APPENDIX 8.1C

Operational and Commissioning Dispersion Modeling

APPENDIX 8.1C

Operational and Commissioning Dispersion Modeling

In addition to the tables and figures presented below, a copy of the final "AES Highgrove HEF Dispersion Model Protocol" is attached.

Tables presented in this Appendix are as follows:

AES Highgrove AFC

Table 8.1C-1 Summary Table of Stack Parameters (ISCST3 Input)

97F

							97F50L		**97F75L**		**97FBL**		**97FBL + Evap**	
	Source ID	Easting (X) (m)	Northing (Y) (m)	Base Elev. (m)	Stack Height (m)	Stack Diam. (m)	Temp. (K)	Exit Vel. (m/s)	Temp. (K)	Exit Vel. (m/s)	Temp. (K)	Exit Vel. (m/s)	Temp. (K)	Exit Vel. (m/s)
1	CTGSTK1	469396	3764701.5	286.21	24.38	3.81	688.15	24.18	679.26	30.04	697.59	34.51	690.37	35.75
2	CTGSTK2	469396	3764648	286.21	24.38	3.81	688.15	24.18	679.26	30.04	697.59	34.51	690.37	35.75
3	CTGSTK3	469396	3764595	286.21	24.38	3.81	688.15	24.18	679.26	30.04	697.59	34.51	690.37	35.75
4	COOLT1C1	469415.9	3764666.5	286.21	6.55	4.88	307.21	9.24						
5	COOLT1C2	469421	3764666.3	286.21	6.55	4.88	307.21	9.24						
6	COOLT2C1	469415.9	3764613.3	286.21	6.55	4.88	307.21	9.24						
7	COOLT2C2	469421	3764613	286.21	6.55	4.88	307.21	9.24						
8	COOLT3C1	469415.9	3764560.3	286.21	6.55	4.88	307.21	9.24						
9	COOLT3C2	469421	3764560.3	286.21	6.55	4.88	307.21	9.24						

80F

							80F50L		**80F75L**		**80FBL**		**80FBL + Evap**	
	Source ID	Easting (X) (m)	Northing (Y) (m)	Base Elev. (m)	Stack Height (m)	Stack Diam. (m)	Temp. (K)	Exit Vel. (m/s)	Temp. (K)	Exit Vel. (m/s)	Temp. (K)	Exit Vel. (m/s)	Temp. (K)	Exit Vel. (m/s)
1	CTGSTK1	469396	3764701.5	286.21	24.38	3.81	689.26	24.12	679.26	29.97	693.71	35.23	690.93	35.66
2	CTGSTK2	469396	3764648	286.21	24.38	3.81	689.26	24.12	679.26	29.97	693.71	35.23	690.93	35.66
3	CTGSTK3	469396	3764595	286.21	24.38	3.81	689.26	24.12	679.26	29.97	693.71	35.23	690.93	35.66
4	COOLT1C1	469415.9	3764666.5	286.21	6.55	4.88	307.21	9.24						
5	COOLT1C2	469421	3764666.3	286.21	6.55	4.88	307.21	9.24						
6	COOLT2C1	469415.9	3764613.3	286.21	6.55	4.88	307.21	9.24						
7	COOLT2C2	469421	3764613	286.21	6.55	4.88	307.21	9.24						
8	COOLT3C1	469415.9	3764560.3	286.21	6.55	4.88	307.21	9.24						
9	COOLT3C2	469421	3764560.3	286.21	6.55	4.88	307.21	9.24						

30F

							30F50L		**30F75L**		**30FBL**	
	Source ID	Easting (X) (m)	Northing (Y) (m)	Base Elev. (m)	Stack Height (m)	Stack Diam. (m)	Temp. (K)	Exit Vel. (m/s)	Temp. (K)	Exit Vel. (m/s)	Temp. (K)	Exit Vel. (m/s)
1	CTGSTK1	469396	3764701.5	286.21	24.38	3.81	674.82	24.64	664.82	30.76	668.15	36.58
2	CTGSTK2	469396	3764648	286.21	24.38	3.81	674.82	24.64	664.82	30.76	668.15	36.58
3	CTGSTK3	469396	3764595	286.21	24.38	3.81	674.82	24.64	664.82	30.76	668.15	36.58
4	COOLT1C1	469415.9	3764666.5	286.21	6.55	4.88	307.21	9.24				
5	COOLT1C2	469421	3764666.3	286.21	6.55	4.88	307.21	9.24				
6	COOLT2C1	469415.9	3764613.3	286.21	6.55	4.88	307.21	9.24				
7	COOLT2C2	469421	3764613	286.21	6.55	4.88	307.21	9.24				
8	COOLT3C1	469415.9	3764560.3	286.21	6.55	4.88	307.21	9.24				
9	COOLT3C2	469421	3764560.3	286.21	6.55	4.88	307.21	9.24				

AES Highgrove AFC

Table 8.1C-2a Summary Table of Building Parameters (ISCST3 Input)

Building Name	Number of Tiers	Tier Number	Base Elevation	Tier Height	Number of Corners	Corner 1 East (X)	Corner 1 North (Y)	Corner 2 East (X)	Corner 2 North (Y)	Corner 3 East (X)	Corner 3 North (Y)	Corner 4 East (X)	Corner 4 North (Y)	Corner 5 East (X)	Corner 5 North (Y)	Corner 6 East (X)	Corner 6 North (Y)	Corner 7 East (X)	Corner 7 North (Y)	Corner 8 East (X)	Corner 8 North (Y)
			(ft)	(m)		(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)
AIRIN1	1	1	939	11.97	8	469366.1	3764682	469370.5	3764682	469370.5	3764680	469384.7	3764680	469384.7	3764675	469370.5	3764675	469370.5	3764673	469366.1	3764673
AIRIN2	1	1	939	11.97	8	469365.3	3764628	469369.8	3764628	469369.8	3764627	469383.9	3764627	469383.9	3764621	469369.8	3764621	469369.8	3764619	469365.3	3764619
AIRIN3	1	1	939	11.97	8	469364.8	3764575	469369.3	3764575	469369.3	3764573	469383.4	3764573	469383.4	3764568	469369.3	3764568	469369.3	3764566	469364.8	3764566
CONWAR	1	1	939	7.32	4	469452	3764660	469471.8	3764660	469471.8	3764586	469452	3764586								
CAN1	1	1	939	11.58	6	469390.9	3764687	469390.9	3764696	469395.7	3764700	469400.9	3764696	469400.9	3764686	469390.9	3764686				
CAN2	1	1	939	11.58	6	469390.4	3764633	469390.4	3764643	469395.2	3764646	469400.4	3764643	469400.4	3764633	469390.4	3764633				
CAN3	1	1	939	11.58	6	469389.8	3764581	469389.8	3764590	469394.6	3764593	469399.8	3764590	469399.8	3764580	469389.8	3764580				
MISC1	1	1	939	4	4	469409.2	3764701	469416.8	3764701	469416.8	3764692	469409.2	3764692								
MISC2	1	1	939	4	4	469408.7	3764648	469416.2	3764648	469416.2	3764640	469408.7	3764640								
MISC3	1	1	939	4	4	469408	3764595	469415.5	3764595	469415.5	3764587	469408	3764587								
HeatEx1	1	1	939	4.88	4	469381.8	3764661	469381.8	3764665	469393.5	3764665	469393.5	3764661								
main1	1	1	939	4.52	4	469384.8	3764675	469384.8	3764679	469394.7	3764679	469394.7	3764675								
vent1	1	1	939	12.12	4	469394.7	3764679	469394.7	3764675	469399.4	3764675	469399.4	3764679								
gen1	1	1	939	8.76	4	469399.7	3764679	469407.4	3764679	469407.4	3764675	469399.7	3764675								
PWRCNTR	1	1	939	3.05	4	469409.7	3764679	469409.7	3764684	469425	3764684	469425	3764679								
Main2	1	1	939	4.52	4	469384	3764621	469384	3764626	469393.9	3764626	469393.9	3764621								
Vent2	1	1	939	12.12	4	469394.1	3764626	469394.1	3764621	469398.8	3764621	469398.8	3764626								
Gen2	1	1	939	8.76	4	469399	3764626	469406.7	3764626	469406.7	3764621	469399	3764621								
HeatEx2	1	1	939	4.88	4	469381.3	3764608	469381.3	3764611	469393	3764611	469393	3764608								
PwrCntr2	1	1	939	3.05	4	469409.5	3764626	469409.5	3764631	469424.7	3764631	469424.7	3764626								
Main3	1	1	939	4.52	4	469383.6	3764568	469383.6	3764573	469393.6	3764573	469393.6	3764568								
Vent3	1	1	939	12.12	4	469393.7	3764573	469393.7	3764568	469398.4	3764568	469398.4	3764573								
Gen3	1	1	939	8.76	4	469398.3	3764573	469406	3764573	469406	3764568	469398.3	3764568								
HeatEx3	1	1	939	4.88	4	469380.3	3764555	469380.3	3764558	469392	3764558	469392	3764555								
PwrCntr3	1	1	939	3.05	4	469409	3764573	469409	3764578	469424.2	3764578	469424.2	3764573								
COOLT1	2	1	939	2.59	4	469412.6	3764658	469412.6	3764675	469425.2	3764675	469425.2	3764658								
COOLT1	*	2 *		4.72	4	469412.6	3764671	469425.2	3764671	469425.2	3764662	469412.6	3764662								
COOLT2	2	1	939	2.59	4	469412.6	3764605	469412.6	3764621	469425.2	3764621	469425.2	3764605								
COOLT2	*	2 *		4.72	4	469412.6	3764618	469425.2	3764618	469425.2	3764609	469412.6	3764609								
COOLT3	2	1	939	2.59	4	469412.6	3764552	469412.6	3764568	469425.2	3764568	469425.2	3764552								
COOLT3	*	2 *		4.72	4	469412.6	3764564	469425.2	3764564	469425.2	3764555	469412.6	3764555								

AES Highgrove AFC

Table 8.1C-2b Summary Table of Tank Parameters (ISCST3 Input)

	Number of Tiers	Tier Number	Base Elevation (ft)	Tank Height (m)	Tank Center UTM X (m)	Tank Center UTM Y (m)	Tank Diameter (ft)	Comments
Large Tank	1	1	939	9.75	469461.4	3764690	44	350,000 gallon capacity
Small Tank	1	1	939	7.32	469463.6	3764670.5	27	100,000 gallon capacity

AES Highgrove AFC
Table 8.1C-3 Screening Commissioning and Operational Modeling Parameters (Turbines only)

	Scenario	NOx		CO		PM10		SO2		Velocity		Temperature	
		(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(m/s)	(ft/s)	F	K
Annual	30F Base Load	5.69	0.72	*	*	2.93	0.37	0.30	0.04	36.58	120.01	743	668.3
	30F 75% Load	4.68	0.59	*	*	2.93	0.37	0.25	0.03	30.76	100.93	737	664.7
	30F 50% Load	3.69	0.46	*	*	2.93	0.37	0.19	0.02	24.64	80.85	755	674.9
	80F Base Load + Evap	5.54	0.70	*	*	2.93	0.37	0.29	0.04	35.66	116.99	784	691.1
	80F Base Load	5.47	0.69	*	*	2.93	0.37	0.29	0.04	35.23	115.58	789	693.4
	80F 75% Load	4.55	0.57	*	*	2.93	0.37	0.24	0.03	29.97	98.33	763	679.5
	80F 50% Load	3.59	0.45	*	*	2.93	0.37	0.19	0.02	24.12	79.12	781	689.0
	97F Base Load + Evap	5.55	0.70	*	*	2.93	0.37	0.29	0.04	35.75	117.29	783	690.6
	97F Base Load	5.35	0.67	*	*	2.93	0.37	0.28	0.04	34.51	113.21	796	697.4
	97F 75% Load	4.56	0.57	*	*	2.93	0.37	0.24	0.03	30.04	98.56	763	679.0
	97F 50% Load	3.60	0.45	*	*	2.93	0.37	0.19	0.02	24.18	79.34	779	688.3
24-Hour	30F Base Load	*	*	*	*	5.98	0.75	0.61	0.08	36.58	120.01	743.2	668.3
	30F 75% Load	*	*	*	*	5.98	0.75	0.49	0.06	30.76	100.93	736.7	664.7
	30F 50% Load	*	*	*	*	5.98	0.75	0.37	0.05	24.64	80.85	755.1	674.9
	80F Base Load + Evap	*	*	*	*	5.98	0.75	0.60	0.08	35.66	116.99	784.3	691.1
	80F Base Load	*	*	*	*	5.98	0.75	0.59	0.07	35.23	115.58	788.5	693.4
	80F 75% Load	*	*	*	*	5.98	0.75	0.48	0.06	29.97	98.33	763.4	679.5
	80F 50% Load	*	*	*	*	5.98	0.75	0.36	0.05	24.12	79.12	780.6	689.0
	97F Base Load + Evap	*	*	*	*	5.98	0.75	0.60	0.08	35.75	117.29	783.4	690.6
	97F Base Load	*	*	*	*	5.98	0.75	0.57	0.07	34.51	113.21	795.6	697.4
	97F 75% Load	*	*	*	*	5.98	0.75	0.48	0.06	30.04	98.56	762.6	679.0
	97F 50% Load	*	*	*	*	5.98	0.75	0.36	0.05	24.18	79.34	779.3	688.3
	Pre- break-in Checkout	*	*	*	*	*	*	*	*	20.08	65.89	817.6	709.6
	Controlled Break-in	*	*	*	*	*	*	*	*	20.08	65.89	817.6	709.6
	Water Injection	*	*	*	*	*	*	*	*	24.12	79.12	780.6	689.0
	Complete AVR	*	*	*	*	*	*	*	*	35.23	115.58	788.5	693.4
	SCR Commissioning	*	*	*	*	*	*	*	*	29.97	98.33	763.4	679.5
	Full load testing &	*	*	*	*	*	*	*	*	35.23	115.58	788.5	693.4
8-Hour	30F Base Load	*	*	17.75	2.24	*	*	*	*	36.58	120.01	743.2	668.3
	30F 75% Load	*	*	15.74	1.98	*	*	*	*	30.76	100.93	736.7	664.7
	30F 50% Load	*	*	13.78	1.74	*	*	*	*	24.64	80.85	755.1	674.9
	80F Base Load + Evap	*	*	17.47	2.20	*	*	*	*	35.66	116.99	784.3	691.1
	80F Base Load	*	*	17.31	2.18	*	*	*	*	35.23	115.58	788.5	693.4
	80F 75% Load	*	*	15.48	1.95	*	*	*	*	29.97	98.33	763.4	679.5
	80F 50% Load	*	*	13.60	1.71	*	*	*	*	24.12	79.12	780.6	689.0
	97F Base Load + Evap	*	*	17.45	2.20	*	*	*	*	35.75	117.29	783.4	690.6
	97F Base Load	*	*	17.09	2.15	*	*	*	*	34.51	113.21	795.6	697.4
	97F 75% Load	*	*	15.53	1.96	*	*	*	*	30.04	98.56	762.6	679.0
	97F 50% Load	*	*	13.61	1.72	*	*	*	*	24.18	79.34	779.3	688.3
	Pre- break-in Checkout	*	*	55	6.93	*	*	*	*	20.08	65.89	817.6	709.6
	Controlled Break-in	*	*	60	7.56	*	*	*	*	20.08	65.89	817.6	709.6
	Water Injection	*	*	168	21.17	*	*	*	*	24.12	79.12	780.6	689.0
	Complete AVR	*	*	255	32.13	*	*	*	*	35.23	115.58	788.5	693.4
	SCR Commissioning	*	*	9	1.13	*	*	*	*	29.97	98.33	763.4	679.5
	Full load testing &	*	*	12	1.51	*	*	*	*	35.23	115.58	788.5	693.4
3-Hour	30F Base Load	*	*	*	*	*	*	0.60	0.08	36.58	120.01	743.2	668.3
	30F 75% Load	*	*	*	*	*	*	0.54	0.07	30.76	100.93	736.7	664.7
	30F 50% Load	*	*	*	*	*	*	0.48	0.06	24.64	80.85	755.1	674.9
	80F Base Load + Evap	*	*	*	*	*	*	0.59	0.07	35.66	116.99	784.3	691.1
	80F Base Load	*	*	*	*	*	*	0.59	0.07	35.23	115.58	788.5	693.4
	80F 75% Load	*	*	*	*	*	*	0.53	0.07	29.97	98.33	763.4	679.5
	80F 50% Load	*	*	*	*	*	*	0.47	0.06	24.12	79.12	780.6	689.0
	97F Base Load + Evap	*	*	*	*	*	*	0.59	0.07	35.75	117.29	783.4	690.6
	97F Base Load	*	*	*	*	*	*	0.58	0.07	34.51	113.21	795.6	697.4
	97F 75% Load	*	*	*	*	*	*	0.53	0.07	30.04	98.56	762.6	679.0
	97F 50% Load	*	*	*	*	*	*	0.47	0.06	24.18	79.34	779.3	688.3
	Pre- break-in Checkout	*	*	*	*	*	*	*	*	20.08	65.89	817.6	709.6
	Controlled Break-in	*	*	*	*	*	*	*	*	20.08	65.89	817.6	709.6
	Water Injection	*	*	*	*	*	*	*	*	24.12	79.12	780.6	689.0
	Complete AVR	*	*	*	*	*	*	*	*	35.23	115.58	788.5	693.4
	SCR Commissioning	*	*	*	*	*	*	*	*	29.97	98.33	763.4	679.5
	Full load testing &	*	*	*	*	*	*	*	*	35.23	115.58	788.5	693.4
1-Hour	30F Base Load	13.54	1.71	35.94	4.53	*	*	0.59	0.07	36.58	120.01	743.2	668.3
	30F 75% Load	13.06	1.65	35.44	4.46	*	*	0.57	0.07	30.76	100.93	736.7	664.7
	30F 50% Load	12.59	1.59	34.95	4.40	*	*	0.54	0.07	24.64	80.85	755.1	674.9
	80F Base Load + Evap	13.46	1.70	35.87	4.52	*	*	0.59	0.07	35.66	116.99	784.3	691.1
	80F Base Load	13.43	1.69	35.83	4.51	*	*	0.59	0.07	35.23	115.58	788.5	693.4
	80F 75% Load	13.00	1.64	35.37	4.46	*	*	0.56	0.07	29.97	98.33	763.4	679.5
	80F 50% Load	12.55	1.58	34.90	4.40	*	*	0.54	0.07	24.12	79.12	780.6	689.0
	97F Base Load + Evap	13.47	1.70	35.86	4.52	*	*	0.59	0.07	35.75	117.29	783.4	690.6
	97F Base Load	13.37	1.69	35.77	4.51	*	*	0.58	0.07	34.51	113.21	795.6	697.4
	97F 75% Load	13.00	1.64	35.38	4.46	*	*	0.56	0.07	30.04	98.56	762.6	679.0
	97F 50% Load	12.55	1.58	34.90	4.40	*	*	0.54	0.07	24.18	79.34	779.3	688.3
	Pre- break-in Checkout	91	11.47	55	6.93	*	*	*	*	20.08	65.89	817.6	709.6
	Controlled Break-in	99	12.47	60	7.56	*	*	*	*	20.08	65.89	817.6	709.6
	Water Injection	175	22.05	168	21.17	*	*	*	*	24.12	79.12	780.6	689.0
	Complete AVR	81	10.21	255	32.13	*	*	*	*	35.23	115.58	788.5	693.4
	SCR Commissioning	35	4.41	9	1.13	*	*	*	*	29.97	98.33	763.4	679.5
	Full load testing &	8	1.02	12	1.51	*	*	*	*	35.23	115.58	788.5	693.4

