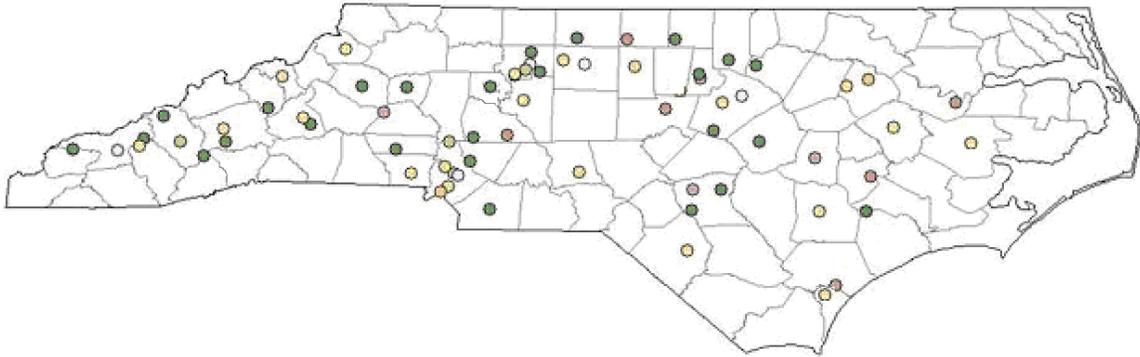


2013 ANNUAL MONITORING NETWORK PLAN FOR THE NORTH CAROLINA DIVISION OF AIR QUALITY

VOLUME 1

NETWORK DESCRIPTIONS



July 1, 2013

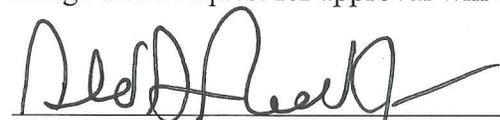
North Carolina Division of Air Quality
A Division of the North Carolina Department
of Environment and Natural Resources
Mail Service Center 1641
Raleigh, North Carolina 27699-1641



CERTIFICATION

By the signatures below, the North Carolina Division of Air Quality (NC-DAQ) certifies that the information contained in the 2013 Annual Monitoring Network Plan is complete and accurate at the time of submittal to EPA Region 4. However, due to circumstances that may arise during the sampling year, some network information may change. A notification of change and a request for approval will be submitted to EPA region 4 at that time.

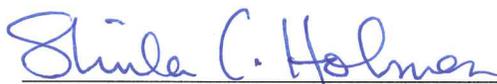
Signature



Donald D. Redmond, Jr.
Ambient Monitoring Section Chief, NC-DAQ

Date 7/1/13

Signature



Sheila C. Holman
Director, NC-DAQ

Date 7/1/2013

I. Introduction

The North Carolina Division of Air Quality (NC-DAQ) works with the state's citizens to protect and improve outdoor, or ambient, air quality in North Carolina for the health and benefit of all. To carry out this mission, the NC-DAQ has programs for monitoring air quality, permitting and inspecting air emissions sources, developing plans for improving air quality, and educating and informing the public about air quality issues.

The NC-DAQ, which is part of the N.C. Department of Environment and Natural Resources (DENR), also enforces state and federal air pollution regulations. In North Carolina, the General Assembly enacts state air pollution laws, and the Environmental Management Commission adopts most regulations dealing with air quality. In addition, the U.S. Environmental Protection Agency (EPA) has designated the NC-DAQ as the lead agency for enforcing federal laws and regulations dealing with air pollution in North Carolina.

The Ambient Monitoring Section (AMS) of the NC-DAQ operates an air quality-monitoring program for the state. The AMS is responsible for measuring levels of regulated pollutants in the ambient (outdoor) air by maintaining a network of 60 monitoring stations across the state and measuring the concentration of pollutants such as ozone, lead, particles (dust), nitrogen oxides, sulfur dioxide, and carbon monoxide. The AMS provides these monitoring services in accordance with U.S. EPA regulatory requirements. The criteria pollutant monitoring system is designed to make measurements to assess compliance with the National Ambient Air Quality Standards (NAAQS) as set by the EPA. The NAAQS define air pollutant concentration level thresholds judged necessary to protect the public health and welfare.

The law as defined in Title 40 of the Code of Federal Regulations (CFR) Part 58.10 *Annual Monitoring Network Plan and Periodic Network Assessment* requires an annual monitoring network plan. This plan must provide the following information for each monitoring station in the network:

- The Air Quality System (AQS) site identification number;
- The location, including street address and geographical coordinates;
- The sampling and analysis method(s) for each measured parameter;
- The operating schedules for each monitor;
- Any proposals to remove or move a monitoring station within a period of 18 months following plan submittal;
- The monitoring objective and spatial scale of representativeness for each monitor as defined in appendix D to this part;
- The identification of any sites that are suitable and sites that are not suitable for comparison against the annual fine particle (PM_{2.5}) NAAQS as described in §58.30; and
- The Metropolitan Statistical Area (MSA), Core-Based Statistical Area (CBSA), Combined Statistical Area (CSA) or other area represented by the monitor.
- The designation of any Pb monitors as either source-oriented or non-source-oriented according to Appendix D to 40 CFR Part 58.

- Any source-oriented monitors for which a waiver has been requested or granted by the EPA Regional Administrator as allowed for under paragraph 4.5(a)(ii) of Appendix D to 40 CFR part 58.
- Any source-oriented or non-source-oriented site for which a waiver has been requested or granted by the EPA Regional Administrator for the use of Pb-PM10 monitoring in lieu of Pb-TSP monitoring as allowed for under paragraph 2.10 of Appendix C to 40 CFR part 58.
- The identification of required NO₂ monitors as either near-road or area-wide sites in accordance with appendix D, section 4.3 of this part.

This plan contains information on the criteria pollutant monitoring networks operated by the NC-DAQ and continues in the following sections outlined below:

- II. Summary of Proposed Changes
- III. Carbon Monoxide (CO) Monitoring Network
- IV. Sulfur Dioxide Monitoring Network
- V. Ozone Monitoring Network
- VI. Particle Monitoring Network for Particles with Aerodynamic Diameters of 10 Micrometers or Less (PM₁₀)
- VII. Fine Particle (PM_{2.5}) Monitoring Network
- VIII. Lead Monitoring Network
- IX. Urban Air Toxics Monitoring Network
- X. NC-DAQ NCore Monitoring Network
- XI. Nitrogen Dioxide Monitoring Network
- XII. EPA Approval Dates for Quality Management Plan and Quality Assurance Project Plans
- XIII. Equipment Condition of North Carolina Monitoring Sites

A table summarizing the monitoring network and providing the types of monitors operated at each station is provided in Appendix A. Summary of Monitoring Sites and Types of Monitors. The annual network review forms filled out each year for each of the monitoring sites operated by the NC-DAQ and the Western North Carolina Regional Air Quality Agency are attached as an appendix to each regional section in Volume 2 and are also available for review at the Division of Air Quality, 217 West Jones Street, Raleigh, North Carolina, 27603. The Mecklenburg County Air Quality 2013 Annual Monitoring Network Plan is provided in Appendix B. The Forsyth County Office of Environmental Assistance and Protection 2013 Annual Monitoring Network Plan is provided in Appendix C.

Volume II of the annual network plan discusses the monitoring network by Metropolitan Statistical Areas (MSAs) organized by the area of the state in which they are located. The day-to-day operations of the monitors are managed by regional office monitoring staff located in one of the seven regional Division of Air Quality Offices located in Asheville, Mooresville, Winston-Salem, Raleigh, Fayetteville, Washington, and Wilmington. Volume II of the monitoring plan discusses the monitoring network for each Regional Office starting with Asheville in the west and moving to Wilmington in the east. Each region is subdivided into sections based on Metropolitan Statistical Areas. Volume II discusses the current monitoring as well as future monitoring plans or needs.

In February of 2013 the Office of Management and Budget revised the definitions of MSAs based on the 2010 census as shown in Figure 1.¹ As a result of these revisions, North Carolina gained two MSAs in the eastern part of the state: Myrtle Beach-Conway-North Myrtle Beach and New Bern. Three MSAs gained additional counties and, thus, additional people– Charlotte-Concord-Gastonia, Virginia Beach-Norfolk-New Port News, and Winston-Salem. Two MSAs lost counties and, thus, people – Greenville and Wilmington. The discussions in this network monitoring plan are based on the 2013 MSA definitions.



Figure 1. North Carolina Metropolitan Statistical Areas in 2013

¹ Office of Management and Budget, OMB BULLETIN NO. 13-01: Revised Delineations of Metropolitan Statistical Areas, Micropolitan Statistical Areas, and Combined Statistical Areas, and Guidance on Uses of the Delineations of These Areas, February 28, 2013, available on the worldwide web at <http://www.whitehouse.gov/sites/default/files/omb/bulletins/2013/b13-01.pdf>, accessed March 22, 2013.

Contents

I. Introduction	3
List of Tables	7
List of Figures.....	9
II. Summary of Proposed Changes.....	11
A. Monitors Scheduled to Start Up or Shut Down in 2013 or 2014.....	12
1. Monitoring Changes in the Charlotte-Concord-Gastonia MSA	13
2. Changes to Monitoring in the Raleigh MSA	14
3. Changes to Monitoring in the Rocky Mount MSA.....	16
4. Changes to Monitoring in the Areas Outside Metropolitan Statistical Areas.....	16
B. Sites to be Relocated or Moved.....	17
1. Sites to be moved in the Asheville MSA	17
2. Monitoring Site Relocations in the Hickory-Lenoir-Morganton MSA	18
3. Monitoring Site Relocations in the Goldsboro MSA.....	18
C. Changes to the Methods Used to Measure Fine Particles for Comparison to the NAAQS.....	19
D. Rotating Background Monitors.....	20
E. Currently Required Future Near-Road Monitors	20
IV. Sulfur Dioxide Monitoring Network.....	27
V. Ozone Monitoring Network	38
VI. Particle Monitoring Network for Particles with Aerodynamic Diameters of 10 Micrometers or Less (PM₁₀).....	63
VII. Fine Particle (PM_{2.5}) Monitoring Network.....	74
VIII. Lead Monitoring Network.....	100
IX. Urban Air Toxics Monitoring Network.....	104
X. NC-DAQ NCore Monitoring Network.....	109
A. Overview	109
B. Monitor Siting Considerations	109
C. Monitors/Methods	110
D. Readiness Preparation	111
E. Waiver Requests	112
1. Millbrook Meteorological Tower	112
1. NO _y probe inlet placement.....	113
XI. Nitrogen Dioxide Monitoring Network	114
A. Near Road Monitoring	114
1. Raleigh Core Based Statistical Area	114
2. Greensboro-High Point Core Based Statistical Area	116
3. Durham-Chapel Hill Core Based Statistical Area	117
B. Area wide sites.....	118
C. Regional Administrator Required Monitoring.....	119
XII. EPA Approval Dates for Quality Management Plan and Quality Assurance Project Plans.....	124
XIII. Equipment Condition of North Carolina Monitoring Sites.....	129
XIV. References.....	130
Appendix A. Summary of Monitoring Sites and Types of Monitors	131

Appendix B. 2013 Annual Monitoring Network Plan for Mecklenburg County Air Quality.....	135
Appendix C. 2013 Annual Monitoring Network Plan for Forsyth County Office of Environmental Assistance and Protection.....	136
Appendix D. 2010 Network Plan EPA Approval Letter	137
Appendix E. 2011 Network Plan EPA Approval Letter.....	144
Appendix F. 2012 Network Plan EPA Approval Letter.....	152
Appendix G. Monitoring Agreement Between Virginia and North Carolina for the Virginia Beach-Norfolk-New Port News Metropolitan Statistical Area.....	160
Appendix H. Waiver for Second Wilmington Ozone Monitor	169
Appendix I. Request for Waiver from Longer Ozone Season for Mountain Sites	170
Appendix J. NCore Monitoring Plan Approval Letter	172
Appendix K. Public Notice of Availability of Network Plan.....	174
Appendix L. Public Comments Received.....	180
Glossary	181

List of Tables

Table 1. Alphabetical List of Fastest Growing Counties in North Carolina based on population change between April 1, 2010, or July 1, 2011 and July 1, 2012.	11
Table 2. Summary of Monitors Scheduled to Start Up or Shut Down in 2013 or 2014... ..	12
Table 3. List of Sites to Be Relocated and New Locations Where Applicable	17
Table 4. List of Monitoring Sites with Special Purpose Non-Regulatory Fine Particle Monitors.....	19
Table 5. List of Rotating Background Monitors.....	20
Table 6. List of Near Road Monitoring Scheduled to Start January 1, 2017.....	21
Table 7 Carbon Monoxide Concentrations Measured by the North Carolina Carbon Monoxide Monitoring Network 2008 to 2012 ^a	23
Table 8 North Carolina Carbon Monoxide Monitoring Network – Monitor Locations ^a ..	24
Table 9 North Carolina Carbon Monoxide Monitoring Network - Statement of Purpose ^a	25
Table 10 Status of North Carolina Carbon Monoxide Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network ^a	26
Table 11 Highest Sulfur Dioxide Concentration and Year Measured by the North Carolina Sulfur Dioxide Monitoring Network (2008 through 2012) ^a	31
Table 12 North Carolina Sulfur Dioxide Monitoring Network – 2013 and Proposed Monitor Locations ^a	33
Table 13 Statement of Purpose for North Carolina Sulfur Dioxide Monitoring Network ^a	34
Table 14 Status of North Carolina Sulfur Dioxide Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network ^a	36
Table 15 Summary of Ozone Concentrations Measured by the North Carolina Ozone Monitoring Network (2008 through 2012) ^a	39
Table 16 Design Values and Required Ozone Monitors for North Carolina Metropolitan Statistical Areas (MSA)	42

Table 17 North Carolina Ozone Monitoring Network – Monitor Locations ^a	55
Table 18 Monitor Type, Operating Schedules, Monitoring Objectives, and Scales for the North Carolina Ozone Monitoring Network ^a	58
Table 19 Statement of Purpose for the North Carolina Ozone Monitoring Network and Proposed Changes to the Network ^a	60
Table 20 Ambient PM ₁₀ Concentrations Measured in North Carolina.....	65
Table 21 Ambient Concentrations and Required Number of PM ₁₀ Monitors for North Carolina Metropolitan Statistical Areas (MSA)	67
Table 22 North Carolina PM ₁₀ Monitoring Network – Monitor Locations.....	68
Table 23 Statement of Purpose for North Carolina PM ₁₀ Monitoring Network.....	70
Table 24 Status of North Carolina PM ₁₀ Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network ^a	72
Table 25 Fine Particle Concentrations Measured by the North Carolina Fine Particle Monitoring Network in the Last Five Years (2008-2012) ^a	80
Table 26 Fine Particle Monitors that Have Demonstrated Attainment of the National Ambient Air Quality Standards for the Past Five Years.....	83
Table 27 Design Values and Required Fine Particle Monitors for North Carolina Metropolitan Statistical Areas (MSA)	84
Table 28 North Carolina Fine Particle Monitoring Network – Monitor Locations ^a	85
Table 29 Statement of Purpose for North Carolina Fine Particle Monitoring Network ^a ..	88
Table 30 Status of North Carolina Fine Particle Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network ^a	92
Table 31 Locations and Schedules for Continuous Monitors in the North Carolina Fine Particle Monitoring Network ^a	94
Table 32 Status of North Carolina Continuous Fine Particle Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network.....	97
Table 33 North Carolina Lead Monitoring Network – Monitor Locations ^a	102
Table 34 Statement of Purpose for North Carolina Lead Monitoring Network ^a	103
Table 35 Status of North Carolina Lead Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network ^a	103
Table 36 List of Urban Air Toxic Compounds Measured in North Carolina.....	104
Table 37 NC UAT Monitoring Network – Monitor Locations.....	106
Table 38 Statement of Purpose for NC UAT Monitoring Network.....	107
Table 39 Status of NC UAT Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network ^a	108
Table 40. Fleet Equivalent Average Annual Daily Traffic for Selected Road Segments in the Raleigh Metropolitan Statistical Area.....	115
Table 41. Fleet Equivalent Average Annual Daily Traffic for Selected Road Segments in the Greensboro-High Point MSA.....	116
Table 42. Fleet Equivalent Average Annual Daily Traffic for Road Segments in the Durham-Chapel Hill Metropolitan Statistical Area	117
Table 43 North Carolina Nitrogen Dioxide Monitoring Network – Monitor Locations ^a	121
Table 44 Statement of Purpose for the North Carolina Nitrogen Dioxide Monitoring Network ^a	122

