Appendix III

Monitoring Data

Design Values

This appendix provides a detailed summary of the design values based on ambient monitoring data collected in New Jersey's two multi-state nonattainment areas for the annual 15 µg/m^3 and daily 35 µg/m^3 fine particle ($PM_{2.5}$) National Ambient Air Quality Standards (NAAQS) and additional information on New Jersey's $PM_{2.5}$ speciation data.

In New Jersey, ambient air quality monitoring of $PM_{2.5}$ began in 1999. Currently, a total of 21 air quality monitoring stations are located in New Jersey where a Federal Reference Method sampler (FRM) routinely collects 24-hour $PM_{2.5}$ samples. All FRM sites collect a sample once every three days, with the exception of four monitors that sample daily. Some of the monitoring locations have multiple samplers. To collect $PM_{2.5}$ species, samples are collected once every three days concurrent with FRM sampling. As of 2011, nine sites also continuously monitor fine particle concentrations to determine the Air Quality Index (AQI). The data is transmitted every minute to the Bureau of Air Monitoring's (BAM's) central computer, where the data is made available on the BAM's public website (www.state.nj.us/dep/airmon).

To determine compliance with the NAAQS, "design values" are the metrics (i.e., statistics) that are compared to the NAAQS.[1] The 3-year average of annual $PM_{2.5}$ arithmetic means for a single monitoring site or a group of monitoring sites is referred to as the "annual standard design value." The 3-year average of the 98th percentile 24-hour average values recorded at each monitoring site per year is referred to as the "24-hour standard design value." A 'design value' for an area means the calculated concentration according to the applicable appendix of 40 CFR Part 50 for the highest site in an attainment or nonattainment area.[2]

A historical and current summary of monitoring data in New Jersey's multi-state nonattainment areas is shown in Figures 1 through 8 below. For the 2007-2009 design value period, there were 20 monitors in New Jersey's PM2.5 monitoring network. The monitor in Columbia was started in September 2010. Four of the monitors in New Jersey are located in attainment counties and are therefore not included in the Tables below.

[1] 40 CFR Appendix N to Part 50
[2] 40 CFR Part 58.1

Table 1
$PM_{2.5}$ Annual 15 µg/m^3 Monitoring Data Design Values 2001-2008
Northern New Jersey-New York-Connecticut Nonattainment Area

			Annual Design Values							
State	**County**	**Monitoring Site ID**	**1999-2001**	**2000-2002**	**2001-2003**	**2002-2004**	**2003-2005**	**2004-2006**	**2005-2007**	**2006-2008**
New Jersey	Bergen	340030003	14.3	14.0	13.6	12.8	13.3	12.8	13.2	12.2
New Jersey	Essex	340130015	15.0	14.1	13.6	13.5	13.9	13.2	13.3	13.1[4]
New Jersey	Essex	340130016	**15.2**	14.7	14.3	13.9	13.5	NA	NA	NA
New Jersey	Hudson	340171003	**15.9**	**15.3**	14.7	14.3	14.7	14.1	14.0	12.9
New Jersey	Hudson	340172002	**17.5**	**16.6**	**16.3**	**16.8**	**17.4**	**15.7**	**15.4**	14.1
New Jersey	Mercer	340210008	14.3	14.2	13.8	13.0	13.0	12.7	12.5	11.9
New Jersey	Mercer	340218001	11.8	11.9	11.9	11.5	11.7	11.0	10.8	10.1
New Jersey	Middlesex	340230006	12.6	12.5	12.4	11.8	12.5	11.8	12.1	11.3
New Jersey	Morris	340270004	13.7	12.6	12.4	11.6	11.9	11.2	11.3	10.3
New Jersey	Morris	340273001	11.2	11.1	11.0	10.5	10.6	10.0	10.1	9.4
New Jersey	Passaic	340310005	13.0	13.2	13.1	12.9	13.1	12.6	12.9	12.3
New Jersey	Union	340390004	**16.3**	**15.8**	**15.5**	**15.3**	**15.5**	14.8	14.4	13.6
New Jersey	Union	340390006	14.5	13.9	13.5	13.2	13.6	13.1	13.3	12.6
New Jersey	Union	340392003	14.1	13.1	12.8	12.8	13.3	12.9	13.0	12.3
New York	Bronx	360050073	**21.7**	NA	NA	NA	NA	NA	NA	NA
New York	Bronx	360050080	**16.4**	**16.0**	**15.7**	**15.2**	**15.7**	**15.1**	**15.5**	14.3
New York	Bronx	360050083	14.3	14.1	13.7	13.2	13.4	12.9	13.0	12.6
New York	Bronx	360050110	14.5	14.8	14.7	14.3	14.1	13.3	13.0	12.4
New York	Bronx	360050133	NA	NA	NA	NA	NA	NA	NA	11.7
New York	Kings	360470011	**16.0**	**16.2**	NA	NA	NA	NA	NA	NA
New York	Kings	360470052	**16.3**	**15.5**	14.3	13.4	12.9	NA	NA	NA
New York	Kings	360470076	14.4	14.4	14.2	13.7	14.2	NA	NA	NA
New York	Kings	360470122	**15.3**	14.7	14.7	14.2	14.6	14.0	14.0	12.9
New York	Nassau	360590005	13.5	NA	NA	NA	NA	NA	NA	NA
New York	Nassau	360590008	12.2	12.1	12.2	11.7	12.1	11.5	11.4	10.9
New York	Nassau	360590011	14.7	**15.3**	NA	NA	NA	NA	NA	NA
New York	Nassau	360590012	12.5	12.1	11.4	11.0	10.7	NA	NA	NA
New York	Nassau	360590013	12.4	12.0	11.5	11.1	10.9	NA	NA	NA
New York	New York	360610010	**16.7**	**17.0**	**17.1**	NA	NA	NA	NA	NA
New York	New York	360610056	**17.8**	**17.5**	**17.5**	**16.7**	**17.0**	**15.7**	**15.9**	**15.5**
New York	New York	360610062	**17.1**	**16.8**	**16.2**	**15.2**	**15.3**	14.3	14.8	14.3
New York	New York	360610079	**15.4**	15.0	14.6	13.9	14.0	13.3	13.5	12.8
New York	New York	360610128	14.8	**15.2**	**15.5**	**15.6**	**15.8**	**15.1**	**15.3**	14.2

Table 1
$PM_{2.5}$ Annual 15 µg/m^3 Monitoring Data Design Values 2001-2008
Northern New Jersey-New York-Connecticut Nonattainment Area

