000	1.48		0.08									0.04					2.034E-06	
AREA7	6,000	1.48		0.08									0.04					2.034E-06	
AREA7	6,000	1.48		0.08									0.04					2.034E-06	
Paved Road	Line Source		0.30																1.535E-02
TOTAL ALL AREAS (TPY)		244	15.47	1.24	0.07	0.73	7.89	0.38	18.52	37.00	0.43	7.39	1.18	0.42	0.26	0.38			
															Total =	91.4			

Table A-3 PM_{10} Short-Term Emissions for Year 2012

Modeled Area ID	Modeled Area (m^2)	Assigned Acreage	Emissions Distribution (TPY)														TOTAL ($g/m^2/s$)	TOTAL ($g/m^2/s$)	Commuter/ Commercial Traffic ($g/m^2/s$)
			VEHICLE TRAVEL EMISSIONS						GRADING/EXCAVATION				Diesel & Gasoline Emissions						
			Commuter and Commercial Traffic	Barge to Concrete Plant	Unpaved road construction	Concrete Plant to Applic. Site	Excavated Dirt to Map Area 5	Batch Plant Operations	Earth Moving / Excavation	Grading and Compaction	Sand and Aggregate at Barge	Wind Erosion	Dewatering & Earthwork	Batch Plant	Concrete	Others (incl. gasoline)			
Hours of Operations (hour ending)			1-24/ Vary	7-18	7-18	1-24	7-18	1-24	7-18	7-18	7-18	1-24	7-18	1-24	1-24	7-18	1-24	7-18	1-24
U3AREA	126,360	31			0.00	0.09	0.00		1.50	1.81		0.95	0.08		0.097	0.09	4.573E-07	2.816E-06	
AREA2	178,435	44	3.33		0.00	0.09	0.00		2.12	2.55		1.34	0.08		0.088	0.09	4.328E-07	2.774E-06	9.522E-07
AREA3	95,106	23	3.33		0.00	0.09	0.00		1.13	1.36		0.71	0.08		0.074	0.09	4.698E-07	2.863E-06	1.786E-06
AREA4	235,625	58	3.33	0.09	0.00	0.09	0.00		2.80	3.37		1.77	0.08	0.0527	0.074	0.09	4.290E-07	2.787E-06	7.211E-07
AREA5	245,982	61	3.33	0.09	0.00	0.09	0.00		2.93	3.52		1.84	0.08	0.0527	0.061	0.09	4.242E-07	2.782E-06	6.907E-07
AREA6	99,198	25	3.33	0.09	0.00	0.09		0.50		1.42		0.50	0.08	0.40	0.061	0.09	7.982E-07	1.731E-06	1.713E-06
AREA7	6,000	1		0.02							0.22		0.02	0.0790			6.717E-07	4.366E-06	
AREA7	6,000	1.48		0.02									0.02					7.090E-07	
AREA7	6,000	1.48		0.02									0.02					7.090E-07	
AREA7	6,000	1.48		0.02									0.02					7.090E-07	
Paved Road	Line Source		0.59																2.989E-02
TOTAL ALL AREAS (TPY)		244	17.24	0.35	0.02	0.53	0.00	0.50	10.49	14.02	0.22	7.10	0.56	0.59	0.45	0.56			
															Total =	52.6			

Table A-4 PM_{10} Short-Term Emissions for Year 2013

Modeled Area ID	Modeled Area (m^2)	Assigned Acreage	Emissions Distribution (TPY)														TOTAL ($g/m^2/s$)	TOTAL ($g/m^2/s$)	Commuter /Commercial Traffic ($g/m^2/s$)
			VEHICLE TRAVEL EMISSIONS						GRADING/EXCAVATION				Diesel & Gasoline Emissions						
			Commuter and Commercial Traffic	Barge to Concrete Plant	Unpaved road construction	Concrete Plant to Applic. Site	Excavated Dirt to Map Area 5	Batch Plant Operations	Earth Moving / Excavation	Grading and Compaction	Sand and Aggregate at Barge	Wind Erosion	Dewatering & Earthwork	Batch Plant	Concrete	Others (incl. gasoline)			
Hours of Operations (hour ending)			1-24/ Vary	7-18	7-18	1-24	7-18	1-24	7-18	7-18	7-18	1-24	7-18	1-24	1-24	7-18	1-24	7-18	1-24
U3AREA	126,360	31			0.00	0.08	0.00		0.95	0.36		0.56	0.03		0.080	0.09	2.924E-07	1.154E-06	
AREA2	178,435	44	4.62		0.00	0.08	0.00		1.34	0.50		0.80	0.03		0.071	0.09	2.710E-07	1.125E-06	1.321E-06
AREA3	95,106	23	4.62		0.00	0.08	0.00		0.71	0.27		0.42	0.03		0.057	0.09	3.015E-07	1.187E-06	2.478E-06
AREA4	235,625	58	4.62	0.00	0.00	0.08	0.00		1.77	0.66		1.05	0.03	0.0527	0.057	0.09	2.690E-07	1.107E-06	1.000E-06
AREA5	245,982	61	4.62	0.00	0.00	0.08	0.00		1.85	0.69		1.10	0.03	0.0527	0.043	0.09	2.645E-07	1.105E-06	9.579E-07
AREA6	99,198	25	4.62	0.00	0.00	0.08		0.49		0.28		0.00	0.03	0.40	0.043	0.09	5.236E-07	4.150E-07	2.375E-06
AREA7	6,000	1.48		0.00							0.00		0.01	0.0790			6.717E-07	1.229E-07	
AREA7	6,000	1.48		0.00									0.01					1.229E-07	
AREA7	6,000	1.48		0.00									0.01					1.229E-07	
AREA7	6,000	1.48		0.00									0.01					1.229E-07	
Paved Road	Line Source		0.88																4.496E-02
TOTAL ALL AREAS (TPY)		244	23.97	0.00	0.01	0.48	0.00	0.49	6.62	2.76	0.00	3.94	0.20	0.59	0.35	0.56			
															Total =	40.0			

Table A-5 PM_{10} Short-Term Emissions for Year 2014

Modeled Area ID	Modeled Area (m^2)	Assigned Acreage	Emissions Distribution (TPY)														TOTAL ($g/m^2/s$)	TOTAL ($g/m^2/s$)	Commuter/ Commercial Traffic ($g/m^2/s$)
			VEHICLE TRAVEL EMISSIONS						GRADING/EXCAVATION				Diesel & Gasoline Emissions						
			Commuter and Commercial Traffic	Barge to Concrete Plant	Unpaved road construction	Concrete Plant to Applic. Site	Excavated Dirt to Map Area 5	Batch Plant Operations	Earth Moving / Excavation	Grading and Compaction	Sand and Aggregate at Barge	Wind Erosion	Dewatering & Earthwork	Batch Plant	Concrete	Others (incl. gasoline)			
Hours of Operations (hour ending)			1-24	7-18	7-18	1-24	7-18	1-24	7-18	7-18	7-18	1-24	7-18	1-24	1-24	7-18	1-24	7-18	1-24
U3AREA	126,360	31			0.00	0.02	0.00		0.24	0.12		0.95	0.01		0.050	0.08	4.101E-07	3.641E-07	
AREA2	178,435	44	1.53		0.00	0.02	0.00		0.34	0.17		1.34	0.01		0.048	0.08	4.015E-07	3.417E-07	4.365E-07
AREA3	95,106	23	1.53		0.00	0.02	0.00		0.18	0.09		0.71	0.01		0.045	0.08	4.169E-07	3.894E-07	8.190E-07
AREA4	235,625	58	1.53	0.00	0.00	0.02	0.00		0.44	0.22		1.77	0.01	0.0098	0.045	0.08	3.983E-07	3.285E-07	3.306E-07
AREA5	245,982	61	1.53	0.00	0.00	0.02	0.00		0.46	0.23		1.84	0.01	0.0098	0.042	0.08	3.971E-07	3.268E-07	3.167E-07
AREA6	99,198	25	1.53	0.00	0.00	0.02		0.12		0.09		0.00	0.01	0.08	0.042	0.08	1.352E-07	1.935E-07	7.852E-07
AREA7	6,000	1.48		0.00							0.00		0.00	0.0147			1.250E-07	6.301E-08	
AREA7	6,000	1.48		0.00									0.00					6.301E-08	
AREA7	6,000	1.48		0.00									0.00					6.301E-08	
AREA7	6,000	1.48		0.00									0.00					6.301E-08	
Paved Road			0.30																1.530E-02
TOTAL ALL AREAS (TPY)		244	7.93	0.00	0.00	0.12	0.00	0.12	1.66	0.92	0.00	6.60	0.10	0.11	0.27	0.48			
															Total =	18.3			

Table A-6 PM_{10} Short-Term Emissions for Year 2015

Modeled Area ID	Modeled Area (m^2)	Assigned Acreage	Emissions Distribution (TPY)														TOTAL ($g/m^2/s$)	TOTAL ($g/m^2/s$)	Commuter/ Commercial Traffic ($g/m^2/s$)
			VEHICLE TRAVEL EMISSIONS						GRADING/EXCAVATION				Diesel & Gasoline Emissions						
			Commuter and Commercial Traffic	Barge to Concrete Plant	Unpaved road construction	Concrete Plant to Applic. Site	Excavated Dirt to Map Area 5	Batch Plant Operations	Earth Moving / Excavation	Grading and Compaction	Sand and Aggregate at Barge	Wind Erosion	Dewatering & Earthwork	Batch Plant	Concrete	Others (incl. gasoline)			
Hours of Operations (hour ending)			1-24	7-18	7-18	1-24	7-18	1-24	7-18	7-18	7-18	1-24	7-18	1-24	1-24	7-18	1-24	7-18	1-24
U3AREA	126,360	31			0.00	0.00	0.00		0.05	0.00		0.95	0.00		0.017	0.03	3.892E-07	7.216E-08	
AREA2	178,435	44	0.11		0.00	0.00	0.00		0.07	0.00		1.34	0.00		0.017	0.03	3.870E-07	6.353E-08	3.211E-08
AREA3	95,106	23	0.11		0.00	0.00	0.00		0.04	0.00		0.71	0.00		0.016	0.03	3.906E-07	8.187E-08	6.024E-08
AREA4	235,625	58	0.11	0.00	0.00	0.00	0.00		0.10	0.00		1.77	0.00	0.0046	0.016	0.03	3.866E-07	5.844E-08	2.431E-08
AREA5	245,982	61	0.11	0.00	0.00	0.00	0.00		0.10	0.00		1.84	0.00	0.0046	0.015	0.03	3.862E-07	5.778E-08	2.329E-08
AREA6	99,198	25	0.11	0.00	0.00	0.00		0.00		0.00		0.00	0.00	0.04	0.015	0.03	2.658E-08	3.767E-08	5.775E-08
AREA7	6,000	1		0.00							0.00		0.00	0.0070			5.923E-08	1.441E-08	
AREA7	6,000	1.48		0.00									0.00					1.441E-08	
AREA7	6,000	1.48		0.00									0.00					1.441E-08	
AREA7	6,000	1.48		0.00									0.00					1.441E-08	
Paved Road			0.02																1.222E-03
TOTAL ALL AREAS (TPY)		244	0.59	0.00	0.00	0.00	0.00	0.00	0.37	0.00	0.00	6.60	0.02	0.05	0.09	0.20			
															Total =	7.9			