AES Highgrove AFC

Table 8.1C-4 Detailed Opeational Modeling Parameters (PM10 Only)

Source ID	Source Description	Easting (X)	Northing (Y)	Base Elevation	Stack Height	Temperature	Exit Velocity	Stack Diameter	PM10 (24-Hr)	PM10 (24 Hr)	PM10 Annual	PM10 Annual
		(m)	(m)	(m)	(m)	(K)	(m/s)	(m)	(lb/hr)	(g/s)	(lb/hr)	(g/s)
CTGSTK1	North CTG Stack	469396	3764701.5	286.2072	24.384	689.26	24.12	3.81	5.98	0.7535	2.93	0.3692
CTGSTK2	Middle CTG Stack	469396	3764648	286.2072	24.384	689.26	24.12	3.81	5.98	0.7535	2.93	0.3692
CTGSTK3	South CTG STack	469396	3764595	286.2072	24.384	689.26	24.12	3.81	5.98	0.7535	2.93	0.3692
COOLT1C1	West Cell for CTGSTK1	469415.91	3764666.5	286.2072	6.5532	307.21	9.24	4.8768	0.0240	0.0030	0.0151	0.0019
COOLT1C2	East Cell for CTGSTK1	469421.03	3764666.25	286.2072	6.5532	307.21	9.24	4.8768	0.0240	0.0030	0.0151	0.0019
COOLT2C1	West Cell for CTGSTK2	469415.91	3764613.25	286.2072	6.5532	307.21	9.24	4.8768	0.0240	0.0030	0.0151	0.0019
COOLT2C2	East Cell for CTGSTK2	469421.03	3764613	286.2072	6.5532	307.21	9.24	4.8768	0.0240	0.0030	0.0151	0.0019
COOLT3C1	West Cell for CTGSTK3	469415.91	3764560.25	286.2072	6.5532	307.21	9.24	4.8768	0.0240	0.0030	0.0151	0.0019
COOLT3C2	East Cell for CTGSTK3	469421.03	3764560.25	286.2072	6.5532	307.21	9.24	4.8768	0.0240	0.0030	0.0151	0.0019

AES Highgrove AFC

Table 8.1C-5 Commissioning Modeling Results Summary (ug/m3)

	Scenario	Comments	NOx (ug/m3)				CO (ug/m3)			
			All	STK1	STK2	STK3	All	STK1	STK2	STK3
8-Hour	Pre- break-in Checkout	Highest aggregate of two stacks					97.3	50.1	47.7	41.7
	Controlled Break-in Operation	All 3 stacks					138.1	54.7	52.0	45.5
	Water Injection Commissioning	One stack only					143.3	143.3	134.2	112.2
	Complete AVR Commissioning	All 3 stacks					399.4	176.0	159.4	122.3
	SCR Commissioning	All 3 stacks					16.2	6.9	6.4	5.0
	Full load testing & checkout	All 3 stacks					18.8	8.3	7.5	5.8
1-Hour	Pre- break-in Checkout	Highest aggregate of two stacks	389.5	199.2	190.4	182.2	235.4	120.4	115.1	110.1
	Controlled Break-in Operation	All 3 stacks	622.0	216.7	207.2	198.2	377.0	131.3	125.6	120.1
	Water Injection Commissioning	One stack only	359.0	359.0	343.7	329.4	344.6	344.6	330.0	316.2
	Complete AVR Commissioning	All 3 stacks	391.4	135.5	130.4	125.6	1232.1	426.6	410.5	395.3
	SCR Commissioning	All 3 stacks	186.8	64.8	62.2	59.8	48.0	16.7	16.0	15.4
	Full load testing & checkout	All 3 stacks	39.1	13.5	13.0	12.6	58.0	20.1	19.3	18.6

AES Highgrove AFC
Table 8.1C-6 Operational Modeling Results Summary (SCREENING)
Concentrations DO NOT Include Background.

	Scenario	NOx (ug/m3)				CO (ug/m3)				SO2 (ug/m3)				PM10 (ug/m3)			
		All	STK1	STK2	STK3	All	STK1	STK2	STK3	All	STK1	STK2	STK3	All	STK1	STK2	STK3
Annual	30F Base Load	0.5560	0.1891	0.1857	0.1833					2.94E-02	1.00E-02	9.83E-03	9.70E-03	0.2865	0.097	0.096	0.094
	30F 75% Load	0.4868	0.1653	0.1632	0.1605					2.55E-02	8.67E-03	8.56E-03	8.42E-03	0.3052	0.104	0.102	0.101
	30F 50% Load	0.4095	0.1390	0.1376	0.1346					2.12E-02	7.20E-03	7.12E-03	6.97E-03	0.3257	0.111	0.109	0.107
	80F Base Load + Evap	0.5411	0.1840	0.1807	0.1784					2.86E-02	9.72E-03	9.55E-03	9.42E-03	0.2865	0.097	0.096	0.094
	80F Base Load	0.5357	0.1822	0.1789	0.1766					2.83E-02	9.62E-03	9.45E-03	9.33E-03	0.2875	0.098	0.096	0.095
	80F 75% Load	0.4747	0.1612	0.1592	0.1565					2.49E-02	8.44E-03	8.34E-03	8.19E-03	0.3063	0.104	0.103	0.101
	80F 50% Load	0.3996	0.1357	0.1342	0.1313					2.06E-02	7.01E-03	6.93E-03	6.78E-03	0.3262	0.111	0.110	0.107
	97F Base Load + Evap	0.5422	0.1844	0.1810	0.1787					2.87E-02	9.74E-03	9.57E-03	9.44E-03	0.2863	0.097	0.096	0.094
	97F Base Load	0.5276	0.1794	0.1763	0.1739					2.78E-02	9.47E-03	9.30E-03	9.18E-03	0.2893	0.098	0.097	0.095
	97F 75% Load	0.4754	0.1614	0.1594	0.1567					2.49E-02	8.45E-03	8.35E-03	8.21E-03	0.3060	0.104	0.103	0.101
	97F 50% Load	0.4006	0.1360	0.1346	0.1317					2.07E-02	7.02E-03	6.95E-03	6.80E-03	0.3261	0.111	0.110	0.107
24-Hour	30F Base Load									3.68E-01	1.40E-01	1.27E-01	1.18E-01	3.5863	1.366	1.236	1.151
	30F 75% Load									3.27E-01	1.25E-01	1.15E-01	1.05E-01	3.9689	1.523	1.397	1.271
	30F 50% Load									2.73E-01	1.06E-01	9.87E-02	8.71E-02	4.3843	1.696	1.587	1.399
	80F Base Load + Evap									3.58E-01	1.36E-01	1.23E-01	1.15E-01	3.5915	1.368	1.238	1.152
	80F Base Load									3.54E-01	1.35E-01	1.22E-01	1.14E-01	3.6126	1.377	1.247	1.159
	80F 75% Load									3.17E-01	1.22E-01	1.12E-01	1.02E-01	3.9914	1.533	1.407	1.278
	80F 50% Load									2.65E-01	1.03E-01	9.60E-02	8.46E-02	4.3964	1.701	1.593	1.403
	97F Base Load + Evap									3.58E-01	1.37E-01	1.24E-01	1.15E-01	3.5871	1.366	1.237	1.151
	97F Base Load									3.50E-01	1.33E-01	1.21E-01	1.12E-01	3.6502	1.392	1.262	1.171
	97F 75% Load									3.18E-01	1.22E-01	1.12E-01	1.02E-01	3.9866	1.531	1.405	1.276
	97F 50% Load									2.66E-01	1.03E-01	9.62E-02	8.48E-02	4.3938	1.700	1.592	1.402
8-Hour	30F Base Load					27.528	12.155	11.000	8.424								
	30F 75% Load					28.091	12.021	11.029	8.750								
	30F 50% Load					28.556	11.720	10.966	9.162								
	80F Base Load + Evap					27.147	11.981	10.845	8.308								
	80F Base Load					27.112	11.947	10.822	8.301								
	80F 75% Load					27.854	11.895	10.924	8.678								
	80F 50% Load					28.313	11.605	10.865	9.083								
	97F Base Load + Evap					27.081	11.956	10.821	8.288								
	97F Base Load					27.148	11.927	10.818	8.317								
	97F 75% Load					27.893	11.917	10.942	8.687								
	97F 50% Load					28.305	11.605	10.863	9.080								
3-Hour	30F Base Load									1.914	0.662	0.638	0.614				
	30F 75% Load									1.903	0.660	0.634	0.609				
	30F 50% Load									1.875	0.652	0.624	0.598				
	80F Base Load + Evap									1.885	0.652	0.628	0.605				
	80F Base Load									1.882	0.651	0.627	0.604				
	80F 75% Load									1.885	0.653	0.628	0.603				
	80F 50% Load									1.857	0.646	0.619	0.593				
	97F Base Load + Evap									1.886	0.653	0.628	0.605				
	97F Base Load									1.879	0.650	0.626	0.603				
	97F 75% Load									1.885	0.653	0.628	0.603				
	97F 50% Load									1.858	0.646	0.619	0.593				
1-Hour	30F Base Load	64.924	22.472	21.629	20.830	172.38	59.666	57.427	55.305	2.846	0.985	0.948	0.913				
	30F 75% Load	69.314	24.038	23.090	22.193	188.09	65.228	62.657	60.221	3.010	1.044	1.003	0.964				
	30F 50% Load	74.035	25.751	24.660	23.630	205.46	71.462	68.434	65.578	3.183	1.107	1.060	1.016				
	80F Base Load + Evap	64.679	22.389	21.547	20.751	172.30	59.642	57.399	55.277	2.831	0.980	0.943	0.908				
	80F Base Load	64.890	22.465	21.618	20.816	173.11	59.932	57.672	55.533	2.838	0.983	0.946	0.911				
	80F 75% Load	69.375	24.062	23.110	22.209	188.81	65.488	62.898	60.445	3.008	1.043	1.002	0.963				
	80F 50% Load	73.993	25.738	24.646	23.616	205.81	71.589	68.550	65.685	3.178	1.105	1.058	1.014				
	97F Base Load + Evap	64.631	22.372	21.532	20.736	172.07	59.561	57.323	55.205	2.829	0.979	0.943	0.908				
	97F Base Load	65.298	22.611	21.754	20.943	174.65	60.476	58.184	56.015	2.853	0.988	0.951	0.915				
	97F 75% Load	69.319	24.042	23.092	22.192	188.65	65.430	62.844	60.394	3.006	1.043	1.001	0.962				
	97F 50% Load	73.976	25.732	24.640	23.610	205.69	71.549	68.513	65.650	3.177	1.105	1.058	1.014				

AES Highgrove AFC

Table 8.1C-7 Operational Modeling Results Summary (Detailed - PM10 Only)

	Scenario	PM10 (ug/m3)				
		All	**STK1**	**STK2**	**STK3**	**Cooling Tower**
Annual	80F 50% Load	0.331	0.111	0.109	0.107	0.139
24-hour	80F 50% Load	4.45	1.701	1.593	1.403	0.79

TABLE 8.1C-8a: ANNUAL FREQUENCY DISTRIBUTION (COUNTS)

Date Range: Jan 1 - Dec 31

Wind Speed (m/s) Wind Direction (from)	0.5-2.1	2.1-3.6	3.6-5.7	5.7-8.8	8.8-11.1	>=11	Totals
N	455	36	13	4	0	0	508
NNE	279	76	95	47	1	0	498
NE	195	36	42	14	0	0	287
ENE	254	42	11	1	0	0	308
E	334	36	9	0	0	0	379
ESE	259	40	8	0	0	0	307
SE	151	8	0	0	0	0	159
SSE	172	9	0	0	0	0	181
S	278	6	1	0	0	0	285
SWS	263	26	14	0	0	0	303
SW	144	5	1	0	0	0	150
WSW	283	32	4	1	0	0	320
W	554	223	81	20	2	0	880
WNW	793	904	520	59	0	0	2276
NW	388	100	9	0	0	0	497
NNW	347	9	4	0	0	0	360
Totals	5149	1588	812	146	3	0	

Source: SCAQMD 1981 Riverside Meteorological Data

TABLE 8.1C-8b: 1ST QUARTER FREQUENCY DISTRIBUTION (COUNTS)

Date Range: Jan 1 - Mar 31

Wind Speed (m/s) Wind Direction (from)	0.5-2.1	2.1-3.6	3.6-5.7	5.7-8.8	8.8-11.1	>=11	Totals
N	99	29	8	0	0	0	136
NNE	112	34	36	29	1	0	212
NE	72	11	7	2	0	0	92
ENE	113	30	5	1	0	0	149
E	130	16	1	0	0	0	147
ESE	84	20	5	0	0	0	109
SE	30	3	0	0	0	0	33
SSE	57	5	0	0	0	0	62
S	79	1	0	0	0	0	80
SWS	63	9	1	0	0	0	73
SW	39	2	0	0	0	0	41
WSW	86	17	4	0	0	0	107
W	135	77	25	7	2	0	246
WNW	126	140	25	6	0	0	297
NW	54	4	0	0	0	0	58
NNW	73	8	3	0	0	0	84
Totals	1352	406	120	45	3	0	