Table 45 Status of North Carolina Nitrogen Dioxide Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network	123
Table 46. Dates the EPA Approved the Quality Management Plan and Quality Assurance Project Plans.....	124

List of Figures

Figure 1. North Carolina Metropolitan Statistical Areas in 2013	5
Figure 2. The Rockwell Ozone, Particle, and Precursor Monitoring Site	13
Figure 3. Millbrook NCore Monitoring Site.....	14
Figure 4. The Finley Farm Fine Particle Monitoring Site	15
Figure 5. The Springfield Road Fine Particle Monitoring Site in Rocky Mount	16
Figure 6. The Bent Creek Ozone Monitoring Site (37-021-0030).....	17
Figure 7. The Waggin Trail Ozone Monitoring Site.....	18
Figure 8. Location of New Bayview Ferry Site (B) Relative to Old Aurora Site (A)	28
Figure 9. Location of North Carolina PWEI monitors	29
Figure 10. Location of the Durham-Chapel Hill PWEI Sulfur Dioxide Monitor (red dot) in Relationship to Sulfur Dioxide Sources.....	30
Figure 11. Location of the Wilmington PWEI Monitor (green dot) in Relationship to Sources of Sulfur Dioxide.....	30
Figure 12. 8-Hour Ozone Design Value Trends.	38
Figure 13. 40 CFR 58 Appendix D Table D-2.....	41
Figure 14. Raleigh MSA Ozone Monitor Locations.....	43
Figure 15. Winston Salem MSA Ozone Monitor Locations.....	44
Figure 16. Location of Ozone Monitors in the Durham-Chapel Hill MSA.....	44
Figure 17. Charlotte MSA North Carolina Ozone Monitors.	45
Figure 18. Enochville and Rockwell Time Series for 2012.....	46
Figure 19. Correlation between Enochville and Rockwell	47
Figure 20. Ozone monitors surrounding Harnett County	48
Figure 21. VISTAS Unmonitored Areas Analysis Map for Harnett and Hoke Counties	49
Figure 22. VISTAS Unmonitored Area Analysis for Ozone in 2012.....	49
Figure 23. Propane Tank at the Waggin Trail Site	50
Figure 24. Future plans for the Waggin Trail Monitoring Site.....	51
Figure 25. Relationship between Waggin Trail site and Taylorsville 2013 Site	52
Figure 26. Aerial view of new Bent Creek Location	53
Figure 27. Location of 2013 Ozone Monitoring Stations	57
Figure 28. Table D-4 from 40CFR58 Appendix D.....	63
Figure 29. PM 10 Monitor Locations	69
Figure 30. Historical Design Values for Sites Proposed to be Shut Down.....	74
Figure 31. Average 24-Hour Fine Particle Concentrations at Greenville and Kinston ...	75
Figure 32. 24-Hour Fine Particle Correlation for the Kinston and Greenville Monitors	75
Figure 33. Daily Fine Particle Concentrations at Clayton and Rocky Mount in 2012	76
Figure 34. Correlation of Daily Fine Particle Concentrations at Clayton and Rocky Mount.....	76
Figure 35. Fine Particle Concentrations at Millbrook and Finley Farm in 2012	77
Figure 36. Correlation of Fine Particle Concentrations between Finley Farm and Millbrook	77

Figure 37. Location of Wayne Community College in relationship to Dillard Middle School	79
Figure 38. Locations of 2013 Fine Particle Monitoring Stations.....	87
Figure 39. Location of Required Population-Exposure Lead Monitors in North Carolina	101
Figure 40. Millbrook NCore Site	112
Figure 41 Wake County Near-Road Monitoring Station Location (red circle).....	115
Figure B42. Possible Locations of Future Greensboro Near-Roadway Nitrogen Dioxide Monitoring Sites.....	116
Figure 43. Locations of Segments with Highest Fleet Adjusted AADT in the Durham-Chapel Hill MSA	118
Figure 44. Signature Page from the DENR Quality Management Plan	125
Figure 45. NCore QAPP Submittal Documentation	128

II. Summary of Proposed Changes

This section lists the known changes to the network expected to occur during the next 18 months. It also includes a list of required near road monitors that will be required in 2017. Table 1 contains a list of fastest growing counties in North Carolina for reference in the discussions in this section and the following sections of the report, which describe monitoring changes required because of population growth in the MSA. The discussion in this section is organized as follows:

- Monitors scheduled to start-up or shut-down in 2013;
- Sites to be relocated or moved in 2013;
- Changes to the Methods Used to Measure Fine Particles for Comparison to the NAAQS;
- Rotating Background Monitors and their Operating Schedules; and
- Current Requirement for Near Road Monitoring in 2017

Table 1. Alphabetical List of Fastest Growing Counties in North Carolina based on population change between April 1, 2010, or July 1, 2011 and July 1, 2012.

County Name	Population Estimate July 1, 2012	State Ranking of Counties by 2012 Estimate	Reason for Selection as one of the Fastest Growing Counties in North Carolina
Brunswick	112,257	25	Growth of 4.5 % between April 1, 2010 and July 1, 2012. Nation's 89 th fastest growing county.
Cabarrus	184,498	11	Growth of 3,439 people (1.9 %) between July 1, 2011, and July 1, 2012.
Durham	279,641	6	Growth of 12,054 people from April 1, 2010, to July 1, 2012. Nation's 88 th fastest growing county.
Forsyth	358,137	4	Growth of 7,467 people between July 1, 2010, and July 1, 2012.
Guilford	500,879	3	Growth of 12,473 people between April 1, 2010, and July 1, 2012.
Harnett	122,135	24	Growth of 7,457 people (6.5 %) between 4/1/2010 and 7/1/2012. Nation's 38 th fastest growing county.
Hoke	50,536	54	Growth of 7.6 % between April 1, 2010, and July 1, 2012. Nation's 20 th fastest growing county.
Mecklenburg	969,031	1	Growth of 49,403 people (5.4 %) between 4/1/2010 and 7/1/2012. Nation's 56 th fastest growing county.
Onslow	183,263	12	Growth of 5,833 people (3.3 %) between July 1, 2011, and July 1, 2012.

Table 1. Alphabetical List of Fastest Growing Counties in North Carolina based on population change between April 1, 2010, or July 1, 2011 and July 1, 2012.

County Name	Population Estimate July 1, 2012	State Ranking of Counties by 2012 Estimate	Reason for Selection as one of the Fastest Growing Counties in North Carolina
Wake	952,151	2	Growth of 51,158 people (5.7 %) between 4/1/2010 and 7/1/2012. Nation's 51 st fastest growing county.

A. Monitors Scheduled to Start Up or Shut Down in 2013 or 2014

Table 2 presents a list of monitors that are expected to start-up or shut-down in 2013 listed by Metropolitan Statistical Area (MSA) and AQS Site Identification Number. Changes to the monitors operated by Mecklenburg County Air Quality are discussed in Appendix B. 2013 Annual Monitoring Network Plan for Mecklenburg County Air Quality. The only changes discussed here are those applying to the seven monitoring sites listed in the table that are operated by the NC-DAQ.

Table 2. Summary of Monitors Scheduled to Start Up or Shut Down in 2013 or 2014

Charlotte-Concord-Gastonia Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor or Pollutant	Proposed Change	Time Frame
37119044	Humane Society or Remount Road	NO ₂	A near-road NO ₂ monitor will begin operating to meet Appendix D requirements	1/01/2014
371590021	Rockwell	Reactive Oxides of Nitrogen	The 42S monitor will shut down Monitor will be upgraded to an i-series trace level unit	5/20/2013 1/1/2014
		Sulfate	Add a continuous sulfate monitor	
371590022	Enochville	Ozone	Monitor will shut down	10/31/2013

Raleigh Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor or Pollutant	Proposed Change	Time Frame
371830014	Millbrook	NO ₂	An area-wide Photolytic NO ₂ monitor will begin operating to meet Appendix D requirements	8/01/2013
		Carbonyls	Carbonyl sampling will resume	7/01/2013
371830020	Finley Farm	Fine Particles (PM _{2.5})	Monitoring will end on 12/31/2013	12/31/2013
371830021	Triple Oak Road	NO ₂	A near-road NO ₂ monitor will begin operating to meet Appendix D requirements	1/01/2014 or earlier

Rocky Mount Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor or Pollutant	Proposed Change	Time Frame
370650004	Springfield Rd	Fine Particles (PM _{2.5})	Monitoring will end on 12/31/2013	12/31/2013

Not In A Metropolitan Statistical Area – Valley, Piedmont, and Coastal Sites

AQS Site Id Number	Site Name	Monitor or Pollutant	Proposed Change	Time Frame
371070004	Lenoir Community College	Fine Particles (PM _{2.5})	Monitoring will end on 12/31/2013	12/31/2013
371230001	Candor	Carbonyls	Carbonyl sampling will resume	7/01/2013

^a Operated by Mecklenburg County Air Quality

1. Monitoring Changes in the Charlotte-Concord-Gastonia MSA

At the **Rockwell** (37-159-0021) site in Rowan County the NC-DAQ operates a year-round ozone monitor, one-in-three day fine particle FRM monitor, a one-in-six day collocated fine particle monitor, a continuous fine particle monitor, and a one-in-six day speciation fine particle monitor. In addition a high sensitivity reactive oxides of nitrogen monitor operated year round at this site until mid May 2013 when it was shut down because it was not operating properly. Sometime in late 2013 this monitor is scheduled to be upgraded to a trace level monitor. A continuous fine particle nitrate monitor and aethalometer also operate year-round here. In early 2012 the NC-DAQ decided to add a continuous sulfate monitor to this site. To make resources available to operate the continuous sulfate monitor, the NC-DAQ decided to shut down the carbon monoxide monitor at the end of June 2012. The continuous sulfate monitor is scheduled to be installed sometime in late 2013. The site is shown in Figure 2.



Figure 2. The Rockwell Ozone, Particle, and Precursor Monitoring Site

At the **Enochville** (37-159-0022) site in Rowan County the NC-DAQ operates a seasonal ozone monitor. The ambient ozone concentrations measured at the Enochville Site are currently at 100 % of the 8-hour NAAQS. The Enochville monitor was installed in the mid-1990s for urban air-shed model evaluation as a maximum ozone concentration site. The model showed an ozone bloom, plume, candle flame shaped ozone formation happening north of Charlotte near Enochville. The Enochville monitor generally tracks with the Rockwell monitor, but during these high ozone "events", the ozone appears significantly higher at Enochville than at Rockwell. These events are rare and cause the model to go from blue south and southwest of Charlotte, to green over Charlotte, to yellow just downwind of Charlotte to orange just south of Enochville to red over Enochville. The NC-DQ believes the Enochville site has met its objectives and is no longer needed for model evaluation purposes and the Rockwell, County Line, and Garinger ozone monitors adequately represent the air quality in the Charlotte-Concord-Gastonia MSA. As a result the NC-DAQ plans to shut down this site at the end of the 2013 ozone season (October 31, 2013).

2. Changes to Monitoring in the Raleigh MSA

In the Raleigh MSA, nitrogen dioxide monitoring will begin at two sites (Millbrook and Triple Oak Road), carbonyl sampling will begin at Millbrook, and a fine particle monitor (Finley Farm) will be shut down. At the **Millbrook** (37-183-0014) site the NC-DAQ operates a year-round ozone monitor, one-in-three day fine particle Federal Reference Method (FRM), low-volume manual PM₁₀, and manual fine particle speciation monitors, one continuous fine particle Federal Equivalent Method (FEM) monitor, trace-level sulfur dioxide, carbon monoxide and reactive oxides of nitrogen monitors, and an air toxics volatile organic carbon monitor. The NC-DAQ also operates continuous fine particle monitors for sulfate, nitrate and black carbon at this site. The site is shown in Figure 3. Because the Millbrook site is an NCore site, the NC-DAQ began analyzing the low-volume PM₁₀ samples for lead, starting December 27, 2011. The NC-DAQ began operating a fine particle Beta Attenuation Monitor (BAM) at the site as an FEM in January 2011. July 1, 2013 the NC-DAQ will begin operating a carbonyl sampler at the site to support shale gas development background monitoring studies in Lee County. August 1, 2013, the NC-DAQ will begin operating an area wide photolytic nitrogen dioxide monitor at the site to meet the requirements in 40 CFR 58 Appendix D.



Figure 3. Millbrook NCore Monitoring Site

At the **Finley Farm Site** (37-183-0020) the NC-DAQ operates a one-in-three day fine particle FRM monitor. The site is shown in Figure 4. It is the third fine particle monitoring site in the MSA. Currently, the design value for the MSA is less than 85 percent of the National Ambient Air Quality Standards (NAAQS). As a result, the MSA

is only required to have two fine particle monitors. To free up resources to do other monitoring in the Raleigh region, the NC-DAQ will shut down the Finley Farm site on December 31, 2013.



Figure 4. The Finley Farm Fine Particle Monitoring Site

At the new **Triple Oak Site** the NC-DAQ will operate a near road nitrogen dioxide monitoring site. The site is being established in collaboration with the U.S. EPA Office of Research and Development (ORD) and will be a multi-pollutant site. The site is scheduled to be up and operational as soon as possible but no later than January 1, 2014. The NC-DAQ will start operating a photolytic nitrogen dioxide monitor at the site. A trace level carbon monoxide monitor and a fine particle monitor will be added by January 1, 2017. The NC-DAQ is also planning on purchasing an aethalometer and ultrafine particle counter to place at the site. The NC-DAQ expects the aethalometer and ultrafine particle counter to be up and operational about a year after the nitrogen dioxide monitoring begins. The NC-DOT currently operates a traffic counter at the site. The U.S. EPA also plans to operate a wide suite of monitors at this site, including air toxics monitors, continuous fine particle monitors, and meteorological sensors.

3. Changes to Monitoring in the Rocky Mount MSA

At the **Springfield Road** (37-065-0004) site in Edgecombe County the NC-DAQ operates a one-in-three day fine particle Federal Reference Monitor (FRM). The site is shown in Figure 5. The NC-DAQ will shut down this monitor on December 31, 2013, because it has been attaining the standard for the past five years and is below 80 percent of the National Ambient Air Quality Standards (NAAQS). The Rocky Mount MSA is small enough that it is not required to have a fine particle monitor if the design value is unknown or less than 85 percent of the NAAQS. A non-regulatory continuous fine particle monitor for air quality forecasting will continue to operate at the Leggett site.



