



# 1999 Air Quality Report

A summary of the New Jersey air quality data for 1999. Contains information on the Air Quality Index (AQI), concentrations of individual pollutants - sulfur dioxide, fine and inhalable particulates, carbon monoxide, ozone, nitrogen oxides, lead, sulfates and nitrates, smoke shade, and acid precipitation - and a monthly summary of meteorological information. A trend comparison with previous years is also provided.

December, 2000

New Jersey Department of Environmental Protection  
Bureau of Air Monitoring

## 1999 AIR QUALITY REPORT

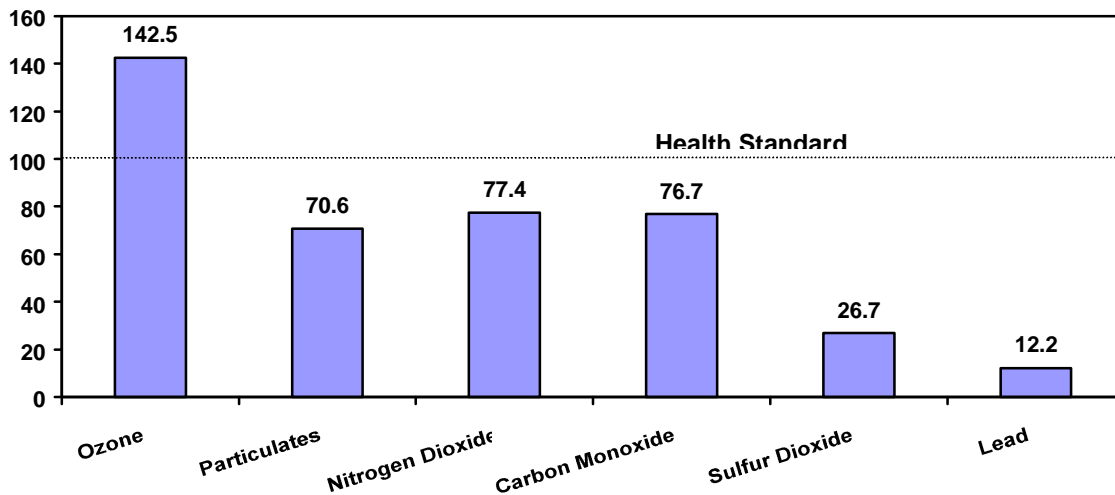
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September, 2000

1999 AIR QUALITY REPORT  
EXECUTIVE SUMMARY

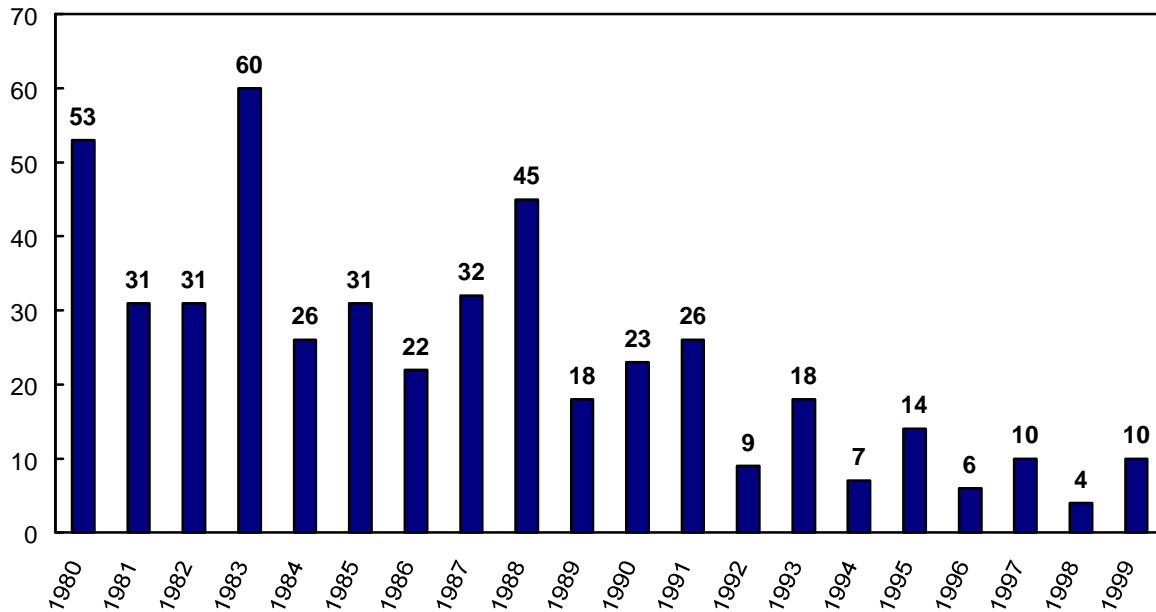
Based on indicators monitored by the Department of Environmental Protection, air quality in New Jersey has improved significantly since the passage of the original Clean Air Act in 1970. There are National Ambient Air Quality Standards (NAAQS) for six specific air pollutants ("criteria pollutants") and these are the indicators of overall air quality that are used. The NAAQS are based both on health effects (for the primary standards) and welfare effects (for the secondary standards). A bar chart comparing the maximum criteria pollutant concentrations recorded in 1999 with the health NAAQS can be seen below. In 1999, all pollutants except ozone were well within the standards. Even carbon monoxide, which was responsible for unhealthy air quality on 44 days as recently as 1984, has declined significantly in recent years and did not reach unhealthy levels in 1999.

**Maximum 1999 Pollutant Concentrations  
as Percent of Federal Standards**



The 1-hour health standard for ozone was exceeded on only 10 days in 1999. In July, 1997 more stringent NAAQS for ozone and fine particulates were promulgated. Based on the new 8-hour ozone standard, New Jersey would have had 46 exceedance days as compared to 10 days with the old 1-hour standard. Initial sampling results for fine particulates indicate that some areas of the state would exceed those new standards. Ozone and particulates are New Jersey's two most pervasive air quality problems and more measures need to be taken to ensure that those health standards are attained in future years.

### Number of Days the 1-Hour Ozone Health Standard Was Exceeded in New Jersey, 1980-1999



Pollutants other than the six criteria pollutants, and parameters such as meteorology and acid precipitation are also routinely monitored by the department. Acid precipitation remains a persistent environmental problem in New Jersey. Measured pH levels ten times more acidic than the naturally occurring pH of rainwater (5.0 to 5.6) are recorded regularly. The acidity of precipitation measured in New Jersey has improved since 1994 as a result of implementation of the first phase of acid rain controls required by the 1990 Clean Air Act Amendments. Summaries of the acid precipitation data as well as all other pollutant and weather data collected by the department are also contained in this report. Summaries of the data by year from 1975 to 1999 are reported in Appendix A, and Appendix B provides maps illustrating designated nonattainment areas within the state as defined by the U.S. Environmental Protection Agency in the Code of Federal Regulations (40 CFR Part 81). Nonattainment designations are based on evaluations of air monitoring data, emissions inventories, dispersion modeling and other analyses performed for specific "base year(s)". Thus they may not appear consistent with direct comparisons of the 1999 data to the air quality standards.

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to preserve the layout of the original printed report)

1999 AIR QUALITY REPORT

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Note: Supplementary Information Available:

1. Annual Quality Assurance Report - 1999
2. Annual Air Quality Brochure - 2000

The above supplementary information is available for public inspection.  
Please contact Andy Mikula at 609-984-5512 to make arrangements.



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AIR QUALITY  
MONITORING  
REPORT  
1999



## MONITORING AIR QUALITY IN NEW JERSEY

The major objectives of monitoring air pollutant levels are: 1) to provide an early warning system for pollutant levels which may have the potential to endanger public health; 2) to assess air quality in light of established public health and welfare standards; and 3) to track air pollution trends and changes in ambient air quality due to changes in the amount of pollutants emitted.

Continuous air pollution monitoring provides critical information needed in the event of an air pollution episode. When meteorological conditions develop which may lead to an increase in airborne pollutants for extended periods of time, a threat to the public health, welfare, and safety may exist. When an air pollution episode occurs pollutant levels are carefully watched around-the-clock to ascertain if air quality has deteriorated sufficiently to warrant emergency actions. A daily reporting system known as the Air Quality Index (see pages 9-14) has been developed for disseminating air quality information daily and during emergency situations.

An air quality standard defines a limit for the atmospheric concentration of airborne contaminants and is established for the purpose of protecting the public health and welfare. Air quality standards are derived from scientific studies of the effects produced by various exposures to specific pollutants. The New Jersey and National Ambient Air Quality Standards are divided into primary and secondary standards. The primary standards define air quality levels intended to protect the public health with an adequate margin of safety. The secondary standards define levels of air quality intended to protect the public welfare from any known or anticipated adverse effects of a pollutant (e.g. soiling, vegetation damage, material corrosion). Both the State and National Ambient Air Quality Standards are listed in Table 1. This report compares the 1999 air quality with these standards.

Ambient air quality standards cover relatively few air pollutants. For example, no ambient air quality standards exist for acid deposition, nitric oxide, smoke shade or particulate sulfate or nitrate. Yet these pollutants are significant and data on them are included in this report.

Finally, ambient air quality data are used as the baseline for evaluating the effect of the construction of new emission sources or of modifications to existing ones. Tracking ambient air quality is necessary to ensure that air quality standards will be achieved and maintained. Air quality data are also used as a baseline in the development of air pollution control regulations contained in the New Jersey State Implementation Plan.

TABLE 1

## AMBIENT AIR QUALITY STANDARDS

<u>Pollutant</u>	<u>Standard</u>	<u>Averaging Period</u>	<u>New Jersey (a)</u>	<u>National (b)</u>
Sulfur Dioxide	Primary	12-month arith. mean	80 ug/m <sup>3</sup> (.03 ppm)	.030 ppm
	Primary	24-hour average	365 ug/m <sup>3</sup> (.14 ppm)	.14 ppm <sup>c</sup>
	Secondary	12-month arith. mean	60 ug/m <sup>3</sup> (.02 ppm)	---
	Secondary	24-hour average	260 ug/m <sup>3</sup> (.10 ppm)	---
	Secondary	3-hour average	1300 ug/m <sup>3</sup> (0.5 ppm)	0.5 ppm <sup>c</sup>
Total Suspended Particulates	Primary	12-month geom. mean	75 ug/m <sup>3</sup>	---
	Primary	24-hour average	260 ug/m <sup>3</sup>	---
	Secondary	12-month geom. mean (d)	60 ug/m <sup>3</sup>	---
	Secondary	24-hour average	150 ug/m <sup>3</sup>	---
Inhalable Particulates (PM10)	Prim. & Sec.	Annual arith. mean	---	50 ug/m <sup>3</sup>
	Prim. & Sec.	24-hour average	---	150 ug/m <sup>3</sup>
Fine Particulates (PM2.5)	Prim. & Sec.	Annual arith. mean	---	15 ug/m <sup>3</sup>
	Prim. & Sec.	24-Hour Average	---	65 ug/m <sup>3</sup>
Carbon Monoxide	Prim. & Sec.	8-hour average	10 mg/m <sup>3</sup> (9 ppm)	9 ppm (10 mg/m <sup>3</sup> ) (e)
	Prim. & Sec.	1-hour average	40 mg/m <sup>3</sup> (35 ppm)	35 ppm (40 mg/m <sup>3</sup> ) (e)
Ozone	Primary	Max. Daily 1-Hr. Avg.	.12 ppm (235 ug/m <sup>3</sup> )	.12 ppm (235 ug/m <sup>3</sup> ) (f)
	Secondary	1-hour average	.08 ppm (160 ug/m <sup>3</sup> )	.12 ppm (235 ug/m <sup>3</sup> ) (f)
	Prim. & Sec.	8-hour average	---	.08 ppm (160 ug/m <sup>3</sup> ) (g)
Nitrogen Dioxide	Prim. & Sec.	12-month arith. mean	100 ug/m <sup>3</sup> (.05 ppm)	.053 ppm (100 ug/m <sup>3</sup> )
Lead	Prim. & Sec.	3-month average	1.5 ug/m <sup>3</sup>	---
		Quarterly Mean	---	1.5 ug/m <sup>3</sup>

a) New Jersey short-term standards are not to be exceeded more than once in any 12-month period.

b) National short-term standards are not to be exceeded more than once in a calendar year.

c) National standards are block averages rather than moving averages.

d) Intended as a guideline for achieving short-term standard.

e) National secondary standards for carbon monoxide have been dropped.

f) Maximum daily 1-hour averages: averaged over a three year period the expected number of days above the standard must be less than or equal to one. This standard was replaced by an 8-hour average standard on September 18, 1997.

g) Standard is met when the 3-year average of the fourth highest daily maximum 8-hour average is less than or equal to .08 ppm. This new standard became effective September 18, 1997.

## NEW JERSEY AIR MONITORING NETWORKS

A listing of monitoring locations in operation during 1999 along with addresses and parameters measured is shown in Table 2. The monitoring results contained in this report were provided by three separate networks: 1) Continuous Air Monitoring, 2) Particulate Sampling and 3) Precipitation Sampling.

The Continuous Air Monitoring Network consisted of 28 automated remote locations which transmitted data around-the-clock to a centralized computer facility located in Trenton. The computer interrogates the field monitors once each minute to retrieve the data. Pollutants monitored by the Continuous Air Monitoring Network include: sulfur dioxide, carbon monoxide, ozone, nitrogen oxides, smoke shade, particle matter and meteorological parameters such as wind speed/direction, temperature, relative humidity, solar radiation, and barometric pressure.

The Particulate Sampling Network consisted of 24 remote locations. Each sampler collected a 24-hour sample at least once every six days. Sampling data, however, are not available on a real-time basis. A field technician must retrieve the sample for laboratory work. A total of 22 samplers were operated for fine particulates and 11 samplers for inhalable particulates. In addition, 5 continuous monitoring instruments for fine particulates were in operation during 1999. Subsequent laboratory analyses for selected samples included determinations of the concentrations of lead, nitrates, and sulfates.

The Photochemical Assessment Monitoring Stations (PAMS) program is a major monitoring effort being implemented to measure levels of ozone precursors. This network will provide hourly data on some 60 individual organics known to be important in ozone formation. PAMS sites also measure Nitrogen Oxides, Ozone and specific weather parameters. The first PAMS site in New Jersey went on line on June 1, 1995 at Rider University. A second location at Rutgers University was put into operation in 1996. A third location in Camden was started in 1997. PAMS data are reported separately and are not included in this report.

The Precipitation Sampling Network consisted of three locations. Similar to the Particulate Sampling Network, this network does not provide continuous real-time data. Rain water samples are retrieved either on a weekly basis or after each storm event. Laboratory analyses provide information on the observed pH and conductivity along with the concentrations of sulfate, nitrate, chloride, calcium, magnesium, potassium, sodium and ammonium ions.

Additional information provided in this report includes: 1) 6-9 a.m. non-methane organic compounds and nitrogen oxides from an EPA summer study of ozone precursors at Newark.

For federal reporting purposes some parameters were further subdivided by the following site coding:

1) State and Local Air Monitoring Sites (SLAMS) - These sites fulfill the federal monitoring requirements for the State.

2) National Air Monitoring Sites (NAMS) - These sites are a subset of the SLAMS which must comply with stricter siting criteria and reporting requirements.

3) Special Purpose Monitors (SPM) - These monitors fulfill a specific need or purpose and are not federally required. SPM's are used for a number of reasons: a) to collect data for research projects; b) to monitor around major point sources; or c) to collect data concerning pollutants for which National Ambient Air Quality Standards have not been established.



TABLE 2

## NEW JERSEY AIR MONITORING PROGRAM -- 1999

## PARAMETER CODING

AP	-	ACID PRECIPITATION	NOX	-	NITROGEN OXIDES
CO	-	CARBON MONOXIDE	O3	-	OZONE
CPM	-	CONTINUOUS PARTICLE MATTER	PAMS	-	PHOTOCHEMICAL ASSESSMENT SITE
FP	-	FINE PARTICULATES	Pb	-	LEAD
IP	-	INHALABLE PARTICULATES	S&N	-	SULFATES AND NITRATES
MET	-	METEOROLOGICAL PARAMETERS	SO2	-	SULFUR DIOXIDE
NMOC	-	NON-METHANE ORGANIC COMPOUNDS	SS	-	SMOKE SHADE

<u>COUNTY</u>	<u>LOCATION</u>	<u>SAMPLER #</u>	<u>PARAMETERS</u>	<u>ADDRESS</u>
ATLANTIC	Atlantic City	IP36	IP	Trump Plaza Parking Garage, Atlantic Ave. b/w Mississippi and Missouri Avenues
	Nacote Creek R.S. Somers Point		O3,SO2 NOX,SO2	Brigantine Wildlife Refuge Marina, Woodlawn Avenue
BERGEN	Fort Lee	IP14	CO,CPM,IP,S&N	N. Bridge Plaza near Lemoine Ave.
	Fort Lee Hackensack	F11	FP CO,SO2,SS	Library, Center Avenue 133 River Street
BURLINGTON	Burlington Lebanon State Forest		CO,SO2,SS AP	1 East Broad Street Route 70
CAMDEN	Ancora State Hospital Camden Lab	F03,F04,IP02	AP,CO,O3,SO2,SS CO,CPM,FP,IP,MET, NOX,O3,PAMS,S&N, SO2,SS	N.J. Psychiatric Hospital Institute for Medical Research, Copewood & Davis Streets
	Camden - RRF	IP33,IP34	IP	Camden Resource Recovery Facility
	Pennsauken	071,IP10,F13	FP,IP	Morris-Delair Water Plant
CUMBERLAND	Millville		NOX,O3,SO2	Lincoln Ave. & Highway 55
ESSEX	East Orange		CO,NOX,MET	Main Street & Greenwood Ave.
	Newark	F05,IP29	CO,CPM,FP,IP, NMOC,NOX,O3,SO2, SS	St. Charles & Berlin Sts.
	Newark-Cultural Center	F10	FP	447 18 <sup>th</sup> Avenue
GLOUCESTER	Clarksboro Greenwich Twp.	F20	O3,SO2 FP	Shady Lane Rest Home Gibbstown Municipal Bldg. 420 Washington Street

TABLE 2 (CONT.)

<u>COUNTY</u>	<u>LOCATION</u>	<u>SAMPLER #</u>	<u>PARAMETERS</u>	<u>ADDRESS</u>
HUDSON	Bayonne		NOX,O3,SO2	Veteran's Park
	Jersey City		CO,SO2,SS	2828 Kennedy Blvd.
	Jersey City	F07,F21,IP09	FP,IP	355 Newark Avenue
	North Bergen	IP35	CO,IP	3401 Tonnele Avenue
	Union City	F08	FP	714 31 <sup>st</sup> Street
HUNTERDON	Flemington		MET,O3,SS	Raritan Sewage Plant
MERCER	Rider University		MET,NOX,O3, PAMS	Rider University, Route 206
	Trenton-Library	F14,IP06	FP,IP	120 Academy Street
	Washington Crossing State Park	F16	AP,FP	Pennington-Titusville Road
MIDDLESEX	Middlesex New Brunswick	057,068	CO Pb	Route 1 & Georges Road Delco-Remy, 12 <sup>th</sup> St. & Livingston Ave.
	New Brunswick Perth Amboy	F06	CPM CO,SO2,SS	Log Cabin Road 130 Smith Street
	Rutgers University		NOX,O3,PAMS	Horticultural Farm #3 Ryders Lane
MONMOUTH	Freehold Monmouth University		CO,SS O3	5 W. Main Street Edison Science Building
MORRIS	Chester	F15	FP,MET,NOX,O3 SO2	Bell Labs, Route 513
	Morristown Morristown Ambulance Squad	F18	CO,SS FP	11 Washington Street 16 Early Street
OCEAN	Colliers Mills		O3	Fish & Wildlife Management Area
	Toms River	F17	FP	Elementary School, Hooper Avenue
PASSAIC	Paterson Ramapo	F09	FP O3	176 Broadway Avenue Ramapo Mountain State Forest
UNION	Elizabeth Elizabeth-Mitchell Building	F12	CO,SO2,SS FP	7 Broad Street 500 North Broad Street
	Elizabeth Lab	F01,F02,IP28	CO,CPM,FP,IP, MET,NOX,S&N,SO2 SS	New Jersey Turnpike Interchange 13
	Rahway	F22	FP	Fire Department, 1300 Main Street
WARREN	Phillipsburg	F19	FP	Municipal Building 675 Corliss Avenue



## DAILY AIR QUALITY REPORTING

A daily air quality summary for the previous day and a forecast, known as the Air Quality Index (AQI), is provided each morning to the Associated Press wire service, the New York Times, and to various radio and television stations. Each afternoon an air quality update which includes current air quality information and a forecast is issued to various newspapers. The State is divided into 9 AQI reporting regions as illustrated in Figure 1. Each pollutant monitored in the reporting region (Table 3) is given a numerical AQI rating based on the concentration recorded for the previous day. The daily numerical AQI rating for the reporting region is equal to the highest rating achieved by any pollutant within that region. A descriptive rating based on the numerical rating is also reported with a AQI of 0-50 being rated good; 51-100 moderate; 101-150 unhealthy for sensitive groups; 151-200 unhealthy; and 201-300 very unhealthy. A summary of the number of days with each descriptor rating is listed in Table 4. Table 5 lists the dates when the Air Quality Index exceeded the unhealthy threshold at any individual continuous monitoring location. A forecast consisting of the expected descriptor ratings over the next 72-hour period is also provided for each reporting region on weekdays. A telephone recording of the AQI forecast is taped by 11 a.m., Monday through Friday, and can be heard by dialing **1-800-782-0160**. Along with the forecast, cautionary statements are provided for days when the air quality is expected to be unhealthful.

In July 1987, procedures were initiated in cooperation with the New Jersey Department of Health to disseminate information about the health effects of ozone and to notify the public on high ozone days. If high ozone levels are anticipated, an ozone forecast press release, which includes precautionary statements, is issued to the New Jersey Health Department, Associated Press, United Press International, and to various newspapers, radio and television stations. An hourly watch of ozone levels is also initiated. If levels above the primary ozone standard (PSI = 100) are observed, a subsequent ozone health advisory press release is issued. In March 1988, the watch procedures were expanded to include sulfur dioxide, particulates, carbon monoxide, and nitrogen dioxide.

A weekday "ozone forecast map" introduced during the 1996 ozone season was televised on the New Jersey Network's (NJN) TV News Broadcast. After the ozone season an air quality forecast map was substituted. A worldwide web page was also created in 1996 to show current air quality levels. This web page can be accessed at the following internet address:  
**<http://www.state.nj.us/dep/airmon>**.

Figure 1. State of New Jersey  
Air Quality Index Reporting Regions

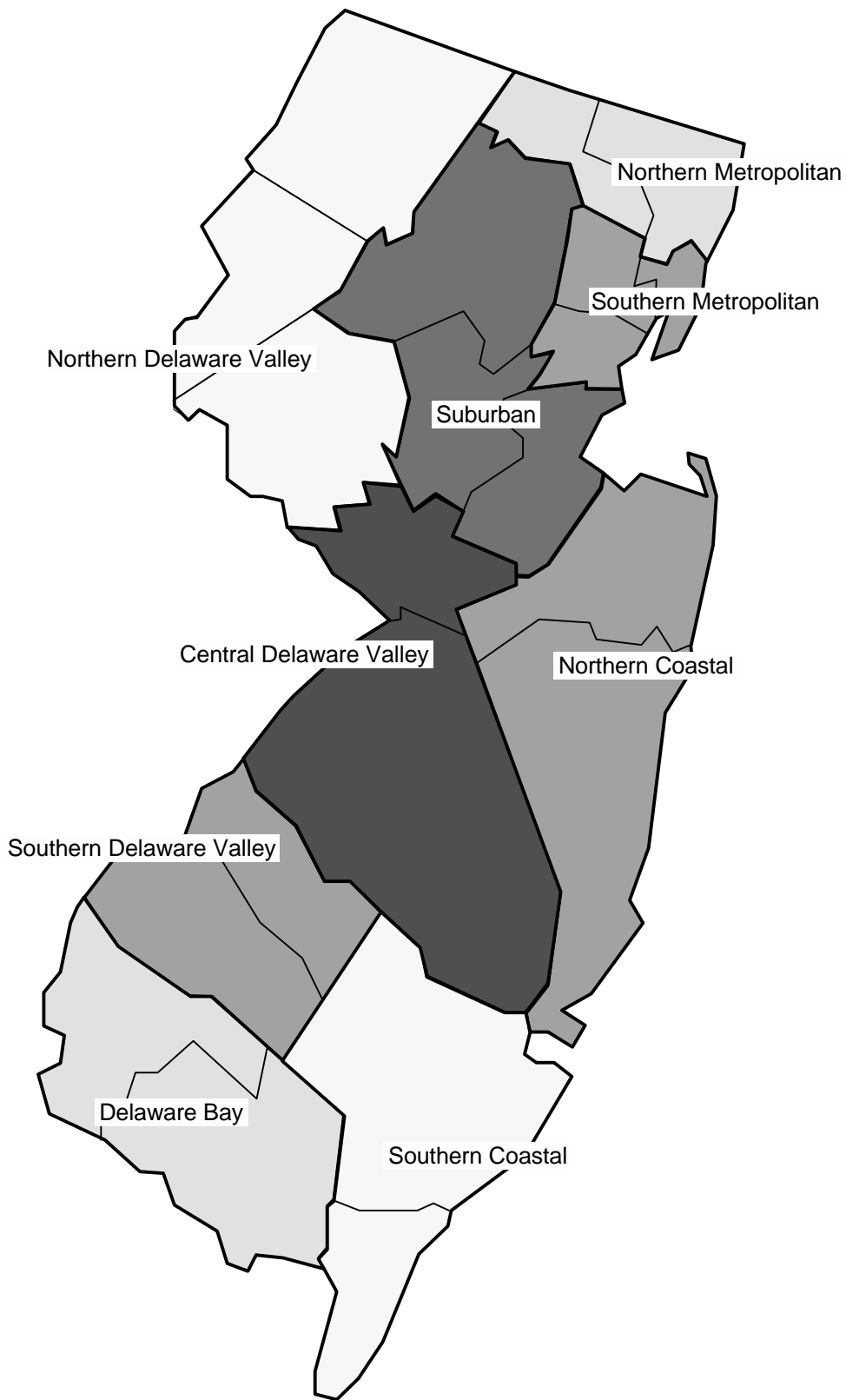


TABLE 3

## POLLUTANTS MONITORED ACCORDING TO AIR QUALITY INDEX REGION

<u>REPORTING REGION</u>	<u>MONITORING SITE</u>	<u>POLLUANTS MONITORED</u>				
		<u>CO</u>	<u>SO2</u>	<u>PM</u>	<u>O3</u>	<u>NO2</u>
NORTHERN METROPOLITAN	Fort Lee	X	-	X	-	-
	Hackensack	X	X	X	-	-
	Ramapo	-	-	-	X	-
SOUTHERN METROPOLITAN	Bayonne	-	X	-	X	X
	East Orange	X	-	-	-	X
	Elizabeth	X	X	X	-	-
	Elizabeth Lab	X	X	X	-	X
	Jersey City	X	X	X	-	-
	Newark	X	X	X	X	X
	North Bergen	X	-	-	-	-
SUBURBAN	Chester	-	X	-	X	X
	Middlesex	X	-	-	-	-
	Morristown	X	-	X	-	-
	New Brunswick	-	-	X	-	-
	Perth Amboy	X	X	X	-	-
	Rutgers University	-	-	-	X	X
NORTHERN DELAWARE VALLEY	Flemington	-	-	X	X	-
CENTRAL DELAWARE VALLEY	Burlington	X	X	X	-	-
	Rider University	-	-	-	X	X
NORTHERN COASTAL	Colliers Mills	-	-	-	X	-
	Freehold	X	-	X	-	-
	Monmouth University	-	-	-	X	-
SOUTHERN COASTAL	Nacote Creek R.S.	-	X	-	X	-
	Somers Point	-	X	-	-	X
SOUTHERN DELAWARE VALLEY	Ancora S.H.	X	X	X	X	-
	Camden Lab	X	X	X	X	X
	Clarksboro	-	X	-	X	-
DELAWARE BAY	Millville	-	X	-	X	X

POLLUTANT CODING

CO - Carbon Monoxide  
SO2 - Sulfur Dioxide  
PM - Particulate Matter  
O3 - Ozone  
NO2 - Nitrogen Dioxide

TABLE 4

AIR QUALITY INDEX (AQI)  
ANNUAL SUMMARY - 1999

NUMBER OF DAYS

NOTE: NEW, MORE STRINGENT HEALTH STANDARDS USED

AQI REPORTING REGION	DESCRIPTOR RATINGS				
	GOOD	MODERATE	UNHEALTHY FOR SENSITIVE GROUPS	UNHEALTHY	VERY UNHEALTHY
Northern Metropolitan	136	206	23	0	0
Southern Metropolitan	112	236	13	3	1
Suburban	256	83	19	5	2
Northern Delaware Valley	309	33	19	4	0
Central Delaware Valley	309	32	16	5	3
Northern Coastal	305	32	23	5	0
Southern Coastal	320	31	14	0	0
Southern Delaware Valley	225	109	24	7	0
Delaware Bay	314	34	16	1	0
Statewide	98	217	38	9	3





TABLE 5 (CONT.)