Table A-7 PM_{10} Short-Term Emissions for Year 2016

Modeled Area ID	Modeled Area (m^2)	Assigned Acreage	Emissions Distribution (TPY)														TOTAL ($g/m^2/s$)	TOTAL ($g/m^2/s$)	Commuter/ Commercial Traffic ($g/m^2/s$)
			VEHICLE TRAVEL EMISSIONS						GRADING/EXCAVATION				Diesel & Gasoline Emissions						
			Commuter and Commercial Traffic	Barge to Concrete Plant	Unpaved road construction	Concrete Plant to Applic. Site	Excavated Dirt to Map Area 5	Batch Plant Operations	Earth Moving / Excavation	Grading and Compaction	Sand and Aggregate at Barge	Wind Erosion	Dewatering & Earthwork	Batch Plant	Concrete	Others (incl. gasoline)			
Hours of Operations (hour ending)			1-24	7-18	7-18	1-24	7-18	1-24	7-18	7-18	7-18	1-24	7-18	1-24	1-24	7-18	1-24	7-18	1-24
U3AREA	126,360	31			0.00	0.00	0.00		0.03	0.00		0.95	0.00		0.007	0.02	3.852E-07	3.474E-08	
AREA2	178,435	44	0.11		0.00	0.00	0.00		0.04	0.00		1.34	0.00		0.007	0.02	3.843E-07	3.082E-08	3.211E-08
AREA3	95,106	23	0.11		0.00	0.00	0.00		0.02	0.00		0.71	0.00		0.007	0.02	3.858E-07	3.916E-08	6.024E-08
AREA4	235,625	58	0.11	0.00	0.00	0.00	0.00		0.05	0.00		1.77	0.00	0.0023	0.007	0.02	3.842E-07	2.851E-08	2.431E-08
AREA5	245,982	61	0.11	0.00	0.00	0.00	0.00		0.05	0.00		1.84	0.00	0.0023	0.006	0.02	3.840E-07	2.820E-08	2.329E-08
AREA6	99,198	25	0.11	0.00	0.00	0.00		0.00		0.00			0.00	0.02	0.006	0.02	1.270E-08	1.713E-08	5.775E-08
AREA7	6,000	1		0.00							0.00		0.00	0.0034			2.880E-08	4.046E-09	
AREA7	6,000	1.48		0.00									0.00					4.046E-09	
AREA7	6,000	1.48		0.00									0.00					4.046E-09	
AREA7	6,000	1.48		0.00									0.00					4.046E-09	
Paved Road	930	0.23	0.00																0.000E+00
TOTAL ALL AREAS (TPY)		244	0.56	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.00	6.60	0.01	0.03	0.04	0.09			
															Total =	7.5			

Table A-8 PM_{10} Annual Emissions for Year 2010

Modeled Area ID	Map Area Nos.	Modeled Area (m^2)	Assigned Acreage	Emissions Distribution (TPY)														TOTAL ($g/m^2/s$)	TOTAL ($g/m^2/s$)	Commuter/Commercial Traffic ($g/m^2/s$)
				VEHICLE TRAVEL EMISSIONS						GRADING/EXCAVATION				Diesel & Gasoline Emissions						
				Commuter and Commercial Traffic	Barge to Concrete Plant	Unpaved road construction	Concrete Plant to Applic. Site	Excavated Dirt to Map Area 5	Batch Plant Operations	Earth Moving / Excavation	Grading and Compaction	Sand and Aggregate at Barge	Wind Erosion	Dewatering & Earthwork	Batch Plant	Concrete	Others (incl. gasoline)			
Hours of Operations (hour ending)				1-24	7-18	7-18	1-24	7-18	1-24	7-18	7-18	7-18	1-24	7-18	1-24	1-24	7-18	1-24	7-18	1-24
U3AREA	Unit 3 Area	126,360	31			0.01	0.05	1.74		2.51	4.66		0.95	0.16		0.023	0.03	2.811E-07	5.041E-06	
AREA2	1,2,8,9	178,435	44	0.96		0.01	0.05	1.74		3.54	6.58		1.34	0.16		0.021	0.03	2.751E-07	4.727E-06	1.871E-07
AREA3	CTCWS,10,11	95,106	23	0.96		0.01	0.05	1.74		1.89	3.51		0.71	0.16		0.018	0.03	2.856E-07	5.394E-06	3.509E-07
AREA4	3,4,7,12	235,625	58	0.96	0.19	0.01	0.05	2.90		4.67	8.69		1.77	0.16	0.0098	0.018	0.03	2.729E-07	4.942E-06	1.417E-07
AREA5	5,13	245,982	61	0.96	0.19	0.01	0.05	3.49		4.88	9.08		1.84	0.16	0.0098	0.015	0.03	2.720E-07	5.066E-06	1.357E-07
AREA6	6	99,198	24.5	0.96	0.19	0.01	0.05		0.12		3.66		0.31	0.16	0.08	0.015	0.03	2.007E-07	2.853E-06	3.365E-07
AREA7	Barge 1	6,000	1.48		0.05							0.22		0.04	0.0147			8.565E-08	3.512E-06	
AREA7	Barge 2	6,000	1.48		0.05									0.04					1.007E-06	
AREA7	Barge 3	6,000	1.48		0.05									0.04					1.007E-06	
AREA7	Barge 4	6,000	1.48		0.05									0.04					1.007E-06	
Paved Road	Paved Road			0.073																2.547E-03
TOTAL ALL AREAS (TPY)			244	4.85	0.75	0.05	0.28	11.62	0.12	17.49	36.19	0.22	6.91	1.11	0.11	0.11	0.21			
																Total =	80.0			

Table A-9 PM_{10} Annual Emissions for Year 2011

Modeled Area ID	Map Area Ilos.	Modeled Area (m^2)	Assigned Acreage	Emissions Distribution (TPY)																	
				VEHICLE TRAVEL EMISSIONS					Batch Plant Operations	GRADING/EXCAVATION		Sand and Aggregate at Barge	Wind Erosion	Diesel & Gasoline Emissions				TOTAL ($g/m^2/s$)	TOTAL ($g/m^2/s$)	Commuter/Commercial Traffic ($g/m^2/s$)
				Commuter and Commercial Traffic	Barge to Concrete Plant	Unpaved road construction	Concrete Plant to Applic. Site	Excavated Dirt to Map Area 5		Earth Moving / Excavation	Grading and Compaction			Dewatering & Earthwork	Batch Plant	Concrete	Others (incl. gasoline)			
Hours of Operations (hour ending)				1-24	7-18	7-18	1-24	7-18	1-24	7-18	7-18	7-18	1-24	7-18	1-24	1-24	7-18	1-24	7-18	1-24
U3AREA	Unit 3 Area	126,360	31			0.01	0.12	1.18		2.66	4.77		0.95	0.17		0.059	0.07	3.116E-07	4.896E-06	
AREA2	1,2,8,9	178,435	44	3.03		0.01	0.12	1.18		3.75	6.73		1.34	0.17		0.053	0.07	2.958E-07	4.665E-06	5.942E-07
AREA3	CTCWS,10,11	95,106	23	3.03		0.01	0.12	1.18		2.00	3.59		0.71	0.17		0.043	0.07	3.221E-07	5.156E-06	1.115E-06
AREA4	3,4,7,12	235,625	58	3.03	0.31	0.01	0.12	1.97		4.95	8.89		1.77	0.17	0.0375	0.043	0.07	2.917E-07	4.856E-06	4.500E-07
AREA5	5,13	245,982	61	3.03	0.31	0.01	0.12	2.37		5.17	9.28		1.84	0.17	0.0375	0.033	0.07	2.891E-07	4.936E-06	4.311E-07
AREA6	6	99,198	24.5	3.03	0.31	0.01	0.12		0.38		3.74		0.49	0.17	0.29	0.033	0.07	4.622E-07	3.030E-06	1.069E-06
AREA7	Barge 1	6,000	1		0.08							0.43		0.04	0.0562			3.275E-07	6.402E-06	
AREA7	Barge 2	6,000	1.48		0.08									0.04					1.393E-06	
AREA7	Barge 3	6,000	1.48		0.08									0.04					1.393E-06	
AREA7	Barge 4	6,000	1.48		0.08									0.04					1.393E-06	
Paved Road	Paved Road			0.27																9.505E-03
TOTAL ALL AREAS (TPY)			244	15.44	1.24	0.07	0.73	7.89	0.38	18.52	37.00	0.43	7.09	1.18	0.42	0.26	0.41			
																Total =	91.1			

Table A-10 PM_{10} Annual Emissions for Year 2012

Modeled Area ID	Map Area Ilos.	Modeled Area (m^2)	Assigned Acreage	Emissions Distribution (TPY)																	
				VEHICLE TRAVEL EMISSIONS					Batch Plant Operations	GRADING/EXCAVATION		Sand and Aggregate at Barge	Wind Erosion	Diesel & Gasoline Emissions				TOTAL ($g/m^2/s$)	TOTAL ($g/m^2/s$)	Commuter/Commercial Traffic ($g/m^2/s$)
				Commuter and Commercial Traffic	Barge to Concrete Plant	Unpaved road construction	Concrete Plant to Applic. Site	Excavated Dirt to Map Area 5		Earth Moving / Excavation	Grading and Compaction			Dewatering & Earthwork	Batch Plant	Concrete	Others (incl. gasoline)			
Hours of Operations (hour ending)				1-24	7-18	7-18	1-24	7-18	1-24	7-18	7-18	7-18	1-24	7-18	1-24	1-24	7-18	1-24	7-18	1-24
U3AREA	Unit 3 Area	126,360	31			0.00	0.09	0.00		1.50	1.81		0.95	0.08		0.097	0.10	3.132E-07	1.934E-06	
AREA2	1,2,8,9	178,435	44	3.33		0.00	0.09	0.00		2.12	2.55		1.34	0.08		0.088	0.10	2.964E-07	1.904E-06	6.522E-07
AREA3	CTCWS,10,11	95,106	23	3.33		0.00	0.09	0.00		1.13	1.36		0.71	0.08		0.074	0.10	3.218E-07	1.968E-06	1.224E-06
AREA4	3,4,7,12	235,625	58	3.33	0.09	0.00	0.09	0.00		2.80	3.37		1.77	0.08	0.0527	0.074	0.10	2.938E-07	1.912E-06	4.939E-07
AREA5	5,13	245,982	61	3.33	0.09	0.00	0.09	0.00		2.93	3.52		1.84	0.08	0.0527	0.061	0.10	2.905E-07	1.909E-06	4.731E-07
AREA6	6	99,198	25	3.33	0.09	0.00	0.09		0.50		1.42		0.31	0.08	0.40	0.061	0.10	4.796E-07	1.192E-06	1.173E-06
AREA7	Barge 1	6,000	1		0.02							0.22		0.02	0.0790			4.601E-07	2.990E-06	
AREA7	Barge 2	6,000	1.48		0.02									0.02					4.856E-07	
AREA7	Barge 3	6,000	1.48		0.02									0.02					4.856E-07	
AREA7	Barge 4	6,000	1.48		0.02									0.02					4.856E-07	
Paved Road	Paved Road			0.53																1.851E-02
TOTAL ALL AREAS (TPY)			244	17.18	0.35	0.02	0.53	0.00	0.50	10.49	14.02	0.22	6.91	0.56	0.59	0.45	0.62			
																Total =	52.4			