Source: SCAQMD 1981 Riverside Meteorological Data

TABLE 8.1C-8c: 2ND QUARTER FREQUENCY DISTRIBUTION (COUNTIS)

Date Range: Apr 1 - Jun 30

Wind Speed (m/s) Wind Direction (from)	0.5-2.1	2.1-3.6	3.6-5.7	5.7-8.8	8.8-11.1	>=11	Totals
N	86	0	3	0	0	0	89
NNE	45	12	26	9	0	0	92
NE	28	5	4	4	0	0	41
ENE	29	4	0	0	0	0	33
E	31	2	0	0	0	0	33
ESE	26	7	0	0	0	0	33
SE	29	2	0	0	0	0	31
SSE	36	2	0	0	0	0	38
S	66	4	0	0	0	0	70
SWS	55	1	0	0	0	0	56
SW	27	3	0	0	0	0	30
WSW	62	3	0	1	0	0	66
W	155	57	17	6	0	0	235
WNW	259	291	225	29	0	0	804
NW	116	55	7	0	0	0	178
NNW	72	1	1	0	0	0	74
Totals	1122	449	283	49	0	0	

Source: SCAQMD 1981 Riverside Meteorological Data

TABLE 8.1C-8d: 3RD QUARTER FREQUENCY DISTRIBUTION (COUNTS)

Date Range: Jul 1 - Sep 30

Wind Speed (m/s) Wind Direction (from)	0.5-2.1	2.1-3.6	3.6-5.7	5.7-8.8	8.8-11.1	>=11	Totals
N	103	1	0	0	0	0	104
NNE	42	0	0	0	0	0	42
NE	33	0	0	0	0	0	33
ENE	30	0	0	0	0	0	30
E	37	0	0	0	0	0	37
ESE	32	0	0	0	0	0	32
SE	13	0	0	0	0	0	13
SSE	20	0	0	0	0	0	20
S	58	0	1	0	0	0	59
SWS	73	14	13	0	0	0	100
SW	33	0	1	0	0	0	34
WSW	77	5	0	0	0	0	82
W	179	65	23	7	0	0	274
WNW	244	312	234	23	0	0	813
NW	102	14	1	0	0	0	117
NNW	112	0	0	0	0	0	112
Totals	1188	411	273	30	0	0	

Source: SCAQMD 1981 Riverside Meteorological Data

TABLE 8.1C-8e: 4TH QUARTER FREQUENCY DISTRIBUTION (COUNTS)

Date Range: Oct 1 - Dec 31

Wind Speed (m/s) Wind Direction (from)	0.5-2.1	2.1-3.6	3.6-5.7	5.7-8.8	8.8-11.1	>=11	Totals
N	167	6	2	4	0	0	179
NNE	80	30	33	9	0	0	152
NE	62	20	31	8	0	0	121
ENE	82	8	6	0	0	0	96
E	136	18	8	0	0	0	162
ESE	117	13	3	0	0	0	133
SE	79	3	0	0	0	0	82
SSE	59	2	0	0	0	0	61
S	75	1	0	0	0	0	76
SWS	72	2	0	0	0	0	74
SW	45	0	0	0	0	0	45
WSW	58	7	0	0	0	0	65
W	85	24	16	0	0	0	125
WNW	164	161	36	1	0	0	362
NW	116	27	1	0	0	0	144
NNW	90	0	0	0	0	0	90
Totals	1487	322	136	22	0	0	

Source: SCAQMD 1981 Riverside Meteorological Data

AES Highgrove AFC
Table 8.1C-9a Period of Record Monthly Climate Summary

RIVERSIDE FIRE STN 3, CALIFORNIA (047470)

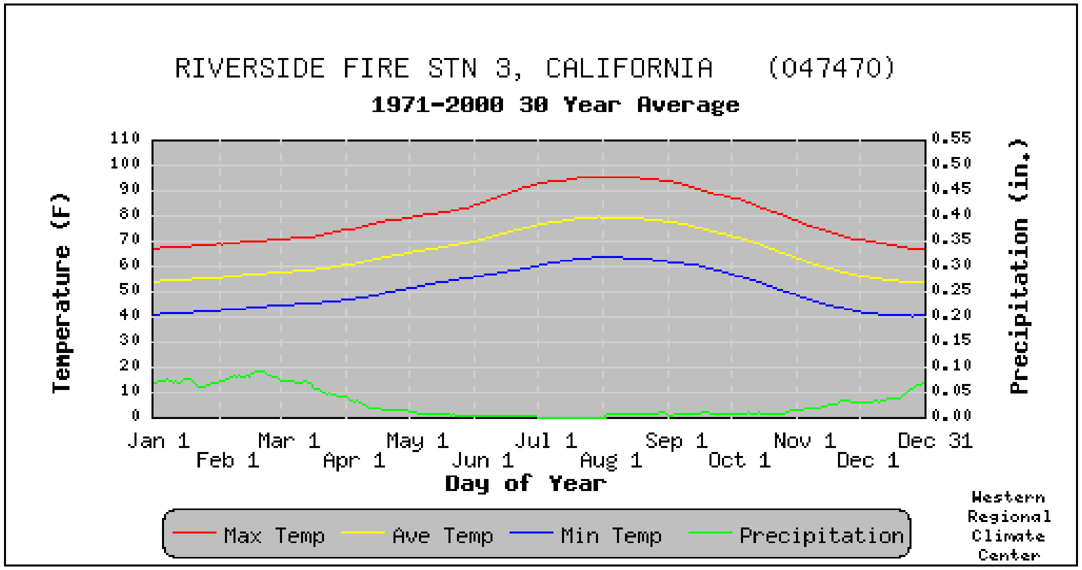
Period of Record : 12/1/1927 to 9/30/2005

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	66.7	68.3	71.4	75.9	80.4	86.8	94.2	94.5	91	83	74.2	67.8	79.5
Average Min. Temperature (F)	39.7	41.5	43.5	47.1	51.8	55.7	60.3	60.6	57.4	51	43.4	39.7	49.3
Average Total Precipitation (in.)	2.04	2.32	1.72	0.79	0.23	0.05	0.05	0.15	0.2	0.42	0.89	1.54	10.4
Average Total SnowFall (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

AES Highgrove AFC
Table 8.1C-9b Plot of Monthly Temperature and Precipitation

RIVERSIDE FIRE STN 3, CALIFORNIA

1971 - 2000 Temperature and Precipitation



Data is smoothed using a 29 day running average.

- Max. Temp. is the average of all daily maximum temperatures recorded for the day of the year between the years 1971 and 2000.
- Ave. Temp. is the average of all daily average temperatures recorded for the day of the year between the years 1971 and 2000.
- Min. Temp. is the average of all daily minimum temperatures recorded for the day of the year between the years 1971 and 2000.
- Precipitation is the average of all daily total precipitation recorded for the day of the year between the years 1971 and 2000.

Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [1]		Federal Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)*		0.08 ppm (157 µg/m^3)[8]		
Respirable Particulate Matter (PM10)	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		50 µg/m^3		
Fine Particulate Matter (PM2.5)	24 Hour	No Separate State Standard		65 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	15 µg/m^3		
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Photometry (NDIR)
	1 Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	—
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	—	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.25 ppm (470 µg/m^3)		—		
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	—	Ultraviolet Fluorescence	0.030 ppm (80 µg/m^3)	—	Spectrophotometry (Pararosaniline Method)
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (365 µg/m^3)	—	
	3 Hour	—		—	0.5 ppm (1300 µg/m^3)	
	1 Hour	0.25 ppm (655 µg/m^3)		—	—	—
Lead[9]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	—
	Calendar Quarter	—		1.5 µg/m^3	Same as Primary Standard	High Volume Sampler and Atomic Absorption
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per kilometer — visibility of ten miles or more (0.07 — 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		No Federal Standards		
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[9]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

*This concentration was approved by the Air Resources Board on April 28, 2005 and is expected to become effective in early 2006.

See footnotes on next page ...

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter—PM10, PM2.5, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2. National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calender year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current federal policies.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. Any equivalent procedure which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7. Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.

8. New federal 8-hour ozone and fine particulate matter standards were promulgated by U.S. EPA on July 18,1997. Contact U.S. EPA for further clarification and current federal policies.

9. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

SCAQMD AIR QUALITY SIGNIFICANCE THRESHOLDS

Mass Daily Thresholds		
Pollutant	**Construction**	**Operation**
NOx	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM10	150 lbs/day	150 lbs/day
SOx	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
Toxic Air Contaminants (TACs) and Odor Thresholds		
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Hazard Index ≥ 1.0 (project increment) Hazard Index ≥ 3.0 (facility-wide)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
Ambient Air Quality for Criteria Pollutants [a]		
NO2 1-hour average annual average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.25 ppm (state) 0.053 ppm (federal)	
PM10 24-hour average annual geometric average annual arithmetic mean	10.4 $\mu g/m^3$ (recommended for construction) [b] 2.5 $\mu g/m^3$ (operation) 1.0 $\mu g/m^3$ 20 $\mu g/m^3$	
Sulfate 24-hour average	1 ug/m^3	
CO 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) 9.0 ppm (state/federal)	

[a] Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated.

[b] Ambient air quality threshold based on SCAQMD Rule 403.

KEY: lbs/day = pounds per day ppm = parts per million ug/m^3 = microgram per cubic meter ≥ greater than or equal to

2002 AIR QUALITY
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

2002

Source/Receptor Area No.	Location	Station No.	Carbon Monoxide: No. Days of Data	CO: Max. Conc. in ppm 1-hour	CO: Max Conc. in ppm 8-hour	CO: No. Days Standard Exceeded a) Federal ≥ 9.5 ppm 8-hour	CO: No. Days Standard Exceeded a) State > 9.0 ppm 8-hour	Ozone: No. Days of Data	Ozone: Max. Conc. in ppm 1-hour	Ozone: Max. Conc. in ppm 8-hour	Ozone: Fourth High Conc. ppm 8-hour	Ozone: No. Days Standard Exceeded Health Advisory ≥ 0.15 ppm 1-hour	Ozone: No. Days Standard Exceeded Federal > 0.12 ppm 1-hour	Ozone: No. Days Standard Exceeded Federal > 0.08 ppm 8-hour	Ozone: No. Days Standard Exceeded State > 0.09 ppm 1-hour	Nitrogen Dioxide: No. Days of Data	NO_2: Max Conc. in ppm 1-hour	NO_2: No. Days Standard Exceeded State > 0.25 ppm 1-hour	NO_2: Average Compared to Federal Standard b) AAM in ppm	Sulfur Dioxide: No. Days of Data	SO_2: Max. Conc. in ppm 1-hour c)	SO_2: Max. Conc. in ppm 24-hour c)
LOS ANGELES COUNTY																						
1	Central LA	087	360	5	4.0	0	0	365	0.122	0.080	0.079	0	0	0	8	363	0.14	0	0.0327	365	0.02	0.016
2	Northwest Coastal LA County	091	365	4	2.7	0	0	365	0.118	0.078	0.074	0	0	0	1	360	0.11	0	0.0249	--	--	--
3	Southwest Coastal LA County	094	363	7	6.1	0	0	357	0.088	0.073	0.066	0	0	0	0	315*	0.10*	0	0.0244*	360	0.07	0.007
4	South Coastal LA County	072	365	6	4.6	0	0	365	0.084	0.065	0.060	0	0	0	0	350	0.13	0	0.0298	365	0.03	0.008
6	West San Fernando Valley	074	365	6	4.8	0	0	365	0.152	0.122	0.113	1	9	27	42	362	0.09	0	0.0248	--	--	--
7	East San Fernando Valley	069	365	6	4.6	0	0	365	0.128	0.097	0.091	0	1	6	17	362	0.26	1	0.0402	363	0.01	0.007
8	West San Gabriel Valley	088	365	6	4.0	0	0	365	0.137	0.103	0.096	0	3	10	23	365	0.15	0	0.0335	--	--	--
9	East San Gabriel Valley 1	060	365	4	2.4	0	0	365	0.136	0.102	0.098	0	5	12	26	363	0.12	0	0.0336	--	--	--
9	East San Gabriel Valley 2	591	365	5	2.3	0	0	365	0.152	0.114	0.111	1	12	23	45	362	0.10	0	0.0272	--	--	--
10	Pomona/Walnut Valley	075	365	6	3.3	0	0	365	0.150	0.112	0.100	1	5	15	28	365	0.11	0	0.0365	--	--	--
11	South San Gabriel Valley	085	365	5	4.0	0	0	365	0.111	0.079	0.074	0	0	0	3	362	0.12	0	0.0344	--	--	--
12	South Central LA County	084	363	16	10.1	1	1	364	0.072	0.053	0.050	0	0	0	0	362	0.14	0	0.0357	--	--	--
13	Santa Clarita Valley	090	363	3	1.9	0	0	362	0.169	0.145	0.131	8	32	56	81	355	0.10	0	0.0200	--	--	--
ORANGE COUNTY																						
16	North Orange County	3177	365	10	4.4	0	0	365	0.121	0.079	0.073	0	0	0	3	335	0.12	0	0.0256	--	--	--
17	Central Orange County	3176	365	7	5.4	0	0	365	0.103	0.079	0.070	0	0	0	3	358	0.10	0	0.0244	--	--	--
18	North Coastal Orange County	3195	357	5	4.3	0	0	365	0.087	0.071	0.066	0	0	0	0	364	0.11	0	0.0187	365	0.03	0.016
19	Saddleback Valley	3812	365	3	3.6	0	0	365	0.136	0.095	0.081	0	2	2	9	--	--	--	--	--	--	--
RIVERSIDE COUNTY																						
22	Norco/Corona	4155	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23	Metropolitan Riverside County 1	4144	358	8	3.0	0	0	358	0.155	0.124	0.111	1	12	38	56	338	0.10	0	0.0237	351	0.02	0.002
23	Metropolitan Riverside County 2	4146	361	7	3.9	0	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24	Perris Valley	4149	--	--	--	--	--	365	0.147	0.117	0.107	1	4	41	59	--	--	--	--	--	--	--
25	Lake Elsinore	4158	365	3	2.0	0	0	365	0.139	0.114	0.104	0	6	44	52	364	0.07	0	0.0173	--	--	--
29	Banning Airport	4164	--	--	--	--	--	365	0.160	0.131	0.113	2	13	52	64	364	0.15	0	0.0199	--	--	--
30	Coachella Valley 1**	4137	363	2	1.2	0	0	365	0.136	0.127	0.110	0	2	48	49	356	0.10	0	0.0172	--	--	--
30	Coachella Valley 2**	4157	--	--	--	--	--	365	0.114	0.111	0.096	0	0	16	24	--	--	--	--	--	--	--
SAN BERNARDINO COUNTY																						
32	Northwest San Bernardino Valley	5175	363	4	1.6	0	0	363	0.139	0.118	0.106	0	5	19	36	359	0.12	0	0.0369	--	--	--
33	Southwest San Bernardino Valley	5817	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
34	Central San Bernardino Valley 1	5197	--	--	--	--	--	335	0.159	0.124	0.115	2	8	22	37	303*	0.12*	0	0.0334*	329	0.03*	0.010*
34	Central San Bernardino Valley 2	5203	359	5	3.3	0	0	359	0.147	0.113	0.106	1	6	30	43	345	0.11	0	0.0296	--	--	--
35	East San Bernardino Valley	5204	--	--	--	--	--	365	0.158	0.123	0.119	2	23	47	66	--	--	--	--	--	--	--
37	Central San Bernardino Mountains	5181	--	--	--	--	--	365	0.161	0.139	0.132	3	22	82	91	--	--	--	--	--	--	--
38	East San Bernardino Mountains	5818	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	DISTRICT MAXIMUM			16	10.1	1	1		0.169	0.145	0.132	8	32	82	91		0.26	1	0.0402		0.07	0.016
	SOUTH COAST AIR BASIN			16	10.1	1	1		0.169	0.145	0.132	18	49	103	118		0.26	1	0.0402		0.07	0.016

ppm - Parts Per Million parts of air, by volume. AAM = Annual Arithmetic Mean -- - Pollutant not monitored.

