

# Ambient Air Monitoring Network Plan 2017

This document, a description of the New Jersey Ambient Air Monitoring Network for 2017, is available for public comment. Please email comments by June 23, 2017 to [bamweb@dep.nj.gov](mailto:bamweb@dep.nj.gov), or write to:

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**NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION**  
Bureau of Air Monitoring  
[www.NJAQINOW.net](http://www.NJAQINOW.net)



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## **DISCLAIMER**

Mention of trade names, manufacturers or commercial products in this document does not constitute New Jersey Department of Environmental Protection endorsement or recommendation for use.

## EXECUTIVE SUMMARY

New Jersey's Ambient Air Monitoring Network Plan provides a complete description of the monitoring network, and summarizes any changes made in the previous year and any planned within the next year. The New Jersey Department of Environmental Protection (NJDEP) is required to submit a Network Plan to the U.S. Environmental Protection Agency (USEPA) each year.

Here is a list of network changes that occurred from March 2016 to March 31, 2017:

1. Shut down the New Brunswick site after moving the PM<sub>2.5</sub> chemical speciation network sampler and mercury sampler to the Rutgers University site;
2. Discontinued obsolete smoke shade monitoring at the Elizabeth, Elizabeth Lab, and Jersey City sites;
3. Shut down the East Orange site (CO, NO<sub>x</sub>, meteorology) because of duplicated efforts at nearby monitors;
4. Discontinued mercury monitoring at the Brigantine and Chester sites because of duplicative efforts and equipment problems.

### Proposed Changes

New USEPA regulations were promulgated in 2015 requiring Photochemical Assessment Monitoring Stations (PAMS) to be located at National Core (NCore) monitoring sites by June 2019. NJDEP intends to ask USEPA for a waiver from that requirement, in order to allow the continued operation of the long-standing site at Rutgers University (established in 1996), instead of moving it to the Newark Firehouse NCore site. In addition, New Jersey is requesting to be an early adopter of new equipment to be required at PAMS sites, ahead of the June 2019 deadline, in order to receive early funding to replace aging equipment. Documentation for justifying the waiver can be found in Appendix F.

At the Rahway monitoring station, changes are proposed to the PM<sub>2.5</sub> monitors in 2017. We would like to remove the filter-based manual sampler and the real-time sampler, and replace them with a new federal equivalent method PM<sub>2.5</sub> continuous sampler, which will enable us to conserve resources and utilize more advanced technology.

NJDEP was recently notified that the Gibbstown monitoring station, located at a municipal maintenance facility, will be undergoing reconstruction and will no longer meet PM<sub>2.5</sub> monitor siting criteria. We are proposing to relocate the PM<sub>2.5</sub> monitor to the Clarksboro monitoring station, about five miles away, as soon as possible.

## REGULATORY REQUIREMENTS

The NJDEP is required by 40 CFR Part 58 to submit an Annual Monitoring Network Plan to the USEPA Region 2 Regional Administrator by July 1 of each year, and to have the Plan available for public inspection for at least 30 days prior to its submittal to the USEPA. The Plan describes State and Local Air Monitoring Stations (SLAMS), National Core (NCore) stations, Speciation Trends Network (STN) stations, State speciation stations, Special Purpose Monitor (SPM) stations, and Photochemical Assessment Monitoring Stations (PAMS).

This 2017 Network Plan contains all the information required by the regulations, descriptions of the air monitoring sites, large and small scale maps of the monitoring stations, a summary of the changes to the Air Monitoring Network that NJDEP expects to implement during the year, comments received following the 30-day public comment period, and the NJDEP's responses to

these comments. It is available for download from the Bureau of Air Monitoring's website, [www.njaginow.net](http://www.njaginow.net), or as a hard copy by calling 609-292-0138.

## THE NEW JERSEY AIR MONITORING NETWORK

The NJDEP currently operates 33 air monitoring sites throughout the state. Table 1 lists all the monitoring sites along with the pollutants, categories of pollutants, or meteorological parameters that are measured at each site. Figure 1 shows the locations of the monitoring stations across New Jersey.

Data used for comparison to the National Ambient Air Quality Standards (NAAQS) must be measured by USEPA-approved real-time analyzers or USEPA-approved manual samplers. The real-time data is also used to generate a rating of air quality called the Air Quality Index (AQI), which is updated hourly on the Bureau of Air Monitoring's webpage.

Real-time sampling instruments automatically collect and analyze data continuously, and transmit the data to a centralized computer system once every minute. Several parameters, including carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), sulfur dioxide (SO<sub>2</sub>), fine particulate matter (PM<sub>2.5</sub>), and meteorological data are measured this way.

NJDEP also uses USEPA-approved manual PM samplers for comparison to the NAAQS. Three different types of airborne particles are collected on a filter over a 24-hour period: fine particles (particles smaller than 2.5 micrometers in diameter, or PM<sub>2.5</sub>); inhalable particulate (particles smaller than 10 micrometers in diameter, or PM<sub>10</sub>); and PM<sub>coarse</sub> (particles between 2.5 micrometers in diameter and 10 micrometers in diameter). After the completion of the collection period, the samples are manually retrieved and sent to NJDEP's laboratory for gravimetric analysis.



NJDEP also monitors other pollutants, some of which are grouped together into categories by their method of sampling or analysis. These categories are listed in the headings of Table 1. Sites that monitor for ozone precursors (pollutants that affect ozone formation in the atmosphere) are part of the national Photochemical Assessment Monitoring Station (PAMS) program. Ozone precursors are frequently referred to as PAMS pollutants. Pollutants in the "PM<sub>2.5</sub> Speciation" category include trace elements, heavy metals, and carbon compounds; they are analyzed using PM<sub>2.5</sub> particles. "Toxics" include selected volatile organic compounds (VOCs) and carbonyls that are analyzed using whole air samples or adsorbent media. The PM<sub>2.5</sub> speciation, VOC, and carbonyl samples are collected by NJDEP and sent to USEPA-approved contract laboratories for analysis. At several urban monitoring stations, NJDEP uses a BTEX analyzer to measure near real-time benzene, toluene, ethylbenzene, and xylenes, and an aethalometer to collect near real-time black carbon particle data. Finally, NJDEP

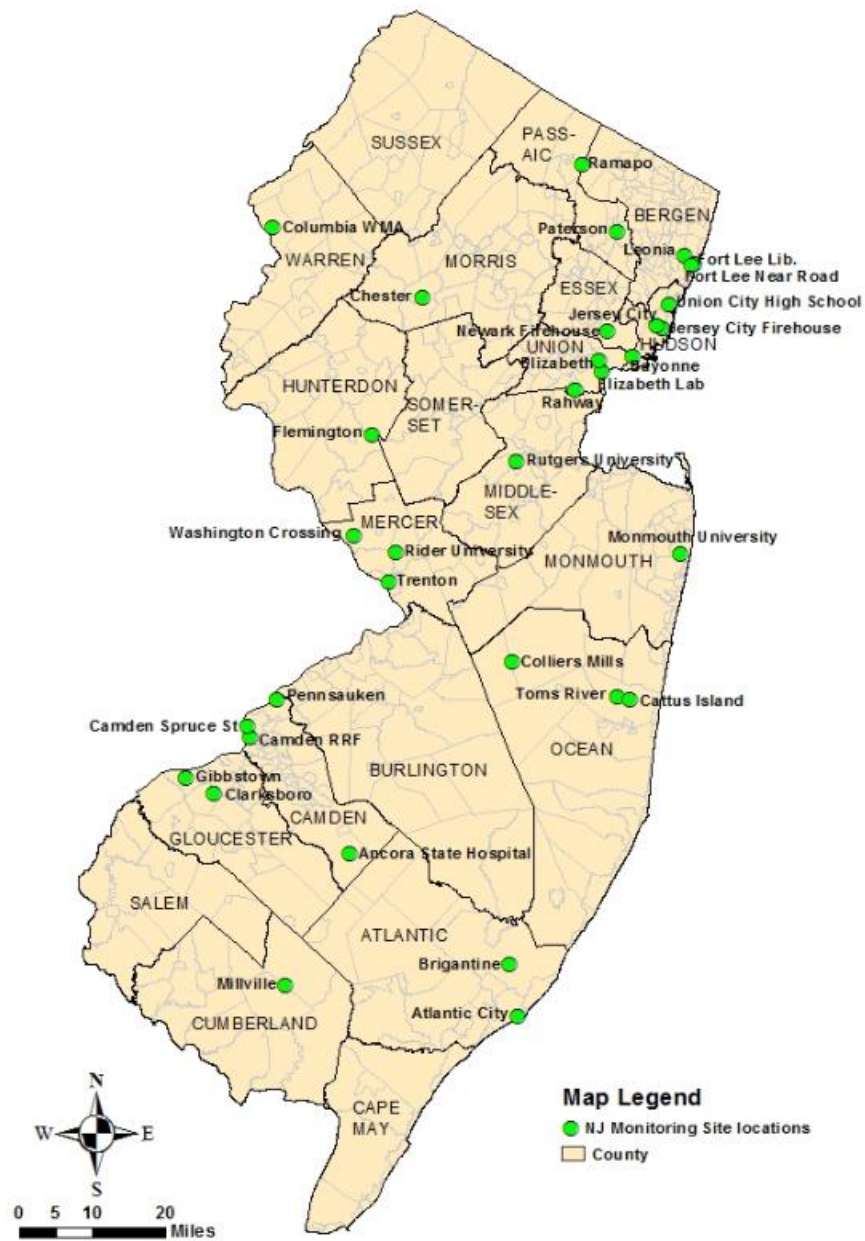
also measures acid deposition, mercury, and visibility (measured with a nephelometer).

**TABLE 1: SUMMARY OF CURRENT NEW JERSEY AIR MONITORING SITES**

		Monitoring Parameters																							
		CO	NO <sub>2</sub>	NO <sub>y</sub>	O <sub>3</sub>	SO <sub>2</sub>	PM <sub>2.5</sub>	Real-Time PM <sub>2.5</sub>	PM <sub>10</sub>	PM coarse	PM <sub>2.5</sub> -Speciation	O <sub>3</sub> Precursors	Toxics	Urban Pollutants*	Acid Deposition	Mercury	Visibility	Barometric Pressure	Relative Humidity	Temperature	Wind Direction	Wind Speed	Rain	Solar Radiation	
1	Ancora State Hospital				1																				
2	Atlantic City						1																		
3	Bayonne		1		1	1								1				1	1	1	1	1	1		
4	Brigantine				1	1	1	1									1								
5	Camden RRF							1																	
6	Camden Spruce St	1	1		1	1	1	1			1		1	1				1	1	1	1	1	1		
7	Cattus Island														1										
8	Chester		1		1	1	1				1		1												
9	Clarksboro				1																				
10	Colliers Mills				1																				
11	Columbia WMA		1		1	1	1											1	1	1	1	1	1		
12	Elizabeth	1				1																			
13	Elizabeth Lab	1	1			1	2	1			1		1	1		1		1	1	1	1	1	1		
14	Flemington				1			1										1	1	1	1	1	1	1	
15	Fort Lee Library						1																		
16	Fort Lee Near Road	1	1					1						1				1	1	1	1	1	1		
17	Gibbstown						1																		
18	Jersey City	1	1			1																			
19	Jersey City Firehouse						2	1	2																
20	Leonia				1																				
21	Millville		1		1			1																	
22	Monmouth University				1																				
23	Newark Firehouse	1	1	1	1	1	1	1	1	1				1				1	1	1	1	1	1	1	
24	Paterson						1																		
25	Pennsauken						1																		
26	Rahway						1	1																	
27	Ramapo				1																				
28	Rider University				1			1										1	1	1	1	1		1	
29	Rutgers University		1		1		1	1			2	1	1			1									
30	Toms River						1																		
31	Trenton						1																		
32	Union City High School						1																		
33	Washington Crossing														1										
CURRENT TOTAL		6	10	1	16	9	19	12	4	1	6	1	4	5	2	2	1	8	8	8	8	8	7	3	

\* Urban pollutants include black carbon and select volatile organic compounds (benzene, toluene, ethylbenzene, and xylenes).

**FIGURE 1: MAP OF CURRENT NEW JERSEY AIR MONITORING NETWORK**



## CHANGES TO THE NETWORK

**Table 2: Network Changes, March 2016 – March 2017**

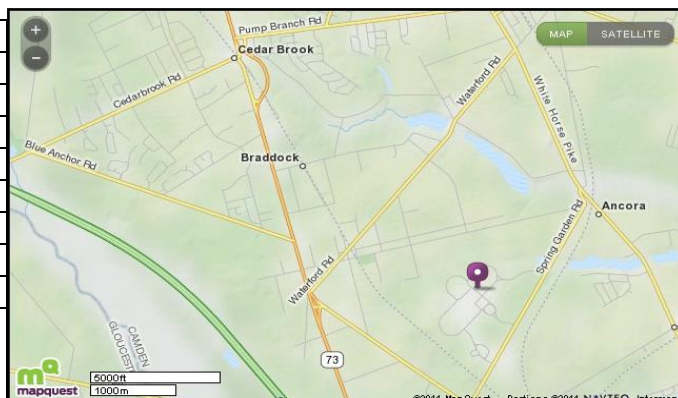
Monitoring Site	Parameter(s)	Action	Date
Brigantine	Mercury	Discontinued	12/31/16
Chester	Mercury	Discontinued	12/31/16
East Orange	CO	Shut down	7/1/16
East Orange	NOx	Shut down	7/1/16
East Orange	Meteorological Data	Shut down	7/1/16
Elizabeth	Smoke Shade	Discontinued	12/31/16
Elizabeth Trailer	Smoke Shade	Discontinued	12/31/16
Jersey City	Smoke Shade	Discontinued	12/31/16
New Brunswick	Mercury	Relocated to Rutgers	10/1/16
New Brunswick	PM <sub>2.5</sub> Speciation	Relocated to Rutgers	6/30/16
Rutgers University	Mercury	Startup	10/31/16
Rutgers University	PM <sub>2.5</sub> Speciation	Startup	7/5/16



## NEW JERSEY AIR MONITORING SITE DESCRIPTIONS

### SITE INFORMATION

<b>Site Name</b>	Ancora State Hospital
<b>Address</b>	301 Spring Garden Road
<b>City, State, Zip</b>	Hammonton, NJ 08037
<b>AQS Code</b>	34 007 1001
<b>NJ County</b>	Camden
<b>MSA/CSA</b>	Philadelphia-Camden-Wilmington CSA
<b>Latitude</b>	39.684250
<b>Longitude</b>	-74.861491
<b>Date Established</b>	1/1/1966
<b>Suitable for Comparison to PM<sub>2.5</sub> NAAQS?</b>	Not Applicable



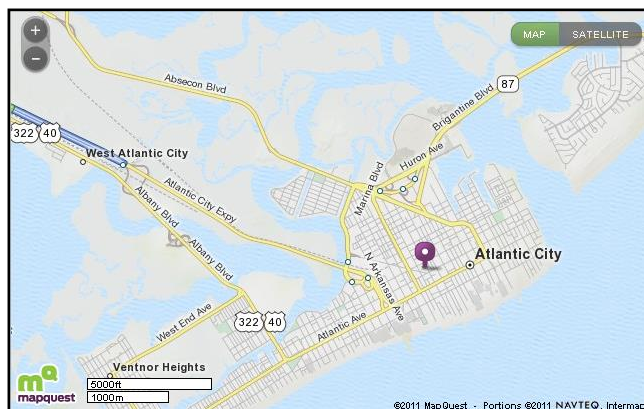
### PARAMETER SUMMARY

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Ozone (O <sub>3</sub> )	44201	Thermo 49C	Ultraviolet	047	Continuous	Urban	Population Exposure

<b>Site Purpose</b>	To measure background concentrations for the southern part of New Jersey. May also measure maximum ozone concentrations downwind from the Philadelphia metropolitan area.
<b>Plans for the next 18 months</b>	No changes.
<b>Other Comment</b>	

## SITE INFORMATION

<b>Site Name</b>	Atlantic City
<b>Address</b>	Atlantic Cape Community College, 1535 Bacharach Boulevard
<b>City, State, Zip</b>	Atlantic City, NJ 08401
<b>AQS Code</b>	34 001 1006
<b>NJ County</b>	Atlantic
<b>MSA/CSA</b>	Atlantic City MSA
<b>Latitude</b>	39.363260
<b>Longitude</b>	-74.431000
<b>Date Established</b>	7/27/2001
<b>Suitable for Comparison to PM<sub>2.5</sub> NAAQS?</b>	Yes



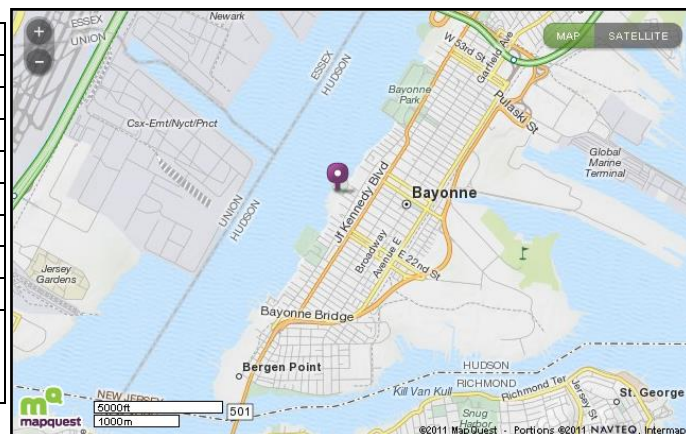
## PARAMETER SUMMARY

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Fine Particles (PM <sub>2.5</sub> )	88101	Thermo 2025 Low- volume sequential sampler	Gravimetric	145	Every 3 days	Neighborhood	Population Exposure

<b>Site Purpose</b>	To measure fine particle concentrations in the commercial area of Atlantic City.
<b>Plans for the next 18 months</b>	No changes.
<b>Other Comment</b>	

## SITE INFORMATION

<b>Site Name</b>	Bayonne
<b>Address</b>	Park Road at end of W. 25 <sup>th</sup> St.
<b>City, State, Zip</b>	Bayonne, NJ 07002
<b>AQS Code</b>	34 017 0006
<b>NJ County</b>	Hudson
<b>MSA/CSA</b>	New York-Northeast New Jersey-Connecticut CSA
<b>Latitude</b>	40.670250
<b>Longitude</b>	-74.126081
<b>Date Established</b>	1/1/1983
<b>Suitable for Comparison to PM<sub>2.5</sub> NAAQS?</b>	Not Applicable