RECORD OF DAYS WHEN THE AIR QUALITY INDEX (AQI)EXCEEDED THE HEALTH STANDARD - 1999

\* NUMBER IN THE PARENTHESES ( ) INDICATES NUMBER OF MONITORING SITES EXCEEDING 100 ON A GIVEN DAY

<u>RATINGS</u>		<u>POLLUTANTS</u>			
USG	- UNHEALTHY FOR SENSITIVE GROUPS	PM	- PARTICULATE MATTER		
UH	- UNHEALTHY	O3	- OZONE		
VUH	- VERY UNHEALTHY				
<u>DATE</u>	<u>HIGHEST LOCATION</u>	<u>HIGHEST AQI VALUE</u>	<u>HIGHEST POLLUTANT</u>	<u>HIGHEST RATING</u>	<u># OF SITES* ABOVE 100</u>
August 1	Nacote Creek R.S.	119	O3	USG	O3 (3)
August 4	Flemington	119	O3	USG	O3 (3)
August 5	Colliers Mills	119	O3	USG	O3 (4)
August 6	Colliers Mills	101	O3	USG	O3 (1)
August 7	Colliers Mills	104	O3	USG	O3 (2)
August 11	Flemington	135	O3	USG	O3 (5)
August 12	Rider University	147	O3	USG	O3 (7) PM (1)
August 13	Chester	104	O3	USG	O3 (1)
August 14	Flemington	104	O3	USG	O3 (1)
August 17	Chester	145	O3	USG	O3 (5) PM (1)
August 18	Nacote Creek R.S.	119	O3	USG	O3 (1)
August 24	Ramapo	101	O3	USG	O3 (1)
September 2	Ramapo	106	O3	USG	O3 (1)
September 8	Fort Lee	124	PM	USG	PM (1)
September 9	Fort Lee	133	PM	USG	PM (2)
November 10	Fort Lee	104	PM	USG	PM (1)

AIR QUALITY SUMMARY  
AND TREND ANALYSIS  
REPORT  
1999

## Air Quality Summary 1999

In 1999, 9 of 14 monitoring locations for ozone recorded violations of the New Jersey (NJ) primary (health) ambient air quality standard (AAQS) as compared to 2 of 14 locations in 1998. None of the 15 monitoring locations for carbon monoxide recorded violations of the NJ 8-hour primary AAQS in 1999. In 1999, none of the 10 sampling locations recorded exceedances of 24-hour national AAQS for inhalable particulates (PM-10). Also, in 1999 no contraventions of the New Jersey primary AAQS for nitrogen dioxide, lead, or sulfur dioxide were recorded at any monitoring locations for those pollutants. The following sections provide a brief summary of the monitoring information collected along with comparisons to the applicable AAQS:

Sulfur Dioxide (SO<sub>2</sub>) - Sulfur dioxide was continuously monitored at 15 locations (see Figure 2) during 1999. Monitoring results for SO<sub>2</sub> are listed in Table 6. Neither the primary nor the secondary (public welfare) AAQS were violated in 1999. The maximum 24-hour average recorded in 1999 was 0.036 parts per million (ppm) at the Jersey City monitoring site. The maximum 3-hour average recorded at Jersey City was 0.081 ppm. The highest annual average of 0.008 ppm was calculated for the Jersey City location. Trends in SO<sub>2</sub> levels from 1989-1999 are illustrated in Figure 3a. SO<sub>2</sub> emissions primarily result from the combustion of fossil fuels containing sulfur.

Fine Particulates (PM<sub>2.5</sub>) - Fine Particulates were sampled at 19 locations (see Figure 4) during 1999. Sampling results for PM<sub>2.5</sub> for 1999 are listed in Table 7. The highest arithmetic mean was calculated at 18.3 micrograms per cubic meter (ug/m<sup>3</sup>) for the Union City sampling location. The maximum 24-hour average of 50.1 ug/m<sup>3</sup> was also recorded at the Union City sampling location. A continuous monitoring methodology known as tapered element oscillating microbalance (TEOM) was utilized at 5 locations in 1999. Results are shown on Table 7.

Inhalable Particulates (PM-10) - Inhalable particulates were collected by 11 samplers operating at 10 locations (see Figure 5) during 1999. Two samplers were co-located at the Camden Resource Recovery Facility (RRF) to provide data for precision calculations. At this time, New Jersey has not adopted AAQS for inhalable particulates, however, the federal Environmental Protection Agency (EPA) promulgated AAQS for PM-10 in July, 1987. No sampling locations violated the national primary and secondary 24-hour or annual arithmetic mean AAQS during 1999. Sampling results for PM-10 are listed in Table 8. The highest annual arithmetic mean of 35.3 ug/m<sup>3</sup> was calculated for the North Bergen sampler and the maximum 24-hour average of 91 ug/m<sup>3</sup> was recorded at the Fort Lee location. Trends in inhalable particulate levels from 1989-1999 are illustrated in Figure 6a. A corrected table for 1998 is also included in Appendix C.

Carbon Monoxide (CO) - Carbon monoxide was measured at 15 locations (see Figure 7) during 1999. Monitoring results for carbon monoxide are listed in Table 9. No monitoring locations violated the 1-hour or 8-hour primary and secondary AAQS during 1999. The maximum observed 8-hour average of 7.3 ppm was recorded at the East Orange monitoring location. The maximum observed 1-hour average of 11.0 ppm was recorded by the East Orange monitoring location. Trends in CO levels from 1989-1999 are illustrated in Figure 8a. The predominant source of CO emissions is gasoline fueled automobiles and trucks.

Ozone (O<sub>3</sub>) - Ozone was monitored at 14 locations (see Figure 9) during 1999 and monitoring results are listed in Table 10. Nine of fourteen monitoring

locations violated the New Jersey primary 1-hour average AAQS during 1999. The maximum 1-hour average for ozone of 0.157 ppm was recorded at the Rutgers University monitoring location. All fourteen monitoring locations in operation during the summer violated New Jersey's secondary 1-hour average AAQS in 1999 with Ancora S.H. having the most occurrences (234 hours) above the secondary 1-hour average AAQS. Trends in 1-hour ozone levels from 1989-1999 are illustrated in Figure 10a. Ozone is caused by various photochemical reactions of volatile organics substances (hydrocarbons) with oxides of nitrogen on days with bright sunshine and warm temperatures. Thus ozone is only a potential problem in the late spring, summer, and early fall months. The national 8-hour ozone primary and secondary standards were exceeded at all 14 monitoring locations. The maximum 8-hour average of 0.135 ppm occurred at Rutgers University. A special study to determine concentrations of ozone reactants at the Newark continuous monitoring site measured non-methane organic compound (NMOC) concentrations during the 6-9 a.m. period on weekdays from July through September. Results of this study are listed in Table 11. The ratio of NMOC to nitrogen oxide from 6-9 a.m. is believed to be an important factor in ozone formation and build-up during the afternoon hours. Trends in NMOC levels from 1989-1999 are illustrated in Figure 11.

Nitrogen Oxides (NOX) - Nitrogen oxides were monitored at 10 locations (see Figure 12) during 1999. Monitoring results for the two major constituents of NOX, namely nitric oxide (NO) and nitrogen dioxide (NO<sub>2</sub>), are listed in Table 12. Nitrogen dioxide primary and secondary AAQS were not violated at any of the monitoring sites in 1999. No ambient air quality standards have been promulgated for nitric oxide. The highest NO<sub>2</sub> 12-month average of 0.042 ppm was calculated for the Elizabeth Lab monitoring location. The highest annual average for nitric oxide (0.054 ppm) was also recorded by the Elizabeth Lab monitoring instrument. Trends in NO<sub>2</sub> levels from 1989-1999 are illustrated in Figure 13a. Nitrogen oxides are products of combustion which are emitted in approximately equal amounts from industrial boilers and motor vehicles.

Lead (Pb) - Lead levels were determined by analysis of filters obtained from 3 samplers in 2 cities (see Figure 14). Results of the laboratory analyses for lead are listed in Table 13. The highest 3-month average of 0.183 ug/m<sup>3</sup> was calculated for samples from the New Brunswick-057 sampling location for the 3 months ending March, 1999. Trends for lead from 1989-1999 are illustrated in Figure 15a. Lead as well as other trace metals are emitted in various proportions from motor vehicles, certain metal processing industries, and incinerators. A corrected table for 1998 is also included in Appendix C

Smoke Shade (SS) - Smoke shade was monitored at 12 locations (see Figure 16) during 1999. Monitoring results for smoke shade are listed in Table 14. No AAQS have been established for this parameter although a rough correlation exists with 2.1 COHS (Coefficient of Haze) for a daily average approximately equivalent to the New Jersey primary 24-hour TSP AAQS of 260 ug/m<sup>3</sup>. The highest daily average of 1.89 COHS was recorded by the Jersey City monitoring location. The highest annual average of 0.83 COHS was also calculated for the Jersey City location. Figures 17a & 17b show by monitoring location the highest and 2nd highest 24-hour daily averages and annual averages respectively.

Acid Precipitation (AP) - The New Jersey Precipitation Sampling Network consisted of three locations in 1999 (see Figure 18). Acid precipitation, more accurately described as acid deposition, has been implicated in the destruction of vegetation and aquatic life, the contamination of potable water supplies due to leaching of heavy metals, the accelerated weathering of materials, the aggravation of respiratory ailments, and the reduction of visibility.

Acid deposition results mainly from various chemical reactions involving sulfur dioxide and nitrogen oxide gases released into the atmosphere during fuel combustion. The compounds formed by these reactions can be deposited as dry particulate matter or wet precipitation.

When acidity is reported on the pH scale, neutral is considered as 7 with decreasing pH values corresponding to increasing acidity. Normal rainfall has a pH of approximately 5.6 due to the natural presence of carbonic acid in the atmosphere. The mean pH value recorded by the Washington Crossing Park weekly sampler was 4.33. The Ancora State Hospital sampler reported a mean pH of 4.46 and the Lebanon State Forest sampler recorded a mean pH of 4.55 during 1999. In addition to pH, analyses for conductivity and various anions and cations were performed. Analytical results for 1999 are presented in Table 15. Acid precipitation results from the Washington Crossing State Park event sampler are segregated by season, precipitation amounts, and meteorological regimes in Table 16. Figure 19 illustrates the recent trend in wet sulfate deposition.

Filters from 3 inhalable particulate (PM-10) samplers were analyzed for sulfates and nitrates (see Figure 20). Sulfates and nitrates are pollutants which form in the atmosphere and react with water to form acids which reduce the pH of rainfall. These sulfates and nitrates can travel long distances and reduce visibility. Some of these particles which settle out from the atmosphere (dry deposition) can later react with water to form acids on the ground. Results of the sulfate and nitrate analyses are listed in Table 17. A corrected table for 1998 is also included in Appendix C.

Meteorological Parameters (MET) - Meteorological parameters monitored on a continuous basis during 1999 were wind direction/speed, temperature, relative humidity, barometric pressure, and solar radiation (see Figure 21). Tables 18 and 19 summarize the 1999 meteorological monitoring results on a monthly basis.



Figure 2. State of New Jersey  
Sulfur Dioxide Monitoring Network, 1999

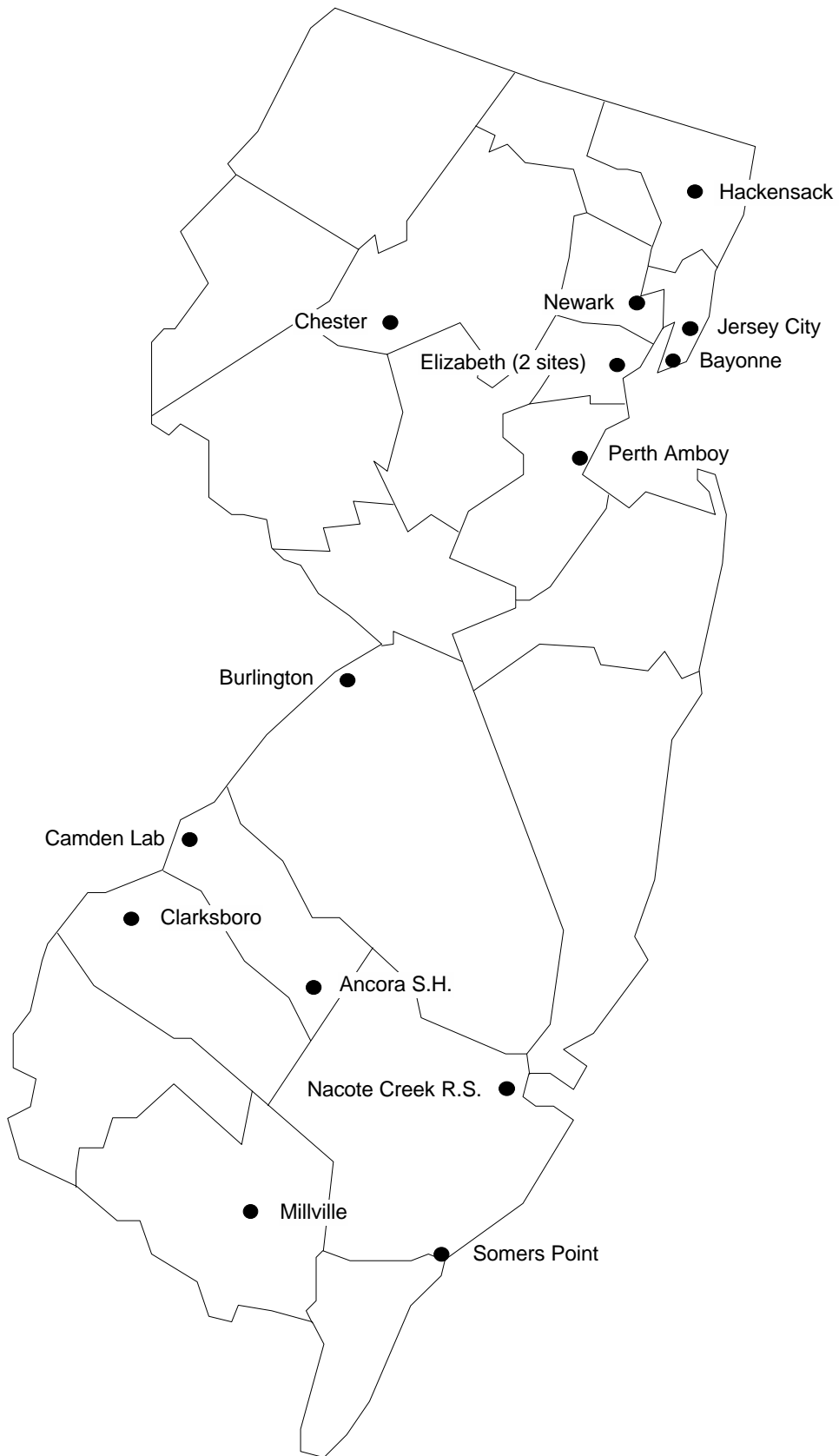


TABLE 6

## AIR QUALITY IN NEW JERSEY COMPARED WITH AIR QUALITY STANDARDS - 1999

## SULFUR DIOXIDE

3-HOUR AND ANNUAL AVERAGES  
PARTS PER MILLION (PPM)

## AMBIENT AIR QUALITY STANDARDS FOR SULFUR DIOXIDE

3-HOUR AVERAGE SECONDARY STANDARD: 1300 ug/m<sup>3</sup> (0.5 ppm)<sup>a</sup>  
 12-MONTH AVERAGE PRIMARY STANDARD: 80 ug/m<sup>3</sup> (0.03 ppm)  
 12-MONTH AVERAGE SECONDARY STANDARD: 60 ug/m<sup>3</sup> (0.02 ppm)<sup>b</sup>

SITE CODES: N = NAMS, S = SLAMS, SPM = SPECIAL PURPOSE MONITORING

VIOLATION CODES: XXX = NEW JERSEY & NATIONAL (PS) = PRIMARY STANDARD  
 XX = NEW JERSEY (SS) = SECONDARY STANDARD  
 -- = NO VIOLATION

<u>Monitoring Site</u>	<u>Site Code</u>	<u>3-Hour Avg. (ppm)<sup>c</sup></u>	<u>2<sup>nd</sup> Highest</u>	<u># Above 0.5 ppm</u>	<u>Viol. Code</u>	<u>12-Month Average Maximum</u>	<u>Year</u>	<u>Viol. Code</u>
Ancora S.H.	S	.030	.030	0	--	.004	.003	--
Bayonne	N	.049	.040	0	--	.006	.005	--
Burlington	S	.035	.034	0	--	.005	.004	--
Camden Lab	N	.055	.050	0	--	.006	.006	--
Chester	S	.056	.052	0	--	.005	.004	--
Clarksboro	S	.051	.048	0	--	.006	.005	--
Elizabeth	S	.044	.035	0	--	.006	.005	--
Elizabeth Lab	N	.075	.051	0	--	.008	.007	--
Hackensack	S	.050	.038	0	--	.005	.005	--
Jersey City	N	.081	.064	0	--	.009	.008	--
Millville	S	.032	.030	0	--	.004	.003	--
Nacote Creek R.S.	S	.022	.020	0	--	.003	.003	--
Newark <sup>d</sup>	S	.048	.043	0	--	.007	.007	--
Perth Amboy	N	.042	.035	0	--	.005	.005	--
Somers Point	SPM	.038	.036	0	--	.004	.003	--

- a) New Jersey and National Ambient Air Quality Standard not be exceeded more than once in any 12-month period.  
 b) New Jersey Ambient Air Quality Standard.  
 c) Based on non-overlapping 3-hour moving averages.  
 d) Data not available after November 5<sup>th</sup>.



TABLE 6 (Cont.)

AIR QUALITY IN NEW JERSEY COMPARED WITH AIR QUALITY STANDARDS - 1999

SULFUR DIOXIDE

24-HOUR AND DAILY AVERAGES  
PARTS PER MILLION (PPM)

AMBIENT AIR QUALITY STANDARDS FOR SULFUR DIOXIDE  
 24-HOUR AVERAGE PRIMARY STANDARD: 365 ug/m<sup>3</sup> (0.14 ppm)<sup>a</sup>  
 24-HOUR AVERAGE SECONDARY STANDARD: 260 ug/m<sup>3</sup> (0.10 ppm)<sup>a</sup>  
 DAILY AVERAGE PRIMARY STANDARD: 0.14 ppm (365 ug/m<sup>3</sup>)<sup>b</sup>

SITE CODES: N = NAMS, S = SLAMS, SPM = SPECIAL PURPOSE MONITORING

VIOLATION CODES: XXX = NEW JERSEY & NATIONAL (PS) = PRIMARY STANDARD  
 XX = NEW JERSEY (SS) = SECONDARY STANDARD  
 -- = NO VIOLATION

Monitoring Site	Site Code	24-Hour Avg. (ppm) <sup>c</sup>		# Above		Viol. Code	Daily Average		Viol. Code
		Maximum	2 <sup>nd</sup> Highest	0.14	0.10		Maximum	2 <sup>nd</sup> Highest	
Ancora S.H.	S	.018	.014	0	0	--	.014	.013	--
Bayonne	N	.022	.020	0	0	--	.019	.018	--
Burlington	S	.024	.021	0	0	--	.023	.018	--
Camden Lab	N	.035	.028	0	0	--	.035	.023	--
Chester	S	.028	.026	0	0	--	.021	.020	--
Clarksboro	S	.023	.022	0	0	--	.021	.020	--
Elizabeth	S	.024	.023	0	0	--	.022	.020	--
Elizabeth Lab	N	.026	.025	0	0	--	.025	.023	--
Hackensack	S	.023	.022	0	0	--	.023	.020	--
Jersey City	N	.036	.032	0	0	--	.033	.030	--
Millville	S	.015	.014	0	0	--	.014	.012	--
Nacote Creek R.S.	S	.010	.010	0	0	--	.009	.009	--
Newark <sup>d</sup>	S	.029	.022	0	0	--	.027	.022	--
Perth Amboy	N	.022	.019	0	0	--	.021	.016	--
Somers Point	SPM	.020	.014	0	0	--	.017	.011	--

- a) Ambient Air Quality Standard not be exceeded more than once in any 12-month period.
- b) National Ambient Air Quality Standard not to be exceeded more than once a year.
- c) Based on non-overlapping 24-hour moving averages.
- d) Data not available after November 5<sup>th</sup>.

Figure 3a. Trend in Sulfur Dioxide Concentrations in New Jersey, 1989-1999:  
Second Highest Daily Averages

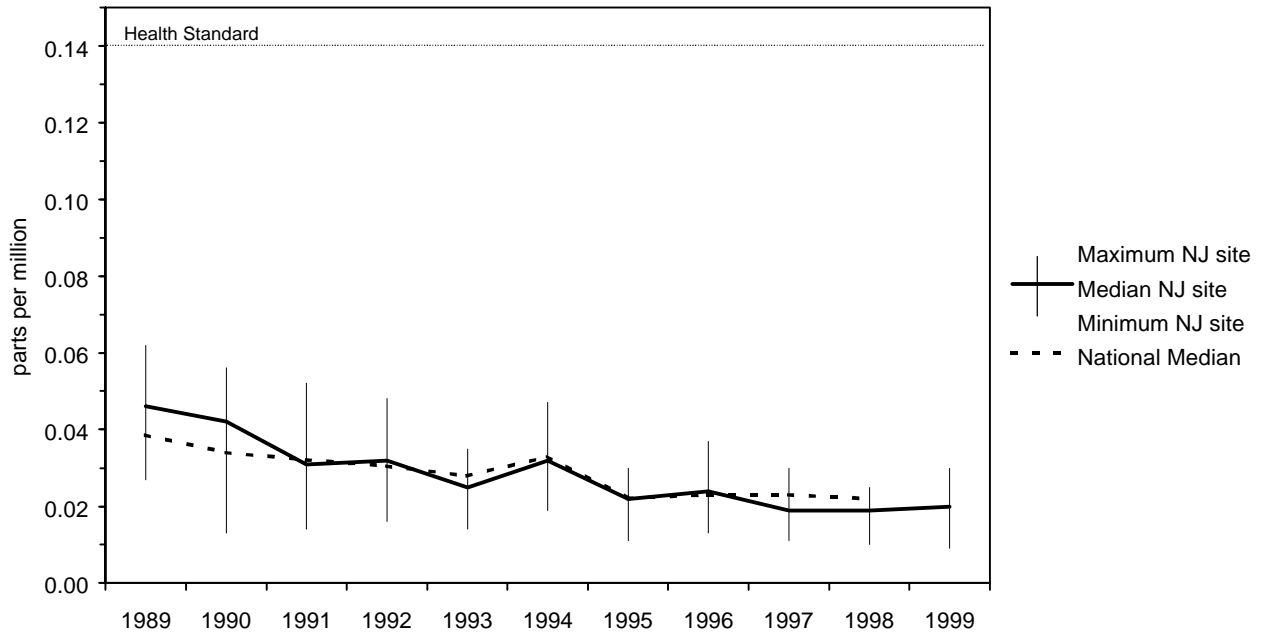


Figure 3b. 1999 Sulfur Dioxide Concentrations in New Jersey:  
Highest and Second Highest Daily Averages

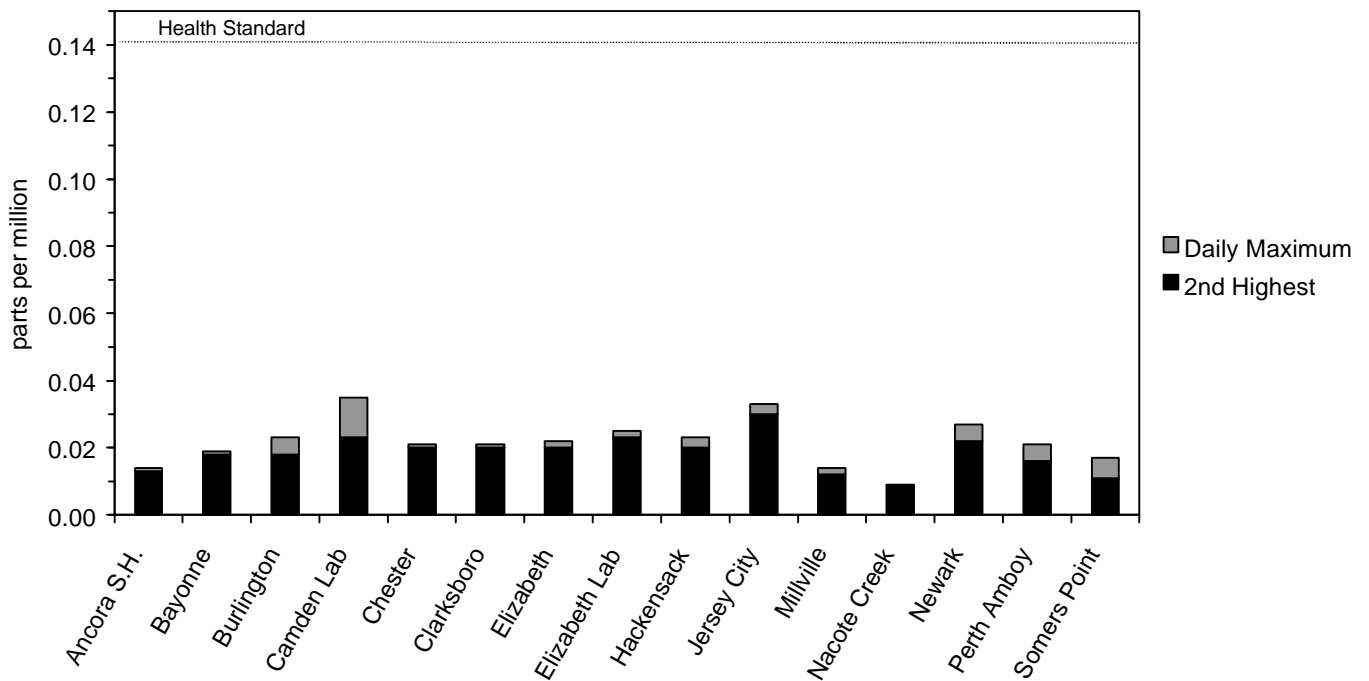


Figure 4. State of New Jersey  
Fine Particulate Monitoring Network, 1999

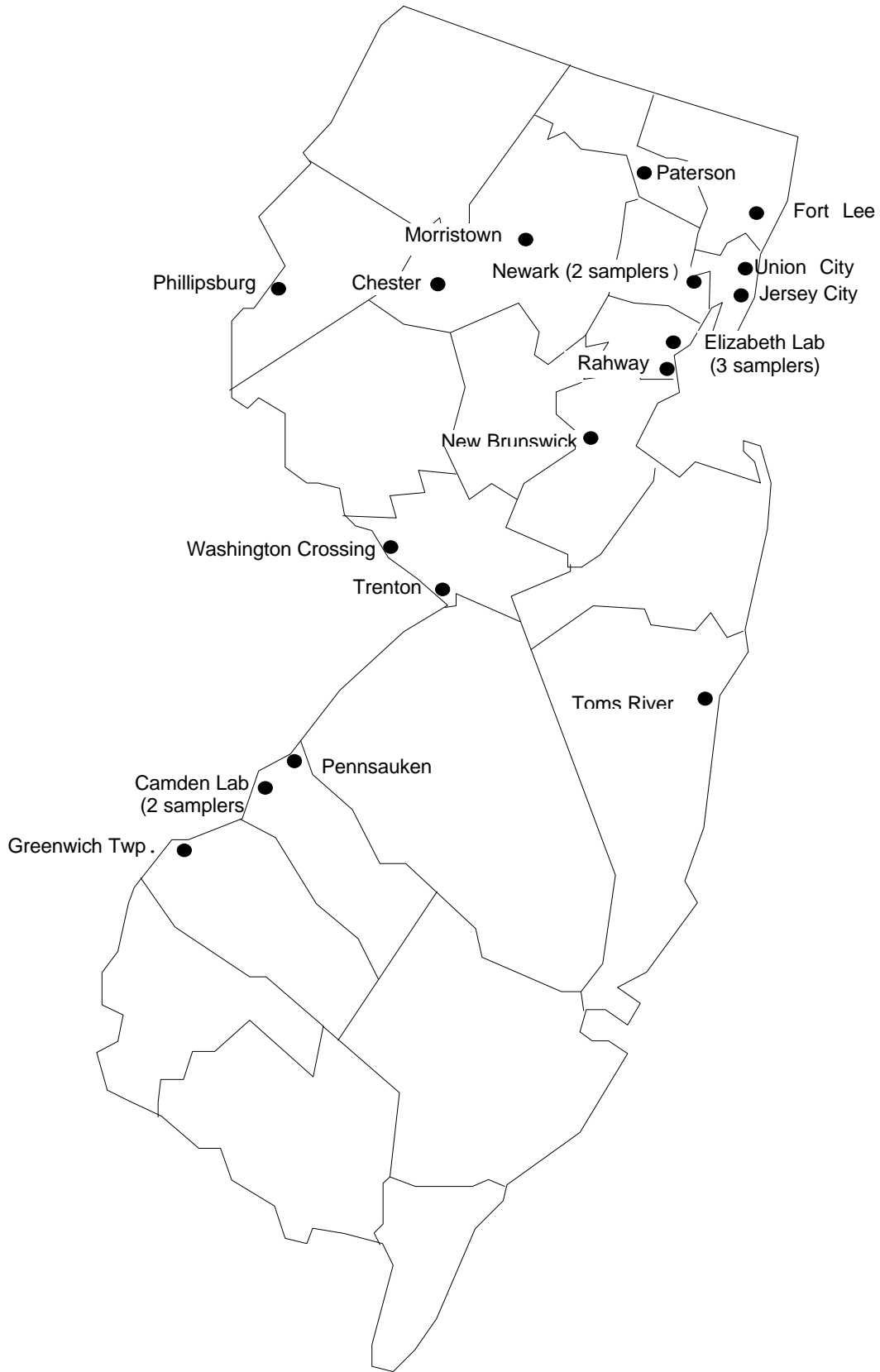


TABLE 7  
 AIR QUALITY IN NEW JERSEY  
 COMPARED WITH AIR QUALITY STANDARDS -- 1999  
 FINE PARTICULATES (PM-2.5)  
 AT LOCAL CONDITIONS  
 ANNUAL STATISTICS<sup>a</sup>

NATIONAL AMBIENT AIR QUALITY STANDARDS FOR FINE PARTICULATES:  
 ANNUAL ARITHMETIC MEAN PRIMARY AND SECONDARY STANDARDS: 15 ug/m<sup>3</sup>  
 24-HOUR AVERAGE PRIMARY AND SECONDARY STANDARDS: 65 ug/m<sup>3</sup>

DATA IN PARENTHESES ( ) INCLUDE SAMPLES NOT MEETING LABORATORY SPECIFICATIONS

<u>Monitoring Site</u>	<u>Sampler No.</u>	<u># of Samples</u>	<u>Annual Arith. Mean<sup>a</sup></u>	<u>24-Hour Maximum</u>	<u>Average 2nd Highest</u>
Camden Lab	F03	48 (54)	13.9 (13.8)	39.7 (39.7)	34.9 (34.9)
Camden Lab	F04	94 (102)	12.9 (13.7)	38.6 (38.6)	36.4 (36.4)
Chester	F15	95 (108)	10.0 (10.6)	38.9 (38.9)	29.5 (29.5)
Elizabeth Lab	F01	44 (48)	17.7 (17.8)	49.1 (49.1)	40.0 (40.0)
Elizabeth Lab	F02	99 (108)	14.7 (16.1)	49.5 (49.9)	41.0 (49.5)
Elizabeth-Mitchell Bldg.	F12	93 (108)	13.6 (15.1)	43.1 (46.3)	40.4 (45.1)
Fort Lee	F11	104 (112)	13.4 (13.7)	40.1 (40.1)	38.6 (39.0)
Greenwich Twp.	F20	38 (38)	13.0 (13.0)	25.3 (25.3)	24.9 (24.9)
Jersey City	F07	88 (101)	14.6 (16.1)	47.3 (50.2)	39.6 (47.3)
Jersey City	F21	4 (4)	14.4 (14.4)	16.4 (16.4)	15.9 (15.9)
Morristown	F18	68 (68)	14.8 (14.8)	39.5 (39.5)	35.0 (35.0)
Newark-Cultural Center	F10	58 (58)	15.9 (15.9)	47.7 (47.7)	43.6 (43.6)
Newark Lab	F05	71 (77)	15.5 (16.1)	46.8 (46.8)	40.7 (40.7)
New Brunswick	F06	94 (104)	10.9 (11.5)	37.8 (37.8)	35.3 (35.3)
Paterson	F09	91 (93)	12.4 (12.3)	43.7 (43.7)	40.7 (40.7)
Pennsauken	F13	97 (106)	13.5 (13.9)	37.9 (37.9)	36.1 (36.1)
Phillipsburg	F19	24 (24)	11.9 (11.9)	31.0 (31.0)	29.8 (29.8)
Rahway	F22	5 (5)	15.2 (15.2)	17.0 (17.0)	17.0 (17.0)
Toms River	F17	75 (75)	10.4 (10.4)	39.7 (39.7)	36.8 (36.8)
Trenton	F14	102 (118)	12.4 (13.3)	37.3 (37.6)	32.8 (37.3)
Union City	F08	36 (47)	18.3 (19.6)	50.1 (50.1)	39.5 (49.6)
Washington Crossing	F16	97 (110)	10.8 (11.1)	32.8 (32.8)	32.8 (30.2)

a) No Monitoring sites met data capture sufficient for valid annual mean.