Figure 5. The Springfield Road Fine Particle Monitoring Site in Rocky Mount

4. Changes to Monitoring in the Areas Outside Metropolitan Statistical Areas

At the **Lenoir Community College** site the NC-DAQ operates an ozone monitor and a one-in-three day fine particle manual FRM monitor. The site is also collocated with wind speed and wind direction sensors on a 10-meter tower, temperature sensors at 10-meters and 2-meters, and solar radiation, rainfall, and relative humidity sensors. On December 31, 2013, the NC-DAQ will shut down the fine particle monitor at this site. The fine particle concentrations measured by this monitor have been attaining the standard for the last five years and are currently less than 80 percent of the National Ambient Air Quality Standards. The Kinston urban area is a micropolitan statistical area so it is not required by 40 CFR 58 Appendix D to meet any minimum fine particle monitoring requirements. As discussed later in VII. Fine Particle (PM_{2.5}) Monitoring Network, the fine particle concentrations measured by this monitor in Kinston correlate with the fine particle concentrations measured by the monitor in Greenville. Thus, if needed, future fine particle concentrations in Kinston could be estimated using data from the monitor in Greenville. Thus, the NC-DAQ decided to shut down this monitor and use the resources elsewhere.

At the **Candor** site the NC-DAQ operates a one-in-three day fine particle manual FRM monitor. In July 2013 the NC-DAQ will add a carbonyl sampler to the site to support shale gas development background monitoring in Lee County.

B. Sites to be Relocated or Moved

Three monitoring sites will be relocated or moved during 2012. These sites are listed in Table 3.

Table 3. List of Sites to Be Relocated and New Locations Where Applicable

Asheville Metropolitan Statistical Area				
AQS Site Id Number	Site Name	Monitor or Pollutant	Proposed Change	Time Frame
370210030 ^a	Bent Creek	Ozone	Site will be relocated in the park to a more open area with fewer trees	5/31/2013
Hickory Metropolitan Statistical Area				
AQS Site Id Number	Site Name	Monitor or Pollutant	Proposed Change	Time Frame
370030004	Waggin Trail	Ozone	Site will shut down due to changes at the site.	10/31/2013 or sooner
370030005	Taylorville 2013	Ozone	Site will start up	5/31/2013
Goldsboro Metropolitan Statistical Area				
AQS Site Id Number	Site Name	Monitor or Pollutant	Proposed Change	Time Frame
371910005	Dillard	Fine Particles (PM _{2.5})	Site may move to a new location	1/1//2014
^a Operated by the Western North Carolina Regional Air Quality Agency				

1. Sites to be moved in the Asheville MSA

In the Asheville the ozone-monitoring site at Bent Creek (37-021-0021), shown in Figure 6 will be moving to a new Bent Creek location that is within a mile of the existing Bent Creek location in late May 2013. The growth of the trees at the site, is forcing the WNCRAQA to move the monitor. Because the move is within one mile of the current site, the site identification number will not change. Additional information is provided in Section V. Ozone Monitoring Network.



Figure 6. The Bent Creek Ozone Monitoring Site (37-021-0030)

2. Monitoring Site Relocations in the Hickory-Lenoir-Morganton MSA

The Hickory MSA has three monitoring sites: two ozone-monitoring sites at Lenoir (37-027-0003) and Waggin Trail (37-003-0004) in Taylorsville and one particle monitoring site at the Hickory Water Tower (37-035-0004) in Hickory. Only the Waggin Trail site needs to be relocated at this time. The **Waggin Trail** site is shown in Figure 7. The NC-DAQ discovered in January 2013 that Alexander County is establishing a vehicle maintenance facility at the current location. Although the ozone monitor is located in a county building used as a storage location for financial records and will remain, the NC-DAQ believes the new gasoline, diesel, and propane fueling and maintenance activities will make the site unsuitable for meeting its monitoring objectives. No construction activities had started by April 1 so ozone monitoring resumed at this site for the 2013 ozone season and will continue until activities at the site are such that they will compromise the ozone concentrations at the site. This season will be the last ozone season that monitoring will be done at this site.



Figure 7. The Waggin Trail Ozone Monitoring Site

The Waggin Trail site will be replaced with the **Taylorsville 2013** (37-003-0005) site, located at the Board of Education Office in Taylorsville. The Waggin Trail and Taylorsville 2013 site will operate simultaneously for as long as possible during the 2013 season. More information on the construction activities at the Waggin Trail site and the new Taylorsville 2013 site is available in Section V. Ozone Monitoring Network.

3. Monitoring Site Relocations in the Goldsboro MSA

At the **Dillard** (37-191-0005) site in Wayne County the NC-DAQ operates a one-in-three day fine particle Federal Reference Monitor (FRM), a fine particle continuous monitor and wind speed and wind direction sensors. On November 1, 2012, the NC-DAQ installed a Beta Attenuation Monitor (BAM) at the site to replace the Tapered Element Oscillating Microbalance (TEOM) monitor and begin a two-year study comparing the BAM to the FRM monitor. In 2013 the NC-DAQ started looking for a location on the campus of Wayne Community College (WCC) for these particle

monitors. More information on the reason for moving these monitors is provided in Section VII. Fine Particle (PM_{2.5}) Monitoring Network. If a suitable location is found on campus, the NC-DAQ will move the particle monitors to the new location by January 1, 2014.

C. Changes to the Methods Used to Measure Fine Particles for Comparison to the NAAQS

Currently the NC-DAQ uses an R & P Model 2025 PM_{2.5} Sequential Monitor with a WINS impactor (Air Quality System (AQS) Method Code 118) and U.S. EPA reference method designation RFPS-0498-118 for determining compliance with the fine particle NAAQS for all but two of its sites. The NC-DAQ uses a Ruprecht & Patshneck TEOM Series 1400a for continuous (averaged on an hourly basis) measurement of fine particles for many of its sites. The TEOM is ineligible to become an equivalent method for fine particles because it does not work as well in other parts of the nation as it does in North Carolina. Reference and equivalent methods need to work the same throughout the nation. Also, the TEOM is no longer supported by the manufacturer so eventually parts will not be available for it.

In early 2008 the Met One Beta Attenuation Monitor (BAM) was approved as a Federal Equivalent Method (FEM). Since 2008 the NC-DAQ purchased a total of 10 BAMs. After a two-year study, two R & P Model 2025 PM_{2.5} Sequential Monitors have been replaced by BAMs. These BAM monitors are located at the Raleigh Millbrook (37-183-0014) and Bryson City (37-173-0002) monitoring sites. In 2012 five more BAMs were installed in the eastern half of the state as special purpose non-regulatory monitors for a two-year study. The sites where these monitors were installed are listed in Table 4. During this study the BAMs will be compared to the R & P Model 2025 PM_{2.5} Sequential Monitors. At the end of the study if the BAM data meets the equivalency requirements, the NC-DAQ plans to replace the R & P Model 2025 PM_{2.5} Sequential Monitors with the BAMs. If not, in the 2014 network plan the NC-DAQ will request that the data from these monitors be exempt from use in determining compliance with the national ambient air quality standards. In 2013 a special purpose non-regulatory BAM will be added to the Candor site for a two year comparison study.

Table 4. List of Monitoring Sites with Special Purpose Non-Regulatory Fine Particle Monitors

Wilmington Metropolitan Statistical Area				
AQS Site Id Number	Site Name	Monitor or Pollutant	Proposed Change	Time Frame
371290002	Castle Hayne	Fine Particles (PM _{2.5})	Monitoring method at the site may change in 2014	10/23/2014
Goldsboro Metropolitan Statistical Area				
AQS Site Id Number	Site Name	Monitor or Pollutant	Proposed Change	Time Frame
371910005	Dillard	Fine Particles (PM _{2.5})	Monitoring method may change in 2014	9/30/2014
Not In A Metropolitan Statistical Area – Valley, Piedmont, and Coastal Sites				
AQS Site Id Number	Site Name	Monitor or Pollutant	Proposed Change	Time Frame
370330001 ^c	Cherry Grove	Fine Particles (PM _{2.5})	Monitoring method may change in 2014	3/31/2014
370610002	Kenansville	Fine Particles (PM _{2.5})	Monitoring method may change in 2014	1/1/2014
371170001	Jamesville	Fine Particles (PM _{2.5})	Monitoring method may change in 2014	9/30/2014
371290001	Candor	Fine Particles (PM _{2.5})	Will add a continuous monitor in 2013	6/30/2013

D. Rotating Background Monitors

Currently the NC-DAQ operates two rotating background monitoring networks for providing background concentration data for prevention of significant deterioration (PSD) modeling. Monitors for sulfur dioxide (SO₂) or PM₁₀ rotate to these sites every three years. The rotating sites were selected to provide the greatest possible spatial coverage from the coastal plain to the foothills. The sites with background monitors and the schedules for operating the background monitors are provided in Table 5.

Table 5. List of Rotating Background Monitors

Charlotte-Concord-Gastonia Metropolitan Statistical Area				
AQS Site Id Number	Site Name	Monitor or Pollutant	Proposed Change	Time Frame
370710016	Grier Middle School/ Gastonia	PM ₁₀	PM ₁₀ Special Purpose Background Monitoring began on an every three-year basis	3/1/2013
Greensboro-High Point Metropolitan Statistical Area				
AQS Site Id Number	Site Name	Monitor or Pollutant	Proposed Change	Time Frame
371570099	Bethany	SO ₂	Rotating SO ₂ monitor will resume operating in 2014	1/1/2014
Durham-Chapel Hill Metropolitan Statistical Area				
AQS Site Id Number	Site Name	Monitor or Pollutant	Proposed Change	Time Frame
370370004	Pittsboro	SO ₂	Rotating SO ₂ monitor will resume in 2014	1/1/2014
Fayetteville Metropolitan Statistical Area				
AQS Site Id Number	Site Name	Monitor or Pollutant	Proposed Change	Time Frame
370511003	Golfview	SO ₂	Rotating SO ₂ monitor will resume operating in 2015	1/1/2015
Hickory Metropolitan Statistical Area				
AQS Site Id Number	Site Name	Monitor or Pollutant	Proposed Change	Time Frame
370270003	Lenoir	SO ₂	Rotating SO ₂ monitor began operating in 2013	1/1/2013
Not In A Metropolitan Statistical Area – Valley, Piedmont, and Coastal Sites				
AQS Site Id Number	Site Name	Monitor or Pollutant	Proposed Change	Time Frame
370330001 ^c	Cherry Grove	PM ₁₀	PM ₁₀ Special Purpose Background Monitoring started	1/1/2013
370610002	Kenansville	PM ₁₀	Rotating background PM ₁₀ monitoring to support PSD modeling resumed. Method changed.	5/10/2013
371110004	East Marion	PM ₁₀	Rotating background PM ₁₀ monitoring to support PSD modeling will resume	1/1/2014
371170001	Jamesville	PM ₁₀	Rotating background PM ₁₀ monitoring to support PSD modeling will resume	1/1/2015
		SO ₂	Rotating SO ₂ monitor resumed operating in 2013	1/1/2013
371290001	Candor	PM ₁₀	Rotating background PM ₁₀ monitoring to support PSD modeling will resume	1/1/2014

E. Currently Required Future Near-Road Monitors

The current monitoring regulations will require the NC-DAQ to add additional near road monitors in 2017. Table 6 lists future near road sites as well as monitors that will need to be added to the two near road sites that are scheduled to start January 1, 2014. At this time the US EPA does not have funding to add additional near road

nitrogen dioxide monitoring sites in areas with populations between 500,000 and one million. If funding is provided for additional near road sites, those sites will be discussed in greater detail in the 2015 and 2016 network plans. At this time the NC-DAQ plans to seek a waiver for the Durham near road monitor and may also ask for waivers for the monitors in Greensboro and Winston-Salem.

Table 6. List of Near Road Monitoring Scheduled to Start January 1, 2017

Charlotte-Concord-Gastonia Metropolitan Statistical Area				
AQS Site Id Number	Site Name	Monitor or Pollutant	Proposed Change	Time Frame
37119044 ^a	Humane Society or Remount Road	CO	A near-road CO monitor will begin operating to meet Appendix D requirements	1/01/2017
		Fine Particles (PM _{2.5})	A near-road PM _{2.5} monitor will begin operating to meet Appendix D requirements	1/01/2017

Raleigh Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor or Pollutant	Proposed Change	Time Frame
371830021	Triple Oak Road	CO	A near-road CO monitor will begin operating to meet Appendix D requirements	1/01/2017
		Fine Particles (PM _{2.5})	A near-road PM _{2.5} monitor will begin operating to meet Appendix D requirements	1/01/2017

Greensboro-High Point Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor or Pollutant	Proposed Change	Time Frame
370830015	Knox Road	NO ₂	A near-road NO ₂ monitor is currently required to meet Appendix D requirements	1/01/2017

Winston-Salem Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor or Pollutant	Proposed Change	Time Frame
370670031 ^b	To be determined	NO ₂	A near-road NO ₂ monitor is currently required to meet Appendix D requirements	1/01/2017

Durham-Chapel Hill Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor or Pollutant	Proposed Change	Time Frame
37063016	Page Road	NO ₂	A near-road NO ₂ monitor is currently required to meet Appendix D requirements	1/01/2017

^a Operated by Mecklenburg County Air Quality

^b Operated by Forsyth County Office of Environmental Assistance and Protection

III. Carbon Monoxide (CO) Monitoring Network

Carbon Monoxide monitoring is conducted in three of the major urban areas of the State. The 2013-2014 State-operated Network consists of a monitor in the Raleigh-Durham-Cary-Chapel Hill Combined Statistical Area that collects data using a Federal Reference Method for comparison to the National Ambient Air Quality Standards (NAAQS). Local program agencies operate carbon monoxide monitors in Charlotte and Winston-Salem. These state and local agency sites are in three of the five largest urban areas in North Carolina. The Peters Creek Winston-Salem location is a micro-scale site that provides maximum carbon monoxide concentrations for the monitoring area. The Raleigh and Charlotte sites are neighborhood scale National Core (NCore) sites. These sites did not report any exceedances of the one or eight hour ambient air quality standard from 2008 to 2012. In 2012 the State shut down the high sensitivity carbon monoxide non-reference method monitor at Rockwell in Rowan County.

The Crabtree micro-scale maximum concentration CO site in Raleigh (Wake County) operated to meet requirements in the NC DAQ CO maintenance State Implementation Plan (SIP). The SIP requires the state to operate at least one CO monitor in either Durham or Wake Counties so that the data from the monitor can be used to trigger contingency requirements. In 2009 the NC DAQ started operating the NCore trace-level CO monitor at the Millbrook site in Raleigh. This trace level monitor is classified by EPA as a Federal Reference Method and is therefore suitable to be compared to the NAAQS. The 2nd-highest 8-hour average for both monitors in 2010 was 2 parts per million, which is less than 25 % of the NAAQS. Because the monitors had the same design value in 2010 and the design value was so far below the standard, the NC DAQ shut down the Crabtree site on March 31, 2011, and is now using the Millbrook CO monitor to meet the requirements in the SIP.

In 2012 the NC-DAQ evaluated the ozone and fine particle precursor monitoring at Rockwell and decided that the carbon monoxide monitor provided information that was less needed than information from other monitors that have been planned for the site but not installed because of limited resources. As a result, the NC-DAQ shut down the non-regulatory carbon monoxide monitor at the site in July 2012 when it broke.