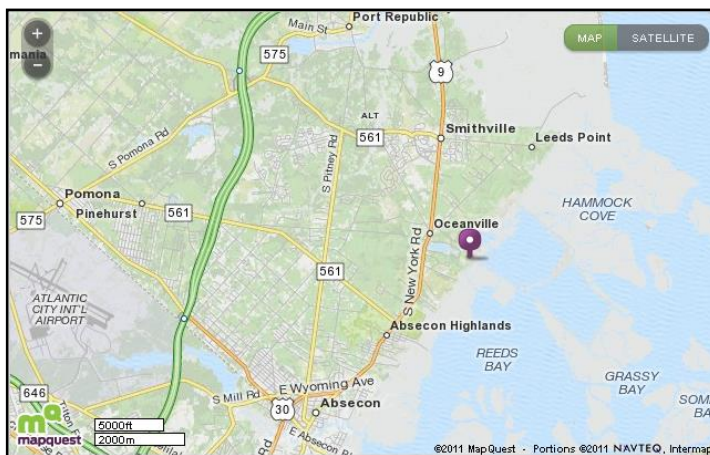
## PARAMETER SUMMARY

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Nitric Oxide (NO)	42601	Thermo 42i	Chemiluminescence	074	Continuous	Urban	Population Exposure
Nitrogen Dioxide (NO <sub>2</sub> )	42602	Thermo 42i	Chemiluminescence	074	Continuous	Urban	Population Exposure
Oxides of Nitrogen (NO <sub>x</sub> )	42603	Thermo 42i	Chemiluminescence	074	Continuous	Urban	Population Exposure
Ozone (O <sub>3</sub> )	44201	Thermo 49i	Ultraviolet	047	Continuous	Neighborhood	Population Exposure
Sulfur Dioxide (SO <sub>2</sub> )	42401	Thermo 43i	Pulsed fluorescence	060	Continuous	Neighborhood	Population Exposure
Black Carbon	84313	Teledyne API Model 633 Aethalometer	Optical absorption	861	Continuous	Neighborhood	Population Exposure
BTEX	Appendix E	Syntech Spectras GC 955 BTEX analyzer	Auto GC-PID	092	Continuous	Neighborhood	Population Exposure
Barometric Pressure	64101	Vaisala WXT	Capacitive sensor	060	Continuous	Neighborhood	
Relative Humidity	62201	Vaisala WXT	Capacitive sensor	060	Continuous	Neighborhood	
Temperature	62101	Vaisala WXT	Capacitive sensor	060	Continuous	Neighborhood	
Precipitation	65102	Vaisala WXT	Ultrasonic sensor	060	Continuous	Neighborhood	
Wind Direction	61102	Vaisala WXT	Ultrasonic sensor	060	Continuous	Neighborhood	
Wind Speed	61101	Vaisala WXT	Ultrasonic sensor	060	Continuous	Neighborhood	

<b>Site Purpose</b>	To measure population exposure in the Hudson County area
<b>Plans for the next 18 months</b>	No changes.
<b>Other Comment</b>	

## SITE INFORMATION

<b>Site Name</b>	Brigantine
<b>Address</b>	Edwin B. Forsythe National Wildlife Refuge Visitor Center, 800 Great Creek Road,
<b>City, State, Zip</b>	Galloway, NJ 08231
<b>AQS Code</b>	34 001 0006
<b>NJ County</b>	Atlantic
<b>MSA/CSA</b>	Atlantic City MSA
<b>Latitude</b>	39.464872
<b>Longitude</b>	-74.448736
<b>Date Established</b>	1/1/2007
<b>Suitable for Comparison to PM<sub>2.5</sub> NAAQS?</b>	Yes



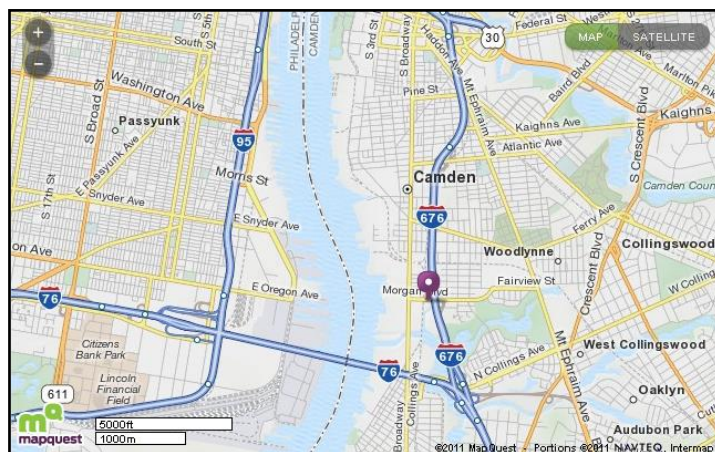
## PARAMETER SUMMARY

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Ozone (O <sub>3</sub> )	44201	Teledyne T400	Ultraviolet	087	Continuous	Urban	Background
Sulfur Dioxide (SO <sub>2</sub> )	42401	Thermo 43iTLE	Pulsed fluorescence	560	Continuous	Urban	Background
Fine Particles (PM <sub>2.5</sub> )	88101	Thermo 2025 Low- volume sequential sampler	Gravimetric	145	Every 3 days	Urban	Background
Real-time PM <sub>2.5</sub>	88101	Thermo 5014i	Beta Particle attenuation	183	Continuous	Urban	Background
Real-time PM <sub>2.5</sub>	88347	Nephelometer	Light-scattering	011	Continuous	Urban	Background

<b>Site Purpose</b>	To measure pollutant concentrations and visibility in Class I protected areas.
<b>Plans for the next 18 months</b>	No changes.
<b>Other Comment</b>	SO <sub>2</sub> is measured by a "trace-level" analyzer. Also an IMPROVE station, part of NESCAUM visibility network. Real-time PM <sub>2.5</sub> data by nephelometer data not submitted to EPA's AQS database. The US Fish & Wildlife Service collects a weekly acid deposition sample which is sent to the National Atmospheric Deposition Program (NADP) for analysis.

## SITE INFORMATION

<b>Site Name</b>	Camden RRF (Resource Recovery Facility)
<b>Address</b>	600 Morgan Street
<b>City, State, Zip</b>	Camden, NJ 08104
<b>AQS Code</b>	34 007 0009
<b>NJ County</b>	Camden
<b>MSA/CSA</b>	Philadelphia-Camden-Wilmington CSA
<b>Latitude</b>	39.912431
<b>Longitude</b>	-75.116864
<b>Date Established</b>	5/8/1994
<b>Suitable for Comparison to PM<sub>2.5</sub> NAAQS?</b>	Not Applicable



## PARAMETER SUMMARY

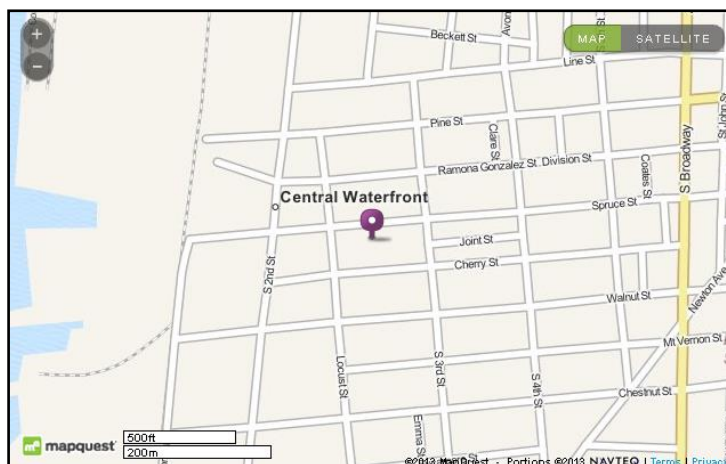
Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Inhalable Particles (PM <sub>10</sub> )	81102	Thermo 2025 Low-volume sequential sampler	Gravimetric	127	Every 6 days	Middle	Source Oriented

<b>Site Purpose</b>	To measure the impact of mobile sources in heavily used roadways in southern Camden.
<b>Plans for the next 18 months</b>	No changes.
<b>Other Comment</b>	



## SITE INFORMATION

Site Name	Camden Spruce Street
Address	226-298 Spruce Street
City, State, Zip	Camden, NJ 08103
AQS Code	34 007 0002
NJ County	Camden
MSA/CSA	Philadelphia-Camden-Wilmington CSA
Latitude	39.934446
Longitude	-75.125291
Date Established	4/11/2012
Suitable for Comparison to PM <sub>2.5</sub> NAAQS?	Yes



## PARAMETER SUMMARY

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Carbon Monoxide (CO)	42101	Thermo 48C	Nondispersive-infrared	054	Continuous	Neighborhood	Population Exposure
Nitric Oxide (NO)	42601	Thermo 42i	Chemiluminescence	074	Continuous	Neighborhood	Population Exposure
Nitrogen Dioxide (NO <sub>2</sub> )	42602	Thermo 42i	Chemiluminescence	074	Continuous	Neighborhood	Population Exposure
Oxides of Nitrogen (NO <sub>x</sub> )	42603	Thermo 42i	Chemiluminescence	074	Continuous	Neighborhood	Population Exposure
Ozone (O <sub>3</sub> )	44201	Thermo 49i	Ultraviolet	047	Continuous	Neighborhood	Population Exposure
Sulfur Dioxide (SO <sub>2</sub> )	42401	Thermo 43iTLE	Pulsed fluorescence	060	Continuous	Neighborhood	Population Exposure
Fine Particles (PM <sub>2.5</sub> )	88101	Thermo 2025i Low-volume sequential sampler	Gravimetric	145	Every 3 days	Neighborhood	Population Exposure
Real-time PM <sub>2.5</sub>	88101	Thermo 5014i	Beta Particle attenuation	183	Continuous	Neighborhood	Population Exposure
PM <sub>2.5</sub> Speciation	Appendix C	Met One	XRF, IC, TOA	Appendix C	Every 6 days	Neighborhood	Population Exposure
Volatile Organic Compounds	Appendix A	Canister	TO-15	Appendix A	Every 6 days	Neighborhood	Population Exposure
Carbonyls	Appendix B	DNPH cartridge	TO-11A	Appendix B	Every 6 days	Neighborhood	Population Exposure
Black Carbon	84313	Teledyne API Model 633 Aethalometer	Optical absorption	861	Continuous	Neighborhood	Population Exposure
BTEX	Appendix E	Syntech Spectras GC 955 BTEX analyzer	Auto GC-PID	092	Continuous	Neighborhood	Population Exposure
Barometric Pressure	64101	Vaisala WXT	Capacitive sensor	060	Continuous	Neighborhood	
Relative Humidity	62201	Vaisala WXT	Capacitive sensor	060	Continuous	Neighborhood	
Temperature	62101	Vaisala WXT	Capacitive sensor	060	Continuous	Neighborhood	

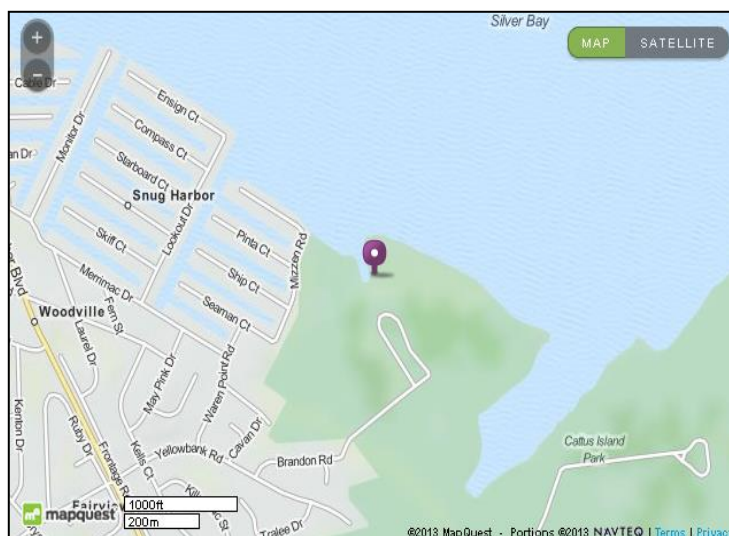
**PARAMETER SUMMARY (Camden Spruce Street, continued)**

<b>Parameter</b>	<b>AQS Parameter Code</b>	<b>Sampling Instrument</b>	<b>Method of Analysis</b>	<b>AQS Method Code</b>	<b>AQS Sample Frequency</b>	<b>AQS Spatial Scale</b>	<b>AQS Monitoring Objective</b>
Precipitation	65102	Vaisala WXT	Ultrasonic sensor	060	Continuous	Neighborhood	
Wind Direction	61102	Vaisala WXT	Ultrasonic sensor	060	Continuous	Neighborhood	
Wind Speed	61101	Vaisala WXT	Ultrasonic sensor	060	Continuous	Neighborhood	

<b>Site Purpose</b>	Comprehensive air monitoring station in the Philadelphia-Camden metro area of southern New Jersey.
<b>Plans for the next 18 months</b>	No changes.
<b>Other Comment</b>	PM <sub>2.5</sub> gravimetric sampler is collocated for precision.

## SITE INFORMATION

<b>Site Name</b>	Cattus Island
<b>Address</b>	Cattus Island County Park, end of Bandon Road
<b>Municipality</b>	Toms River NJ 08753
<b>AQS Code</b>	None
<b>NJ County</b>	Ocean
<b>MSA/CSA</b>	New York-Northeast New Jersey-Connecticut CSA
<b>Latitude</b>	39.989636
<b>Longitude</b>	-74.134132
<b>Date Established</b>	10/23/2012
<b>Suitable for Comparison to PM2.5 NAAQS?</b>	Not Applicable



## PARAMETER SUMMARY

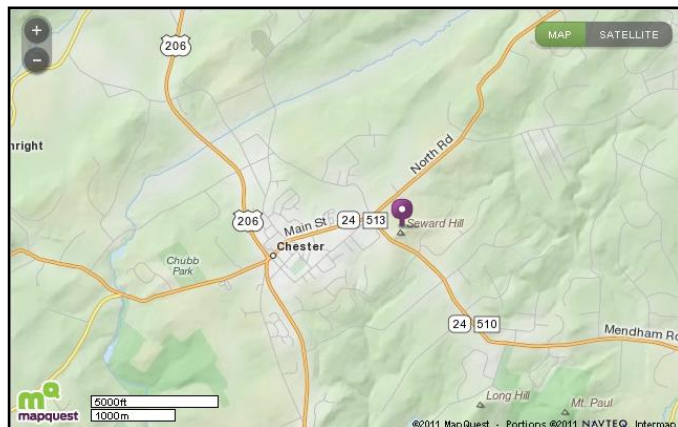
Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Acid Deposition		Wet Deposition Collector	Ion Chromatography		Weekly	Neighborhood	Population Exposure

<b>Site Purpose</b>	To measure population exposure and transported fine particle concentrations.
<b>Plans for the next 18 months</b>	No changes.
<b>Other Comment</b>	Acid deposition samples are sent to the National Atmospheric Deposition Program (NADP) for analysis. Acid deposition data are not submitted by NJDEP or NADP to EPA's AQS database.



## SITE INFORMATION

<b>Site Name</b>	Chester
<b>Address</b>	Department of Public Works Building # 1, 50 North Road
<b>City, State, Zip</b>	Chester, NJ 07930
<b>AQS Code</b>	34 027 3001
<b>NJ County</b>	Morris
<b>MSA/CSA</b>	New York-Northeast New Jersey-Connecticut CSA
<b>Latitude</b>	40.787628
<b>Longitude</b>	-74.676301
<b>Date Established</b>	1/1/1978
<b>Suitable for Comparison to PM<sub>2.5</sub> NAAQS?</b>	Yes



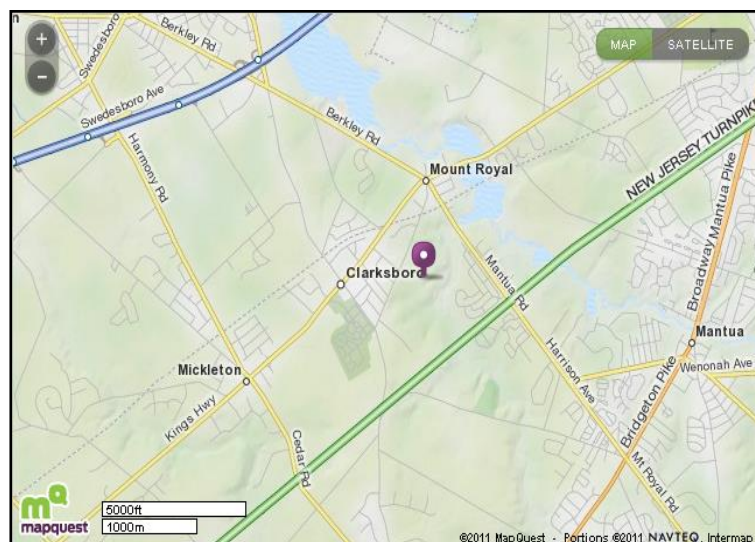
## PARAMETER SUMMARY

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Nitric Oxide (NO)	42601	Teledyne T200	Chemiluminescence	099	Continuous	Urban	Background
Nitrogen Dioxide (NO <sub>2</sub> )	42602	Teledyne T200	Chemiluminescence	099	Continuous	Urban	Background
Oxides of Nitrogen (NO <sub>x</sub> )	42603	Teledyne T200	Chemiluminescence	099	Continuous	Urban	Background
Ozone (O <sub>3</sub> )	44201	Teledyne T400	Ultraviolet	087	Continuous	Urban	Population Exposure
Sulfur Dioxide (SO <sub>2</sub> )	42401	Thermo 43A	Pulsed fluorescence	060	Continuous	Urban	Background
Fine Particles (PM <sub>2.5</sub> )	88101	Thermo 2025 Low-volume sequential sampler	Gravimetric	145	Every 3 days	Urban	Population Exposure
PM <sub>2.5</sub> Speciation	Appendix C	Met One	XRF, IC, TOA	Appendix C	Every 6 days	Neighborhood	Population Exposure
Volatile Organic Compounds	Appendix A	Canister	TO-15	Appendix A	Every 6 days	Neighborhood	Population Exposure
Carbonyls	Appendix B	DNPH cartridge	TO-11A	Appendix B	Every 6 days	Neighborhood	Population Exposure

<b>Site Purpose</b>	To measure background concentrations in northern New Jersey.
<b>Plans for the next 18 months</b>	No changes.
<b>Other Comment</b>	See Appendices A, B and C for more information on PM <sub>2.5</sub> speciation, volatile organic compounds and carbonyls.