			Annual Design Values							
State	County	Monitoring Site ID	1999-2001	2000-2002	2001-2003	2002-2004	2003-2005	2004-2006	2005-2007	2006-2008
New York	New York	360610134	NA	NA	NA	NA	NA	NA	13.3	13.2
New York	Orange	360710002	11.7	11.5	11.5	11.1	11.4	10.8	10.8	10.0
New York	Queens	360810094	13.2	13.7	13.5	13.3	NA	NA	NA	NA
New York	Queens	360810096	13.9	13.7	13.2	12.7	12.4	NA	NA	NA
New York	Queens	360810097	13.3	13.1	NA	NA	NA	NA	NA	NA
New York	Queens	360810124	14.2	13.5	13.5	12.8	12.7	12.1	11.8	11.3
New York	Richmond	360850055	13.6	14.2	13.8	13.4	13.7	13.4	13.2	12.4
New York	Richmond	360850067	12.6	12.3	12.0	11.5	11.8	11.5	11.5	10.9
New York	Suffolk	361030001	12.9	12.4	12.1	11.3	11.5	11.3	12.0	NA
New York	Suffolk	361030002	NA	NA	NA	NA	NA	10.4	10.6	10.5
New York	Westchester	361191002	12.8	12.5	12.3	11.7	11.9	11.6	11.7	11.2
Connecticut	Fairfield	090010010	13.6	13.5	13.1	12.7	13.3	13.2	13.2	12.4
Connecticut	Fairfield	090010113	12.3	12.5	12.7	12.6	12.3	NA	NA	NA
Connecticut	Fairfield	090011123	12.8	12.8	13.0	12.3	12.6	12.3	12.6	12.0
Connecticut	Fairfield	090012124	12.4	12.9	13.1	12.7	12.6	11.8	NA	NA
Connecticut	Fairfield	090013005	13.0	12.9	13.0	12.5	12.7	12.3	12.3	11.8
Connecticut	Fairfield	090019003	12.9	12.2	11.8	11.4	11.7	11.4	11.3	10.6
Connecticut	New Haven	090090018	**16.8**	**16.4**	**16.5**	**16.0**	**17.0**	**17.2**	**18.9**	NA
Connecticut	New Haven	090090026	NA	NA	11.9	11.7	12.2	12.1	12.1	11.6
Connecticut	New Haven	090090027	NA	NA	NA	12.2	12.8	12.6	12.3	11.7
Connecticut	New Haven	090091123	14.1	13.9	13.9	13.4	13.5	13.0	12.8	12.2
Connecticut	New Haven	090092008	NA	NA	11.9	11.5	11.6	11.2	11.1	10.7
Connecticut	New Haven	090092123	13.6	13.6	13.2	12.6	12.9	12.7	12.6	11.9
Connecticut	New Haven	090098003	NA	NA	12.9	12.8	12.8	12.8	NA	NA
Connecticut	New Haven	090099005	11.6	11.5	11.8	11.7	12.3	NA	NA	NA

Notes

1. Data Source: USEPA. [Modified version of] Table 6. $PM_{2.5}$ Site Design Value History Listing, 1999-2001 through 2008-2010. AQS Data Query July 14, 2011. Last updated July 15, 2011. http://www.epa.gov/airtrends/values.html, accessed December 30, 2011.
2. Design values above the annual $PM_{2.5}$ NAAQS (15 µg/m^3) are shown in bold type.
3. NA = Data not available or incomplete
4. Incomplete design value, monitor shutdown in 2008

5.

Table 2
Annual $PM_{2.5}$ Monitoring Design Values 2009-2011
Northern New Jersey-New York-Connecticut Nonattainment Area

State	County	Monitor Site	AQS Monitor ID	Annual $PM_{2.5}$ Mean					Annual $PM_{2.5}$ DV		
			Year	2007	2008	2009	2010	2011	2007-2009	2008-2010	2009-2011
			Units	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$
			NAAQS	15	15	15	15	15	15	15	15
NJ	Bergen	Fort Lee	34 003 0003	13.3	11.6	9.1	8.8	9.8	11.3	9.8	9.2
	Essex	Newark Cultural Center	34 013 0015	13.4	13.7*(a)	*(a)	*(a)	*(a)	*(a)	*(a)	*(a)
	Essex	Newark Firehouse	34 013 0003	*(b)	*(b)	*(b)	9.2	10.5	*(b)	*(b)	*(b)
	Hudson	Jersey City Primary	34 017 1003	13.2	12.2	10.3	9.6	10.8	11.9	10.6	10.3
	Hudson	Union City	34 017 2002	15.0	13.3	10.8	10.6	11.8	13.0	11.5	11.1
	Mercer	Trenton	34 021 0008	12.0	11.1	9.3	9.5	10.3	10.9	10.0	9.7
	Mercer	Washington Crossing	34 021 8001	10.2	10.0	7.9	8.1	8.4	9.3	8.7	8.2
	Middlesex	New Brunswick	34 023 0006	12.2	10.9	8.1	7.4	8.3	10.4	8.8	7.9
	Morris	Morristown	34 027 0004	11.4	9.4	8.1	8.5	8.7	9.7	8.7	8.5
	Morris	Chester	34 027 3001	10.3	8.8	7.2	7.5	7.9	8.8	7.8	7.6
	Passaic	Paterson	34 031 0005	13.5	11.4	9.0	8.9	10.1	11.3	9.7	9.3
	Union	Elizabeth Turnpike Primary	34 039 0004	13.8	12.8	11.3	10.6	12.2	12.7	11.6	11.4
	Union	Elizabeth Downtown	34 039 0006	13.1	12.4	9.4	9.2	10.0	11.6	10.3	9.5
	Union	Rahway	34 039 2003	13.1	12.0	9.4	9.3	10.1	11.5	10.2	9.6
NY	Bronx	Morrisania	36 005 0080	15.6	13.5	12.7	11.4	11.6	13.9	12.5	11.9
	Bronx	E. 156th St.	36 005 0110	12.8	11.8	10.8	(c)*	(c)*	11.8	*(c)	*(c)
	Bronx	200th St./Southern Blvd.	36 005 0133 (merged with 0083)	13.2	11.7	10.0	10.0	10.0	11.6	10.6	10.0
	Kings	JHS 126	36 047 0122	13.9	12.0	10.7	9.9	10.3	12.2	10.9	10.3
	Nassau	Cedarhurst	36 059 0008	11.0	10.9	9.0	8.7	8.9	10.3	9.5	8.9
	New York	PS 59	36 061 0056	16.1	15.9*	*(d)	*(d)	*(d)	14.0(d)	-	-
	New York	JHS 45	36 061 0079	13.6	12.2	10.4	9.8	10.4	12.1	10.8	10.2
	New York	PS 19	36 061 0128	15.6	13.1*	11.9*	11.5	12.1	12.1(e)	-	-
	New York	PS 124	36 061 0134	13.3	13.2	11.6	11.5	12.2	12.7	12.1	11.7
	Orange	55 Broadway	36 071 0002	10.6	9.5	7.9	8.1	8.6	9.3	8.5	8.2
	Queens	Queens College	36 081 0124	11.4	11.0	9.5	9.4	9.3	10.6	10.0	9.4
	Staten Island	Port Richmond	36 085 0055	13.0	12.1	9.8	9.7	10.1	11.6	10.5	9.8
	Staten Island	Susan Wagner HS	36 085 0067	11.5	10.7	8.5	8.2	9.3	10.2	9.1	8.5

