



# 2011 Network Summary

New Jersey Department of Environmental Protection

## NETWORK DESIGN

In 2011, the Bureau of Air Monitoring maintained 40 Ambient Air Monitoring Sites in New Jersey. These monitoring sites fulfill one or more of the following objectives: measure maximum pollutant concentration, assess population exposure, determine the impact of major pollution sources, measure background levels, determine the extent of regional pollutant transport, or measure secondary impacts in rural areas.

Data from the network are provided to various public and media outlets and are used to provide hourly updates on air quality to the Bureau's web page at <http://www.njaqinow.net>.

## MONITORING NETWORK

NJ's Air Monitoring Network measures for a wide variety of pertinent ambient air pollutant data and most of the data is sent to the Bureau's data acquisition system. Ambient air data sent to the acquisition system are either transmitted in real-time or subsequently added to the system. A map showing the locations of NJ's Air Monitoring sites are shown in Figure 3 (page 3).

Ambient air quality data measured in real-time, at NJ's monitoring sites, are transmitted via wireless communication directly to the Bureau's data acquisition system. Most of the data is transmitted once every minute, thus providing real-time data retrieval capability. This technology provides New Jersey resident's with the ability to view ambient air data, within their respected communities, on the Bureau of Air Monitoring's web site (<http://www.njaqinow.net>) and on the Environmental Protection Agency's AirNow website (<http://airnow.gov>). Real-time parameters measured throughout New Jersey's Air Monitoring sites are: carbon monoxide (CO), oxides of nitrogen (NO<sub>x</sub>) measuring both nitrogen dioxide and nitric oxide, ozone (O<sub>3</sub>), sulfur dioxide (SO<sub>2</sub>), smoke shade (SS), total reactive oxides of nitrogen (NO<sub>y</sub>), real-time fine particulates (PM<sub>2.5</sub>), visibility, and meteorological data which include wind speed (WS), wind direction (WD), barometric pressure, solar radiation, temperature, and relative humidity.

Figure 1

Photo of Brigantine Air Monitoring Station located on the grounds of the Edwin B. Forsythe National Wildlife Refuge in Atlantic County.