* Less than 12 full months of data. May not be representative.

** Salton Sea Air Basin.

a) - The federal 1-hour standard (1-hour average CO > 35 ppm) and state 1-hour standard (1-hour average CO > 20 ppm) were not exceeded.

b) - The federal standard is annual arithmetic mean NO_2 greater than 0.0534 ppm. No location exceeded this standard.

c) - The state standards are 1-hour average SO_2 > 0.25 ppm and 24-hour average SO_2 > 0.04 ppm. No location exceeded state standards. The federal standards are annual arithmetic mean SO_2 > 0.03 ppm, 24-hour average > 0.14 ppm, and 3-hour average > 0.50 ppm. SO_2 concentrations were well below the federal standards.

South Coast
Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765-4182
http://www.aqmd.gov

The map showing the locations of source/receptor areas can be accessed via the Internet at http://www.aqmd.gov/smog/areamap.html. Locations of source/receptor areas are shown on the "South Coast Air Quality Management District Air Monitoring Areas" map available free of charge from SCAQMD Public Information.

2002 AIR QUALITY
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

2002

Source/Receptor Area No. Location	Station No.	PM10 [d),++]: No. Days of Data	PM10: Max. Conc. in µg/m³ 24-hour	PM10: No. (%) Samples Exceeding Standard Federal > 150 µg/m³ 24-hour	PM10: No. (%) Samples Exceeding Standard State > 50 µg/m³ 24-hour	PM10: Annual Averages [g)] AAM Conc. µg/m³	PM10: Annual Averages [g)] AGM Conc. µg/m³	PM2.5 [e),++]: No. Days of Data	PM2.5: Max. Conc. in µg/m³ 24-hour	PM2.5: No. (%) Samples Exceeding Standard Federal > 65 µg/m³ 24-hour	PM2.5: Annual Averages [h)] AAM Conc. µg/m³	TSP [f)]: No. Days of Data	TSP: Max. Conc. in µg/m³ 24-hour	TSP: Annual Average AAM Conc. µg/m³	Lead [f)]: Max. Monthly Average Conc. [i)] µg/m³	Lead: Max. Quarterly Average Conc. [i)] µg/m³	Sulfate [f)]: Max. Conc. in µg/m³ 24-hour	Sulfate: No. (%) Samples Exceeding Standard State ≥ 25 µg/m³ 24-hour
LOS ANGELES COUNTY																		
1 Central LA	087	55	65	0	8(14.5)	39.3	37.6	330	66.3	1(0.3)	21.8	69	152	77.7	0.05	0.03	15.2	0
2 Northwest Coastal LA County	091	--	--	--	--	--	--	--	--	--	--	60	191	52.3	--	--	14.6	0
3 Southwest Coastal LA County	094	61	121	0	12(19.7)	37.4	34.1	--	--	--	--	60	680	83.8	0.02	0.02	15.6	0
4 South Coastal LA County	072	58	74	0	5(8.6)	35.9	34.1	356	62.7	0	19.5	61	104	65.5	0.03	0.02	17.8	0
6 West San Fernando Valley	074	--	--	--	--	--	--	120	48.8	0	18.9	--	--	--	--	--	--	--
7 East San Fernando Valley	069	58	71	0	7(12.1)	37.7	35.2	122	63.0	0	24.0	--	--	--	--	--	--	--
8 West San Gabriel Valley	088	--	--	--	--	--	--	121	57.8	0	20.3	59	86	54.8	--	--	10.5	0
9 East San Gabriel Valley 1	060	57	91	0	23(40.4)	46.1	42.7	339	72.4	1(0.3)	20.8	59	195	91.7	--	--	11.3	0
9 East San Gabriel Valley 2	591	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10 Pomona/Walnut Valley	075	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11 South San Gabriel Valley	085	--	--	--	--	--	--	118	61.0	0	23.9	60	147	82.5	0.06	0.05	11.2	0
12 South Central LA County	084	--	--	--	--	--	--	122	64.0	0	23.3	59	223	98.5	0.04	0.04	15.3	0
13 Santa Clarita Valley	090	60	61	0	7(11.7)	33.3	32.5	--	--	--	--	--	--	--	--	--	--	--
ORANGE COUNTY																		
16 North Orange County	3177	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17 Central Orange County	3176	61	69	0	5(8.2)	33.6	31.5	351	68.6	1(0.3)	18.6	--	--	--	--	--	--	--
18 North Coastal Orange County	3195	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19 Saddleback Valley	3812	60	80	0	5(8.3)	31.3	28.7	119	58.5	0	15.5	--	--	--	--	--	--	--
RIVERSIDE COUNTY																		
22 Norco/Corona	4155	56	78	0	19(33.9)	44.5	41.5	--	--	--	--	--	--	--	--	--	--	--
23 Metropolitan Riverside County 1	4144	118	130	0	81(68.6)	58.5	53.4	327	77.6	8(2.5)	27.5	60	200	120.1	0.03	0.02	11.7	0
23 Metropolitan Riverside County 2	4146	--	--	--	--	--	--	115	75.5	2(1.7)	27.1	62	129	84.6	0.02	0.02	10.5	0
24 Perris Valley	4149	61	100	0	24(39.3)	45.2	41.6	--	--	--	--	--	--	--	--	--	--	--
25 Lake Elsinore	4158	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29 Banning Airport	4164	54	70	0	6(11.1)	27.5	23.7	--	--	--	--	--	--	--	--	--	--	--
30 Coachella Valley 1**	4137	59	75	0	3(5.1)	27.1	24.6	119	42.3	0	10.0	--	--	--	--	--	--	--
30 Coachella Valley 2**	4157	115+	139+	0+	52(45.2)+	50.6+	49.1+	117	26.8	0	12.0	--	--	--	--	--	--	--
SAN BERNARDINO COUNTY																		
32 Northwest San Bernardino Valley	5175	--	--	--	--	--	--	--	--	--	--	61	122	71.9	0.02	0.02	11.5	0
33 Southwest San Bernardino Valley	5817	61	91	0	25(41.0)	44.9	41.0	111	64.8	0	25.2	--	--	--	--	--	--	--
34 Central San Bernardino Valley 1	5197	60	102	0	32(53.3)	50.2	45.9	118	66.6	1(0.9)	24.3	60	182	105.6	--	--	13.5	0
34 Central San Bernardino Valley 2	5203	59	94	0	33(55.9)	50.4	45.9	117	82.1	3(2.6)	25.7	60	175	97.8	0.03	0.02	10.8	0
35 East San Bernardino Valley	5204	57	83	0	18(31.6)	41.2	36.3	--	--	--	--	--	--	--	--	--	--	--
37 Central San Bernardino Mountains	5181	27*	52*	0	5(18.5)*	36.9*	35.0*	--	--	--	--	--	--	--	--	--	--	--
38 East San Bernardino Mountains	5818	--	--	--	--	--	--	56	34.1	0	11.3	--	--	--	--	--	--	--
DISTRICT MAXIMUM			139	0	81	58.5	53.4		82.1	8	27.5		680	120.1	0.06	0.05	17.8	0
SOUTH COAST AIR BASIN			130	0	90	58.5	53.4		82.1	10	27.5		680	120.1	0.06	0.05	17.8	0

µg/m³ - Micrograms per cubic meter of air. AAM - Annual Arithmetic Mean AGM - Annual Geometric Mean --- Pollutant not monitored.

* Less than 12 full months of data. May not be representative.

** Salton Sea Air Basin.

d) - PM10 samples were collected every 6 days at all sites except for Station Numbers 4144 and 4157 where samples were collected every 3 days.

e) - PM2.5 samples were collected every 3 days at all sites except for the following sites: Station Numbers 060, 072, 087, 3176, and 4144 where samples were taken every day, and Station Number 5818 where samples were taken every 6 days.

f) - Total suspended particulates, lead, and sulfate were determined from samples collected every 6 days by the high volume sampler method, on glass fiber filter media.

g) - Federal PM10 standard is annual average (AAM) > 50 µg/m³; and state standard is annual average (AAM) > 20 µg/m³++.

h) - Federal PM2.5 standard is annual average (AAM) > 15 µg/m³; and state standard is annual average (AAM) > 12 µg/m³++.

i) - Federal lead standard is quarterly average > 1.5 µg/m³; and state standard is monthly average ≥ 1.5 µg/m³. No location exceeded lead standards. Special monitoring immediately downwind of stationary sources of lead was carried out at four locations in 2002. The maximum monthly average concentration was 1.33 µg/m³, and the maximum quarterly average concentration was 0.49 µg/m³, both recorded in Southeast Los Angeles County area.

\+ - The data for the samples collected on high-wind-days (177 µg/m³ on 5/8/02 and 276 µg/m³ on 11/25/02) were excluded in accordance with EPA's Natural Events Policy.

++ - The new PM2.5 annual average state standard of 12 µg/m³ and revised PM10 annual average state standard of 20 µg/m³ (to replace AGM 30 µg/m³) recommended by the California Air Resources Board have been approved by the state Office of Administrative Law and will become effective on July 5, 2003.

2003 AIR QUALITY
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

2003

Source/Receptor Area No.	Location	Station No.	Carbon Monoxide: No. Days of Data	Carbon Monoxide: Max. Conc. in ppm 1-hour	Carbon Monoxide: Max Conc. in ppm 8-hour	Carbon Monoxide: No. Days Standard Exceeded a) Federal ≥ 9.5 ppm 8-hour	Carbon Monoxide: No. Days Standard Exceeded a) State > 9.0 ppm 8-hour	Ozone: No. Days of Data	Ozone: Max. Conc. in ppm 1-hour	Ozone: Max. Conc. in ppm 8-hour	Ozone: Fourth High Conc. ppm 8-hour	Ozone: No. Days Standard Exceeded Health Advisory ≥ 0.15 ppm 1-hour	Ozone: No. Days Standard Exceeded Federal > 0.12 ppm 1-hour	Ozone: No. Days Standard Exceeded Federal > 0.08 ppm 8-hour	Ozone: No. Days Standard Exceeded State > 0.09 ppm 1-hour	Nitrogen Dioxide: No. Days of Data	Nitrogen Dioxide: Max Conc. in ppm 1-hour b)	Nitrogen Dioxide: Annual Average b) AAM Conc. ppm	Sulfur Dioxide: No. Days of Data	Sulfur Dioxide: Max. Conc. in ppm 1-hour c)	Sulfur Dioxide: Max. Conc. in ppm 24-hour c)
LOS ANGELES COUNTY																					
1	Central LA	087	365	6	4.6	0	0	365	0.152	0.088	0.083	1	1	2	11	361	0.16	0.0338	349	0.05*	0.006*
2	Northwest Coastal LA County	091	365	5	2.7	0	0	365	0.134	0.105	0.083	0	1	1	11	352	0.12	0.0231	--	--	--
3	Southwest Coastal LA County	094	361	7	5.0	0	0	365	0.110	0.078	0.073	0	0	0	2	363	0.12	0.0238	365	0.03	0.006
4	South Coastal LA County	072	363	6	4.7	0	0	365	0.099	0.071	0.063	0	0	0	1	341	0.14*	0.0288*	361	0.03	0.008
6	West San Fernando Valley	074	365	6	4.1	0	0	365	0.179	0.129	0.119	1	14	49	68	364	0.13*	0.0260*	--	--	--
7	East San Fernando Valley	069	349	5*	4.7*	0*	0*	341	0.134*	0.108*	0.097*	0*	4*	20*	37*	344	0.14*	0.0356*	338	0.01*	0.005*
8	West San Gabriel Valley	088	365	5	3.8	0	0	365	0.152	0.108	0.103	1	7	28	44	356	0.14	0.0322	--	--	--
9	East San Gabriel Valley 1	060	365	5	2.6	0	0	365	0.150	0.124	0.107	1	11	21	40	347	0.12*	0.0296*	--	--	--
9	East San Gabriel Valley 2	591	357	3	2.1	0	0	365	0.162	0.134	0.123	7	22	41	61	361	0.12	0.0271	--	--	--
10	Pomona/Walnut Valley	075	365	6	4.4	0	0	365	0.161	0.123	0.109	3	13	24	39	365	0.12	0.0352	--	--	--
11	South San Gabriel Valley	085	365	5	4.0	0	0	364	0.128	0.097	0.084	0	1	2	18	360	0.14	0.0353	--	--	--
12	South Central LA County	084	362	12	7.3	0	0	361	0.081	0.063	0.059	0	0	0	0	356	0.13	0.0312	--	--	--
13	Santa Clarita Valley	090	363	3	1.7	0	0	363	0.194	0.152	0.137	15	35	69	89	363	0.12	0.0221	--	--	--
ORANGE COUNTY																					
16	North Orange County	3177	365	8	4.1	0	0	365	0.165	0.087	0.082	1	1	2	7	361	0.16	0.0284	--	--	--
17	Central Orange County	3176	365	6	3.9	0	0	365	0.136	0.087	0.082	0	2	1	11	362	0.13	0.0240	--	--	--
18	North Coastal Orange County	3195	365	7	5.8	0	0	364	0.107	0.088	0.080	0	0	1	4	362	0.11	0.0199	354	0.02	0.012
19	Saddleback Valley	3812	362	3	1.8	0	0	362	0.153	0.105	0.097	1	4	8	16	--	--	--	--	--	--
RIVERSIDE COUNTY																					
22	Norco/Corona	4155	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23	Metropolitan Riverside County 1	4144	365	5	3.7	0	0	365	0.169	0.140	0.123	4	18	62	80	360	0.09	0.0217	363	0.02	0.012
23	Metropolitan Riverside County 2	4146	360	5	3.4	0	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24	Perris Valley	4149	--	--	--	--	--	357	0.155	0.121	0.119	1	7	47	67	--	--	--	--	--	--
25	Lake Elsinore	4158	345	4*	1.3*	0*	0*	345	0.154*	0.137*	0.113*	2*	7*	35*	50*	328	0.08*	0.0182*	--	--	--
29	Banning Airport	4164	--	--	--	--	--	365	0.166	0.146	0.127	3	27	63	75	346	0.09*	0.0193*	--	--	--
30	Coachella Valley 1**	4137	339	3*	1.3*	0*	0*	359	0.141	0.111	0.108	0	4	44	54	347	0.06*	0.0173*	--	--	--
30	Coachella Valley 2**	4157	--	--	--	--	--	365	0.123	0.105	0.102	0	0	19	24	--	--	--	--	--	--
SAN BERNARDINO COUNTY																					
32	Northwest San Bernardino Valley	5175	363	4	2.9	0	0	365	0.155	0.134	0.116	2	15	35	48	363	0.11	0.0349	--	--	--
33	Southwest San Bernardino Valley	5817	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
34	Central San Bernardino Valley 1	5197	--	--	--	--	--	351	0.176	0.148	0.134	7	26	48	65	355	0.12	0.0307	361	0.01	0.004
34	Central San Bernardino Valley 2	5203	365	5	4.6	0	0	358	0.160	0.137	0.123	4	19	45	59	362	0.10	0.0270	--	--	--
35	East San Bernardino Valley	5204	--	--	--	--	--	365	0.174	0.153	0.138	12	38	72	91	--	--	--	--	--	--
37	Central San Bernardino Mountains	5181	--	--	--	--	--	341	0.163*	0.142*	0.130*	6*	34*	74*	84*	--	--	--	--	--	--
38	East San Bernardino Mountains	5818	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DISTRICT MAXIMUM				12	7.3	0	0		0.194	0.153	0.138	15	38	74	91		0.16	0.0356		0.05	0.012
SOUTH COAST AIR BASIN				12	7.3	0	0		0.194	0.153	0.138	36	68	119	133		0.16	0.0356		0.05	0.012

ppm - Parts Per Million parts of air, by volume. AAM = Annual Arithmetic Mean -- - Pollutant not monitored.

* Less than 12 full months of data. May not be representative.

