

Appendix G-10

Additional Information on Design Value Calculations

AIRS ID	State	County	Latitude	Longitude	NAA	98th	98th	98th	98th	98th					
						Percentile -- 2000	Percentile -- 2001	Percentile -- 2002	Percentile -- 2003	Percentile -- 2004	2000 - Q1	2000-Q2	2000-Q3	2000-Q4	2001 - Q1
24-003-0014	MD	Anne Arundel	38.9025	-76.6531	Baltimore	35.7	31.7	33.5	31.5	36.8	-	35.7	28.2	25.8	26
24-003-0019	MD	Anne Arundel	39.1011	-76.7294	Baltimore	37.1	38.2	34.2	35.8	34.6	19.3	37.1	25.8	35	29.1
24-003-1003	MD	Anne Arundel	39.1695	-76.6279	Baltimore	33.8	38.3	42.7	39.2	37	33.5	23.5	29.1	33.8	32.2
24-003-2002	MD	Anne Arundel	39.1588	-76.5111	Baltimore	38.8	38	40.4	36.9	35.2	11.5	38.8	29.8	31.8	28.9
24-025-1001	MD	Harford	39.4102	-76.2967	Baltimore	38.3	34.4	28.8	37.5	30.3	27	38.3	25.6	29.7	34.4
24-005-3001	MD	Baltimore	39.3108	76.4744	Baltimore	35.8	41.7	36.7	38.6	36.3	18.4	34.1	35.8	34.9	40.9
24-005-1007	MD	Baltimore	39.4608	-76.6311	Baltimore	33.8	36.7	34.5	35.1	33.4	27.6	29.7	23.6	33.8	33.7
24-510-0035	MD	Baltimore	39.2328	-76.5797	Baltimore	41.8	39.8	41.8	41.4	38.7	36.9	41.8	35.2	39.1	39.8
24-510-0006	MD	Baltimore	39.3406	-76.5822	Baltimore	38.3	39.7	33.1	32.7	35.4	33.2	38.3	25.8	38	37.9
24-510-0007	MD	Baltimore	39.3444	-76.6853	Baltimore	39.6	38.7	36.2	39.5	33.5	22.5	39.6	25.4	38.4	36.6
24-510-0008	MD	Baltimore	39.2877	-76.5476	Baltimore	-	37.5	35	35.4	37	-	-	-	-	-
24-510-0040	MD	Baltimore	39.2981	-76.6047	Baltimore	40.8	45	38	42.2	40.6	40.8	38.4	35.7	37.7	43.2
24-510-0049	MD	Baltimore	39.2617	-76.6375	Baltimore	34.2	43	38	40.3	37.7	15.2	30.3	24.8	34.2	43