Table A-11 PM_{10} Annual Emissions for Year 2013

Modeled Area ID	Map Area Nos.	Modeled Area (m^2)	Assigned Acreage	Emissions Distribution (TPY)														TOTAL ($g/m^2/s$)	TOTAL ($g/m^2/s$)	Commuter/Commercial Traffic ($g/m^2/s$)
				VEHICLE TRAVEL EMISSIONS						GRADING/EXCAVATION				Diesel & Gasoline Emissions						
				Commuter and Commercial Traffic	Barge to Concrete Plant	Unpaved road construction	Concrete Plant to Applic. Site	Excavated Dirt to Map Area 5	Batch Plant Operations	Earth Moving / Excavation	Grading and Compaction	Sand and Aggregate at Barge	Wind Erosion	Dewatering & Earthwork	Batch Plant	Concrete	Others (incl. gasoline)			
Hours of Operations (hour ending)				1-24	7-18	7-18	1-24	7-18	1-24	7-18	7-18	7-18	1-24	7-18	1-24	1-24	7-18	1-24	7-18	1-24
U3AREA	Unit 3 Area	126,360	31			0.00	0.08	0.00		0.95	0.36		0.56	0.03		0.080	0.10	2.003E-07	7.958E-07	
AREA2	1,2,8,9	178,435	44	4.62		0.00	0.08	0.00		1.34	0.50		0.80	0.03		0.071	0.10	1.856E-07	7.742E-07	9.045E-07
AREA3	TCWS,10,	95,106	23	4.62		0.00	0.08	0.00		0.71	0.27		0.42	0.03		0.057	0.10	2.065E-07	8.202E-07	1.697E-06
AREA4	3,4,7,12	235,625	58	4.62	0.00	0.00	0.08	0.00		1.77	0.66		1.05	0.03	0.0527	0.057	0.10	1.843E-07	7.614E-07	6.849E-07
AREA5	5,13	245,982	61	4.62	0.00	0.00	0.08	0.00		1.85	0.69		1.10	0.03	0.0527	0.043	0.10	1.812E-07	7.598E-07	6.561E-07
AREA6	6	99,198	25	4.62	0.00	0.00	0.08		0.49		0.28		0.00	0.03	0.40	0.043	0.10	3.586E-07	2.911E-07	1.627E-06
AREA7	Barge 1	6,000	1.48		0.00							0.00		0.01	0.0790			4.601E-07	8.421E-08	
AREA7	Barge 2	6,000	1.48		0.00									0.01					8.421E-08	
AREA7	Barge 3	6,000	1.48		0.00									0.01					8.421E-08	
AREA7	Barge 4	6,000	1.48		0.00									0.01					8.421E-08	
Paved Road				0.80																2.784E-02
TOTAL ALL AREAS (TPY)			244	23.89	0.00	0.01	0.48	0.00	0.49	6.62	2.76	0.00	3.94	0.20	0.59	0.35	0.62			
																Total =	40.0			

Table A-12 PM_{10} Annual Emissions for Year 2014

Modeled Area ID	Map Area Nos.	Modeled Area (m^2)	Assigned Acreage	Emissions Distribution (TPY)														TOTAL ($g/m^2/s$)	TOTAL ($g/m^2/s$)	Commuter/Commercial Traffic ($g/m^2/s$)
				VEHICLE TRAVEL EMISSIONS						GRADING/EXCAVATION				Diesel & Gasoline Emissions						
				Commuter and Commercial Traffic	Barge to Concrete Plant	Unpaved road construction	Concrete Plant to Applic. Site	Excavated Dirt to Map Area 5	Batch Plant Operations	Earth Moving / Excavation	Grading and Compaction	Sand and Aggregate at Barge	Wind Erosion	Dewatering & Earthwork	Batch Plant	Concrete	Others (incl. gasoline)			
Hours of Operations (hour ending)				1-24	7-18	7-18	1-24	7-18	1-24	7-18	7-18	7-18	1-24	7-18	1-24	1-24	7-18	1-24	7-18	1-24
U3AREA	Unit 3 Area	126,360	31			0.00	0.02	0.00		0.24	0.12		0.95	0.01		0.050	0.09	2.809E-07	2.548E-07	
AREA2	1,2,8,9	178,435	44	1.53		0.00	0.02	0.00		0.34	0.17		1.34	0.01		0.048	0.09	2.750E-07	2.378E-07	2.990E-07
AREA3	TCWS,10,	95,106	23	1.53		0.00	0.02	0.00		0.18	0.09		0.71	0.01		0.045	0.09	2.855E-07	2.738E-07	5.610E-07
AREA4	3,4,7,12	235,625	58	1.53	0.00	0.00	0.02	0.00		0.44	0.22		1.77	0.01	0.0098	0.045	0.09	2.728E-07	2.279E-07	2.264E-07
AREA5	5,13	245,982	61	1.53	0.00	0.00	0.02	0.00		0.46	0.23		1.84	0.01	0.0098	0.042	0.09	2.720E-07	2.266E-07	2.169E-07
AREA6	6	99,198	25	1.53	0.00	0.00	0.02		0.12		0.09		0.00	0.01	0.08	0.042	0.09	9.258E-08	1.394E-07	5.378E-07
AREA7	Barge 1	6,000	1.48		0.00							0.00		0.00	0.0147			8.565E-08	4.315E-08	
AREA7	Barge 2	6,000	1.48		0.00									0.00					4.315E-08	
AREA7	Barge 3	6,000	1.48		0.00									0.00					4.315E-08	
AREA7	Barge 4	6,000	1.48		0.00									0.00					4.315E-08	
Paved Road				0.27																9.475E-03
TOTAL ALL AREAS (TPY)			244	7.90	0.00	0.00	0.12	0.00	0.12	1.66	0.92	0.00	6.60	0.10	0.11	0.27	0.54			
																Total =	18.4			

Table A-13 PM_{10} Annual Emissions for Year 2015

Modeled Area ID	Map Area Nos.	Modeled Area (m^2)	Assigned Acreage	Emissions Distribution (TPY)														TOTAL ($g/m^2/s$)	TOTAL ($g/m^2/s$)	Commuter/ Commercial Traffic ($g/m^2/s$)
				VEHICLE TRAVEL EMISSIONS						GRADING/EXCAVATION				Diesel & Gasoline Emissions						
				Commuter and Commercial Traffic	Barge to Concrete Plant	Unpaved road construction	Concrete Plant to Applic. Site	Excavated Dirt to Map Area 5	Batch Plant Operations	Earth Moving / Excavation	Grading and Compaction	Sand and Aggregate at Barge	Wind Erosion	Dewatering & Earthwork	Batch Plant	Concrete	Others (incl. gasoline)			
Hours of Operations (hour ending)				1-24	7-18	7-18	1-24	7-18	1-24	7-18	7-18	7-18	1-24	7-18	1-24	1-24	7-18	1-24	7-18	1-24
U3AREA	Unit 3 Area	126,360	31			0.00	0.00	0.00		0.05	0.00		0.95	0.00		0.017	0.04	2.666E-07	5.210E-08	
AREA2	1,2,8,9	178,435	44	0.11		0.00	0.00	0.00		0.07	0.00		1.34	0.00		0.017	0.04	2.651E-07	4.541E-08	2.199E-08
AREA3	CTCWS,10,11	95,106	23	0.11		0.00	0.00	0.00		0.04	0.00		0.71	0.00		0.016	0.04	2.675E-07	5.963E-08	4.126E-08
AREA4	3,4,7,12	235,625	58	0.11	0.00	0.00	0.00	0.00		0.10	0.00		1.77	0.00	0.0046	0.016	0.04	2.648E-07	4.146E-08	1.665E-08
AREA5	5,13	245,982	61	0.11	0.00	0.00	0.00	0.00		0.10	0.00		1.84	0.00	0.0046	0.015	0.04	2.645E-07	4.095E-08	1.595E-08
AREA6	6	99,198	25	0.11	0.00	0.00	0.00		0.00		0.00		0.00	0.00	0.04	0.015	0.04	1.820E-08	2.921E-08	3.956E-08
AREA7	Barge 1	6,000	1		0.00							0.00		0.00	0.0070			4.057E-08	9.872E-09	
AREA7	Barge 2	6,000	1.48		0.00									0.00					9.872E-09	
AREA7	Barge 3	6,000	1.48		0.00									0.00					9.872E-09	
AREA7	Barge 4	6,000	1.48		0.00									0.00					9.872E-09	
Paved Road				0.02																7.569E-04
TOTAL ALL AREAS (TPY)			244	0.58	0.00	0.00	0.00	0.00	0.00	0.37	0.00	0.00	6.60	0.02	0.05	0.09	0.23			
																Total =	8.0			

Table A-14 PM_{10} Annual Emissions for Year 2016

Modeled Area ID	Map Area Nos.	Modeled Area (m^2)	Assigned Acreage	Emissions Distribution (TPY)														TOTAL ($g/m^2/s$)	TOTAL ($g/m^2/s$)	Commuter/Commercial Traffic ($g/m^2/s$)
				VEHICLE TRAVEL EMISSIONS						GRADING/EXCAVATION				Diesel & Gasoline Emissions						
				Commuter and Commercial Traffic	Barge to Concrete Plant	Unpaved road construction	Concrete Plant to Applic. Site	Excavated Dirt to Map Area 5	Batch Plant Operations	Earth Moving / Excavation	Grading and Compaction	Sand and Aggregate at Barge	Wind Erosion	Dewatering & Earthwork	Batch Plant	Concrete	Others (incl. gasoline)			
Hours of Operations (hour ending)				1-24	7-18	7-18	1-24	7-18	1-24	7-18	7-18	7-18	1-24	7-18	1-24	1-24	7-18	1-24	7-18	1-24
U3AREA	Unit 3 Area	126,360	31			0.00	0.00	0.00		0.03	0.00		0.95	0.00		0.007	0.02	2.639E-07	2.513E-08	
AREA2	1,2,8,9	178,435	44	0.11		0.00	0.00	0.00		0.04	0.00		1.34	0.00		0.007	0.02	2.632E-07	2.206E-08	2.199E-08
AREA3	TCWS,10,	95,106	23	0.11		0.00	0.00	0.00		0.02	0.00		0.71	0.00		0.007	0.02	2.642E-07	2.860E-08	4.126E-08
AREA4	3,4,7,12	235,625	58	0.11	0.00	0.00	0.00	0.00		0.05	0.00		1.77	0.00	0.0023	0.007	0.02	2.631E-07	2.024E-08	1.665E-08
AREA5	5,13	245,982	61	0.11	0.00	0.00	0.00	0.00		0.05	0.00		1.84	0.00	0.0023	0.006	0.02	2.630E-07	2.000E-08	1.595E-08
AREA6	6	99,198	25	0.11	0.00	0.00	0.00		0.00		0.00			0.00	0.02	0.006	0.02	8.699E-09	1.344E-08	3.956E-08
AREA7	Barge 1	6,000	1		0.00							0.00		0.00	0.0034			1.972E-08	2.771E-09	
AREA7	Barge 2	6,000	1.48		0.00									0.00					2.771E-09	
AREA7	Barge 3	6,000	1.48		0.00									0.00					2.771E-09	
AREA7	Barge 4	6,000	1.48		0.00									0.00					2.771E-09	
Paved Road				0.00																0.000E+00
TOTAL ALL AREAS (TPY)			244	0.56	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.00	6.60	0.01	0.03	0.04	0.11			
																Total =	7.5			