PARTICLE MATTER  
 CONTINUOUS MONITORING METHODOLOGY  
 TAPERED ELEMENT OSCILLATING MICROBALANCE (TEOM)  
 2.5 MICRON FRACTION

Camden Lab	SPM	15	54	53
Elizabeth Lab	SPM	15	46	44
Fort Lee	SPM	21	60	60
Newark <sup>b</sup>	SPM	13	43	38
New Brunswick	SPM	12	50	43

b) Data not available after November 5th

Figure 5. State of New Jersey  
Inhalable Particulates Monitoring Network, 1999

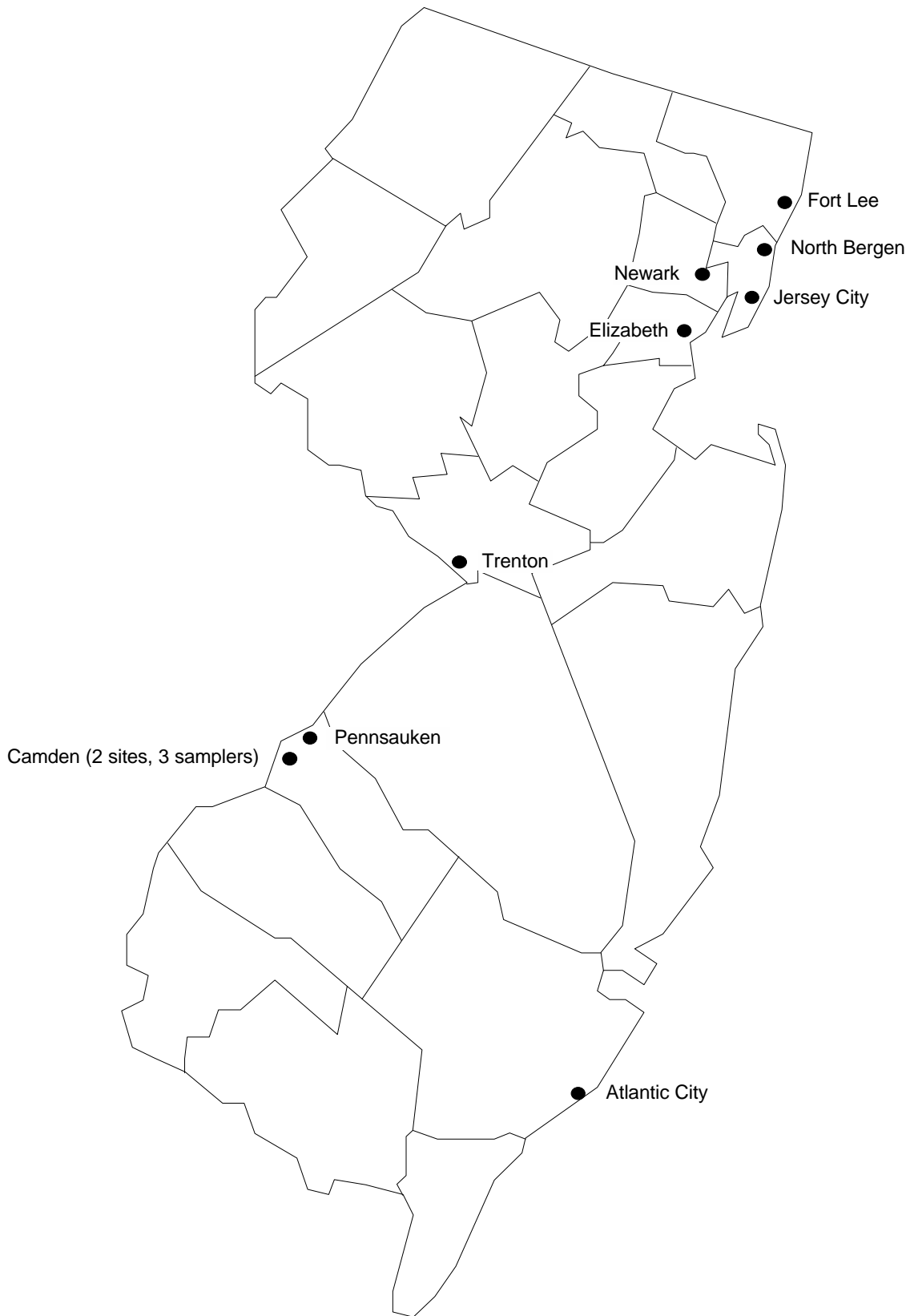


TABLE 8  
 AIR QUALITY IN NEW JERSEY  
 COMPARED WITH AIR QUALITY STANDARDS -- 1999  
 INHALABLE PARTICULATES (PM-10)  
 AT STANDARD PRESSURE AND TEMPERATURE CONDITIONS  
 ANNUAL STATISTICS  
 MICROGRAMS PER CUBIC METER (ug/m<sup>3</sup>)

NATIONAL AMBIENT AIR QUALITY STANDARDS FOR INHALABLE PARTICULATES:  
 ANNUAL ARITHMETIC MEAN PRIMARY & SECONDARY STANDARD: 50 ug/m<sup>3</sup>  
 24-HOUR AVERAGE PRIMARY & SECONDARY STANDARD: 150 ug/m<sup>3</sup>

SITE CODES: N = NAMS, S = SLAMS, PM = SPECIAL PURPOSE MONITORING  
 \*\*\*\* = INSUFFICIENT DATA FOR VALID ANNUAL ARITHMETIC MEAN

<u>Monitoring Site</u>	<u>Sampler No.</u>	<u>Site Code</u>	<u># of Samples</u>	<u>Annual Arith. Mean</u>	<u>24-Hour Average Maximum</u>	<u>2<sup>nd</sup> Highest</u>
Atlantic City	IP36	S	58	21.7	53	46
Camden Lab	IP02	N	59	19.1	46	43
Camden RRF #1	IP33	SPM	59	34.6	86	73
Camden RRF #2	IP34	SPM	59	34.4	87	82
Elizabeth Lab	IP28	S	58	32.7	87	67
Fort Lee	IP14	N	60	34.3	91	73
Jersey City-Newark Ave.	IP09	N	55	27.8	61	56
Newark	IP29	S	50	****	67	66
North Bergen	IP35	S	57	35.3	63	56
Pennsauken-WTP	IP10	S	60	22.4	63	51
Trenton	IP06	S	57	20.5	63	48

Figure 6a. Trend in Inhalable Particulate Concentrations in New Jersey, 1989-1999: Annual Averages

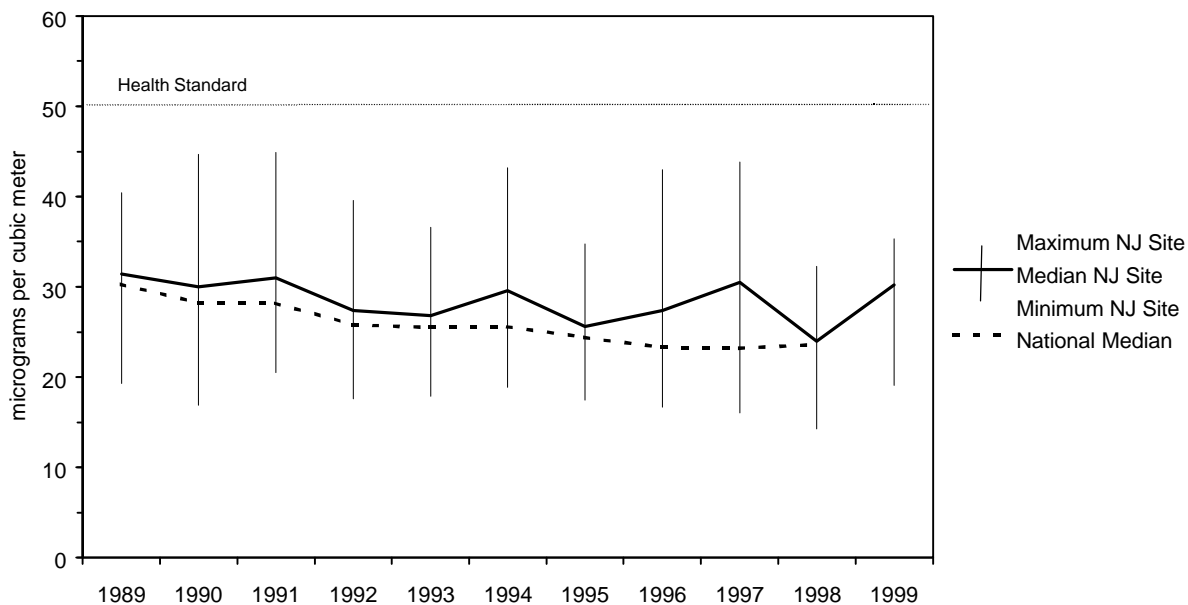


Figure 6b. 1999 Inhalable Particulate Concentrations in New Jersey: Annual Averages

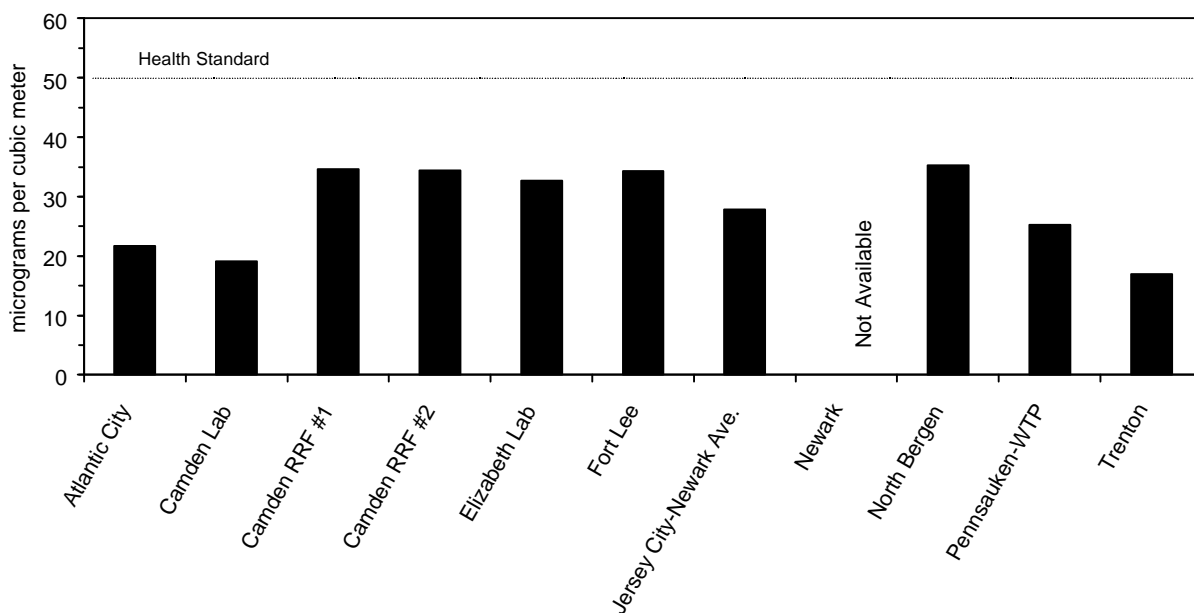






Figure 7. State of New Jersey  
Carbon Monoxide Monitoring Network, 1999

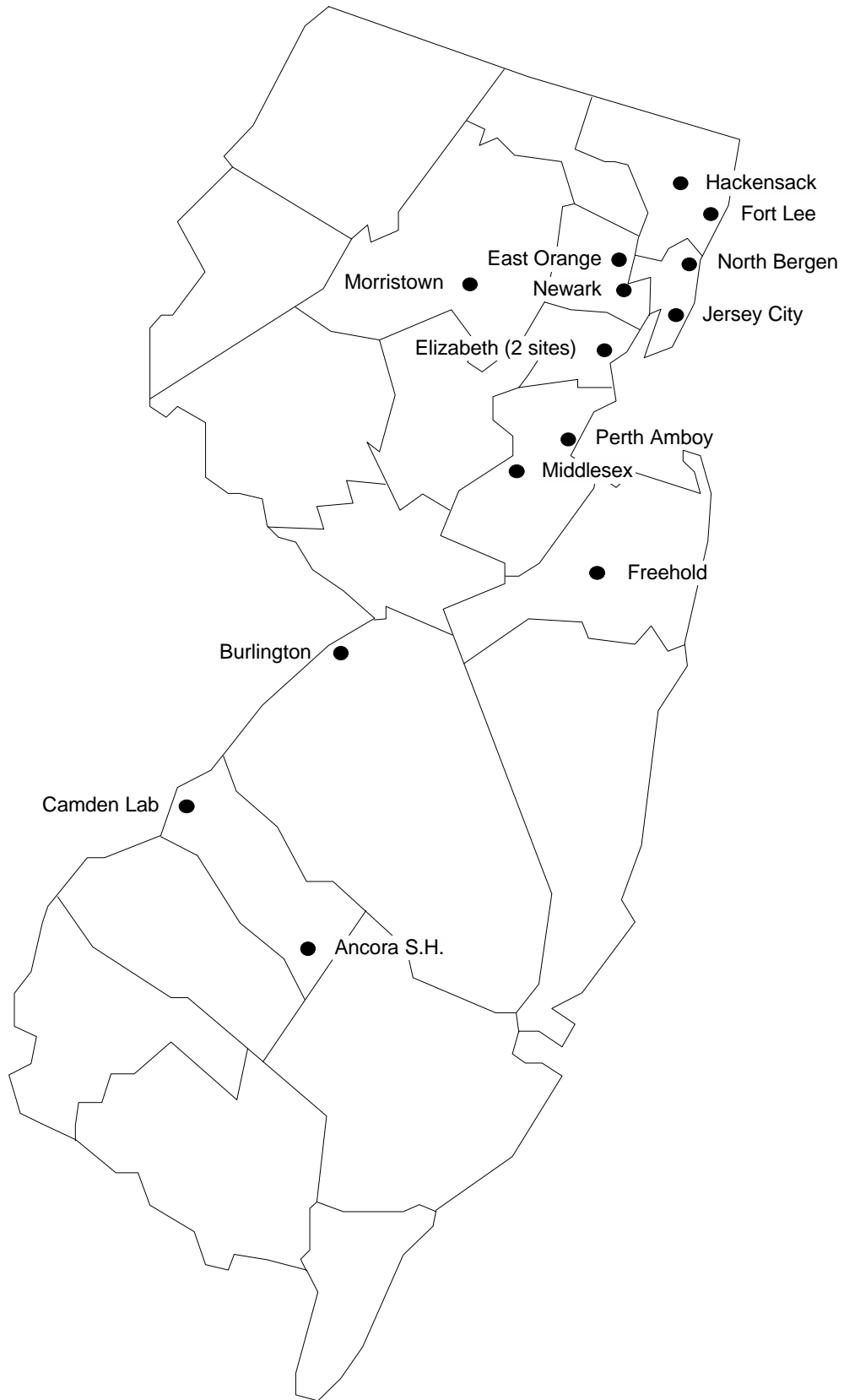


TABLE 9

AIR QUALITY IN NEW JERSEY  
COMPARED WITH AIR QUALITY STANDARDS -- 1999

CARBON MONOXIDE  
PARTS PER MILLION (PPM)

AMBIENT AIR QUALITY STANDARDS FOR CARBON MONOXIDE:

1-HOUR AVERAGE PRIMARY & SECONDARY STANDARD: 40 mg/m<sup>3</sup> (35 ppm)<sup>a</sup>  
 1-HOUR AVERAGE NATIONAL PRIMARY STANDARD: 35 ppm  
 8-HOUR AVERAGE PRIMARY & SECONDARY: 10 mg/m<sup>3</sup> (9 ppm)<sup>a</sup>  
 8-HOUR AVERAGE NATIONAL PRIMARY STANDARD: 9 ppm

SITE CODES: N = NAMS, S = SLAMS, SPM = SPECIAL PURPOSE MONITORING  
 VIOLATION CODES: XXX = NEW JERSEY & NATIONAL, -- = NO VIOLATION  
 XX = NEW JERSEY

Monitoring Site	Site Code	1-Hour Max.	Avg. (ppm) 2 <sup>nd</sup> Highest	# Above 35 ppm	Viol. Code	8-Hour Max.	Avg. (ppm) <sup>b</sup> 2 <sup>nd</sup> Highest	# Above 9.0 ppm	Viol. Code
Ancora S.H.	S	1.2	1.2	0	--	1.4	1.0	0	--
Burlington	S	6.7	5.7	0	--	3.7	3.7	0	--
Camden Lab	S	7.0	5.5	0	--	3.9	3.7	0	--
East Orange	SPM	11.0	10.0	0	--	7.3	6.9	0	--
Elizabeth	S	9.8	8.9	0	--	6.7	6.6	0	--
Elizabeth Lab	SPM	5.6	5.4	0	--	4.2	3.2	0	--
Fort Lee	S	5.1	4.7	0	--	3.9	3.8	0	--
Freehold	S	9.6	8.0	0	--	4.3	3.4	0	--
Hackensack	N	6.9	5.7	0	--	4.9	4.4	0	--
Jersey City	N	6.2	5.9	0	--	4.0	3.9	0	--
Middlesex	SPM	5.5	4.5	0	--	3.4	3.4	0	--
Morristown	S	6.1	5.9	0	--	4.2	4.1	0	--
Newark <sup>c</sup>	S	5.6	5.5	0	--	4.6	3.9	0	--
North Bergen	S	10.5	10.0	0	--	6.4	6.1	0	--
Perth Amboy	S	5.9	4.5	0	--	3.8	3.2	0	--

mg/m<sup>3</sup> - milligrams per cubic meter

- a) New Jersey Ambient Air Quality Standard not to be exceeded more than once in any 12-month period.  
 b) Based on non-overlapping 8-hour moving averages.  
 c) Data not available after November 5th.

Figure 8a. Trend in Carbon Monoxide Concentrations in New Jersey, 1989-1999:  
Second Highest 8-Hour Averages

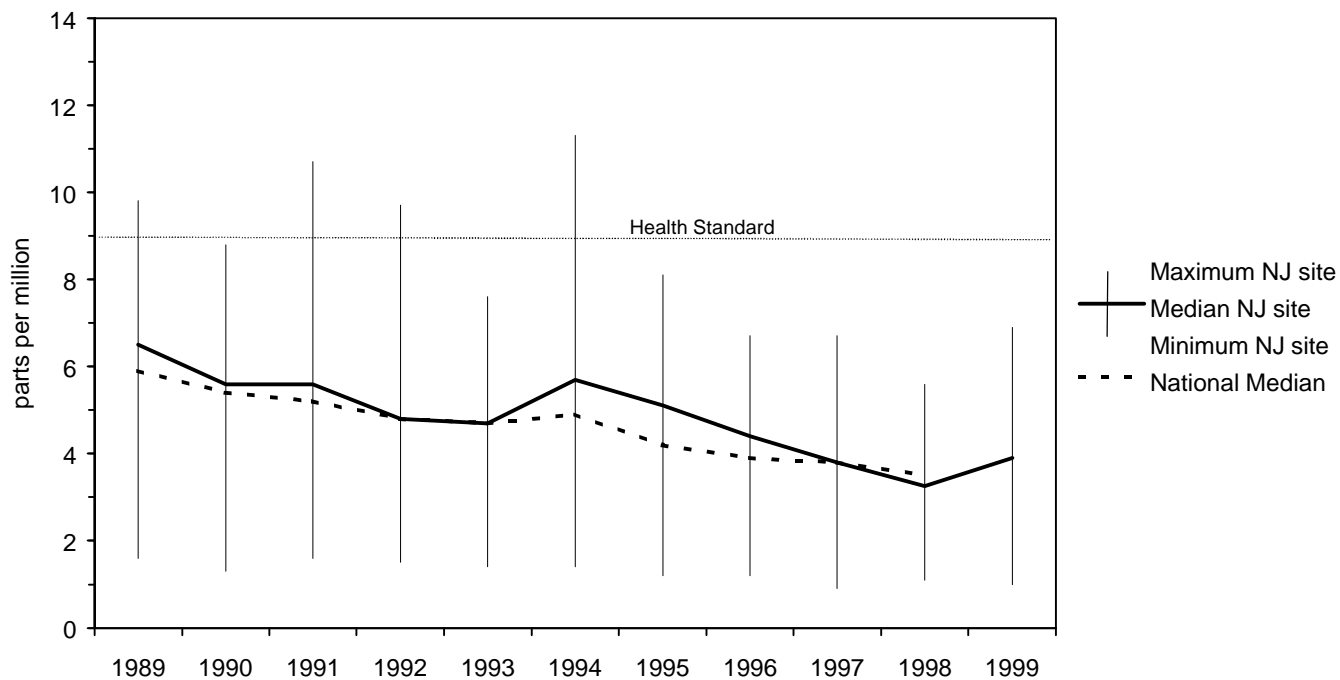


Figure 8b. 1999 Carbon Monoxide Concentrations in New Jersey:  
Highest and Second Highest 8-Hour Averages

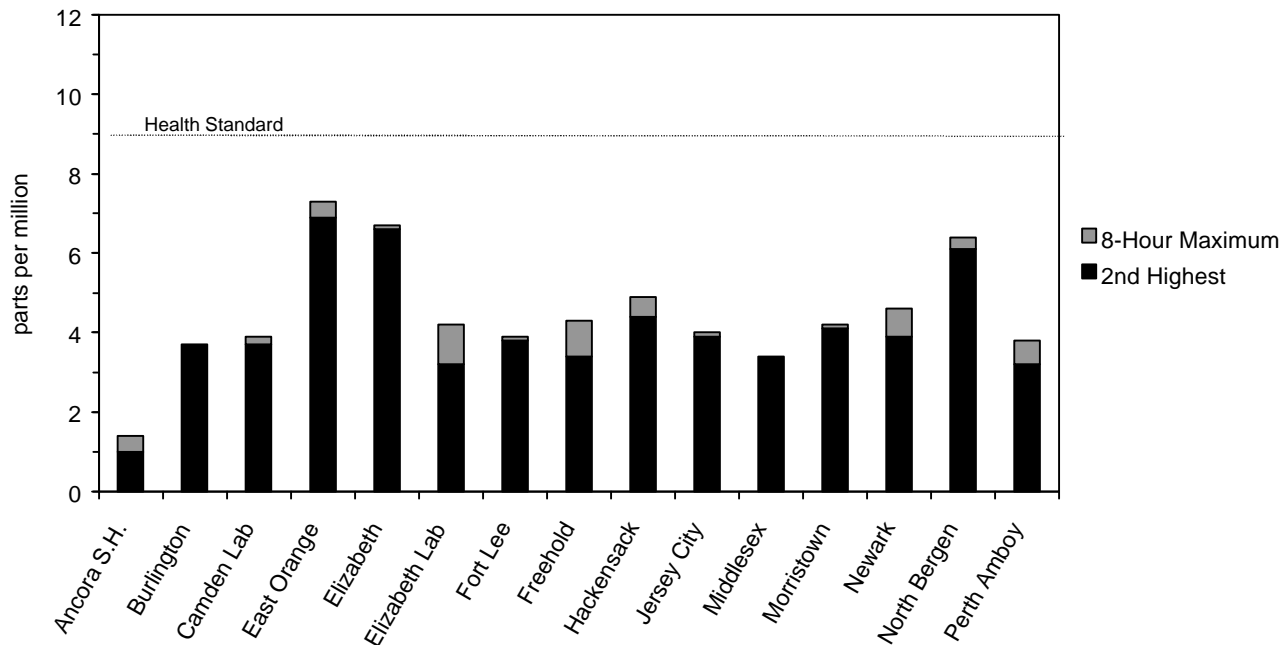




Figure 9. State of New Jersey  
Ozone Monitoring Network, 1999

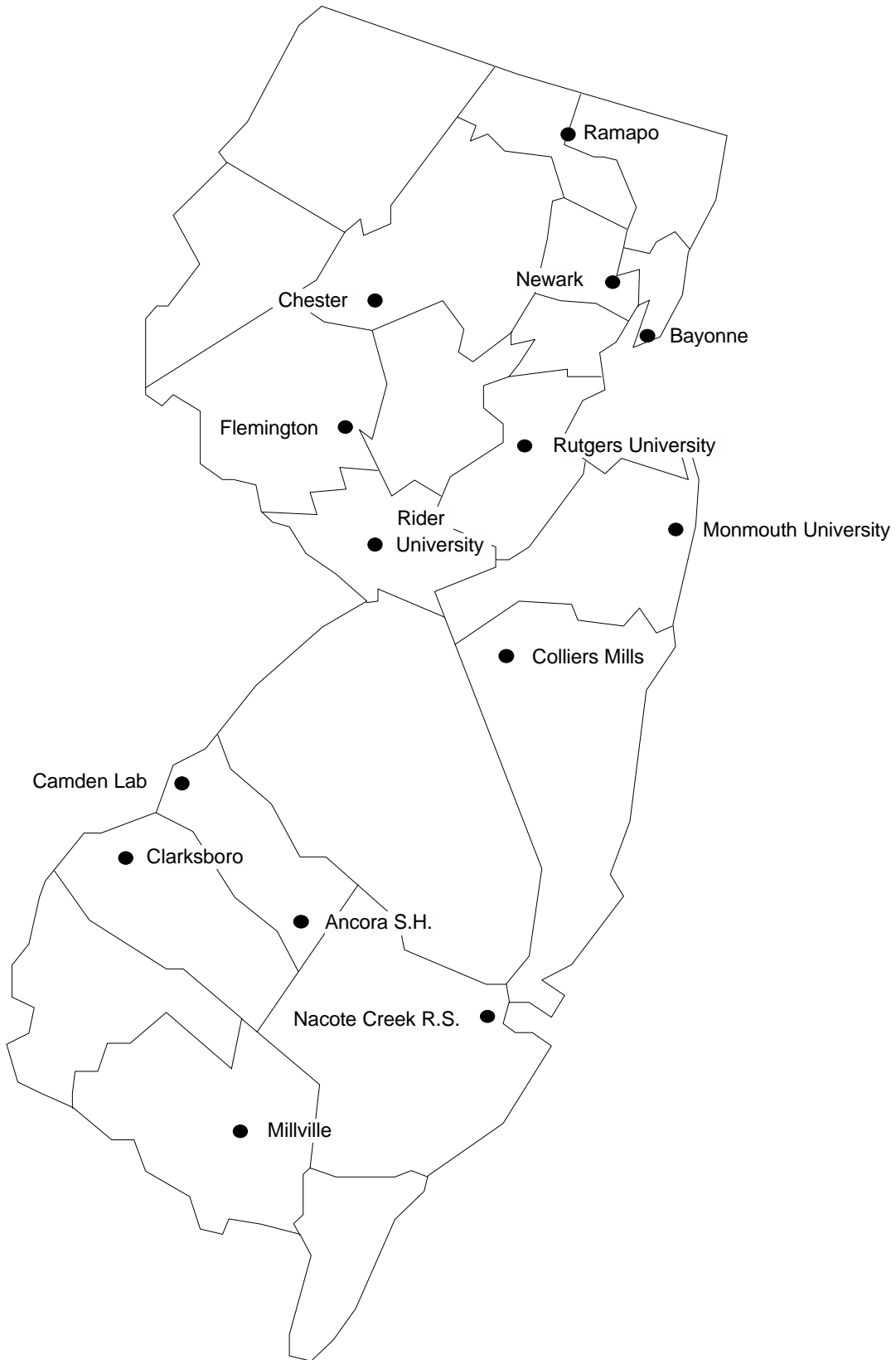


TABLE 10

AIR QUALITY IN NEW JERSEY  
 COMPARED WITH AIR QUALITY STANDARDS -- 1999

OZONE  
 1-HOUR AVERAGES  
 PARTS PER MILLION (ppm)

AMBIENT AIR QUALITY STANDARDS FOR OZONE  
 MAXIMUM DAILY 1-HOUR AVG. PRIMARY STANDARD: 0.12 ppm (235 ug/m<sup>3</sup>)<sup>ab</sup>  
 1-HOUR AVERAGE SECONDARY STANDARD: 0.08 ppm (160 ug/m<sup>3</sup>)<sup>b</sup>

SITE CODES: N = NAMS, S = SLAMS, SPM = SPECIAL PURPOSE MONITORING

VIOLATION CODES: XXX = NEW JERSEY AND NATIONAL (PS) = PRIMARY STANDARD  
 XX = NEW JERSEY (SS) = SECONDARY STANDARD  
 X = NATIONAL -- = NO VIOLATION

Monitoring Site	Site Code	Daily Max.		# of Days with Hrs. Above .12	Viol. Code	1-Hour Averages		# of Hrs. Above .08	Viol. Code
		Hgst.	2 <sup>nd</sup> Hgst.			Max.	2 <sup>nd</sup> Hgst.		
Ancora S.H.	S	.142	.127	2	XXX(PS)	.142	.137	234	XX(SS)
Bayonne	N	.147	.139	5	XXX(PS)	.147	.144	139	XX(SS)
Camden Lab	N	.137	.125	2	XX(PS)	.137	.131	140	XX(SS)
Chester	S	.121	.119	0	---	.121	.120	177	XX(SS)
Clarksboro	N	.135	.131	2	XXX(PS)	.135	.134	172	XX(SS)
Colliers Mills	S	.137	.135	3	XXX(PS)	.137	.137	196	XX(SS)
Flemington	S	.137	.133	2	XX(PS)	.137	.133	197	XX(SS)
Millville	S	.119	.116	0	---	.119	.116	128	XX(SS)
Monmouth University	S	.123	.119	0	X(PS)	.123	.122	85	XX(SS)
Nacote Creek R.S.	S	.119	.118	0	---	.119	.118	125	XX(SS)
Newark <sup>c</sup>	S	.133	.122	1	---	.133	.130	68	XX(SS)
Ramapo	S	.135	.129	2	XX(PS)	.135	.129	126	XX(SS)
Rider University	N	.151	.149	6	XXX(PS)	.151	.149	209	XX(SS)
Rutgers University	S	.157	.154	4	XXX(PS)	.157	.154	184	XX(SS)
Statewide	-	.157	.154	10					

ug/m<sup>3</sup> - micrograms per cubic meter

- a) National Ambient Air Quality Standard - averaged over a three period the expected number of days above the standards must be less than or equal to one.  
 b) New Jersey Ambient Air Quality Standard not to be exceeded more than once in any 12-month period.  
 c) Data not available after November 5<sup>th</sup>.