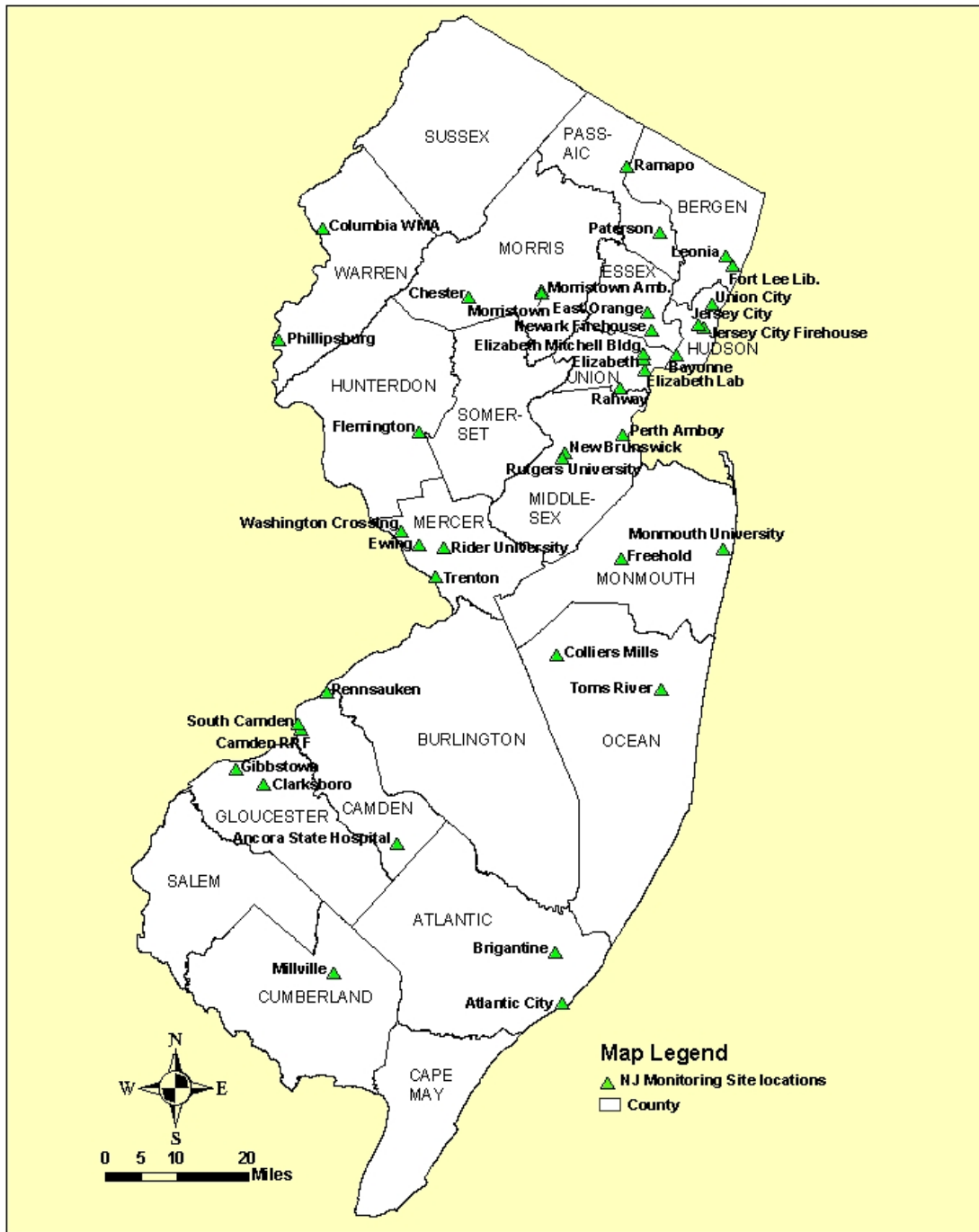
Data subsequently sent to the Bureau's data acquisition system, consists mainly of instruments that collect samples for analysis in a laboratory. The data collected throughout New Jersey's Air Monitoring sites are: fine particulates (particles smaller than 2.5 micrometers in diameter or  $PM_{2.5}$ ) see figure 2 which is a photo of a  $PM_{2.5}$  sampler, inhalable particulates (particles smaller than 10 micrometers in diameter or  $PM_{10}$ ), mercury (Hg), several parameters associated with acid deposition, pollutants important in the formation of ground level ozone (ozone precursors), and a group of organic and inorganic compounds that are considered toxic pollutants. Sites that measure ozone precursors are part of the national Photochemical Assessment Monitoring Station (PAMS) program. PAMS data are collected on a seasonal basis (June 1st – August 31st). While these ozone precursors are automatically measured every hour, the data are retrieved once a day and require extensive review before they are validated.

Parameters recorded at each site are displayed in Table 1 (page 4). Changes to the Network are summarized in Table 2 (page 5).

Figure 2  
Photo of USEPA-approved  $PM_{2.5}$  sampler on the roof of the Union City Health Department building in Hudson County