Table A-15 CO and SO_2 Short-Term Emissions for Year 2011

Modeled Area ID	Map Area Nos.	Modeled Area (m^2)	Assigned Acreage	MODELED CO EMISSIONS						MODELED SO2 EMISSIONS					
				Diesel & Gasoline Emissions						Diesel & Gasoline Emissions					
				Dewatering & Earthwork	Batch Plant	Concrete	Others (incl. gasoline)	TOTAL ($g/m^2/s$)	TOTAL ($g/m^2/s$)	Dewatering & Earthwork	Batch Plant	Concrete	Others (incl. gasoline)	TOTAL ($g/m^2/s$)	TOTAL ($g/m^2/s$)
Hours of Operations (hour ending)				7-18	1-24	1-24	7-18	1-24	7-18	7-18	1-24	1-24	7-18	1-24	7-18
U3AREA	Unit 3 Area	126,360	31	0.82		1.172	4.96	4.731E-07	4.675E-06	0.10		0.180	0.16	7.263E-08	2.129E-07
AREA2	1,2,8,9	178,435	44	0.82		1.084	4.96	3.098E-07	3.310E-06	0.10		0.162	0.16	4.620E-08	1.507E-07
AREA3	CTCWS,10,11	95,106	23	0.82		0.951	4.96	5.103E-07	6.211E-06	0.10		0.134	0.16	7.195E-08	2.828E-07
AREA4	3,4,7,12	235,625	58	0.82	0.5521	0.951	4.96	3.255E-07	2.507E-06	0.10	0.0666	0.134	0.16	4.347E-08	1.142E-07
AREA5	5,13	245,982	61	0.82	0.5521	0.819	4.96	2.844E-07	2.401E-06	0.10	0.0666	0.107	0.16	3.594E-08	1.093E-07
AREA6	6	99,198	25	0.82	1.3830	0.819	4.96	1.132E-06	5.955E-06	0.10	0.1653	0.107	0.16	1.399E-07	2.712E-07
AREA7	Barge 1	6,000	1	0.21	0.8281			7.041E-06	3.503E-06	0.03	0.0999			8.498E-07	4.442E-07
AREA7	Barge 2	6,000	1.48	0.21					3.503E-06	0.03					4.442E-07
AREA7	Barge 3	6,000	1.48	0.21					3.503E-06	0.03					4.442E-07
AREA7	Barge 4	6,000	1.48	0.21					3.503E-06	0.03					4.442E-07
				5.77	3.32	5.80	29.79			0.73	0.40	0.82	0.95		
						Total =	44.7					Total =	2.9		

Table A-16 NOx and SO_2 Annual Emissions for Year 2011

Modeled Area ID	Map Area Nos.	Modeled Area (m^2)	Assigned Acreage	MODELED NOx EMISSIONS						MODELED SO2 EMISSIONS					
				Diesel & Gasoline Emissions						Diesel & Gasoline Emissions					
				Dewatering & Earthwork	Batch Plant	Concrete	Others (incl. gasoline)	TOTAL ($g/m^2/s$)	TOTAL ($g/m^2/s$)	Dewatering & Earthwork	Batch Plant	Concrete	Others (incl. gasoline)	TOTAL ($g/m^2/s$)	TOTAL ($g/m^2/s$)
Hours of Operations (hour ending)				7-18	1-24	1-24	7-18	1-24	7-18	7-18	1-24	1-24	7-18	1-24	7-18
U3AREA	Unit 3 Area	126,360	31	6.65		2.721	2.79	7.524E-07	5.223E-06	0.27		0.113	0.11	3.129E-08	2.085E-07
AREA2	1,2,8,9	178,435	44	6.65		2.381	2.79	4.662E-07	3.699E-06	0.27		0.099	0.11	1.947E-08	1.477E-07
AREA3	CTCWS,10,11	95,106	23	6.65		1.871	2.79	6.874E-07	6.940E-06	0.27		0.079	0.11	2.896E-08	2.770E-07
AREA4	3,4,7,12	235,625	58	6.65	1.2905	1.871	2.79	4.688E-07	2.801E-06	0.27	0.0513	0.079	0.11	1.929E-08	1.118E-07
AREA5	5,13	245,982	61	6.65	1.2905	1.361	2.79	3.767E-07	2.683E-06	0.27	0.0513	0.058	0.11	1.555E-08	1.071E-07
AREA6	6	99,198	25	6.65	3.0876	1.361	2.79	1.567E-06	6.653E-06	0.27	0.1259	0.058	0.11	6.485E-08	2.656E-07
AREA7	Barge 1	6,000	1	1.66	1.9357			1.127E-05	1.936E-05	0.07	0.0769			4.477E-07	7.846E-07
AREA7	Barge 2	6,000	1.48	1.66					1.936E-05	0.07					7.846E-07
AREA7	Barge 3	6,000	1.48	1.66					1.936E-05	0.07					7.846E-07
AREA7	Barge 4	6,000	1.48	1.66					1.936E-05	0.07					7.846E-07
				46.54	7.60	11.57	16.77			1.89	0.31	0.49	0.65		
						Total =	82.5					Total =	3.3		

Appendix B

Construction Emissions Calculations

Table B-1 Unpaved Road Emissions Calculation

UNPAVED ROADS

Item No.	Construction Activity	Operation Type	Mean vehicle weight (tons)	Units	2010	2011	2012	2013	2014	2015	TOTAL
11	Building Excavation	Haul to Stockpile	20.4	VMT	546,000	-	-	-	-	-	546,000
15	Structural Backfill	Haul to Power Block	20.4	VMT	-	447,000	-	-	-	-	447,000
23	Unpaved Construction	Motor Grading	29	VMT	2,500	3,800	2,500	1,300	-	-	10,100
26	Concrete Operations	Mat. Trans. Barge to	51.2	VMT	35,200	70,380	35,200	-	-	-	140,780
29	Concrete Operations	Ready Mix Transport	28.0	VMT	13,300	41,200	54,000	52,800	13,200	-	174,500
31	Vehicle Traffic	Commuters	2	VMT	205,000	838,000	1,670,000	2,536,000	863,000	69,000	6,181,000
33	Vehicle Traffic	Commercial	2	VMT	19,400	21,700	14,500	2,730	350	-	58,680

			EF lb/VMT	PM_{10}	1.22	1.01	0.56	0.52	0.51	0.46
11	Building Excavation	Haul to Stockpile		tpy PM_{10}	11.62	-	-	-	-	-
15	Structural Backfill	Haul to Power Block		tpy PM_{10}	0.00	7.89	-	-	-	-
23	Unpaved Construction	Motor Grading		tpy PM_{10}	0.05	0.07	0.02	0.01	-	-
26	Concrete Operations	Mat. Trans. Barge to Batch Plant		tpy PM_{10}	0.75	1.24	0.35	-	-	-
29	Concrete Operations	Ready Mix Transport (CP tp app site)		tpy PM_{10}	0.28	0.73	0.53	0.48	0.12	-
31	Vehicle Traffic	Commuters		tpy PM_{10}	4.36	14.79	16.51	23.07	7.63	0.56
33	Vehicle Traffic	Commercial		tpy PM_{10}	0.41	0.38	0.14	0.02	0.00	-
				Total	**17.48**	**25.10**	**17.56**	**23.58**	**7.75**	**0.56**

E (lb/VMT) = k * (s/12)^a * (W/3)^b

k (PM_{10})	1.5	Particle size multiplier, lb/VMT
s	4.0	Surface Material silt content, g/m^2, Sand and Gravel Processing from AP-42 Table 13.2.2-1;used lower end.
a	0.9	exponent
b	0.45	exponent

		2010	2011	2012	2013	2014	2015
W	Mean vehicle weight, tons	16.9	11.2	3.1	2.6	2.4	2.0

Watering efficiency	95%
Gravelling efficiency	30%

Table B-2 Paved Road Emissions Calculation

PAVED ROADS

Item No.	Construction Activity	Operation Type	Units	2010	2011	2012	2013	2014	2015	TOTAL
3	Vehicle Traffic	Commuters	VMT	44,000	178,500	355,400	539,900	183,900	14,700	**1,316,400**
33	Vehicle Traffic	Commercial	VMT	5,460	6,100	4,080	760	100	0	**16,500**

E (lb/VMT) = k * (sL/2)^0.65 * (W/3)^1.5 - C * (1 - (P / (4 N))								
k (PM_{10})	0.016	Particle size multiplier, lb/VMT						
k ($PM_{2.5}$)	0.0024	Particle size multiplier, lb/VMT						
sL	3	Road surface silt content, g/m^2, Air Pollution Engineering Manual, 2nd Ed. AWMA.						
W	2	Mean vehicle weight, tons						
C (PM_{10})	0.00047	Exhaust, break wear, & tire wear correction, lb/VMT						
C ($PM_{2.5}$)	0.00036	Exhaust, break wear, & tire wear correction, lb/VMT						
P	140	Number of days of 0.01 inch of precipitation or greater (Figure 13.2.1-2)						
N	365	Number of days in averaging period						
watering/flushing efficiency	70.00%							
1- (P/(4N))		**0.90411**	**0.90411**	**0.90411**	**0.90411**	**0.90411**	**0.90411**	

Uncontrolled	EF	2010	2011	2012	2013	2014	2015
	lb/VMT	ton/yr	ton/yr	ton/yr	ton/yr	ton/yr	ton/yr
PM_{10}	0.011	0.27	1.00	1.95	2.94	1.00	0.08
$PM_{2.5}$	0.0013	0.03	0.12	0.24	0.36	0.12	0.01

Controlled (1)	EF	2010	2011	2012	2013	2014	2015
	lb/VMT	ton/yr	ton/yr	ton/yr	ton/yr	ton/yr	ton/yr
PM_{10}	0.01	0.07	0.27	0.53	0.80	0.27	0.02
$PM_{2.5}$	0.0012	0.01	0.03	0.07	0.10	0.03	0.00

Note: (1) Only the annual emissions have the control efficiency of precipitation built in them

Table B-3 Material Transfer Emissions Calculation

BATCH DROP OPERATIONS

Item No.	Construction Activity	Operation Type	Material	Units	2010	2011	2012	2013	2014	2105	TOTAL
4	Scrapers unloading topsoil	Batch Drop	Earth	Tons	310,000	0	0	0	0	0	310,000
7	Scrapers unloading overburden as fill	Batch Drop	Earth	Tons	2,158,000	2,158,000	644,000	0	0	0	4,960,000
10	Load Excavated Mat'l into Trucks	Batch Drop	Earth	Tons	3,410,000	0	0	0	0	0	3,410,000
12	Truck-Dump	Batch Drop	Earth	Tons	3,410,000	0	0	0	0	0	3,410,000
14	Load Stockpile into Off-Road Truck	Batch Drop	Earth	Tons	0	2,790,000	0	0	0	0	2,790,000
16	Truck-Dump	Batch Drop	Earth	Tons	0	2,790,000	0	0	0	0	2,790,000
25	Material Transfer from Barge	Batch Drop	Aggregates	Tons	198,800	397,600	198,800	0	0	0	795,200
		Batch Drop	Sand	Tons	152,218	304,436	152,218	0	0	0	608,872

AP-42 Section 13.2.4-3 Aggregate Handling and Storage Piles

E (lb/ton) = 0.0032 * k * (U/5)^1.3 / (M/2)^1.4

k (PM_{10}) =	0.35	
k ($PM_{2.5}$) =	0.053	
U =	6.2	miles per hour, Based on average of hourly values over multiyear period from CCNPP on-site monitor.
M (earth) =	3.4	%, Average moisture content Based on AP-42 Table 13.2.4-1 mean moisture content for exposed ground
M (aggregates) =	1.77	%, moisture content based on AP-42 Table 11.2.-2 footnote b
M (sand) =	4.17	%, moisture content based on AP-42 Table 11.2.-2 footnote b