## SITE INFORMATION

Site Name	Clarksboro
Address	Shady Lane Complex, 256 County House Road
City, State, Zip	Clarksboro, NJ 08020
AQS Code	34 015 0002
NJ County	Gloucester
MSA/CSA	Philadelphia-Camden-Wilmington CSA
Latitude	39.800339
Longitude	-75.212119
Date Established	1/1/1981
Suitable for Comparison to PM <sub>2.5</sub> NAAQS?	Not Applicable



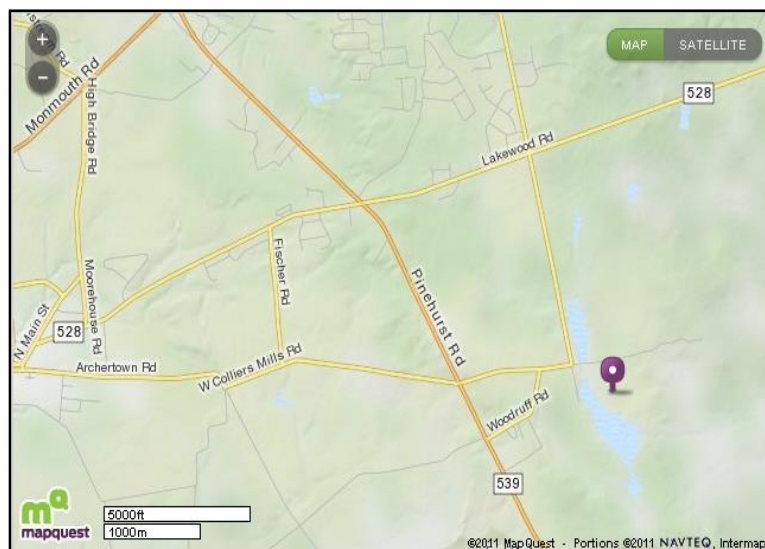
## PARAMETER SUMMARY

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Ozone (O <sub>3</sub> )	44201	Thermo 49i	Ultraviolet	047	Continuous	Urban	Highest Concentration

Site Purpose	To measure highest concentrations of ozone downwind from Philadelphia metropolitan area.
Plans for the next 18 months	Relocate PM <sub>2.5</sub> monitor from Gibbstown.
Other Comment	

## SITE INFORMATION

<b>Site Name</b>	Colliers Mills
<b>Address</b>	Colliers Mills Wildlife Management Area, Success Rd. near Hawkin Road
<b>City, State, Zip</b>	Jackson, NJ 08527
<b>AQS Code</b>	34 029 0006
<b>NJ County</b>	Ocean
<b>MSA/CSA</b>	New York-Northeast New Jersey-Connecticut CSA
<b>Latitude</b>	40.064830
<b>Longitude</b>	-74.444050
<b>Date Established</b>	1/1/1985
<b>Suitable for Comparison to PM<sub>2.5</sub> NAAQS?</b>	Not Applicable



## PARAMETER SUMMARY

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Ozone (O <sub>3</sub> )	44201	Teledyne T400	Ultraviolet	087	Continuous	Urban	Highest Concentration

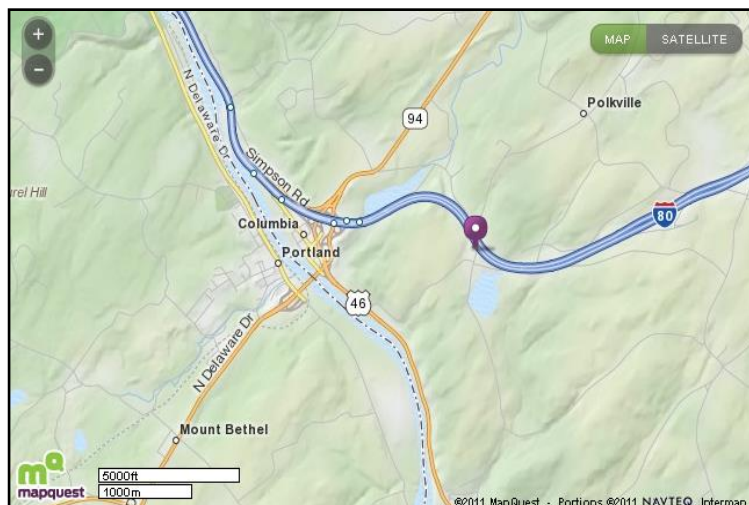
**Site Purpose**  
**Plans for the next 18 months**  
**Other Comment**

To measure highest concentrations for ozone downwind from the Philadelphia metropolitan area and central New Jersey.

No changes.

## SITE INFORMATION

<b>Site Name</b>	Columbia WMA
<b>Address</b>	Columbia Wildlife Management Area, 105 Delaware Avenue
<b>City, State, Zip</b>	Knowlton Township, NJ 07832
<b>AQS Code</b>	34 041 0007
<b>NJ County</b>	Warren
<b>MSA/CSA</b>	Allentown-Bethlehem-Easton-PA-NJ MSA
<b>Latitude</b>	40.924580
<b>Longitude</b>	-75.067815
<b>Date Established</b>	9/23/2010
<b>Suitable for Comparison to PM<sub>2.5</sub> NAAQS?</b>	Yes



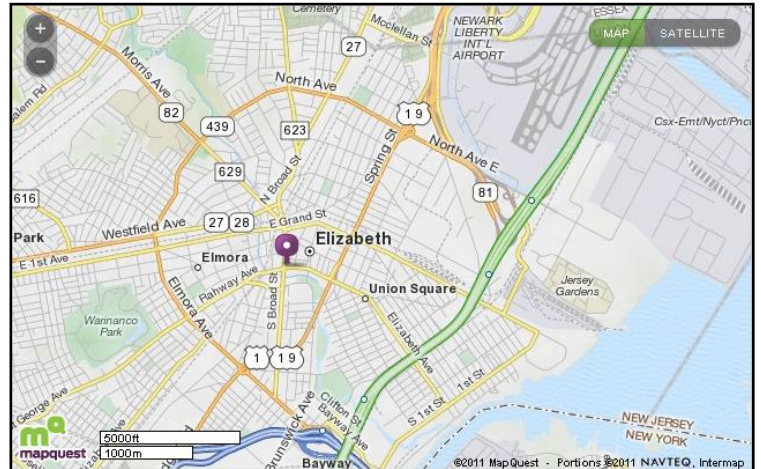
## PARAMETER SUMMARY

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Nitric Oxide (NO)	42601	Thermo 42i	Chemiluminescence	099	Continuous	Neighborhood	Population Exposure
Nitrogen Dioxide (NO <sub>2</sub> )	42602	Thermo 42i	Chemiluminescence	099	Continuous	Neighborhood	Population Exposure
Oxides of Nitrogen (NO <sub>x</sub> )	42603	Thermo 42i	Chemiluminescence	099	Continuous	Neighborhood	Population Exposure
Ozone (O <sub>3</sub> )	44201	Thermo 49i	Ultraviolet	047	Continuous	Neighborhood	Population Exposure
Sulfur Dioxide (SO <sub>2</sub> )	42401	Teledyne T100U	Pulsed fluorescence	100	Continuous	Neighborhood	Highest Concentration
Fine Particles (PM <sub>2.5</sub> )	88101	Thermo 2025 Low-volume sequential sampler	Gravimetric	145	Every 3 days	Neighborhood	Population Exposure
Real-time PM <sub>2.5</sub>	88101	Thermo 5014i	Beta Particle attenuation	183	Continuous	Neighborhood	Population Exposure
Barometric Pressure	64101	Vaisala WXT	Capacitive sensor	060	Continuous	Neighborhood	
Relative Humidity	62201	Vaisala WXT	Capacitive sensor	060	Continuous	Neighborhood	
Temperature	62101	Vaisala WXT	Capacitive sensor	060	Continuous	Neighborhood	
Precipitation	65102	Vaisala WXT	Ultrasonic sensor	060	Continuous	Neighborhood	
Wind Direction	61102	Vaisala WXT	Ultrasonic sensor	060	Continuous	Neighborhood	
Wind Speed	61101	Vaisala WXT	Ultrasonic sensor	060	Continuous	Neighborhood	

<b>Site Purpose</b>	To measure population exposure for NO <sub>2</sub> , O <sub>3</sub> and PM <sub>2.5</sub> ; and highest concentrations for SO <sub>2</sub> .
<b>Plans for the next 18 months</b>	No changes.
<b>Other Comment</b>	

## SITE INFORMATION

Site Name	Elizabeth
Address	7 Broad Street
City, State, Zip	Elizabeth, NJ 07201
AQS Code	34 039 0003
NJ County	Union
MSA/CSA	New York-Northeast New Jersey-Connecticut CSA
Latitude	40.662493
Longitude	-74.214800
Date Established	1/1/1970
Suitable for Comparison to PM <sub>2.5</sub> NAAQS?	Not Applicable



## PARAMETER SUMMARY

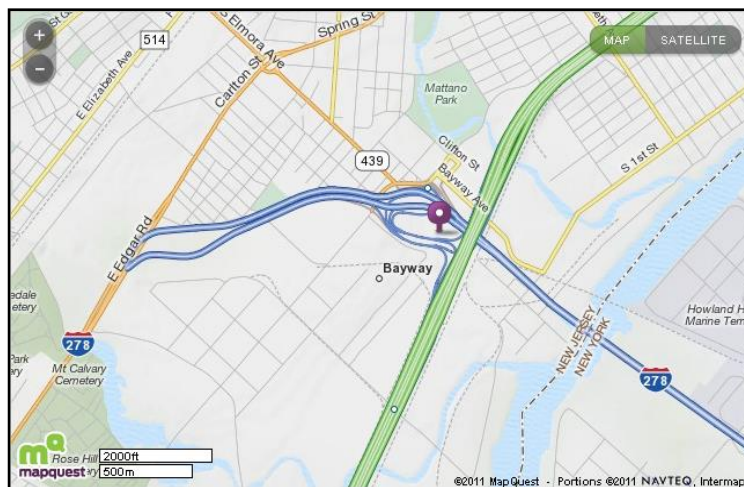
Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Carbon Monoxide (CO)	42101	Thermo 48i	Nondispersive-infrared	054	Continuous	Micro	Highest Concentration
Sulfur Dioxide (SO <sub>2</sub> )	42401	Teledyne T100	Pulsed fluorescence	100	Continuous	Middle	Population Exposure

Site Purpose	To measure the highest concentrations in the central commercial area of Elizabeth.
Plans for the next 18 months	No changes.
Other Comment	



## SITE INFORMATION

<b>Site Name</b>	Elizabeth Lab
<b>Address</b>	Interchange 13 Toll Plaza, NJ Turnpike
<b>City, State, Zip</b>	Elizabeth, NJ 07202
<b>AQS Code</b>	34 039 0004
<b>NJ County</b>	Union
<b>MSA/CSA</b>	New York-Northeast New Jersey-Connecticut CSA
<b>Latitude</b>	40.641440
<b>Longitude</b>	-74.208365
<b>Date Established</b>	1/1/1972
<b>Suitable for Comparison to PM<sub>2.5</sub> NAAQS?</b>	Yes



## PARAMETER SUMMARY

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Carbon Monoxide (CO)	42101	Thermo 48i	Nondispersive-infrared	054	Continuous	Neighborhood	Highest Concentration
Nitric Oxide (NO)	42601	Thermo 42i	Chemiluminescence	074	Continuous	Neighborhood	Highest Concentration
Nitrogen Dioxide (NO <sub>2</sub> )	42602	Thermo 42i	Chemiluminescence	074	Continuous	Neighborhood	Highest Concentration
Oxides of Nitrogen (NO <sub>x</sub> )	42603	Thermo 42i	Chemiluminescence	074	Continuous	Neighborhood	Highest Concentration
Sulfur Dioxide (SO <sub>2</sub> )	42401	Thermo 43i	Pulsed fluorescence	060	Continuous	Neighborhood	Highest Concentration
Fine Particles (PM <sub>2.5</sub> )	88101	Thermo 2025i Low-volume sequential sampler	Gravimetric	145	Daily	Neighborhood	Population Exposure
Real-time PM <sub>2.5</sub>	88101	Thermo 5014i	Beta Particle attenuation	183	Continuous	Neighborhood	Population Exposure
PM <sub>2.5</sub> Speciation	Appendix C	Met One	XRF, IC, TOA	Appendix C	Every 3 days	Neighborhood	Highest Concentration
Volatile Organic Compounds	Appendix A	Canister	TO-15	Appendix A	Every 6 days	Neighborhood	Population Exposure
Carbonyls	Appendix B	DNPH cartridge	TO-11A	Appendix B	Every 6 days	Neighborhood	Population Exposure
Mercury (Hg)		Tekran 2537x	CVAF Spectrometry		Hourly	Neighborhood	Population Exposure
Black Carbon	84313	Teledyne API Model 633 Aethalometer	Optical absorption	861	Continuous	Neighborhood	Population Exposure
BTEX	Appendix E	Syntech Spectras GC 955 BTEX analyzer	Auto-GC PID	092	Continuous	Neighborhood	Population Exposure
Wind Direction	61102	Vaisala WXT	Ultrasonic sensor	060	Continuous	Neighborhood	
Wind Speed	61101	Vaisala WXT	Ultrasonic sensor	060	Continuous	Neighborhood	

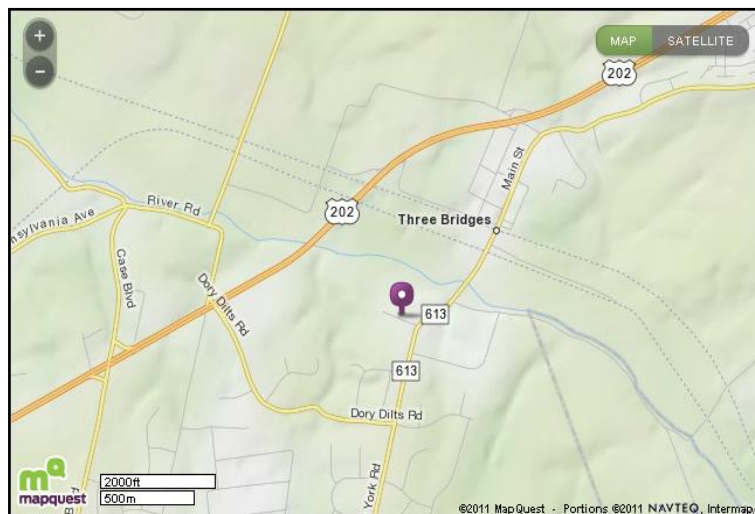
PARAMETER SUMMARY (Elizabeth Lab, continued)

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Barometric Pressure	64101	Vaisala WXT	Capacitive sensor	060	Continuous	Neighborhood	
Relative Humidity	62201	Vaisala WXT	Capacitive sensor	060	Continuous	Neighborhood	
Temperature	62101	Vaisala WXT	Capacitive sensor	060	Continuous	Neighborhood	
Precipitation	65102	Vaisala WXT	Ultrasonic sensor	060	Continuous	Neighborhood	

<b>Site Purpose</b>	The comprehensive air monitoring site in the northeast metropolitan region of New Jersey.
<b>Plans for the next 18 months</b>	No changes.
<b>Other Comment</b>	PM <sub>2.5</sub> gravimetric sampler is collocated for precision.

## SITE INFORMATION

<b>Site Name</b>	Flemington
<b>Address</b>	Raritan Township Municipal Utilities Authority, 365 Old York Road
<b>City, State, Zip</b>	Flemington, NJ 08822
<b>AQS Code</b>	34 019 0001
<b>NJ County</b>	Hunterdon
<b>MSA/CSA</b>	New York-Northeast New Jersey-Connecticut CSA
<b>Latitude</b>	40.515262
<b>Longitude</b>	-74.806671
<b>Date Established</b>	1/1/1980
<b>Suitable for Comparison to PM<sub>2.5</sub> NAAQS?</b>	Not Applicable



## PARAMETER SUMMARY

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Ozone (O <sub>3</sub> )	44201	Teledyne T400	Ultraviolet	087	Continuous	Urban	Population Exposure
Real-time PM <sub>2.5</sub>	88101	Thermo 5014i	Beta Particle attenuation	183	Continuous	Neighborhood	Population Exposure
Barometric Pressure	64101	Vaisala WXT	Capacitive sensor	060	Continuous	Neighborhood	
Relative Humidity	62201	Vaisala WXT	Capacitive sensor	060	Continuous	Neighborhood	
Solar Radiation	63301	Qualimetrics	Pyrometer	011	Continuous	Neighborhood	
Temperature	62101	Vaisala WXT	Capacitive sensor	060	Continuous	Neighborhood	
Precipitation	65102	Vaisala WXT	Ultrasonic sensor	060	Continuous	Neighborhood	
Wind Direction	61102	Vaisala WXT	Ultrasonic sensor	060	Continuous	Neighborhood	
Wind Speed	61101	Vaisala WXT	Ultrasonic sensor	060	Continuous	Neighborhood	

<b>Site Purpose</b>	To measure ozone concentrations in the northwestern region of New Jersey.
<b>Plans for the next 18 months</b>	No changes.
<b>Other Comment</b>	



## SITE INFORMATION

Site Name	Fort Lee Library
Address	320 Main Street, Fort Lee Public Library
City, State, Zip	Fort Lee, NJ 07024
AQS Code	34 003 0003
NJ County	Bergen
MSA/CSA	New York-Northeast New Jersey-Connecticut CSA
Latitude	40.852256
Longitude	-73.973314
Date Established	1/23/1986
Suitable for Comparison to PM <sub>2.5</sub> NAAQS?	Yes



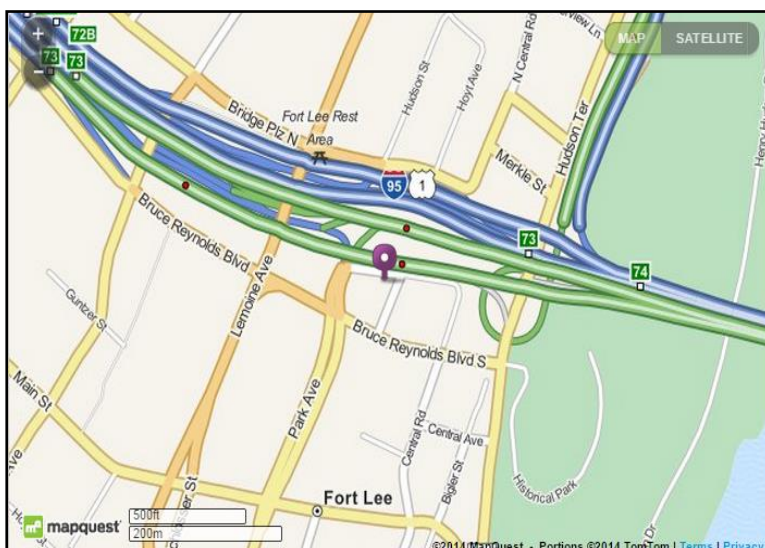
## PARAMETER SUMMARY

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Fine Particles (PM <sub>2.5</sub> )	88101	Thermo 2025 Low-volume sequential sampler	Gravimetric	145	Every 3 days	Neighborhood	Population Exposure