Table 7 provides the highest maximum 1-hour and 8-hour concentrations for each operating site for 2008 through 2012. Table 8 provides the locations of the sites for the North Carolina Carbon Monoxide Monitoring Network. Table 9 provides the statement of purpose for each current and proposed monitoring site in the North Carolina Carbon Monoxide Monitoring Network. Table 10 summarizes the status for each current and proposed monitoring site regarding whether it is suitable for comparison to the NAAQS and meets the requirements in Appendices A, C, D, and E of 40CFR58. Table 10 also provides a summary of proposed and planned changes to the carbon monoxide monitoring network.

Table 7 Carbon Monoxide Concentrations Measured by the North Carolina Carbon Monoxide Monitoring Network 2008 to 2012 ^a

Charlotte-Concord-Gastonia Metropolitan Statistical Area							
AQS Site Identification Number	Site Name	Highest 1-hr 1 st max for 2008-2012			Highest 8-hr 1 st max for 2008-2012		
		Value (parts per million)	Percent of NAAQS ^b	Year	Value (parts per million)	Percent of NAAQS ^b	Year
371190041 ^{c, d}	Garinger	4.2	12 %	2012	2.0	22 %	2010
371190041 ^{c, e}	Garinger	2.7	-	2012	1.7	-	2010
371590021 ^{e, f, g, h}	Rockwell	1.6	-	2008	0.9	-	2008

Raleigh Metropolitan Statistical Area							
AQS Site Identification Number	Site Name	Highest 1-hr 1 st max for 2008-2012			Highest 8-hr 1 st max for 2008-2012		
		Value (parts per million)	Percent of NAAQS ^b	Year	Value (parts per million)	Percent of NAAQS ^b	Year
371830014 ^{c, f}	Millbrook	4.0	-	2008	2.4	-	2008
371830018 ^{d, g}	Crabtree	3.5	10 %	2008	2.2	24 %	2008

Greensboro-High Point Metropolitan Statistical Area							
AQS Site Identification Number	Site Name	Highest 1-hr 1 st max for 2008-2012			Highest 8-hr 1 st max for 2008-2012		
		Value (parts per million)	Percent of NAAQS ^b	Year	Value (parts per million)	Percent of NAAQS ^b	Year
370811011 ^{d, g}	Latham Park	1.9	5.4 %	2008	1.6	18 %	2008

Winston-Salem Metropolitan Statistical Area							
AQS Site Identification Number	Site Name	Highest 1-hr 1 st max for 2008-2012			Highest 8-hr 1 st max for 2008-2012		
		Value (parts per million)	Percent of NAAQS ^b	Year	Value (parts per million)	Percent of NAAQS ^b	Year
370670023 ^{d, i}	Peters Creek	3.9	11 %	2009	2.3	26 %	2011

Durham-Chapel Hill Metropolitan Statistical Area							
AQS Site Identification Number	Site Name	Highest 1-hr 1 st max for 2008-2012			Highest 8-hr 1 st max for 2008-2012		
		Value (parts per million)	Percent of NAAQS ^b	Year	Value (parts per million)	Percent of NAAQS ^b	Year
370630015 ^{c, g}	Durham Armory	1.9	-	2008	1.5	-	2008

Fayetteville Metropolitan Statistical Area							
AQS Site Identification Number	Site Name	Highest 1-hr 1 st max for 2008-2012			Highest 8-hr 1 st max for 2008-2012		
		Value (parts per million)	Percent of NAAQS ^b	Year	Value (parts per million)	Percent of NAAQS ^b	Year
370510007 ^{d, g}	Fayetteville ABC	2.2	6.3 %	2008	1.7	19 %	2008

Not in a Metropolitan Statistical Area – Valley, Piedmont, and Coastal Sites							
QS Site Identification Number	Site Name	Highest 1-hr 1 st max for 2008-2012			Highest 8-hr 1 st max for 2008-2012		
		Value (parts per million)	Percent of NAAQS ^b	Year	Value (parts per million)	Percent of NAAQS ^b	Year
370330001 ^{e, g, j}	Cherry Grove	1.5	-	2008	1.3	-	2008

^a All monitors use an Instrumental Nondispersive Infrared Thermo Electron 48C Method (Air Quality System (AQS) Method Code 054) except one of the monitors operated by the Mecklenburg County Air Quality which uses an Instrumental Gas Filter Correlation Teledyne API 300 EU (AQS Method Code 593)

^b The National Ambient Air Quality Standard (NAAQS) for a 1-hour period is 35 parts per million and 9 for an 8-hour period. Attainment is based on the second highest average for the calendar year.

^c Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^d Monitor method suitable for comparing to the NAAQS

^e Monitor method unsuitable for comparing to the NAAQS

Table 7 Carbon Monoxide Concentrations Measured by the North Carolina Carbon Monoxide Monitoring Network 2008 to 2012 ^a

- ^f Year-round trace-level CO
^g This monitor was shut down
^h The Rockwell monitor was located in Rowan County as a downwind site for the Charlotte MSA and an upwind site for the Greensboro-High Point MSA.
ⁱ Operated by the Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403)
^j The Cherry Grove monitor was located in Caswell County and was a downwind monitor for the Greensboro-High Point Metropolitan Statistical Area (MSA).

Table 8 North Carolina Carbon Monoxide Monitoring Network – Monitor Locations^a
Charlotte-Concord-Gastonia Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Site Location				MSA, CSA, or CBSA represented
		Street Address	City	Longitude	Latitude	
371190041 ^b	Garinger	1130 Eastway Drive	Charlotte	-80.7857	35.2401	Charlotte
371190041 ^b	Garinger	1130 Eastway Drive	Charlotte	-80.7857	35.2401	Charlotte

Raleigh Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Site Location				MSA, CSA, or CBSA represented
		Street Address	City	Longitude	Latitude	
371830014	Millbrook	3801 Spring Forest Road	Raleigh	-78.5742	35.8561	Raleigh

Winston-Salem Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Site Location				MSA, CSA, or CBSA represented
		Street Address	City	Longitude	Latitude	
370670023 ^c	Peters Creek	1401 Corporation Parkway	Winston-Salem	-80.2583	36.0658	Winston-Salem

- ^a All monitors use an Instrumental Nondispersive Infrared Thermo Electron 48C or 48 i Method (Air Quality System (AQS) Method Code 054 or 554) except the NCore monitor operated by Mecklenburg County Air Quality which uses an Instrumental Gas Filter Correlation Teledyne API 300 EU (AQS Method Code 593)
^b Operated by Mecklenburg County Air Quality (Air Quality System (AQS) Reporting Agency 0669)
^c Operated by Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403)

Table 9 North Carolina Carbon Monoxide Monitoring Network - Statement of Purpose^a

Charlotte-Concord-Gastonia Metropolitan Statistical Area						
AQS Site ID Number	Site Name	Monitor Type	Operating Schedule	Statement of Purpose	Monitoring Objective	Scale
371190041 ^b	Garinger	SLAMS	Hourly Year round	Compliance with the NAAQS, Required in SIP.	Population Exposure	Neighborhood
371190041 ^b	Garinger	NCORE	Hourly Year round	Ozone and fine particle precursor monitoring	Population Exposure	Neighborhood

Raleigh Metropolitan Statistical Area						
AQS Site ID Number	Site Name	Monitor Type	Operating Schedule	Statement of Purpose	Monitoring Objective	Scale
371830014	Millbrook	NCORE	Hourly Year round	Ozone and fine particle precursor monitoring. Compliance with the NAAQS, Required in SIP. .	Population Exposure; General/ Background	Middle

Winston-Salem Metropolitan Statistical Area						
AQS Site ID Number	Site Name	Monitor Type	Operating Schedule	Statement of Purpose	Monitoring Objective	Scale
370670023 ^c	Peters Creek	SLAMS	Hourly Year round	Compliance with the NAAQS, Required in SIP.	Highest Concentration	Micro

^a All monitors use an Instrumental Nondispersive Infrared Thermo Electron 48C or 48i Method (Air Quality System (AQS) Method Code 054 or 554) except one of the monitors operated by the Mecklenburg County Air Quality which uses an Instrumental Gas Filter Correlation Teledyne API 300 EU (AQS Method Code 593)

^b Operated by Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^c Operated by Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403)

Table 10 Status of North Carolina Carbon Monoxide Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network^a

Charlotte-Concord-Gastonia Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices A, C, D & E ^b		Proposal to Move or Change
			C ^c	D	
371190041 ^d	Garinger	Yes	Yes: RFCA-0981-054	No Criteria	Shut down when trace analyzer is set up to run dual levels.
371190041 ^d	Garinger	Yes	Yes: RFCA-1093-093	Yes - NCore	None

Raleigh Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices A, C, D & E ^b		Proposal to Move or Change
			C ^c	D	
371830014	Millbrook	Yes	Yes: RFCA-0981-054	Yes - NCore	None

Winston-Salem Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices A, C, D & E ^b		Proposal to Move or Change
			C ^c	D	
370670023 ^e	Peters Creek	Yes	Yes: RFCA-0981-054	No Criteria	None

^a All monitors use an Instrumental Nondispersive Infrared Thermo Electron 48C or 48i Method (Air Quality System (AQS) Method Code 054 or 554) except one of the monitors operated by Mecklenburg County Air Quality which uses an Instrumental Gas Filter Correlation Teledyne API 300 EU (AQS Method Code 593)

^b All monitors meet the requirements of 40CFR58 Appendix A. The only monitors required in Appendix D are for NCore. All sites meet the appropriate siting criteria in Appendix E of 40CFR58.

^c RFCA-0981-054 is the code assigned by the U.S. EPA to reference and equivalent methods that are suitable for comparison to the National Ambient Air Quality Standards. The list of reference and equivalent methods is available at <http://www.epa.gov/ttn/amtic/files/ambient/criteria/reference-equivalent-methods-list.pdf>.

^d Operated by the Mecklenburg County Air Quality (Air Quality System (AQS) Reporting Agency 0669)

^e Operated by the Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403)

IV. Sulfur Dioxide Monitoring Network

Sulfur Dioxide (SO₂) monitoring is currently conducted in North Carolina at nine sites operated by the North Carolina Division of Air Quality (NC-DAQ) and at two sites operated by local programs. In addition, the South Carolina Department of Health and Environmental Control operates a background SO₂ monitor in York County, South Carolina [part of the Charlotte- Concord-Gastonia Metropolitan Statistical Area (MSA)]

The data collected is used to determine human health effect exposures in MSAs with over one million people, to collect background levels for Prevention of Significant Deterioration (PSD) permit modeling, and to determine the impact on SO₂ levels due to facilities that burn large quantities of fossil fuels or manufacture sulfuric acid. Though few major cities are being monitored for sulfur dioxide, data from previous years show these cities to have sulfur dioxide concentrations less than 40 % of the limits established by the U.S. Environmental Protection Agency (EPA) for all areas except Wilmington (the SO₂ monitor in New Hanover County is currently at 57 % of the one-hour SO₂ standard).

Table 11 lists the highest concentrations of sulfur dioxide measured in North Carolina between 2008 and 2012 as compared to the National Ambient Air Quality Standards (NAAQS). Table 12 provides the locations of the current and proposed sites through 2015 for the North Carolina Sulfur Dioxide Monitoring Network. Table 13 provides the statement of purpose for each current and proposed monitoring site in the North Carolina Sulfur Dioxide Monitoring Network. Table 14 summarizes the status of each current and proposed monitoring site regarding the suitability for comparison to the NAAQS and whether or not it meets the requirements as outlined in Appendices A, C, D, and E of 40CFR58. Table 14 also provides a summary of proposed and planned changes to the sulfur dioxide monitoring network.

The NC-DAQ operates one trace-level SO₂ monitor on a 100 ppb scale because low levels of SO₂ are a precursor for fine particle formation. The current network consists of one site in Wake County. Sometime in the future, the trace-level network may expand to a second site in Rowan County. The Wake County site is a National Core (NCore) monitoring site. The NC DAQ monitors for these trace-level-particle precursor pollutants year-round because monitoring for fine particles is required on a year-round basis. Mecklenburg County Air Quality also operates a trace-level SO₂ monitor at the Garinger NCore site in Mecklenburg County.

In 2010, the NC-DAQ modified the rotating PSD network by shutting down the Bryson City SO₂ monitor (Swain County) and adding rotating PSD SO₂ monitors at Lenoir (Caldwell County) and Bethany (Rockingham County). Assessment of the SO₂ monitoring network indicated that the ability of NC-DAQ to meet its obligation to provide relevant background SO₂ data for PSD modeling could be improved by these changes.

In 2011 the NC-DAQ moved the Aurora monitor across the Pamlico River to the Bayview Ferry station because more people live over there and the new site is downwind of the PCS facility. Figure 8 shows the relative locations of the two sites. The Bayview Ferry site began operating January 2011

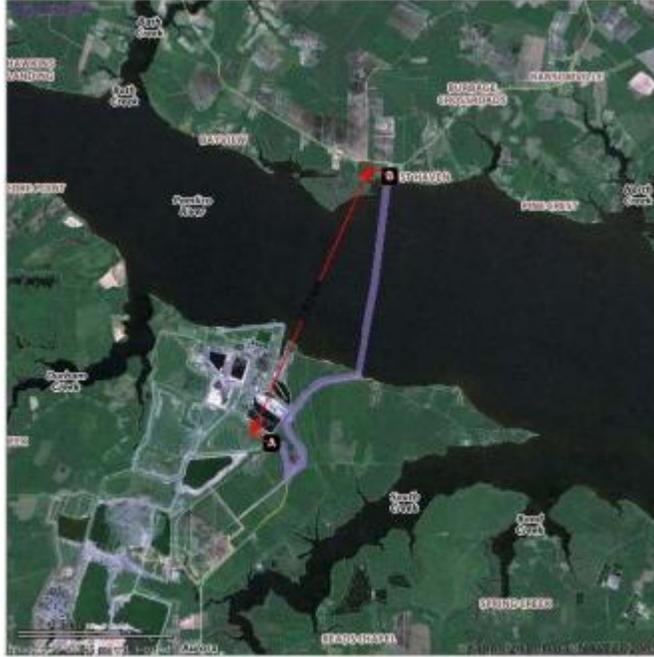


Figure 8. Location of New Bayview Ferry Site (B) Relative to Old Aurora Site (A)

In 2010 the EPA changed the monitoring regulations for sulfur dioxide to support the lower sulfur dioxide NAAQS. For the SO₂ monitoring network the EPA developed the population weighted emissions index (PWEI). The PWEI is calculated for each Core-Based Statistical Area (CBSA) by multiplying the population of each CBSA, using the most current census data or estimates, by the total amount of SO₂ in tons per year emitted within the CBSA, using an aggregate of the most recent county level emissions data available in the National Emissions Inventory for each county in each CBSA. The resulting product is divided by 1,000,000, providing a PWEI value, the units of which are million person-tons per year. For any CBSA with a calculated PWEI value equal to or greater than 1,000,000, a minimum of three SO₂ monitors are required within that CBSA. For any CBSA with a calculated PWEI value equal to or greater than 100,000, but less than 1,000,000, a minimum of two SO₂ monitors are required within that CBSA. For any CBSA with a calculated PWEI value equal to or greater than 5,000, but less than 100,000, a minimum of one SO₂ monitor is required within that CBSA. In 2013 the 2010 sulfur dioxide monitoring requirements required North Carolina to add three PWEI sulfur dioxide monitors to three MSAs in North Carolina: Charlotte-Concord-Gastonia, Durham-Chapel Hill, and Wilmington.