** Salton Sea Air Basin.

a) - The federal 1-hour standard (1-hour average CO > 35 ppm) and state 1-hour standard (1-hour average CO > 20 ppm) were not exceeded.

b) - The state standard is 1-hour average NO_2 > 0.25 ppm. The federal standard is annual arithmetic mean NO_2 > 0.0534 ppm. No location exceeded the standards.

c) - The state standards are 1-hour average SO_2 > 0.25 ppm and 24-hour average SO_2 > 0.04 ppm. No location exceeded state standards. The federal standards are annual arithmetic mean SO_2 > 0.03 ppm, 24-hour average > 0.14 ppm, and 3-hour average > 0.50 ppm. SO_2 concentrations were well below the federal standards.

AQMD

South Coast
Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765-4182
www.aqmd.gov

The map showing the locations of source/receptor areas can be accessed via the Internet at http://www.aqmd.gov/telemweb/areamap.aspx. Locations of source/receptor areas are shown on the "South Coast Air Quality Management District Air Monitoring Areas" map available free of charge from SCAQMD Public Information.

2003 AIR QUALITY
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

2003

No.	Source/Receptor Area Location	Station No.	Suspended Particulates PM10 d): No. Days of Data	PM10: Max. Conc. in µg/m³ 24-hour	PM10: No. (%) Samples Exceeding Standard: Federal > 150 µg/m³ 24-hour	PM10: No. (%) Samples Exceeding Standard: State > 50 µg/m³ 24-hour	PM10: Annual Average g) AAM Conc. µg/m³	Suspended Particulates PM2.5 e): No. Days of Data	PM2.5: Max. Conc. in µg/m³ 24-hour	PM2.5: No. (%) Samples Exceeding Standard: Federal > 65 µg/m³ 24-hour	PM2.5: Annual Averages h) AAM Conc. µg/m³	Particulates TSP f): No. Days of Data	TSP: Max. Conc. in µg/m³ 24-hour	TSP: Annual Average AAM Conc. µg/m³	Lead f): Max. Monthly Average Conc. i) µg/m³	Lead: Max. Quarterly Average Conc. i) µg/m³	Sulfate f): Max. Conc. in µg/m³ 24-hour	Sulfate: No. (%) Samples Exceeding Standard: State ≥ 25 µg/m³ 24-hour
	LOS ANGELES COUNTY																	
1	Central LA	087	61	81	0	6(9.8)	34.6	330	83.7	5(1.5)	21.3	61	157	73.5	0.15	0.15	14.6	0
2	Northwest Coastal LA County	091	--	--	--	--	--	--	--	--	--	59	114	49.4	--	--	14.3	0
3	Southwest Coastal LA County	094	61	58	0	3(4.9)	29.7	--	--	--	--	61	122	56.7	0.17	0.10	16.4	0
4	South Coastal LA County	072	61	63	0	4(6.6)	32.8	324	115.2	3(0.9)	18.0	64	159	63.9	0.10	0.05	17.8	0
6	West San Fernando Valley	074	--	--	--	--	--	115	47.5	0	16.4	--	--	--	--	--	--	--
7	East San Fernando Valley	069	50	81*	0*	7(14.0)*	38.1*	92	120.6	1(1.1)	20.9	--	--	--	--	--	--	--
8	West San Gabriel Valley	088	--	--	--	--	--	110	89.0	1(0.9)	18.6	59	111	54.3	--	--	12.7	0
9	East San Gabriel Valley 1	060	60	119	0	21(35.0)	44.4	314	121.2	3(1.0)	19.2	55	176	83.9	--	--	11.7	0
9	East San Gabriel Valley 2	591	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10	Pomona/Walnut Valley	075	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11	South San Gabriel Valley	085	--	--	--	--	--	111	90.3	1(0.9)	20.6	60	160	75.4	0.05	0.04	14.4	0
12	South Central LA County	084	--	--	--	--	--	117	54.8	0	20.2	60	449	105.2	0.04	0.04	14.9	0
13	Santa Clarita Valley	090	61	72	0	10(16.4)	31.8	--	--	--	--	--	--	--	--	--	--	--
	ORANGE COUNTY																	
16	North Orange County	3177	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17	Central Orange County	3176	61	96	0	6(9.8)	32.7	340	115.5	3(0.9)	17.3	--	--	--	--	--	--	--
18	North Coastal Orange County	3195	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19	Saddleback Valley	3812	57	64	0	2(3.5)	26.7	109	50.6	0	13.1	--	--	--	--	--	--	--
	RIVERSIDE COUNTY																	
22	Norco/Corona	4155	58	116	0	15(25.9)	40.5	--	--	--	--	--	--	--	--	--	--	--
23	Metropolitan Riverside County 1	4144	109	164	2(1.8)	62(56.9)	56.9	350	104.3	8(2.3)	24.9	58	283	105.6	0.02	0.02	10.1	0
23	Metropolitan Riverside County 2	4146	--	--	--	--	--	116	73.3	1(0.9)	22.6	60	225	85.0	0.02	0.01	10.0	0
24	Perris Valley	4149	58	142	0	19(32.8)	43.9	--	--	--	--	--	--	--	--	--	--	--
25	Lake Elsinore	4158	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29	Banning Airport	4164	60	79	0	9(15.0)	29.0	--	--	--	--	--	--	--	--	--	--	--
30	Coachella Valley 1**	4137	60	108	0	4(6.7)	27.1	112	21.2	0	9.0	--	--	--	--	--	--	--
30	Coachella Valley 2**	4157	112	124+	0+	47(42.0)+	50.2+	118	26.8	0	11.4	--	--	--	--	--	--	--
	SAN BERNARDINO COUNTY																	
32	Northwest San Bernardino Valley	5175	--	--	--	--	--	--	--	--	--	60	269	69.6	0.02	0.02	11.8	0
33	Southwest San Bernardino Valley	5817	62	149	0	18(29.0)	42.9	118	88.9	3(2.5)	23.8	--	--	--	--	--	--	--
34	Central San Bernardino Valley 1	5197	50	101*	0*	27(54.0)*	47.2*	111	98.1	1(0.9)	21.8	59	335	119.8	--	--	11.9	0
34	Central San Bernardino Valley 2	5203	59	98	0	23(39.0)	44.9	119	73.9	1(0.8)	22.2	60	242	97.8	0.14	0.08	12.1	0
35	East San Bernardino Valley	5204	58	92	0	15(25.9)	37.0	--	--	--	--	--	--	--	--	--	--	--
37	Central San Bernardino Mountains	5181	50	47*	0*	0*	25.6*	--	--	--	--	--	--	--	--	--	--	--
38	East San Bernardino Mountains	5818	--	--	--	--	--	55	35.0	0	10.5	--	--	--	--	--	--	--
	DISTRICT MAXIMUM			164	2	62	56.9		121.2	8	24.9		449	119.8	0.17	0.15	17.8	0
	SOUTH COAST AIR BASIN			164	2	69	56.9		121.2	14	24.9		449	119.8	0.17	0.15	17.8	0

µg/m³ - Micrograms per cubic meter of air. AAM - Annual Arithmetic Mean -- - Pollutant not monitored.

* Less than 12 full months of data. May not be representative.

** Salton Sea Air Basin.

d) - PM10 samples were collected every 6 days at all sites except for Station Numbers 4144 and 4157 where samples were collected every 3 days.

e) - PM2.5 samples were collected every 3 days at all sites except for the following sites: Station Numbers 060, 072, 087, 3176, and 4144 where samples were taken every day, and Station Number 5818 where samples were taken every 6 days.

f) - Total suspended particulates, lead, and sulfate were determined from samples collected every 6 days by the high volume sampler method, on glass fiber filter media.

g) - Federal PM10 standard is annual average (AAM) > 50 µg/m³. State standard is annual average (AAM) > 20 µg/m³ (changed from AGM > 30 µg/m³, effective July 5, 2003).

h) - Federal PM2.5 standard is annual average (AAM) > 15 µg/m³. State standard is annual average (AAM) > 12 µg/m³ (new standard, established July 5, 2003).

i) - Federal lead standard is quarterly average > 1.5 µg/m³; and state standard is monthly average ≥ 1.5 µg/m³. No location exceeded lead standards. Special monitoring immediately downwind of stationary sources of lead was carried out at four locations in 2003. The maximum monthly average concentration was 0.35 µg/m³, and the maximum quarterly average concentration was 0.29 µg/m³, both recorded in Central Los Angeles.

\+ - The data for five samples collected on high-wind days (178 µg/m³ on 1/6/03, 132 µg/m³ on 2/2/03, 227 µg/m³ on 5/15/03, 148 µg/m³ on 6/20/03 and 309 µg/m³ on 6/23/03) were excluded in accordance with EPA's Natural Events Policy.

Printed on Recycled Paper

2004 AIR QUALITY
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

2004

Source/Receptor Area No.	Location	Station No.	CO: No. Days of Data	CO: Max. Conc. in ppm 1-hour	CO: Max Conc. in ppm 8-hour	CO: No. Days Standard Exceeded a) Federal ≥ 9.5 ppm 8-hour	CO: No. Days Standard Exceeded a) State > 9.0 ppm 8-hour	Ozone: No. Days of Data	Ozone: Max. Conc. in ppm 1-hour	Ozone: Max. Conc. in ppm 8-hour	Ozone: Fourth High Conc. ppm 8-hour	Ozone: No. Days Standard Exceeded Health Advisory ≥ 0.15 ppm 1-hour	Ozone: Federal > 0.12 ppm 1-hour	Ozone: Federal > 0.08 ppm 8-hour	Ozone: State b) > 0.09 ppm 1-hour	Ozone: State b) > 0.07 ppm 8-hour	NO2: No. Days of Data	NO2: Max Conc. in ppm 1-hour c)	NO2: Annual Average c) AAM Conc. ppm	SO2: No. Days of Data	SO2: Max. Conc. in ppm 1-hour d)	SO2: Max. Conc. in ppm 24-hour d)
LOS ANGELES COUNTY																						
1	Central LA	087	361	4	3.2	0	0	366	0.110	0.092	0.079	0	0	1	7	7	359	0.16	0.0328	364	0.08	0.015
2	Northwest Coastal LA County	091	360	4	2.3	0	0	366	0.107	0.089	0.078	0	0	1	5	6	355	0.09	0.0198	--	--	--
3	Southwest Coastal LA County 1	094	90*	6*	4.4*	0*	0*	90*	0.069*	0.060*	0.056*	0*	0*	0*	0*	0*	89*	0.08*	0.0310*	89*	0.03*	0.004*
3	Southwest Coastal LA County 2	820	260*	4*	3.0*	0*	0*	262*	0.120*	0.100*	0.086*	0*	0*	4*	4*	13*	230*	0.09*	0.0136*	261*	0.02*	0.007*
4	South Coastal LA County 1	072	366	4	3.4	0	0	366	0.090	0.075	0.071	0	0	0	0	0	356	0.12	0.0280	361	0.04	0.012
4	South Coastal LA County 2	077	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6	West San Fernando Valley	074	366	5	3.5	0	0	366	0.131	0.116	0.102	0	2	29	54	65	365	0.08	0.0214	--	--	--
7	East San Fernando Valley	069	366	5	3.7	0	0	366	0.137	0.109	0.089	0	2	7	27	37	356	0.12	0.0332	348	0.02	0.010
8	West San Gabriel Valley	088	361	7	3.4	0	0	365	0.130	0.103	0.093	0	1	9	27	31	355	0.12	0.0270	--	--	--
9	East San Gabriel Valley 1	060	366	3	2.0	0	0	366	0.134	0.104	0.094	0	2	10	28	26	351	0.10	0.0204	--	--	--
9	East San Gabriel Valley 2	591	361	2	2.0	0	0	366	0.134	0.108	0.095	0	4	16	42	35	353	0.12	0.0240	--	--	--
10	Pomona/Walnut Valley	075	366	4	3.1	0	0	366	0.131	0.102	0.097	0	4	13	31	25	364	0.11	0.0314	--	--	--
11	South San Gabriel Valley	085	366	5	3.6	0	0	366	0.104	0.084	0.080	0	0	0	7	7	353	0.12	0.0305	--	--	--
12	South Central LA County	084	366	10	6.7	0	0	366	0.084	0.072	0.065	0	0	0	0	0	362	0.10	0.0301	--	--	--
13	Santa Clarita Valley	090	363	5	3.7	0	0	360	0.158	0.133	0.108	1	13	52	69	81	358	0.09	0.0204	--	--	--
ORANGE COUNTY																						
16	North Orange County	3177	364	7	4.0	0	0	364	0.099	0.080	0.078	0	0	0	6	6	341	0.12	0.0252	--	--	--
17	Central Orange County	3176	366	5	4.1	0	0	366	0.120	0.097	0.088	0	0	6	14	35	361	0.12	0.0199	--	--	--
18	North Coastal Orange County	3195	366	5	4.1	0	0	366	0.104	0.087	0.076	0	0	1	2	5	357	0.10	0.0151	364	0.03	0.008
19	Saddleback Valley	3812	366	2	1.6	0	0	366	0.116	0.089	0.086	0	0	2	11	20	--	--	--	--	--	--
RIVERSIDE COUNTY																						
22	Norco/Corona	4155	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23	Metropolitan Riverside County 1	4144	364	4	3.0	0	0	366	0.141	0.117	0.112	0	8	35	59	75	363	0.09	0.0172	331	0.02	0.015
23	Metropolitan Riverside County 2	4146	366	4	2.1	0	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24	Perris Valley	4149	--	--	--	--	--	365	0.128	0.103	0.097	0	2	19	37	47	--	--	--	--	--	--
25	Lake Elsinore	4158	353	2	0.9	0	0	353	0.130	0.116	0.103	0	2	21	41	51	339	0.06	0.0151	--	--	--
29	Banning Airport	4164	--	--	--	--	--	349	0.156	0.116	0.112	1	7	40	49	69	334	0.08	0.0165	--	--	--
30	Coachella Valley 1**	4137	366	2	1.0	0	0	366	0.125	0.108	0.099	0	1	31	36	55	353	0.07	0.0130	--	--	--
30	Coachella Valley 2**	4157	--	--	--	--	--	366	0.111	0.102	0.098	0	0	18	23	51	--	--	--	--	--	--
SAN BERNARDINO COUNTY																						
32	Northwest San Bernardino Valley	5175	366	3	2.1	0	0	366	0.138	0.105	0.103	0	2	18	31	31	365	0.11	0.0305	--	--	--
33	Southwest San Bernardino Valley	5817	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
34	Central San Bernardino Valley 1	5197	313*	3*	2.1*	0*	0*	366	0.149	0.123	0.112	0	7	28	48	54	346	0.06	0.0273	360	0.01	0.006
34	Central San Bernardino Valley 2	5203	366	4	3.3	0	0	366	0.157	0.130	0.113	1	9	38	55	58	363	0.12	0.0261	--	--	--
35	East San Bernardino Valley	5204	--	--	--	--	--	366	0.160	0.137	0.122	1	12	53	75	76	--	--	--	--	--	--
37	Central San Bernardino Mountains	5181	--	--	--	--	--	364	0.163	0.145	0.124	1	9	66	75	96	--	--	--	--	--	--
38	East San Bernardino Mountains	5818	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	DISTRICT MAXIMUM			10	6.7	0	0		0.163	0.145	0.124	1	13	66	75	96		0.16	0.0332		0.08	0.015
	SOUTH COAST AIR BASIN			10	6.7	0	0		0.163	0.148	0.124	4	28	90	111	148		0.16	0.0332		0.08	0.015

ppm - Parts Per Million parts of air, by volume. AAM = Annual Arithmetic Mean -- - Pollutant not monitored.

* Less than 12 full months of data. May not be representative. ** Salton Sea Air Basin.

a) - The federal 1-hour standard (1-hour average CO > 35 ppm) and state 1-hour standard (1-hour average CO > 20 ppm) were not exceeded.

b) - On April 28, 2005, Air Resources Board has approved revising the California Ozone standard to establish a new 8-hour average standard of 0.07 ppm. The new 8-hour standard is expected to take effect by December 2005.

c) - The state standard is 1-hour average NO_2 > 0.25 ppm. The federal standard is annual arithmetic mean NO_2 > 0.0534 ppm. No location exceeded the standards.

d) - The state standards are 1-hour average SO_2 > 0.25 ppm and 24-hour average SO_2 > 0.04 ppm. The federal standards are annual arithmetic mean SO_2 > 0.03 ppm, 24-hour average > 0.14 ppm, and 3-hour average > 0.50 ppm. No location exceeded SO_2 standards.