Table 2
Annual $PM_{2.5}$ Monitoring Design Values 2009-2011
Northern New Jersey-New York-Connecticut Nonattainment Area

State	County	Monitor Site	AQS Monitor ID	Annual $PM_{2.5}$ Mean					Annual $PM_{2.5}$ DV		
			Year	2007	2008	2009	2010	2011	2007-2009	2008-2010	2009-2011
			Units	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$
			NAAQS	15	15	15	15	15	15	15	15
NY	Suffolk	East Farmingdale/ Babylon	36 103 0002	10.9	10.1	8.1	8.4	8.8	9.7	8.9	8.4
	Westchester	Mamaroneck	36 119 1002	11.7	11.0	9.1	8.8	9.3	10.6	9.6	9.1
CT	Fairfield	Roosevelt School	09 001 0010	12.7	11.9	9.4	8.8	10.0	11.3	10.0	9.4
	Fairfield	Danbury	09 001 1123	12.0	11.7	9.2	9.1	9.6	11.0	10.0	9.3
	Fairfield	Norwalk	09 001 3005	11.9	11.8	9.5	*(f)	10.1*(f)	11.1	*(f)	*(f)
	Fairfield	Westport	09 001 9003	10.9	10.2	8.9	8.6	9.5	10.0	9.2	9.0
	New Haven	Woodward Av	09 009 0026	11.6	11.5	9.2	*(g)	*(g)	10.8	*(g)	*(g)
	New Haven	James St	09 009 0027	11.5	11.3	9.7	8.9	10.0	10.8	10.0	9.6
	New Haven	State St	09 009 1123	12.2	12.1	9.9	9.0	10.0	11.4	10.3	9.6
	New Haven	Huntington St	09 009 2008	10.8	10.5	8.5	*(g)	*(g)	9.9	*(g)	*(g)
	New Haven	Waterbury	09 009 2123	12.0	11.7	9.4	9.2	9.9	11.0	10.1	9.5

Notes

Sources:
2007-2009: 75 FR 69589 (November 15, 2010)
2008-2010: AQS (2/23/2012) and state agency input
2009-2011: AQS (5/7/2012)
* = Incomplete data
a. Shutdown 7/24/2008 and replaced with a new monitor (0003). Not a design value monitor for the area.
b. Monitor established 5/13/2009. Not a design value monitor for the area.
c. No data gathered after 6/16/2010. Not a design value monitor for the area.
d. Monitor shutdown mid-2008. Valid design value calculated per the USEPA's Bootstrapping Analysis in the 2010 Clean Data Determination.
e. Monitor sampling suspended 5/27/2008-3/02/09. Valid design value calculated per the USEPA's Bootstrapping Analysis in the 2010 Clean Data Determination.
f. Monitor temporarily removed in 2010; partial 2011. Not a design value monitor for the area.
g. Monitor shutdown 2010. Not a design value monitor for the area.

Table 3
$PM_{2.5}$ Daily 35 µg/m^3 Monitoring Data Design Values 2001-2008
Northern New Jersey-New York-Connecticut Nonattainment Area

			Daily (24-Hour) Design Values							
State	**County**	**Monitoring Site ID**	**1999-2001**	**2000-2002**	**2001-2003**	**2002-2004**	**2003-2005**	**2004-2006**	**2005-2007**	**2006-2008**
New Jersey	Bergen	340030003	**36**	35	**36**	35	**37**	**37**	**38**	35
New Jersey	Essex	340130015	**39**	**37**	**37**	**38**	**38**	**38**	**38**	35[4]
New Jersey	Essex	340130016	34	**37**	**36**	**37**	35	NA	NA	NA
New Jersey	Hudson	340171003	**41**	**38**	**40**	**40**	**41**	**39**	**38**	**36**
New Jersey	Hudson	340172002	**43**	**39**	**39**	**38**	**44**	**43**	**41**	**38**
New Jersey	Mercer	340210008	**37**	**38**	**37**	**37**	**36**	34	34	33
New Jersey	Mercer	340218001	30	32	33	32	32	30	30	28
New Jersey	Middlesex	340230006	33	32	**36**	**36**	**38**	34	32	31
New Jersey	Morris	340270004	35	35	**38**	35	34	31	32	29
New Jersey	Morris	340273001	30	32	34	33	33	31	31	28
New Jersey	Passaic	340310005	**37**	35	**37**	**36**	**37**	35	**37**	33
New Jersey	Union	340390004	**40**	**40**	**41**	**41**	**41**	**41**	**39**	**36**[5]
New Jersey	Union	340390006	**38**	33	35	35	**38**	**37**	**38**	35
New Jersey	Union	340392003	30	**36**	35	**36**	**37**	**37**	**36**	34
New York	Bronx	360050073	**39**	NA	NA	NA	NA	NA	NA	NA
New York	Bronx	360050080	**41**	**38**	**40**	**40**	**40**	**39**	**38**	**36**
New York	Bronx	360050083	**36**	**36**	**36**	35	35	34	35	34
New York	Bronx	360050110	**38**	**40**	**40**	**38**	**37**	**36**	**36**	34
New York	Bronx	360050133	NA	NA	NA	NA	NA	NA	NA	30
New York	Kings	360470011	42	42	NA	NA	NA	NA	NA	NA
New York	Kings	360470052	**39**	**37**	32	29	26	NA	NA	NA
New York	Kings	360470076	**38**	**36**	33	33	33	NA	NA	NA
New York	Kings	360470122	35	35	**37**	**38**	**38**	**37**	**36**	34
New York	Nassau	360590005	34	NA	NA	NA	NA	NA	NA	NA
New York	Nassau	360590008	32	32	34	34	35	33	32	30
New York	Nassau	360590011	**39**	**38**	NA	NA	NA	NA	NA	NA
New York	Nassau	360590012	32	32	30	29	26	NA	NA	NA
New York	Nassau	360590013	33	34	31	30	26	NA	NA	NA
New York	New York	360610010	**41**	**43**	**44**	NA	NA	NA	NA	NA
New York	New York	360610056	**43**	**40**	**39**	**39**	**39**	**41**	**39**	**37**
New York	New York	360610062	**43**	**41**	**42**	**41**	**42**	**38**	**37**	35
New York	New York	360610079	**38**	**38**	**39**	**40**	**40**	**37**	**36**	35
New York	New York	360610128	**38**	**38**	**42**	**42**	**42**	**38**	**38**	34

Table 3
$PM_{2.5}$ Daily 35 µg/m^3 Monitoring Data Design Values 2001-2008
Northern New Jersey-New York-Connecticut Nonattainment Area