Site Purpose	To measure the population exposure in the Fort Lee area.
Plans for the next 18 months	No changes.
Other Comment	

## SITE INFORMATION

<b>Site Name</b>	Fort Lee Near Road
<b>Address</b>	2047 Central Avenue, adjacent to George Washington Bridge Toll Plaza
<b>City, State, Zip</b>	Fort Lee, NJ 07024
<b>AQS Code</b>	34 003 0010
<b>NJ County</b>	Bergen
<b>MSA/CSA</b>	New York-Northeast New Jersey-Connecticut CSA
<b>Latitude</b>	40.853550
<b>Longitude</b>	-73.966180
<b>Date Established</b>	4/1/2014
<b>Suitable for Comparison to PM<sub>2.5</sub> NAAQS?</b>	Not Applicable



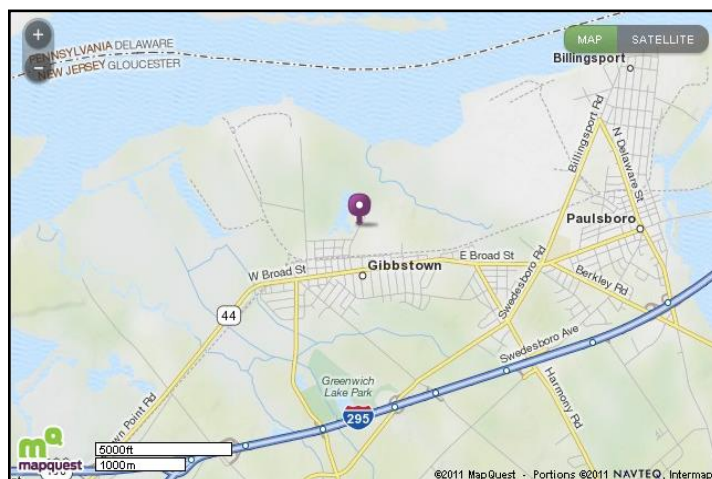
## PARAMETER SUMMARY

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Nitric Oxide (NO)	42601	Thermo 42i	Chemiluminescence	074	Continuous	Microscale	Near-Road Exposure
Nitrogen Dioxide (NO <sub>2</sub> )	42602	Thermo 42i	Chemiluminescence	074	Continuous	Microscale	Near-Road Exposure
Oxides of Nitrogen (NO <sub>x</sub> )	42603	Thermo 42i	Chemiluminescence	074	Continuous	Microscale	Near-Road Exposure
Carbon Monoxide (CO)	42101	Thermo 48i	Nondispersive infrared	054	Continuous	Microscale	Near-Road Exposure
Real-time PM <sub>2.5</sub>	88101	Thermo 5014i	Beta Particle attenuation	183	Continuous	Microscale	Near-Road Exposure
Black Carbon	84313	Teledyne API Model 633 Aethalometer	Optical absorption	861	Continuous	Neighborhood	Population Exposure
BTEX	Appendix E	Syntech Spectras GC 955 BTEX analyzer	Auto-GC PID	092	Continuous	Neighborhood	Population Exposure
Barometric Pressure	64101	Vaisala WXT	Capacitive sensor	060	Continuous	Neighborhood	
Relative Humidity	62201	Vaisala WXT	Capacitive sensor	060	Continuous	Neighborhood	
Temperature	62101	Vaisala WXT	Capacitive sensor	060	Continuous	Neighborhood	
Precipitation	65102	Vaisala WXT	Ultrasonic sensor	060	Continuous	Neighborhood	
Wind Direction	61102	Vaisala WXT	Ultrasonic sensor	060	Continuous	Neighborhood	
Wind Speed	61101	Vaisala WXT	Ultrasonic sensor	060	Continuous	Neighborhood	

<b>Site Purpose</b>	To measure near-road exposure for NO <sub>2</sub> , CO and PM <sub>2.5</sub> .
<b>Plans for the next 18 months</b>	No changes.
<b>Other Comment</b>	

## SITE INFORMATION

<b>Site Name</b>	Gibbstown
<b>Address</b>	Municipal Maintenance Yard, 61 North School Street
<b>City, State, Zip</b>	Gibbstown, NJ 08027
<b>AQS Code</b>	34 015 0004
<b>NJ County</b>	Gloucester
<b>MSA/CSA</b>	Philadelphia-Camden-Wilmington CSA
<b>Latitude</b>	39.830837
<b>Longitude</b>	-75.284682
<b>Date Established</b>	2/2/2007
<b>Suitable for Comparison to PM<sub>2.5</sub> NAAQS?</b>	Yes



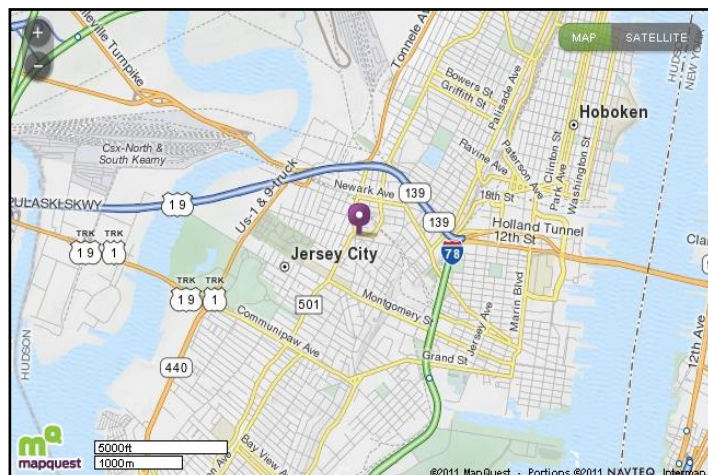
## PARAMETER SUMMARY

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Fine Particles (PM <sub>2.5</sub> )	88101	Thermo 2025 Low-volume sequential sampler	Gravimetric	145	Every 3 days	Neighborhood	Population Exposure

<b>Site Purpose</b>	To measure population exposure in the Gibbstown area.
<b>Plans for the next 18 months</b>	Relocate monitor to Clarksboro because of changes at the site that will cause it to no longer meet siting criteria.
<b>Other Comment</b>	

## SITE INFORMATION

Site Name	Jersey City
Address	2828 John F. Kennedy Boulevard
City, State, Zip	Jersey City, NJ 07306
AQS Code	34 017 1002
NJ County	Hudson
MSA/CSA	New York-Northeast New Jersey-Connecticut CSA
Latitude	40.731645
Longitude	-74.066308
Date Established	1/1/1970
Suitable for Comparison to PM <sub>2.5</sub> NAAQS?	Not Applicable



## PARAMETER SUMMARY

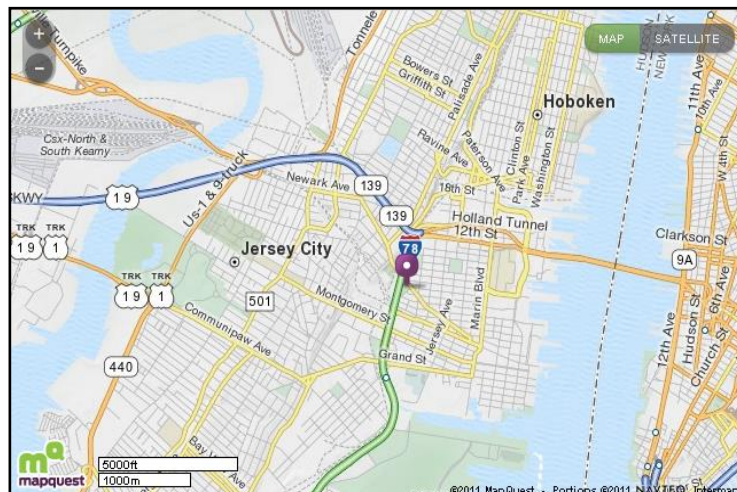
Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Carbon Monoxide (CO)	42101	Thermo 48/TLE	Nondispersive-infrared	054	Continuous	Micro	Highest Concentration
Sulfur Dioxide (SO <sub>2</sub> )	42401	Teledyne T100	Pulsed fluorescence	100	Continuous	Neighborhood	Highest Concentration
Nitric Oxide (NO)	42601	Teledyne T200	Chemiluminescence	099	Continuous	Neighborhood	Population Exposure
Nitrogen Dioxide (NO <sub>2</sub> )	42602	Teledyne T200	Chemiluminescence	099	Continuous	Neighborhood	Population Exposure
Oxides of Nitrogen (NO <sub>x</sub> )	42603	Teledyne T200	Chemiluminescence	099	Continuous	Neighborhood	Population Exposure

Site Purpose	To measure highest concentrations in the central commercial area of Jersey City.
Plans for the next 18 months	No changes.
Other Comment	



## SITE INFORMATION

<b>Site Name</b>	Jersey City Firehouse
<b>Address</b>	Jersey City Fire Department Engine 6, 355 Newark Avenue,
<b>City, State, Zip</b>	Jersey City, NJ 07302
<b>AQS Code</b>	34 017 1003
<b>NJ County</b>	Hudson
<b>MSA/CSA</b>	New York-Northeast New Jersey- Connecticut CSA
<b>Latitude</b>	40.725454
<b>Longitude</b>	-74.052290
<b>Date Established</b>	1/1/1967
<b>Suitable for Comparison to PM<sub>2.5</sub> NAAQS?</b>	Yes



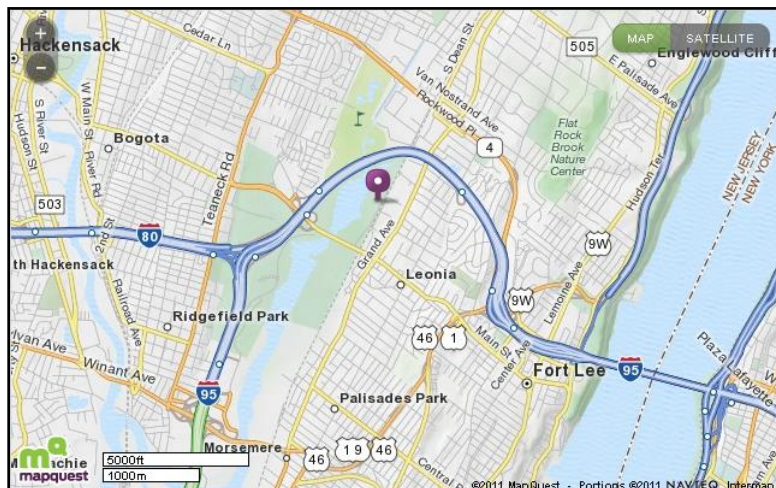
## PARAMETER SUMMARY

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Fine Particles (PM <sub>2.5</sub> )	88101	Thermo 2025 Low-volume sequential sampler	Gravimetric	145	Daily	Neighborhood	Population Exposure
Real-time PM <sub>2.5</sub>	88101	Thermo 5014i	Beta Particle attenuation	183	Continuous	Neighborhood	Population Exposure
Inhalable Particles (PM <sub>10</sub> )	81102	Thermo 2000 Low-volume single sampler	Gravimetric	126	Every 6 days	Neighborhood	Highest Concentration

<b>Site Purpose</b>	To measure population exposure in the Jersey City area.
<b>Plans for the next 18 months</b>	No changes.
<b>Other Comment</b>	Gravimetric PM <sub>2.5</sub> and PM <sub>10</sub> are collocated for precision measurements. Sample taken every 6 days. The AQS method code for the collocated PM <sub>2.5</sub> monitor is 143.

## SITE INFORMATION

Site Name	Leonia
Address	40 Fort Lee Road, Overpeck Park,
City, State, Zip	Leonia, NJ 07605
AQS Code	34 003 0006
NJ County	Bergen
MSA/CSA	New York-Northeast New Jersey-Connecticut CSA
Latitude	40.870436
Longitude	-73.991994
Date Established	12/7/2007
Suitable for Comparison to PM <sub>2.5</sub> NAAQS?	Not Applicable



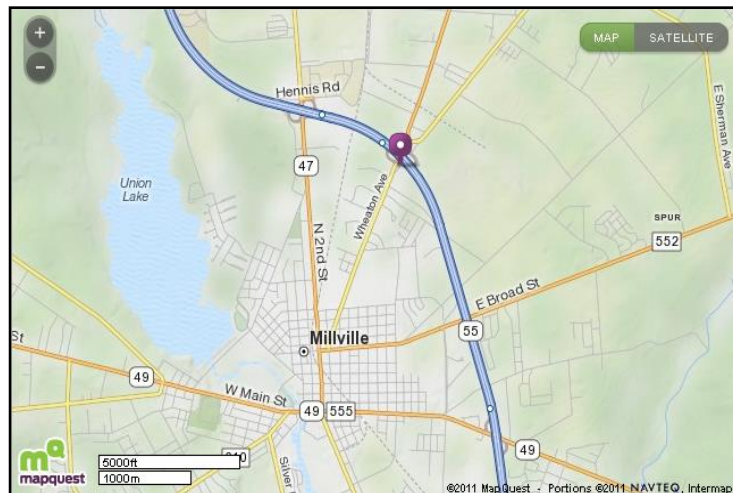
## PARAMETER SUMMARY

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Ozone (O <sub>3</sub> )	44201	Thermo 49C	Ultraviolet	047	Continuous	Neighborhood	Population Exposure

Site Purpose	To measure population exposure in the Leonia and Teaneck areas.
Plans for the next 18 months	No changes.
Other Comment	

## SITE INFORMATION

Site Name	Millville
Address	Next to 4425 South Main Road
City, State, Zip	Millville, NJ 08332
AQS Code	34 011 0007
NJ County	Cumberland
MSA/CSA	Vineland-Millville-Bridgeton MSA
Latitude	39.422273
Longitude	-75.025204
Date Established	1/1/1983
Suitable for Comparison to PM <sub>2.5</sub> NAAQS?	Not Applicable



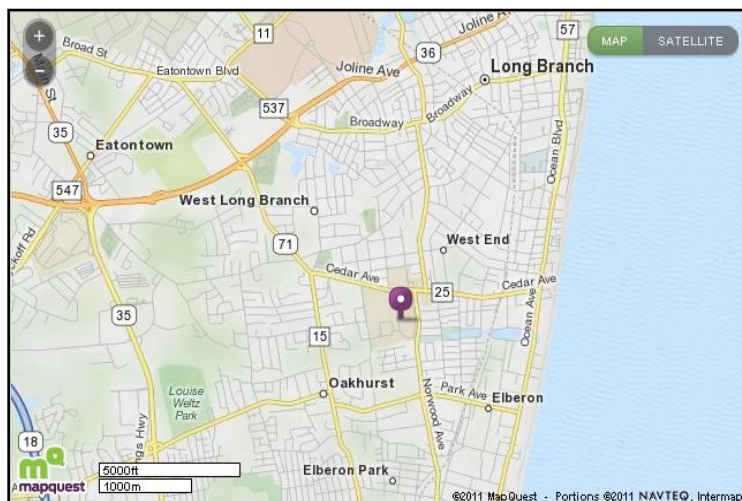
## PARAMETER SUMMARY

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Nitric Oxide (NO)	42601	Teledyne T200	Chemiluminescence	099	Continuous	Neighborhood	Population Exposure
Nitrogen Dioxide (NO <sub>2</sub> )	42602	Teledyne T200	Chemiluminescence	099	Continuous	Neighborhood	Population Exposure
Oxides of Nitrogen (NO <sub>x</sub> )	42603	Teledyne T200	Chemiluminescence	099	Continuous	Neighborhood	Population Exposure
Ozone (O <sub>3</sub> )	44201	Thermo 49C	Ultraviolet	047	Continuous	Neighborhood	Population Exposure
Real-time PM <sub>2.5</sub>	88101	Thermo 5014i	Beta Particle attenuation	183	Continuous	Neighborhood	Population Exposure

Site Purpose	To measure population exposure in the Vineland and Millville areas.
Plans for the next 18 months	No changes.
Other Comment	

## SITE INFORMATION

<b>Site Name</b>	Monmouth University
<b>Address</b>	Edison Science Bldg., 400 Cedar Avenue
<b>City, State, Zip</b>	West Long Branch, NJ 07764
<b>AQS Code</b>	34 025 0005
<b>NJ County</b>	Monmouth
<b>MSA/CSA</b>	New York-Northeast New Jersey-Connecticut CSA
<b>Latitude</b>	40.277647
<b>Longitude</b>	-74.005100
<b>Date Established</b>	5/13/1989
<b>Suitable for Comparison to PM<sub>2.5</sub> NAAQS?</b>	Not Applicable



## PARAMETER SUMMARY

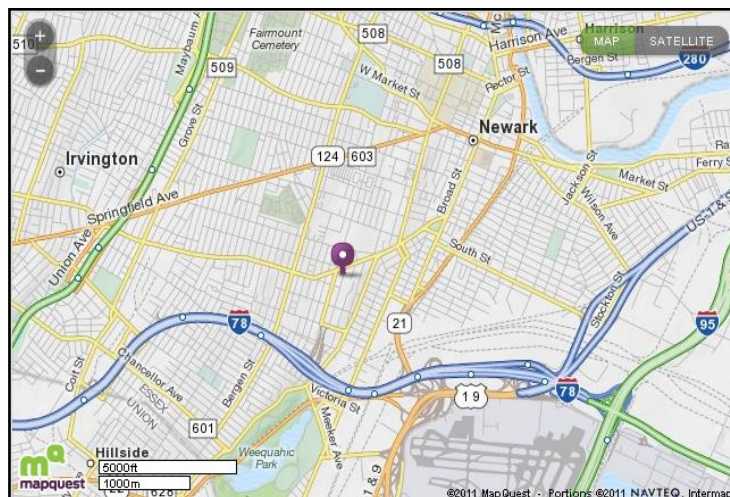
Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Ozone (O <sub>3</sub> )	44201	Thermo 49	Ultraviolet	047	Continuous	Neighborhood	Highest Concentration

<b>Site Purpose</b>	To measure highest concentrations of ozone in the eastern Monmouth County area.
<b>Plans for the next 18 months</b>	No changes.
<b>Other Comment</b>	