The SO₂ monitoring site(s) required as a result of the calculated PWEI in each CBSA satisfies minimum monitoring requirements if the monitor is sited within the boundaries of the parent CBSA and is one of the following site types (as defined in section 1.1.1 of 40 CFR 58 Appendix D): population exposure, highest concentration, source impacts, general background, or regional transport. SO₂ monitors at NCore stations may satisfy minimum monitoring requirements if that monitor is located within a CBSA that is required to have one or more PWEI monitors.

The 2010 regulations required the NC-DAQ to include a monitoring plan for the sulfur dioxide PWEI network with the Network Monitoring Plan due on July 1, 2011, and

allowed that monitoring plan to be revised in 2012. After the 2012 monitoring plan was submitted, the US EPA recalculated the PWEI numbers. This plan reflects the revised numbers calculated by the US EPA in July 2012. Figure 9 shows the locations of the three required PWEI sulfur dioxide monitoring sites.

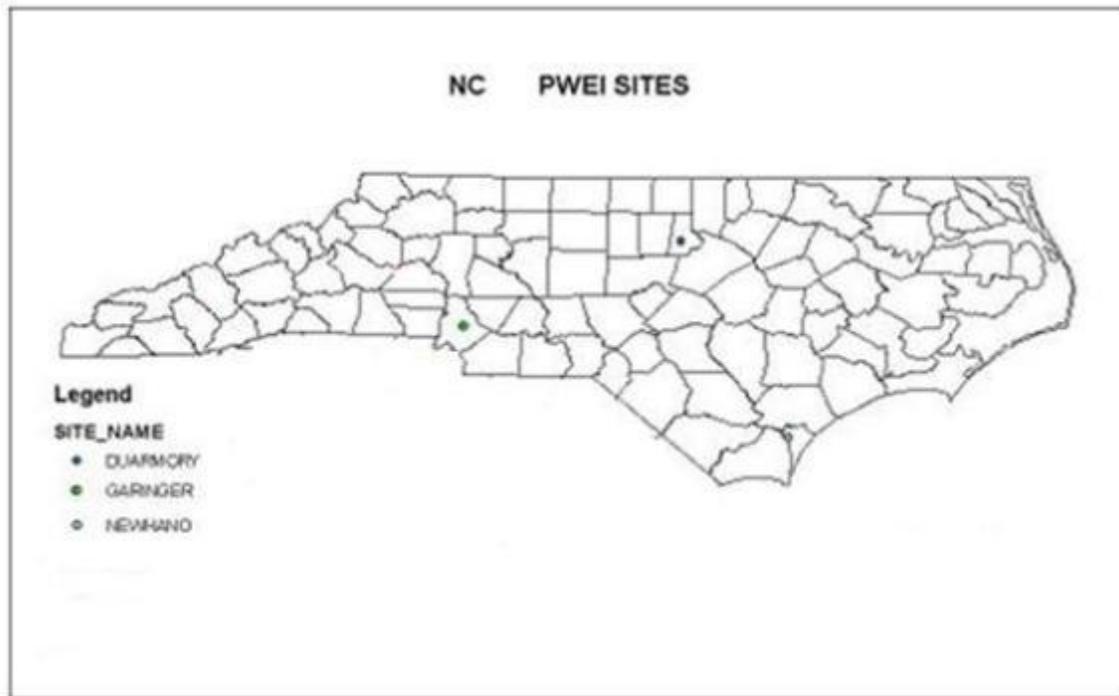


Figure 9. Location of North Carolina PWEI monitors

In 2011 the NC-DAQ and the MCAQ proposed the following monitoring sites to meet the PWEI requirements:

- Garinger as a population exposure monitor in the Charlotte-Concord-Gastonia MSA;
- Durham Armory as a population exposure monitor in the Durham MSA; and
- New Hanover as a population exposure/highest concentration monitor in the Wilmington MSA.

These locations were approved by EPA Region 4 in 2011 (see Appendix E. 2011 Network Plan EPA Approval Letter). The locations of two of these sites in relationship to sulfur dioxide emissions are shown in Figure 10 and Figure 11.

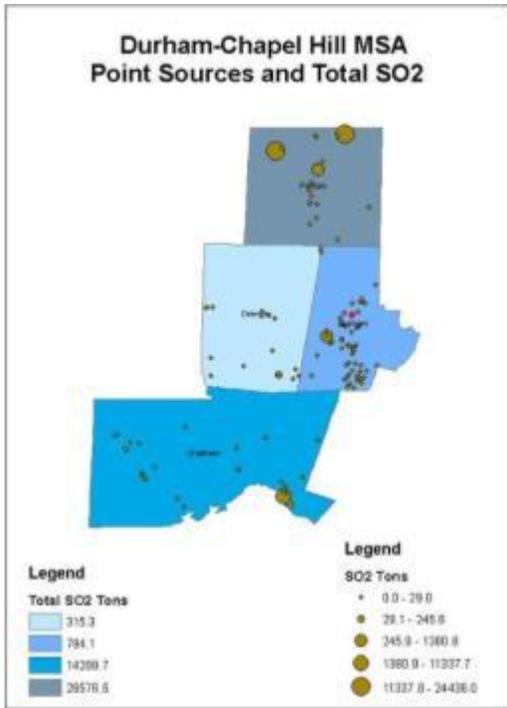


Figure 10. Location of the Durham-Chapel Hill PWEI Sulfur Dioxide Monitor (red dot) in Relationship to Sulfur Dioxide Sources

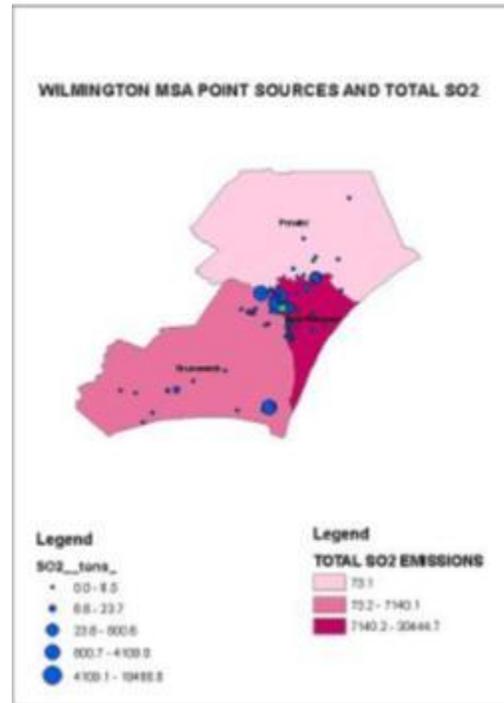


Figure 11. Location of the Wilmington PWEI Monitor (green dot) in Relationship to Sources of Sulfur Dioxide

In the 2011 network plan the NC-DAQ proposed doing PWEI monitoring at five additional sites, located in the Asheville, Charlotte-Concord-Gastonia, Greensboro-High Point, Hickory, and Winston-Salem MSAs. After the network plan was written the EPA developed revised PWEI lists, which no longer included required PWEI monitors for those three areas. As a result, the NC-DAQ did not add PWEI monitors to the Waynesville Elementary School, Mendenhall School, and Hickory sites and has revised the 2013 network plan to reflect a smaller PWEI network.

Table 11 Highest Sulfur Dioxide Concentration and Year Measured by the North Carolina Sulfur Dioxide Monitoring Network (2008 through 2012) ^a

Charlotte-Concord-Gastonia Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 1-hr Design Value Observed for 2008 to 2012			Highest 3-hr average observed (1 st max) for 2008 to 2012		
		Value (parts per billion)	Percent of NAAQS ^b	Year	Value (parts per million)	Percent of NAAQS ^b	Year
371190041 ^c	Garinger	77.7	104%	2006-2008	0.0599	12.0%	2008

Raleigh Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 1-hr Design Value Observed for 2008 to 2012			Highest 3-hr average observed (1 st max) for 2008 to 2012		
		Value (parts per billion)	Percent of NAAQS ^b	Year	Value (parts per million)	Percent of NAAQS ^b	Year
371830014	Millbrook	19.0	25.3 %	2006-2008	0.035	7 %	2009

Greensboro-High-Point Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 1-hr Design Value Observed for 2008 to 2012			Highest 3-hr average observed (1 st max) for 2008 to 2012		
		Value (parts per billion)	Percent of NAAQS ^b	Year	Value (parts per million)	Percent of NAAQS ^b	Year
371570099 ^d	Bethany	17.5	-	2011	0.013	2.6 %	2011

Winston-Salem Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 1-hr Design Value Observed for 2008 to 2012			Highest 3-hr average observed (1 st max) for 2008 to 2012		
		Value (parts per billion)	Percent of NAAQS ^b	Year	Value (parts per million)	Percent of NAAQS ^b	Year
370670022 ^e	Hattie Avenue	52.3	69.7 %	2006-2008	0.031	6.2 %	2010

Durham-Chapel Hill Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 1-hr Design Value Observed for 2008 to 2012			Highest 3-hr average observed (1 st max) for 2008 to 2012		
		Value (parts per billion)	Percent of NAAQS ^b	Year	Value (parts per million)	Percent of NAAQS ^b	Year
370370004 ^d	Pittsboro	22.0	-	2008	0.019	3.8 %	2011

Fayetteville Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 1-hr Design Value Observed for 2008 to 2012			Highest 3-hr average observed (1 st max) for 2008 to 2012		
		Value (parts per billion)	Percent of NAAQS ^b	Year	Value (parts per million)	Percent of NAAQS ^b	Year
370511003 ^d	Golfview	10.0	-	2009	0.0086	2 %	2009

Wilmington Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 1-hr Design Value Observed for 2008 to 2012			Highest 3-hr average observed (1 st max) for 2008 to 2012		
		Value (parts per billion)	Percent of NAAQS ^b	Year	Value (parts per million)	Percent of NAAQS ^b	Year
371290006	New Hanover	110	147 %	2008-2010	0.142	28 %	2008

Not in a Metropolitan Statistical Area – Valley, Piedmont and Coastal Sites

Table 11 Highest Sulfur Dioxide Concentration and Year Measured by the North Carolina Sulfur Dioxide Monitoring Network (2008 through 2012)^a

AQS Site Identification Number	Site Name	Highest 1-hr Design Value Observed for 2008 to 2012			Highest 3-hr average observed (1 st max) for 2008 to 2012		
		Value (parts per billion)	Percent of NAAQS ^b	Year	Value (parts per million)	Percent of NAAQS ^b	Year
370130007 ^f	New Aurora	33.7	44.9 %	2006-2008	0.033	7 %	2008
370130151 ^d	Bayview	25.7	34.3 %	2011-2012	0.020	4 %	2011
371170001 ^d	Jamesville	6	-	2010	0.008	2 %	2010
371730002 ^{d, g}	Bryson City	5	-	2010	0.005	1 %	2010

^a Monitors at all sites use an Automated Equivalent Method. The NC-DAQ monitors at all sites except for Millbrook in Raleigh use an Instrumental Pulsed Fluorescence method using a Thermo Electron 43C (Air Quality System (AQS) Method Code 009). The monitor at Millbrook in Raleigh and the monitor operated by Mecklenburg County Air Quality use an Instrumental Pulsed Fluorescence method using a Thermo Electron 43C-TLE (AQS Method Code 560). The monitor operated by Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403) uses an Instrumental Ultraviolet Fluorescence method using an API Model 100 A SO₂ Analyzer (AQS Method Code 100).

^b The National Ambient Air Quality Standard for the 99th percentile maximum one hour concentration during a 24-hour period is 75 parts per billion averaged over 3 years and 0.5 parts per million for a 3-hour period. Attainment of the secondary standard is based on the second highest average for the calendar year.

^c Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^d Three years of data are not available to calculate a design value.

^e Operated by the Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403)

^f The New Aurora monitor was located in Beaufort County on the fence line of the PCS Phosphate facility. It began operation in September 2005 and stopped in January 2011.

^g The Bryson City monitor was located in Swain County and was operated every three years to provide background data for permit modeling to meet requirements for prevention of significant deterioration. The monitor was shut down in April 2010 because the site was moved, the monitor broke during the site move, the NC-DAQ learned that the data was not required for PSD modeling because of the terrain, the measured values were low, and no users of the data could be identified.

Table 12 North Carolina Sulfur Dioxide Monitoring Network – 2013 and Proposed Monitor Locations^a

Charlotte-Concord-Gastonia Metropolitan Statistical Area

AQS Site Identification Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
371190041 ^b	Garinger	1130 Eastway Drive	Charlotte	-80.785683	35.24028	Charlotte
371590021 ^h	Rockwell	301 West Street	Rockwell	-80.395039	35.551868	None
450910006 ^c	York	2316 Chester Highway (US 321)	York, SC	-81.228409	34.935817	Charlotte

Raleigh Metropolitan Statistical Area

AQS Site Identification Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
371830014	Millbrook	3801 Spring Forest Road	Raleigh	-78.574167	35.856111	Raleigh

Greensboro-High Point Metropolitan Statistical Area

AQS Site Identification Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
371570099 ^d	Bethany	6371 NC 65	Bethany	-79.859167	36.308889	Greensboro

Winston-Salem Metropolitan Statistical Area

AQS Site Identification Number	Site Location Site Name	MSA, CSA, or CBSA represented				MSA, CSA, or CBSA represented
		Street Address	City	Longitude	Latitude	
370670022 ^d	Hattie Avenue	Corner of 13 th & Hattie Avenue	Winston-Salem	-80.226667	36.110556	Winston-Salem

Durham-Chapel Hill Metropolitan Statistical Area

AQS Site Identification Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
370370004	Pittsboro	Route 4, Box 62 Russett Run Road	Pittsboro	-79.159722	35.757222	Durham-Chapel Hill
370630015	Durham Armory	801 Stadium Drive	Durham	-78.905417	36.032944	Durham-Chapel Hill

Fayetteville Metropolitan Statistical Area

AQS Site Identification Number	Site Location Site Name	MSA, CSA, or CBSA represented				MSA, CSA, or CBSA represented
		Street Address	City	Longitude	Latitude	
370511003	Golfview	3625 Golfview Road	Hope Mills	-78.9625	34.968889	Fayetteville

Hickory Metropolitan Statistical Area

AQS Site Identification Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
370270003 ^f	Lenoir	110 Nuway Circle NE	Lenoir	-81.530278	35.935833	Hickory

Wilmington Metropolitan Statistical Area

AQS Site Identification Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
371290006	New Hanover	2400 US Highway 421 N	Wilmington	-77.956529	34.268403	Wilmington

Table 12 North Carolina Sulfur Dioxide Monitoring Network – 2013 and Proposed Monitor Locations^a

Not in a Metropolitan Statistical Area – Valley, Piedmont and Coastal Sites

AQS Site Identification Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
370130151 ^g	Bayview	229 NC Highway 306N	Bath	-76.74	35.428	None
371170001	Jamesville	1210 Hayes Street	Jamesville	-76.89782	35.81069	None

^a Monitors at all sites use an Automated Equivalent Method. The NC-DAQ monitors, except the monitor at the Millbrook NCore site, use an Instrumental Pulsed Fluorescence method using a Thermo Electron 43C (Air Quality System (AQS) Method Code 009). The monitor at the Millbrook NCore site and the monitor operated by Mecklenburg County Air Quality use an Instrumental Pulsed Fluorescence method using a Thermo Electron 43C-TLE (AQS Method Code 560). The monitor operated by Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403) uses an Instrumental Ultraviolet Fluorescence method using an API Model 100 A SO₂ Analyzer (AQS Method Code 100).