			Daily (24-Hour) Design Values							
State	**County**	**Monitoring Site ID**	**1999-2001**	**2000-2002**	**2001-2003**	**2002-2004**	**2003-2005**	**2004-2006**	**2005-2007**	**2006-2008**
New York	New York	360610134	NA	NA	NA	NA	NA	NA	**37**	34
New York	Orange	360710002	29	30	30	30	29	28	29	28
New York	Queens	360810094	**35**	35	35	34	NA	NA	NA	NA
New York	Queens	360810096	**36**	35	35	34	33	NA	NA	NA
New York	Queens	360810097	31	33	NA	NA	NA	NA	NA	NA
New York	Queens	360810124	**36**	**37**	**38**	**37**	**36**	34	33	32
New York	Richmond	360850055	29	**37**	**39**	**39**	**37**	34	34	33
New York	Richmond	360850067	32	31	31	31	33	33	31	30
New York	Suffolk	361030001	33	34	**36**	35	35	33	34	NA
New York	Suffolk	361030002	NA	NA	NA	NA	NA	32	30	29
New York	Westchester	361191002	34	34	34	34	34	34	33	32
Connecticut	Fairfield	090010010	**38**	**39**	**38**	**36**	**37**	**36**	35	33
Connecticut	Fairfield	090010113	**36**	35	**36**	**37**	**40**	NA	NA	NA
Connecticut	Fairfield	090011123	33	34	35	33	33	32	33	31
Connecticut	Fairfield	090012124	34	**36**	**38**	**36**	**37**	32	NA	NA
Connecticut	Fairfield	090013005	**36**	35	**38**	**36**	**36**	33	34	31
Connecticut	Fairfield	090019003	34	34	**37**	**36**	**37**	32	32	30
Connecticut	New Haven	090090018	**40**	**41**	**41**	**39**	**40**	**39**	**44**	NA
Connecticut	New Haven	090090026	NA	NA	**46**	**39**	**38**	35	34	32
Connecticut	New Haven	090090027	NA	NA	NA	33	**36**	**36**	35	33
Connecticut	New Haven	090091123	**36**	**37**	**40**	**39**	**40**	**38**	**36**	34
Connecticut	New Haven	090092008	NA	NA	**44**	**38**	**36**	33	32	29
Connecticut	New Haven	090092123	**36**	34	35	34	35	34	35	32
Connecticut	New Haven	090098003	NA	NA	**47**	**39**	**39**	31	NA	NA
Connecticut	New Haven	090099005	32	33	**36**	**37**	**44**	NA	NA	NA

Notes

1. Data Source: USEPA. [Modified version of] Table 6. $PM_{2.5}$ Site Design Value History Listing, 1999-2001 through 2008-2010. AQS Data Query July 14, 2011. Last updated July 15, 2011. http://www.epa.gov/airtrends/values.html, accessed December 30, 2011.
2. Design values above the daily $PM_{2.5}$ NAAQS (35 µg/m^3) are shown in bold type.
3. NA = Data not available or incomplete
4. Incomplete design value, monitor shutdown in 2008
5. Incomplete data

Table 4
Daily (24-Hour) $PM_{2.5}$ Monitoring Design Values 2009-2011
Northern New Jersey-New York-Connecticut Nonattainment Area

State	County	Monitor Site	AQS Monitor ID	Daily $PM_{2.5}$ 98th Percentile					Daily $PM_{2.5}$ DV		
			Year	2007	2008	2009	2010	2011	2007-2009	2008-2010	2009-2011
			Units	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
			NAAQS	35	35	35	35	35	35	35	35
NJ	Bergen	Fort Lee	34 003 0003	34.5	32.2	27.1	25.1	23.5	31	28	25
	Essex	Newark Cultural Center	34 013 0015	34.9	28.7*(a)	*(a)	*(a)	*(a)	*(a)	*(a)	*(a)
	Essex	Newark Firehouse	34 013 0003	*(b)	*(b)	*(b)	24.0	23.9	*(b)	*(b)	*(b)
	Hudson	Jersey City Primary	34 017 1003	34.9	32.0	29.2	25.9	28.2	32	29	28
	Hudson	Union City	34 017 2002	39.1	33.4	26.6	26.7	25.7	33	29	26
	Mercer	Trenton	34 021 0008	32.5	31.0	23.0	26.9	27.7	29	27	26
	Mercer	Washington Crossing	34 021 8001	27.2	27.6	22.2	18.5	19.7	26	23	20
	Middlesex	New Brunswick	34 023 0006	30.4	28.9	21.0	19.1	20.5	27	23	20
	Morris	Morristown	34 027 0004	32.4	23.8	21.9	23.3	21.0	26	23	22
	Morris	Chester	34 027 3001	31.4	24.3	20.9	22.7	24.4	26	23	23
	Passaic	Paterson	34 031 0005	36.6	28.6	26.1	24.4	25.4	30	26	25
	Union	Elizabeth Turnpike Primary	34 039 0004	35.0	33.8*(h)	27.7	28.1	32.9	32	30	30
	Union	Elizabeth Downtown	34 039 0006	35.9	31.1	25.6	25.1	21.5	31	27	24
	Union	Rahway	34 039 2003	33.4	29.9	25.2	23.8	23.8	30	26	24
NY	Bronx	Morrisania	36 005 0080	36.2	31.3	30.0	27.0	27.0	33	29	28
	Bronx	E. 156th St.	36 005 0110	34.4	29.9	30.6	(c)*	(c)*	32	(c)*	(c)*
	Bronx	200th St./Southern Blvd.	36 005 0133 (merged with 0083)	32.5	29.8	27.4	24.8	23.0	30	27	25
	Brooklyn	JHS 126	36 047 0122	33.6	29.4	26.9	24.8	24.3	30	27	25
	Nassau	Cedarhurst	36 059 0008	28.5	29.2	25.8	20.2	23.1	28	25	23
	New York	PS 59	36 061 0056	36.8	33.1	*(d)	*(d)	*(d)	*(d)	*(d)	*(d)
	New York	JHS 45	36 061 0079	34.3	32.3	28.8	25.2	25.2	32	29	26
	New York	PS 19	36 061 0128	37.8	25.7*	29.0*	25.4	26.4	31*(e)	27*(e)	-
	New York	PS 124	36 061 0134	37.1	31.8	29.0	27.0	26.8	33	29	28
	Orange	55 Broadway	36 071 0002	30.4	26.0	20.6	26.5	20.8	26	24	23
	Queens	Queens College	36 081 0124	31.8	30.3	26.7	25.5	24.7	30	28	26
	Richmond	Port Richmond	36 085 0055	32.8	28.7	24.6	25.5	23.2	29	26	24

Table 4
Daily (24-Hour) $PM_{2.5}$ Monitoring Design Values 2009-2011
Northern New Jersey-New York-Connecticut Nonattainment Area