## SITE INFORMATION

<b>Site Name</b>	Newark Firehouse
<b>Address</b>	Newark Fire Department Engine 10, 360 Clinton Avenue,
<b>City, State, Zip</b>	Newark, NJ 07108
<b>AQS Code</b>	34 013 0003
<b>NJ County</b>	Essex
<b>MSA/CSA</b>	New York-Northeast New Jersey- Connecticut CSA
<b>Latitude</b>	40.720989
<b>Longitude</b>	-74.192892
<b>Date Established</b>	5/1/2009
<b>Suitable for Comparison to PM<sub>2.5</sub> NAAQS?</b>	Yes



## PARAMETER SUMMARY

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Carbon Monoxide (CO)	42101	Thermo 48iTLE	Nondispersive-infrared	554	Continuous	Neighborhood	Population Exposure
Nitric Oxide (NO)	42601	Thermo 42i-Y	Chemiluminescence	674	Continuous	Neighborhood	Population Exposure
NO <sub>y</sub> -NO Difference	42612	Thermo 42i-Y	Chemiluminescence	674	Continuous	Neighborhood	Population Exposure
Total Reactive Oxides of Nitrogen (NO <sub>y</sub> )	42600	Thermo 42i-Y	Chemiluminescence	674	Continuous	Neighborhood	Population Exposure
Nitric Oxide (NO)	42601	Thermo 42i	Chemiluminescence	074	Continuous	Neighborhood	Population Exposure
Nitrogen Dioxide (NO <sub>2</sub> )	42602	Thermo 42i	Chemiluminescence	074	Continuous	Neighborhood	Population Exposure
Oxides of Nitrogen (NO <sub>x</sub> )	42603	Thermo 42i	Chemiluminescence	074	Continuous	Neighborhood	Population Exposure
Ozone (O <sub>3</sub> )	44201	Thermo 49i	Ultraviolet	047	Continuous	Neighborhood	Population Exposure
Sulfur Dioxide (SO <sub>2</sub> )	42401	Thermo 43iTLE	Pulsed fluorescence	560	Continuous	Neighborhood	Highest Concentration
Fine Particles (PM <sub>2.5</sub> )	88101	Thermo 2025 Low-volume sequential sampler	Gravimetric	145	Every 3 days	Neighborhood	Population Exposure
Lead (Pb)	85129	Thermo 2025 Low-volume sequential sampler	XRF with PM <sub>10</sub>	811	Every 6 days	Neighborhood	Population Exposure
Real-time PM <sub>2.5</sub>	88101	Thermo 5014i	Beta Particle attenuation	183	Continuous	Neighborhood	Population Exposure

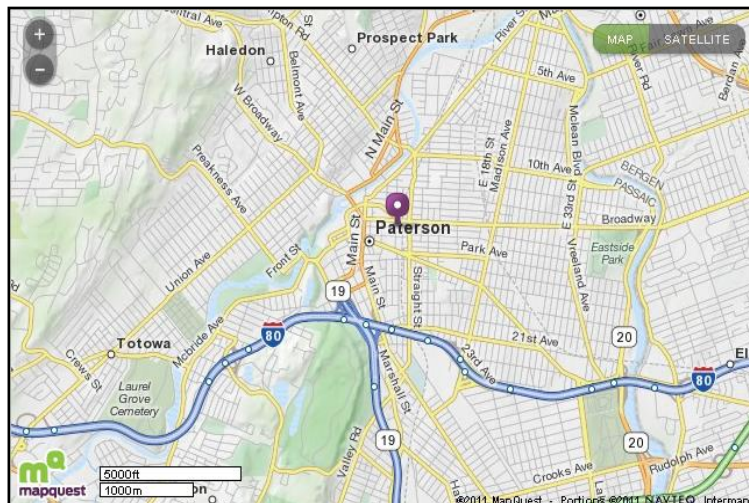
**PARAMETER SUMMARY (Newark Firehouse, continued)**

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
PM coarse	86101	Thermo 2025 Sequential Sampler Pair	Paired Gravimetric Difference	176	Every 3 days	Neighborhood	Population Exposure
Inhalable Particles (PM <sub>10</sub> )	81102	Thermo 2025 Sequential Sampler	Gravimetric	127	Every 3 days	Neighborhood	Population Exposure
PM <sub>2.5</sub> Speciation	Appendix C	Met One	XRF, IC, TOA	Appendix C	Every 3 days	Neighborhood	Population Exposure
BTEX	Appendix E	Syntech Spectras GC 955 BTEX analyzer	Auto-GC PID	092	Continuous	Neighborhood	Population Exposure
Black Carbon	84313	Teledyne API Model 633 Aethalometer	Optical absorption	861	Continuous	Neighborhood	Population Exposure
Barometric Pressure	64101	Vaisala WXT	Capacitive sensor	060	Continuous	Neighborhood	
Relative Humidity	62201	Vaisala WXT	Capacitive sensor	060	Continuous	Neighborhood	
Solar Radiation	63301	Qualimetrics	Pyrometer	011	Continuous	Neighborhood	
Temperature	62101	Vaisala WXT	Capacitive sensor	060	Continuous	Neighborhood	
Precipitation	65102	Vaisala WXT	Ultrasonic sensor	060	Continuous	Neighborhood	
Wind Direction	61102	Vaisala WXT	Ultrasonic sensor	060	Continuous	Neighborhood	
Wind Speed	61101	Vaisala WXT	Ultrasonic sensor	060	Continuous	Neighborhood	
Resultant Wind Direction	61104	Vaisala WXT	Ultrasonic sensor	060	Continuous	Neighborhood	
Resultant Wind Speed	61103	Vaisala WXT	Ultrasonic sensor	060	Continuous	Neighborhood	

Site Purpose	New Jersey's NCore site
Plans for the next 18 months	No changes.
Other Comment	CO and SO <sub>2</sub> data are measured by "trace-level" analyzers. See Appendix C for more information on PM <sub>2.5</sub> speciation.

## SITE INFORMATION

<b>Site Name</b>	Paterson
<b>Address</b>	Paterson City Board of Health, 176 Broadway
<b>City, State, Zip</b>	Paterson, NJ 07505
<b>AQS Code</b>	34 031 0005
<b>NJ County</b>	Passaic
<b>MSA/CSA</b>	New York-Northeast New Jersey-Connecticut CSA
<b>Latitude</b>	40.918381
<b>Longitude</b>	-74.168092
<b>Date Established</b>	1/1/1978
<b>Suitable for Comparison to PM<sub>2.5</sub> NAAQS?</b>	Yes



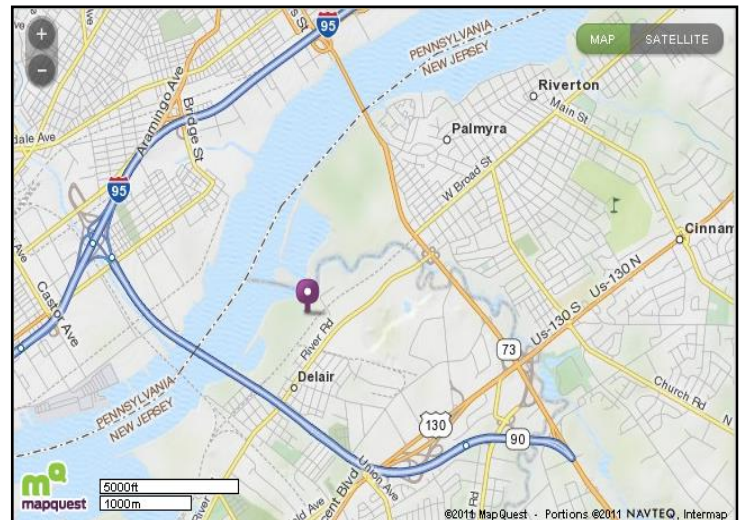
## PARAMETER SUMMARY

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Fine Particles (PM <sub>2.5</sub> )	88101	Thermo 2025 Low-volume sequential sampler	Gravimetric	145	Every 3 days	Neighborhood	Population Exposure

<b>Site Purpose</b>	To measure population exposure in the Paterson area.
<b>Plans for the next 18 months</b>	No changes.
<b>Other Comment</b>	

## SITE INFORMATION

Site Name	Pennsauken
Address	Morris-Delair Water Treatment Plant, 8998 Zimmerman Avenue
City, State, Zip	Pennsauken, NJ 08110
AQS Code	34 007 1007
NJ County	Camden
MSA/CSA	Philadelphia-Camden-Wilmington CSA
Latitude	39.989036
Longitude	-75.050008
Date Established	9/1/1983
Suitable for Comparison to PM <sub>2.5</sub> NAAQS?	Yes



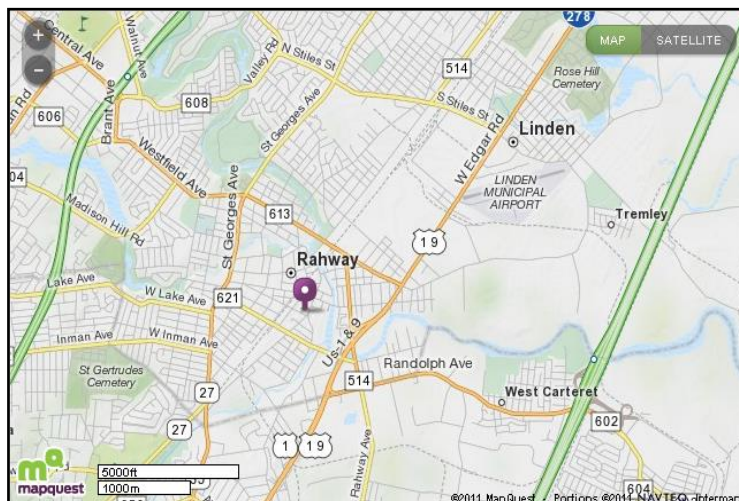
## PARAMETER SUMMARY

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Fine Particles (PM <sub>2.5</sub> )	88101	Thermo 2025 Low- volume sequential sampler	Gravimetric	145	Every 3 days	Neighborhood	Population Exposure

Site Purpose	To measure population exposure in the Pennsauken area.
Plans for the next 18 months	No changes.
Other Comment	

## SITE INFORMATION

<b>Site Name</b>	Rahway
<b>Address</b>	Rahway Fire Department Headquarters, 1300 Main Street
<b>City, State, Zip</b>	Rahway, NJ 07065
<b>AQS Code</b>	34 039 2003
<b>NJ County</b>	Union
<b>MSA/CSA</b>	New York-Northeast New Jersey- Connecticut CSA
<b>Latitude</b>	40.603943
<b>Longitude</b>	-74.276174
<b>Date Established</b>	12/11/1999
<b>Suitable for Comparison to PM<sub>2.5</sub> NAAQS?</b>	Yes



## PARAMETER SUMMARY

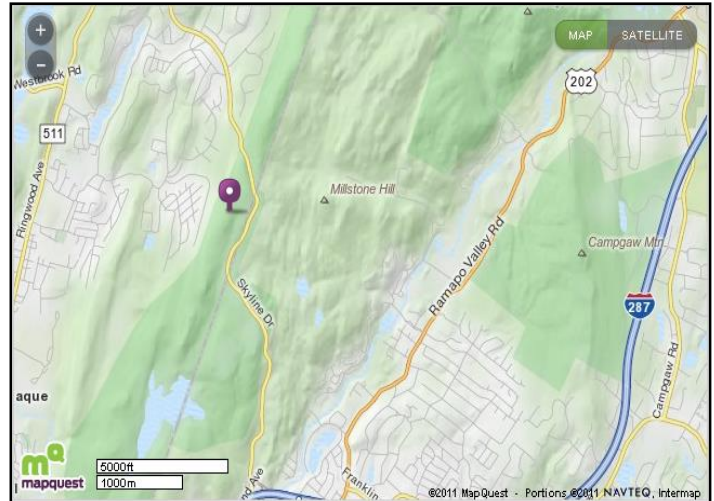
Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Fine Particles (PM <sub>2.5</sub> )	88101	Thermo 2025 Low- volume sequential sampler	Gravimetric	145	Daily	Neighborhood	Population Exposure
Real-time PM <sub>2.5</sub>	88502	Thermo 1400 TEOM	Gravimetric, Acceptable PM <sub>2.5</sub>	703	Continuous	Neighborhood	Population Exposure

<b>Site Purpose</b>	To measure population exposure in the Rahway area.
<b>Plans for the next 18 months</b>	Replace TEOM with a new federal equivalent method real-time sampler. Remove filter-based PM <sub>2.5</sub> sampler.
<b>Other Comment</b>	Real-time PM <sub>2.5</sub> TEOM sampler is operating without the FDMS at 50° Celsius.



## SITE INFORMATION

<b>Site Name</b>	Ramapo
<b>Address</b>	Ramapo Mountain State Forest Access Road off Skyline Drive
<b>City, State, Zip</b>	Wanaque, NJ 07465
<b>AQS Code</b>	34 031 5001
<b>NJ County</b>	Passaic
<b>MSA/CSA</b>	New York-Northeast New Jersey- Connecticut CSA
<b>Latitude</b>	41.058617
<b>Longitude</b>	-74.255544
<b>Date Established</b>	6/5/1998
<b>Suitable for Comparison to PM<sub>2.5</sub> NAAQS?</b>	Not Applicable



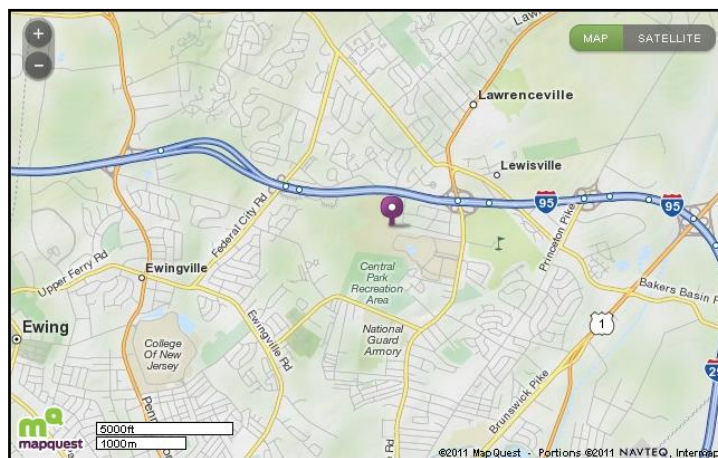
## PARAMETER SUMMARY

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Ozone (O <sub>3</sub> )	44201	Thermo 49i	Ultraviolet	047	Continuous	Urban	Background

<b>Site Purpose</b>	To measure background, transport and upwind concentrations of ozone.
<b>Plans for the next 18 months</b>	No changes.
<b>Other Comment</b>	

## SITE INFORMATION

<b>Site Name</b>	Rider University
<b>Address</b>	2083 Lawrenceville Road, Athletic Fields
<b>City, State, Zip</b>	Lawrenceville, NJ 08648
<b>AQS Code</b>	34 021 0005
<b>NJ County</b>	Mercer
<b>MSA/CSA</b>	Trenton-Ewing MSA
<b>Latitude</b>	40.283092
<b>Longitude</b>	-74.742644
<b>Date Established</b>	6/1/1981
<b>Suitable for Comparison to PM<sub>2.5</sub> NAAQS?</b>	Not Applicable



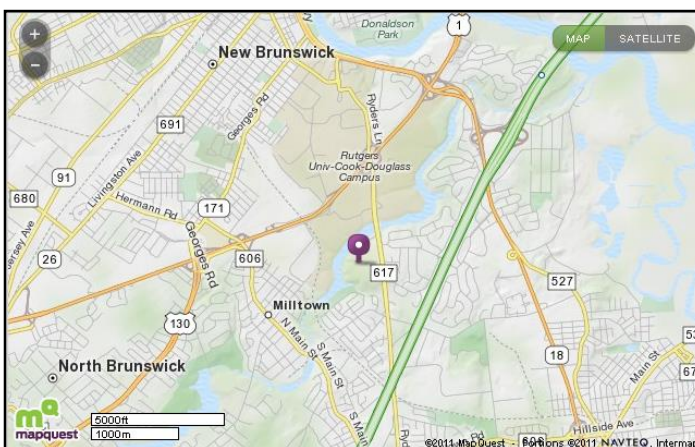
## PARAMETER SUMMARY

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Ozone (O <sub>3</sub> )	44201	Thermo 49C	Ultraviolet	047	Continuous	Neighborhood	Population Exposure
Barometric Pressure	64101	Vaisala WXT	Capacitive sensor	060	Continuous	Neighborhood	
Relative Humidity	62201	Vaisala WXT	Capacitive sensor	060	Continuous	Neighborhood	
Solar Radiation	63301	Qualimetrics	Pyrometer	011	Continuous	Neighborhood	
Temperature	62101	Vaisala WXT	Capacitive sensor	060	Continuous	Neighborhood	
Wind Direction	61102	Vaisala WXT	Ultrasonic sensor	060	Continuous	Neighborhood	
Wind Speed	61101	Vaisala WXT	Ultrasonic sensor	060	Continuous	Neighborhood	
Real-time PM <sub>2.5</sub>	88101	Thermo 5014i	Beta Particle attenuation	183	Continuous	Neighborhood	Population Exposure

<b>Site Purpose</b>	To measure population exposure.
<b>Plans for the next 18 months</b>	No changes.
<b>Other Comment</b>	

## SITE INFORMATION

<b>Site Name</b>	Rutgers University
<b>Address</b>	Horticultural Farm #3, 67 Ryders Lane
<b>City, State, Zip</b>	East Brunswick, NJ 08901
<b>AQS Code</b>	34 023 0011
<b>NJ County</b>	Middlesex
<b>MSA/CSA</b>	New York-Northeast New Jersey-Connecticut CSA
<b>Latitude</b>	40.462182
<b>Longitude</b>	-74.429439
<b>Date Established</b>	10/1/1994
<b>Suitable for Comparison to PM<sub>2.5</sub> NAAQS?</b>	Not Applicable



## PARAMETER SUMMARY

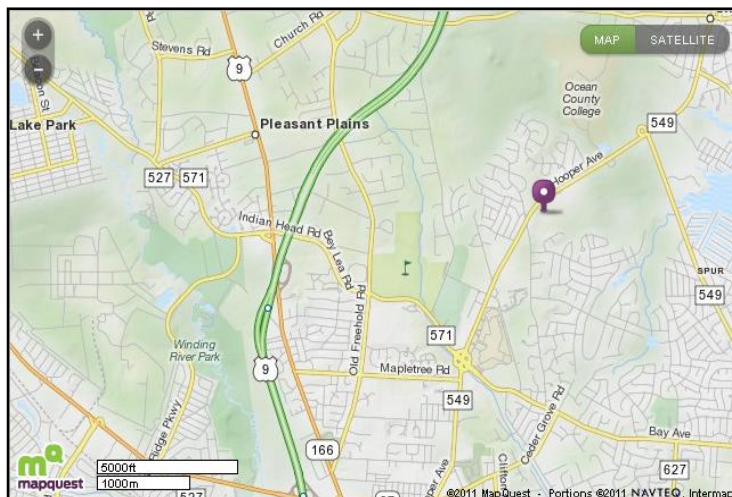
Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Nitric Oxide (NO)	42601	Thermo 42	Chemiluminescence	074	Continuous	Neighborhood	Population Exposure
Nitrogen Dioxide (NO <sub>2</sub> )	42602	Thermo 42	Chemiluminescence	074	Continuous	Neighborhood	Population Exposure
Oxides of Nitrogen (NO <sub>x</sub> )	42603	Thermo 42	Chemiluminescence	074	Continuous	Neighborhood	Population Exposure
Ozone (O <sub>3</sub> )	44201	Teledyne T400	Ultraviolet	087	Continuous	Neighborhood	Population Exposure
Ozone Precursors (PAMS)	Appendix D	Perkin Elmer	Auto GC-FID	Appendix D	Hourly	Urban	Background
Real-time PM <sub>2.5</sub>	88101	Thermo 5014i	Beta Particle attenuation	183	Continuous	Neighborhood	Population Exposure
Fine Particles (PM <sub>2.5</sub> )	88101	Thermo 2025 Low-volume sequential sampler	Gravimetric	145	Every 3 days	Neighborhood	Population Exposure
Volatile Organic Compounds	Appendix A	Canister	TO-15	Appendix A	Every 6 days	Neighborhood	Population Exposure
Carbonyls	Appendix B	DNPH cartridge	TO-11A	Appendix B	Every 6 days	Neighborhood	Population Exposure
PM <sub>2.5</sub> Speciation	Appendix C	Met One	XRF, IC, TOA	Appendix C	Every 3 days	Neighborhood	Population Exposure
Mercury (Hg)		Tekran 2537x	CVAF Spectrometry		Hourly	Neighborhood	Population Exposure

<b>Site Purpose</b>	To measure population exposure and ozone precursors – downwind for Philadelphia metropolitan area and upwind for New York metropolitan area.
<b>Plans for the next 18 months</b>	No changes.
<b>Other Comment</b>	Upper air and lower air meteorological measurements are collected at this site by Rutgers University; see Appendix D for more information on ozone precursors, also known as PAMS. See Appendices A and B for more information on volatile organic compounds and carbonyls.