South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765-4182
www.aqmd.gov

The map showing the locations of source/receptor areas can be accessed via the Internet at http://www.aqmd.gov/telemweb/areamap.aspx. Locations of source/receptor areas are shown on the "South Coast Air Quality Management District Air Monitoring Areas" map available free of charge from SCAQMD Public Information.

2004 AIR QUALITY
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

2004

No.	Source/Receptor Area Location	Station No.	Suspended Particulates PM10 e): No. Days of Data	PM10: Max. Conc. in µg/m³ 24-hour	PM10: No. (%) Samples Exceeding Standard, Federal > 150 µg/m³ 24-hour	PM10: No. (%) Samples Exceeding Standard, State > 50 µg/m³ 24-hour	PM10: Annual Average h) AAM Conc. µg/m³	Suspended Particulates PM2.5 f): No. Days of Data	PM2.5: Max. Conc. in µg/m³ 24-hour	PM2.5: No. (%) Samples Exceeding Standard, Federal > 65 µg/m³ 24-hour	PM2.5: Annual Averages i) AAM Conc. µg/m³	Particulates TSP g): No. Days of Data	TSP: Max. Conc. in µg/m³ 24-hour	TSP: Annual Average AAM Conc. µg/m³	Lead g): Max. Monthly Average Conc. j) µg/m³	Lead: Max. Quarterly Average Conc. j) µg/m³	Sulfate g): Max. Conc. in µg/m³ 24-hour	Sulfate: No. (%) Samples Exceeding Standard, State ≥ 25 µg/m³ 24-hour
	LOS ANGELES COUNTY																	
1	Central LA	087	61	72	0	5(8.2)	32.7	318	75.0	2(0.6)	19.6	62	115	66.4	0.03	0.03	12.7	0
2	Northwest Coastal LA County	091	--	--	--	--	--	--	--	--	--	59	79	46.8	--	--	11.4	0
3	Southwest Coastal LA County 1	094	15*	52*	0*	2(13.3)*	30.9*	--	--	--	--	15*	71*	50.5*	0.01	0.01	13.1	0
3	Southwest Coastal LA County 2	820	37*	47*	0*	0*	25.1	--	--	--	--	45*	77*	43.8*	0.01	0.01	14.3	0
4	South Coastal LA County 1	072	60	72	0	4(6.7)	33.1	323	66.6	1(0.3)	17.6	62	103	59.1	0.02	0.01	15.9	0
4	South Coastal LA County 2	077	59	83	0	12(20.3)	38.1	327	59.7	0	16.6	59	112	64.2	0.02	0.01	16.4	0
6	West San Fernando Valley	074	--	--	--	--	--	106	56.2	0	15.6	--	--	--	--	--	--	--
7	East San Fernando Valley	069	60	74	0	7(11.7)	37.5	109	60.1	0	19.2	--	--	--	--	--	--	--
8	West San Gabriel Valley	088	--	--	--	--	--	113	59.4	0	16.6	58	95	49.5	--	--	11.2	0
9	East San Gabriel Valley 1	060	55	83	0	8(14.5)	35.4	279	75.6	1(0.4)	18.4	59	156	75.2	--	--	10.6	0
9	East San Gabriel Valley 2	591	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10	Pomona/Walnut Valley	075	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11	South San Gabriel Valley	085	--	--	--	--	--	108	60.7	0	19.9	55	140	73.0	0.03	0.02	12.4	0
12	South Central LA County	084	--	--	--	--	--	115	55.8	0	18.5	58	128	78.6	0.03	0.03	14.7	0
13	Santa Clarita Valley	090	60	54	0	2(3.3)	28.1	--	--	--	--	--	--	--	--	--	--	--
	ORANGE COUNTY																	
16	North Orange County	3177	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17	Central Orange County	3176	61	74	0	7(11.5)	34.1	319	58.9	0	16.8	--	--	--	--	--	--	--
18	North Coastal Orange County	3195	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19	Saddleback Valley	3812	57	47	0	0	23.7	111	49.4	0	12.1	--	--	--	--	--	--	--
	RIVERSIDE COUNTY																	
22	Norco/Corona	4155	57	76	0	11(19.3)	38.0	--	--	--	--	--	--	--	--	--	--	--
23	Metropolitan Riverside County 1	4144	119	137	0	72(60.5)	55.5	342	91.7	5(1.5)	22.1	60	199	100.5	0.02	0.01	9.8	0
23	Metropolitan Riverside County 2	4146	--	--	--	--	--	110	93.8	2(1.8)	20.8	59	244	81.9	0.01	0.01	9.1	0
24	Perris Valley	4149	59	83	0	15(25.4)	41.4	--	--	--	--	--	--	--	--	--	--	--
25	Lake Elsinore	4158	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29	Banning Airport	4164	61	82	0	7(11.5)	29.3	--	--	--	--	--	--	--	--	--	--	--
30	Coachella Valley 1**	4137	59	79	0	2(3.4)	26.4	112	27.1	0	9.0	--	--	--	--	--	--	--
30	Coachella Valley 2**	4157	118+	83+	0+	23(19.5)+	39.3+	110	28.5	0	10.7	--	--	--	--	--	--	--
	SAN BERNARDINO COUNTY																	
32	Northwest San Bernardino Valley	5175	--	--	--	--	--	--	--	--	--	55	127	63.5	0.02	0.01	9.2	0
33	Southwest San Bernardino Valley	5817	58	93	0	17(29.3)	42.8	112	86.1	2(1.8)	20.9	--	--	--	--	--	--	--
34	Central San Bernardino Valley 1	5197	61	106	0	29(47.5)	47.7	104	71.4	1(1.0)	20.0	59	235	113.4	--	--	10.8	0
34	Central San Bernardino Valley 2	5203	58	118	0	28(48.3)	48.6	106	93.4	4(3.8)	22.0	58	179	92.7	0.02	0.01	9.6	0
35	East San Bernardino Valley	5204	60	88	0	20(33.3)	38.6	--	--	--	--	--	--	--	--	--	--	--
37	Central San Bernardino Mountains	5181	57	52	0	1(1.8)	26.4	--	--	--	--	--	--	--	--	--	--	--
38	East San Bernardino Mountains	5818	--	--	--	--	--	52	28.6	0	9.5	--	--	--			--	--
	DISTRICT MAXIMUM			137	0	72	55.5		93.8	5	22.1		244	113.4	0.03	0.03	16.4	0
	SOUTH COAST AIR BASIN			137	0	81	55.5		93.8	7	22.1		244	113.4	0.03	0.03	16.4	0

µg/m³ - Micrograms per cubic meter of air. AAM - Annual Arithmetic Mean -- - Pollutant not monitored.

* Less than 12 full months of data. May not be representative. ** Salton Sea Air Basin.

e) - PM10 samples were collected every 6 days at all sites except for Station Numbers 4144 and 4157 where samples were collected every 3 days.

f) - PM2.5 samples were collected every 3 days at all sites except for the following sites: Station Numbers 060, 072, 077, 087, 3176, and 4144 where samples were taken every day, and Station Number 5818 where samples were taken every 6 days.

g) - Total suspended particulates, lead, and sulfate were determined from samples collected every 6 days by the high volume sampler method, on glass fiber filter media.

h) - Federal PM10 standard is annual average (AAM) > 50 µg/m³. State standard is annual average (AAM) > 20 µg/m³ (changed from AGM > 30 µg/m³, effective July 5, 2003).

i) - Federal PM2.5 standard is annual average (AAM) > 15 µg/m³. State standard is annual average (AAM) > 12 µg/m³ (state standard was established on July 5, 2003).

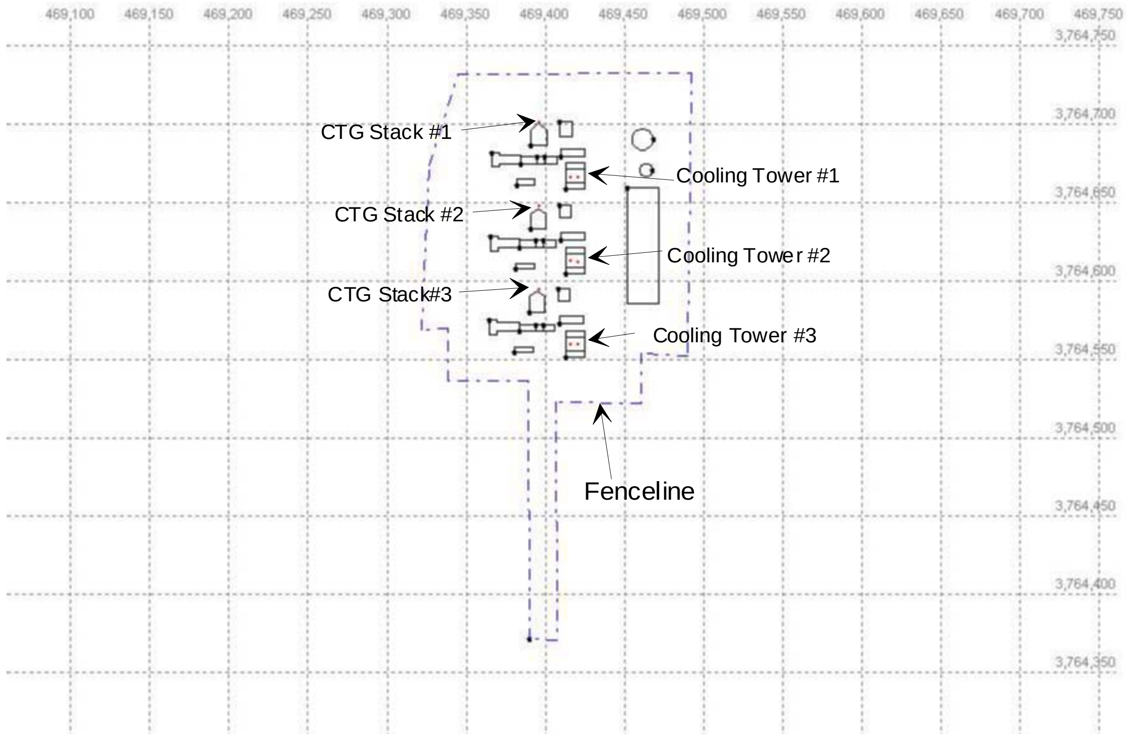
j) - Federal lead standard is quarterly average > 1.5 µg/m³; and state standard is monthly average ≥ 1.5 µg/m³. No location exceeded lead standards. Maximum monthly and quarterly lead concentrations at special monitoring sites immediately downwind of stationary lead sources were 0.59 µg/m³ and 0.30 µg/m³, respectively, both recorded at Southeast Los Angeles County.

\+ - The data for the sample collected on a high-wind day (161 µg/m³ on 10/9/04) was excluded in accordance with EPA's Natural Events Policy.

Printed on Recycled Paper

Figure 8.1C-1

AESH Facility Layout used for ISCST3 Modeling



Final Protocol

AES Highgrove HEF Dispersion Model Protocol

Prepared for

AES Highgrove, LLC

February 2006

CH2MHILL
2485 Natomas Park Drive
Suite 600
Sacramento, CA 95833

SECTION 1

Introduction

AES Highgrove, LLC plans to construct and operate a simple-cycle merchant power plant in the City of Grand Terrace, California. The site is located at 12700 Taylor Street, north of the intersection of Taylor and Main streets, on a parcel which once constituted part of Southern California Edison's (SCE) former Highgrove Generating Station. The proposed project, called the AES Highgrove facility, will be a nominal 300 megawatt (MW) peaking facility consisting of three GE LMS100 natural-gas-fired turbines and associated equipment. The LMS100 is based on a new, highly efficient, integrated technology, where the low pressure compressor is derived from the heavy duty frame engine, and the high pressure compressor, combustor and power turbine are derived from the aeroderivative technology. Each combustion turbine generator (CTG) system consists of a stationary CTG, supporting systems, and associated auxiliary equipment. The CTGs will be equipped with water injection capability to control oxides of nitrogen (NOx) emissions generated in the combustion process. A two-cell wet cooling tower will be installed with each CTG and, in conjunction with an air to water heat exchanger ("intercooler"), will cool a stream of compressed air from the gas turbine, and increase its efficiency. To further reduce NO_x, CO, and VOC emissions, post-combustor selective catalytic reduction (SCR) and oxidation catalyst control systems will also be used.

The PTE for the proposed power plant is less than 250 tons per year for each of the Prevention of Significant Deterioration (PSD) regulated pollutants and the facility is not considered one of the 28 major source categories (40 CFR 52.21(b)(1)(i)) Therefore, for PSD purposes, the project is not considered a major stationary source in accordance with South Coast Air Quality Management District (SCAQMD) Rule 1702 [1] or the PSD regulations. However, emissions from the proposed project are expected to exceed one or more of the SCAQMD thresholds defining a major polluting facility shown in Table 1-1. Therefore, in accordance with the New Source Review (NSR) requirements outlined in the SCAQMD Regulation XIII (VOC, CO, PM_{10}, $PM_{2.5}$, and SOx) and Regulation XX (NOx), modeling will be conducted to demonstrate that the project will not cause a new violation of a state or federal ambient air quality standard nor make an existing violation significantly worse.

For modeled pollutants with background concentrations above the state or federal ambient air quality standards (AAQS), model concentrations will be compared to both the significant change in air quality concentration levels listed in Appendix A of Rule 1303 and excerpted in Table 1-2 and the AAQS.

[1] SCAQMD Rule 1702 is listed for completeness. However, the SCAQMD has relinquished authority to conduct PSD review back to USEPA and Rule 1702 will no longer be applicable to new or modified projects until such time as USEPA redelegates PSD authority back to the SCAQMD.

TABLE 1-1
SCAQMD Major Polluting Facility Potential to Emit (PTE) Thresholds

Pollutant	PTE Threshold (tons/yr)
NO_x/VOC	10
SO_2	100
CO	50
PM_{10}	70

Reference: Definition of Major Polluting Facility, SCAQMD Rule 1302, December 6, 2002.

TABLE 1-2
SCAQMD Rule 1303 Allowable Change in Concentration Thresholds

Pollutant	Averaging Period	Significant Change in Air Quality Concentration	
		ppm	μg/m3
NO_2	**1-hour**	0.01	20
	Annual	0.0005	1
CO	**1-hour**	1	1100
	8-hour	0.45	500
PM_{10}	**24-hour**	--	2.5
	Annual Geometric Mean		1

Reference: Table A-2, Appendix A, SCAQMD Rule 1303, December 6, 2002.

Because of the regulatory requirements for conducting an air quality impact analysis, the Applicant intends to submit an air quality impact analyses to both the SCAQMD and the California Energy Commission (CEC). In addition, a cumulative impacts analysis will be performed. The results of the analyses will be presented in detail in the Application for Certification (AFC) and the Permit to Construct/Title V Operating Permit Application in accordance with Regulation XIII, Rule 2005 and Regulation XXX. The project will be required to evaluate construction-based impacts per the CEC regulations. This modeling protocol outlines the proposed use of air dispersion modeling techniques, which will be used to assess impacts from the proposed source to meet the SCAQMD and CEC air quality modeling requirements. This protocol also follows modeling guidance provided in the U.S. Environmental Protection Agency's (USEPA) *Guideline on Air Quality Models* (40 CFR Part 51, Appendix W, November 9 , 2005) and SCAQMD modeling guidance. Impacts from operation of the facility will be compared to the criteria in Table 1-3.

TABLE 1-3
Criteria for Estimating Air Quality Impacts

Air Quality Criteria	NO_2	$PM_{10/2.5}$	CO	SO_2
Ambient Air Quality Standards	✓	✓	✓	✓
Class I Visibility	✓	✓		✓
SCAQMD Allowable Change in Concentration		✓		

SECTION 2
Project Location and Emissions Sources

The project site is located in an industrially zoned area of the City of Grand Terrace, San Bernardino County. The site is located at 12700 Taylor Street, north of the intersection of Taylor and Main streets. The new facility will be located on the property which was once part of the former SCE Highgrove Generating Station. At the time of divestiture in late 1998, SCE's property consisted of four electric generating units, with a combined nominal capacity of 154 MW, cooling towers, boilers, tanks, and associated equipment, and several large oil storage tanks, which served the facility when the units used oil as a primary fuel. The AES Highgrove facility will be located on the former tank farm site, located north of the old generating equipment.