		EF	2010	2011	2012	2013	2014	2015
		lb/ton	ton/yr	ton/yr	ton/yr	ton/yr	ton/yr	ton/yr
earth grading	PM_{10}	**7.05E-04**	0.87	0.76	0.23	-	-	-
earth moving	PM_{10}	**7.05E-04**	2.40	1.97	-	-	-	-
aggregates	PM_{10}	**1.76E-03**	0.17	0.35	0.17	-	-	-
sand	PM_{10}	**5.30E-04**	0.04	0.08	0.04	-	-	-
TOTAL	PM10		**3.49**	**3.16**	**0.44**	**-**	**-**	**-**

Table B-4 Site Preparation Emissions Calculation

BULLDOZING GRADING COMPACTION

Bulldozing	Item No.	Construction Activity	Operation Type	Units	2010	2011	2012	2013	2014	2015	2016	TOTAL
	1	Vegetation Removal	Bulldozing (w/Item 8)	Hours								
	8	Bulldozing	Includes Items 1, 13, and 17	Hours/year	8,200	9,000	5,700	3,600	900	200	100	**27,600**
	13	Spread material	Bulldozing (w/Item 8)	Hours								
	17	Spread material	Bulldozing (w/Item 8)	Hours								
		EMISSIONS (PM10)	**Units of Lb/year**		30,168	33,111	20,970	13,244	3,311	736	368	**101,541**

Grading	Item No.	Construction Activity	Operation Type	Units	2010	2011	2012	2013	2014	2015	2016	TOTAL
	2	Scrapers removing topsoil		Tons	310,000	0	0	0	0	0		310,000
	5	Scrapers removing overburden		Tons	2,158,000	2,158,000	644,000	0	0	0		4,960,000
	23	Motor Grading		VMT	2,500	3,800	2,500	1,300	0	0		10,100
		Predicted hours of operation for Items 2, 5, 23		Hours/year	14,000	14,500	4,900	500	0	0	0	33,900
		EMISSIONS (PM10)	**Units of Lb/year**		51,506	53,346	18,027	1,840	0	0	0	124,719

Compaction	Item No.	Construction Activity	Operation Type	Units	2010	2011	2012	2013	2014	2015	2016	TOTAL
	9	Compaction	Includes Items 18, 24	Hours/year	5,200	5,200	2,600	1,000	500	0	0	**14,500**
	18	Compaction	Included with Item 9	Hours								
	24	Compaction	Included with Item 9	Hours								
		EMISSIONS (PM10)	**Units of Lb/year**		19130.941	19130.941	9565.4706	3679.0272	1839.5136	0		53345.89383

		Units	2010	2011	2012	2013	2014	2015	2016
Bulldozing	EMISSIONS (PM10)	**TPY**	15.08	16.56	10.49	6.62	1.66	0.37	0.18
Grading	EMISSIONS (PM10)	**TPY**	25.75	26.67	9.01	0.92	0.00	0.00	0.00
Compaction	EMISSIONS (PM10)	**TPY**	9.57	9.57	4.78	1.84	0.92	0.00	0.00
		Total	**50.40**	**52.79**	**24.28**	**9.38**	**2.58**	**0.37**	**0.18**

Mojave Desert Air Quality Management District Emissions Inventory Guidance Method D Bulldozing., Scraping, and Grading

E_f (lb/hr) = 2.76 * k * (s^1.5 / M^1.4)

k (PM_{10}) =	0.36	
s =	7.5	%, Average silt content Based on AP-42 Table 13.2.4-1 mean silt content for overburden
M =	3.4	%, Average moisture content Based on AP-42 Table 13.2.4-1 mean moisture content for exposed ground
Ef (PM10)	**3.679**	**lb/hr**

Table B-5 Wind Erosion Emissions Calculation – Open Areas

Activity Data and Yearly Emissions from Wind Erosion						
Wind Erosion	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
	acres	acres	acres	acres	acres	acres
Total Disturbed Acreage[1]	**218**	**218**	**218**	**130**	**70**	**70**

Uncontr. Emis. Factor (lb/ac/dy)	PM-10 Emis Uncontr. (lb/day)					
	2010	**2011**	**2012**	**2013**	**2014**	**2015**
1.66	361.9	361.9	361.9	215.8	116.2	116.2

Moisture Control Eff. (%)	**PM-10 Emis Controlled. (TPY)**					
	2010	**2011**	**2012**	**2013**	**2014**	**2015**
90%	6.6	6.6	6.6	3.9	2.1	2.1

[1] Uncontrolled emission factor for windblown dust from the Clark County Department of Air Qualilty and Environmental Management (DAQEM). Sufficient water will be added to maintain a 3% moisture content at the surface. DAQEM data indicate that 3% moisture produces over 90% reduction in uncontrolled emissions. Lack of data on PM-2.5 emissions led to the conservative assumption that PM-2.5 emissions are the same as PM-10 emissions.

* Table 5.5-1 from the CPCN application. This table provides a summary of the construction activity data provided by Bechtel, the design firm for CCNPP Unit 3

Table B-6 Wind Erosion Emissions Calculation – Storage Piles

To Calculate the area of the SAND storage piles

			2010	2011	2012	2013	2014	2015
Aggregate deliveries by Barge	Tons		198,800	397,600	198,800	0	0	0
Lbs of Sand required			304,435,817.69	608,871,635.39	304,435,817.69	0	0	0
Density of Sand (lbs/cu.yd)			2,633	2,633	2,633	2,633	2,633	2,633
Volume of Sand Required (cu.yd)			**115,623.17**	**231,246.35**	**115,623.17**	**0**	**0**	**0**
Using a 1:3 ratio for h:base --- Height			36.61	46.13	36.61	0	0	0
Base			109.83	138.38	109.83	0	0	0
Slope (s)			66.00	83.16	66.00	0	0	0
Curved surface area (exposed) (square yards)			**11,386.89**	**18,075.57**	**11,386.89**	**0**	**0**	**0**

			PM10					
Units			2010	2011	2012	2013	2014	2015
TONS	E	=	**0.12**	**0.20**	**0.12**	**0**	**0**	**0**
tons/acre	E_f	=	0.053	0.053	0.053	0.053	0.053	0.053
Watering Control efficiency	e	=	90%	90%	90%	90%	90%	90%
	J	=	0.5	0.5	0.5	0.5	0.5	0.5
%	sL	=	6	6	6	6	6	6
days	P	=	140	140	140	140	140	140
%	I	=	13.3	13.3	13.3	13.3	13.3	13.3
acres	A	=	2.35	3.72	2.35	0	0	0

To Calculate the area of the AGGREGATE storage piles

			2010	2011	2012	2013	2014	2015
Aggregate deliveries by Barge	Tons		198,800	397,600	198,800	0	0	0
Lbs of Aggregate required (Lbs)			519,274,509.80	1,038,549,019.61	519,274,509.80	0	0	0
Density of Aggregate (lbs/cu.yd)			2,498	2,498	2,498	2,498	2,498	2,498
Volume of Sand Required (cu.yd)			**207,876.10**	**415,752.21**	**207,876.10**	**0**	**0**	**0**
Using a 1:3 ratio for h:base --- Height (yards)			44.52	56.09	44.52	0	0	0
Base (yards)			133.55	168.27	133.55	0	0	0
Slope (s) (yards)			80.26	101.12	80.26	0	0	0
Curved surface area (exposed) (square yards)			**16,836.24**	**26,725.86**	**16,836.24**	**0**	**0**	**0**

			PM10					
Units			2010	2011	2012	2013	2014	2015
TONS	E	=	**0.18**	**0.29**	**0.18**	**0**	**0**	**0**
tons/acre	E_f	=	0.053	0.053	0.053	0.053	0.053	0.053
Watering Control efficiency	e	=	90%	90%	90%	90%	90%	90%
	J	=	0.5	0.5	0.5	0.5	0.5	0.5
%	sL	=	6	6	6	6	6	6
days	P	=	140	140	140	140	140	140
%	I	=	13.3	13.3	13.3	13.3	13.3	13.3
acres	A	=	3.47	5.51	3.47	0	0	0

Mojave Desert Air Quality Management District Emissions Inventory Guidance Method G Wind Erosion from Stockpiles

$$E = E_f * A$$

$$E_f = J * 1.7 * (sL/1.5) * (365-P)/235 * (I / 15) * (365/2000)$$

E_f = Emission factor (tons/acre)
J = particulate aerodynamic factor
sL = silt loading
P = Average number of days in a year with at least 0.01 inches of precipitation
I = Percentage of time with unobstructed wind speed > 12 mph in %
A = Exposed surface area of stockpiles in acres

Table B-7 Concrete Batch Plant Emissions Calculation

Activity Data and Maximum Emissions from Concrete Batch Plants

Plant Data			
Maximum Concrete Production			
Plants	number	1	based on total concrete production for 1 plant from original calculations
Maximum Production Rate per Concrete Batch Plant	cu. yds/hr	200	
Annual Avg. Production Rate	cubic yds/year	125,000	
Annual Max. Production Rate	cubic yds/year	206,061	
Cement and cement amendments pneumatic transfer from truck to silos vent thru 99% efficient baghouse			

	2010	2011	2012	2013	2014	2015
Total Concrete Schedule (CY)	42250	131,000	171,750	168,000	42,000	0

Emissions

Based on Plant Wide PM-10 Emission Factors for Concrete Plants from AP-42 Table 11.12-3 and the controlled truck loading PM-10 factor in Table 11.12-2; PM-2.5=PM-10 for controlled silo cement unloading, PM-2.5/PM-10 ratio from Table 11.12-3 for truck loading, and PM-2.5/PM-10 ratio from Section 13.2.4 for other categories. A control efficiency of 90% was applied for watering to those material transfer activities without control.