**Figure 3**  
**New Jersey Air Monitoring Sites 2011**  
**Network Summary**



**Table 1  
Monitoring Network Chart**

	CO	NO <sub>x</sub>	NO <sub>y</sub>	O <sub>3</sub>	SO <sub>2</sub>	Smoke Shade	PM <sub>2.5</sub>	PM <sub>2.5</sub> -Speciation	Real-Time PM <sub>2.5</sub>	Visibility	PM <sub>10</sub>	O <sub>3</sub> Precursors - PAMS	VOCs	Carbonyls	Acid Deposition	Mercury	Barometric Pressure	Relative Humidity	Solar Radiation	Temperature	Wind Direction	Wind Speed
Ancora State Hospital	Y			Y											Y							
Atlantic City							Y															
Bayonne		Y		Y	Y																	
Brigantine				Y	Y		Y		Y	Y					Y <sup>1</sup>	Y						
Camden RRF											Y											
Chester		Y		Y	Y		Y	Y					Y	Y		Y			Y			
Clarksboro				Y																		
Colliers Mills				Y																		
Columbia WMA		Y		Y	Y		Y		Y								Y	Y		Y	Y	Y
East Orange	Y	Y																Y		Y		
Elizabeth	Y				Y	Y																
Elizabeth Lab	Y	Y			Y	Y	Y	Y	Y				Y	Y		Y					Y	Y
Elizabeth Mitchell Bldg							Y															
Ewing									Y													
Flemington				Y					Y								Y	Y	Y	Y	Y	Y
Fort Lee Library							Y															
Freehold	Y																					
Gibbstown							Y															
Jersey City	Y				Y	Y																
Jersey City Firehouse							Y		Y		Y											
Leonia				Y																		
Millville		Y		Y					Y													
Monmouth University				Y																		
Morristown	Y																					
Morristown Amb Squad							Y															
New Brunswick							Y	Y	Y				Y	Y		Y						
Newark Firehouse	Y	Y	Y	Y	Y		Y	Y	Y								Y	Y	Y	Y	Y	Y
Paterson							Y															
Pennsauken							Y															
Perth Amboy	Y																					
Phillipsburg							Y															
Rahway							Y		Y													
Ramapo				Y																		
Rider University				Y													Y	Y	Y	Y	Y	Y
Rutgers University		Y		Y								Y					Y <sup>2</sup>	Y <sup>2</sup>	Y <sup>2</sup>	Y <sup>2</sup>	Y <sup>2</sup>	Y <sup>2</sup>
South Camden									Y													
Toms River							Y															
Trenton							Y				Y											
Union City							Y															
Washington Crossing							Y								Y							
TOTAL	9	8	1	15	8	3	20	4	11	1	3	1	3	3	3	4	5	6	5	6	6	6

Y - Measuring Parameter Data in 2011

<sup>1</sup> The United States Fish and Wildlife Service is responsible for sample collection

<sup>2</sup> Meteorological measurements at the Site are collected by Rutgers University

Began measuring data in 2011. See Table 2 (page 5)

Shutdown from measuring data in 2011. See Table 2 (page 5)

**Table 2  
2010-2011 Network Changes**

Monitoring Site	Parameter(s)	Action	Date
Ancora State Hospital	SO <sub>2</sub>	Shut down	12/31/10
	CO	Shut down	06/30/11
Atlantic City	PM <sub>10</sub>	Shut down	03/09/10
Clarksboro	SO <sub>2</sub>	Shut down	12/31/10
Columbia WMA	SO <sub>2</sub> , PM <sub>2.5</sub>	Start-up	09/23/10
	Real-Time PM <sub>2.5</sub>	Start-up	10/22/10
	NO <sub>x</sub> , O <sub>3</sub>	Start-up	01/20/11
	WS, WD, Relative Humidity, Temperature, Barometric Pressure	Start-up	03/11/11
Freehold	SS	Shut down	12/31/10
	CO	Shut down	06/30/11
Hackensack	CO, SO <sub>2</sub> , SS	Shut down	12/31/10
Leonia	NO <sub>x</sub>	Shut down	12/31/10
Millville	SO <sub>2</sub>	Shut down	12/31/10
Morristown	SS	Shut down	12/31/10
	CO	Shut down	06/30/11
Newark-Firehouse	NO <sub>y</sub> , WS, WD, Barometric Pressure, Solar Radiation	Start-up	11/09/10
	Temperature	Start-up	11/10/10
	Relative Humidity	Start-up	12/17/10
	NO <sub>x</sub>	Start-up	01/12/11
Perth Amboy	CO	Shut down	06/30/11
	SO <sub>2</sub> , SS	Shut down	12/31/10
Rider University	O <sub>3</sub> Precursors - PAMS	Shut down	08/31/10
	NO <sub>x</sub>	Shut down	12/31/10
Trenton	PM <sub>10</sub>	Shut down	03/31/11

## REFERENCES

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Pelton, D. J. and R. C. Koch, Optimum Sampling Exposure Criteria for Lead, EPA-450/4-84-012, GEOMET Technologies, Inc., Rockville, MD, Prepared for USEPA, Office of Air Quality Planning and Standards, Research Triangle Park, NC, February 1984.

Watson, J. G., et. al., Guidance for Network Design and Optimum Site Exposure for PM<sub>2.5</sub> and PM<sub>10</sub>, EPA-454/R-99-022, Desert Research Institute, University and Community College System of Nevada, Reno, NV. Prepared for USEPA, Office of Air Quality Planning and Standards, Research Triangle Park, NC, December 1997