State	County	Monitor Site	AQS Monitor ID	Daily $PM_{2.5}$ 98th Percentile					Daily $PM_{2.5}$ DV		
			Year	2007	2008	2009	2010	2011	2007-2009	2008-2010	2009-2011
			Units	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3
			NAAQS	35	35	35	35	35	35	35	35
	Richmond	Susan Wagner HS	36 085 0067	28.8	27.7	23.0	21.5	23.6	27	24	23
NY	Suffolk	East Farmingdale/ Babylon	36 103 0002	28.8	26.8	21.6	26.1	21.7	26	25	23
	Westchester	Mamaroneck	36 119 1002	30.6	30.4	27.0	26.7	22.7	29	28	25
CT	Fairfield	Roosevelt School	09 001 0010	30.2	32.3	29.3	23.3	23.7	31	28	25
	Fairfield	Danbury	09 001 1123	30.4	27.5	27.6	25.7	24.8	29	27	26
	Fairfield	Norwalk	09 001 3005	31.9	26.3	29.3	*(f)	*(f)	29	*(f)	*(f)
	Fairfield	Westport	09 001 9003	29.0	30.7	26.4	24.2	25.2	29	27	26
	New Haven	Woodward Av	09 009 0026	29.8	30.9	28.5	*(g)	*(g)	30	*(g)	*(g)
	New Haven	James St	09 009 0027	30.5	31.5	30.2	25.5	27.5	31	29	28
	New Haven	State St	09 009 1123	30.6	32.1	30.8	23.9	26.6	31	29	27
	New Haven	Huntington St	09 009 2008	28.5	25.4	27.3	*(g)	*(g)	27	*(g)	*(g)
	New Haven	Waterbury	09 009 2123	32.7	28.4	28.1	25.7	24.3	30	27	26

Notes

Sources:
2007-2010: AQS (2/23/2012) and state agency input
2011: AQS (5/7/2012)
* = Incomplete data
a. Shutdown 7/24/2008 and replaced with a new monitor (0003). Not a design value monitor for the area.
b. Monitor established 5/13/2009. Not a design value monitor for the area.
c. No data gathered after 6/16/2010. Not a design value monitor for the area.
d. Monitor shutdown mid-2008. Valid design values pending the USEPA's Bootstrapping Analysis.
e. Monitor sampling suspended 5/27/2008-3/02/09. Valid design values pending the USEPA's Bootstrapping Analysis.
f. Monitor temporarily removed in 2010; partial 2011. Not a design value monitor for the area.
g. Monitor shutdown 2010. Not a design value monitor for the area.
h. Incomplete data

Table 5
$PM_{2.5}$ Annual 15 µg/m^3 Monitoring Data Design Values 2001-2008
Southern New Jersey-Philadelphia Nonattainment Area

			Annual Design Values							
State	County	Monitoring Site ID	1999-2001	2000-2002	2001-2003	2002-2004	2003-2005	2004-2006	2005-2007	2006-2008
New Jersey	Camden	340070003	14.2	14.1	14.4	14.2	14.5	13.2	13.4	13.0[4]
New Jersey	Camden	340071007	14.6	14.5	14.0	13.7	13.8	13.3	13.5	12.7
New Jersey	Gloucester	340150004	NA	NA	NA	NA	NA	NA	13.3	12.4
New Jersey	Gloucester	340155001	14.3	14.0	13.5	12.8	13.5	NA	NA	NA
Delaware	New Castle	100031003	**15.1**	15.0	14.8	14.2	14.3	13.5	13.4	12.9
Delaware	New Castle	100031007	14.1	13.9	13.6	13.2	13.4	12.8	12.6	11.8
Delaware	New Castle	100031011	14.3	NA	NA	NA	NA	NA	NA	NA
Delaware	New Castle	100031012	**15.5**	**15.3**	**15.1**	14.7	14.6	13.9	13.5	12.9
Delaware	New Castle	100032004	**16.6**	**16.5**	**16.2**	**15.3**	**15.1**	14.8	14.7	14.2
Pennsylvania	Bucks	420170012	13.4	14.1	14.3	13.9	13.9	13.2	13.2	12.6
Pennsylvania	Chester	420290100	NA	14.6	**15.1**	14.8	**15.2**	14.2	14.2	13.4
Pennsylvania	Delaware	420450002	15.0	**15.5**	**15.4**	**15.1**	**15.7**	15.0	15.0	14.1
Pennsylvania	Montgomery	420910013	13.8	14.0	14.1	13.2	12.8	12.2	12.5	12.3
Pennsylvania	Philadelphia	421010004	**15.3**	**15.3**	**15.2**	14.4	14.3	13.9	13.8	13.4
Pennsylvania	Philadelphia	421010014	NA	14.5	13.9	12.8	11.9	10.6	NA	NA
Pennsylvania	Philadelphia	421010020	14.5	14.6	14.3	13.8	14.4	14.7	**15.5**	NA
Pennsylvania	Philadelphia	421010024	14.1	14.3	13.8	13.2	13.0	12.7	12.7	12.4
Pennsylvania	Philadelphia	421010027	**23.4**	**23.4**	NA	NA	NA	NA	NA	NA
Pennsylvania	Philadelphia	421010047	**16.6**	**16.6**	**16.2**	**15.4**	**15.2**	15.0	15.0	14.5
Pennsylvania	Philadelphia	421010052	NA	13.1	13.1	13.1	NA	NA	NA	NA
Pennsylvania	Philadelphia	421010055	NA	NA	NA	NA	NA	NA	NA	13.5
Pennsylvania	Philadelphia	421010057	NA	NA	NA	NA	NA	NA	12.0	12.7
Pennsylvania	Philadelphia	421010136	**15.3**	**15.2**	14.9	13.6	13.7	13.4	13.6	13.2

Notes

1. Data Source: USEPA. [Modified version of] Table 6. $PM_{2.5}$ Site Design Value History Listing, 1999-2001 through 2008-2010. AQS Data Query July 14, 2011. Last updated July 15, 2011. http://www.epa.gov/airtrends/values.html, accessed December 30, 2011.
2. Design values above the annual $PM_{2.5}$ NAAQS (15 µg/m^3) are shown in bold type.
3. NA = Data not available or incomplete
4. Incomplete design value, monitor shutdown in 2008

Table 6
Annual $PM_{2.5}$ Monitoring Design Values 2009-2011
Southern New Jersey-Philadelphia Nonattainment Area