			HOURLY	HOURLY	PM-10 (tons/year)					
Activity	PM-10 lbs/cu. yd	PM-2.5 lbs/cu. yd	PM-10 lbs/hr	PM-2.5 lbs/hr	2010	2011	2012	2013	2014	2015
Aggregate delivery to ground	0.00031	0.00005	0.06	0.01	0.007	0.020	0.027	0.026	0.007	0.000
Sand delivery to ground	0.00007	0.00001	0.01	0.002	0.001	0.005	0.006	0.006	0.001	0.000
Aggregate transfer to conveyor	0.00031	0.00005	0.06	0.01	0.007	0.020	0.027	0.026	0.007	0.000
Sand transfer to conveyor	0.00007	0.00001	0.01	0.002	0.001	0.005	0.006	0.006	0.001	0.000
Sand transfer to elevated storage	0.00007	0.00001	0.01	0.002	0.001	0.005	0.006	0.006	0.001	0.000
Cement delivery to silo (controlled)	0.0001	0.0001	0.02	0.02	0.002	0.007	0.009	0.008	0.002	0.000
Cement supplement to silo (controlled)	0.0002	0.0002	0.04	0.04	0.004	0.013	0.017	0.017	0.004	0.000
Weigh Hopper loading (controlled)*	0.0002	0.00003	0.05	0.01	0.005	0.015	0.020	0.019	0.005	0.000
Truck loading (controlled)*	0.0045	0.0008	0.90	0.16	0.095	0.296	0.387	0.379	0.095	0.000
Totals			**1.17**	**0.25**	**0.12**	**0.38**	**0.50**	**0.49**	**0.12**	**0.00**

**Based on applying controls to achieve the 94+% reduction in PM-10 emissions reflected in the AP-42 controlled emission factor in Table 11.12-2 for truck loading.*

Table B-8a Combustion Equipment Emissions Calculation

Activity Data and Emissions for Construction Equipment Fuel Combustion

EQUIPMENT CATEGORY	DESCRIPTION	FUEL TYPE	QTY	MOTOR SIZE (HP)	median life (note 8) hours	COMBINED YEARLY TOTAL HOURS OF USE 1	2	3	4	5	6	7	TIER [Note 1]	BSFC (lb/hp-hr)	EMISSION FACTORS-ss HC g/hp-hr	CO (g/hp-hr)	NOx g/hp-hr	[Note 2] PM (g/hp-hr)	TAF Assign (H/Lo)	LF Note 7	BSFC TAF Note 6
DEWATERING & EARTHWORK																					
	Dewatering Deep Well or Wellpoint Pumps (24-Hr/Da	Diesel	4	180	4667	35000	17500	0	0	0	0	0	2	0.367	0.3085	0.7475	4.000	0.1316	None	0.43	1.00
	Scraper, Self-Propelled, 24cy Struck	Diesel	10	450	7000	13000	13000	3900	0	0	0	0	2	0.367	0.1669	0.8425	4.3351	0.1316	Hi	0.59	1.01
	CAT D9 Dozer	Diesel	4	410	7000	5200	5200	2600	1500	0	0	0	2	0.367	0.1669	0.8425	4.3351	0.1316	Hi	0.59	1.01
	CAT D6 Dozer	Diesel	2	185	4667	2600	2600	1500	500	500	0	0	2	0.367	0.3085	0.7475	4.000	0.1316	Hi	0.59	1.01
	CAT 330 Crawler/Hydraulic Backhoe, 3-1/4cy Struck	Diesel	4	268	4667	2600	5200	2600	2000	1000	0	0	2	0.367	0.3085	0.7475	4.000	0.1316	Lo	0.21	1.18
	CAT 953 Crawler/Loader, 2-1/2cy	Diesel	4	133	4667	2600	5200	2600	2000	1000	0	0	2	0.367	0.3384	0.8667	4.1	0.18	Hi	0.59	1.01
	Case 521D Articulated 4X4 Wheel Loader, 2-1/4cy	Diesel	2	110	4667	2600	5200	2600	2000	1000	500	0	2	0.367	0.3384	0.8667	4.1	0.18	Lo	0.21	1.18
	Kenworth t-800 Dump Trucks, 13/15cy	Diesel	10	250	4667	6500	13000	6500	2000	1000	0	0	2	0.367	0.3085	0.7475	4.000	0.1316	Hi	0.59	1.01
	CAT 825 Vibratory Compactor	Diesel	4	354	7000	5200	5200	2600	1000	500	0	0	2	0.367	0.1669	0.8425	4.3351	0.1316	None	0.43	1.00
	Case 580 Tractor Loader/Backhoe, 1cy/18"	Diesel	2	75	4667	0	0	1000	1000	1000	1000	500	2	0.408	0.3672	2.3655	4.7	0.24	Lo	0.21	1.18
	Case Skid Loader, 1/2cy	Diesel	2	50	4667	0	0	1000	1000	1000	1000	500	2	0.408	0.2789	1.5323	4.7279	0.3389	Lo	0.21	1.18
	JCB Mini Backhoe/Loader, 1/2cy/12"	Diesel	2	50	4667	0	0	1000	1000	1000	1000	0	2	0.408	0.2789	1.5323	4.7279	0.3389	Lo	0.21	1.18
	CAT 14H Motor Grader, 14' Blade	Diesel	1	220	4667	1000	1500	1000	0	0	0	0	2	0.367	0.3085	0.7475	4.000	0.1316	Hi	0.59	1.01
	Gradall	Diesel	1	220	4667	1000	1000	500	500	500	0	0	2	0.367	0.3085	0.7475	4.000	0.1316	Hi	0.59	1.01
	GMC Truck w/6000 gal. water tank	Diesel	1	300	7000	1000	1000	1000	1000	1000	0	0	2	0.367	0.3085	0.7475	4.000	0.1316	Hi	0.59	1.01
BATCH PLANT																					
	Central Mix Plant w/chiller & heater, ~ 130 cy/hr	Electric	2	0		400	1200	1600	1600	400	200	100	N/A	0.00	0.00	0.00	0.00	0.00	None	0.43	0.00
	CAT 988F Loader, 5cy Bucket @ Stockpiles	Diesel	1	266	4667	400	1200	1600	1600	400	200	100	2	0.367	0.3085	0.7475	4.000	0.1316	Lo	0.21	1.18
	CAT D6H Dozer @ Stockpiles	Diesel	1	165	4667	400	1200	1600	1600	400	200	100	2	0.367	0.3384	0.8667	4.1	0.18	Hi	0.59	1.01
	Crawler/Backhoe, 1cy @ Spoils	Diesel	1	115	4667	100	300	400	400	100	50	40	2	0.367	0.3384	0.8667	4.1	0.18	Lo	0.21	1.18
	GMC 12/14cy Dump Truck @ Spoils	Diesel	1	300	7000	100	300	400	400	100	50	40	2	0.367	0.3085	0.7475	4.000	0.1316	Hi	0.59	1.01
	IR 375cfm Air Compressor, Trailer Mounted	Diesel	1	113	4667	100	300	400	400	100	50	40	2	0.367	0.3384	0.8667	4.1	0.18	None	0.43	1.00
	Dump Trucks for Aggregate and Sand, 30 cy	Diesel	5	480	7000	1600	5000	6500	6500	1600	800	400	2	0.367	0.1669	0.8425	4.3351	0.1316	Hi	0.59	1.01
CONCRETE																					
	Concrete Transport Trucks, Agitator/Mixer, 10cy capa	Diesel	15	250	4667	4220	13100	24000	17200	18800	4200	2100	2	0.367	0.3085	0.7475	4.000	0.1316	Hi	0.59	1.01
	Crater Crane w/Grove RT990 Hydraulic Crane & 200ft Conveyor	Diesel	1	300	7000	200	600	800	800	0	0	0	2	0.367	0.3085	0.7475	4.000	0.1316	None	0.43	1.00
	Concrete Pump Truck @ 170 cy/hr	Diesel	4	250	4667	800	2400	3200	3200	800	400	200	2	0.367	0.3085	0.7475	4.000	0.1316	None	0.43	1.00
	Concrete Pump, Trailer Mounted @ 115/120 cy/hr	Diesel	4	180	4667	800	2400	3200	3200	800	0	0	2	0.367	0.3085	0.7475	4.000	0.1316	None	0.43	1.00
	IR 375cfm Air Compressor, Trailer Mounted	Diesel	2	113	4667	800	2400	3200	3200	800	400	200	2	0.367	0.3384	0.8667	4.1	0.18	None	0.43	1.00
	IR 750cfm Air Compressor, Trailer Mounted	Diesel	1	250	4667	400	1200	1600	1600	400	200	100	2	0.367	0.3085	0.7475	4.000	0.1316	None	0.43	1.00
LIFTING/RIGGING																					
	Manitowoc 4600 S-5 Crawler Crane w/S-4 Ringer Attachment, 75	Diesel	1	685	7000	0	1000	2000	2000	2000	1000	0	2	0.367	0.1669	1.3272	4.1	0.1316	None	0.43	1.00
	Manitowoc M-250 S-2 Crawler Crane w/300' Boom Attachment & Luffing Jib, 300-ton Capacity	Diesel	2	450	7000	0	1000	2000	2000	2000	500	0	2	0.367	0.1669	0.8425	4.3351	0.1316	None	0.43	1.00
	Manitowoc 4100 S-2 Crawler Crane 230-ton Capacity, w/Tower Attachmentm 31-ton Capacity	Diesel	2	333	7000	1000	2000	4000	4000	2000	1000	0	2	0.367	0.1669	0.8425	4.3351	0.1316	None	0.43	1.00
	Manitowoc 3900W Crawler Crane, w/180' Boom & 30' Jib, 140-ton Capacity	Diesel	2	287	4667	1000	2000	4000	4000	2000	1000	0	2	0.367	0.3085	0.7475	4	0.1316	None	0.43	1.00
	Linkbelt HC248 Lattice Boom Truck Crane w/ 200' Boom Attachment & Luffing Jib, 165-ton Capacity	Diesel	2	405	7000	1000	2000	4000	4000	4000	1000	500	2	0.367	0.1669	0.8425	4.3351	0.1316	None	0.43	1.00
	Kenworth T-800 Prime Mover for Heavy-Haul Trailers	Diesel	2	330	7000	0	200	400	400	200	0	0	2	0.367	0.1669	0.8425	4.3351	0.1316	Hi	0.59	1.01
	Grove RT-635 Rough Terrain Hyd. Crane, 35-ton Capacity	Diesel	2	152	4667	2000	4000	4000	4000	4000	200	1000	2	0.367	0.3384	0.8667	4.1	0.18	None	0.43	1.00
	Grove RT-865 Rough Terrain Hyd. Crane, 65-ton Capacity	Diesel	4	250	4667	2000	4000	4000	4000	4000	2000	1000	2	0.367	0.3085	0.7475	4	0.1316	None	0.43	1.00
	IR Teleboom Forklift 4x4, 4.5-ton	Diesel	2	65	4667	0	1000	2000	2000	2000	1000	500	2	0.367	0.3672	2.3655	4.7	0.24	Hi	0.59	1.01
	GMC 16-ft Flatbed Truck to haul rigging gear	Diesel	1	180	4667	400	500	600	600	500	400	200	2	0.367	0.3085	0.7475	4	0.1316	Hi	0.59	1.01
SHOP FABRICATION																					
	Grove RT-528 Rough Terrain Hyd. Crane, 28-ton	Diesel	2	125	4667	1000	2000	2000	2000	2000	1000	500	2	0.367	0.3384	0.8667	4.1	0.18	None	0.43	1.00
	Grove AP308 Carry Deck Hyd. Crane, 8-1/2-ton	Diesel	1	78	4667	500	750	1000	1000	1000	750	500	2	0.367	0.3672	2.3655	4.7	0.24	None	0.43	1.00
	IR Teleboom Forklift 4x4, 4.5-ton	Diesel	2	65	4667	500	750	1000	1000	1000	750	500	2	0.367	0.3672	2.3655	4.7	0.24	Hi	0.59	1.01
	GMC 18' Flatbed/Stakebed Trucks	Diesel	1	165	4667	500	1000	1500	1500	1000	750	500	2	0.367	0.3384	0.8667	4.1	0.18	Hi	0.59	1.01
	IR 375cfm Air Compressor, Trailer Mtd	Diesel	1	113	4667	500	750	1000	1000	1000	750	500	2	0.367	0.3384	0.8667	4.7	0.18	None	0.43	1.00
WAREHOUSE																					
	Linkbelt 228 Lattice Boom Truck Crane, 160-ft Boom, 30-ft Jib	Diesel	1	250	4667	500	750	750	750	750	500	250	2	0.367	0.3085	0.7475	4	0.1316	None	0.43	1.00
	Grove RT-528 Rough Terrain Hyd. Crane, 28-ton	Diesel	2	125	4667	1000	2000	2000	2000	2000	1000	500	2	0.367	0.3384	0.8667	4.1	0.18	None	0.43	1.00
	IR Teleboom Forklift 4x4, 4.5-ton	Diesel	2	65	4667	500	750	1000	1000	1000	750	500	2	0.367	0.3672	2.3655	4.7	0.24	Hi	0.59	1.01
	GMC Topkick Knuckle Boom Truck w/6-ton Capacity	Diesel	2	180	4667	0	500	750	750	750	500	500	2	0.367	0.3085	0.7475	4	0.1316	Hi	0.59	1.01
	Grove AP308 Carry Deck Hyd. Crane, 8-1/2-ton	Diesel	1	78	4667	500	750	750	750	750	500	500	2	0.367	0.3672	2.3655	4.7	0.24	None	0.43	1.00
	GMC 18' Flatbed/Stakebed Trucks	Diesel	4	165	4667	1000	2000	3000	3000	3000	1500	1000	2	0.367	0.3384	0.8667	4.1	0.18	Hi	0.59	1.01
EQUIPMENT MAINTENANCE																					
	GMC Fuel Truck w/Meters, 4000gal Diesel Fuel	Diesel	3	250	4667	1500	1500	1500	1500	1000	500	0	2	0.367	0.3085	0.7475	4	0.1316	Hi	0.59	1.01
	GMC Fuel & Lubrication Truck w/Pwr Wash; Cont/Waste Oil Tank; 2000 gal Diesel Fuel	Diesel	2	250	4667	1000	1000	1000	1000	1000	500	500	2	0.367	0.3085	0.7475	4	0.1316	Hi	0.59	1.01
	GMC 3500 HD Mechanics Truck, w/Tools, Welder, Air Comp;	Diesel	2	180	4667	1000	1000	1000	1000	1000	500	0	2	0.367	0.3085	0.7475	4	0.1316	Hi	0.59	1.01
	GMC Wrecker & Tire Service Truck	Diesel	1	300	7000	500	500	500	500	250	0	0	2	0.367	0.3085	0.7475	4	0.1316	Hi	0.59	1.01
	Utility, Gasoline-powered Pick-up Trucks & Automobiles	Gasoline	100	231	4667	26,400	52,800	105,600	105,600	105,600	52,800	26,400	4		0.0633	0.8749	0.0803	0.0022			