## SITE INFORMATION

<b>Site Name</b>	Toms River
<b>Address</b>	Hooper Avenue Elementary School, 1517 Hooper Avenue
<b>City, State, Zip</b>	Toms River, NJ 08753
<b>AQS Code</b>	34 029 2002
<b>NJ County</b>	Ocean
<b>MSA/CSA</b>	New York-Northeast New Jersey- Connecticut CSA
<b>Latitude</b>	39.994908
<b>Longitude</b>	-74.170447
<b>Date Established</b>	2/11/1999
<b>Suitable for Comparison to PM<sub>2.5</sub> NAAQS?</b>	Yes



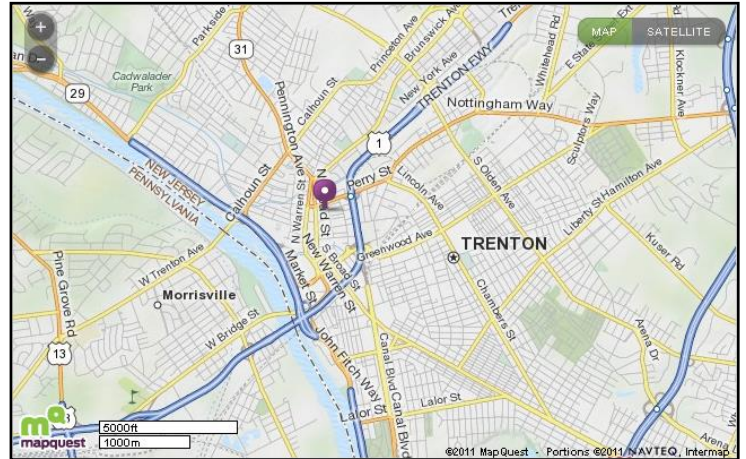
## PARAMETER SUMMARY

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Fine Particles (PM <sub>2.5</sub> )	88101	Thermo 2025 Low- volume sequential sampler	Gravimetric	145	Daily	Neighborhood	Population Exposure

<b>Site Purpose</b>	To measure population exposure in the Toms River area.
<b>Plans for the next 18 months</b>	No changes.
<b>Other Comment</b>	

## SITE INFORMATION

Site Name	Trenton
Address	Trenton Public Library, 120 Academy Street
City, State, Zip	Trenton, NJ 08608
AQS Code	34 021 0008
NJ County	Mercer
MSA/CSA	Trenton-Ewing MSA
Latitude	40.222411
Longitude	-74.763167
Date Established	9/1/1982
Suitable for Comparison to PM <sub>2.5</sub> NAAQS?	Yes



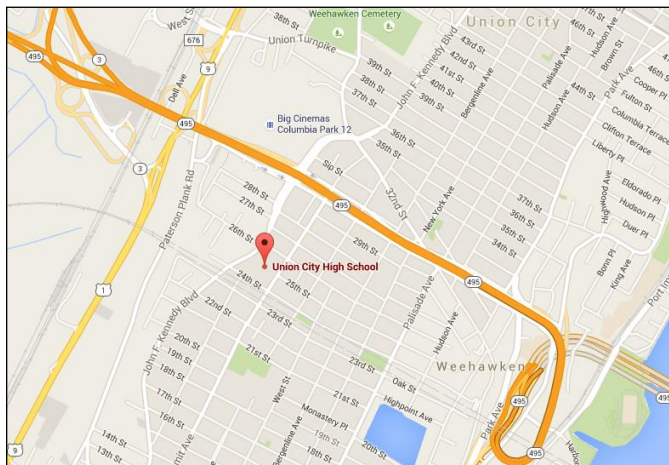
## PARAMETER SUMMARY

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Fine Particles (PM <sub>2.5</sub> )	88101	Thermo 2025 Low-volume sequential sampler	Gravimetric	145	Daily	Neighborhood	Population Exposure

Site Purpose	To measure population exposure in the downtown commercial district of Trenton.
Plans for the next 18 months	No changes.
Other Comment	

## SITE INFORMATION

<b>Site Name</b>	Union City High School
<b>Address</b>	2500 John F. Kennedy Blvd.
<b>City, State, Zip</b>	Union City, NJ 07087
<b>AQS Code</b>	34 017 0008
<b>NJ County</b>	Hudson
<b>MSA/CSA</b>	New York-Northeast New Jersey-Connecticut CSA
<b>Latitude</b>	40.770908
<b>Longitude</b>	-74.036218
<b>Date Established</b>	1/1/2016
<b>Suitable for Comparison to PM<sub>2.5</sub> NAAQS?</b>	Yes



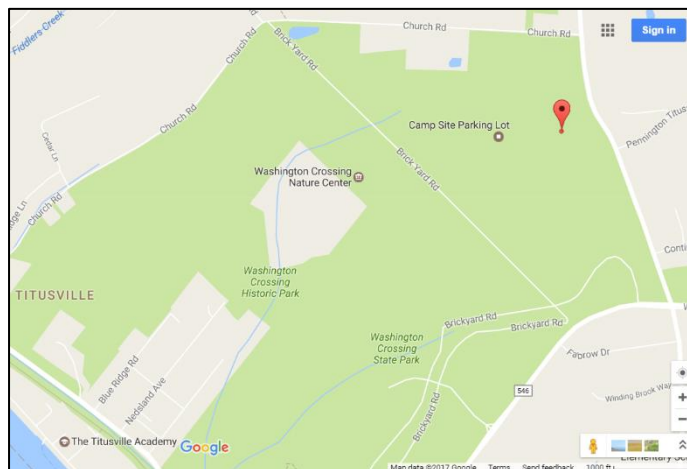
## PARAMETER SUMMARY

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Fine Particles (PM <sub>2.5</sub> )	88101	Thermo 2025 Low-volume sequential sampler	Gravimetric	145	Every 3 days	Neighborhood	Population Exposure

<b>Site Purpose</b>	To measure population exposure in the Union City and Hudson County areas.
<b>Plans for the next 18 months</b>	No changes.
<b>Other Comment</b>	

## SITE INFORMATION

Site Name	Washington Crossing
Address	1240 Bear Tavern Road, Washington Crossing State Park
City, State, Zip	Titusville, NJ 08560
AQS Code	
NJ County	Mercer
MSA/CSA	Trenton-Ewing MSA
Latitude	40.315359
Longitude	-74.853613
Date Established	1/1/1989
Suitable for Comparison to PM <sub>2.5</sub> NAAQS?	Yes



## PARAMETER SUMMARY

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Acid Deposition		Wet Deposition Collector	Ion Chromatography		Weekly	Neighborhood	Population Exposure

Site Purpose	To measure population exposure and transported fine particle concentrations.
Plans for the next 18 months	No changes.
Other Comment	The weekly acid deposition samples are sent to the National Atmospheric Deposition Program (NADP) for analysis. The event acid deposition samples are analyzed by the Bureau of Air Monitoring. The weekly and event acid deposition data are not submitted by NJDEP or NADP to EPA's AQS database.

## GLOSSARY OF ABBREVIATIONS AND TERMS

### ABBREVIATIONS

**AQI** – Air Quality Index, a national air quality rating system based on the National Ambient Air Quality Standards

**AQS** – Air Quality Subsystem, USEPA's database for air quality data nationwide

**CBSA** – Core-Based Statistical Area

**CSA** – Combined Statistical Area, defined by U.S. Office of Management and Budget as a geographic area having 2 or more Metropolitan Statistical Areas

**CFR** – Code of Federal Regulations

**CO** – Carbon monoxide

**CVAF Spectrometry** – Cold Vapor Atomic Fluorescence Spectrometry, method for analyzing mercury

**DNPH cartridge** – Di-Nitro-Phenyl-Hydrazine, an adsorbent for trapping carbonyls in air

**DVMT** – Daily Vehicle Miles Traveled

**auto GC-FID** – automated gas Chromatograph Flame Ionization Detection

**Hg** – Mercury

**IC** – Ion Chromatography, a method for analyzing for ionic compounds from fine particles

**IMPROVE** – Interagency Monitoring of Protected Visual Environments

**MSA** – Metropolitan Statistical Area, 1 or more counties having a population greater than 50,000

**NAAQS** – National Ambient Air Quality Standard

**NCore** – National Core, a monitoring site having a group of parameters specified by USEPA

**NJDEP** – New Jersey Department of Environmental Protection

**NNEM** – Nonroad Emissions Equipment Model

**NO** – Nitric oxide

**NO<sub>2</sub>** – Nitrogen dioxide

**NO<sub>x</sub>** – Oxides of nitrogen

**NO<sub>y</sub>** – Total reactive oxides of nitrogen

**O<sub>3</sub>** – Ozone

**PAMS** – Photochemical Assessment Monitoring Station, sites which measure ozone precursors

**Pb** – Lead

**PM<sub>2.5</sub>** – Fine particles, 2.5 micrometers in aerodynamic diameter or smaller

**PM<sub>10</sub>** – Inhalable particles, 10 micrometer in aerodynamic diameter or smaller

**PM<sub>10-2.5</sub>** – Coarse particles, between 10 and 2.5 micrometers in aerodynamic diameter

**PM<sub>2.5</sub>-Speciation** – a group of elements, ionic compounds and carbon compounds that are analyzed from fine particles

**PWEI** – Population-weighted emissions index

**R&P 1400** – the instrument manufactured by Rupprecht and Pattashnik to measure real-time PM<sub>2.5</sub>

**R&P 2025** – the instrument manufactured by Rupprecht and Pattashnik to measure PM<sub>2.5</sub>; data from this instrument can be used for comparison to the NAAQS

**RRF** – Resource Recovery Facility; trash incineration facility

**SLAMS** – State and Local Air Monitoring Station; designation for monitoring site or sampler from which data can be used for comparison to the National Ambient Air Quality Standards

**SO<sub>2</sub>** – Sulfur dioxide

**SPM** – Special Purpose Monitor; designation for monitoring site or sampler from which data are not used for comparison to the National Ambient Air Quality Standards

**STN** – Speciation Trends Network

**TEOM-FDMS** – Tapered Element Oscillating Microbalance with Filter Dynamic Measurement System; the analytical method used by an R&P 1400 to measure real-time PM<sub>2.5</sub>

**THERMO 42** – the instrument manufactured by Thermo Environmental Corp. to measure nitrogen dioxide, nitric oxide and oxides of nitrogen

**THERMO 43A** – the instrument manufactured by Thermo Environmental Corp. to measure sulfur dioxide

**THERMO 48** – the instrument manufactured by Thermo Environmental Corp. to measure carbon monoxide



**THERMO 49** – the instrument manufactured by Thermo Environmental Corp. to measure ozone  
**TLE** – Trace Level Enhanced; type of analyzer which measures very low concentrations  
**TO-11A** – a standard method approved by USEPA to analyze carbonyls  
**TO-15** – a standard method approved by USEPA to analyze volatile organic compounds  
**TOA** – Thermal Optic Analysis, a method for analyzing carbon compounds from fine particles  
**TSP** – Total suspended particles; all particles that are captured by a high-volume sampler  
**USEPA** - United States Environmental Protection Agency  
**VOC** – Volatile organic compound, a carbon-based chemical that is gaseous  
**XRF** – X-ray fluorescence, a method for analyzing elements from fine particles

## TERMS

**Acid deposition** – acid rain, the phenomenon by which air pollutants raise the acidity of rain and snow  
**Ambient air** – air in areas that are accessible to the general public  
**Anemometer** – an instrument used for measuring wind speed  
**Atomic absorption** – the method used for analyzing for lead from TSP  
**Background** – a monitoring site in an area which is not affected by air pollution sources  
**Canister** – a stainless steel container used for collecting an air sample to be analyzed for VOCs  
**Capacitive sensor** – an instrument used for measuring relative humidity  
**Carbonyls** – a group of aldehydes, or a carbon chain with an oxygen molecule at one end  
**Chemiluminescence** – the method used for analyzing for NO, NO<sub>2</sub> and NO<sub>x</sub>  
**Coarse particles** – also PM<sub>10-2.5</sub>; particles between 10 and 2.5 micrometers in aerodynamic diameter  
**Collocated** – two samplers operating side-by-side in order to collect data used for precision statistics  
**Continuous** – an instrument that collects data instantaneously, without stopping, throughout the year, and transmits the data to a central data acquisition system every minute  
**Design value** - a statistic that describes the air quality status of a given location relative to the level of the NAAQS  
**Fine particles** – also PM<sub>2.5</sub>; particles 2.5 micrometers in aerodynamic diameter or smaller  
**Gravimetric** – weighing a filter in a controlled environment by a highly accurate balance  
**High-volume sampler** – an instrument used to collect Total Suspended Particles  
**Highest concentration** – a monitoring instrument or site which is designated to measure the maximum concentration of a pollutant in a given area  
**Inhalable particles** – also PM<sub>10</sub>; particles 10 micrometers in aerodynamic diameter or smaller  
**Ion chromatography** – also IC, a method used for analyzing for ionic compounds  
**Manual** – an instrument that collects an air sample over a 24-hour filter on a filter, adsorbent cartridge or canister which is then manually retrieved for subsequent analysis  
**Met One** – a manufacturer of PM<sub>2.5</sub> speciation samplers  
**Micro-scale** – the spatial scale of a monitoring site, from 10–100 meters around the monitor  
**Middle-scale** – the spatial scale of a monitoring site, from 100–1000 meters around the monitor  
**Neighborhood-scale** – the spatial scale of a monitoring site, from 1-10 km around the monitor  
**Nephelometer** – an instrument that measures fine particles through light scattering  
**Nondispersive-infrared** – the method used for analyzing for carbon monoxide  
**Ozone precursors** – a group of 55 volatile organic compounds that affect ozone formation and destruction in the atmosphere; also called PAMS pollutants  
**PerkinElmer** – the manufacturer of an automated GC-FID  
**Population exposure** – a monitoring instrument or site that is designated to measure the concentrations of a pollutant in a highly populated area  
**Pressure transducer** – an instrument used for measuring barometric pressure  
**Pulsed fluorescence** – the method used for analyzing for sulfur dioxide  
**Pyrometer** – the method used for measuring solar radiation  
**Qualimetrics** – the manufacturer of meteorological instruments  
**Real-time PM<sub>2.5</sub>** – PM<sub>2.5</sub> concentrations that are measured continuously

**Regional scale** – the spatial scale of a monitoring site, from 100-1000 km around the monitor

**SierraAnderson** – the manufacturer of PM<sub>10</sub> samplers

**Smoke shade** – an index of TSP by the measurement of light diminishment due to particles

**Solar radiation** – the intensity of energy from sunlight

**Tape sampler** – an instrument that measures TSP by collecting particles on a roll of filter paper which is automatically forwarded hourly

**Thermistor** – an instrument that measures temperature

**Ultraviolet** – the method used for analyzing ozone

**Urban Scale** – the spatial scale of a monitoring site, from 10-100 km around the monitor

**Wallace Fisher** – the manufacturer of smoke shade analyzers

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## APPENDIX A: VOLATILE ORGANIC COMPOUNDS

	Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code
1	1,1,1-Trichloroethane	43814	Canister	TO-15	101
2	1,1,2,2-Tetrachloroethane	43818	Canister	TO-15	101
3	1,1,2-Trichloroethane	43820	Canister	TO-15	101
4	1,1-Dichloroethane	43813	Canister	TO-15	101
5	1,1-Dichloroethene	43826	Canister	TO-15	101
6	1,2,4-Trichlorobenzene	45810	Canister	TO-15	101
7	1,2,4-Trimethylbenzene	45208	Canister	TO-15	101
8	1,2-Dibromoethane	43843	Canister	TO-15	101
9	1,2-Dichloroethane	43815	Canister	TO-15	101
10	1,2-Dichloropropane	43829	Canister	TO-15	101
11	1,3,5-Trimethylbenzene	45207	Canister	TO-15	101
12	1,3-Butadiene	43218	Canister	TO-15	101
13	Acetonitrile	43702	Canister	TO-15	101
14	Acetylene	43206	Canister	TO-15	101
15	Acrolein	43505	Canister	TO-15	101
16	Acrylonitrile	43704	Canister	TO-15	101
17	Benzene	45201	Canister	TO-15	101
18	Bromochloromethane	43836	Canister	TO-15	101
19	Bromodichloromethane	43828	Canister	TO-15	101
20	Bromoform	43806	Canister	TO-15	101
21	Bromomethane	43819	Canister	TO-15	101
22	Carbon Disulfide	42153	Canister	TO-15	101
23	Carbon Tetrachloride	43804	Canister	TO-15	101
24	Chlorobenzene	45801	Canister	TO-15	101
25	Chloroethane	43812	Canister	TO-15	101
26	Chloroform	43803	Canister	TO-15	101
27	Chloromethane	43801	Canister	TO-15	101
28	Chloroprene	43835	Canister	TO-15	101
29	cis-1,2-Dichloroethylene	43839	Canister	TO-15	101
30	cis-1,3-Dichloropropene	43831	Canister	TO-15	101
31	Dibromochloromethane	43832	Canister	TO-15	101
32	Dichlorodifluoromethane	43823	Canister	TO-15	101
33	Dichloromethane	43802	Canister	TO-15	101
34	Dichlorotetrafluoroethane	43208	Canister	TO-15	101
35	Ethyl Acrylate	43438	Canister	TO-15	101
36	Ethyl tert-Butyl Ether	43396	Canister	TO-15	101
37	Ethylbenzene	45203	Canister	TO-15	101
38	Hexachloro-1,3-Butadiene	43844	Canister	TO-15	101
39	m,p-Xylene	45109	Canister	TO-15	101
40	m-Dichlorobenzene	45806	Canister	TO-15	101

## APPENDIX A: VOLATILE ORGANIC COMPOUNDS (Continued)

	Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code
41	Methyl Isobutyl Ketone	43560	Canister	TO-15	101
42	Methyl Methacrylate	43441	Canister	TO-15	101
43	Methyl tert-Butyl Ether	43372	Canister	TO-15	101
44	n-Octane	43233	Canister	TO-15	101
45	o-Dichlorobenzene	45805	Canister	TO-15	101
46	o-Xylene	45204	Canister	TO-15	101
47	p-Dichlorobenzene	45807	Canister	TO-15	101
48	Propylene	43205	Canister	TO-15	101
49	Styrene	45220	Canister	TO-15	101
50	tert-Amyl Methyl Ether	43373	Canister	TO-15	101
51	Tetrachloroethylene	43817	Canister	TO-15	101
52	Toluene	45202	Canister	TO-15	101
53	trans-1,2-Dichloroethylene	43838	Canister	TO-15	101
54	trans-1,3-Dichloropropene	43830	Canister	TO-15	101
55	Trichloroethylene	43824	Canister	TO-15	101
56	Trichlorofluoromethane	43811	Canister	TO-15	101
57	Trichlorotrifluoroethane	43821	Canister	TO-15	101
58	Vinyl Chloride	43860	Canister	TO-15	101



## APPENDIX B: CARBONYLS

	Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code
1	2-Butanone	43552	DNPH Cartridge	TO-11A	202
2	2,5-Dimethylbenzaldehyde	45503	DNPH Cartridge	TO-11A	202
3	Acetaldehyde	43503	DNPH Cartridge	TO-11A	202
4	Acetone	43551	DNPH Cartridge	TO-11A	202
5	Benzaldehyde	45501	DNPH Cartridge	TO-11A	202
6	Butyraldehyde	43329	DNPH Cartridge	TO-11A	202
7	Crotonaldehyde	43528	DNPH Cartridge	TO-11A	202
8	Formaldehyde	43502	DNPH Cartridge	TO-11A	202
9	Hexaldehyde	43517	DNPH Cartridge	TO-11A	202
10	Isovaleraldehyde	43513	DNPH Cartridge	TO-11A	202
11	Propionaldehyde	43504	DNPH Cartridge	TO-11A	202
12	Tolualdehydes	45504	DNPH Cartridge	TO-11A	202
13	Valeraldehyde	43518	DNPH Cartridge	TO-11A	202

## APPENDIX C: SPECIATED FINE PARTICLES

	Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code
1	Aluminum	88104	Met One SASS Teflon	Energy Dispersive XRF	811
2	Ammonium	88301	Met One SASS Nylon	Ion Chromatography	812
3	Antimony	88102	Met One SASS Teflon	Energy Dispersive XRF	811
4	Arsenic	88103	Met One SASS Teflon	Energy Dispersive XRF	811
5	Barium	88107	Met One SASS Teflon	Energy Dispersive XRF	811
6	Bromine	88109	Met One SASS Teflon	Energy Dispersive XRF	811
7	Cadmium	88110	Met One SASS Teflon	Energy Dispersive XRF	811
8	Calcium	88111	Met One SASS Teflon	Energy Dispersive XRF	811
9	Cerium	88117	Met One SASS Teflon	Energy Dispersive XRF	811
10	Cesium	88118	Met One SASS Teflon	Energy Dispersive XRF	811
11	Chlorine	88115	Met One SASS Teflon	Energy Dispersive XRF	811
12	Chromium	88112	Met One SASS Teflon	Energy Dispersive XRF	811
13	Cobalt	88113	Met One SASS Teflon	Energy Dispersive XRF	811
14	Copper	88114	Met One SASS Teflon	Energy Dispersive XRF	811
15	EleCarbTor	88380	URG 3000N w/Pall Quartz filter and Cyc	EC1+EC2+EC3- (OP(TOR))=(88383+88384+883	838
16	EleCarbTot	88357	URG 3000N w/Pall Quartz filter and Cyc	EC1+EC2+EC3-OP (88329+88330+88331-8838	838
17	Indium	88131	Met One SASS Teflon	Energy Dispersive XRF	811
18	Iron	88126	Met One SASS Teflon	Energy Dispersive XRF	811
19	Lead	88128	Met One SASS Teflon	Energy Dispersive XRF	811
20	Magnesium	88140	Met One SASS Teflon	Energy Dispersive XRF	811
21	Manganese	88132	Met One SASS Teflon	Energy Dispersive XRF	811
22	Nickel	88136	Met One SASS Teflon	Energy Dispersive XRF	811
23	Nitrate	88306	Met One SASS Nylon	Ion Chromatography	812
24	OrgCarbTor	88370	URG 3000N w/Pall Quartz filter and Cyc	OC1+OC2+OC3+OC4+(OP(TO R))=(88374+88375	838
25	OrgCarbTot	88355	URG 3000N w/Pall Quartz filter and Cyc	OC1+OC2+OC3+OC4+OP (88374+88375+88376+	838
26	Phosphorus	88152	Met One SASS Teflon	Energy Dispersive XRF	811
27	Potassium	88180	Met One SASS Teflon	Energy Dispersive XRF	811
28	Potassium IC	88303	Met One SASS Nylon	Ion Chromatography	812
29	Rubidium	88176	Met One SASS Teflon	Energy Dispersive XRF	811
30	Selenium	88154	Met One SASS Teflon	Energy Dispersive XRF	811
31	Silicon	88165	Met One SASS Teflon	Energy Dispersive XRF	811
32	Silver	88166	Met One SASS Teflon	Energy Dispersive XRF	811
33	Sodium	88184	Met One SASS Teflon	Energy Dispersive XRF	811
34	Sodium IC	88302	Met One SASS Nylon	Ion Chromatography	812
35	Strontium	88168	Met One SASS Teflon	Energy Dispersive XRF	811
36	Sulfate	88403	Met One SASS Nylon	Ion Chromatography	812
37	Sulfur	88169	Met One SASS Teflon	Energy Dispersive XRF	811
38	Tin	88160	Met One SASS Teflon	Energy Dispersive XRF	811
39	Titanium	88161	Met One SASS Teflon	Energy Dispersive XRF	811
40	Vanadium	88164	Met One SASS Teflon	Energy Dispersive XRF	811
41	Zinc	88167	Met One SASS Teflon	Energy Dispersive XRF	811
42	Zirconium	88185	Met One SASS Teflon	Energy Dispersive XRF	811

## APPENDIX D: OZONE PRECURSORS

	Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code
1	Sum of PAMS	43000	PerkinElmer	Auto-GC-FID	078
2	Total NMOC	43102	PerkinElmer	Auto-GC-FID	078
3	Ethane	43202	PerkinElmer	Auto-GC-FID	078
4	Ethylene	43203	PerkinElmer	Auto-GC-FID	078
5	Propane	43204	PerkinElmer	Auto-GC-FID	078
6	Propylene	43205	PerkinElmer	Auto-GC-FID	078
7	Acetylene	43206	PerkinElmer	Auto-GC-FID	078
8	n-Butane	43212	PerkinElmer	Auto-GC-FID	078
9	Isobutane	43214	PerkinElmer	Auto-GC-FID	078
10	trans-2-Butene	43216	PerkinElmer	Auto-GC-FID	078
11	cis-2-Butene	43217	PerkinElmer	Auto-GC-FID	078
12	n-Pentane	43220	PerkinElmer	Auto-GC-FID	078
13	Isopentane	43221	PerkinElmer	Auto-GC-FID	078
14	1-Pentene	43224	PerkinElmer	Auto-GC-FID	078
15	trans-2-Pentene	43226	PerkinElmer	Auto-GC-FID	078
16	cis-2-Pentene	43227	PerkinElmer	Auto-GC-FID	078
17	2-Methyl-2-Butene	43228	PerkinElmer	Auto-GC-FID	078
18	3-Methylpentane	43230	PerkinElmer	Auto-GC-FID	078
19	n-Hexane	43231	PerkinElmer	Auto-GC-FID	078
20	n-Heptane	43232	PerkinElmer	Auto-GC-FID	078
21	n-Octane	43233	PerkinElmer	Auto-GC-FID	078
22	4-Methyl-1-Pentene	43234	PerkinElmer	Auto-GC-FID	078
23	n-Nonane	43235	PerkinElmer	Auto-GC-FID	078
24	n-Decane	43238	PerkinElmer	Auto-GC-FID	078
25	Cyclopentane	43242	PerkinElmer	Auto-GC-FID	078
26	Isoprene	43243	PerkinElmer	Auto-GC-FID	078
27	2,2-Dimethylbutane	43244	PerkinElmer	Auto-GC-FID	078
28	1-Hexene	43245	PerkinElmer	Auto-GC-FID	078
29	2-Methyl-1-Pentene	43246	PerkinElmer	Auto-GC-FID	078
30	2,4-Dimethylpentane	43247	PerkinElmer	Auto-GC-FID	078
31	Cyclohexane	43248	PerkinElmer	Auto-GC-FID	078
32	3-Methylhexane	43249	PerkinElmer	Auto-GC-FID	078
33	2,2,4-Trimethylpentane	43250	PerkinElmer	Auto-GC-FID	078
34	2,3,4-Trimethylpentane	43000	PerkinElmer	Auto-GC-FID	078
35	3-Methylheptane	43102	PerkinElmer	Auto-GC-FID	078
36	Methylcyclohexane	43203	PerkinElmer	Auto-GC-FID	078
37	Methylcyclopentane	43204	PerkinElmer	Auto-GC-FID	078
38	2-Methylhexane	43205	PerkinElmer	Auto-GC-FID	078
39	1-Butene	43206	PerkinElmer	Auto-GC-FID	078
40	3-Methyl-1-Butene	43212	PerkinElmer	Auto-GC-FID	078
41	Cyclopentene	43214	PerkinElmer	Auto-GC-FID	078
42	2,3-Dimethylbutane	43216	PerkinElmer	Auto-GC-FID	078
43	2-Methylpentane	43217	PerkinElmer	Auto-GC-FID	078
44	trans-2-Hexene	43220	PerkinElmer	Auto-GC-FID	078

## APPENDIX D: OZONE PRECURSORS (Continued)

	Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code
45	cis-2-Hexene	43221	PerkinElmer	Auto-GC-FID	078
46	2,3-Dimethylpentane	43224	PerkinElmer	Auto-GC-FID	078
47	c-Undecane	43226	PerkinElmer	Auto-GC-FID	078
48	2-Methylheptane	43227	PerkinElmer	Auto-GC-FID	078
49	Isomers of Ethyltoluene	43228	PerkinElmer	Auto-GC-FID	078
50	m/p Xylene	43230	PerkinElmer	Auto-GC-FID	078
51	m/p Ethyltoluene	43231	PerkinElmer	Auto-GC-FID	078
52	Benzene	43232	PerkinElmer	Auto-GC-FID	078
53	Toluene	43233	PerkinElmer	Auto-GC-FID	078
54	Ethylbenzene	43234	PerkinElmer	Auto-GC-FID	078
55	o-Xylene	43235	PerkinElmer	Auto-GC-FID	078
56	1,3,5-Trimethylbenzene	43238	PerkinElmer	Auto-GC-FID	078
57	1,2,4-Trimethylbenzene	43242	PerkinElmer	Auto-GC-FID	078
58	n-Propylbenzene	43243	PerkinElmer	Auto-GC-FID	078
59	Isopropylbenzene	43244	PerkinElmer	Auto-GC-FID	078
60	o-Ethyltoluene	43245	PerkinElmer	Auto-GC-FID	078
61	m-Ethyltoluene	43246	PerkinElmer	Auto-GC-FID	078
62	p-Ethyltoluene	43247	PerkinElmer	Auto-GC-FID	078
63	m-Diethylbenzene	45218	PerkinElmer	Auto-GC-FID	078
64	p-Diethylbenzene	45219	PerkinElmer	Auto-GC-FID	078
65	Styrene	45220	PerkinElmer	Auto-GC-FID	078
66	1,2,3-Trimethylbenzene	45225	PerkinElmer	Auto-GC-FID	078

## APPENDIX E: BTEX COMPOUNDS

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code
Benzene	45201	Syntech Spectras BTEX analyzer GC 955	Gas Chromatography	092
Toluene	45202	Syntech Spectras BTEX analyzer GC 955	Gas Chromatography	092
Ethylbenzene	45203	Syntech Spectras BTEX analyzer GC 955	Gas Chromatography	092
m,p-Xylene	45109	Syntech Spectras BTEX analyzer GC 955	Gas Chromatography	092
o-Xylene	45204	Syntech Spectras BTEX analyzer GC 955	Gas Chromatography	092



## APPENDIX F

### DOCUMENTATION TO JUSTIFY THE REQUEST FOR A WAIVER FROM REQUIREMENT TO MEASURE PAMS PARAMETERS AT NCORE STATION

In October 2015, the U.S Environmental Protection Agency (EPA) revised 40 CFR 50 to promulgate the 70 ppb 8-hour average ozone (O<sub>3</sub>) National Ambient Air Quality Standard (NAAQS), and updated 40 CFR 58 to require the measurement of a revised group of Photochemical Assessment Monitoring Station (PAMS) parameters at National Core (NCore) stations. The changes to the PAMS monitoring requirements included a waiver provision that allows the measurement of PAMS parameters at alternative sites. Appendix D of 40 CFR 58, and the PAMS Required Monitoring Quality Assurance Implementation Plan identify the following reasons for requesting a waiver: 1) In order to avoid measuring PAMS parameters at a historically low O<sub>3</sub> concentration site; 2) to provide data that is suitable for regional scale modeling; and 3) to continue tracking trends in O<sub>3</sub> precursor concentrations.

The New Jersey Department of Environmental Protection (NJDEP) is requesting a waiver from the requirement to measure PAMS parameters at New Jersey's NCore station at Newark Firehouse, and is proposing to measure the revised PAMS parameters at an alternate site, the existing PAMS site at Rutgers University. The reasons for this proposal are: 1) Ozone concentrations since 2009 have been consistently higher at Rutgers University than Newark Firehouse; 2) Modeling for regional O<sub>3</sub> concentrations that are rigorous enough for State Implementation Plan (SIP) development has also shown that current and future O<sub>3</sub> concentrations at Rutgers will continue to be higher than O<sub>3</sub> concentrations at Newark Firehouse; and 3) PAMS parameters have been collected at Rutgers University since 1996, and it would be appropriate to continue there in order to evaluate long-term trends. The following sections provide the data to support this proposal.

#### O<sub>3</sub> CONCENTRATIONS AT RUTGERS AND NEWARK FIREHOUSE

Table 1 lists the addresses, Air Quality Subsystem (AQS) site codes and coordinates for these two stations. Figure 1 provides the locations of all the O<sub>3</sub> monitoring stations in New Jersey including Rutgers University and Newark Firehouse. Newark Firehouse is the NCore station for New Jersey. Rutgers University is the Type 1 (upwind) PAMS site for the New York metropolitan area, and the Type 4 (downwind) PAMS site for the Philadelphia metropolitan area.

Table 1. Site Information

	<b>NEWARK FIREHOUSE</b>	<b>RUTGERS UNIVERSITY</b>
AQS Code	34 013 0003	34 023 0011
Address	360 Clinton Avenue, Newark Fire Department Engine 10	Ryders Lane, Horticultural Farm #3, New Brunswick, NJ 08901
Metro Area	New York-Northeast New Jersey-Connecticut CSA	New York-Northeast New Jersey-Connecticut CSA
Latitude	40.720989	40.462182
Longitude	-74.192892	-74.429439
Land Use Type	Urban-commercial-residential	Suburban-residential-agricultural
Year Established	5/1/2009	10/1/1994
Comment	NCore site	Existing PAMS site

Figure 1. Map of Ozone Monitoring Stations in New Jersey

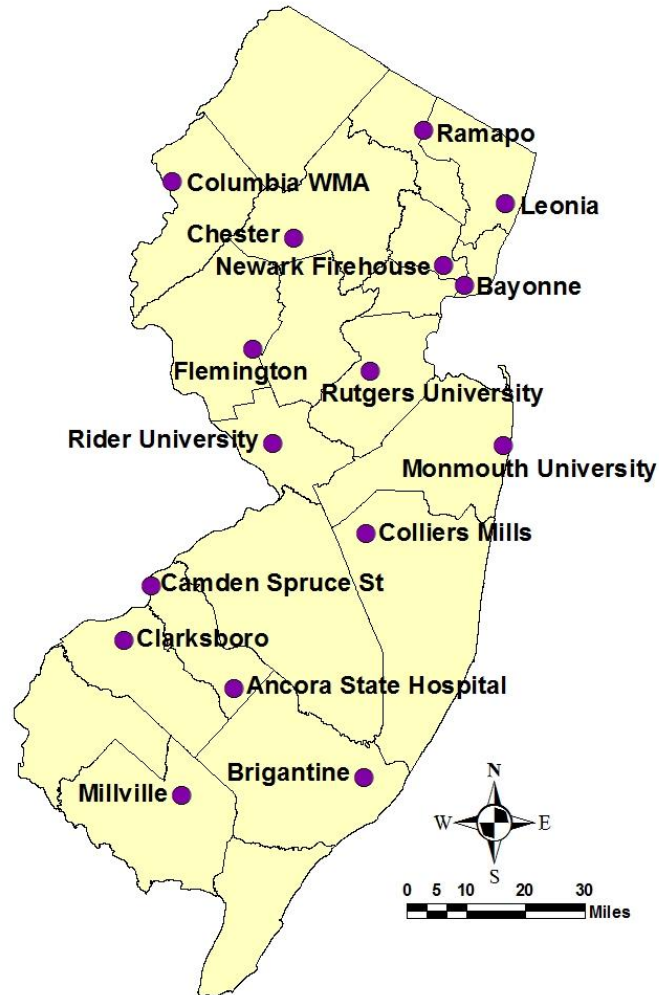


Table 2 lists the 4<sup>th</sup> highest 8-hour average O<sub>3</sub> concentrations at Rutgers University and Newark Firehouse from 2009 to 2016, and Figure 3 is a chart showing this trend. Figure 4 shows the daily maximum 8-hour average O<sub>3</sub> concentrations at Rutgers University from 2012 to 2016, along with a dashed line indicating the 99<sup>th</sup> percentile value for this 5-year period. Figure 5 shows the corresponding chart for the Newark Firehouse station. The 99<sup>th</sup> percentile of the daily maximum 8-hour average O<sub>3</sub> concentrations from 2012 to 2016 at Newark Firehouse is 75 ppb, and 81 ppb for Rutgers University.