Table 10 (Cont.)  
 AIR QUALITY IN NEW JERSEY COMPARED WITH AIR QUALITY STANDARDS -- 1999

OZONE  
 8-HOUR AVERAGES  
 PARTS PER MILLION (PPM)

AMBIENT AIR QUALITY STANDARD FOR OZONE:  
 8-HOUR AVERAGE PRIMARY & SECONDARY STANDARD: 0.08 PPM<sup>a</sup>

SITE CODES: N= NAMS, S = SLAMS, SPM = SPECIAL PURPOSE MONITORING

VIOLATION CODES: X = NATIONAL (PS) = PRIMARY STANDARD  
 --- = NO VIOLATION

Monitoring Site	Site Code	Daily Maximum 8-hour Average Highest (PPM)				Average of 4 <sup>th</sup> Highest 8- Hour Average 1997 - 1999	Viol. Code	# of Days with 8-Hour Averages Above .08 (PPM)
		1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>			
Ancora S.H.	S	.119	.109	.109	.105	.106	X(PS)	25
Bayonne	N	.131	.122	.115	.106	.100	X(PS)	17
Camden Lab	N	.119	.108	.106	.105	.099	X(PS)	16
Chester	N	.117	.108	.104	.102	.098	X(PS)	21
Clarksboro	N	.117	.117	.108	.105	.103	X(PS)	21
Colliers Mills	S	.117	.110	.106	.106	.107	X(PS)	23
Flemington	S	.115	.114	.110	.110	.103	X(PS)	23
Millville	S	.105	.104	.098	.096	.099	X(PS)	17
Monmouth Univ.	S	.109	.100	.096	.096	.094	X(PS)	12
Nacote Creek R.S.	S	.103	.098	.097	.095	.097	X(PS)	14
Newark <sup>b</sup>	S	.112	.107	.104	.098	.094	X(PS)	6
Ramapo	S	.104	.103	.099	.099	----	( c )	16
Rider University	N	.129	.129	.125	.114	.105	X(PS)	24
Rutgers University	S	.135	.132	.122	.110	.105	X(PS)	23
Statewide		.135	.132	.125	.122	.116		46

- a) National Ambient Air Quality Standard - The average of the 4<sup>th</sup> highest daily maximum 8-hour average over a 3 year period must be less than or equal to 0.08 ppm.
- b) Data not available after November 5<sup>th</sup>.
- c) Three years of data must be available before a determination of violation.

Figure 10a. Trend in Ozone Concentrations in New Jersey, 1989-1999:  
Second Highest 1-Hour Averages

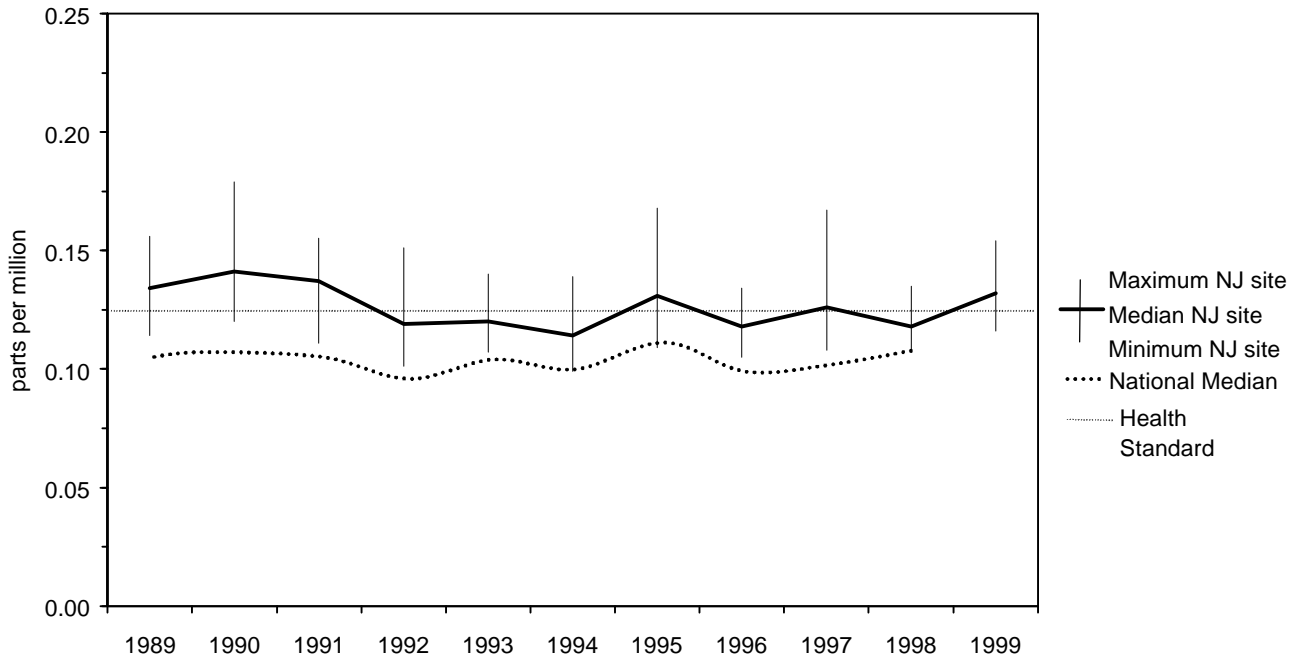


Figure 10b. 1999 Ozone Concentrations in New Jersey:  
Highest and Second Highest Daily 1-Hour Averages

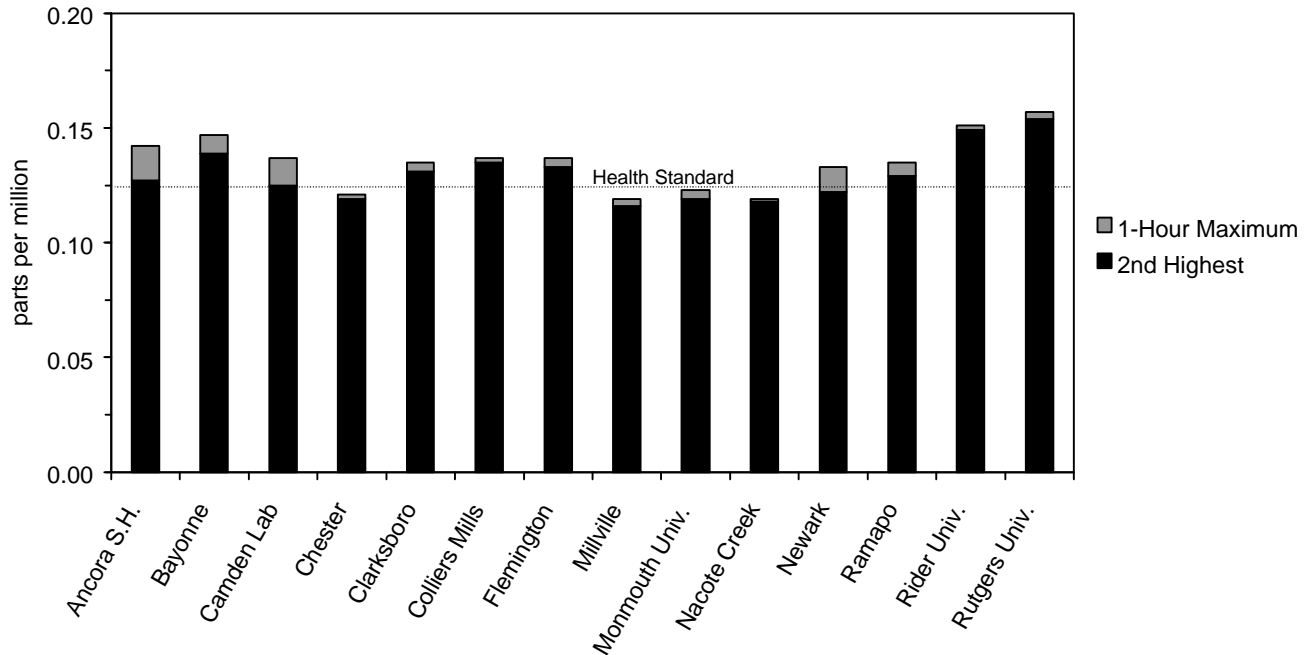




TABLE 11

## AIR QUALITY IN NEW JERSEY COMPARED WITH AIR QUALITY STANDARDS - 1999

OZONE PRECURSORS  
NON-METHANE ORGANIC COMPOUNDS AND NITROGEN OXIDES  
6-9 AM STATISTICS  
ON SELECTED SAMPLING DATES

NON-METHANE ORGANIC COMPOUNDS (NMOC)  
PARTS PER MILLION

Newark				
<u>Month</u>	<u># of Samples</u>	<u>Mean</u>	<u>Minimum</u>	<u>Maximum</u>
July	4	.157	.115	.197
August	18	.099	.040	.203
<u>September</u>	<u>11</u>	<u>.130</u>	<u>.041</u>	<u>.203</u>
Season	33	.116	.040	.203

NITROGEN OXIDES (NOX)<sup>a</sup>  
PARTS PER MILLION

Newark				
<u>Month</u>	<u># of Samples</u>	<u>Mean</u>	<u>Minimum</u>	<u>Maximum</u>
July	4	.072	.041	.111
August	18	.062	.012	.149
<u>September</u>	<u>11</u>	<u>.100</u>	<u>.025</u>	<u>.190</u>
Season	33	.076	.012	.190

a) Nitrogen Oxides concentrations were estimated by summing the nitric oxide and nitrogen dioxide observed levels.

NMOC/NOX RATIOS

Newark				
<u>Month</u>	<u># of Samples</u>	<u>Mean</u>	<u>Minimum</u>	<u>Maximum</u>
July	4	2.60	1.10	4.76
August	18	1.87	0.58	5.08
<u>September</u>	<u>11</u>	<u>1.47</u>	<u>0.81</u>	<u>3.14</u>
Season	33	1.82	0.58	5.08

TABLE 11 (CONT.)  
 AIR QUALITY IN NEW JERSEY COMPARED WITH AIR QUALITY STANDARDS - 1999

OZONE PRECURSORS  
 NON-METHANE ORGANIC COMPOUNDS (NMOC) AND NITROGEN OXIDES (NOX)

6-9 A.M. STATISTICS  
 PARTS PER MILLION

NEWARK

1999 Date	NMOC PPMC	NOX PPM	NMOC/ NOX	1999 Date	NMOC PPMC	NOX PPM	NMOC/ NOX	1999 Date	NMOC PPMC	NOX PPM	NMOC/ NOX
7/27	.195	.041	4.76	8/13	.132	.087	1.52	9/1	.179	.057	3.14
7/28	.197	.086	2.29	8/16	.109	.066	1.65	9/2	.096	.085	1.13
7/29	.122	.111	1.10	8/17	.085	.053	1.60	9/8	.150	.140	1.07
7/30	.115	.051	2.25	8/18	.056	.045	1.24	9/9	.165	.190	0.87
8/2	.099	.040	2.48	8/19	.066	.047	1.40	9/10	.199	.112	1.78
8/3	.044	.032	1.38	8/20	.099	.097	1.02	9/15	.203	.137	1.48
8/4	.184	.095	1.94	8/22	.061	.012	5.08	9/22	.041	.025	1.64
8/5	.197	.118	1.67	8/25	.203	.149	1.36	9/23	.094	.063	1.49
8/6	.112	.065	1.72	8/26	.092	.039	2.36	9/24	.169	.165	1.02
8/11	.053	.091	0.58	8/30	.080	.027	2.96	9/29	.072	.089	0.81
8/12	.062	.025	2.48	8/31	.040	.035	1.14	9/30	.063	.037	1.70

Figure 11. Trend in Nonmethane Organic Compounds in New Jersey, 1989-1999:  
Seasonal Average 6 a.m. - 9 a.m. Concentrations

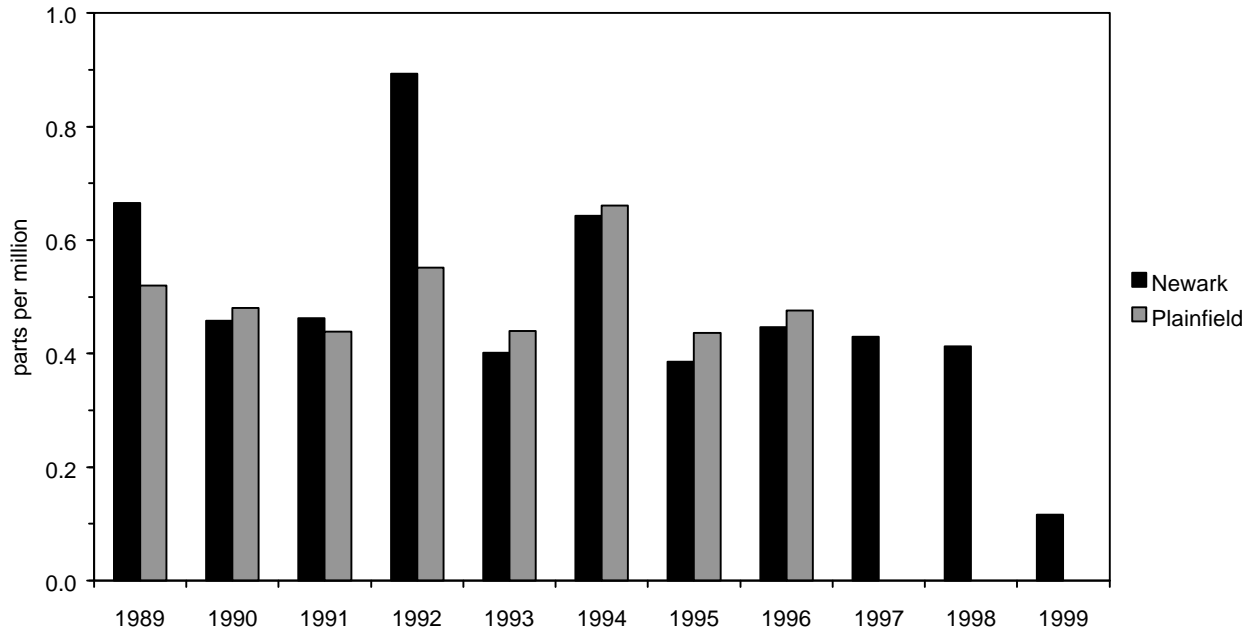




Figure 12. State of New Jersey  
Nitrogen Oxides Monitoring Network, 1999

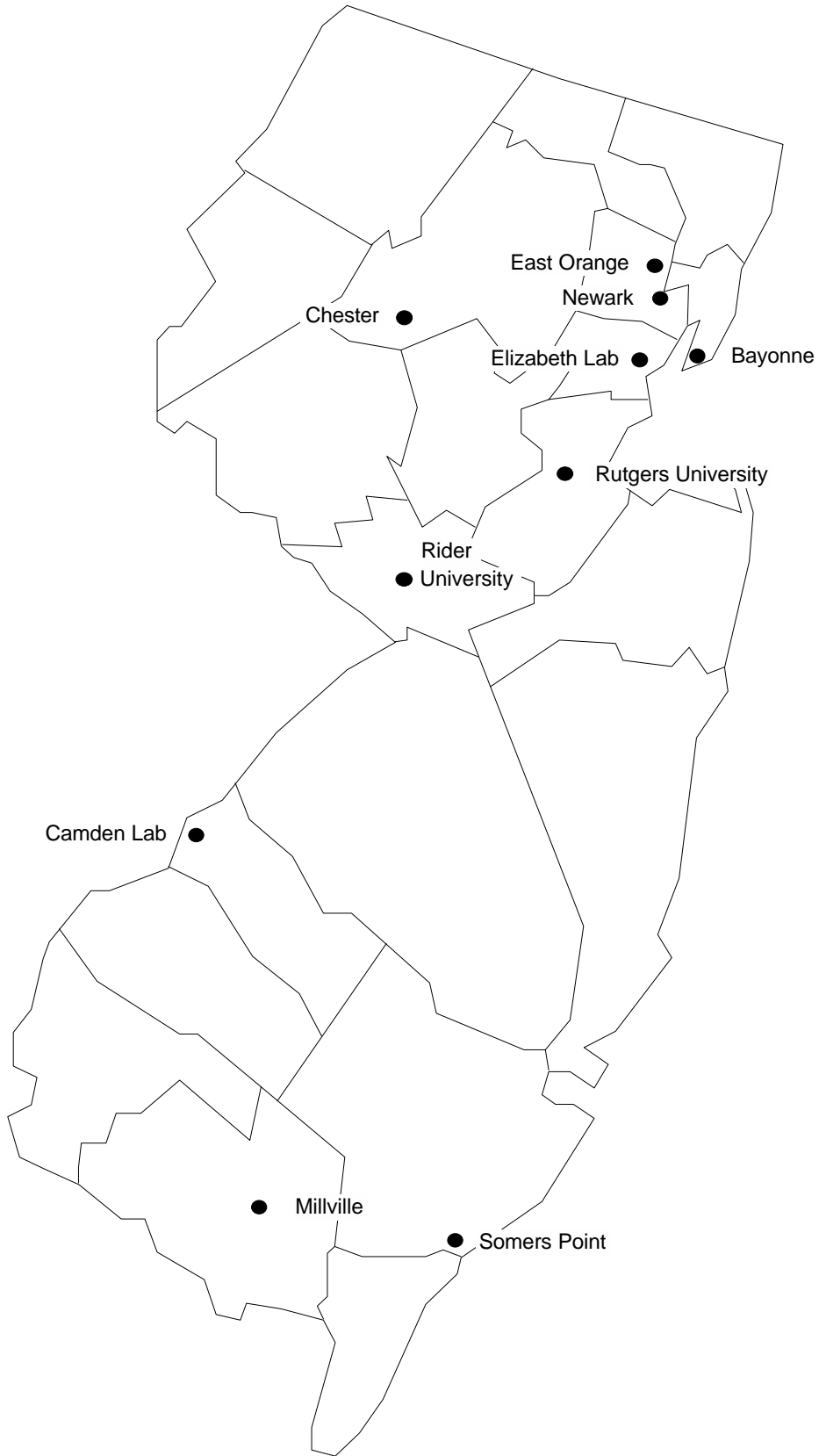


TABLE 12

AIR QUALITY IN NEW JERSEY  
COMPARED WITH AIR QUALITY STANDARDS -- 1999

NITROGEN DIOXIDE & NITRIC OXIDE  
PARTS PER MILLION

AMBIENT AIR QUALITY STANDARDS FOR NITROGEN DIOXIDE:  
 12-MONTH AVERAGE PRIMARY STANDARD: 100 ug/m<sup>3</sup> (.05 ppm)<sup>a</sup>  
 ANNUAL AVERAGE PRIMARY STANDARD: .053 ppm (100 ug/m<sup>3</sup>)<sup>b</sup>  
 12-MONTH AVERAGE SECONDARY STANDARD: 100 ug/m<sup>3</sup> (.05 ppm)<sup>a</sup>  
 ANNUAL AVERAGE SECONDARY STANDARD: .053 ppm (100 ug/m<sup>3</sup>)<sup>b</sup>  
 1-HOUR AVERAGE GUIDELINE: 470 ug/m<sup>3</sup> (.25 ppm)<sup>c</sup>

NO AMBIENT AIR QUALITY STANDARDS HAVE  
BEEN ESTABLISHED FOR NITRIC OXIDE

SITE CODES: N = NAMS, S = SLAMS, SPM = SPECIAL PURPOSE MONITORING

VIOLATION CODES: XXX = NEW JERSEY AND NATIONAL, XX = NEW JERSEY  
-- = NO VIOLATION

Monitoring Site	Site Code	Nitrogen Dioxide		Nitrogen Dioxide		Viol. Code	Nitric Oxide Annual Avg. (ppm)
		1-Hour Average (ppm) Maximum	2 <sup>nd</sup> Highest	12-Month Average (ppm) Maximum	Cal. Year		
Bayonne	N	.100	.091	.027	.026	--	.022
Camden Lab	S	.080	.076	.023	.022	--	.017
Chester	S	.067	.066	.012	.011	--	.003
East Orange	N	.109	.106	.030	.030	--	.039
Elizabeth Lab	S	.134	.131	.042	.041	--	.054
Millville	SPM	.066	.065	.018	.016	--	.016
Newark <sup>d</sup>	S	.147	.135	.033	.033	--	.034
Rider Univ.	SPM	.069	.068	.017	.017	--	.016
Rutgers Univ.	S	.099	.081	.020	.019	--	.016
Somers Point	SPM	.059	.048	.008	.008	--	.004

a) New Jersey Ambient Air Quality Standard.

b) National Ambient Air Quality Standard.

c) California State Primary Standard used by New Jersey for analysis of short-term impacts in dispersion modeling studies.

d) Data not available after November 5th.

Figure 13a. Trend in Nitrogen Dioxide Concentrations in New Jersey, 1989-1999: Annual Averages

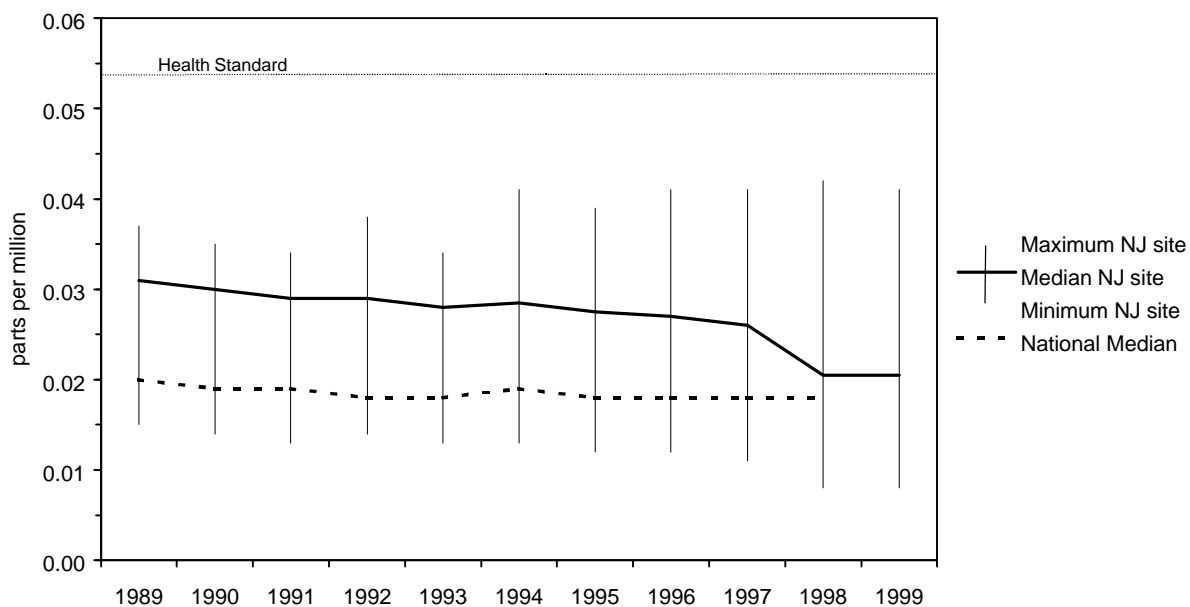


Figure 13b. 1999 Nitrogen Dioxide and Nitric Oxide Concentrations in New Jersey: Annual Averages

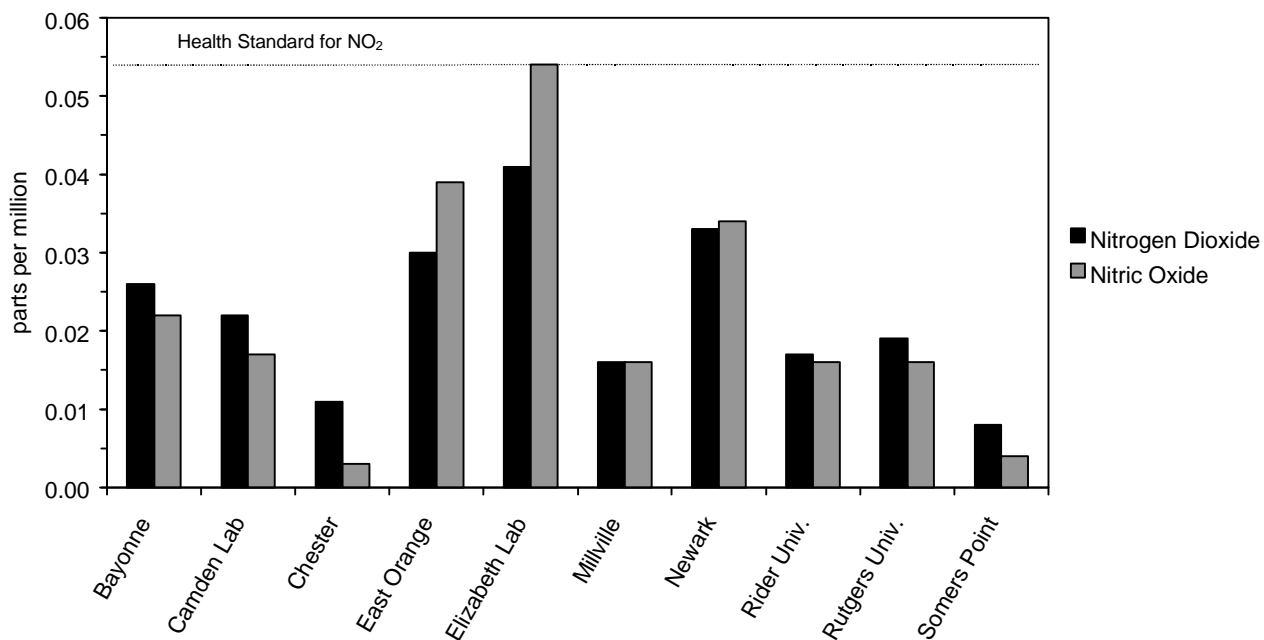






Figure 14. State of New Jersey  
Lead Monitoring Network, 1999

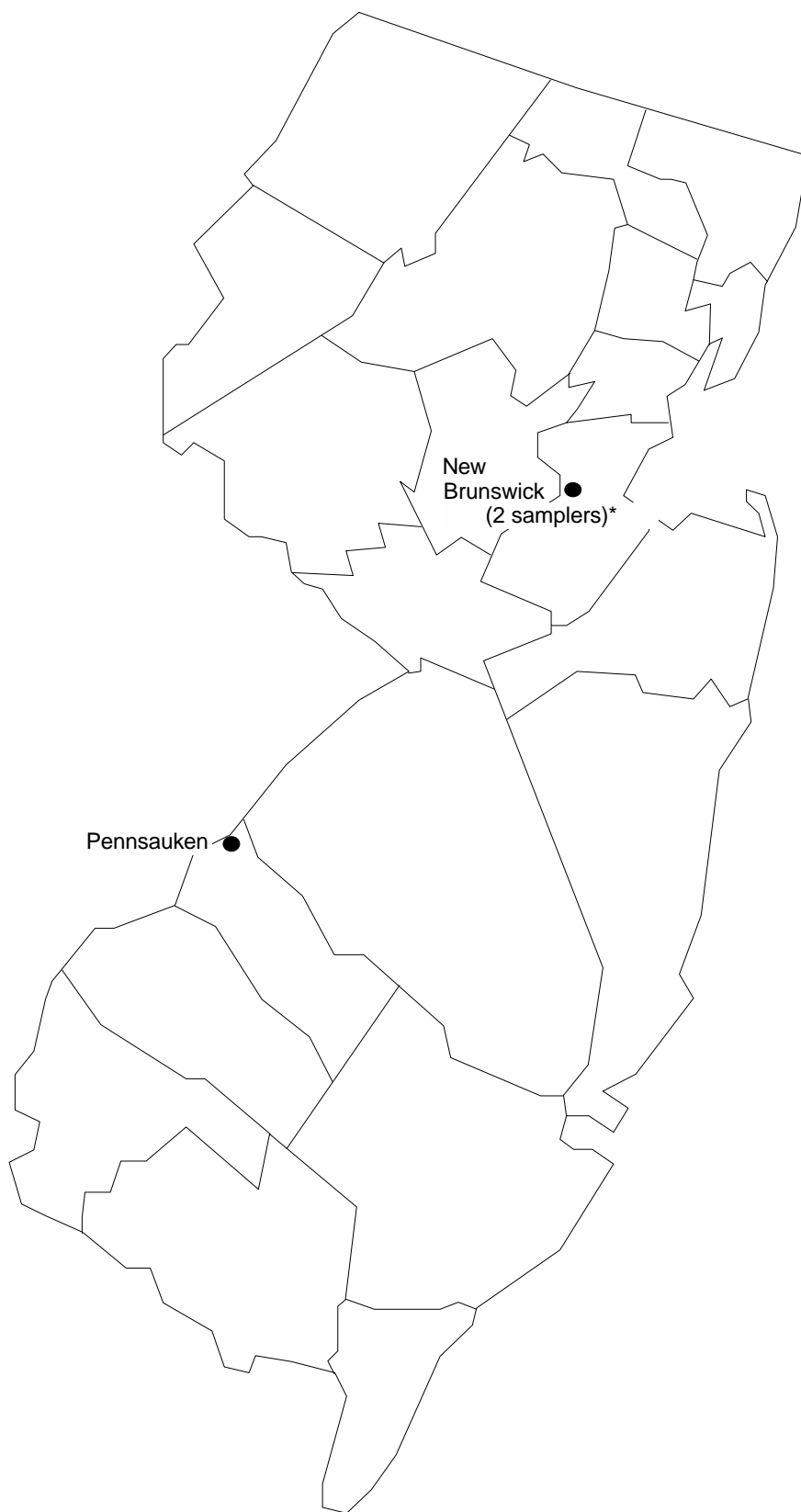


TABLE 13

AIR QUALITY IN NEW JERSEY  
 COMPARED WITH AIR QUALITY STANDARDS -- 1999  
 LEAD

3-MONTH AVERAGES

MICROGRAMS PER CUBIC METER

HIGH VOLUME PARTICULATE SAMPLERS

AMBIENT AIR QUALITY STANDARDS FOR LEAD:

3-MONTH ARITH. MEAN PRIMARY & SECONDARY STANDARDS: 1.5 ug/m<sup>3a</sup>

CALENDAR QUARTER ARITH. MEAN PRIMARY & SECONDARY STANDARD: 1.5 ug/m<sup>3b</sup>

SITE CODES: N = NAMS, S = SLAMS, SPM = SPECIAL PURPOSE MONITORING IND = INDUSTRIAL FACILITY

VIOLATION CODES: XXX = NEW JERSEY AND NATIONAL, XX = NEW JERSEY, -- = NO VIOLATION

Monitoring Site	Sampler No.	Site Code	3-Month Average Maximum	Average Month	Viol. Code	Arithmetic Means				Viol. Code
						1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	
New Brunswick	057	S	.183	Mar.	--	.183	.021	.053	.035	--
New Brunswick	068	SPM	.180	Mar.	--	.180	.020	.059	.046	--
Pennsauken <sup>c</sup>	071	S	.075	Mar.	--	.075	.012	.021	.012	--

a) New Jersey Ambient Air Quality Standard

b) National Ambient Air Quality Standard

c) Less than 50 percent of samples above minimum detection limits

Figure 15a. Trend in Lead Concentrations in New Jersey, 1989-1999: Maximum Quarterly Averages

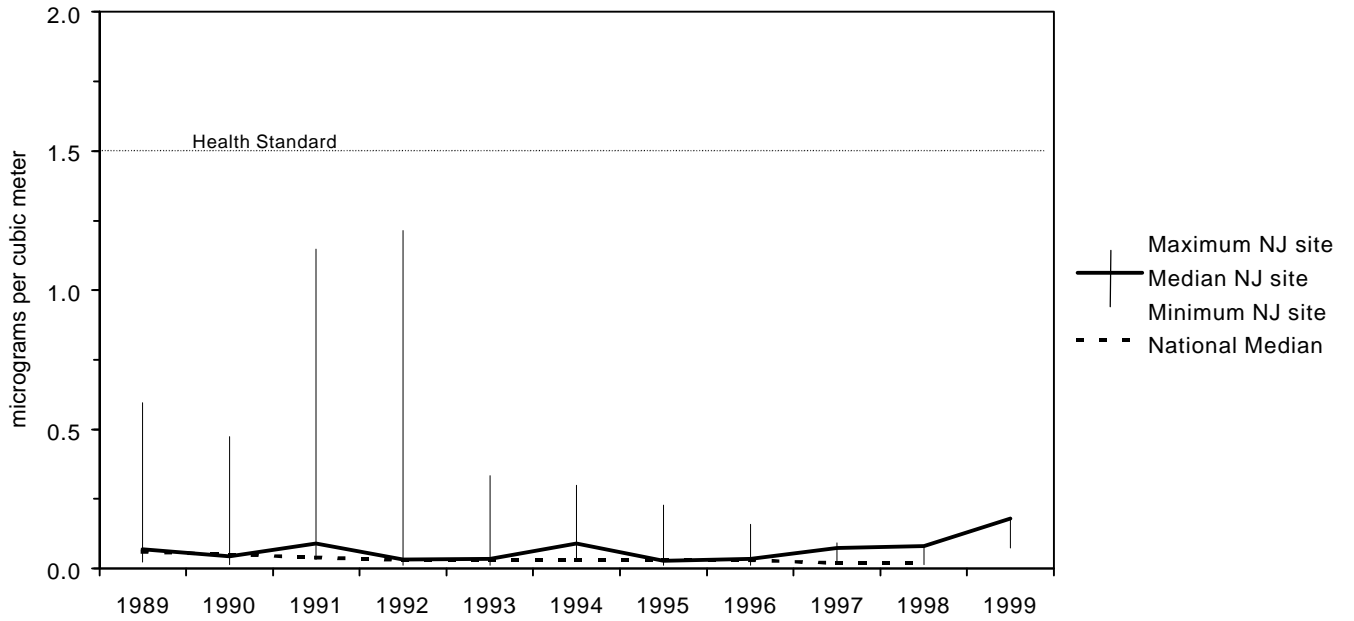


Figure 15b. 1999 Lead Concentrations in New Jersey: Maximum Quarterly Averages

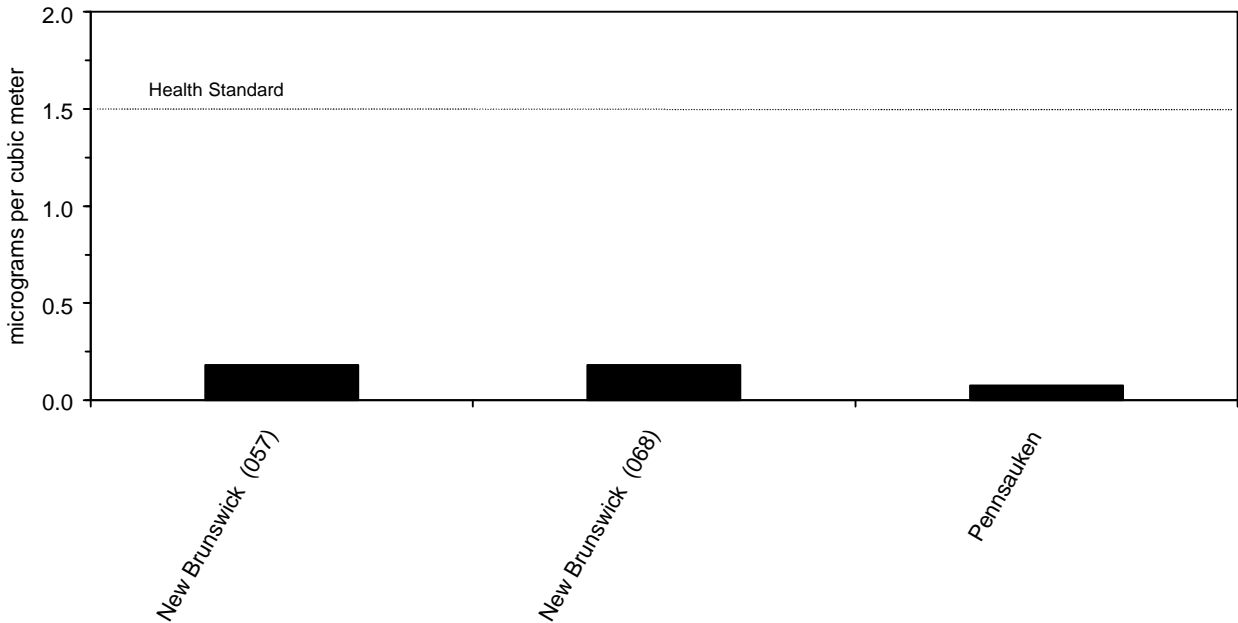




Figure 16. State of New Jersey  
Smoke Shade Monitoring Network, 1999

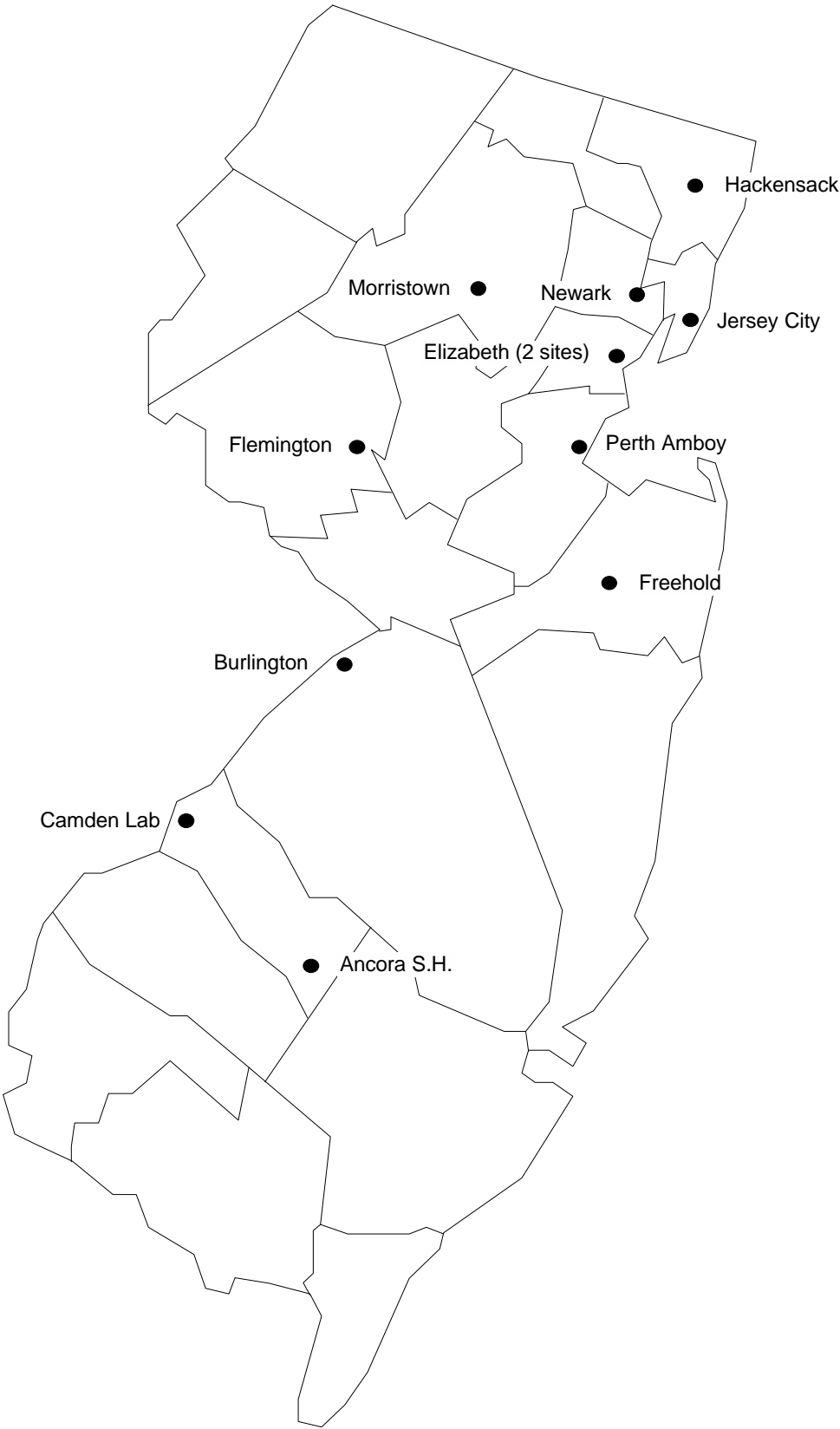


TABLE 14  
 AIR QUALITY IN NEW JERSEY  
 COMPARED WITH AIR QUALITY STANDARDS -- 1999

SMOKE SHADE  
 DAILY AND ANNUAL AVERAGES  
 COEFFICIENT OF HAZE (COHS)

NO AMBIENT AIR QUALITY STANDARDS HAVE  
 BEEN ESTABLISHED FOR SMOKE SHADE

SITE CODES: N = NAMS, S = SLAMS, SPM = SPECIAL PURPOSE MONITORING

<u>Monitoring Site</u>	<u>Site Code</u>	<u>Daily Average (COHS)</u>		<u>Annual Average (COHS)</u>
		<u>Maximum</u>	<u>2<sup>nd</sup> Highest</u>	
Ancora S.H.	SPM	0.34	0.31	0.12
Burlington	SPM	0.88	0.82	0.21
Camden Lab	SPM	0.37	0.36	0.13
Elizabeth	SPM	1.56	1.55	0.50
Elizabeth Lab	SPM	1.37	1.25	0.39
Flemington	SPM	0.58	0.51	0.17
Freehold	SPM	0.99	0.77	0.27
Hackensack	SPM	0.94	0.93	0.30
Jersey City	SPM	1.89	1.85	0.83
Morristown	SPM	0.94	0.90	0.32
Newark <sup>a</sup>	SPM	1.24	1.13	0.29
Perth Amboy	SPM	1.32	0.83	0.28

a) Data not available after November 5<sup>th</sup>.

Figure 17a. 1999 Smoke Shade Measurements in New Jersey  
Highest and Second Highest Daily Averages

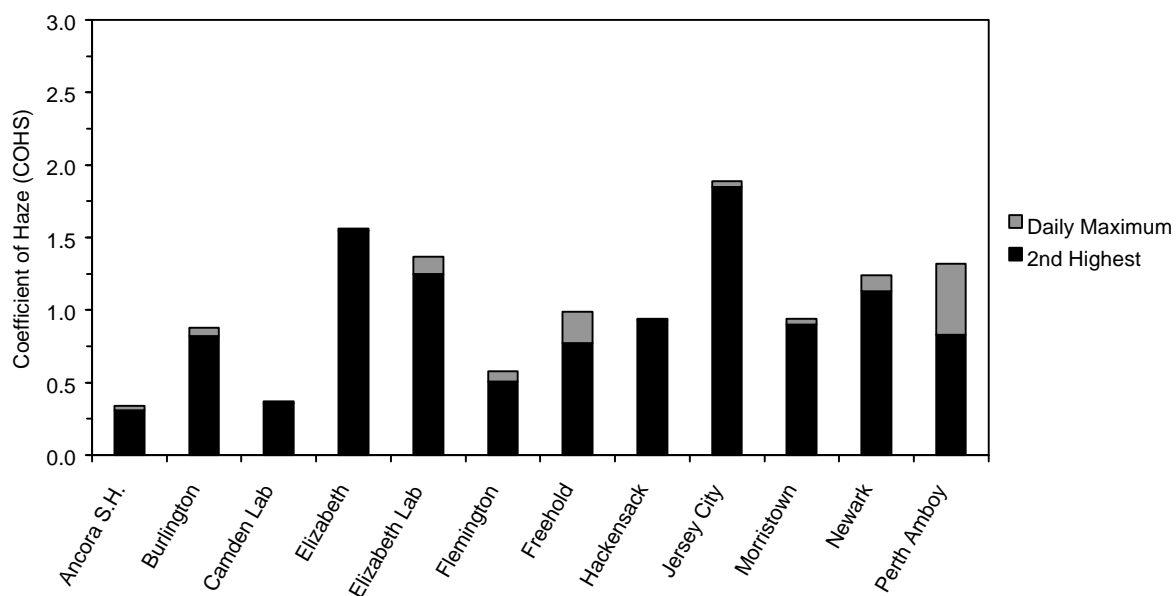


Figure 17b. 1999 Smoke Shade Measurements in New Jersey  
Annual Averages

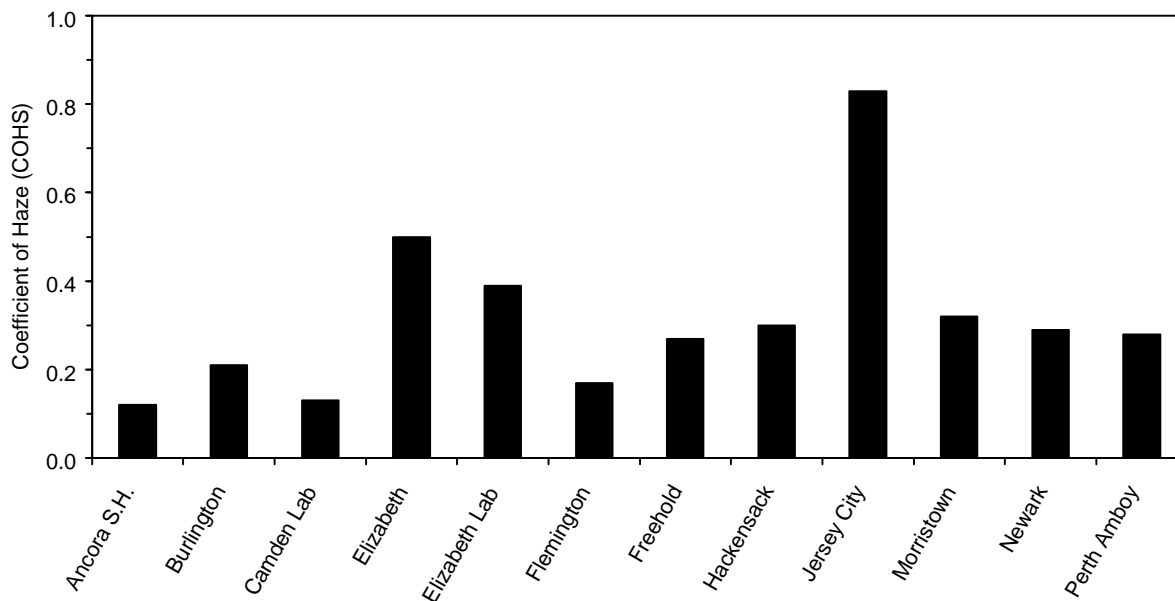






Figure 18. State of New Jersey  
Acid Precipitation Monitoring Network, 1999

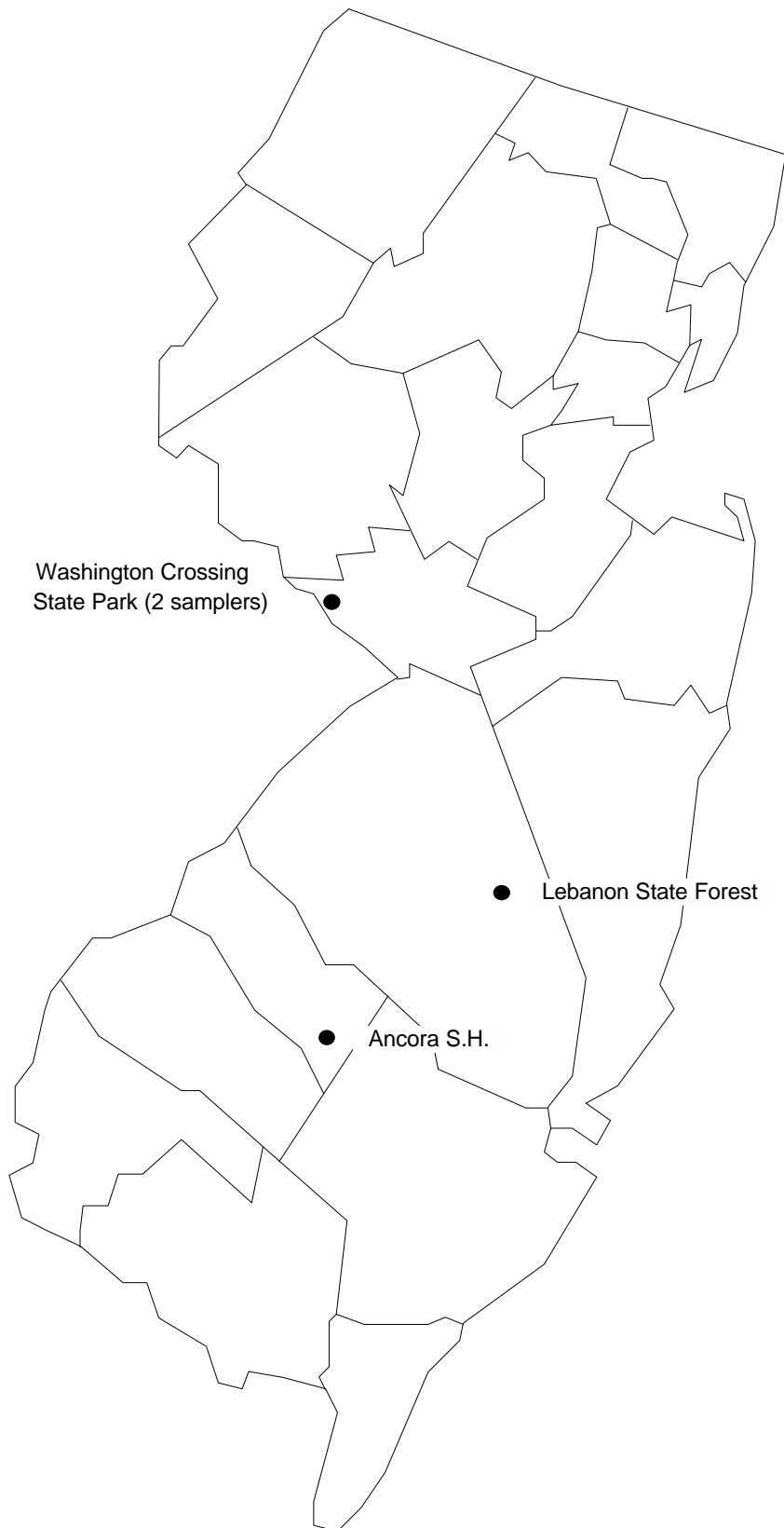


Table 15

1999 ACID PRECIPITATION MONITORING NETWORK  
ANNUAL AND SEASONAL AVERAGES  
WEIGHTED BY PRECIPITATION AMOUNT

Ancora State Hospital - Weekly

	Precip. Inches	pH	Cond. us/cm	Ca <sup>2+</sup> mg/l	Mg <sup>+</sup> mg/l	K <sup>+</sup> mg/l	Na <sup>+</sup> mg/l	NH <sub>4</sub> <sup>-</sup> mg/l	NO <sub>3</sub> <sup>-</sup> mg/l	Cl <sup>-</sup> mg/l	SO <sub>4</sub> <sup>2-</sup> mg/l	PO <sub>4</sub> <sup>3-</sup> mg/l
Winter	13.91	4.49	21.0									
Spring	7.74	4.36	26.6									
Summer	16.64	4.43	22.5									
Fall	9.19	4.62	15.8									
Annual	47.48	4.46	21.4									

Data not available

Lebanon State Forest - Weekly

	Precip. Inches	pH	Cond. us/cm	Ca <sup>2+</sup> mg/l	Mg <sup>+</sup> mg/l	K <sup>+</sup> mg/l	Na <sup>+</sup> mg/l	NH <sub>4</sub> <sup>-</sup> mg/l	NO <sub>3</sub> <sup>-</sup> mg/l	Cl <sup>-</sup> mg/l	SO <sub>4</sub> <sup>2-</sup> mg/l	PO <sub>4</sub> <sup>3-</sup> mg/l
Winter	11.51	4.45	21.9									
Spring	7.22	4.39	23.3									
Summer	16.38	4.67	14.1									
Fall	11.50	4.65	15.3									
Annual	46.61	4.55	17.7									

Data not available

Washington Crossing State Park - Weekly

	Precip. Inches	pH	Cond. us/cm	Ca <sup>2+</sup> mg/l	Mg <sup>+</sup> mg/l	K <sup>+</sup> mg/l	Na <sup>+</sup> mg/l	NH <sub>4</sub> <sup>-</sup> mg/l	NO <sub>3</sub> <sup>-</sup> mg/l	Cl <sup>-</sup> mg/l	SO <sub>4</sub> <sup>2-</sup> mg/l	PO <sub>4</sub> <sup>3-</sup> mg/l
Winter	12.35	4.55	15.7	0.051	0.027	0.011	0.207	0.068	0.955	0.373	1.008	0.001
Spring	16.17	4.37	26.2	0.114	0.022	0.065	0.095	0.488	1.791	0.223	2.373	0.002
Summer	6.65	4.03	48.5	0.184	0.037	0.019	0.062	0.473	2.918	0.204	4.266	0.002
Fall	4.12	4.39	22.1	0.063	0.033	0.017	0.230	0.188	1.555	0.440	1.494	0.002
Annual	39.29	4.33	26.2	0.101	0.027	0.035	0.139	0.322	1.694	0.290	2.172	0.002

Washington Crossing State Park - Event

	Precip. Inches	pH	Cond. us/cm	Ca <sup>2+</sup> mg/l	Mg <sup>+</sup> mg/l	K <sup>+</sup> mg/l	Na <sup>+</sup> mg/l	NH <sub>4</sub> <sup>-</sup> mg/l	NO <sub>3</sub> <sup>-</sup> mg/l	Cl <sup>-</sup> mg/l	SO <sub>4</sub> <sup>2-</sup> mg/l	PO <sub>4</sub> <sup>3-</sup> mg/l
Winter	12.03	4.43	20.1									
Spring	6.67	4.29	27.9									
Summer	10.06	4.47	18.6									
Fall	7.59	4.53	17.4									
Annual	36.35	4.43	20.5									

Data not available

LEGEND: Cond. = Specific conductance, Ca<sup>2+</sup> = Calcium, Mg<sup>+</sup> = Magnesium, K<sup>+</sup> = Potassium,  
Na<sup>+</sup> = Sodium, NH<sub>4</sub> = Ammonium, NO<sub>3</sub><sup>-</sup> = Nitrate, Cl<sup>-</sup> = Chloride, SO<sub>4</sub><sup>2-</sup> = Sulfate,  
PO<sub>4</sub><sup>3-</sup> = Phosphate.  
us/cm = microSiemens per centimeter, mg/l = milligrams per liter.  
Winter = Jan. - Mar.; Spring = Apr. - June; Summer = Jul. - Sept.; Fall = Oct. - Dec.

TABLE 16

ACID PRECIPITATION - COMPARISON WITH METEOROLOGY  
SUMMARY OF 1999 ACID PRECIPITATION MONITORING BY THE  
WASHINGTON CROSSING STATE PARK PRECIPITATION EVENT SAMPLER

ACID PRECIPITATION EVENTS BY SEASON<sup>1</sup>

	Winter	Spring	Summer	Fall
Number of storm events	12	12	9	11
Total precipitation (inches)	12.03	6.81	9.92	7.59
Average acidity (pH)	4.43	4.28	4.48	4.53

## ACID PRECIPITATION EVENTS BY PRECIPITATION AMOUNT

	Trace-.5"	0.51-1.0"	1.0-1.5"	1.51-2.0"	>2.0"
Number of storm events	18	13	7	2	4
Total precip. (inches)	3.09	9.87	8.07	3.45	11.87
Average acidity (pH)	4.12	4.49	4.45	4.51	4.46

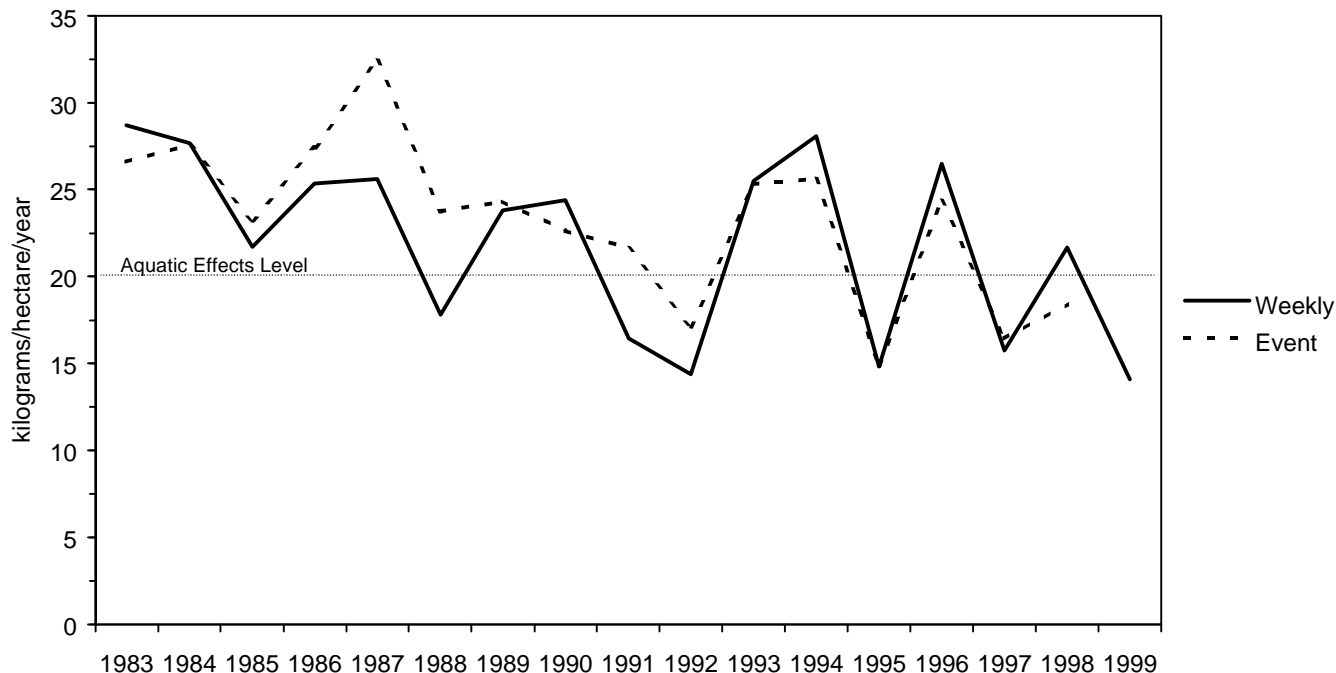
ACID PRECIPITATION EVENTS BY METEOROLOGICAL REGIME<sup>2</sup>

	Midwest	South Central	Coastal	Local	Combination
Number of storm events	16	9	5	3	11
Average inches of Precip. per storm	0.74	1.01	0.55	0.34	1.07
Total precip. (inches)	11.78	9.08	2.74	1.01	11.74
Average acidity (pH)	4.32	4.52	4.67	4.41	4.45

Notes: <sup>1</sup>Seasons correspond to the following months: Winter = January through March; Spring = April through June; Summer = July through September; Fall = October through December.

<sup>2</sup>Meteorological regimes refer to general storm type and the direction from which storms originate or pass over before reaching New Jersey. The "Combination" regime refers to those events that could not be clearly classified and are considered to fall into one or more of the other categories.

Figure 19. Trend in Sulfate Deposition in Precipitation at Washington Crossing State Park, New Jersey, 1983 - 1999: Annual Loading



This figure shows the change in the amount of sulfate ion deposited over the last seventeen years at the acid precipitation monitoring site in Washington Crossing State Park, New Jersey. The figure shows "wet deposition" only; that is, it does not include dry particulate sulfate that was deposited when no precipitation was occurring. Therefore, total deposition is higher than what is shown.

The factors controlling the trend are the sulfate concentration in air and cloud droplets, and the total amount of precipitation in a given year. For example, in 1991 and 1992, both the sulfate concentrations and the total precipitation were below normal, while these values rebounded in 1993 and 1994. Since the values shown here are annual totals, they are sensitive to exclusion or loss of samples due to contamination.