^b Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^c Operated by the South Carolina Department of Health and Environmental Control (AQS Reporting Agency 0971).

^d This monitor started operating on 1/1/2011 on a 1-in-3 year schedule.

^e Operated by the Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403)

^f This monitor started operating on 1/1/2013 on a 1-in-3 year schedule. It replaces the Bryson monitor.

^g This monitor is located in Beaufort County on the fence line of the PCS Phosphate facility. It replaced the New Aurora Site (37013007) that was dislocated by nearby current land clearing and future mining activities.

^h This monitor has been proposed for several years to support fine particle precursor monitoring at this site.

Table 13 Statement of Purpose for North Carolina Sulfur Dioxide Monitoring Network^a

Charlotte-Concord-Gastonia Metropolitan Statistical Area

AQS Site ID Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose	Monitoring Objective	Scale
371190041 ^c	Garinger	NCORE	Every year	Compliance with the NAAQS; required monitor for NCore & PWEI.	Population Exposure	Neighborhood
371590021 ⁱ	Rockwell	Proposed SLAMS	Every year; Will begin trace-level monitoring in 2013	SO ₂ fine particle precursor monitoring. Compliance with the NAAQS.	General/Background	Urban
450910006 ^d	York	Special Purpose	Every year	Second required PWEI monitor for the MSA	Extreme Downwind	Urban

Raleigh Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose	Monitoring Objective	Scale
371830014	Millbrook	NCORE	Every year;	Required monitor for NCore. SO ₂ fine particle precursor monitoring. Compliance w/NAAQS.	General/Background	Neighborhood

Greensboro-High Point Metropolitan Statistical Area

AQS Site ID Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose	Monitoring Objective	Scale
37-157-0099 ^e	Bethany	Special Purpose	Every 3rd year.	Industrial expansion monitoring for PSD modeling.	General/Background	Urban

Winston-Salem Metropolitan Statistical Area

AQS Site ID Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose	Monitoring Objective	Scale
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Table 13 Statement of Purpose for North Carolina Sulfur Dioxide Monitoring Network ^a

370670022 ^f	Hattie Avenue	SLAMS	Every year	Compliance with the NAAQS; PWEI Monitor	Population Exposure	Neighborhood
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Durham-Chapel Hill Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose	Monitoring Objective	Scale
370370004	Pittsboro	Special Purpose	Every 3rd year. Site operated in '11 & will operate again in 2014	Industrial expansion monitoring for PSD modeling.	Upwind/Background General/Background	Urban
370630015	Durham Armory	SLAMS	Every year;	PWEI Monitor for Durham-Chapel Hill MSA	Population Exposure	Neighborhood

Fayetteville Metropolitan Statistical Area

AQS Site ID Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose	Monitoring Objective	Scale
370511003	Golfview	SLAMS	Every 3rd year. Site operated in '12 & will operate again in '15	Industrial expansion monitoring for PSD modeling.	Population Exposure	Neighborhood

Hickory Metropolitan Statistical Area

AQS Site ID Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose	Monitoring Objective	Scale
370270003 ^g	Lenoir	Special Purpose	Every 3rd year. Site is operating in 2013	Industrial expansion monitoring for PSD modeling.	General/Background	Regional

Wilmington Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose	Monitoring Objective	Scale
371290006	New Hanover	SLAMS	Every year	Maximum concentration site to ensure compliance w/NAAQS; required PWEI monitor	Population Exposure/ Highest Concentration	Urban

Not in a Metropolitan Statistical Area – Valley, Piedmont and Coastal Sites

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose	Monitoring Objective	Scale
370130151 ^h	Bayview	SLAMS	Every year	Fence-line monitoring at PCS Phosphate facility to ensure compliance with the NAAQS	Source Oriented	Neighborhood
371170001	Jamesville	Special Purpose	Every 3rd year. Site is operating in '13.	Industrial expansion monitoring for PSD modeling.	Upwind/Background General/Background	Urban

^a Monitors at all sites use an Automated Equivalent Method. The NC-DAQ monitors, except the monitor at the Millbrook NCore site, use an Instrumental Pulsed Fluorescence method using a Thermo Electron 43C (Air Quality System (AQS) Method Code 009). The monitor at the Millbrook NCore site and the monitor operated by Mecklenburg County Air Quality use an Instrumental Pulsed Fluorescence method using a Thermo Electron 43C-TLE (AQS Method Code 560). The monitor operated by Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403) uses an Instrumental Ultraviolet Fluorescence method using an API Model 100 A SO₂ Analyzer (AQS Method Code 100).

^b All monitors operate year round on an hourly schedule.

^c Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^d Operated by the South Carolina Department of Health and Environmental Control (AQS Reporting Agency 0971).

^e This monitor started operating on 1/1/2011 on a 1-in-3 year schedule.

Table 13 Statement of Purpose for North Carolina Sulfur Dioxide Monitoring Network ^a

^f Operated by the Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403)

^g This monitor started operating on 1/1/2013 on a 1-in-3 year schedule. It replaced the Bryson monitor.

^h This monitor is located in Beaufort County on the fence line of the PCS Phosphate facility. It replaced the New Aurora site (37013007) that was dislocated by nearby land clearing and future mining activities.

ⁱ This monitor has been proposed for several years to support fine particle precursor monitoring at this site.

Table 14 Status of North Carolina Sulfur Dioxide Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network ^a

Charlotte-Concord-Gastonia Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices A, C, D, & E ^{b, c}	Proposal to Move or Change
371190041 ^d	Garinger	Yes	Yes: EQSA-0486-060	None
371590021 ^j	Rockwell	Yes	Yes: EQSA-0486-060	Site not yet operating; will begin trace-level monitoring sometime in 2013
450910006 ^e	York	Yes	Yes: EQSA-0486-060	None

Raleigh Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices A, C, D, & E ^{b, c}	Proposal to Move or Change
371830014	Millbrook	Yes	Yes: EQSA-0486-060	None

Greensboro-High Point Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices A, C, D, & E ^{b, c}	Proposal to Move or Change
371570099 ^f	Bethany	Yes	Yes: EQSA-0486-060	Site operated in 2011 and will operate again in 2014

Winston-Salem Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices A, C, D, & E ^{b, c}	Proposal to Move or Change
370670022 ^g	Hattie Avenue	Yes	Yes: EQSA-0495-100	None

Durham-Chapel Hill Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices A, C, D, & E ^{b, c}	Proposal to Move or Change
370370004	Pittsboro	Yes	Yes: EQSA-0486-060	Site operated in 2011 and will operate again in 2014
370630015	Durham Armory	Yes	Yes: EQSA-0486-060	Site began operating 1/1/2013 as PWEI site

Fayetteville Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices A, C, D, & E ^{b, c}	Proposal to Move or Change
370511003	Golfview	Yes	Yes: EQSA-0486-060	Site operated in 2012 and will operate again in 2015

Hickory Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices A, C, D, & E ^{b, c}	Proposal to Move or Change
370270003 ^h	Lenoir	Yes	Yes: EQSA-0486-060	Site began operating in 2013

Table 14 Status of North Carolina Sulfur Dioxide Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network ^a

Wilmington Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices A, C, D, & E ^{b, c}	Proposal to Move or Change
371290006	New Hanover	Yes	Yes: EQSA-0486-060	None

Not in a Metropolitan Statistical Area – Valley, Piedmont and Coastal Sites

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices A, C, D, & E ^{b, c}	Proposal to Move or Change
370130151 ⁱ	Bayview Ferry	Yes	Yes: EQSA-0486-060	None
371170001	Jamesville	Yes	Yes: EQSA-0486-060	Site is operating in 2013

^a Monitors at all sites use an Automated Equivalent Method. The NC-DAQ monitors use an Instrumental Pulsed Fluorescence method using a Thermo Electron 43C (Air Quality System (AQS) Method Code 009). The monitor operated by Mecklenburg County Air Quality uses an Instrumental Pulsed Fluorescence method using a Thermo Electron 43C-TLE (AQS Method Code 560). The monitor operated by Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403) uses an Instrumental Ultraviolet Fluorescence method using an API Model 100 A SO₂ Analyzer (AQS Method Code 100).

^b All monitors meet the requirements of 40CFR58 Appendix A. The Quality Assurance Project Plan and Standard Operating Procedures are being revised to reflect the changes to Appendix A of Part 58 promulgated in 2006. Appendix D has no minimum requirements for Sulfur Dioxide Monitoring. All sites meet the appropriate siting criteria in Appendix E of 40CFR58 promulgated in 2006.

^c EQSA-0486-060 and EQSA-0495-100 are codes assigned by the U.S. EPA to reference and equivalent methods that are suitable for comparison to the National Ambient Air Quality Standards. The list of reference and equivalent methods is available <http://www.epa.gov/ttn/amtic/files/ambient/criteria/reference-equivalent-methods-list.pdf>.

^d Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^e Operated by the South Carolina Department of Health and Environmental Control (AQS Reporting Agency 0971).

^f This monitor started operating on 1/1/2011 on a 1-in-3 year schedule.

^g Operated by the Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403)

^h This monitor will start operating on 1/1/2013 on a 1-in-3 year schedule. It will replace the Bryson monitor.

ⁱ This monitor is located in Beaufort County across the river from the PCS Phosphate facility. It replaced the Aurora site (37013007) that was dislocated by nearby land clearing and future mining activities.

^j This monitor has been proposed for several years to support fine particle precursor monitoring at this site.

V. Ozone Monitoring Network

The North Carolina Division of Air Quality (NC-DAQ) currently operates one of the largest ozone monitoring networks in the Southeast. This strong network has greatly benefited the state by enabling the NC-DAQ to learn about how ozone is transported to and within the state, to identify the parts of the state where the formation of ozone results in peak concentrations, and to know where ozone concentrations do and do not exceed the National Ambient Air Quality Standards (NAAQS). By having sufficient monitors to provide understanding of ozone formation in an area, NC-DAQ was able to make strong arguments with the United States Environmental Protection Agency (EPA) to prevent certain areas of the state from being designated as nonattainment and was able to develop effective implementation plans.

Table 15 provides the highest ozone design values for the monitors in North Carolina for the past five years. This information is important because the monitoring regulations promulgated by the U.S. EPA in 2006 require a monitor to be attaining the NAAQS for the past five years before the monitor can be shut down. On March 12, 2007, the U.S. EPA lowered the 8-hour ozone standard to 0.075 parts per million. Only 10 of the 40 monitors currently operating statewide have met an 8-hour ozone design value of 0.075 parts per million for the past five years (see Figure 12). Those monitors are located at Bryson City (37-173-0002) in Swain County, Waynesville (37-087-0004/8) in Haywood County, Bent Creek (37-021-0030) in Buncombe County, Lenoir (37-027-0003) in Caldwell County, Shiloh Church (37-067-0028) in Forsyth County, Lenoir Community College (37-107-0004) in Lenoir County, Jamesville (37-117-0001) in Martin County, Linville Falls (37-011-0002) in Avery County, Pittsboro (37-037-0004) in Chatham County, and Castle Hayne (37-129-0002) in New Hanover County. However, none of these monitors meets the additional requirement of having less than 10 % probability of exceeding 80 % of the NAAQS during the next three years. Thus, they are not eligible to be shut down.

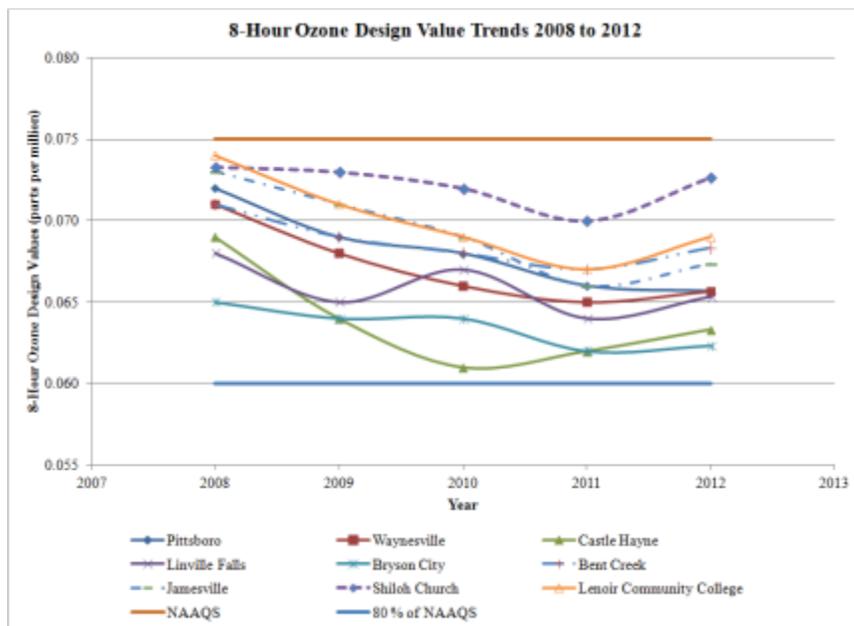


Figure 12. 8-Hour Ozone Design Value Trends.

Table 15 Summary of Ozone Concentrations Measured by the North Carolina Ozone Monitoring Network (2008 through 2012)^a

Charlotte-Concord-Gastonia Metropolitan Statistical Area

AQS Site Id Number	Site Name	Highest 8-Hour Ozone Design Value for 2008-2012		
		Value (parts per million)	Percent of NAAQS ^b	Year
37-109-0004	Crouse	0.082	109%	2006-2008
37-119-0041 ^c	Garinger	0.089	119%	2006-2008
37-119-1005 ^c	Arrowood	0.079	105%	2006-2008
37-119-1009 ^c	County Line (U)	0.094	125%	2006-2008
37-159-0021	Rockwell	0.088	117%	2006-2008
37-159-0022	Enochville	0.088	117%	2006-2008
37-179-0003	Monroe Middle School	0.080	107%	2006-2008

Raleigh Metropolitan Statistical Area

AQS Site Id Number	Site Name	Highest 8-Hour Ozone Design Value for 2008-2012		
		Value (parts per million)	Percent of NAAQS ^b	Year
37-069-0001	Franklinton	0.077	103%	2006-2008
37-101-0002	West Johnston	0.075	100%	2006-2008
37-183-0014	Millbrook	0.080	107%	2006-2008
37-183-0016	Fuquay	0.077	103%	2006-2008

Greensboro-High Point Metropolitan Statistical Area

AQS Site Id Number	Site Name	Highest 8-Hour Ozone Design Value for 2008-2012		
		Value (parts per million)	Percent of NAAQS ^b	Year
37-081-0013 ^c	Mendenhall	0.082	109%	2006-2008
37-157-0099	Bethany	0.080	107%	2006-2008

Winston-Salem Metropolitan Statistical Area

AQS Site Id Number	Site Name	Highest 8-Hour Ozone Design Value for 2008-2012		
		Value (parts per million)	Percent of NAAQS ^b	Year
37-059-0002	Cooleemee	0.082	109%	2006-2008
37-059-0003	Mocksville	0.073	97%	2010-2012
37-067-0022 ^h	Hattie Ave. (U)	0.081	108%	2006-2008
37-067-0028 ^h	Shiloh Church	0.073	97%	2008-2010
37-067-0030 ^h	Clemmons	0.077	103%	2006-2008
37-067-1008 ^h	Union Cross	0.081	108%	2006-2008