AIRS ID	State	County	2001-Q2	2001-Q3	2001-Q4	2002 - Q1	2002-Q2	2002-Q3	2002-Q4	2003 - Q1	2003-Q2	2003-Q3	2003-Q4	2004 - Q1	2004-Q2	2004-Q3	2004-Q4
24-003-0014	MD	Anne Arundel	31.6	31.7	25.8	18.6	31.5	33.5	26.5	29	28.5	31.5	22.3	27.2	25.2	36.8	27.4
24-003-0019	MD	Anne Arundel	38.2	32.6	23.7	18.5	34.2	31.8	29.1	34.9	28.6	35.8	24.5	29.9	28.1	34.6	29
24-003-1003	MD	Anne Arundel	38.3	34.7	27.2	22.1	33.7	30.5	42.7	39.2	30.1	38.2	31.3	37	30.1	33.2	31.9
24-003-2002	MD	Anne Arundel	38	29.3	23.9	21.1	31.8	40.4	39.1	33.7	31	36.9	31.5	35.2	29.5	33.3	30.6
24-025-1001	MD	Harford	33.4	31.8	27.8	17.5	25.5	28.5	28.8	18.2	29.2	37.5	25.8	22.4	28.8	30.3	25.6
24-005-3001	MD	Baltimore	41.2	41.7	35.7	31.4	36.7	31.1	35.9	36	38.6	38.5	33.4	35.2	36.3	32.4	32.5
24-005-1007	MD	Baltimore	36.7	36.2	28.9	22.3	31.7	34.5	31.7	35.1	30	31.6	25.2	21.2	32.3	33.4	31.4
24-510-0035	MD	Baltimore	38.8	39.4	35.3	31.1	37.8	33.5	41.8	38.5	40.7	41.4	35.8	34	33.7	38.7	37.1
24-510-0006	MD	Baltimore	39.7	33.7	29.7	22.8	31.5	33.1	32.2	31.2	24.4	32.7	29.6	22.3	33	35.4	32.9
24-510-0007	MD	Baltimore	38.7	36.5	27.8	24.9	32.9	36.2	32.6	34.2	27.5	39.5	29.3	24.9	31.2	33.5	27.7
24-510-0008	MD	Baltimore	34.8	37.5	36.7	24.5	31.5	34.5	35	35.4	34.8	30	31.5	27.8	36.1	37	35.8
24-510-0040	MD	Baltimore	43.8	45	37.7	34.7	38	35.4	38	37.8	39.9	40.9	42.2	38	40	40.6	39.8
24-510-0049	MD	Baltimore	42.2	36.9	28.3	23.5	34	32.5	38	40.3	31.8	39.8	36	30.2	33.2	37.7	36.6

Maryland's PM2.5 Annual Design Values (2002-2004)

AIRS ID	Latitude	Longitude	Site Name	City Name	County Name	MSA	PM2.5	Speciated	Started	Ended	2000 Quarterly PM2.5 FRM (ug/m3)				
							FRM	Data			1st	2nd	3rd	4th	Average
240030014	38.9025	-76.6531	Davidsonville	Davidsonville	Anne Arundel	Baltimore	1	No	Jan. 1, 1999	Jan. 2, 2006	NA	15.63	13.35	11.90	13.63
240030019	39.1011	-76.7294	Ft. Meade	Ft. Meade	Anne Arundel	Baltimore	1	Yes	Jan. 1, 1999	Nov. 30, 2004	13.05	18.82	14.39	13.10	14.84
240031003	39.1695	-76.6279	Glen Burnie	Glen Burnie	Anne Arundel	Baltimore	1	No	Jan. 1, 1999	-	15.94	16.74	15.98	15.78	16.11
240032002	39.1588	-76.5111	Riviera Beach	Riviera Beach	Anne Arundel	Baltimore	2	No	Jan. 1, 1999	Dec. 31, 2005	8.65	17.11	15.45	15.53	14.19
240251001	39.4102	-79.2969	Edgewood	Edgewood	Harford	Baltimore	1	No	Jan. 1, 1999	-	16.22	17.37	14.78	13.44	15.45
240053001	39.3108	-76.4745	Essex	Essex	Baltimore	Baltimore	1	Yes	Jan. 1, 1999	-	10.59	15.45	16.53	15.01	14.40
240051007	39.4621	-76.6311	Padonia	Cockeysville	Baltimore	Baltimore	1	No	Jan. 1, 1999	-	14.66	16.01	14.60	14.68	14.99
245100035	39.2328	-76.5797	FMC-Fairfield	Baltimore City	Baltimore	Baltimore	2	No	Jan. 1, 1999	-	20.55	17.25	16.89	16.29	17.75
245100006	39.3406	-76.5822	Northeast Police Station	Baltimore City	Baltimore	Baltimore	1	No	Jan. 1, 1999	-	16.55	17.50	15.57	14.92	16.14
245100007	39.3444	-76.6853	Northwest Police Station	Baltimore City	Baltimore	Baltimore	1	No	Jan. 1, 1999	-	17.37	17.34	15.55	14.95	16.30
245100008	39.2877	-76.5476	Southeast Police Station	Baltimore City	Baltimore	Baltimore	1	No	Jan. 1, 1999	-	NA	NA	NA	NA	NA
245100040	39.2981	-76.6047	Oldtown	Baltimore City	Baltimore	Baltimore	1	No	Jan. 1, 1999	-	18.62	18.11	17.48	16.73	17.74
245100049	39.2617	-76.6375	Westport	Baltimore City	Baltimore	Baltimore	1	No	Jan. 1, 1999	Dec. 31, 2005	11.33	17.68	16.01	15.34	15.09