Sulfate can alter soil and water chemistry, and a deposition level of 20 kilograms per hectare per year has been generally accepted as the limit above which damage to sensitive natural resources is likely to occur. However, there are no national or New Jersey standards for sulfate deposition.

Sulfate deposition in rain and snow is expressed as mass per unit land area. To convert the values shown above to pounds per acre per year, multiply by 0.89 (since one kilogram equals 2.21 pounds and one hectare equals 2.47 acres; a hectare has an area equivalent to a square that is 100 meters on a side).

Figure 20. State of New Jersey  
Sulfates and Nitrates Monitoring Network, 1999

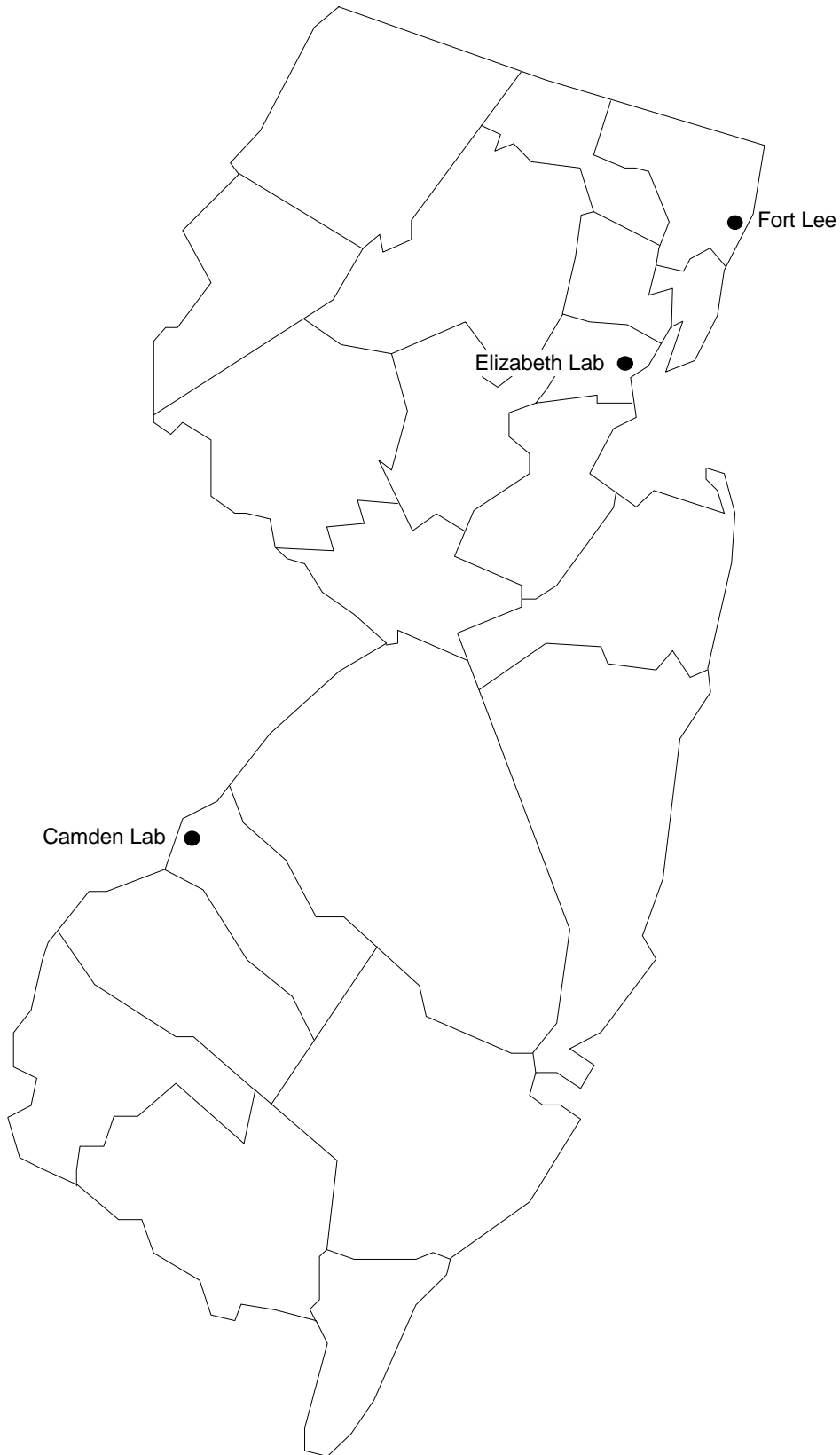


TABLE 17

AIR QUALITY IN NEW JERSEY COMPARED WITH AIR QUALITY STANDARDS - 1999  
 ACID DEPOSITION PARTICULATE MATTER  
 SULFATES AND NITRATES  
 ANNUAL STATISTICS  
 MICROGRAMS PER CUBIC METER  
 NO AMBIENT AIR QUALITY STANDARDS HAVE BEEN ESTABLISHED FOR SULFATES AND NITRATES

SAMPLING LOCATIONS	SITE #	N	PARTICULATES			SULFATES (SO4)			NITRATES (NO3)			SO4 & NO3 % OF PARTICULATES
			MEAN	MIN	MAX	MEAN	MIN	MAX	MEAN	MIN	MAX	
Camden Lab	IP02	59	19.1	6.1	45.5	4.02	0.30	12.45	0.40	0.01	2.65	23.1
Elizabeth Lab	IP28	58	32.7	9.4	86.6	4.99	1.23	16.97	0.75	0.08	3.46	17.6
Fort Lee	IP14	60	34.3	11.6	91.0	4.63	0.50	17.82	0.69	0.09	3.41	15.5

N - Number of samples

Min - Minimum

Max - Maximum

Figure 21. State of New Jersey  
Meteorological Monitoring Network, 1999

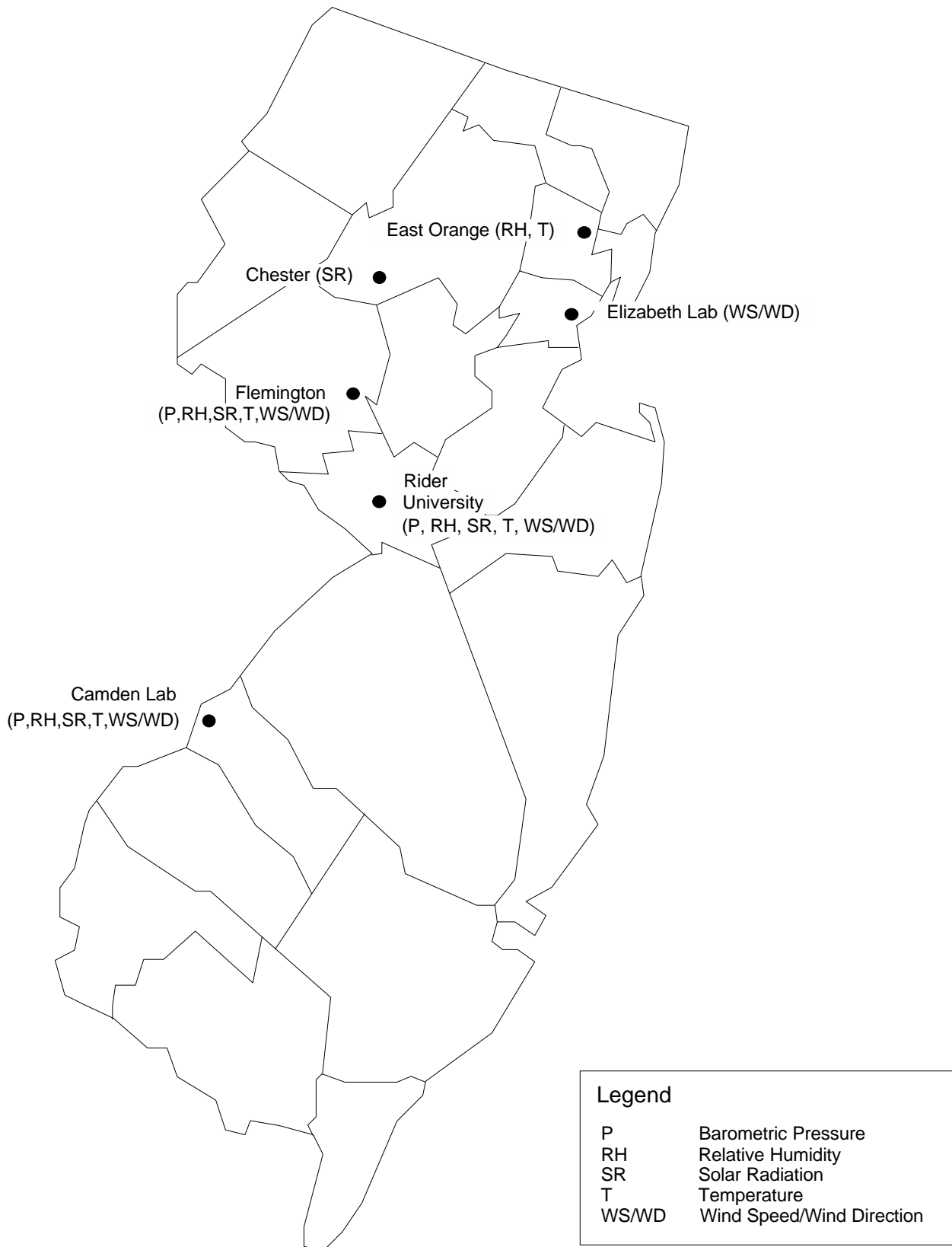


TABLE 18

SUMMARY OF METEOROLOGICAL MONITORING DATA - 1999  
NORTHERN NEW JERSEY

MONITORING SITES		JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	YEAR
<u>East Orange/Elizabeth Lab And Chester</u>														
Temperature: (°F)	Mean <sup>1</sup>	34/31	37/33	42/41	53/52	63/63	74/72	82/77	76/76	69/66	55/57	49/47	39/36	56/54
	Min	11	11	15	33	39	52	57	56	46	34	27	15	11
	Max	62	68	76	82	97	100	106	102	91	80	73	67	106
Mean Wind: (mph, deg)	Speed	3.3	3.0	4.2	3.4	2.6	2.9	2.8	2.8	2.7	2.6	3.3	3.1	3.1
	Direction	195	220	233	204	167	190	220	200	180	225	217	217	206
Relative Humidity: (%)	Mean	68	62	55	54	64	65	62	67	75	72	67	64	65
	Min	23	18	16	18	21	29	28	27	17	26	25	24	16
	Max	96	96	95	95	96	95	95	95	96	96	96	96	96
Solar Radiation: (Langleys)	Mean	0.1	0.1	0.2	0.3	0.3	0.3	0.4	0.3	0.2	0.2	0.1	0.1	0.2
	Max	0.8	1.0	1.3	1.5	1.5	1.3	1.5	1.5	1.3	1.1	0.9	0.7	1.5
<u>Flemington</u>														
Temperature: (°F)	Mean <sup>2</sup>	31/27	35/29	40/38	51/50	61/60	72/69	80/74	74/72	66/65	52/53	47/46	36/32	54/51
	Min	5	7	15	29	33	46	50	51	43	29	20	13	5
	Max	63	68	72	80	93	97	102	100	90	76	71	69	102
Mean Wind: (mph, deg)	Speed	3.4	2.9	4.9	3.4	2.0	2.4	2.8	2.3	2.3	2.4	3.5	3.1	3.0
	Direction	188	234	235	203	177	193	219	213	184	222	205	215	207
Relative Humidity: (%)	Mean	74	69	61	65	73	75	69	74	83	81	74	72	73
	Min	27	19	22	18	32	33	33	32	29	36	31	28	18
	Max	99	99	99	99	99	99	99	99	99	99	99	99	99
Solar Radiation: (Langleys)	Mean	0.1	0.2	0.3	0.3	0.3	0.4	0.4	0.3	0.2	0.2	0.1	0.1	0.2
	Max	0.9	1.1	1.2	1.5	1.4	1.4	1.4	1.3	1.3	1.1	0.9	0.8	1.5
Barometric Pressure (in of Hg)	Mean	30.28	30.16	30.07	30.05	30.13	30.18	30.08	30.07	30.13	30.20	30.20	30.20	30.15
	Min	29.60	29.31	29.20	29.58	29.53	29.70	29.70	29.79	29.20	29.60	29.50	29.70	29.20
	Max	31.00	30.80	30.70	30.41	30.50	30.56	30.40	30.40	30.50	30.60	30.60	30.60	31.00

1) Newark Airport 30-year mean shown to the right of the slash.

2) Allentown, PA 30-year mean shown to the right of the slash.



TABLE 19

SUMMARY OF METEOROLOGICAL MONITORING DATA - 1999  
CENTRAL AND SOUTHERN NEW JERSEY

MONITORING SITES		JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	YEAR
<u>Trenton (Rider University)</u>														
Temperature: (°F)	Mean <sup>3</sup>	33/31	36/33	41/42	52/53	61/63	71/72	79/77	74/75	66/68	53/57	49/46	38/36	54/54
	Min	7	12	17	33	36	50	53	54	46	32	24	15	7
	Max	64	69	72	79	88	94	99	96	84	74	72	68	99
Mean Wind: (mph, deg)	Speed	4.0	--	--	3.4	2.6	2.5	2.7	2.7	2.6	2.6	3.7	3.2	3.0
	Direction	214	--	--	216	194	191	230	206	196	240	222	232	214
Relative Humidity: (%)	Mean	78	72	64	66	74	77	71	76	84	83	75	74	75
	Min	34	26	19	19	33	39	28	32	40	37	31	34	19
	Max	99	99	99	99	99	99	99	99	99	99	99	99	99
Barometric Pressure: (in of Hg)	Mean	30.29	30.17	30.08	30.08	30.15	30.20	30.09	30.07	30.13	30.30	30.20	30.20	30.16
	Min	29.70	29.39	29.20	29.60	29.62	29.70	29.70	29.80	29.37	29.60	29.50	29.70	29.20
	Max	31.00	30.80	30.72	30.50	30.50	30.60	30.40	30.40	30.50	30.60	30.60	30.60	31.00
Solar Radiation (Langleys)	Mean	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.3	0.2	0.2	0.1	0.1	0.2
	Max	0.8	1.0	1.2	1.4	1.4	1.4	1.4	1.3	1.2	1.1	0.9	0.7	1.4
<hr/>														
<u>Camden Lab</u>														
Temperature: (°F)	Mean <sup>3</sup>	36/31	39/33	43/42	54/53	64/63	73/72	81/77	76/75	69/68	57/57	51/46	41/36	57/54
	Min	12	16	19	33	46	58	61	60	51	41	30	21	12
	Max	68	69	71	79	89	95	100	94	85	76	73	69	100
Mean Wind: (mph, deg)	Speed	4.8	4.4	6.2	4.7	3.9	3.9	3.8	3.6	3.0	1.6	2.2	2.2	3.7
	Direction	197	215	228	194	155	163	210	176	196	198	206	208	196
Relative Humidity: (%)	Mean	76	70	61	65	69	75	68	73	82	78	71	68	71
	Min	36	21	19	17	29	38	32	32	46	33	30	29	17
	Max	99	99	99	99	99	99	99	99	99	99	99	99	99
Barometric Pressure: (in of Hg)	Mean	30.43	30.32	30.24	30.25	30.32	30.38	30.28	30.26	30.30	30.40	30.40	30.40	30.33
	Min	29.74	29.50	29.40	29.70	29.79	29.90	29.90	30.00	29.31	29.80	29.70	29.90	29.40
	Max	31.20	31.00	30.90	30.60	30.70	30.70	30.60	30.60	30.70	30.80	30.80	30.80	31.20
Solar Radiation: (Langleys)	Mean	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.2
	Max	0.8	1.0	1.2	1.3	1.3	1.3	1.3	1.3	1.1	1.0	0.8	0.7	1.3

3) Philadelphia 30 year mean shown to the right of the slash.

APPENDIX A

ANNUAL AIR QUALITY COMPARISON

1975 - 1999

# SUMMARY OF 1975 AIR QUALITY IN NEW JERSEY

## Criteria Pollutants

### Ozone (O<sub>3</sub>)

\* No. of sites not in compliance with the 1-hour standard: 5

Bayonne (14)                      Somerville (10)  
Camden Lab (14)                  Asbury Park (8)  
Ancora S.H. (12)

\* No. of sites in compliance with the 1-hour standard: 0

### Carbon Monoxide (CO)

\* No. of sites not in compliance with the 8-hour standard: 16

Morristown (267)                  Somerville (19)  
Jersey City (172)                  Newark (16)  
Elizabeth (126)                    Camden Lab (14)  
Toms River (73)                    Paterson (12)  
Burlington (48)                    Paulsboro (7)  
Freehold (40)                      Asbury Park (3)  
Atlantic City (30)                  Camden Lab (2)  
Perth Amboy (30)                  Hackensack (2)

\* No. of sites in compliance with the 8-hour standard: 6

### Total Suspended Particulates (TSP)

\* No. of sites not in compliance with the 24-hour standard: 0<sup>a</sup> 5<sup>b</sup>

Carteret (8)                      Roselle (3)  
014 Jersey City (4)                  Middlesex (2)  
Hackensack (3)

\* No. of sites in compliance with the 24-hour standard: 64<sup>a</sup> 59<sup>b</sup>

\* No. of sites not in compliance with the annual standard: 2

Carteret  
014 Jersey City

\* No. of sites in compliance with the annual standard: 62

### Nitrogen Dioxide (NO<sub>2</sub>)

\* No. of sites not in compliance with the annual standard: 0

\* No. of sites in compliance with the annual standard: 4

### Lead (Pb)

\* No. of sites not in compliance with the quarterly standard: 0

\* No. of sites in compliance with the quarterly standard: 0

### Sulfur Dioxide (SO<sub>2</sub>)

\* No. of sites not in compliance with the 3-hour or 24-hour standard: 0

\* No. of sites in compliance with the 3-hour or 24-hour standard: 22

\* No. of sites not in compliance with the annual standard: 0

\* No. of sites in compliance with the annual standard: 22

a) In violation of a primary National Ambient Air Quality Standard (Health Standard)  
b) In violation of a secondary National Ambient Air Quality Standard (Welfare Standard)  
c) In violation of a New Jersey standard (if different)  
Number in parentheses ( ) indicates number of violations

# SUMMARY OF 1976 AIR QUALITY IN NEW JERSEY

## Criteria Pollutants

### Ozone (O<sub>3</sub>)

\* No. of sites not in compliance with the 1-hour standard: 6

Camden Lab (31)	Somerville (11)
Bayonne (25)	Asbury Park (10)
Ancora S.H. (15)	Trenton (6)

\* No. of sites in compliance with the 1-hour standard: 0

### Carbon Monoxide (CO)

\* No. of sites not in compliance with the 8-hour standard: 15

Jersey City (195)	Burlington (15)
Morristown (136)	Newark (12)
Elizabeth (100)	Paterson (11)
Toms River (73)	Camden Lab (7)
Perth Amboy (40)	Asbury Park (4)
Freehold (36)	Hackensack (4)
Atlantic City (24)	Elizabeth Lab (2)
Somerville (20)	

\* No. of sites in compliance with the 8-hour standard: 7

### Total Suspended Particulates (TSP)

\* No. of sites not in compliance with the 24-hour standard: 0<sup>a</sup> 7<sup>b</sup>

014 Jersey City (4)	Hoboken (2)
South Brunswick (3)	Jersey City (2)
Bayonne (2)	Roselle (2)
Carteret (2)	

\* No. of sites in compliance with the 24-hour standard: 73<sup>a</sup> 66<sup>b</sup>

\* No. of sites not in compliance with the annual standard: 1

014 Jersey City

\* No. of sites in compliance with the annual standard: 72

### Nitrogen Dioxide (NO<sub>2</sub>)

\* No. of sites not in compliance with the annual standard: 0

\* No. of sites in compliance with the annual standard: 5

### Lead (Pb)

\* No. of sites not in compliance with the quarterly standard: 0

\* No. of sites in compliance with the quarterly standard: 0

### Sulfur Dioxide (SO<sub>2</sub>)

\* No. of sites not in compliance with the 3-hour or 24-hour standard: 0

\* No. of sites in compliance with the 3-hour or 24-hour standard: 22

\* No. of sites not in compliance with the annual standard: 0

\* No. of sites in compliance with the annual standard: 22

a) In violation of a primary National Ambient Air Quality Standard (Health Standard)  
 b) In violation of a secondary National Ambient Air Quality Standard (Welfare Standard)  
 c) In violation of a New Jersey standard (if different)  
 Number in parentheses ( ) indicates number of violations

# SUMMARY OF 1977 AIR QUALITY IN NEW JERSEY

## Criteria Pollutants

### Ozone (O<sub>3</sub>)

\* No. of sites not in compliance with the 1-hour standard: 7

Sandy Hook (13)	Bayonne (6)
Somerville (13)	Chester (6)
Ancora S.H. (12)	Asbury Park (5)
Camden Lab (9)	

\* No. of sites in compliance with the 1-hour standard: 2

### Carbon Monoxide (CO)

\* No. of sites not in compliance with the 8-hour standard: 14

Morristown (102)	Paterson (7)
Elizabeth (78)	Perth Amboy (7)
Jersey City (72)	Newark (4)
Toms River (34)	Camden Lab (3)
Burlington (17)	Hackensack (3)
Freehold (12)	Asbury Park (2)
Somerville (9)	Atlantic City (2)

\* No. of sites in compliance with the 8-hour standard: 8

### Total Suspended Particulates (TSP)

\* No. of sites not in compliance with the 24-hour standard: 0<sup>a</sup> 2<sup>b</sup>

Camden (2)  
Sayreville (2)

\* No. of sites in compliance with the 24-hour standard: 85<sup>a</sup> 83<sup>b</sup>

\* No. of sites not in compliance with the annual standard: 2

014 Jersey City  
Camden

\* No. of sites in compliance with the annual standard: 83

### Nitrogen Dioxide (NO<sub>2</sub>)

\* No. of sites not in compliance with the annual standard: 0

\* No. of sites in compliance with the annual standard: 5

### Lead (Pb)

\* No. of sites not in compliance with the quarterly standard: 3

S57 Pedricktown (3)  
N08 Paterson (2)  
N04 Elizabeth (1)

\* No. of sites in compliance with the quarterly standard: 9

### Sulfur Dioxide (SO<sub>2</sub>)

\* No. of sites not in compliance with the 3-hour or 24-hour standard: 0

\* No. of sites in compliance with the 3-hour or 24-hour standard: 22

\* No. of sites not in compliance with the annual standard: 0

\* No. of sites in compliance with the annual standard: 22

- a) In violation of a primary National Ambient Air Quality Standard (Health Standard)  
 b) In violation of a secondary National Ambient Air Quality Standard (Welfare Standard)  
 c) In violation of a New Jersey standard (if different)  
 Number in parentheses ( ) indicates number of violations

# SUMMARY OF 1978 AIR QUALITY IN NEW JERSEY

## Criteria Pollutants

### Ozone (O<sub>3</sub>)

\* No. of sites not in compliance with the 1-hour standard: 8

Sandy Hook (21)	Ancora S.H. (7)
Camden Lab (13)	Trenton (6)
Bayonne (12)	Chester (5)
Bivalve (11)	Somerville (4)

\* No. of sites in compliance with the 1-hour standard: 0

### Carbon Monoxide (CO)

\* No. of sites not in compliance with the 8-hour standard: 11

Morristown (81)	Freehold (6)
Jersey City (36)	Paterson (6)
Elizabeth (35)	Paulsboro (3)
Toms River (29)	Somerville (3)
Atlantic City (10)	Hackensack (2)
Burlington (8)	

\* No. of sites in compliance with the 8-hour standard: 11

### Total Suspended Particulates (TSP)

\* No. of sites not in compliance with the 24-hour standard: 0<sup>a</sup> 11<sup>b</sup>

014 Jersey City (3)	015 Jersey City (2)
Newark (3)	Kean College (2)
Bayonne (2)	Perth Amboy (2)
Camden (2)	Sayreville (2)
Carteret (2)	Sewaren (2)
Hoboken (2)	

\* No. of sites in compliance with the 24-hour standard: 89<sup>a</sup> 78<sup>b</sup>

\* No. of sites not in compliance with the annual standard: 1

014 Jersey City

\* No. of sites in compliance with the annual standard: 88

### Nitrogen Dioxide (NO<sub>2</sub>)

\* No. of sites not in compliance with the annual standard: 0

\* No. of sites in compliance with the annual standard: 5

### Lead (Pb)

\* No. of sites not in compliance with the quarterly standard: 4

S57 Pedricktown (4)  
014 Jersey City (1)  
S41 Newark (1)  
S45 Trenton (1)

\* No. of sites in compliance with the quarterly standard: 6

### Sulfur Dioxide (SO<sub>2</sub>)

\* No. of sites not in compliance with the 3-hour or 24-hour standard: 0

\* No. of sites in compliance with the 3-hour or 24-hour standard: 22

\* No. of sites not in compliance with the annual standard: 0

\* No. of sites in compliance with the annual standard: 20

a) In violation of a primary National Ambient Air Quality Standard (Health Standard)  
b) In violation of a secondary National Ambient Air Quality Standard (Welfare Standard)  
c) In violation of a New Jersey standard (if different)  
Number in parentheses ( ) indicates number of violations

# SUMMARY OF 1979 AIR QUALITY IN NEW JERSEY

## Criteria Pollutants

### Ozone (O<sub>3</sub>)

\* No. of sites not in compliance with the 1-hour standard: 10

Sandy Hook (14)	Nacote Creek (4)
Camden Lab (8)	Somerville (4)
Bayonne (6)	Trenton (4)
Ancora S.H. (4)	Chester (3)
Asbury Park (4)	Vineland (3)

\* No. of sites in compliance with the 1-hour standard: 0

### Carbon Monoxide (CO)

\* No. of sites not in compliance with the 8-hour standard: 14

Morristown (81)	Perth Amboy (8)
Jersey City (34)	Hackensack (7)
Elizabeth (29)	Toms River (7)
Freehold (13)	Atlantic City (6)
Paterson (13)	Camden Lab (5)
Somerville (10)	Asbury Park (3)
Burlington (9)	Newark (3)

\* No. of sites in compliance with the 8-hour standard: 10

### Total Suspended Particulates (TSP)

\* No. of sites not in compliance with the 24-hour standard: 0<sup>a</sup> 8<sup>b</sup>

Bridgeton (4)	Sewaren (3)
Carteret (3)	West Orange (3)
023 Perth Amboy (3)	Bayonne (2)
N09 Perth Amboy (3)	Camden (2)

\* No. of sites in compliance with the 24-hour standard: 92<sup>a</sup> 84<sup>b</sup>

\* No. of sites not in compliance with the annual standard: 2

N08 Paterson  
023 Perth Amboy

\* No. of sites in compliance with the annual standard: 90

### Nitrogen Dioxide (NO<sub>2</sub>)

\* No. of sites not in compliance with the annual standard: 0

\* No. of sites in compliance with the annual standard: 5

### Lead (Pb)

\* No. of sites not in compliance with the quarterly standard: 3

S57 Pedricktown (4)  
S58 Pedricktown (1)  
S41 Newark (1)

\* No. of sites in compliance with the quarterly standard: 9

### Sulfur Dioxide (SO<sub>2</sub>)

\* No. of sites not in compliance with the 3-hour or 24-hour standard: 0

\* No. of sites in compliance with the 3-hour or 24-hour standard: 22

\* No. of sites not in compliance with the annual standard: 0

\* No. of sites in compliance with the annual standard: 22

- a) In violation of a primary National Ambient Air Quality Standard (Health Standard)  
 b) In violation of a secondary National Ambient Air Quality Standard (Welfare Standard)  
 c) In violation of a New Jersey standard (if different)  
 Number in parentheses ( ) indicates number of violations

# SUMMARY OF 1980 AIR QUALITY IN NEW JERSEY

## Criteria Pollutants

### Ozone (O<sub>3</sub>)

\* No. of sites not in compliance with the 1-hour standard: 16

McGuire AFB (23)	Plainfield (11)
Trenton (19)	Bayonne (8)
Camden Lab (16)	East Orange (7)
Dumont (13)	Nacote Creek (6)
Sandy Hook (13)	Ancora S.H. (5)
New Brunswick (12)	Newark (5)
Chester (11)	Cape May (3)
Flemington (11)	Somerville (2)

\* No. of sites in compliance with the 1-hour standard: 1

### Total Suspended Particulates (TSP)

\* No. of sites not in compliance with the 24-hour standard: 0<sup>a</sup> 5<sup>b</sup>

Jersey City - Newark Ave. (9)<sup>b</sup>  
 Bordentown (2)<sup>b</sup>  
 Fieldsboro (2)<sup>b</sup>  
 Camden - Riverview Towers (2)<sup>b</sup>  
 Jersey City - Collocated (2)<sup>b</sup>

\* No. of sites in compliance with the 24-hour standard: 96

\* No. of sites not in compliance with the annual standard: 4

Jersey City - Newark Ave.	Linden
Paterson - Broadway	Carteret

\* No. of sites in compliance with the annual standard: 81

### Lead (Pb)

\* No. of sites not in compliance with the quarterly standard: 1

S57 Pedricktown

\* No. of sites in compliance with the quarterly standard: 10

### Carbon Monoxide (CO)

\* No. of sites not in compliance with the 8-hour standard: 10

Morristown (40)	Paterson (4)
Jersey City (12)	Burlington (2)
Atlantic City (10)	Freehold (2)
Elizabeth (8)	Perth Amboy (2)
Hackensack (4)	Toms River (2)

\* No. of sites in compliance with the 8-hour standard: 12

### Nitrogen Dioxide (NO<sub>2</sub>)

\* No. of sites not in compliance with the annual standard: 0

\* No. of sites in compliance with the annual standard: 10

### Sulfur Dioxide (SO<sub>2</sub>)

\* No. of sites not in compliance with the 3-hour or 24-hour standard: 0

\* No. of sites in compliance with the 3-hour or 24-hour standard: 31

\* No. of sites not in compliance with the annual standard: 0

\* No. of sites in compliance with the annual standard: 27

a) In violation of a primary National Ambient Air Quality Standard (Health Standard)  
 b) In violation of a secondary National Ambient Air Quality Standard (Welfare Standard)  
 c) In violation of a New Jersey standard (if different)  
 Number in parentheses ( ) indicates number of violations