State	County	Monitor Site	AQS Monitor ID	Annual $PM_{2.5}$ Mean					Annual $PM_{2.5}$ DV		
			Year	2007	2008	2009	2010	2011	2007-2009	2008-2010	2009-2011
			Units	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$
			NAAQS	15	15	15	15	15	15	15	15
NJ	Camden	Pennsauken	340071007	13.8	11.9	9.5	10.3	10.1	11.7	10.3	9.7
	Gloucester	Gibbstown	340150004	13.3	11.5	9.3	10.0	9.4	11.4 (a)	10.0	9.3
DE	New Castle	Bellefonte	100031003	13.4	13.0	10.2	11.1	9.4	12.2 (a)	11.1 (a)	9.9
	New Castle	Lums	100031007	12.5	11.5	10.0	10.5	8.8	11.3 (a)	10.5 (a)	9.6
	New Castle	Nwrk-a	100031012	13.4	12.5	10.6	11.2	10.4	12.2	11.2	10.5
	New Castle	MLK-a	100032004	14.4	13.5	11.2	11.7	10.3	13.0	11.7	10.7
PA	Bucks	Bristol	420170012	13.0	12.7	10.8	10.5	11.5	12.2	11.3	10.9
	Chester	New Garden	420290100	14.1	13.7	14.1	13.8	13.3	13.9 (b)	13.8 (a)	13.7
	Delaware	Chester	420450002	14.7	13.9	12.4	13.5	12.9	13.7	13.3	12.9
	Montgomery	Norristown	420910013	13.1	11.7	10.4	9.5	10.3	11.7	10.5	10.1
	Philadelphia	LAB	421010004	13.7	13.0	10.8	10.7	8.9	12.5	11.5	10.1
	Philadelphia	NEA	421010024	12.9	12.0	9.9	9.6	*(c)	11.6 (a)	10.5	*(c)
	Philadelphia	CHS, Broad St.	421010047	14.3	13.5	11.1	11.0	11.4	13.0 (a)	11.9	11.2
	Philadelphia	RIT-F	421010055	*(d)	13.5	11.3	11.3	12.0	12.4	12.0	11.4
	Philadelphia	FAB-FA	421010057	12.0	13.3	11.1	10.9	11.4	12.1	11.7	11.1
	Philadelphia	5200 Pennypack Park	421010136	*(e)	*(e)	*(e)	*(e)	9.9	*(e)	*(e)	*(e)

Notes

Sources:
77 FR 3147 (January 23, 2012) (The USEPA's Proposed Clean Data Determination containing its Data Substitution and Bootstrapping Analysis)
2011: AQS (5/7/2012)
* = Incomplete data
a. "Max Q Sub." indicates that data was incomplete, but the annual mean of the "incomplete year" has deemed valid because it passed the maximum quarter data substitution test.
b. "I" indicates that data was incomplete and failed to meet a data substitution test to validate the annual mean of the incomplete year. The USEPA performed a bootstrapping analysis to validate the design value for this monitor.
c. Incomplete 2011 data. Not a design value monitor for the area.
d. Monitor started operating in 2008. Not a design value monitor for the area. The USEPA determined this monitor to have complete data in its analysis.
e. Monitor started operating in 2011. Not a design value monitor for the area.

Table 7
$PM_{2.5}$ Daily 35 µg/m^3 Monitoring Data Design Values 2001-2008
Southern New Jersey-Philadelphia Nonattainment Area

			Daily (24-Hour) Design Values							
State	County	Monitoring Site ID	1999-2001	2000-2002	2001-2003	2002-2004	2003-2005	2004-2006	2005-2007	2006-2008
New Jersey	Camden	340070003	**37**	**37**	**40**	**38**	**39**	**36**	35	35[4]
New Jersey	Camden	340071007	**36**	**37**	**40**	**39**	**39**	**37**	**37**	34
New Jersey	Gloucester	340150004	NA	NA	NA	NA	NA	NA	31	28
New Jersey	Gloucester	340155001	33	**37**	**37**	33	32	NA	NA	NA
Delaware	New Castle	100031003	**37**	**39**	**39**	**36**	34	33	33	32
Delaware	New Castle	100031007	35	**38**	**38**	**36**	35	32	32	29
Delaware	New Castle	100031011	**39**	NA	NA	NA	NA	NA	NA	NA
Delaware	New Castle	100031012	**38**	**41**	**40**	**36**	34	32	32	30
Delaware	New Castle	100032004	**40**	**43**	**43**	**39**	**37**	**37**	**37**	**36**
Pennsylvania	Bucks	420170012	**37**	**39**	**40**	**37**	35	33	35	33
Pennsylvania	Chester	420290100	NA	34	**36**	35	35	35	**37**	**36**
Pennsylvania	Delaware	420450002	**37**	**39**	**39**	**36**	35	35	**36**	33
Pennsylvania	Montgomery	420910013	**37**	**39**	**41**	35	33	32	33	30
Pennsylvania	Philadelphia	421010004	**40**	**41**	**40**	**38**	**37**	**36**	**37**	**36**
Pennsylvania	Philadelphia	421010014	NA	30	35	28	27	NA	NA	NA
Pennsylvania	Philadelphia	421010020	33	**36**	**38**	**36**	34	31	33	NA
Pennsylvania	Philadelphia	421010024	**36**	**38**	**38**	**37**	**36**	35	35	33
Pennsylvania	Philadelphia	421010027	**57**	**57**	NA	NA	NA	NA	NA	NA
Pennsylvania	Philadelphia	421010047	**37**	**39**	**40**	**38**	**38**	**36**	**38**	**36**
Pennsylvania	Philadelphia	421010052	NA	**51**	**51**	**51**	NA	NA	NA	NA
Pennsylvania	Philadelphia	421010055	NA	NA	NA	NA	NA	NA	NA	35
Pennsylvania	Philadelphia	421010057	NA	NA	NA	NA	NA	NA	33	33
Pennsylvania	Philadelphia	421010136	**40**	**43**	**42**	**36**	32	33	34	35

Notes

1. Data Source: USEPA. [Modified version of] Table 6. $PM_{2.5}$ Site Design Value History Listing, 1999-2001 through 2008-2010. AQS Data Query July 14, 2011. Last updated July 15, 2011. http://www.epa.gov/airtrends/values.html, accessed December 30, 2011.
2. Design values above the daily $PM_{2.5}$ NAAQS (35 µg/m^3) are shown in bold type.
3. NA = Data not available or incomplete
4. Incomplete design value, monitor shutdown in 2008

Table 8
Daily (24-Hour) $PM_{2.5}$ Monitoring Design Values 2009-2010
Southern New Jersey-Philadelphia Nonattainment Area