Note:

1. Maryland's 2002 Data Excludes Fire Days Associated with the Quebec Forest Fires.
2. FRM=2 the Averages Reflect the Combined Data From Collocated Monitors.
3. Grayed out monitors don't have enough data to be used in the SIP analysis.

Maryland's PM2.5 Annual Design Values (2002-2004)

AIRS ID	Latitude	Longitude	Site Name	City Name	County Name	MSA	PM2.5	Speciated	Started	Ended	2001 Quarterly PM2.5 FRM (ug/m3)				
							FRM	Data			1st	2nd	3rd	4th	Average
240030014	38.9025	-76.6531	Davidsonville	Davidsonville	Anne Arundel	Baltimore	1	No	Jan. 1, 1999	Jan. 2, 2006	11.06	15.63	14.90	9.46	12.76
240030019	39.1011	-76.7294	Ft. Meade	Ft. Meade	Anne Arundel	Baltimore	1	Yes	Jan. 1, 1999	Nov. 30, 2004	12.53	15.58	17.68	10.29	14.02
240031003	39.1695	-76.6279	Glen Burnie	Glen Burnie	Anne Arundel	Baltimore	1	No	Jan. 1, 1999	-	16.54	16.76	16.78	12.41	15.62
240032002	39.1588	-76.5111	Riviera Beach	Riviera Beach	Anne Arundel	Baltimore	2	No	Jan. 1, 1999	Dec. 31, 2005	16.21	16.61	15.08	11.27	14.79
240251001	39.4102	-79.2969	Edgewood	Edgewood	Harford	Baltimore	1	No	Jan. 1, 1999	-	14.28	14.15	15.64	10.39	13.62
240053001	39.3108	-76.4745	Essex	Essex	Baltimore	Baltimore	1	Yes	Jan. 1, 1999	-	16.97	16.86	16.54	13.87	16.06
240051007	39.4621	-76.6311	Padonia	Cockeysville	Baltimore	Baltimore	1	No	Jan. 1, 1999	-	15.43	15.88	16.22	11.88	14.85
245100035	39.2328	-76.5797	FMC-Fairfield	Baltimore City	Baltimore	Baltimore	2	No	Jan. 1, 1999	-	16.68	17.43	17.19	13.69	16.25
245100006	39.3406	-76.5822	Northeast Police Station	Baltimore City	Baltimore	Baltimore	1	No	Jan. 1, 1999	-	14.13	17.24	15.94	11.08	14.60
245100007	39.3444	-76.6853	Northwest Police Station	Baltimore City	Baltimore	Baltimore	1	No	Jan. 1, 1999	-	16.09	17.16	16.63	11.27	15.29
245100008	39.2877	-76.5476	Southeast Police Station	Baltimore City	Baltimore	Baltimore	1	No	Jan. 1, 1999	-	NA	26.33	18.24	13.47	19.35
245100040	39.2981	-76.6047	Oldtown	Baltimore City	Baltimore	Baltimore	1	No	Jan. 1, 1999	-	18.04	19.01	17.87	14.76	17.42
245100049	39.2617	-76.6375	Westport	Baltimore City	Baltimore	Baltimore	1	No	Jan. 1, 1999	Dec. 31, 2005	15.81	19.02	16.24	11.90	15.74

Note:

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2. FRM=2 the Averages Reflect the Combined Data From Collocated Monitors.
3. Grayed out monitors don't have enough data to be used in the SIP analysis.