# SUMMARY OF 1981 AIR QUALITY IN NEW JERSEY

## Criteria Pollutants

### Ozone (O<sub>3</sub>)

\* No. of sites not in compliance with the 1-hour standard: 13

Nacote Creek (10)	Dumont (4)
Cape May (7)	Newark (4)
McGuire AFB (7)	Ancora S.H. (3)
Trenton (7)	Plainfield (3)
Camden Lab (6)	Chester (2)
Bayonne (5)	New Brunswick (2)
Flemington (5)	

\* No. of sites in compliance with the 1-hour standard: 2

### Carbon Monoxide (CO)

\* No. of sites not in compliance with the 8-hour standard: 4

Morristown (25)  
 Jersey City (5)  
 Camden Lab (2)  
 Freehold (2)

\* No. of sites in compliance with the 8-hour standard: 19

### Total Suspended Particulates (TSP)

\* No. of sites not in compliance with the 24-hour standard: 0<sup>a</sup> 4<sup>b</sup>

Newark - Doremus Ave. (8)<sup>b</sup>  
 Camden - Riverview Towers (4)<sup>b</sup>  
 Bayonne - Hudson Co. Park (2)<sup>b</sup>  
 Sewaren (2)<sup>b</sup>

\* No. of sites in compliance with the 24-hour standard: 93

\* No. of sites not in compliance with the annual standard: 0

\* No. of sites in compliance with the annual standard: 83

### Nitrogen Dioxide (NO<sub>2</sub>)

\* No. of sites not in compliance with the annual standard: 0

\* No. of sites in compliance with the annual standard: 11

### Lead (Pb)

\* No. of sites not in compliance with the quarterly standard: 1

Pedricktown (1)

\* No. of sites in compliance with the quarterly standard: 10

### Sulfur Dioxide (SO<sub>2</sub>)

\* No. of sites not in compliance with the 3-hour or 24-hour standard: 0

\* No. of sites in compliance with the 3-hour or 24-hour standard: 29

\* No. of sites not in compliance with the annual standard: 0

\* No. of sites in compliance with the annual standard: 25

a) In violation of a primary National Ambient Air Quality Standard (Health Standard)  
 b) In violation of a secondary National Ambient Air Quality Standard (Welfare Standard)  
 c) In violation of a New Jersey standard (if different)  
 Number in parentheses ( ) indicates number of violations

# SUMMARY OF 1982 AIR QUALITY IN NEW JERSEY

## Criteria Pollutants

### Ozone (O<sub>3</sub>)

\* No. of sites not in compliance with the 1-hour standard: 13

Trenton (10)	Plainfield (7)
Flemington (9)	Bayonne (5)
New Brunswick (9)	Camden Lab (4)
Chester (8)	Nacote Creek (4)
Clarksboro (8)	Newark (4)
Dumont (8)	East Orange (2)
McGuire AFB (7)	

\* No. of sites in compliance with the 1-hour standard: 3

### Carbon Monoxide (CO)

\* No. of sites not in compliance with the 8-hour standard: 6

Jersey City (15)  
Elizabeth (9)  
Morristown (9)  
Camden Lab (3)  
East Orange (3)  
Newark (3)

\* No. of sites in compliance with the 8-hour standard: 17

### Total Suspended Particulates (TSP)

\* No. of sites not in compliance with the 24-hour standard: 0<sup>a</sup> 3<sup>b</sup>

Jersey City - Liberty Park (3)<sup>b</sup>  
Newark - Boy's Club (3)<sup>b</sup>  
Newark - Military Park (2)<sup>b</sup>

\* No. of sites in compliance with the 24-hour standard: 88

\* No. of sites not in compliance with the annual standard: 0

\* No. of sites in compliance with the annual standard: 56

### Nitrogen Dioxide (NO<sub>2</sub>)

\* No. of sites not in compliance with the annual standard: 0

\* No. of sites in compliance with the annual standard: 10

### Lead (Pb)

\* No. of sites not in compliance with the quarterly standard: 0

\* No. of sites in compliance with the quarterly standard: 12

### Sulfur Dioxide (SO<sub>2</sub>)

\* No. of sites not in compliance with the 3-hour or 24-hour standard: 0

\* No. of sites in compliance with the 3-hour or 24-hour standard: 29

\* No. of sites not in compliance with the annual standard: 0

\* No. of sites in compliance with the annual standard: 29

a) In violation of a primary National Ambient Air Quality Standard (Health Standard)  
b) In violation of a secondary National Ambient Air Quality Standard (Welfare Standard)  
c) In violation of a New Jersey standard (if different)  
Number in parentheses ( ) indicates number of violations

# SUMMARY OF 1983 AIR QUALITY IN NEW JERSEY

## Criteria Pollutants

### Ozone (O<sub>3</sub>)

- \* No. of sites not in compliance with the 1-hour standard: 15

McGuire AFB (20)	Newark (13)
Camden Lab (19)	Chester (11)
Trenton (16)	Bayonne (10)
Clarksboro (15)	Flemington (9)
Nacote Creek (15)	Ancora S.H. (8)
Plainfield (15)	East Orange (7)
Cliffside Park (13)	Millville (6)
New Brunswick (13)	

- \* No. of sites in compliance with the 1-hour standard: 0

### Total Suspended Particulates (TSP)

- \* No. of sites not in compliance with the 24-hour standard: 0<sup>a</sup> 1<sup>b</sup>

Jersey City - Duncan Ave. (3)<sup>bc</sup>

- \* No. of sites in compliance with the 24-hour standard: 48

- \* No. of sites not in compliance with the annual standard: 1

Jersey City - Duncan Ave.<sup>c</sup>

- \* No. of sites in compliance with the annual standard: 48

### Lead (Pb)

- \* No. of sites not in compliance with the quarterly standard: 2

New Brunswick (1)  
S57 Pedricktown (1)

- \* No. of sites in compliance with the quarterly standard: 9

### Carbon Monoxide (CO)

- \* No. of sites not in compliance with the 8-hour standard: 4

Elizabeth (14)  
Jersey City (11)  
Morristown (10)  
Hackensack (3)

- \* No. of sites in compliance with the 8-hour standard: 12

### Nitrogen Dioxide (NO<sub>2</sub>)

- \* No. of sites not in compliance with the annual standard: 0

- \* No. of sites in compliance with the annual standard: 12

### Sulfur Dioxide (SO<sub>2</sub>)

- \* No. of sites not in compliance with the 3-hour or 24-hour standard: 0

- \* No. of sites in compliance with the 3-hour or 24-hour standard: 22

- \* No. of sites not in compliance with the annual standard: 0

- \* No. of sites in compliance with the annual standard: 22

a) In violation of a primary National Ambient Air Quality Standard (Health Standard)  
 b) In violation of a secondary National Ambient Air Quality Standard (Welfare Standard)  
 c) In violation of a New Jersey standard (if different)  
 Number in parentheses ( ) indicates number of violations

# SUMMARY OF 1984 AIR QUALITY IN NEW JERSEY

## Criteria Pollutants

### Ozone (O<sub>3</sub>)

- \* No. of sites not in compliance with the 1-hour standard: 13

McGuire AFB (11)	Trenton (5)
Camden Lab (10)	Ancora S.H. (4)
Nacote Creek (9)	Plainfield (4)
New Brunswick (8)	Cliffside Park (3)
Bayonne (6)	Flemington (2)
Clarksboro (6)	Millville (2)
Newark (6)	

- \* No. of sites in compliance with the 1-hour standard: 2

### Carbon Monoxide (CO)

- \* No. of sites not in compliance with the 8-hour standard: 7

Jersey City (43)  
 Elizabeth (16)  
 East Orange (6)  
 Hackensack (6)  
 Morristown (5)  
 Elizabeth (3)  
 Trenton (2)

- \* No. of sites in compliance with the 8-hour standard: 10

### Total Suspended Particulates (TSP)

- \* No. of sites not in compliance with the 24-hour standard: 1<sup>a</sup> 5<sup>b</sup>

Pennsauken (3)<sup>ab</sup>  
 Linden (4)<sup>bc</sup>  
 015 Jersey City (3)<sup>bd</sup>  
 044 Newark (2)<sup>b</sup>  
 060 Newark (2)<sup>b</sup>

- \* No. of sites in compliance with the 24-hour standard: 56<sup>a</sup> 52<sup>b</sup>

- \* No. of sites not in compliance with the annual standard: 1

015 Jersey City<sup>d</sup>

- \* No. of sites in compliance with the annual standard: 47

### Nitrogen Dioxide (NO<sub>2</sub>)

- \* No. of sites not in compliance with the annual standard: 0

- \* No. of sites in compliance with the annual standard: 10

### Lead (Pb)

- \* No. of sites not in compliance with the quarterly standard: 1

New Brunswick (1)

- \* No. of sites in compliance with the quarterly standard: 12

### Sulfur Dioxide (SO<sub>2</sub>)

- \* No. of sites not in compliance with the 3-hour or 24-hour standard: 0

- \* No. of sites in compliance with the 3-hour or 24-hour standard: 23

- \* No. of sites not in compliance with the annual standard: 0

- \* No. of sites in compliance with the annual standard: 21

a) In violation of a primary National Ambient Air Quality Standard (Health Standard)  
 b) In violation of a secondary National Ambient Air Quality Standard (Welfare Standard)  
 c) Construction activity in vicinity of sampler  
 d) Abnormal burning in vicinity of sampler  
 Number in parentheses ( ) indicates number of violations

# SUMMARY OF 1985 AIR QUALITY IN NEW JERSEY

## Criteria Pollutants

### Ozone (O<sub>3</sub>)

\* No. of sites not in compliance with the 1-hour standard: 13

Bayonne (11)	Nacote Creek (6)
Camden Lab (11)	Cliffside Park (5)
Ancora S.H. (10)	Clarksboro (4)
New Brunswick (10)	Newark (4)
Colliers Mills (9)	Plainfield (4)
McGuire AFB (8)	Flemington (3)
Rider College (8)	

\* No. of sites in compliance with the 1-hour standard: 2

### Carbon Monoxide (CO)

\* No. of sites not in compliance with the 8-hour standard: 3

Elizabeth (11)  
Jersey City (9)  
Morristown (2)

\* No. of sites in compliance with the 8-hour standard: 13

### Total Suspended Particulates (TSP)

\* No. of sites not in compliance with the 24-hour standard: 0<sup>a</sup> 8<sup>b</sup>

Linden (6) <sup>bc</sup>	Clifton (2) <sup>b</sup>
Newark-Ave.C (4) <sup>bd</sup>	Jersey City (2) <sup>be</sup>
New Brunswick (3) <sup>bd</sup>	Pennsauken (2) <sup>b</sup>
Sewaren (3) <sup>b</sup>	Perth Amboy (2) <sup>b</sup>

\* No. of sites in compliance with the 24-hour standard: 45<sup>a</sup> 37<sup>b</sup>

\* No. of sites not in compliance with the annual standard: 3

Jersey City (81.0 ug/m<sup>3</sup>)<sup>e</sup>  
Linden (81.2 ug/m<sup>3</sup>)<sup>c</sup>  
Newark-Ave.C (82.1 ug/m<sup>3</sup>)<sup>d</sup>

\* No. of sites in compliance with the annual standard: 37

### Nitrogen Dioxide (NO<sub>2</sub>)

\* No. of sites not in compliance with the annual standard: 0

\* No. of sites in compliance with the annual standard: 8

### Lead (Pb)

\* No. of sites not in compliance with the quarterly standard: 0

\* No. of sites in compliance with the quarterly standard: 15

### Sulfur Dioxide (SO<sub>2</sub>)

\* No. of sites not in compliance with the 3-hour or 24-hour standard: 0

\* No. of sites in compliance with the 3-hour or 24-hour standard: 22

\* No. of sites not in compliance with the annual standard: 0

\* No. of sites in compliance with the annual standard: 20

- a) In violation of a primary National Ambient Air Quality Standard (Health Standard)  
 b) In violation of a secondary National Ambient Air Quality Standard (Welfare Standard)  
 c) Construction activity in vicinity of sampler  
 d) Lead (Pb) monitoring site  
 e) Abnormal burning in vicinity of sampler  
 Number in parentheses ( ) indicates number of violations

# SUMMARY OF 1986 AIR QUALITY IN NEW JERSEY

## Criteria Pollutants

### Ozone (O<sub>3</sub>)

\* No. of sites not in compliance with the 1-hour standard: 11

Ancora S.H. (6)	Flemington (4)
Camden Lab (6)	McGuire AFB (4)
Chester (6)	Plainfield (4)
Rider College (5)	Bayonne (3)
Clarksboro (4)	New Brunswick (3)
Colliers Mills (4)	

\* No. of sites in compliance with the 1-hour standard: 3

### Carbon Monoxide (CO)

\* No. of sites not in compliance with the 8-hour standard: 5

Morristown (5)  
Elizabeth (4)  
Jersey City (4)  
Fort Lee (2)  
Hackensack (2)

\* No. of sites in compliance with the 8-hour standard: 12

### Total Suspended Particulates (TSP)

\* No. of sites not in compliance with the 24-hour standard: 1<sup>a</sup> 4<sup>b</sup>

Perth Amboy (8) <sup>abc</sup>	Newark (4) <sup>bc</sup>
New Brunswick (4) <sup>bc</sup>	Pennsauken (2) <sup>b</sup>

\* No. of sites in compliance with the 24-hour standard: 46<sup>a</sup> 43<sup>b</sup>

\* No. of sites not in compliance with the annual standard: 2

Newark (83.5 ug/m<sup>3</sup>)<sup>c</sup>  
Perth Amboy (77.5 ug/m<sup>3</sup>)<sup>c</sup>

\* No. of sites in compliance with the annual standard: 39

### Nitrogen Dioxide (NO<sub>2</sub>)

\* No. of sites not in compliance with the annual standard: 0

\* No. of sites in compliance with the annual standard: 8

### Lead (Pb)

\* No. of sites not in compliance with the quarterly standard: 1

USMR-Smelter Dock (2)

\* No. of sites in compliance with the quarterly standard: 29

### Sulfur Dioxide (SO<sub>2</sub>)

\* No. of sites not in compliance with the 3-hour or 24-hour standard: 0

\* No. of sites in compliance with the 3-hour or 24-hour standard: 18

\* No. of sites not in compliance with the 12-month standard: 0

\* No. of sites in compliance with the 12-month standard: 18

a) In violation of a primary National Ambient Air Quality Standard (Health Standard)  
b) In violation of a secondary National Ambient Air Quality Standard (Welfare Standard)  
c) Lead (Pb) monitoring site  
Number in parentheses ( ) indicates number of violations

# SUMMARY OF 1987 AIR QUALITY IN NEW JERSEY

## Criteria Pollutants

### Ozone (O<sub>3</sub>)

\* No. of sites not in compliance with the 1-hour standard: 14

Camden Lab (23)	Millville (7)
Rider College (16)	New Brunswick (6)
Plainfield (14)	McGuire AFB (5)
Bayonne (10)	Chester (4)
Clarksboro (10)	Flemington (4)
Ancora S.H. (9)	Nacote Creek (4)
Cliffside Park (9)	Newark (3)

\* No. of sites in compliance with the 1-hour standard: 0

### Carbon Monoxide (CO)

\* No. of sites not in compliance with the 8-hour standard: 0

\* No. of sites in compliance with the 8-hour standard: 15

### Total Suspended Particulates (TSP)

\* No. of sites not in compliance with the 24-hour standard: 0<sup>a</sup> 2<sup>b</sup>

Newark (5)<sup>c</sup>                      New Brunswick (2)<sup>c</sup>

\* No. of sites in compliance with the 24-hour standard: 28<sup>a</sup> 26<sup>b</sup>

\* No. of sites not in compliance with the 12-month standard: 2<sup>a</sup>

Newark (92.7 ug/m<sup>3</sup>)<sup>c</sup>  
Perth Amboy (77.0 ug/m<sup>3</sup>)<sup>c</sup>

\* No. of sites in compliance with the 12-month standard: 26

### Nitrogen Dioxide (NO<sub>2</sub>)

\* No. of sites not in compliance with the annual standard: 0

\* No. of sites in compliance with the annual standard: 8

### Lead (Pb)

\* No. of sites not in compliance with the 3-month standard: 0

\* No. of sites in compliance with the 3-month standard: 30

### Sulfur Dioxide (SO<sub>2</sub>)

\* No. of sites not in compliance with the 3-hour or 24-hour standard: 0

\* No. of sites in compliance with the 3-hour or 24-hour standard: 17

\* No. of sites not in compliance with the 12-month standard: 0

\* No. of sites in compliance with the 12-month standard: 17

a) In violation of a primary National Ambient Air Quality Standard (Health Standard)  
 b) In violation of a secondary National Ambient Air Quality Standard (Welfare Standard)  
 c) Lead (Pb) monitoring site  
 Number in parentheses ( ) indicates number of violations

# SUMMARY OF 1988 AIR QUALITY IN NEW JERSEY

## Criteria Pollutants

### Ozone (O<sub>3</sub>)

\* No. of sites not in compliance with the 1-hour standard: 14

Ancora S.H. (23)	Plainfield (15)
Camden Lab (20)	Bayonne (14)
Clarksboro (20)	Flemington (14)
Chester (18)	McGuire AFB (13)
Rider College (18)	Millville (11)
Cliffside Park (16)	Newark (8)
New Brunswick (15)	Nacote Creek (6)

\* No. of sites in compliance with the 1-hour standard: 0

### Carbon Monoxide (CO)

\* No. of sites not in compliance with the 8-hour standard: 1

Elizabeth (2)

\* No. of sites in compliance with the 8-hour standard: 14

### Total Suspended Particulates (TSP)

\* No. of sites not in compliance with the 24-hour standard: 0<sup>a</sup> 7<sup>b</sup>

060 Newark (8)	061 Atlantic City (2)
063 Perth Amboy (4)	014 Jersey City (2)
005 Carteret (3)	052 Union City (2)
044 Newark (3)	

\* No. of sites in compliance with the 24-hour standard: 28<sup>a</sup> 21<sup>b</sup>

\* No. of sites not in compliance with the 12-month standard: 1

060 Newark (96.4 ug/m<sup>3</sup>)<sup>c</sup>

\* No. of sites in compliance with the 12-month standard: 27

### Nitrogen Dioxide (NO<sub>2</sub>)

\* No. of sites not in compliance with the 12-month standard: 0

\* No. of sites in compliance with the 12-month standard: 9

### Lead (Pb)

\* No. of sites not in compliance with the 3-month standard: 0

\* No. of sites in compliance with the 3-month standard: 30

### Sulfur Dioxide (SO<sub>2</sub>)

\* No. of sites not in compliance with the 3-hour or 24-hour standard: 0

\* No. of sites in compliance with the 3-hour or 24-hour standard: 17

\* No. of sites not in compliance with the 12-month standard: 0

\* No. of sites in compliance with the 12-month standard: 17

- a) In violation of a primary National Ambient Air Quality Standard (Health Standard)  
 b) In violation of a secondary National Ambient Air Quality Standard (Welfare Standard)  
 c) Lead (Pb) monitoring site  
 Number in parentheses ( ) indicates number of violations



# SUMMARY OF 1989 AIR QUALITY IN NEW JERSEY

## Criteria Pollutants

### Ozone (O<sub>3</sub>)

- \* No. of sites not in compliance with the 1-hour standard: 9
  - Monmouth College (10)
  - Ancora S.H. (5)
  - McGuire AFB (4)
  - Camden Lab (3)
  - Clarksboro (3)
- Flemington (3)
- Rider College (3)
- Chester (2)
- Millville (2)
- \* No. of sites in compliance with the 1-hour standard: 6

### Carbon Monoxide (CO)

- \* No. of sites not in compliance with the 8-hour standard: 2
  - Camden Lab (2)
  - East Orange (2)
- \* No. of sites in compliance with the 8-hour standard: 13

### Total Suspended Particulates (TSP)

- \* No. of sites not in compliance with the 24-hour standard: 0<sup>a</sup> 1<sup>b</sup>
  - 060 Newark (4)
- \* No. of sites in compliance with the 24-hour standard: 15<sup>a</sup> 14<sup>b</sup>
- \* No. of sites not in compliance with the 12-month standard: 1
  - 060 Newark (80.0 ug/m<sup>3</sup>)<sup>c</sup>
- \* No. of sites in compliance with the 12-month standard: 14

### Nitrogen Dioxide (NO<sub>2</sub>)

- \* No. of sites not in compliance with the 12-month standard: 0
- \* No. of sites in compliance with the 12-month standard: 9

### Lead (Pb)

- \* No. of sites not in compliance with the 3-month standard: 0
- \* No. of sites in compliance with the 3-month standard: 16

### Sulfur Dioxide (SO<sub>2</sub>)

- \* No. of sites not in compliance with the 3-hour or 24-hour standard: 0
- \* No. of sites in compliance with the 3-hour or 24-hour standard: 17
- \* No. of sites not in compliance with the 12-month standard: 0
- \* No. of sites in compliance with the 12-month standard: 17

a) In violation of a primary National Ambient Air Quality Standard (Health Standard)  
 b) In violation of a secondary National Ambient Air Quality Standard (Welfare Standard)  
 c) Lead (Pb) monitoring site  
 Number in parentheses ( ) indicates number of violations

# SUMMARY OF 1990 AIR QUALITY IN NEW JERSEY

## Criteria Pollutants

### Ozone (O<sub>3</sub>)

\* No. of sites not in compliance with the 1-hour standard: 14

New Brunswick (7)	Clarksboro (4)
Flemington (6)	McGuire AFB (4)
Monmouth Coll. (6)	Chester (3)
Ancora S.H. (5)	Camden Lab (2)
Bayonne (5)	Cliffside Park (2)
Nacote Creek (5)	Millville (2)
Rider College (5)	Newark (2)

\* No. of sites in compliance with the 1-hour standard: 1

### Carbon Monoxide (CO)

\* No. of sites not in compliance with the 8-hour standard: 0

\* No. of sites in compliance with the 8-hour standard: 16

### Total Suspended Particulates (TSP)

\* No. of sites not in compliance with the 24-hour standard: 0<sup>a</sup> 1<sup>b</sup>

060 Newark (2)

\* No. of sites in compliance with the 24-hour standard: 15<sup>a</sup> 14<sup>b</sup>

\* No. of sites not in compliance with the 12-month standard: 1<sup>a</sup> 5<sup>b</sup>

060 Newark (80.2 ug/m<sup>3</sup>)<sup>c</sup>

\* No. of sites in compliance with the 12-month standard: 13<sup>a</sup> 9<sup>b</sup>

### Nitrogen Dioxide (NO<sub>2</sub>)

\* No. of sites not in compliance with the 12-month standard: 0

\* No. of sites in compliance with the 12-month standard: 9

### Lead (Pb)

\* No. of sites not in compliance with the 3-month standard: 0

\* No. of sites in compliance with the 3-month standard: 15

### Sulfur Dioxide (SO<sub>2</sub>)

\* No. of sites not in compliance with the 3-hour or 24-hour standard: 0

\* No. of sites in compliance with the 3-hour or 24-hour standard: 17

\* No. of sites not in compliance with the 12-month standard: 0

\* No. of sites in compliance with the 12-month standard: 17

a) In violation of a primary National Ambient Air Quality Standard (Health Standard)

b) In violation of a secondary National Ambient Air Quality Standard (Welfare Standard)

c) Lead (Pb) monitoring site

Number in parentheses ( ) indicates number of violations

# SUMMARY OF 1991 AIR QUALITY IN NEW JERSEY

## Criteria Pollutants

### Ozone (O<sub>3</sub>)

- \* No. of sites not in compliance with the 1-hour standard: 11

Rider College (16) Bayonne (5)  
Clarksboro (12) Chester (5)  
McGuire AFB (10) New Brunswick (3)  
Camden Lab (6) Cliffside Park (2)  
Monmouth Coll. (6) Nacote Creek (2)  
Ancora S.H. (5)

- \* No. of sites in compliance with the 1-hour standard: 4

### Carbon Monoxide (CO)

- \* No. of sites not in compliance with the 8-hour standard: 1

Elizabeth (2)

- \* No. of sites in compliance with the 8-hour standard: 16

### Total Suspended Particulates (TSP)

- \* No. of sites not in compliance with the 24-hour standard: 0<sup>a</sup> 2<sup>b</sup>

057 New Brunswick (3)  
068 New Brunswick (7)

- \* No. of sites in compliance with the 24-hour standard: 14<sup>a</sup> 12<sup>b</sup>

- \* No. of sites not in compliance with the 12-month standard: 0<sup>a</sup> 3<sup>b</sup>

060 Newark (73.5 ug/m<sup>3</sup>)<sup>c</sup>  
069 Newark (72.0 ug/m<sup>3</sup>)<sup>c</sup>  
068 New Brunswick (67.3 ug/m<sup>3</sup>)<sup>c</sup>

- \* No. of sites in compliance with the 12-month standard: 14<sup>a</sup> 11<sup>b</sup>

### Lead (Pb)

- \* No. of sites not in compliance with the 3-month standard: 0

- \* No. of sites in compliance with the 3-month standard: 19

### Nitrogen Dioxide (NO<sub>2</sub>)

- \* No. of sites not in compliance with the 12-month standard: 0

- \* No. of sites in compliance with the 12-month standard: 8

### Sulfur Dioxide (SO<sub>2</sub>)

- \* No. of sites not in compliance with the 3-hour or 24-hour standard: 0

- \* No. of sites in compliance with the 3-hour or 24-hour standard: 17

- \* No. of sites not in compliance with the 12-month standard: 0

- \* No. of sites in compliance with the 12-month standard: 17

a) In violation of a primary National Ambient Air Quality Standard (Health Standard)  
b) In violation of a secondary National Ambient Air Quality Standard (Welfare Standard)  
c) Lead (Pb) monitoring site  
Number in parentheses ( ) indicates number of violations

# SUMMARY OF 1992 AIR QUALITY IN NEW JERSEY

## Criteria Pollutants

### Ozone (O<sub>3</sub>)

- \* No. of sites not in compliance with the 1-hour standard: 6

Rider College (4)  
Clarksboro (2)  
Colliers Mills (2)  
Monmouth College (2)  
New Brunswick (2)  
Plainfield (2)

- \* No. of sites in compliance with the 1-hour standard: 9

### Carbon Monoxide (CO)

- \* No. of sites not in compliance with the 8-hour standard: 1

North Bergen (2)

- \* No. of sites in compliance with the 8-hour standard: 15

### Total Suspended Particulates (TSP)

- \* No. of sites not in compliance with the 24-hour standard: 0<sup>a</sup> 1<sup>b</sup>

- \* No. of sites in compliance with the 24-hour standard: 12<sup>a</sup> 11<sup>b</sup>

- \* No. of sites not in compliance with the 12-month standard: 0<sup>a</sup> 3<sup>b</sup>

060 Newark (73.5 ug/m<sup>3</sup>)<sup>c</sup>  
069 Newark (72.0 ug/m<sup>3</sup>)<sup>c</sup>  
068 New Brunswick (66.0 ug/m<sup>3</sup>)<sup>c</sup>

- \* No. of sites in compliance with the 12-month standard: 11<sup>a</sup> 8<sup>b</sup>

### Nitrogen Dioxide (NO<sub>2</sub>)

- \* No. of sites not in compliance with the 12-month standard: 0

- \* No. of sites in compliance with the 12-month standard: 8

### Lead (Pb)

- \* No. of sites not in compliance with the 3-month standard: 3

057 New Brunswick  
068 New Brunswick  
1DR New Brunswick

- \* No. of sites in compliance with the 3-month standard: 8

### Sulfur Dioxide (SO<sub>2</sub>)

- \* No. of sites not in compliance with the 3-hour or 24-hour standard: 0

- \* No. of sites in compliance with the 3-hour or 24-hour standard: 16

- \* No. of sites not in compliance with the 12-month standard: 0

- \* No. of sites in compliance with the 12-month standard: 16

- a) In violation of a primary National Ambient Air Quality Standard (Health Standard)  
b) In violation of a secondary National Ambient Air Quality Standard (Welfare Standard)  
c) Lead (Pb) monitoring site  
Number in parentheses ( ) indicates number of violations

# SUMMARY OF 1993 AIR QUALITY IN NEW JERSEY

## Criteria Pollutants

### Ozone (O<sub>3</sub>)

- \* No. of sites not in compliance with the 1-hour standard: 5

Ancora S.H. (9)  
Monmouth College (5)  
Bayonne (3)  
Clarksboro (3)  
Rider University (3)

- \* No. of sites in compliance with the 1-hour standard: 10

### Carbon Monoxide (CO)

- \* No. of sites not in compliance with the 8-hour standard: 0

- \* No. of sites in compliance with the 8-hour standard: 16

### Total Suspended Particulates (TSP)

- \* No. of sites not in compliance with the 24-hour standard: 0<sup>a</sup> 0<sup>b</sup>

- \* No. of sites in compliance with the 24-hour standard: 13<sup>a</sup> 13<sup>b</sup>

- \* No. of sites not in compliance with the 12-month standard: 0<sup>a</sup> 2<sup>b</sup>

060 Newark (61.1 ug/m<sup>3</sup>)<sup>c</sup>  
069 Newark (60.5 ug/m<sup>3</sup>)<sup>c</sup>

- \* No. of sites in compliance with the 12-month standard: 13<sup>a</sup> 11<sup>b</sup>

### Nitrogen Dioxide (NO<sub>2</sub>)

- \* No. of sites not in compliance with the 12-month standard: 0

- \* No. of sites in compliance with the 12-month standard: 8

### Lead (Pb)

- \* No. of sites not in compliance with the 3-month standard: 0

- \* No. of sites in compliance with the 3-month standard: 12

### Sulfur Dioxide (SO<sub>2</sub>)

- \* No. of sites not in compliance with the 3-hour or 24-hour standard: 0

- \* No. of sites in compliance with the 3-hour or 24-hour standard: 16

- \* No. of sites not in compliance with the 12-month standard: 0

- \* No. of sites in compliance with the 12-month standard: 16

- a) In violation of a primary National Ambient Air Quality Standard (Health Standard)  
b) In violation of a secondary National Ambient Air Quality Standard (Welfare Standard)  
c) Lead (Pb) monitoring site  
Number in parentheses ( ) indicates number of violations

# SUMMARY OF 1994 AIR QUALITY IN NEW JERSEY

## Criteria Pollutants

### Ozone (O<sub>3</sub>)

\* No. of sites not in compliance with the 1-hour standard: 3

New Brunswick (4)  
Rider University (4)  
Plainfield (2)

\* No. of sites in compliance with the 1-hour standard: 12

### Carbon Monoxide (CO)

\* No. of sites not in compliance with the 8-hour standard: 3

North Bergen (4)  
East Orange (3)  
Elizabeth (2)