Table B-8b Combustion Equipment Emissions Calculation (cont.)

Activity Data and Emissions for Construction Equipr

EQUIPMENT CATEGORY	DESCRIPTION	FUEL TYPE	ANNUAL EMISSIONS (lbs) Year 1 HC	CO	NOx	PM	SO2	ANNUAL EMISSIONS (lbs) Year 2 HC	CO	NOx	PM	SO2	ANNUAL EMISSIONS (lbs) Year 3 HC	CO	NOx	PM	SO2
DEWATERING & EARTHWORK																	
	Dewatering Deep Well or Wellpoint Pumps (24-Hr/Da	Diesel	1,905	4,915	24,104	375	870	853	2,459	12,052	187	435	921	0	0	0	0
	Scraper, Self-Propelled, 24cy Struck	Diesel	1,379	10,799	31,619	710	1,249	1,379	10,799	31,619	710	1,249	1,348	3,040	9,429	258	375
	CAT D9 Dozer	Diesel	493	3,733	11,466	337	455	493	3,733	11,466	337	455	490	1,827	5,722	145	228
	CAT D8 Dozer	Diesel	205	739	2,384	71	103	205	739	2,384	71	103	204	421	1,374	37	59
	CAT 330 Crawler/Hydraulic Backhoe, 3-1/4cy Struck	Diesel	229	627	1,421	65	62	459	1,269	2,845	130	123	458	627	1,421	65	62
	CAT 953 Crawler/Loader, 2-1/2cy	Diesel	162	616	1,757	82	74	327	1,272	3,625	194	148	323	616	1,757	82	74
	Case 521D Articulated 4X4 Wheel Loader, 2-1/4cy	Diesel	103	299	588	36	26	207	604	1,197	61	51	208	298	588	36	26
	Kenworth t-800 Dump Trucks, 13/15cy	Diesel	704	2,818	8,091	319	347	1,416	5,323	16,208	395	693	1,408	2,818	8,091	319	347
	CAT 825 Vibratory Compactor	Diesel	284	1,518	7,587	136	284	284	1,518	7,587	136	284	283	747	3,786	60	142
	Case 580 Tractor Loader/Backhoe, 1cy/18"	Diesel	0	0	0	0	0	0	0	0	0	0	0	212	180	13	7
	Case Skid Loader, 1/2cy	Diesel	0	0	0	0	0	0	0	0	0	0	0	92	120	14	5
	JCB Mini Backhoe/Loader, 1/2cy/12"	Diesel	0	0	0	0	0	0	0	0	0	0	0	92	120	14	5
	CAT 14H Motor Grader, 14' Blade	Diesel	93	331	1,089	28	47	140	590	1,634	44	70	140	331	1,089	28	47
	Grade8	Diesel	93	331	1,089	28	47	93	165	544	13	23	93	165	544	13	23
	GMC Truck w/6000 gal. water tank	Diesel	127	450	1,484	37	64	127	450	1,484	37	64	127	450	1,484	37	64
BATCH PLANT																	
	Central Mix Plant w/chiller & heater, ~ 130 cy/hr	Electric	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CAT 966F Loader, 5cy Bucket @ Stockpiles	Diesel	35	95	217	9	9	105	285	651	27	28	105	381	868	36	38
	CAT D6H Dozer @ Stockpiles	Diesel	31	114	335	13	14	92	347	1,004	42	42	92	465	1,340	58	56
	Crawler/Backhoe, 1cy @ Spoils	Diesel	4	12	24	1	1	12	38	72	4	3	12	48	96	6	4
	GMC 12/14cy Dump Truck @ Spoils	Diesel	13	45	148	3	6	38	134	445	11	19	38	179	593	14	25
	IR 375cfm Air Compressor, Trailer Mounted	Diesel	4	9	44	1	2	11	28	132	4	5	11	37	176	5	7
	Dump Trucks for Aggregate and Sand, 30 cy	Diesel	176	1,305	4,119	98	164	555	4,195	12,906	375	513	557	5,521	16,795	527	668
CONCRETE																	
	Concrete Transport Trucks, Agitator/Mixer, 10cy capa	Diesel	453	1,654	5,240	177	225	1,427	5,364	16,333	598	699	1,427	8,827	29,923	728	1,280
	Crawler Crane w/Grove RT900 Hydraulic Crane & 200ft Conveyor	Diesel	18	43	228	3	9	53	128	683	10	28	53	171	910	14	37
	Concrete Pump Truck @ 170 cy/hr	Diesel	58	143	759	12	31	177	436	2,280	41	92	177	584	3,042	58	123
	Concrete Pump, Trailer Mounted @ 110/120 cy/hr	Diesel	42	103	546	9	22	127	313	1,641	30	67	128	420	2,189	42	89
	IR 375cfm Air Compressor, Trailer Mounted	Diesel	29	75	382	10	14	88	229	1,166	32	42	88	306	1,409	45	56
	IR 750cfm Air Compressor, Trailer Mounted	Diesel	29	71	379	6	15	88	213	1,139	17	46	88	283	1,517	22	62
LIFTING/ROGGING																	
	Manitowoc 4600 S-8 Crawler Crane w/S-4 Ringer Attachment, 75	Diesel	0	0	0	0	0	109	867	2,664	40	106	109	1,745	5,331	86	211
	Manitowoc M-250 S-2 Crawler Crane w/300' Boom Attachment & Luffing Jib, 300-ton Capacity	Diesel	0	0	0	0	0	71	362	1,850	26	69	71	728	3,703	56	139
	Manitowoc 4100 S-2 Crawler Crane 230-ton Capacity, w/Tower Attachmentm 31-ton Capacity	Diesel	53	268	1,369	20	51	106	539	2,740	42	103	106	1,090	5,486	93	205
	Manitowoc 3900W Crawler Crane, w/187 Boom & 30' Jib, 140-ton Capacity	Diesel	84	205	1,089	17	44	169	414	2,180	36	88	170	844	4,368	88	177
	Linkbelt HC248 Lattice Boom Truck Crane w/ 200' Boom Attachment & Luffing Jib, 185-ton Capacity	Diesel	64	325	1,665	24	62	129	655	3,332	51	129	129	1,326	6,672	113	250
	Kenworth T-800 Prime Mover for Heavy-Haul Trailers	Diesel	0	0	0	0	0	15	111	354	8	14	15	222	707	16	28
	Grove RT-635 Rough Terrain Hyd. Crane, 35-ton Capacity	Diesel	98	254	1,184	35	47	197	518	2,371	80	94	197	518	2,371	80	94
	Grove RT-865 Rough Terrain Hyd. Crane, 65-ton Capacity	Diesel	147	361	1,899	33	77	296	735	3,804	77	154	296	735	3,804	77	154
	IR Teleboom Forklift 4x4, 4.5-ton	Diesel	0	0	0	0	0	33	310	378	20	14	33	628	757	43	28
	GMC 16-ft Flatbed Truck to haul rigging gear	Diesel	30	108	356	9	15	38	135	445	11	19	38	162	534	13	23
SHOP FABRICATION																	
	Grove RT-528 Rough Terrain Hyd. Crane, 28-ton	Diesel	40	104	495	14	19	81	209	973	29	38	81	209	973	29	38
	Grove AP308 Carry Deck Hyd. Crane, 8-1/2-ton	Diesel	13	86	169	6	6	20	129	254	9	9	20	172	339	13	12
	IR Teleboom Forklift 4x4, 4.5-ton	Diesel	16	154	189	10	7	25	232	283	15	10	25	310	378	20	14
	GMC 18' Flatbed/Stakebed Trucks	Diesel	36	143	419	17	18	77	288	837	34	35	77	435	1,256	54	53
	IR 375cfm Air Compressor, Trailer Mtd	Diesel	16	47	252	6	9	27	70	378	9	13	27	94	504	12	17
WAREHOUSE																	
	Linkbelt 238 Lattice Boom Truck Crane, 185-ft Boom, 30-ft Jib	Diesel	37	89	474	7	19	55	134	711	11	29	55	134	711	11	29
	Grove RT-528 Rough Terrain Hyd. Crane, 28-ton	Diesel	40	104	495	14	19	81	209	973	29	38	81	209	973	29	38
	IR Teleboom Forklift 4x4, 4.5-ton	Diesel	16	154	189	10	7	25	232	283	15	10	25	310	378	20	14
	GMC Topkick Knuckle Boom Truck w/6-ton Capacity	Diesel	0	0	0	0	0	38	135	445	11	19	38	203	668	17	29
	Grove AP308 Carry Deck Hyd. Crane, 8-1/2-ton	Diesel	13	86	169	6	6	20	129	254	9	9	20	129	254	9	9
	GMC 18' Flatbed/Stakebed Trucks	Diesel	77	288	837	34	35	154	584	1,676	75	70	154	885	2,516	120	106
EQUIPMENT MAINTENANCE																	
	GMC Fuel Truck w/Meters, 4000gal Diesel Fuel	Diesel	159	569	1,857	50	80	159	569	1,857	50	80	159	569	1,857	50	80
	GMC Fuel & Lubrication Truck w/Pwr Wash, Cont/Waste Oil Tank, 2000 gal Diesel Fuel	Diesel	106	377	1,237	32	53	106	377	1,237	32	53	106	377	1,237	32	53
	GMC 3500 HD Mechanics Truck, w/Tools, Welder, Air Comp.	Diesel	76	271	891	23	38	76	271	891	23	38	76	271	891	23	38
	GMC Wrecker & Tire Service Truck	Diesel	63	224	742	18	32	63	224	742	18	32	63	224	742	18	32
	Utility, Gasoline-powered Pick-up Trucks & Automobiles	Gasoline	851	11,762	811	28	10	1,702	23,525	1,621	58	20	3,404	47,049	3,242	116	39
			8,719	65,622	121,847	2,974	4,695	12,734	72,861	164,962	4,158	6,647	14,360	69,335	145,237	3,909	5,815