Maryland's PM2.5 Annual Design Values (2002-2004)

AIRS ID	Latitude	Longitude	Site Name	City Name	County Name	MSA	PM2.5	Speciated	Started	Ended	2002 Quarterly PM2.5 FRM (ug/m3)				
							FRM	Data			1st	2nd	3rd	4th	Average
240030014	38.9025	-76.6531	Davidsonville	Davidsonville	Anne Arundel	Baltimore	1	No	Jan. 1, 1999	Jan. 2, 2006	8.81	12.73	17.92	10.17	12.41
240030019	39.1011	-76.7294	Ft. Meade	Ft. Meade	Anne Arundel	Baltimore	1	Yes	Jan. 1, 1999	Nov. 30, 2004	9.23	14.03	17.56	10.91	12.93
240031003	39.1695	-76.6279	Glen Burnie	Glen Burnie	Anne Arundel	Baltimore	1	No	Jan. 1, 1999	-	12.52	15.78	18.12	15.12	15.39
240032002	39.1588	-76.5111	Riviera Beach	Riviera Beach	Anne Arundel	Baltimore	2	No	Jan. 1, 1999	Dec. 31, 2005	12.13	14.40	17.94	12.39	14.22
240251001	39.4102	-79.2969	Edgewood	Edgewood	Harford	Baltimore	1	No	Jan. 1, 1999	-	9.93	13.23	14.71	11.02	12.22
240053001	39.3108	-76.4745	Essex	Essex	Baltimore	Baltimore	1	Yes	Jan. 1, 1999	-	14.10	13.65	17.12	13.21	14.52
240051007	39.4621	-76.6311	Padonia	Cockeysville	Baltimore	Baltimore	1	No	Jan. 1, 1999	-	11.40	14.67	17.67	12.61	14.09
245100035	39.2328	-76.5797	FMC-Fairfield	Baltimore City	Baltimore	Baltimore	2	No	Jan. 1, 1999	-	13.40	14.63	18.59	14.35	15.24
245100006	39.3406	-76.5822	Northeast Police Station	Baltimore City	Baltimore	Baltimore	1	No	Jan. 1, 1999	-	12.49	14.59	17.04	12.29	14.10
245100007	39.3444	-76.6853	Northwest Police Station	Baltimore City	Baltimore	Baltimore	1	No	Jan. 1, 1999	-	12.52	14.78	18.07	12.97	14.59
245100008	39.2877	-76.5476	Southeast Police Station	Baltimore City	Baltimore	Baltimore	1	No	Jan. 1, 1999	-	14.05	14.20	18.10	15.80	15.54
245100040	39.2981	-76.6047	Oldtown	Baltimore City	Baltimore	Baltimore	1	No	Jan. 1, 1999	-	14.99	14.61	18.78	14.41	15.70
245100049	39.2617	-76.6375	Westport	Baltimore City	Baltimore	Baltimore	1	No	Jan. 1, 1999	Dec. 31, 2005	12.31	15.46	18.08	14.54	15.10

Note:

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3. Grayed out monitors don't have enough data to be used in the SIP analysis.

Maryland's PM2.5 Annual Design Values (2002-2004)