State	County	Monitor Site	AQS Monitor ID	Daily $PM_{2.5}$ 98th Percentile					Daily $PM_{2.5}$ DV		
			Year	2007	2008	2009	2010	2011	2007-2009	2008-2010	2009-2011
			Units	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
			NAAQS	35	35	35	35	35	35	35	35
NJ	Camden	Pennsauken	340071007	35.1	28.0	25.0	23.4	24.3	29	25	24
	Gloucester	Gibbstown	340150004	31.3	23.9	21.9	21.6	22.2	26 (a)	22	22
DE	New Castle	Bellefonte	100031003	32.3	31.6	23.2	24.3	22.4	29 (b)	26 (a)	23
	New Castle	Lums	100031007	29.6	28.1	20.6	27.5	21.0	26 (a)	25 (a)	23
	New Castle	Nwrk-a	100031012	31.0	28.6	23.4	24.9	22.2	28	26	24
	New Castle	MLK-a	100032004	33.6	34.8	28.4	27.9	24.7	32	30	27
PA	Bucks	Bristol	420170012	35.0	30.9	25.8	28.3	29.7	31	28	28
	Chester	New Garden	420290100	38.1	32.0	31.1	35.1	33.8	34 (b)	33 (b)	33
	Delaware	Chester	420450002	34.0	28.6	27.9	32.8	28.6	30	30	30
	Montgomery	Norristown	420910013	30.1	23.7	27.2	25.9	27.6	27	26	27
	Philadelphia	LAB	421010004	35.4	34.5	25.9	27.6	23.7	32	29	26
	Philadelphia	NEA	421010024	33.5	30.5	25.5	25.2	*(c)	30 (b)	27	*(c)
	Philadelphia	CHS, Broad St.	421010047	35.2	32.8	27.2	27.6	27.5	32 (b)	29	27
	Philadelphia	RIT-F	421010055	*(d)	34.5	28.6	28.9	30.6	32	31	29
	Philadelphia	FAB-FA	421010057	*(e)	32.8	28.3	27.9	30.5	31	30	29
	Philadelphia	5200 Pennypack Park	421010136	*(f)	*(f)	*(f)	*(f)	24.9	*(f)	*(f)	*(f)

Notes

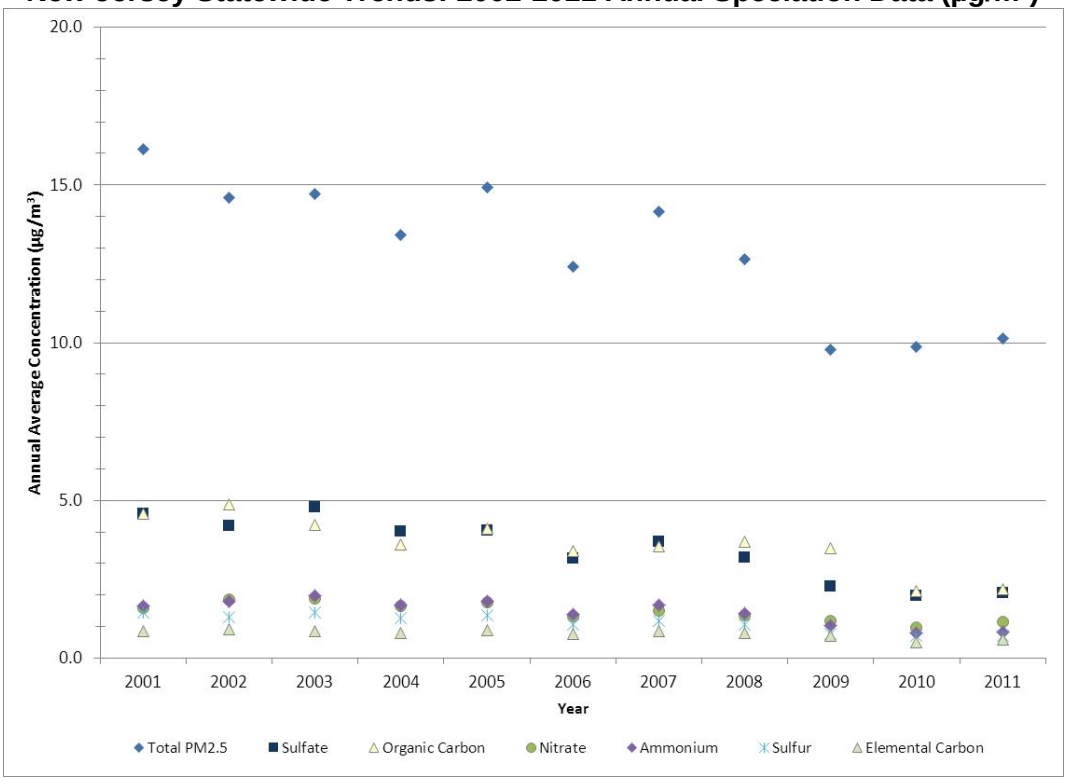
Sources:
2007-2010: USEPA Draft Data Substitution Analysis, June 9, 2011
2011: AQS (5/7/2012)
* = Incomplete data
a. "Max Q Sub." indicates that data was incomplete, but the annual mean of the "incomplete year" has deemed valid because it passed a data substitution (sub.) test.
b. "I" indicates that data was incomplete and failed to meet a data substitution test to validate the annual mean of the incomplete year. These design values are pending the USEPA's Bootstrapping Analysis.
c. Incomplete 2011 data. Not a design value monitor for the area.
d. Monitor started operating in 2008. Not a design value monitor for the area. The USEPA determined this monitor to have complete data in its analysis.
e. Monitor not operational. Not a design value monitor for the area. The USEPA determined this monitor to have complete data in its analysis.
f. Monitor started operating in 2011. Not a design value monitor for the area.

$PM_{2.5}$ Components

New Jersey collects data on the components of $PM_{2.5}$ at monitoring sites across the State. This is also referred to as "speciation" monitoring. "Speciation" monitoring is conducted to determine the chemical characteristics of the fine particles. The New Jersey Speciation Network currently consists of four sites (Elizabeth, Newark, New Brunswick, and Chester shown in Figure 2) at which filters are collected and analyzed to determine their chemical characteristics. The Camden monitoring site is not currently operational, but is included in the historical analysis discussed below. The Newark monitor was not included in the historical analysis, because the site started operation in 2010.The speciation monitors are different than those used to measure attainment (Federal Reference Method (FRM) monitors) and use a different sampling method.

The data from the monitors at Elizabeth, New Brunswick, Camden, and Chester were averaged to show statewide averages for each year from 2002-2011, as shown in Figure 1.[3]

Figure 1:
New Jersey Statewide Trends: 2002-2011 Annual Speciation Data (µg/m^3)



Notes:
Regression analysis (trendline) results:
Sulfate: y = -0.301x + 4.9984, R^2 = 0.8688
Organic Carbon: y = -0.2545x + 4.8956, R^2 = 0.8095
Nitrate: y = -0.1022x + 2.0203, R^2 = 0.879
Total $PM_{2.5}$: y = -0.5877x + 15.898, R^2 = 0.7479
Sulfur: y = -0.0833x + 1.5481, R^2 = 0.8336
Elemental Carbon: y = -0.037x + 0.9662, R^2 = 0.7571
Ammonium: y = -0.1304x + 2.1567, R^2 = 0.843

[3] For additional details on other $PM_{2.5}$ speciation data studies, including seasonal trends, for New Jersey and the region, refer to: NJDEP. State Implementation Plan (SIP) Revision for the Attainment and Maintenance of the Fine Particulate Matter ($PM_{2.5}$) National Ambient Air Quality Standard: $PM_{2.5}$ Attainment Demonstration, Final, Chapter 2, Appendices B11 and B12. New Jersey Department of Environmental Protection, March 26, 2009.

The highest and lowest ten percent (10%) of the days on which total $PM_{2.5}$ mass was measured were analyzed for each year. This analysis is shown in Figures 2 through 5. The "other" species were not included in this analysis.