The project site is relatively flat, at an elevation of approximately 940 feet above sea level. Elevated terrain exists to the west and east of the project site. La Loma Hills are located approximately 0.5 mile to the west and rise to an elevation of approximately 1,400 feet. Blue Mountain lies approximately 1.5 miles to the east of the project site, rising to an elevation of 2,428 feet above sea level. The Box Springs Mountains are 1.7 miles to the southeast of the project site and rise to a height of 2,843 feet above sea level. Figure 2-1 shows the terrain surrounding the project site.

2.1 Proposed Emission Sources

The primary emission sources at the facility will be three combustion turbine generators. Natural gas will be the only fuel for the turbines. The turbines will use advanced combustion controls, combined with SCR, to limit emissions of NOx to 3.5 parts per million by volume (ppmv), while emissions of CO will be limited to 6 ppmv and VOC to 2 ppmv through the use of the advanced combustion controls, combined with the use of an oxidation catalyst. Emissions of PM_{10} and SO_2 will be kept to a minimum through the exclusive use of natural gas and the oxidation catalyst system. In addition, a two-cell wet cooling tower will be installed with each combustion turbine generator. High-efficiency drift eliminators will minimize emissions of PM_{10} from the cooling towers. The proposed project will not include the installation of backup diesel emergency engines or diesel fire pumps. Therefore, only emissions of NOx, SOx, CO, PM_{10}, and $PM_{2.5}$ emissions from the three combustion turbine generators and PM_{10} emissions from the three, 2-cell cooling towers will be modeled. A complete summary of the emission calculation methods will be included in the Appendix of the AFC application, and will include emission rates in pounds/hour, pounds per day, pounds/year, and grams/second for each pollutant and AAQS averaging period, and exhaust temperatures and velocity.

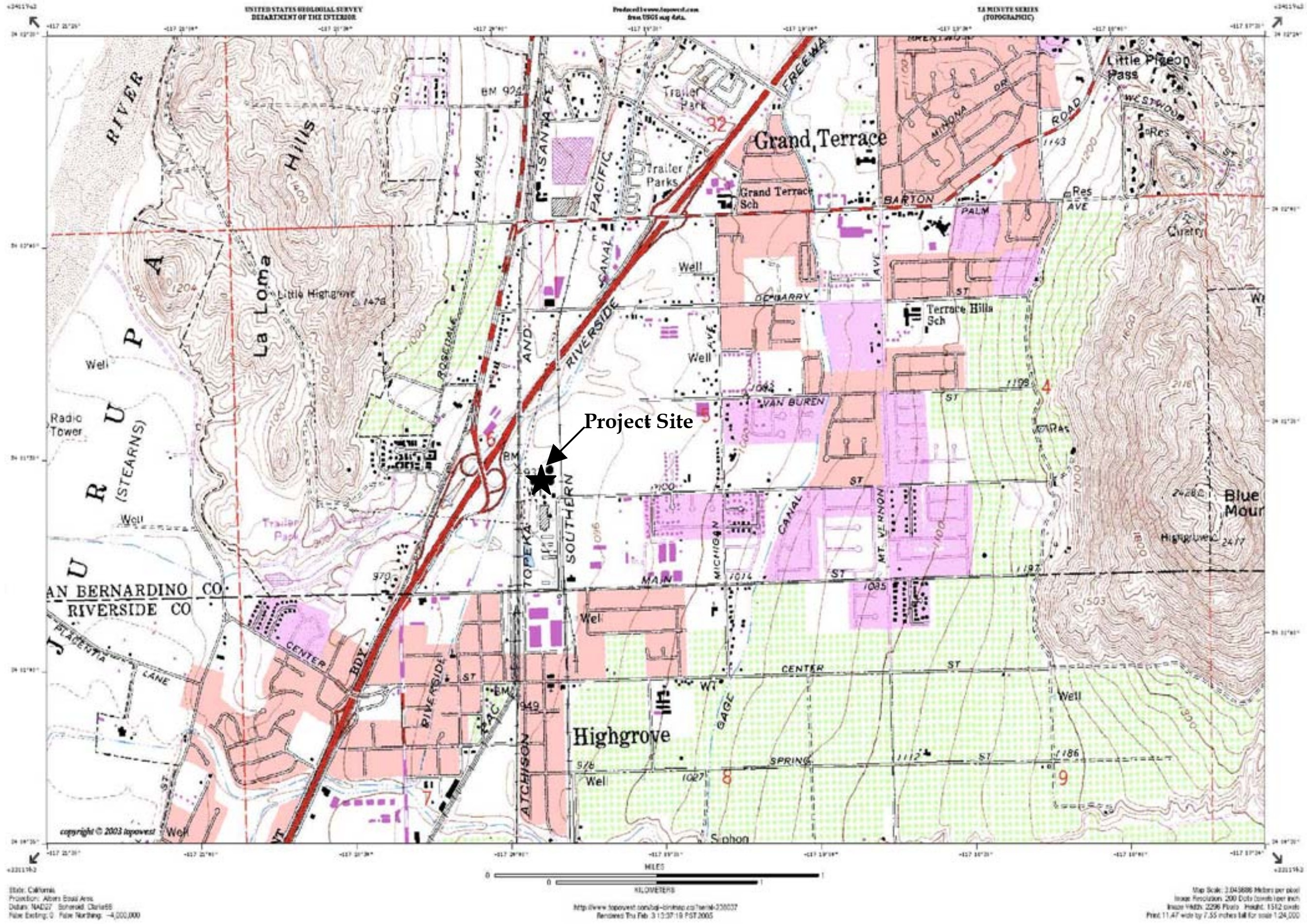


FIGURE 2-1
Site Location and Surrounding Terrain

SECTION 3

Existing Meteorological and Air Quality Data

The CEC requires one year of meteorological data approved by the California Air Resources Board (CARB) or the local air pollution control district to be used in the air modeling. For dispersion modeling analyses in the area of the proposed site, the SCAQMD requires the use of the 1981 Riverside meteorological data file, which has been pre-formatted for use with the Industrial Source Complex – Short Term (ISCST3) model. Therefore, the SCAQMD 1981 meteorological data collected at Riverside station will fulfill both requirements and will be used for this dispersion modeling analysis.

Appendix B (g)(8)(G) of the CEC data adequacy checklist requires a summary of the previous 3 years of ambient concentrations of all criteria pollutants from the closest certified CARB monitoring stations. After evaluating the list of monitoring stations in the vicinity of the proposed project, it was determined the Riverside-Rubidoux monitoring station at 5888 Mission Blvd (USEPA AIRS No. 060658001) is the closest to the proposed project site. Therefore, the background air quality data at the Riverside-Rubidoux station for the previous 3 years are summarized in Table 3-1. The annual SCAQMD ambient air quality data summaries were used as the primary reference and the USEPA AIRS database was used when data were unavailable in the SCAQMD summaries. The maximum concentrations reported in Table 3-1 will be combined with the modeled concentrations and used for comparison to the ambient air quality standards.

TABLE 3-1
Background Air Concentrations for the Highgrove Facility [a, b] 2002 – 2004

Pollutant	Averaging Time	CAAQS	NAAQS	2002		2003		2004		Maximum
		ppm / µg/m^3	ppm / µg/m^3	ppm	µg/m^3	ppm	µg/m^3	ppm	µg/m^3	µg/m^3
NO_2	1-hour [c]	**0.25 / 470**	**-**	0.10	188	0.09	169	0.09	169	**188**
	Annual [c]	**-**	**0.053 / 100**	0.024	44.6	0.022	40.8	0.017	32.4	**44.6**
SO_2	1-hour [c]	**0.25 / 655**	**-**	0.02	52.4	0.02	52.4	0.02	52.4	**52.4**
	3-hour [d]	**–**	**0.5 / 1300**	0.010	26.2	0.015	39.3	0.016	41.9	**41.9**
	24-hour [c]	**0.04 / 105**	**0.14 / 365**	0.002	5.2	0.012	31.4	0.015	39.3	**39.3**
	Annual [d]	**-**	**0.030 / 80**	0.001	2.6	0.003	7.9	0.004	10.5	**10.5**
CO	1-hour [c]	**20 / 23,000**	**35 / 40,000**	8	9162	5	5726	4	4581	**9162**
	8-hour [c]	**9.0 / 10,000**	**9 / 10,000**	3.0	3436	3.7	4237	3.0	3436	**4237**
PM_{10}	24-hour [c]	**- / 50**	**- / 150**	-	130	-	164	-	137	**164**
	Annual [c, e]	**- / 20**	**- / 50**	-	58.5	-	56.9	-	55.5	**58.5**
$PM_{2.5}$	24-hour [c]	**- / -**	**- / 65**	-	77.6	-	104.3	-	91.7	**104.3**
	Annual [c, e]	**- / 12**	**- / 15**	-	27.5	-	24.9	-	22.1	**27.5**

[a] Data reported for the SCAQMD Metropolitan Riverside County 1 Station (a.k.a. 5888 Mission Blvd, Riverside-Rubidoux Monitoring Station – AIRS No. 060658001)
[b] Conversion from ppm to µg/m^3 at 25° Celsius and 760 torr.
[c] Source of data: http://www.aqmd.gov/smog/historicaldata.htm
[d] Source of data: http://www.epa.gov/air/data/monvals.html
[e] Annual Arithmetic Mean

SECTION 4

Air Quality Dispersion Models

Several USEPA dispersion models are proposed for use to quantify pollutant impacts on the surrounding environment based on the multiple emission source operating parameters and their locations. The models proposed for use are the Building Profile Input Program (BPIP, dated 04112), the Industrial Source Complex – Short Term model (ISCST3, Version 02035), CTSCREEN (Version 94111), SCREEN3 (Version dated 96043), and the VISCREEN visibility model (Version 88341). These models will be used for evaluating:

- Compliance with state and federal ambient air quality standards,
- Comparison of impacts to SCAQMD Rule XIII significant impact levels for nonattainment criteria pollutants, and
- Visibility impacts in Class I areas.

ISCST3 with BPIP will be used as the primary model for evaluating the NOx, SOx, CO, PM_{10}, and $PM_{2.5}$ impacts. For determining the annual NO_2 concentration, the ambient ratio method will be used to convert the predicted annual NOx concentration to NO_2. If the modeled NO_2 concentration with the background concentration added exceeds the annual NO_2 air quality standard after applying the ARM, then the ozone limiting method (OLM) will be used to refine the annual NO_2 concentration. For determining the hourly NO_2 concentration, a one-to-one conversion from NOx to NO_2 will be used. If the modeled hourly NO_2 concentration with the background concentration added exceeds the air quality standard, the maximum hourly NOx concentration will be converted to NO_2 based on the maximum 1-hour ozone concentration recorded at the Riverside-Rubidoux monitoring station between 2002 and 2004. If necessary, the OLM will be used to refine the hourly NO_2 concentration using the actual hourly ozone and meteorological data recorded at the Riverside-Rubidoux monitoring station between 1999 and 2003. For evaluating $PM_{2.5}$ impacts, it will be assumed that all particulate from natural gas combustion is less than 2.5 μm and cooling tower particulate emissions are greater than 2.5 μm. CO and SOx concentration will be added to the background concentrations and compared to their respective ambient air quality standards. Modeled PM_{10} concentrations will be compared directly to the SCAQMD significant increase thresholds.

If the concentrations of NO_2, SO_2, CO, PM_{10}, and $PM_{2.5}$ still exceed the ambient air quality standards or the SCAQMD significant increase thresholds after using ISCST3, the ambient ratio method and the ozone limiting method, then CTSCREEN, which is a refined point source Gaussian air quality model for use in all stability conditions for complex terrain applications, will be used. These models, along with options for their use and how they are used, are discussed below.

4.1 Simple, Complex, and Intermediate Terrain Impacts

4.1.1 ISCST3 Dispersion Model

For modeling the project in simple, complex, and intermediate terrain, the ISCST3 model will be used. The ISCST3 model is a steady-state, multiple-source, Gaussian dispersion model designed for use with emission sources situated in terrain where ground elevations can exceed the stack heights of the emission sources. The ISCST3 model requires hourly meteorological data consisting of wind vector, wind speed, temperature, stability class, and mixing height. The model assumes that there is no variability in meteorological parameters over a 1-hour time period, hence the term steady-state. The ISCST3 model allows input of multiple sources and source groupings, eliminating the need for multiple model runs. Complex phenomena such as building-induced plume downwash are also treated in the ISCST3 model.

The ISCST3 model is capable of calculating pollutant concentrations in intermediate terrain. Intermediate terrain is defined as terrain between stack top and final plume height. In calculating pollutant concentrations in intermediate terrain, the model will select the higher of the simple and complex terrain calculations on an hour-by-hour, source-by-source, and receptor-by-receptor basis. In addition, the ISCST3 model is preferred for this application because it incorporates algorithms for the simulation of aerodynamic downwash induced by buildings. These effects are of importance because many of the emission points may be below Good Engineering Practice (GEP) stack height.

The meteorological data from the SCAQMD Riverside monitoring station for 1981 will be used for the ISCST3 modeling.

The technical options selected for the ISCST3 model include:

- Non-regulatory default option (includes final plume rise except for building wake downwash, stack-tip downwash except for Schulman-Scire [SS] downwash, buoyancy-induced dispersion except for SS downwash, default wind profile exponents, default temperature gradients, and no calm processing per SCAQMD policy)
- Anemometer height of 10 meters
- Urban dispersion parameters
- Elevated receptor terrain height option

The final plume rise option does not consider the possible effects of gradual plume rise on ambient concentrations during the rising phase of the plume downwind transport. Gradual plume rise is recommended by USEPA (40 CFR, Part 51, Appendix W, November 9, 2005) when there is significant terrain close to the stacks. Buoyancy-induced dispersion, which accounts for the buoyant growth of a plume caused by entrainment of ambient air, will be included because of the relatively warm exit temperature and subsequent buoyant nature of the exhaust plumes. Stack-tip downwash, which adjusts the effective stack height downward following the methods of Briggs (Briggs, G.A. 1972. “Discussion on Chimney Plumes in Neutral and Stable Surroundings. “*Atmos. Environ*. 6:507-510.) for cases where the stack exit velocity is less than 1.5 times the wind speed at stack top, will be selected as per USEPA guidance.

As required by SCAQMD, the ISCST3 model will be run in the urban dispersion mode and the no-calm control option will be chosen.

4.1.2 CTSCREEN Dispersion Model

If the ISCST3 model calculates exceedances of the AAQS in intermediate or complex terrain, the CTSCREEN model will be used. The CTSCREEN model, the screening mode of CTDMPLUS, is a refined point source Gaussian air quality model for use in all stability conditions for complex terrain applications. As a result of the model accounting for the dimensional nature of the plume and terrain interaction, the model requires digitized terrain of the nearby topographical features. The mathematical representation of terrain is accomplished by the terrain preprocessors, FITCON and HCRIT. CTSCREEN and CTDMPLUS are virtually the same air quality model, the main difference between the two is the meteorological data used. The wind direction used in CTSCREEN is based on the source-terrain geometry, resulting in computation of the highest impacts likely to occur. Other meteorological variables are chosen from possible combinations from a set of predetermined values. CTSCREEN provides maximum concentration estimates that are similar to, but on the conservative side of, those that would be calculated from the CTDMPLUS model with a full year of onsite meteorological data.

As well as calculating maximum 1-hour concentrations at all receptors, the CTSCREEN model is designed to provide conservative estimates of worst-case 3-hour, 24-hour, and annual impacts. Scaling factors are used to convert calculated 1-hour concentrations to 3-hour, 24-hour, and annual estimates. A workgroup study found the ratios to convert 1-hour concentrations to 3-hour, 24-hour, and annual concentrations to be 0.7, 0.15, and 0.03 respectively (*User's Guide to CTDMPLUS, Volume 2: The Screening Mode (CTSCREEN)*, USEPA, EPA/600/8-90/087).