AIRS ID	Latitude	Longitude	Site Name	City Name	County Name	MSA	PM2.5	Speciated	Started	Ended	2003 Quarterly PM2.5 FRM (ug/m3)				
							FRM	Data			1st	2nd	3rd	4th	Average
240030014	38.9025	-76.6531	Davidsonville	Davidsonville	Anne Arundel	Baltimore	1	No	Jan. 1, 1999	Jan. 2, 2006	9.37	12.62	14.12	8.99	11.28
240030019	39.1011	-76.7294	Ft. Meade	Ft. Meade	Anne Arundel	Baltimore	1	Yes	Jan. 1, 1999	Nov. 30, 2004	10.74	12.63	16.08	9.02	12.12
240031003	39.1695	-76.6279	Glen Burnie	Glen Burnie	Anne Arundel	Baltimore	1	No	Jan. 1, 1999	-	14.52	13.94	18.05	12.66	14.79
240032002	39.1588	-76.5111	Riviera Beach	Riviera Beach	Anne Arundel	Baltimore	2	No	Jan. 1, 1999	Dec. 31, 2005	12.98	13.02	15.97	12.41	13.60
240251001	39.4102	-79.2969	Edgewood	Edgewood	Harford	Baltimore	1	No	Jan. 1, 1999	-	10.51	13.03	15.80	10.55	12.47
240053001	39.3108	-76.4745	Essex	Essex	Baltimore	Baltimore	1	Yes	Jan. 1, 1999	-	15.42	13.86	17.37	13.46	15.03
240051007	39.4621	-76.6311	Padonia	Cockeysville	Baltimore	Baltimore	1	No	Jan. 1, 1999	-	13.68	13.13	16.48	10.92	13.55
245100035	39.2328	-76.5797	FMC-Fairfield	Baltimore City	Baltimore	Baltimore	2	No	Jan. 1, 1999	-	17.28	15.30	17.18	15.01	16.19
245100006	39.3406	-76.5822	Northeast Police Station	Baltimore City	Baltimore	Baltimore	1	No	Jan. 1, 1999	-	13.31	11.38	17.11	12.50	13.58
245100007	39.3444	-76.6853	Northwest Police Station	Baltimore City	Baltimore	Baltimore	1	No	Jan. 1, 1999	-	14.19	15.24	18.43	12.57	15.11
245100008	39.2877	-76.5476	Southeast Police Station	Baltimore City	Baltimore	Baltimore	1	No	Jan. 1, 1999	-	15.67	13.23	16.18	12.89	14.49
245100040	39.2981	-76.6047	Oldtown	Baltimore City	Baltimore	Baltimore	1	No	Jan. 1, 1999	-	17.27	15.45	18.79	15.76	16.82
245100049	39.2617	-76.6375	Westport	Baltimore City	Baltimore	Baltimore	1	No	Jan. 1, 1999	Dec. 31, 2005	14.34	15.12	18.02	13.97	15.36

Note:

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Maryland's PM2.5 Annual Design Values (2002-2004)