Data Analysis Notes:

1. A change in sampling methodology occurred in late 2009 for New Brunswick, Elizabeth, and Chester, and in 2007 for Camden. There appears to be lower carbon concentrations measured with the new method compared to the old method.

2. Newark monitor (AQS ID 340130003): Not included in the analysis. 2010 and 2011 data only; both organic and elemental carbon were collected and analyzed by a different method than at the other sites.

3. 2001 was a partial year of data collection for all monitors (except Newark), therefore, 2001 is not included in the analysis.

4. Camden monitor (AQS ID 340070003): 2003 EC and OC data missing for October, November and December, and all data missing for a portion of 2008.

5. The total measured mass presented in the figures does not always equate to the sum of all of the components measured due to different sampling methods.

6. The number of species measured decreased from 55 to 39 in 2010.

7. The 32 "other" species for 2010 and 2011 include Aluminum, Antimony, Arsenic, Barium, Bromine, Cadmium, Calcium, Cerium, Cesium, Chlorine, Chromium, Cobalt, Copper, Indium, Iron, Lead, Magnesium, Manganese, Nickel, Phosphorus, Potassium, Rubidium, Selenium, Silicon, Silver, Sodium, Strontium, Tin, Titanium, Vanadium, Zinc, Zirconium.

Figure 2:
New Jersey Statewide Trends:
2002-2011 Daily Speciation Data (µg/m^3)
10% Highest $PM_{2.5}$ Days

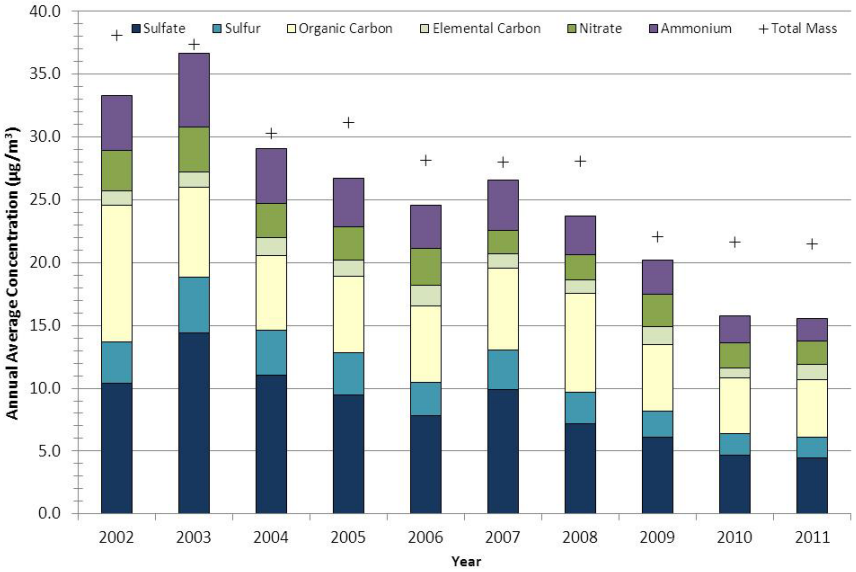


Figure 3:
New Jersey Statewide Trends:
2002-2011 Daily Speciation Data (µg/m^3)
10% Lowest $PM_{2.5}$ Days

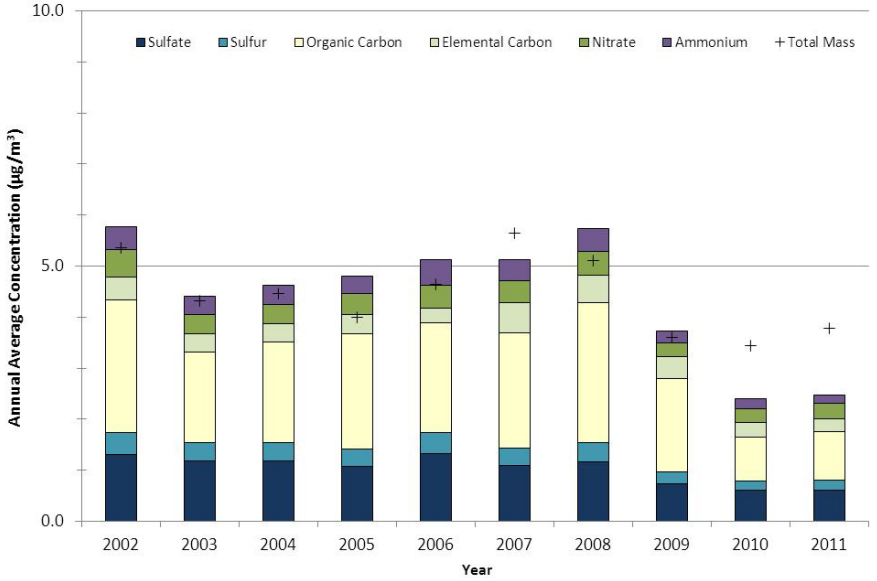


Figure 4:
New Jersey Statewide Trends:
2002-2011 Daily Speciation Data (%)
10% Highest $PM_{2.5}$ Days

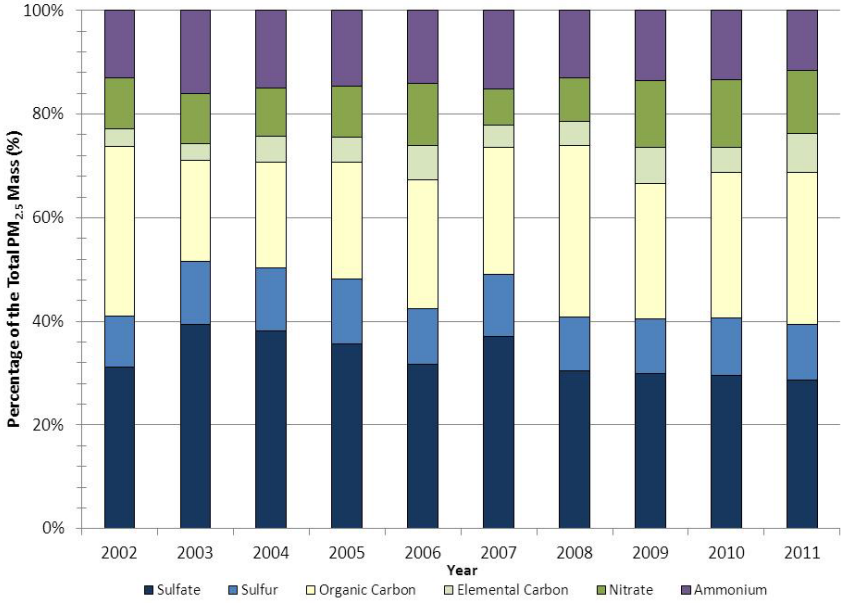


Figure 5:
New Jersey Statewide Trends:
2002-2011 Daily Speciation Data (%)
10% Lowest $PM_{2.5}$ Days