CTSCREEN is appropriate for the following applications:

- Elevated point sources
- Terrain elevations above stack top
- Rural or urban areas
- One-hour to annual averaging time periods

4.2 Ambient Ratio Method and Ozone Limiting Method

Annual NO_2 concentrations will be calculated according to the *Guideline on Air Quality Models* (40 CFR, Part 51, Appendix W, November 9, 2005). The Guideline allows a nationwide default conversion rate of 75 percent for annual NO_2 /NOx ratios. Hourly NO_2 concentrations will be calculated assuming a 100 percent conversion rate of NOx to NO_2.

Should hourly NO_2 concentrations need to be examined in a more rigorous manner, the Ozone (O_3) Limiting Method (OLM) will be used. Concurrent meteorological and O_3 concentration data are needed for the OLM. Five years of meteorological data collected at Riverside Municipal Airport during 1999 to 2003 will be used in the OLM. Hourly ozone data collected at the Riverside-Rubidoux monitoring station from 1999 to 2003 will be used in conjunction with the meteorological data in the OLM to calculate hourly NO_2 concentrations from hourly NO_X concentrations. The OLM involves an initial comparison of the estimated maximum NO_X concentration and the ambient O_3 concentration to determine which is the limiting factor to NO_2 formation. If the O_3 concentration is greater than the maximum NO_X concentration, total conversion is assumed. If the NO_X concentration is greater than the O_3 concentration, the formation of NO_2 is limited by the ambient O_3 concentration. In this case, the NO_2 concentration is set equal to the O_3 concentration plus a correction factor which accounts for in-stack and near-stack thermal conversion.

USEPA's ISC-OLM model will be used to calculate the NO_2 concentration based upon the OLM method. ISC-OLM will be implemented on a plume-by-plume basis (i.e., individual plume). However, for some receptors, a demonstration of plume merging may be made to allow use of the combined source analysis. Plume merging will be demonstrated as follows. The horizontal dispersion of each individual plume, as a function of downwind distance, will be identified using USEPA's SCREEN3 dispersion model at the distance to the receptor of interest, under the appropriate meteorology. This value will be compared with half the distance between sources proposed for plume merging. Should the horizontal dispersion at the distance to the receptor exceed half the distance between the sources proposed for merging, then the plumes are assumed to have merged by the time they are transported to the receptor of interest.

4.3 Good Engineering Practice Stack Height and Downwash

ISCST3 can account for building downwash effects. Stack locations, heights, building locations, and dimensions will be input to BPIP. The first part of BPIP determines and reports on whether or not a stack follows GEP guidance or is being subjected to wake effects from a structure or structures. The second part calculates direction-dependent "equivalent building dimensions" if a stack is being influenced by structure wake effects. The BPIP output will be used in the ISCST3 modeling.

4.4 Receptor Selection

Receptor and source base elevations will be determined from U.S. Geological Survey (USGS) Digital Elevation Model (DEM) data using the 7½-minute format (i.e., 30-meter spacing between grid nodes). All coordinates will be referenced to UTM North American Datum 1927 (NAD27), zone 11. Every effort will be made to maintain receptor spacing across DEM file boundaries.

Cartesian coordinate receptor grids will be used to provide adequate spatial coverage surrounding the project area for assessing ground-level pollution concentrations, to identify the extent of significant impacts, and to identify maximum impact locations. A 30-meter resolution receptor grid will be developed and will extend outwards at least 10 kilometers (km) or more as necessary to calculate the significant impact area. The fence line receptors will be spaced at 30-meter intervals. Concentrations within the facility fence line will not be calculated.

4.5 Modeling Scenarios

Pollutant emissions to the atmosphere from the proposed facility will occur from combustion of natural gas in each of the three identical combustion turbines. Emission rates will be calculated based on vendor data and additional conservative assumptions of turbine performance. Turbine emissions and stack parameters, such as flow rate and exit temperature, exhibit some variation with ambient temperature and operating load. Therefore, in order to calculate the worst-case air quality impacts, dispersion modeling will be conducted at base, 75, and 50 percent loads at 97, 80, and 30 degrees Fahrenheit, which represent the design-high, low, and weighted annual average ambient temperatures (annual average was weighted to reflect peak operation during the summer months). Besides the load/temperature scenarios mentioned above, modeling will also be conducted on startup and shutdown scenarios and the various phases of unit commissioning.

The preliminary operational impacts will be modeled using a unit emission rate (i.e., 1.0 gram/sec) for all scenarios. For this modeling analysis, the three combustion turbines will be the only sources of NOx, SOx, and CO and the emission source parameters (i.e., stack temperature, exit velocity, exhaust flow, stack diameter, and release height) are expected to be similar relative to each operating scenario. Therefore, the preliminary modeled concentrations will be scaled linearly using the actual NOx, SOx, and CO emission rates for each operating scenario and averaging period. The maximum concentrations for each operating scenario and averaging period will then be added to the background concentration and compared to the respective ambient air quality standards.

The preliminary operational impacts for PM_{10} and $PM_{2.5}$ will also be modeled using a unit emission rate (i.e., 1.0 gram/sec) for all scenarios. The results of the preliminary 24-hour and annual PM_{10} modeling for each permit unit will be scaled linearly using the actual PM_{10} emission rate for each operating scenario and compared to the SCAQMD Rule 1303 significance levels. For comparison to the ambient air quality standards, the cooling tower emissions will also be included in the modeling analysis. The maximum concentrations will then be added to the PM_{10} and $PM_{2.5}$ background concentrations and compared to the respective ambient air quality standards.

A screening analysis (i.e., 1.0 gram/sec) will also be used to determine the worst case impacts from commissioning and start-up/shutdown activities. However, because the emission parameters may vary by unit during the commissioning and start-up/shutdown activities, a refined modeling analysis will be conducted for the worst case scenario using the actual emission rates for each pollutant and averaging period. The maximum concentrations will then be added to the background concentration and compared to the respective ambient air quality standards. In addition, PM_{10} will be compared to the SCAQMD Rule 1303 significance levels for each permit unit.

4.6 Ambient Air Quality Impact Analyses

In evaluating the impacts of the proposed project on ambient air quality, modeling of the ambient impacts for the project will be added to representative background concentrations, and the results compared to the state and federal ambient air quality standards for SO_2, NO_2, PM_{10}, and CO. The modeled PM_{10} concentrations for each permit unit will also be compared with the significance thresholds established by the SCAQMD in Rule 1303.

In accordance with USEPA guidance (40 CFR part 51, Appendix W, Sections 7.2.1.1, November 9, 2005), the highest modeled concentration will be used to demonstrate compliance with the annual National Ambient Air Quality Standards (NAAQS), while the highest, second-highest modeled concentrations of SO_2, NO_2, PM_{10}, and CO will be used to demonstrate compliance with the NAAQS based on averaging periods of 24 hours or less.

In accordance with California Air Resources Board guidance, (CARB AAQS Summary Table, 11/29/2005), the highest modeled concentration will be added to the maximum background concentration and compared to the California Ambient Air Quality Standards (CAAQS) for all averaging periods.

4.7 Impacts on Visibility in Class I Areas

SCAQMD Regulation XIII requires the facility to conduct a modeling analysis for plume visibility if the net emission increase from the new or modified source exceeds 15 tons/year of PM_{10} or 40 tons/year of NO_X; and the location of the source, relative to the closest boundary of a specified Federal Class I area, is within the distance specified:

- Agua Tibia: 28 kilometers
- Cucamonga: 28 kilometers
- Joshua Tree: 29 kilometers
- San Gabriel: 29 kilometers
- San Gorgonio: 32 kilometers
- San Jacinto: 28 kilometers

The distances to the Class I areas from the AESH facility were determined using the UTM coordinates for the project site and the nearest boundary of the class I areas. Table 4-1 presents the results of this analysis, showing that no Class I area is closer than the SCAQMD Regulation XIII criteria. Therefore, no visibility analysis is required.

TABLE 4-1
AES Highgrove Distance to Federal Class I areas

Class I Area	SCAQMD Regulation XIII Distance (Kilometers)	Distance from AESH to Class I Area	Visibility Requires (Yes/No)
Agua Tibia	28	68.8	No
Cucamonga	28	29.3	No
Joshua Tree	29	81.5	No
San Gabriel	29	53.3	No
San Gorgonio	32	35.6	No
San Jacinto	28	55.3	No

SECTION 5

Toxic Air Contaminants – Health Risk Assessment

SCAQMD Rule 1401 sets forth the health risk threshold for modified and new permit units. A human health risk assessment (HRA) will be performed for the proposed project. The HRA will follow the latest version of the SCAQMD's Risk Assessment Procedures for Rule 1401 and 212, applicable to applications deemed complete after July 1, 2005, the *Air Toxics Hot Spots Program Risk Assessment Guidelines* (Office of Environmental Health Hazard Assessment [OEHHA], August 2003), and the USEPA *Guideline on Air Quality Models* (40 CFR, Part 51, Appendix W, November 9, 2005). The Hotspots Analysis Reporting Program (HARP, version 1.2a, August 26, 2005) released by CARB will be used to conduct the air dispersion modeling and to evaluate the carcinogenic and non-carcinogenic health risks for the proposed project. The SCAQMD uses the HARP procedure for assessing risk under Rule 1401. The modeled health risk values will be compared with SCAQMD cancer, chronic, and acute risk thresholds. The receptor grid will also include sensitive receptors as required by CEC Regulations (Appendix B (g) (9) (D)).

SCAQMD Rule 1401 presently requires a "permit unit" based assessment. Therefore, impacts of each turbine will be assessed separately. The cooling towers are exempted from SCAQMD permitting requirements per SCAQMD Rule 219 as they will not be using recycled water in the cooling towers. Therefore, no toxics are expected to be emitted by the cooling towers.

SECTION 6

Construction Impacts Analysis

Per Appendix B (g) (8) (I) (i) of the CEC requirements, a screening level or detailed modeling analysis of the direct impacts on ambient air quality is required for the proposed construction related activities. As part of the analysis, construction related exhaust, fugitive dust, and wind blown emissions will be evaluated for the demolition of the existing facility, the construction of the proposed facility, and the associated natural gas and transmission lines. Although the on- and offsite emissions of CO, NOx, PM_{10}, and SOx will be calculated and included as part of the AFC appendix, only the onsite emissions from the proposed project will be included in the air dispersion modeling. This section presents the methodology for estimating emissions and the proposed model selection and settings to be used for the modeling analysis.

6.1 Types of Emission Sources

Construction of the proposed AES Highgrove project will be divided into two main phases: (1) demolition of the existing former SCE-owned electric generating units and associated equipment and (2) construction of the proposed facility, including the site preparation, construction of foundations, and installation and assembly of mechanical and electrical equipment. Site preparation is expected to include site excavation, excavation of footings and foundations, and back filling operations. After site preparation is finished, the construction of the foundations will begin. Once the foundations are finished, the installation and assembly of the mechanical and electrical equipment will begin. Demolition activities are expected to occur during the initial five months of the project and construction of the proposed facility is expected to occur during months four through fourteen of the project.

Fugitive dust emissions from the construction of the project result from: (1) demolition of the existing site, (2) dust entrained during excavation and grading at the construction site, (3) dust entrained during onsite travel on paved and unpaved roads and across the unpaved construction site, (4) dust entrained during aggregate and soil loading and unloading operations, (5) dust entrained from raw material transfer to and from material stockpiles, and (6) wind erosion of areas disturbed during construction activities. Heavy equipment exhaust emissions result from: (1) exhaust from the heavy equipment used for demolition, excavation, grading, and construction of onsite structures; (2) exhaust from a water truck used to control construction dust emissions; (3) exhaust from diesel welding machines, gasoline-powered generators, air compressors, and water pumps; and (4) exhaust from gasoline-powered pickup trucks and diesel flatbed trucks used onsite to transport workers and materials around the construction site. Diesel and gasoline truck exhaust emissions will result from transport of mechanical and electrical equipment to the project site and transport of rubble and debris from the site to an appropriate landfill. Diesel exhaust emissions may also result from transport of raw materials to and from stockpiles.

6.2 Construction Emissions

Construction emissions from the proposed project will be calculated using the emission factors from the SCAQMD CEQA Air Quality Handbook published in November, 1993 and updates available via SCAQMD's website: www.aqmd.gov/ceqa/handbook/offroad/offroad.html or other updated emission factors, load cycle factors and off-road emissions estimating methodologies from CARB and or USEPA, as appropriate. Emissions of CO, NOx, PM_{10},, and SOx from the vehicle and construction equipment exhaust, and the emission of PM_{10} from fugitive dust and wind erosion of storage piles will be summarized for each month of the proposed construction schedule. The maximum short term emission rates used for modeling will be based on the month with the highest on-site emissions, divided by the number of days per month used to determine the emissions (e.g. exhaust emissions would be related to the construction schedule but the wind erosion would be each day of the month), and averaged over the proposed hours of on-site construction activity per day. Emissions for estimating the annual construction impacts will be based on the worst case on-site annual emissions for construction.

6.3 Model Type

The USEPA-approved ISCST3 model will be used to estimate ambient impacts from construction emissions. The modeling options and meteorological data described in Section 4.1 will be used for the modeling analysis.

The construction site will be represented as an area source in the modeling analysis. Emissions will be divided into three categories: exhaust emissions, fugitive dust emissions, and wind blown dust emissions. For exhaust emissions, a plume height of 4.6 meters (15 feet) will be used. Plume height refers to the distance measured from ground level to the centerline of the emissions plume. For dust emissions, a release height of 2 meters will be used due to the ambient plume temperatures and negligible plume velocities. If model refinement is required for assessing NO_2 impacts, the localized significance threshold guidance (Chico, Tom and J. Koizumu, 2003) will be used to determine the conversion of NOx to NO_2.

For the construction modeling analysis, the receptor grid will begin at the property boundary and will extend approximately two kilometers in all directions. Receptor spacing will be 30 meters along the construction boundary out to 500 meters and 100 meter spacing out to 2 kilometers.

6.4 Evaluation of Impacts on Ambient Air Quality

In evaluating the impacts of the proposed construction on ambient air quality, modeling of the ambient impacts for the project will be added to representative background concentrations, and the results compared to the state and federal ambient air quality standards for SO_2, NO_2, and CO. For evaluating PM_{10} impacts, the modeled PM_{10} concentrations will be compared with the significance thresholds established by the SCAQMD in Rule 1303.

Ambient NO_2, SO_2, CO, and PM_{10} concentrations monitored at Riverside-Rubidoux station will be used. This site is less than 10 km from the project site, and the monitoring data are believed to be representative of the site. The highest concentration of the most recent 3 years of data will be used as the background concentration (Table 3-1).

SECTION 7

Cumulative Impact Analysis

A cumulative impact analysis will be performed for the project's typical operating mode in combination with other stationary emission sources within a 6-mile radius, which have received construction permits but are not yet operational, in the permit process, or sources in the CEQA process. The cumulative impact analysis will assess whether estimated emission concentrations will cause or contribute to a violation of any ambient air quality standards.

The sources to be included in the cumulative impact analysis will be determined by consulting the SCAQMD and the CEC. The applicant has requested the SCAQMD to review its permitting and CEQA databases for a 6-mile radius to identify sources using the zip codes for the surrounding area listed in Table 7-1. Once these data are received from the SCAQMD, they will be forwarded to the CEC for review. The applicant will work with the CEC staff to identify those new air pollution sources within the 6-mile area surrounding the AES facility to be included in the cumulative impact analysis.

TABLE 7-1
Zip codes within 10 km of the AES Site

92501	92410	92324
92509	92408	92557
92337	92354	92507
92316	92318	92506
92411	92313	92504

SECTION 8
Final Modeling Submittal

In accordance with SCAQMD and CEC guidelines, the final modeling analyses will include the following materials:

- USGS 7½-minute (1:24,000) map(s) showing the facility
- Modeling summaries of maximum impacts for each air quality model showing meteorological conditions and receptor location and elevation
- All modeling files (including BPIP and meteorological files) on CD, together with a description of all filenames
- Plot plan showing emission points, nearby buildings (including dimensions), cross-section lines, property lines, fencelines, roads, and UTM coordinates
- Table showing the building identifiers in the BPIP run(s) and plot plan