AIRS ID	Latitude	Longitude	Site Name	City Name	County Name	MSA	PM2.5 FRM	Speciated Data	Started	Ended	2004 Quarterly PM2.5 FRM (ug/m3)				
											1st	2nd	3rd	4th	Average
240030014	38.9025	-76.6531	Davidsonville	Davidsonville	Anne Arundel	Baltimore	1	No	Jan.1, 1999	Jan. 2, 2006	9.74	13.01	17.25	9.99	12.50
240030019	39.1011	-76.7294	Ft. Meade	Ft. Meade	Anne Arundel	Baltimore	1	Yes	Jan. 1, 1999	Nov. 30, 2004	10.74	13.49	17.32	11.37	13.23
240031003	39.1695	-76.6279	Glen Burnie	Glen Burnie	Anne Arundel	Baltimore	1	No	Jan. 1, 1999	-	14.07	14.70	18.51	14.07	15.34
240032002	39.1588	-76.5111	Riviera Beach	Riviera Beach	Anne Arundel	Baltimore	2	No	Jan. 1, 1999	Dec. 31, 2005	13.21	14.42	17.82	12.34	14.45
240251001	39.4102	-79.2969	Edgewood	Edgewood	Harford	Baltimore	1	No	Jan. 1, 1999	-	11.63	12.88	16.05	10.89	12.86
240053001	39.3108	-76.4745	Essex	Essex	Baltimore	Baltimore	1	Yes	Jan. 1, 1999	-	13.97	16.01	17.50	13.15	15.16
240051007	39.4621	-76.6311	Padonia	Cockeysville	Baltimore	Baltimore	1	No	Jan. 1, 1999	-	12.50	13.11	17.39	11.66	13.67
245100035	39.2328	-76.5797	FMC-Fairfield	Baltimore City	Baltimore	Baltimore	2	No	Jan. 1, 1999	-	15.10	15.34	19.26	14.29	16.00
245100006	39.3406	-76.5822	Northeast Police Station	Baltimore City	Baltimore	Baltimore	1	No	Jan. 1, 1999	-	13.37	14.95	17.79	12.02	14.53
245100007	39.3444	-76.6853	Northwest Police Station	Baltimore City	Baltimore	Baltimore	1	No	Jan. 1, 1999	-	12.44	14.61	18.61	12.45	14.53
245100008	39.2877	-76.5476	Southeast Police Station	Baltimore City	Baltimore	Baltimore	1	No	Jan. 1, 1999	-	15.25	15.70	19.16	13.61	15.93
245100040	39.2981	-76.6047	Oldtown	Baltimore City	Baltimore	Baltimore	1	No	Jan. 1, 1999	-	15.58	16.58	19.37	14.41	16.49
245100049	39.2617	-76.6375	Westport	Baltimore City	Baltimore	Baltimore	1	No	Jan. 1, 1999	Dec. 31, 2005	15.27	15.11	18.92	12.60	15.48

Note:

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2. FRM=2 the Averages Reflect the Combined Data From Collocated Monitors.
3. Grayed out monitors don't have enough data to be used in the SIP analysis.

Estimated 2009 24-hr PM2.5 design values are attached.

Assumptions:

1. Mean quarterly speciation is used. Ideally, quarterly speciation should be determined using measurements on high PM2.5 days only.
2. Essex speciation is used at all sites.
3. CMAQ-calculated relative response factors at each grid box are determined by dividing CMAQ-calculated 2009 PM2.5 by 2002 PM2.5 and taking the mean of the 20 days each quarter with the highest model-calculated 2002 PM2.5.
4. Relative response factors for soil/crustal material are assumed to equal 1 due to inconsistencies in how the Midwest RPO's soil was grown.
5. Relative response factors for particle bound water are given as a range. Lower bound: Mass weighted mean of sulfate, nitrate, and ammonium RRFs. Upper bound: 1. The "mass" weighting uses observed speciation data at Essex.

		Base	2009range	
510130020	Aurora Hills	37.0	30.9	31.1
510590030	Franconia	34.7	28.1	28.4
510591005	Annandale	35.4	26.9	27.6
510595001	McLean	34.8	26.4	27.1
511071005	Ashburn	34.4	25.5	26.1
110010041	River Terrace	43.4	34.7	35.3
110010042	Ohio Drive/Hain	36.5	30.8	31.1
110010043	McMillan	39.0	32.9	33.3
240030014	Davidsonville	33.3	25.7	26.5
240030019	Ft. Meade	35.8	28.7	29.2
240031003	Glen Burnie	39.3	35.1	35.3
240032002	Riviera Beach	38.3	32.1	32.6
240251001	Edgewood	33.2	28.2	28.7
240053001	Essex	38.1	34.3	34.5
240051007	Padonia	34.9	30.4	30.6
245100035	FMC-Fairfield	40.9	36.8	37.1
245100006	Northeast Polic	35.3	31.4	31.6
245100007	Northwest Polic	37.6	31.1	31.5
245100008	Southeast Polic	36.0	32.9	33.2
245100040	Oldtown	41.1	37.5	37.8
245100049	Westport	39.2	36.2	36.4
240430009	Hagerstown	39.9	30.8	31.3
240150003	Fairhill	33.7	28.7	29.2