Durham-Chapel Hill Metropolitan Statistical Area

AQS Site Id Number	Site Name	Highest 8-Hour Ozone Design Value for 2008-2012		
		Value (parts per million)	Percent of NAAQS ^b	Year
37-037-0004	Pittsboro	0.072	96%	2006-2008
37-063-0013 ^f	Duke Street	0.078	104%	2006-2008
37-063-0015 ^g	Durham Armory	0.074	99%	2007-2009
37-145-0003	Bushy Fork	0.077	103%	2006-2008

Asheville Metropolitan Statistical Area

AQS Site Id Number	Site Name	Highest 8-Hour Ozone Design Value for 2008-2012		
		Value (parts per million)	Percent of NAAQS ^b	Year
37-021-0030 ⁱ	Bent Creek	0.071	95%	2006-2008
37-087-0004	Waynesville	0.071	95%	2006-2008
37-087-0008	Waynesville Elem School	0.065	87%	2010-2012

Table 15 Summary of Ozone Concentrations Measured by the North Carolina Ozone Monitoring Network (2008 through 2012)^a

Fayetteville Metropolitan Statistical Area

AQS Site Id Number	AQS Site Identification Number	AQS Site Identification Number		
37-051-0008	37-051-0008	37-051-0008	37-051-0008	37-051-0008
37-051-1003	37-051-1003	37-051-1003	37-051-1003	37-051-1003

Hickory Metropolitan Statistical Area

AQS Site Id Number	Site Name	Highest 8-Hour Ozone Design Value for 2008-2012		
		Value (parts per million)	Percent of NAAQS ^b	Year
37-003-0004	Waggin Trail	0.077	103%	2006-2008
37-027-0003	Lenoir	0.075	100%	2006-2008

Wilmington Metropolitan Statistical Area

AQS Site Id Number	Site Name	Highest 8-Hour Ozone Design Value for 2008-2012		
		Value (parts per million)	Percent of NAAQS ^b	Year
37-129-0002	Castle Hayne	0.069	92%	2006-2008

Greenville Metropolitan Statistical Area

AQS Site Id Number	Site Name	Highest 8-Hour Ozone Design Value for 2008-2012		
		Value (parts per million)	Percent of NAAQS ^b	Year
37-147-0006	Pitt Co. Ag Center	0.077 ^j	103%	2006-2008

Rocky Mount Metropolitan Statistical Area

AQS Site Id Number	Site Name	Highest 8-Hour Ozone Design Value for 2008-2012		
		Value (parts per million)	Percent of NAAQS ^b	Year
37-065-0099	Leggett	0.076	101%	2006-2008

Not in a Metropolitan Statistical Area – Mountain Top Sites

AQS Site Id Number	Site Name	Highest 8-Hour Ozone Design Value for 2008-2012		
		Value (parts per million)	Percent of NAAQS ^b	Year
37-075-0001 ^k	Joanna Bald	0.078	104%	2006-2008
37-087-0035	Fry Pan	0.078	104%	2006-2008
37-087-0036	Purchase knob	0.077	103%	2006-2008
37-199-0004	Mount Mitchell	0.077 ^q	103%	2006-2008

Not in a Metropolitan Statistical Area – Valley, Piedmont and Coastal Sites

AQS Site Id Number	Site Name	Highest 8-Hour Ozone Design Value for 2008-2012		
		Value (parts per million)	Percent of NAAQS ^b	Year
37-011-0002	Linville Falls	0.068	91%	2006-2008
37-033-0001	Cherry Grove	0.079	105%	2006-2008
37-077-0001	Butner	0.080	107%	2006-2008
37-107-0004	Lenoir community College	0.074	99%	2006-2008
37-117-0001	Jamesville	0.073	97%	2006-2008
37-173-0002	Bryson City	0.065	87%	2006-2008

^a All monitors use an Instrumental Ultra Violet method (Air Quality System (AQS) Method Code 047).

^b The National Ambient Air Quality Standard for an 8-hour period is 0.075 parts per million. Attainment is based on the average of the fourth highest values for three consecutive ozone seasons. The ozone season for North Carolina is from April 1 through October 31.

^c Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^d This monitor was shut down on July 6, 2005, to move it to the Mendenhall monitoring site. This move was made because of site deficiencies identified at the McLeansville site in the annual network review and to combine the Guilford County/Greensboro ozone and particle monitoring sites into one multi-pollutant site.

^e This monitor started on April 15, 2005, to replace the McLeansville monitor.

^f This monitor was shut down on October 31, 2006, to move it across the street to a site more suitable for particle

Table 15 Summary of Ozone Concentrations Measured by the North Carolina Ozone Monitoring Network (2008 through 2012)^a

monitoring so that the Durham ozone and particle sites can be combined into one multi-pollutant site.

^g This monitor started on April 1, 2007, to replace the Duke Street monitor.

^h Operated by the Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403).

ⁱ Operated by the Western North Carolina Regional Air Quality Agency (AQS Reporting Agency 0779).

^j Average of the fourth highest value for one year only (2008).

^k This monitor started on April 3, 2003. The monitor is owned by the United States Forest Service and operated by the North Carolina Division of Air Quality (NC-DAQ).

Other ozone monitors that could be considered for shut down are those monitors that exceed the minimum number of monitors required in 40CFR58 Appendix D Table D-2 provided in Figure 13. The latest estimated population of the Metropolitan Statistical Area (MSA) and the most recent ozone 8-hour design value for the area determines the number of required monitors for an area.

**TABLE D-2 OF APPENDIX D TO PART 58.—
SLAMS MINIMUM O₃ MONITORING REQUIREMENTS**

MSA population ^{1,2}	Most recent 3-year design value concentrations $\geq 85\%$ of any O ₃ NAAQS ³	Most recent 3-year design value concentrations $< 85\%$ of any O ₃ NAAQS ^{3,4}
>10 million	4	2
4–10 million	3	1
350,000–<4 million	2	1
50,000–<350,000 ⁵	1	0

¹ Minimum monitoring requirements apply to the Metropolitan statistical area (MSA).

² Population based on latest available census figures.

³ The ozone (O₃) National Ambient Air Quality Standards (NAAQS) levels and forms are defined in 40 CFR part 50.

⁴ These minimum monitoring requirements apply in the absence of a design value.

⁵ Metropolitan statistical areas (MSA) must contain an urbanized area of 50,000 or more population.

Figure 13. 40 CFR 58 Appendix D Table D-2

Table 16 provides the 2012 estimated population for the MSAs in North Carolina, the design values for 2010-2012, the number of required monitors based on Appendix D and the number of current monitors operated by the NC-DAQ and the local programs. Currently, the NC-DAQ and the local programs operate at least the minimum number of required monitors in every MSA except for the Virginia Beach-Norfolk-New Port News and the Myrtle Beach-Conway-North Myrtle Beach MSAs. The NC-DAQ has a written agreement with the Virginia Department of Environmental Quality (VDEQ), Office of Air Quality Monitoring, that VDEQ will maintain the minimum required number of monitors for the Virginia Beach-Norfolk-New Port News MSA (see Appendix G. Monitoring Agreement Between Virginia and North Carolina for the Virginia Beach-Norfolk-New Port News Metropolitan Statistical Area). The Office of Management and Budget changed the Myrtle Beach –Conway-North Myrtle Beach MSA definition in February 2013 to include Brunswick County in North Carolina. Adding Brunswick County to the MSA resulted in the MSA exceeding the 350,000 population threshold for a required ozone monitor. The NC DAQ is working with the South Carolina Department of Health and Environmental Control to determine who will operate the necessary monitor and where to put the monitor. Details on this monitor will be included in the 2014 network monitoring plan.

Table 16 Design Values and Required Ozone Monitors for North Carolina Metropolitan Statistical Areas (MSA)

MSA	Population Estimate (2012) ^a	2012 Ozone 8-Hour Design Value (As percent of NAAQS) ^b	Number of Monitors operated in North Carolina	
			Required	Current
Charlotte-Concord- Gastonia	2,296,569	111	2	7 ^c
Virginia Beach-Norfolk-Newport News, VA-NC	1,699,925	101	2	0 ^d
Raleigh	1,188,564	100	2	4
Greensboro-High Point	736,065	101	2	2
Winston-Salem	647,697	104	2	5
Durham-Chapel Hill	522,826	99	2	3
Asheville	432,406	91	2	2
Myrtle Beach-Conway-North Myrtle Beach, SC-NC	394,542	Not Available	1	0 ^e
Fayetteville	374,585	96	2	2
Hickory-Lenoir-Morganton	363,627	91	2	2
Wilmington	263,429	83	0	1
Jacksonville	183,263	Not Available	0	0
Greenville	172,554	95	1	1
Burlington	153,920	Not Available	0	0
Rocky Mount	151,662	95	1	1
New Bern	128,119	Not Available	0	0
Goldsboro	124,246	Not Available	0	0

^a Source: U.S. Census Bureau, Population Division, Released March 2013, available on the world wide web at <http://www.census.gov/popest/data/counties/totals/2012/index.html>

^b The National Ambient Air Quality Standard for an 8-hour period is 0.075 parts per million. Attainment is based on the average of the 4th highest value over three consecutive ozone seasons. Values of 0.075 (100 %) and below are considered to be attaining the National Ambient Air Quality Standard.

^c South Carolina Department of Health and Environment operates an additional monitor in York County, South Carolina.

^d Virginia Department of Environmental Quality (VDEQ), Office of Air Quality Monitoring operates three monitors in this MSA.

^e South Carolina Department of Health and Environment does not operate a monitor in Horry County, South Carolina.

The NC-DAQ evaluated each MSA with more than the required monitors to determine if all of the current monitors in the MSA are still needed and providing valuable information. The local program monitors were not included in this analysis. The local program monitors were excluded because the decision on whether to continue to operate them or shut them down is up to the local program and not the NC-DAQ. Thus, eight monitors were considered in this evaluation:

- Franklinton (37-069-0001) in the Raleigh MSA (see Figure 14) – this monitor is the downwind monitor for the Raleigh MSA when the wind is coming from the primary wind

direction during the third quarter of the year when measured ozone concentrations are usually the highest. Its 2010-2012 design value is 0.072 parts per million. Although the NC-DAQ views this monitor as valuable, this monitoring site is one the NC-DAQ may consider shutting down if monitors are required in other parts of the state and additional resources are unavailable. The NC-DAQ expects to make a decision regarding this monitor in 2014 after the ozone monitoring regulations are updated.

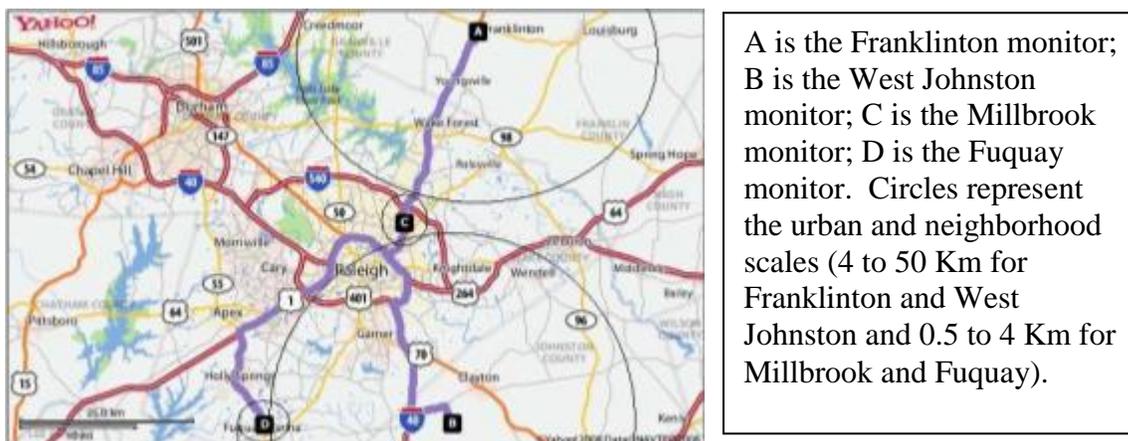


Figure 14. Raleigh MSA Ozone Monitor Locations.

- West Johnston (37-101-0002) in the Raleigh MSA (see Figure 14) – this monitor is the upwind ozone monitor for the Raleigh MSA when the wind is coming from the secondary wind direction during the third quarter of the year when measured ozone concentrations are usually the highest. Its 2010-2012 design value is 0.074 parts per million. In the past, Johnston County has been one of the fastest growing counties in North Carolina as well as one of the fastest growing counties in the nation, although it did not make it on either list the last couple of years.
- Mocksville (37-059-0003) in the Winston-Salem MSA (see Figure 15) – this monitor was established in 2010 to replace the Cooleemee monitor which was the 8-hour ozone design value monitor in the MSA. Model results indicated that the Mocksville monitor would also measure maximum ozone concentrations; however, Hattie Avenue reads higher than Mocksville almost 75 % of the time. Because of its strategic location between the Charlotte and Winston-Salem MSAs, this monitor provides valuable information for planning and forecasting.

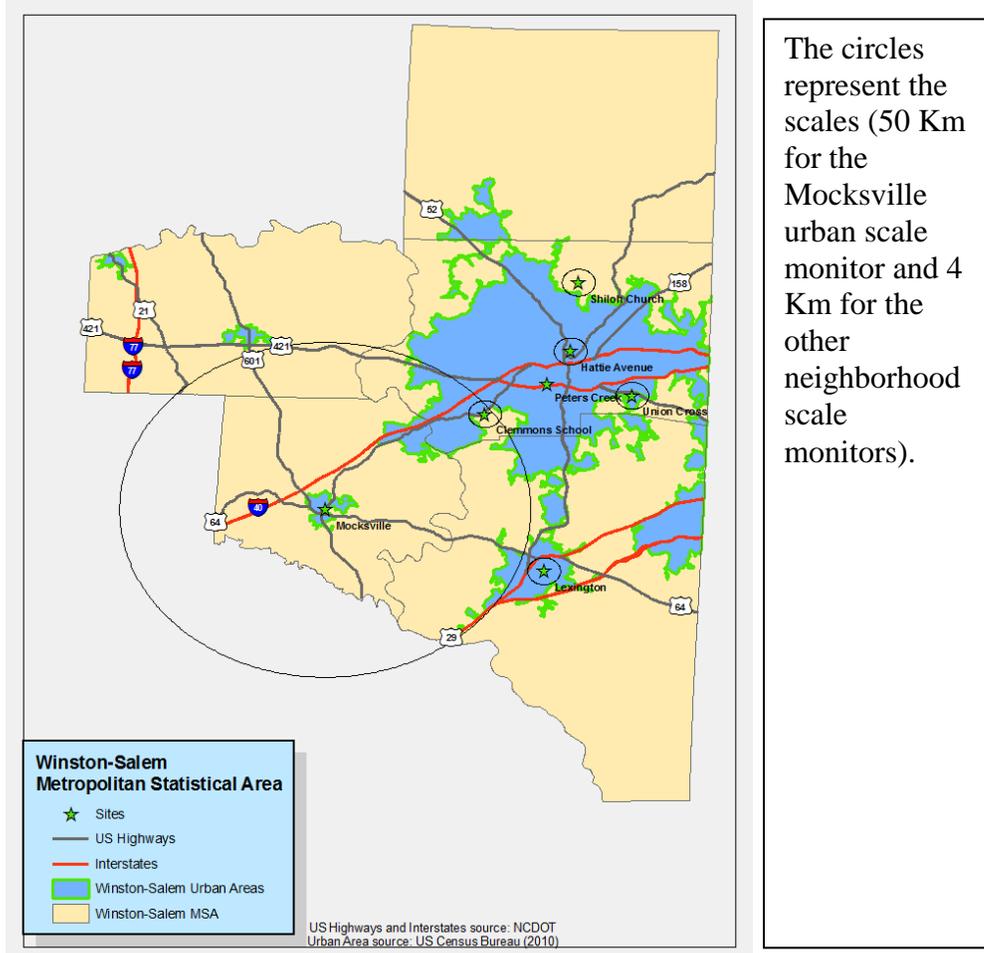


Figure 15. Winston Salem MSA Ozone Monitor Locations.