\* No. of sites in compliance with the 8-hour standard: 13

### Total Suspended Particulates (TSP)

\* No. of sites not in compliance with the 24-hour standard: 0<sup>a</sup> 2<sup>b</sup>

057 New Brunswick (3)  
068 New Brunswick (3)

\* No. of sites in compliance with the 24-hour standard: 13<sup>a</sup> 11<sup>b</sup>

\* No. of sites not in compliance with the 12-month standard: 0<sup>a</sup> 2<sup>b</sup>

060 Newark (71.0 ug/m<sup>3</sup>)<sup>c</sup>  
069 Newark (69.1 ug/m<sup>3</sup>)<sup>c</sup>

\* No. of sites in compliance with the 12-month standard: 13<sup>a</sup> 11<sup>b</sup>

### Nitrogen Dioxide (NO<sub>2</sub>)

\* No. of sites not in compliance with the 12-month standard: 0

\* No. of sites in compliance with the 12-month standard: 9

### Lead (Pb)

\* No. of sites not in compliance with the 3-month standard: 0

\* No. of sites in compliance with the 3-month standard: 12

### Sulfur Dioxide (SO<sub>2</sub>)

\* No. of sites not in compliance with the 3-hour or 24-hour standard: 0

\* No. of sites in compliance with the 3-hour or 24-hour standard: 16

\* No. of sites not in compliance with the 12-month standard: 0

\* No. of sites in compliance with the 12-month standard: 16

- a) In violation of a primary National Ambient Air Quality Standard (Health Standard)  
b) In violation of a secondary National Ambient Air Quality Standard (Welfare Standard)  
c) Lead (Pb) monitoring site  
Number in parentheses ( ) indicates number of violations

# SUMMARY OF 1995 AIR QUALITY IN NEW JERSEY

## Criteria Pollutants

### Ozone (O<sub>3</sub>)

\* No. of sites not in compliance with the 1-hour standard: 11

Colliers Mills (6) Camden (3)  
Monmouth Univ. (5) Ancora S.H. (2)  
New Brunswick (5) Bayonne (2)  
Rider Univ. (5) Chester (2)  
Rutgers Univ. (5) Millville (2)  
Clarksboro (4)

\* No. of sites in compliance with the 1-hour standard: 5

### Carbon Monoxide (CO)

\* No. of sites not in compliance with the 8-hour standard: 0

\* No. of sites in compliance with the 8-hour standard: 16

### Total Suspended Particulates (TSP)

\* No. of sites not in compliance with the 24-hour standard: 2<sup>a</sup> 2<sup>b</sup>

057 New Brunswick<sup>c</sup> (2)<sup>a</sup> (8)<sup>b</sup>  
068 New Brunswick<sup>c</sup> (5)<sup>a</sup> (12)<sup>b</sup>

\* No. of sites in compliance with the 24-hour standard: 11<sup>a</sup> 11<sup>b</sup>

\* No. of sites not in compliance with the 12-month standard: 0<sup>a</sup> 2<sup>b</sup>

060 Newark (69.1 ug/m<sup>3</sup>)<sup>c</sup>  
069 Newark (68.9 ug/m<sup>3</sup>)<sup>c</sup>

\* No. of sites in compliance with the 12-month standard: 13<sup>a</sup> 11<sup>b</sup>

### Nitrogen Dioxide (NO<sub>2</sub>)

\* No. of sites not in compliance with the 12-month standard: 0

\* No. of sites in compliance with the 12-month standard: 10

### Lead (Pb)

\* No. of sites not in compliance with the 3-month standard: 0

\* No. of sites in compliance with the 3-month standard: 12

### Sulfur Dioxide (SO<sub>2</sub>)

\* No. of sites not in compliance with the 3-hour or 24-hour standard: 0

\* No. of sites in compliance with the 3-hour or 24-hour standard: 16

\* No. of sites not in compliance with the 12-month standard: 0

\* No. of sites in compliance with the 12-month standard: 16

- a) In violation of a primary National Ambient Air Quality Standard (Health Standard)  
b) In violation of a secondary National Ambient Air Quality Standard (Welfare Standard)  
c) Lead (Pb) monitoring site  
Number in parentheses ( ) indicates number of violations

# SUMMARY OF 1996 AIR QUALITY IN NEW JERSEY

## Criteria Pollutants

### Ozone (O<sub>3</sub>)

- \* No. of sites not in compliance with the 1-hour standard: 1  
  
Camden (2)
- \* No. of sites in compliance with the 1-hour standard: 14

### Carbon Monoxide (CO)

- \* No. of sites not in compliance with the 8-hour standard: 0
- \* No. of sites in compliance with the 8-hour standard: 16

### Total Suspended Particulates (TSP)

- \* No. of sites not in compliance with the 24-hour standard: 0<sup>a</sup> 2<sup>b</sup>  
  
057 New Brunswick (2)<sup>c</sup>  
068 New Brunswick<sup>c</sup> (2)<sup>c</sup>
- \* No. of sites in compliance with the 24-hour standard: 14<sup>a</sup> 12<sup>b</sup>
- \* No. of sites not in compliance with the 12-month standard: 0<sup>a</sup> 2<sup>b</sup>  
  
060 Newark (67.8 ug/m<sup>3</sup>)<sup>c</sup>  
069 Newark (68.1 ug/m<sup>3</sup>)<sup>c</sup>
- \* No. of sites in compliance with the 12-month standard: 13<sup>a</sup> 11<sup>b</sup>

### Nitrogen Dioxide (NO<sub>2</sub>)

- \* No. of sites not in compliance with the 12-month standard: 0
- \* No. of sites in compliance with the 12-month standard: 11

### Lead (Pb)

- \* No. of sites not in compliance with the 3-month standard: 0
- \* No. of sites in compliance with the 3-month standard: 13

### Sulfur Dioxide (SO<sub>2</sub>)

- \* No. of sites not in compliance with the 3-hour or 24-hour standard: 0
- \* No. of sites in compliance with the 3-hour or 24-hour standard: 16
- \* No. of sites not in compliance with the 12-month standard: 0
- \* No. of sites in compliance with the 12-month standard: 16

- a) In violation of a primary National Ambient Air Quality Standard (Health Standard)
- b) In violation of a secondary National Ambient Air Quality Standard (Welfare Standard)
- c) Lead (Pb) monitoring site  
Number in parentheses ( ) indicates number of violations



# SUMMARY OF 1997 AIR QUALITY IN NEW JERSEY

## Criteria Pollutants

### Ozone (O<sub>3</sub>)

\* No. of sites not in compliance with the 1-hour standard: 7

Ancora S.H. (4)      Nacote Creek (3)  
 Colliers Mills (4)      Monmouth Univ. (2)  
 Rutgers Univ. (4)      Rider Univ. (2)  
 Clarksboro (3)

\* No. of sites in compliance with the 1-hour standard: 8

### Carbon Monoxide (CO)

\* No. of sites not in compliance with the 8-hour standard: 0

\* No. of sites in compliance with the 8-hour standard: 17

### Total Suspended Particulates (TSP)

\* No. of sites not in compliance with the 24-hour standard: 0<sup>a</sup> 2<sup>b</sup>

057 New Brunswick (2)<sup>c</sup>  
 068 New Brunswick (5)<sup>c</sup>

\* No. of sites in compliance with the 24-hour standard: 5<sup>a</sup> 3<sup>b</sup>

\* No. of sites not in compliance with the annual TSP standard: 0<sup>a</sup> 0<sup>b</sup>

\* No. of sites in compliance with the 12-month standard: 5<sup>a</sup> 5<sup>b</sup>

### Nitrogen Dioxide (NO<sub>2</sub>)

\* No. of sites not in compliance with the 12-month standard: 0

\* No. of sites in compliance with the 12-month standard: 11

### Lead (Pb)

\* No. of sites not in compliance with the 3-month standard: 0

\* No. of sites in compliance with the 3-month standard: 6

### Sulfur Dioxide (SO<sub>2</sub>)

\* No. of sites not in compliance with the 3-hour or 24-hour standard: 0

\* No. of sites in compliance with the 3-hour or 24-hour standard: 16

\* No. of sites not in compliance with the 12-month standard: 0

\* No. of sites in compliance with the 12-month standard: 16

- a) In violation of a primary National Ambient Air Quality Standard (Health Standard)
- b) In violation of a secondary National Ambient Air Quality Standard (Welfare Standard)
- c) Lead (Pb) monitoring site  
 Number in parentheses ( ) indicates number of violations

# SUMMARY OF 1998 AIR QUALITY IN NEW JERSEY

## Criteria Pollutants

### Ozone (O<sub>3</sub>)

- \* No. of sites not in compliance with the 1-hour standard: 2  
  
Colliers Mills (3) Monmouth Univ. (2)
- \* No. of sites in compliance with the 1-hour standard: 12

### Carbon Monoxide (CO)

- \* No. of sites not in compliance with the 8-hour standard: 0
- \* No. of sites in compliance with the 8-hour standard: 16

### Total Suspended Particulates (TSP)

- \* No. of sites not in compliance with the 24-hour standard: 0<sup>a</sup> 0<sup>b</sup>
- \* No. of sites in compliance with the 24-hour standard: 3<sup>a</sup> 3<sup>b</sup>
- \* No. of sites not in compliance with the annual TSP standard: 0<sup>a</sup> 0<sup>b</sup>
- \* No. of sites in compliance with the 12-month standard: 3<sup>a</sup> 3<sup>b</sup>

### Nitrogen Dioxide (NO<sub>2</sub>)

- \* No. of sites not in compliance with the 12-month standard: 0
- \* No. of sites in compliance with the 12-month standard: 11

### Lead (Pb)

- \* No. of sites not in compliance with the 3-month standard: 0
- \* No. of sites in compliance with the 3-month standard: 3

### Sulfur Dioxide (SO<sub>2</sub>)

- \* No. of sites not in compliance with the 3-hour or 24-hour standard: 0
- \* No. of sites in compliance with the 3-hour or 24-hour standard: 15
- \* No. of sites not in compliance with the 12-month standard: 0
- \* No. of sites in compliance with the 12-month standard: 15

- a) In violation of a primary National Ambient Air Quality Standard (Health Standard)
  - b) In violation of a secondary National Ambient Air Quality Standard (Welfare Standard)
- Number in parentheses ( ) indicates number of violations

# SUMMARY OF 1999 AIR QUALITY IN NEW JERSEY

## Criteria Pollutants

### Ozone (O<sub>3</sub>)

\* No. of sites not in compliance with the 1-hour standard: 9

Ancora S.H. (2)      Flemington (2)  
Bayonne (5)      Ramapo (2)  
Camden (2)      Rider Univ. (6)  
Clarksboro (2)      Rutgers Univ. (4)  
Colliers Mills (3)

\* No. of sites in compliance with the 1-hour standard: 5

### Carbon Monoxide (CO)

\* No. of sites not in compliance with the 8-hour standard: 0

\* No. of sites in compliance with the 8-hour standard: 15

### Inhalable Particulates (IP)

\* No. of sites not in compliance with the 24-hour standard: 0

\* No. of sites in compliance with the 24-hour standard: 11

\* No. of sites not in compliance with the annual IP standard: 0

\* No. of sites in compliance with the 12-month standard: 10

### Nitrogen Dioxide (NO<sub>2</sub>)

\* No. of sites not in compliance with the 12-month standard: 0

\* No. of sites in compliance with the 12-month standard: 10

### Lead (Pb)

\* No. of sites not in compliance with the 3-month standard: 0

\* No. of sites in compliance with the 3-month standard: 3

### Sulfur Dioxide (SO<sub>2</sub>)

\* No. of sites not in compliance with the 3-hour or 24-hour standard: 0

\* No. of sites in compliance with the 3-hour or 24-hour standard: 15

\* No. of sites not in compliance with the 12-month standard: 0

\* No. of sites in compliance with the 12-month standard: 15

Number in parentheses ( ) indicates number of violations

APPENDIX B  
NEW JERSEY AIR QUALITY  
NON-ATTAINMENT AREAS

NEW JERSEY AIR QUALITY NON-ATTAINMENT AREAS

Sulfur Dioxide<sup>a</sup>

Warren County:

The Town of Belvidere  
The Township of Harmony  
Portion of Liberty Township (South of UTM coordinates N4522  
and West of coordinate E505)  
Portion of Mansfield Township (West of coordinate E505)  
The Township of Oxford  
The Township of White

Carbon Monoxide<sup>b</sup>

Bergen County  
Essex County  
Hudson County  
Union County

Passaic County:

The City of Clifton  
The City of Paterson  
The City of Passaic

Nitrogen Dioxide

No areas in the State are designated as non-attainment

Lead

No areas in the State are designated as non-attainment

PM-10

No areas in the State are designated as non-attainment

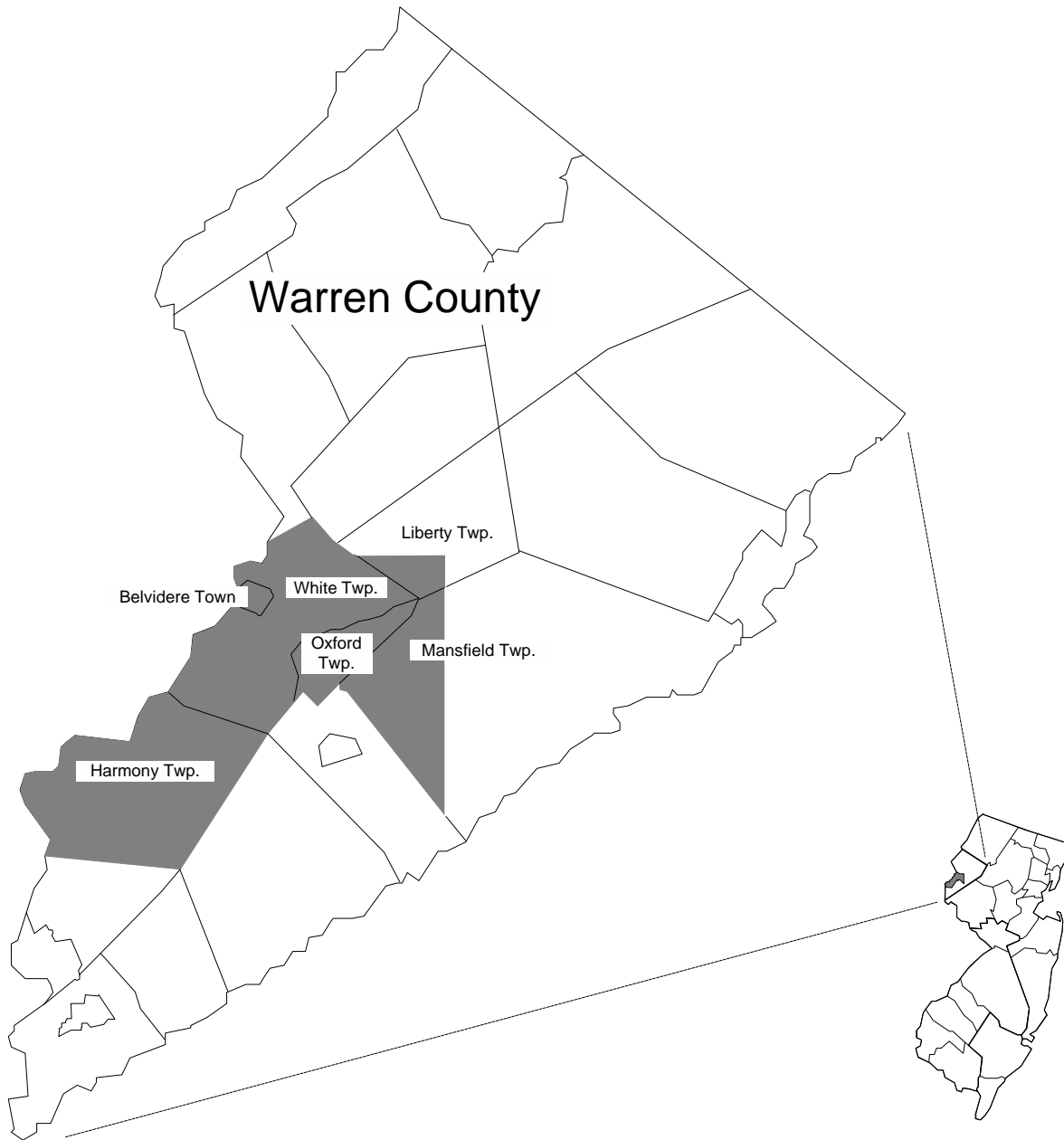
Ozone<sup>b</sup>

The entire State of New Jersey

a) Non-attainment of National Primary (Health) and Secondary (Welfare) Standards

b) Non-attainment of National Primary (Health) Standard

# Sulfur Dioxide Non-Attainment Areas\* in New Jersey

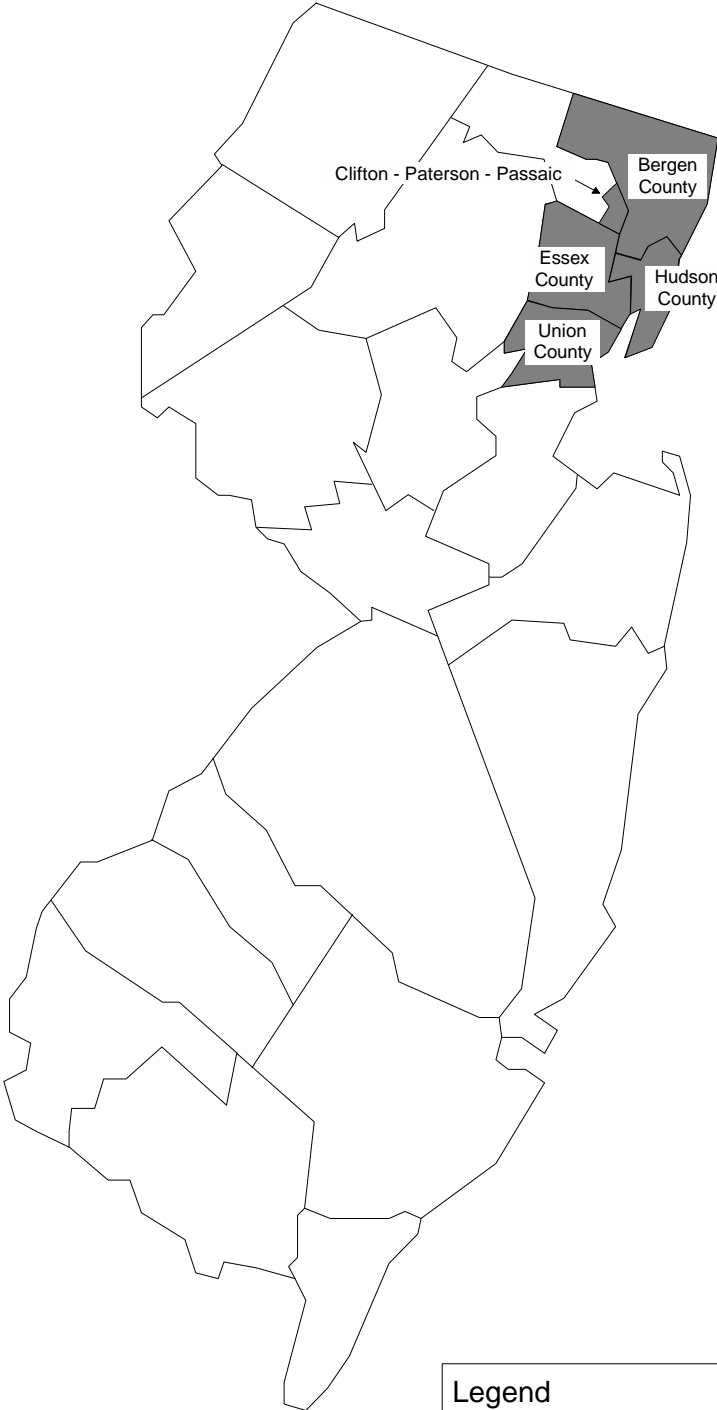


## Legend

- Sulfur Dioxide Nonattainment Area  
(includes Belvidere Town; Harmony Township; Oxford Township; White Township; the portion of Liberty Township south of UTM northing 4,255,000 and west of UTM easting 505,000; and the portion of Mansfield Township west of UTM easting 505,000).

\*Nonattainment of the National Primary (Health) and Secondary (Welfare) Standards

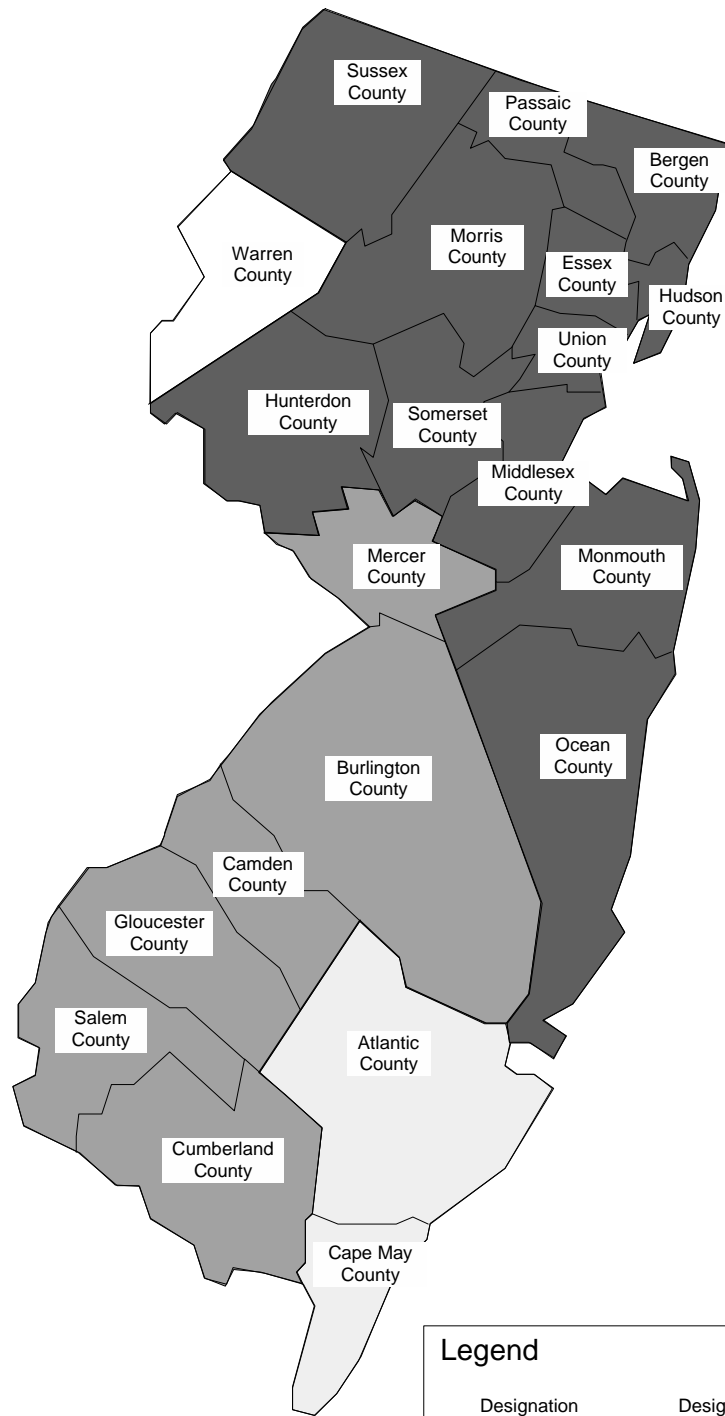
# Carbon Monoxide Non-Attainment Areas\* in New Jersey







Designation	Design Value	Attainment Date
Moderate 2	12.8 - 16.4 ppm	Dec. 31, 1995

\*Nonattainment of the National Primary (Health) Standard

# Ozone Non-Attainment Areas\* in New Jersey



Legend		
Designation	Design Value	Attainment Date
	Marginal .121 - .137 ppm	Nov. 15, 1993
	Moderate .138 - .159 ppm	Nov. 15, 1996
	Severe 1 .180 - .190 ppm	Nov. 15, 2005
	Severe 2 .191 - .279 ppm	Nov. 15, 2007

\*Nonattainment of the National Primary (Health) Standard



Appendix C  
Corrected 1998 Tables for  
Inhalable Particulates, Lead, Sulfates  
and Nitrates

(CORRECTED FOR STANDARD CONDITIONS)  
 TABLE 8  
 AIR QUALITY IN NEW JERSEY  
 COMPARED WITH AIR QUALITY STANDARDS -- 1998  
 INHALABLE PARTICULATES (PM-10)  
 AT STANDARD PRESSURE AND TEMPERATURE CONDITIONS  
 ANNUAL STATISTICS  
 MICROGRAMS PER CUBIC METER (ug/m<sup>3</sup>)

NATIONAL AMBIENT AIR QUALITY STANDARDS FOR INHALABLE PARTICULATES:  
 ANNUAL ARITHMETIC MEAN PRIMARY & SECONDARY STANDARD: 50 ug/m<sup>3</sup>  
 24-HOUR AVERAGE PRIMARY & SECONDARY STANDARD: 150 ug/m<sup>3</sup>

SITE CODES: N = NAMS, S = SLAMS, PM = SPECIAL PURPOSE MONITORING  
 \*\*\*\* = INSUFFICIENT DATA FOR VALID ANNUAL ARITHMETIC MEAN

Monitoring Site	Sampler No.	Site Code	# of Samples	Annual Arith. Mean	24-Hour Maximum	Average 2 <sup>nd</sup> Highest
Atlantic City	IP36	S	58	25.2	54	54
Camden Lab	IP02	N	60	22.7	55	51
Camden RRF #1	IP33	SPM	60	35.0	74	73
Camden RRF #2	IP34	SPM	58	31.3	70	65
Camden Rutgers	IP32	N	61	22.9	59	54
Clifton	IP13	N	45	27.3	63	61
Elizabeth Lab	IP28	S	51	31.2	86	60
Fort Lee	IP14	N	31	****	234	73
Fort Lee Library	IP15	N	31	****	51	43
Jersey City-Newark Ave.	IP09	N	57	26.9	63	63
Jersey City-Duncan Ave.	IP12	S	59	18.7	49	44
Jersey City-Duncan Ave.	IP22	SPM	57	15.5	38	36
Linden	IP18	S	57	20.0	53	48
Newark-Police Booth	IP31	S	33	****	74	73
Newark	IP29	S	58	31.7	75	72
North Bergen	IP35	S	57	38.1	76	73
Pennsauken-WTP	IP10	S	61	25.4	63	57
Phillipsburg	IP30	S	35	****	66	56
Ramapo	IP37	S	24	****	47	45
Ringwood S.P.	IP05	S	21	****	34	28
Trenton	IP06	S	56	23.7	57	54
Westville	IP27	S	60	17.1	50	46

CONTINUOUS MONITORING METHODOLOGY  
 TAPERED ELEMENT OSCILLATING MICROBALANCE (TEOM)  
 2.5 MICRON FRACTION

Camden Lab	SPM	15	53	47
Elizabeth Lab	SPM	16	67	53
Fort Lee	SPM	****	72	61
Newark	SPM	17	57	52

(CORRECTED FOR STANDARD CONDITIONS)

TABLE 13

AIR QUALITY IN NEW JERSEY  
COMPARED WITH AIR QUALITY STANDARDS -- 1998  
LEAD

3-MONTH AVERAGES  
MICROGRAMS PER CUBIC METER  
HIGH VOLUME PARTICULATE SAMPLERS  
AMBIENT AIR QUALITY STANDARDS FOR LEAD:  
3-MONTH ARITH. MEAN PRIMARY & SECONDARY STANDARDS: 1.5 ug/m<sup>3a</sup>  
CALENDAR QUARTER ARITH. MEAN PRIMARY & SECONDARY STANDARD: 1.5 ug/m<sup>3b</sup>

SITE CODES: N = NAMS, S = SLAMS, SPM = SPECIAL PURPOSE MONITORING IND = INDUSTRIAL FACILITY

VIOLATION CODES: XXX = NEW JERSEY AND NATIONAL, XX = NEW JERSEY, -- = NO VIOLATION

<u>Monitoring Site</u>	<u>Sampler No.</u>	<u>Site Code</u>	<u>3-Month Average Maximum</u>	<u>Average Month</u>	<u>Viol. Code</u>	<u>Arithmetic Means</u>				<u>Viol. Code</u>
						<u>1<sup>st</sup> Qtr</u>	<u>2<sup>nd</sup> Qtr</u>	<u>3<sup>rd</sup> Qtr</u>	<u>4<sup>th</sup> Qtr</u>	
New Brunswick	057	S	.080	Jun.	--	.027	.080	.043	.050	--
New Brunswick	068	SPM	.083	Jun.	--	.033	.083	.030	.048	--
Pennsauken <sup>c</sup>	071	S	.015	Feb.	--	.013	.012	.014	.012	--

- a) New Jersey Ambient Air Quality Standard
- b) National Ambient Air Quality Standard
- c) Less than 50 percent of samples above minimum detection limits

(CORRECTED FOR STANDARD CONDITIONS)

TABLE 17

AIR QUALITY IN NEW JERSEY COMPARED WITH AIR QUALITY STANDARDS - 1998

ACID DEPOSITION PARTICULATE MATTER

SULFATES AND NITRATES

ANNUAL STATISTICS

MICROGRAMS PER CUBIC METER

NO AMBIENT AIR QUALITY STANDARDS HAVE BEEN ESTABLISHED FOR SULFATES AND NITRATES

<u>SAMPLING</u> <u>LOCATIONS</u>	SITE <u>#</u>	<u>N</u>	<u>PARTICULATES</u>			<u>SULFATES (SO4)</u>			<u>NITRATES (NO3)</u>			<u>SO4 &amp; NO3</u> <u>% OF</u> <u>PARTICULATES</u>
			<u>MEAN</u>	<u>MIN</u>	<u>MAX</u>	<u>MEAN</u>	<u>MIN</u>	<u>MAX</u>	<u>MEAN</u>	<u>MIN</u>	<u>MAX</u>	
Camden Lab	IP02	60	22.7	8.3	55.4	5.77	1.08	30.65	0.26	0.01	2.45	26.6
Elizabeth Lab	IP28	51	31.2	10.8	86.3	5.84	0.83	15.85	0.43	0.01	2.64	20.1
Fort Lee <sup>a</sup>	IP14	31	45.9	14.2	234.3	5.25	1.01	15.21	0.69	0.10	3.73	12.9
Ringwood S.P. <sup>b</sup>	IP05	21	13.2	4.7	33.9	3.51	1.17	9.78	0.07	0.02	0.24	27.1

a) No data available prior to June 28<sup>th</sup>.

b) No data available after June 16<sup>th</sup>.

N - Number of samples

Min - Minimum

Max - Maximum