EQUIPMENT CATEGORY	DESCRIPTION	FUEL TYPE	ANNUAL EMISSIONS (lbs) Year 4 HC	CO	NOx	PM	SO2	ANNUAL EMISSIONS (lbs) Year 5 HC	CO	NOx	PM	SO2	ANNUAL EMISSIONS (lbs) Year 6 HC	CO	NOx	PM	SO2	ANNUAL EMISSIONS (lbs) Year 7 HC	CO	NOx	PM	SO2
DEWATERING & EARTHWORK																						
	Dewatering Deep Well or Wellpoint Pumps (24-Hr/Da	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Scraper, Self-Propelled, 24cy Struck	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CAT D9 Dozer	Diesel	141	1,044	3,298	74	131	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CAT D8 Dozer	Diesel	59	139	457	11	20	59	139	457	11	20	0	0	0	0	0	0	0	0	0	0
	CAT 330 Crawler/Hydraulic Backhoe, 3-1/4cy Struck	Diesel	176	481	1,093	46	47	68	238	546	22	24	0	0	0	0	0	0	0	0	0	0
	CAT 953 Crawler/Loader, 2-1/2cy	Diesel	124	471	1,351	60	57	62	232	676	28	28	0	0	0	0	0	0	0	0	0	0
	Case 521D Articulated 4X4 Wheel Loader, 2-1/4cy	Diesel	79	229	460	28	19	40	114	230	14	10	20	57	115	7	5	0	0	0	0	0
	Kenworth t-800 Dump Trucks, 13/15cy	Diesel	212	753	2,427	70	157	106	377	1,237	32	53	0	0	0	0	0	0	0	0	0	0
	CAT 825 Vibratory Compactor	Diesel	56	284	1,456	21	55	28	142	728	10	27	0	0	0	0	0	0	0	0	0	0
	Case 580 Tractor Loader/Backhoe, 1cy/18"	Diesel	29	212	180	13	7	29	212	180	13	7	29	212	180	13	7	15	106	90	7	4
	Case Skid Loader, 1/2cy	Diesel	15	92	120	14	5	15	92	120	14	5	15	92	120	14	5	7	46	60	7	2
	JCB Mini Backhoe/Loader, 1/2cy/12"	Diesel	15	92	120	14	5	15	92	120	14	5	15	92	120	14	5	0	0	0	0	0
	CAT 14H Motor Grader, 14' Blade	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Grade8	Diesel	46	165	544	13	23	46	165	544	13	23	0	0	0	0	0	0	0	0	0	0
	GMC Truck w/6000 gal. water tank	Diesel	127	450	1,484	37	64	127	450	1,484	37	64	0	0	0	0	0	0	0	0	0	0
BATCH PLANT																						
	Central Mix Plant w/chiller & heater, ~ 130 cy/hr	Electric	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CAT 966F Loader, 5cy Bucket @ Stockpiles	Diesel	140	381	868	36	38	35	95	217	9	9	17	47	108	4	5	9	24	54	2	2
	CAT D6H Dozer @ Stockpiles	Diesel	123	465	1,340	58	56	31	114	335	13	14	15	57	167	6	7	8	28	84	3	4
	Crawler/Backhoe, 1cy @ Spoils	Diesel	17	48	96	6	4	4	12	24	1	1	2	6	12	1	1	2	6	10	1	0
	GMC 12/14cy Dump Truck @ Spoils	Diesel	51	179	593	14	25	13	45	148	3	5	6	22	74	2	3	5	18	59	1	3
	IR 375cfm Air Compressor, Trailer Mounted	Diesel	16	37	176	5	7	4	9	44	1	2	2	5	22	1	1	1	4	18	0	1
	Dump Trucks for Aggregate and Sand, 30 cy	Diesel	724	5,521	16,795	527	668	176	1,305	4,119	98	164	88	648	2,058	46	82	44	323	1,029	23	41
CONCRETE																						
	Concrete Transport Trucks, Agitator/Mixer, 10cy capa	Diesel	1,873	7,043	21,445	522	917	1,830	6,579	20,946	510	896	450	1,646	5,215	175	224	223	802	2,601	74	112
	Crawler Crane w/Grove RT900 Hydraulic Crane & 200ft Conveyor	Diesel	70	171	910	14	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Concrete Pump Truck @ 170 cy/hr	Diesel	236	584	3,042	58	123	59	143	759	12	31	29	71	379	6	15	15	35	190	3	5
	Concrete Pump, Trailer Mounted @ 110/120 cy/hr	Diesel	170	420	2,189	42	89	42	103	546	9	22	0	0	0	0	0	0	0	0	0	0
	IR 375cfm Air Compressor, Trailer Mounted	Diesel	117	306	1,409	45	56	29	75	382	10	14	15	37	176	5	7	7	19	88	2	3
	IR 750cfm Air Compressor, Trailer Mounted	Diesel	117	283	1,517	22	62	29	71	379	6	15	15	35	190	3	8	7	18	95	1	4
LIFTING/ROGGING																						
	Manitowoc 4600 S-8 Crawler Crane w/S-4 Ringer Attachment, 75	Diesel	218	1,745	5,331	86	211	218	1,745	5,331	86	211	109	867	2,664	40	106	0	0	0	0	0
	Manitowoc M-250 S-2 Crawler Crane w/300' Boom Attachment & Luffing Jib, 300-ton Capacity	Diesel	143	728	3,703	56	139	143	728	3,703	56	139	36	180	925	13	35	0	0	0	0	0
	Manitowoc 4100 S-2 Crawler Crane 230-ton Capacity, w/Tower Attachmentm 31-ton Capacity	Diesel	213	1,090	5,486	93	205	106	539	2,740	42	103	53	268	1,369	20	51	0	0	0	0	0
	Manitowoc 3900W Crawler Crane, w/187 Boom & 30' Jib, 140-ton Capacity	Diesel	340	844	4,368	88	177	169	414	2,180	36	88	84	205	1,089	17	44	0	0	0	0	0
	Linkbelt HC248 Lattice Boom Truck Crane w/ 200' Boom Attachment & Luffing Jib, 185-ton Capacity	Diesel	258	1,326	6,672	113	250	258	1,326	6,672	113	250	64	325	1,665	24	62	32	162	832	12	31
	Kenworth T-800 Prime Mover for Heavy-Haul Trailers	Diesel	30	222	707	16	28	15	111	354	8	14	0	0	0	0	0	0	0	0	0	0
	Grove RT-635 Rough Terrain Hyd. Crane, 35-ton Capacity	Diesel	197	518	2,371	80	94	197	518	2,371	80	94	10	25	118	3	5	49	126	591	17	23
	Grove RT-865 Rough Terrain Hyd. Crane, 65-ton Capacity	Diesel	296	735	3,804	77	154	147	361	1,899	33	77	73	179	949	15	38	73	179	949	15	38
	IR Teleboom Forklift 4x4, 4.5-ton	Diesel	66	628	757	43	28	33	310	378	20	14	33	310	378	20	14	16	154	189	10	7
	GMC 16-ft Flatbed Truck to haul rigging gear	Diesel	38	162	534	13	23	38	135	445	11	19	30	108	356	9	15	15	54	178	4	8
SHOP FABRICATION																						
	Grove RT-528 Rough Terrain Hyd. Crane, 28-ton	Diesel	81	209	973	29	38	81	209	973	29	38	40	104	486	14	19	20	52	243	7	10
	Grove AP308 Carry Deck Hyd. Crane, 8-1/2-ton	Diesel	27	172	339	13	12	27	172	339	13	12	20	129	254	9	9	13	86	169	6	6
	IR Teleboom Forklift 4x4, 4.5-ton	Diesel	33	310	378	20	14	33	310	378	20	14	25	232	283	15	10	16	154	189	10	7
	GMC 18' Flatbed/Stakebed Trucks	Diesel	77	249	837	34	35	57	216	627	25	26	38	143	418	17	18	38	143	418	17	18
	IR 375cfm Air Compressor, Trailer Mtd	Diesel	36	94	504	12	17	36	94	504	12	17	27	70	378	9	13	18	47	252	6	9
WAREHOUSE																						
	Linkbelt 238 Lattice Boom Truck Crane, 185-ft Boom, 30-ft Jib	Diesel	55	134	711	11	29	55	134	711	11	29	37	89	474	7	19	18	44	237	4	10
	Grove RT-528 Rough Terrain Hyd. Crane, 28-ton	Diesel	81	209	973	29	38	81	209	973	29	38	40	104	486	14	19	20	52	243	7	10
	IR Teleboom Forklift 4x4, 4.5-ton	Diesel	33	310	378	20	14	33	310	378	20	14	25	232	283	15	10	16	154	189	10	7
	GMC Topkick Knuckle Boom Truck w/6-ton Capacity	Diesel	57	203	668	17	29	57	203	668	17	29	38	135	445	11	19	38	135	445	11	19
	Grove AP308 Carry Deck Hyd. Crane, 8-1/2-ton	Diesel	20	129	254	9	9	20	129	254	9	9	13	86	169	6	6	13	86	169	6	6
	GMC 18' Flatbed/Stakebed Trucks	Diesel	232	885	2,516	120	106	232	885	2,516	120	106	115	435	1,256	54	53	77	288	837	34	35
EQUIPMENT MAINTENANCE																						
	GMC Fuel Truck w/Meters, 4000gal Diesel Fuel	Diesel	159	569	1,857	50	80	159	569	1,857	50	80	106	377	1,237	32	53	53	187	618	15	27
	GMC Fuel & Lubrication Truck w/Pwr Wash, Cont/Waste Oil Tank, 2000 gal Diesel Fuel	Diesel	106	377	1,237	32	53	106	377	1,237	32	53	106	377	1,237	32	53	53	187	618	15	27
	GMC 3500 HD Mechanics Truck, w/Tools, Welder, Air Comp.	Diesel	76	271	891	23	38	76	271	891	23	38	38	135	445	11	19	0	0	0	0	0
	GMC Wrecker & Tire Service Truck	Diesel	63	224	742	18	32	63	224	742	18	32	32	112	371	9	16	0	0	0	0	0
	Utility, Gasoline-powered Pick-up Trucks & Automobiles	Gasoline	3,404	47,049	3,242	116	39	3,404	47,049	3,242	116	39	1,702	23,525	1,621	58	20	851	11,762	811	29	10
			11,095	79,436	114,072	2,991	4,831	8,894	69,110	79,056	1,958	3,042	3,066	31,539	27,846	753	1,066	1,721	15,250	11,936	341	463

Enclosure 3

Regulatory Commitment

The regulatory commitment in this correspondence is summarized below:

Regulatory Commitment No.	Regulatory Commitment Description	Regulatory Commitment Due Date
CC-09-0002	UNE will prepare an updated construction emissions analysis for CCNPP Unit 3 in order to determine if emissions are still within threshold values. UNE will provide the NRC with the schedule for completion of this emissions analysis by October 2, 2009.	October 2, 2009 schedule for completion of analysis.