Table 2. 4<sup>th</sup> Highest Daily Maximum 8-Hour O<sub>3</sub> Concentrations at Newark Firehouse and Rutgers University, 2009-2016 (parts per billion)

Location	2009	2010	2011	2012	2013	2014	2015	2016
Newark Firehouse	64	85	81	80	69	70	72	70
Rutgers University	67	86	87	82	70	71	77	76
NJ Average	70	82	80	80	69	68	73	72

Figure 3

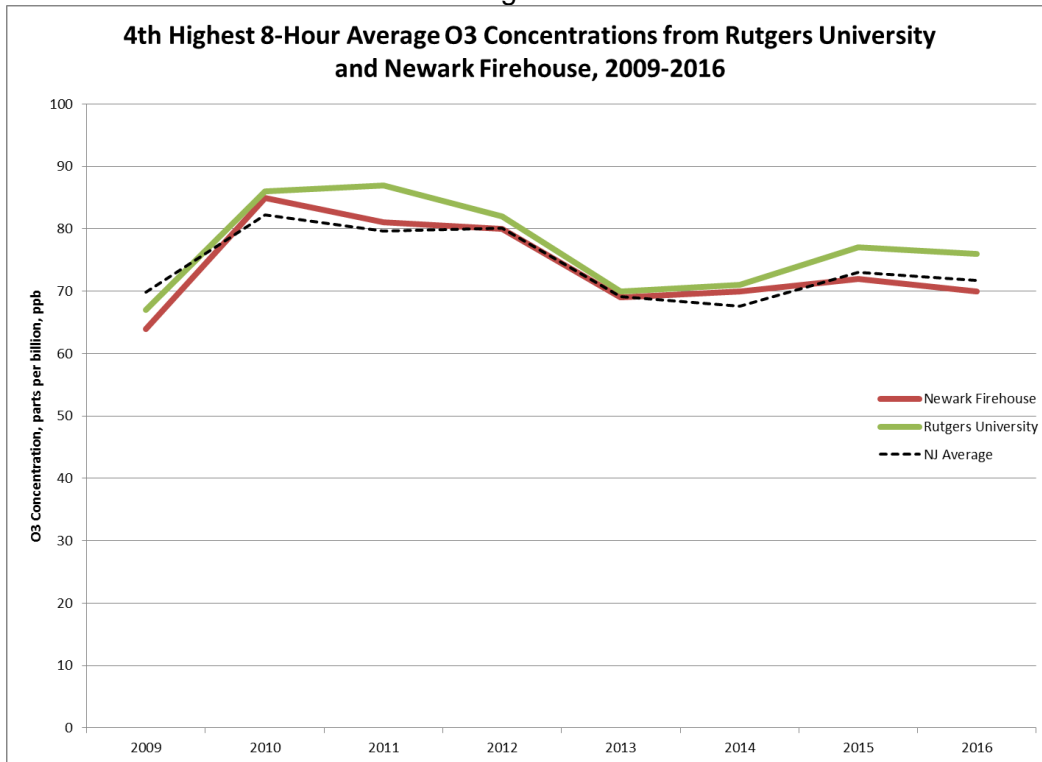


Figure 4

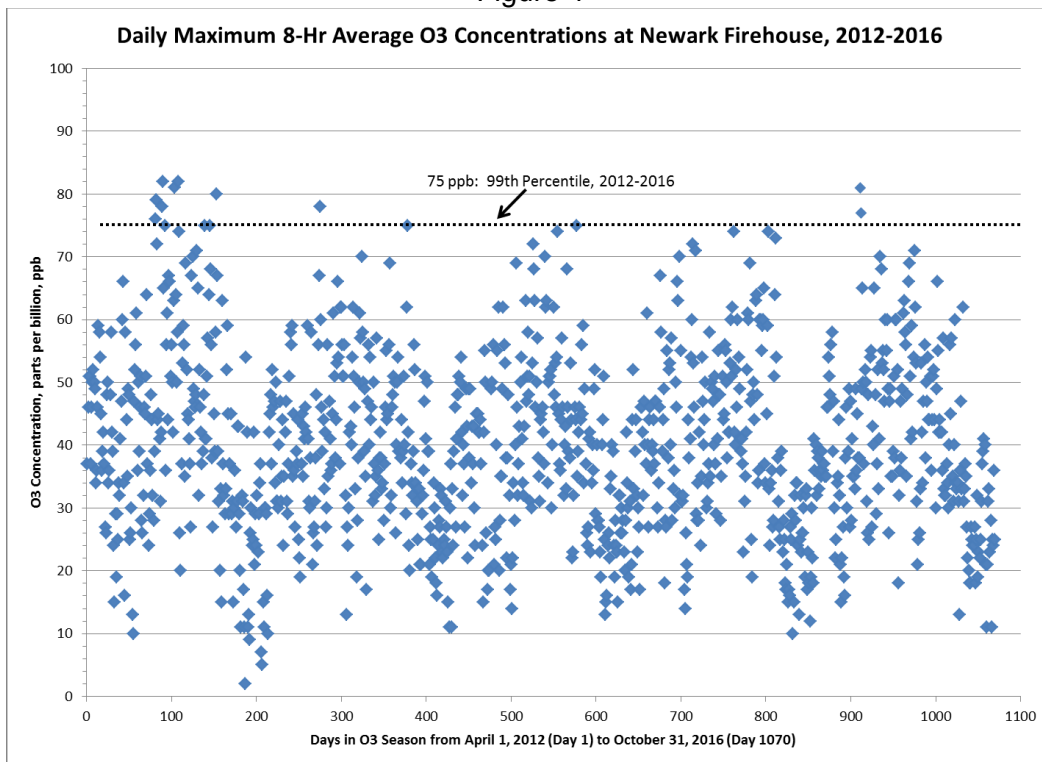
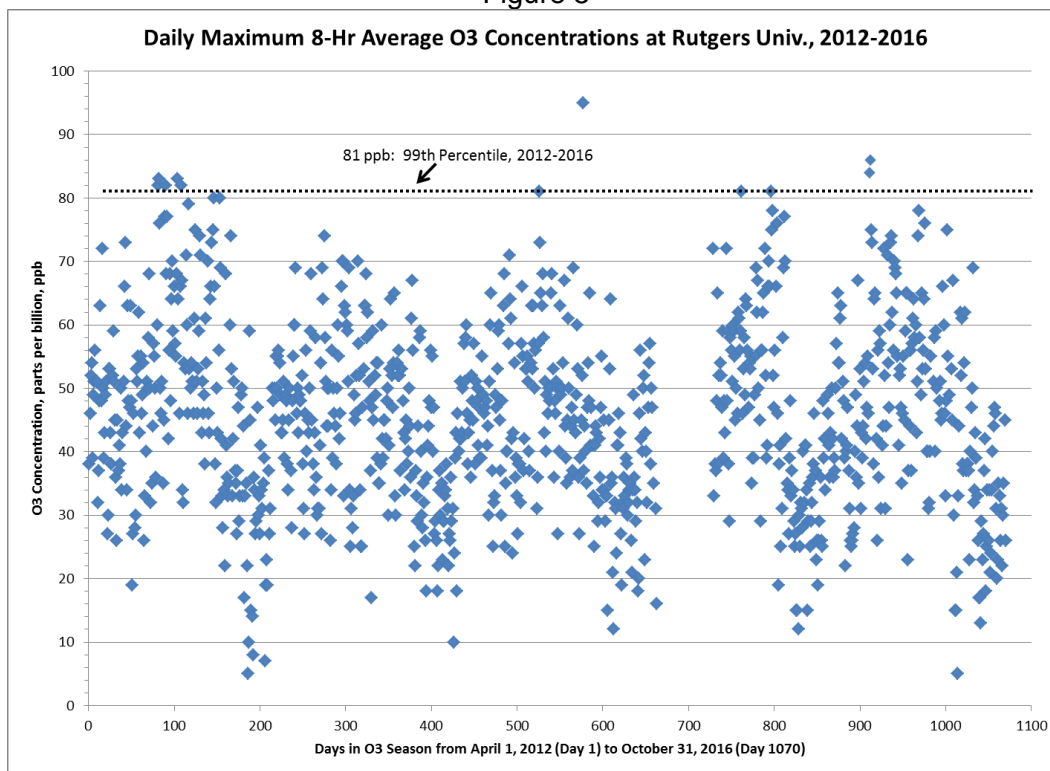


Figure 5



The preliminary O<sub>3</sub> design value for the 3-year period 2014-2016 is 70 ppb for Newark Firehouse and 74 ppb for Rutgers University. This statistic along with the others summarized in Table 3 below show that the O<sub>3</sub> levels at Rutgers University are consistently higher than the concentrations at Newark Firehouse.

**Table 3. Summary of O<sub>3</sub> Statistics at Newark Firehouse and Rutgers University, parts per billion**

STATION	Highest Daily Max 8-Hr Avg O <sub>3</sub> Conc. 2016	4 <sup>th</sup> High Daily Max 8-Hr Avg O <sub>3</sub> Conc. 2016	Design Value 2014-2016	99 <sup>th</sup> %-ile of Daily Max 8-Hr Avg O <sub>3</sub> Conc. 2012-2016
Newark Firehouse	81	70	70	75
Rutgers University	86	76	74	81

#### RUTGERS UNIVERSITY DATA USED FOR REGIONAL MODELING

NJDEP utilized the ozone data from all of New Jersey's ozone monitors to conduct preliminary SIP modeling needed for the draft NJ Attainment Demonstration SIP proposal for the 75 ppb ozone NAAQS that will be submitted in 2017. The modeling, which was conducted using EPA's regional air quality CMAQ model, included data from Connecticut, Delaware, Maryland, Pennsylvania and New York ozone monitors. The 40 stations in these states with the highest modeled concentrations for 2017 are shown in Table 4. In this table, the New Jersey station are ranked, and Rutgers University is projected to have the 4<sup>th</sup> highest modeled design value, and Newark Firehouse is projected to have the 5<sup>th</sup> highest modeled design value.

**Table 4. List of Stations in the Connecticut, Delaware, Maryland, New Jersey, New York and Pennsylvania with the Highest Modeled Ozone Concentrations**

<b>AQS Code</b>	<b>State</b>	<b>Site</b>	<b>Modeled Future Design Value (ppb) 2017</b>	<b>Future DV Rank in NJ</b>
090019003	CT	Sherwood Island State Park-Westport	83	
240251001	MD	Edgewood	81	
360850067	NY	SUSAN WAGNER HS	78	
361030002	NY	BABYLON	77	
090099002	CT	Hammonasset State Park-Madison	77	
090013007	CT	Lighthouse-Stratford	77	
090010017	CT	Greenwich Point Park-Greenwich	77	
360810124	NY	QUEENS COLLEGE 2	74	
340150002	NJ	Clarksboro	74	
240053001	MD	Essex	74	
090011123	CT	Western Conn State Univ-Danbury	74	
421010024	PA	North East Airport (NEA)	73	
420031005	PA	Harrison	73	
361030009	NY	HOLTSVILLE	73	
240150003	MD	Fair Hill Natural Resource Management Ar	73	
240090011	MD	Calvert	73	
090110124	CT	Fort Griswold Park-Groton	73	
340290006	NJ	Colliers Mills	72	1
340071001	NJ	Ancora State Hospital	72	2
361030004	NY	RIVERHEAD	71	
340250005	NJ	Monmouth University	71	3
340230011	NJ	Rutgers University	71	4
240030014	MD	Davidsonville	71	
421011002	PA	BAXTER (BAX)	70	
420170012	PA	A420170012LAT/LONG POINT IS OF SAMPLING	70	
240338003	MD	PG Equestrian Center	70	
240259001	MD	Aldino	70	
090070007	CT	Central Valley Hospital-Middletown	70	
340130003	NJ	Newark - Firehouse	69	5
240339991	MD	Beltsville	69	
240170010	MD	Southern Maryland	69	
240051007	MD	Padonia	69	
110010043	DC	MCMILLAN PAMS	69	
340210005	NJ	Rider University	68	6
340190001	NJ	Flemington	68	7
240330030	MD	HU-Beltsville	68	



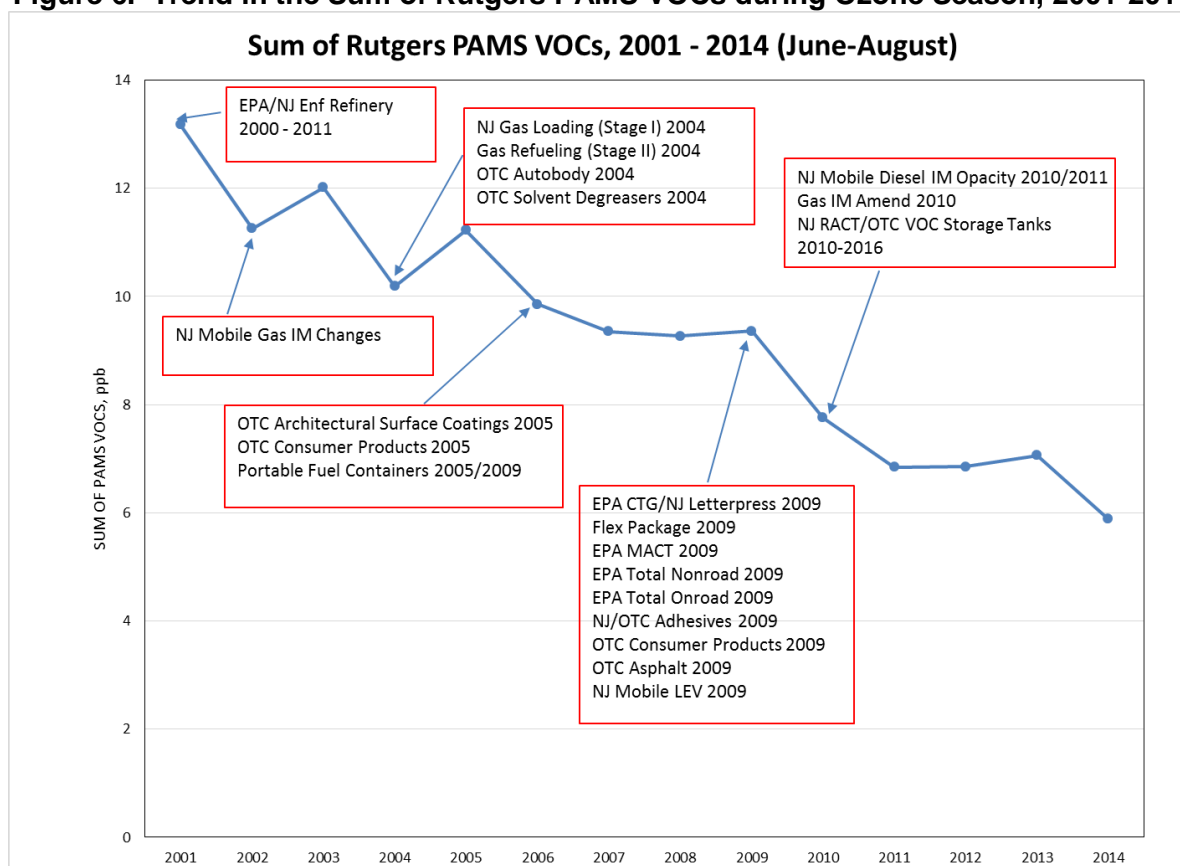
**Table 4 (continued)**

<b>AQS Code</b>	<b>State</b>	<b>Site</b>	<b>Modeled Future Design Value (ppb) 2017</b>	<b>Future DV Rank in NJ</b>
240290002	MD	Millington	68	
100031013	DE	BELLEVUE STATE PARK, FIELD IN SE PORTION	67	
100031010	DE	OPEN FIELD	67	
420710012	PA	Lancaster DW	66	

## TRENDS IN OZONE PRECURSOR CONCENTRATIONS

The Rutgers University PAMS site, which began monitoring in 1996, was designated as a PAMS Type 1 upwind site for the New York metropolitan area, and as a Type 4 downwind site for the Philadelphia metropolitan urban area. An upper air weather monitoring station is also located at the Rutgers University site. Figure 6 provides a trend of the sum of the PAMS VOCs measured during the ozone season (June – August) from 2001-2014. Included in the chart are relevant NJ and federal rules and control measures that were implemented by the year indicated.

**Figure 6. Trend in the Sum of Rutgers PAMS VOCs during Ozone Season, 2001-2014**



## CONCLUSION

The request by the NJDEP to make the required PAMS measurements at an alternate site, Rutgers University, instead of the NCore site at Newark Firehouse, meets three waiver requirements outlined in Appendix D of 40 CFR 58, and the PAMS Required Monitoring Quality Assurance Implementation Plan. The ozone concentrations measured at Rutgers University have historically been higher than those measured at Newark Firehouse. The ozone data from Rutgers University is robust and appropriate for regional ozone modeling and has been used for State Implementation Plans. Since PAMS parameters have been measured since 1996, there is a 20-year history of PAMS data at Rutgers, and this provides valuable trend information that should be continued.