- Bushy Fork (37-145-0003) in the Durham-Chapel Hill MSA (see Figure 16) – although this monitor provides valuable information on model performance, the NC-DAQ may need to shut down this monitoring site if monitors are required in other parts of the state and additional resources are not available. The NC-DAQ expects to make a decision regarding this monitor in 2014 after the ozone monitoring regulations are updated.

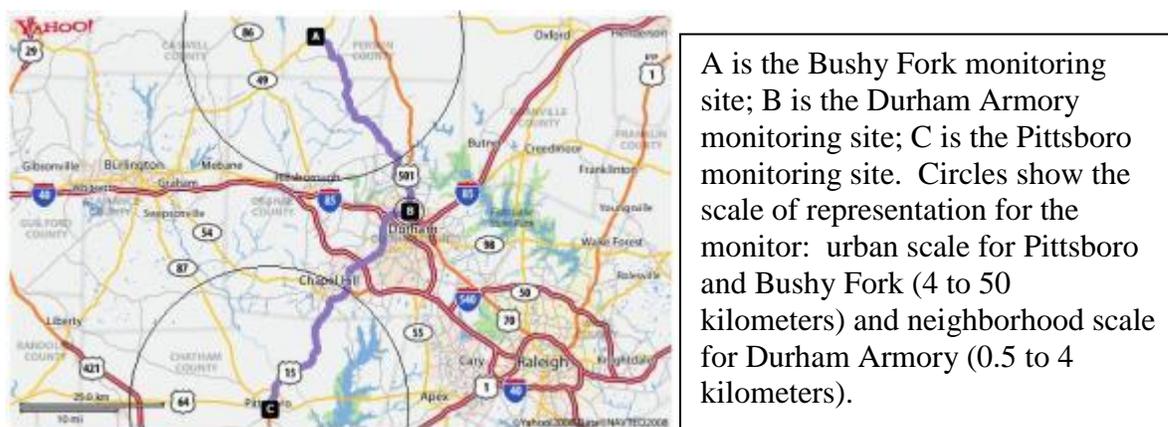


Figure 16. Location of Ozone Monitors in the Durham-Chapel Hill MSA.

- Monroe Middle School (37-179-0003) in the Charlotte-Gastonia-Concord MSA (see Figure 17) – this monitor provides valuable information for ozone forecasting in the Charlotte area. Because it is a monitor that is attaining the standard, it is also used to justify excluding part of Union County from the Metrolina Nonattainment area. In the past, Union County has been one of the fastest growing counties in North Carolina as well as one of the fastest growing counties in the nation, although it did not make it on either list this year. It is also located in the state’s largest MSA.

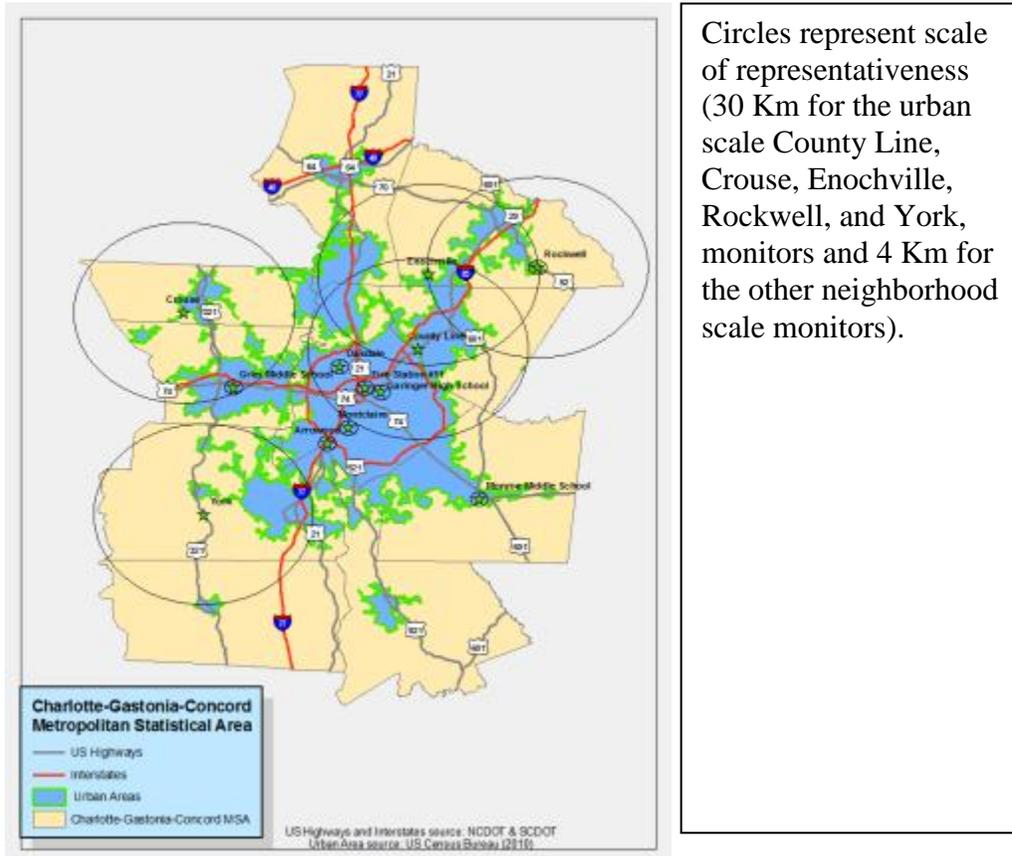


Figure 17. Charlotte MSA North Carolina Ozone Monitors.

- Crouse (37-109-0004) in the Charlotte-Gastonia-Concord MSA (see Figure 17) – this monitor provides valuable spatial information for ozone forecasting in the Charlotte area. Elimination of the Crouse monitor would leave a hole in the ozone network in the area to the west of Charlotte.
- Rockwell (37-159-0021) in the Charlotte-Gastonia-Concord MSA (see Figure 17) – the ozone measured at Rockwell is sometimes some of the highest ozone measured in the Metrolina area. NC-DAQ also expanded monitoring at this site in the past decade and believes the information collected here is important in adding to our understanding of pollution formation and transport in the piedmont area. As a result the NC-DAQ plans to retain the Rockwell monitoring site into the future.
- Enochville (37-159-0022) in the Charlotte-Gastonia-Concord MSA (see Figure 17) – this monitor is currently measuring ambient ozone concentrations at 100 % of the 8-hour NAAQS. The Enochville monitor was installed in the mid-1990s for urban air-shed model

evaluation as a maximum ozone concentration site. The model showed an ozone bloom, plume, candle flame shaped ozone formation happening north of Charlotte near Enochville. As shown in Figure 18 and Figure 19 the Enochville monitor generally tracks with the Rockwell monitor, but during these high ozone "events", the ozone appears significantly higher at Enochville than at Rockwell. These events are rare and cause the model to go from blue south and southwest of Charlotte, to green over Charlotte, to yellow just downwind of Charlotte to orange just south of Enochville to red over Enochville. The NC-DQ believes the Enochville site has met its objectives and is no longer needed for model evaluation purposes and the Rockwell, County Line, and Garinger ozone monitors adequately represent the air quality in the Charlotte-Concord-Gastonia MSA. As a result the NC-DAQ plans to shut down this site at the end of the 2013 ozone season (October 31, 2013).

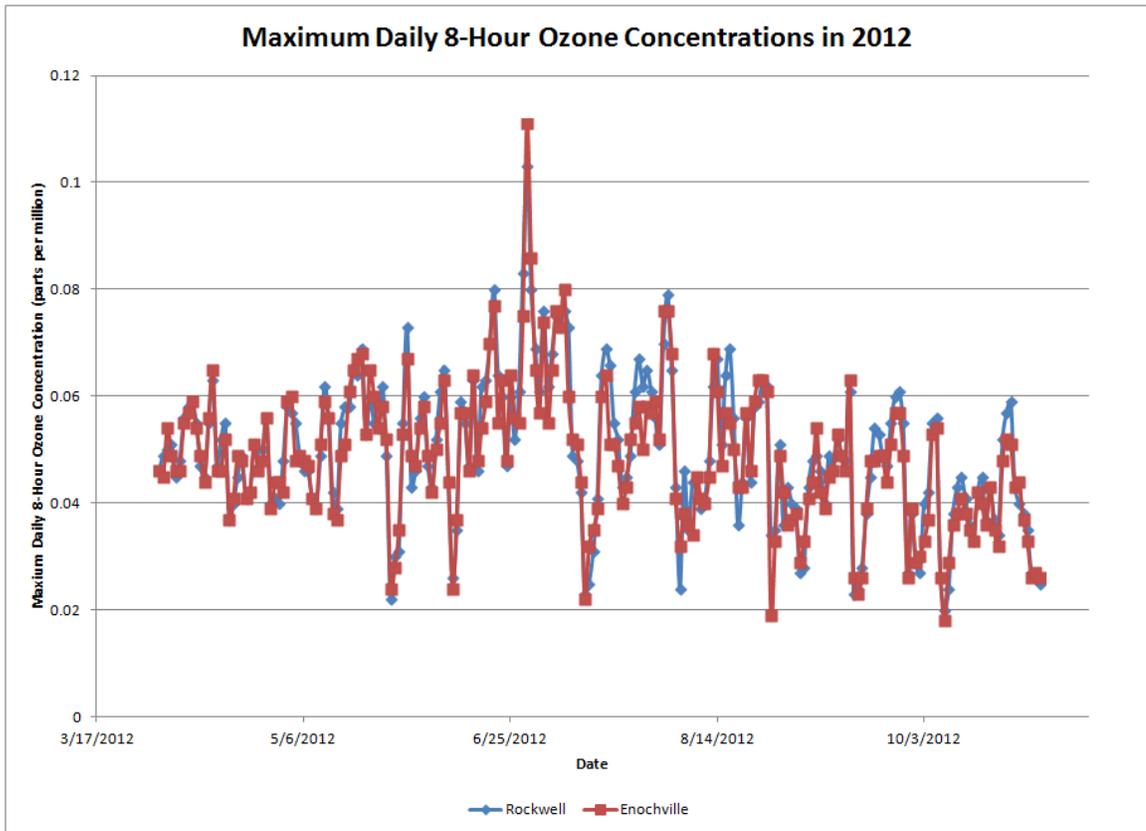


Figure 18. Enochville and Rockwell Time Series for 2012

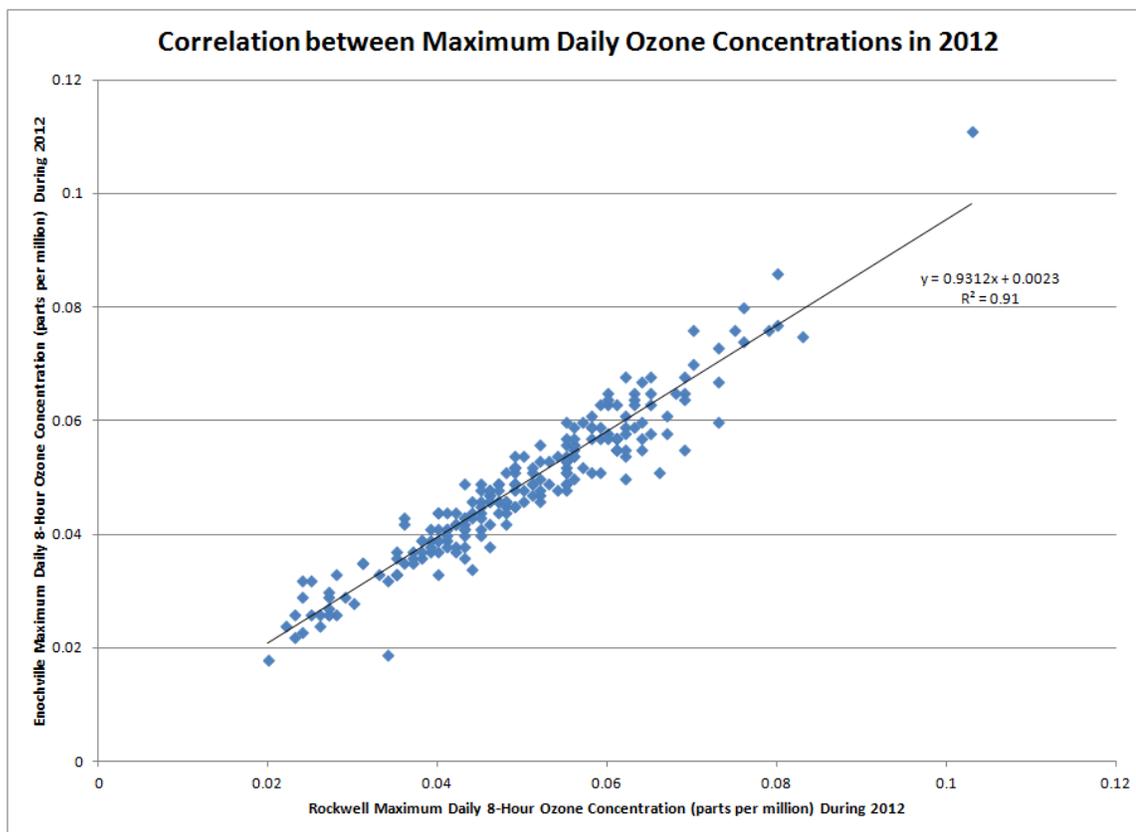


Figure 19. Correlation between Enochville and Rockwell

The NC DAQ also evaluated the fastest growing areas in the state. Of the 10 fastest growing counties in North Carolina listed in Table 1, five of those counties currently do not have an ozone monitor:

- Brunswick County (growth of 4.5 % between April 1, 2010, and July 1, 2012, and the 89th fastest growing county in the nation) – This county is impacted by growth in the Wilmington, North Carolina, and North Myrtle Beach, South Carolina, areas. As of February 2013 Brunswick County is one of two counties making up the Myrtle Beach-Conway-North Myrtle Beach MSA. Prior to February 2013 Brunswick County was part of the Wilmington MSA. Brunswick County has petitioned to be restored to the Wilmington MSA. The Myrtle Beach-Conway-North Myrtle Beach MSA now has a population exceeding the 350,000 threshold at which an ozone monitor is required. Based on ozone monitoring at Castle Hayne in the Wilmington MSA, the design value for the Myrtle Beach-Conway-North Myrtle Beach MSA is expected to be less than 85 percent of the standard.
- Harnett County (growth of 7,457 people and 6.5 % between April 1, 2010, and July 1, 2012 and the 38th fastest growing county in the nation) – This county is located between Raleigh to the north and Fort Bragg and the Fayetteville area to the south, two rapidly growing areas. As shown in Figure 20 there are four ozone monitors surrounding Harnett County (West Johnston to the northeast, Wade to the south, Pittsboro to the northwest, and Fuquay to the north). As a result, the NC-DAQ has no plans to monitor for ozone in Harnett County at this time. However, because of the potential for natural gas extraction

to occur in the Triassic Basin to the west of Harnett County, the NC-DAQ is adding an ozone monitor in Lee County to provide background data.

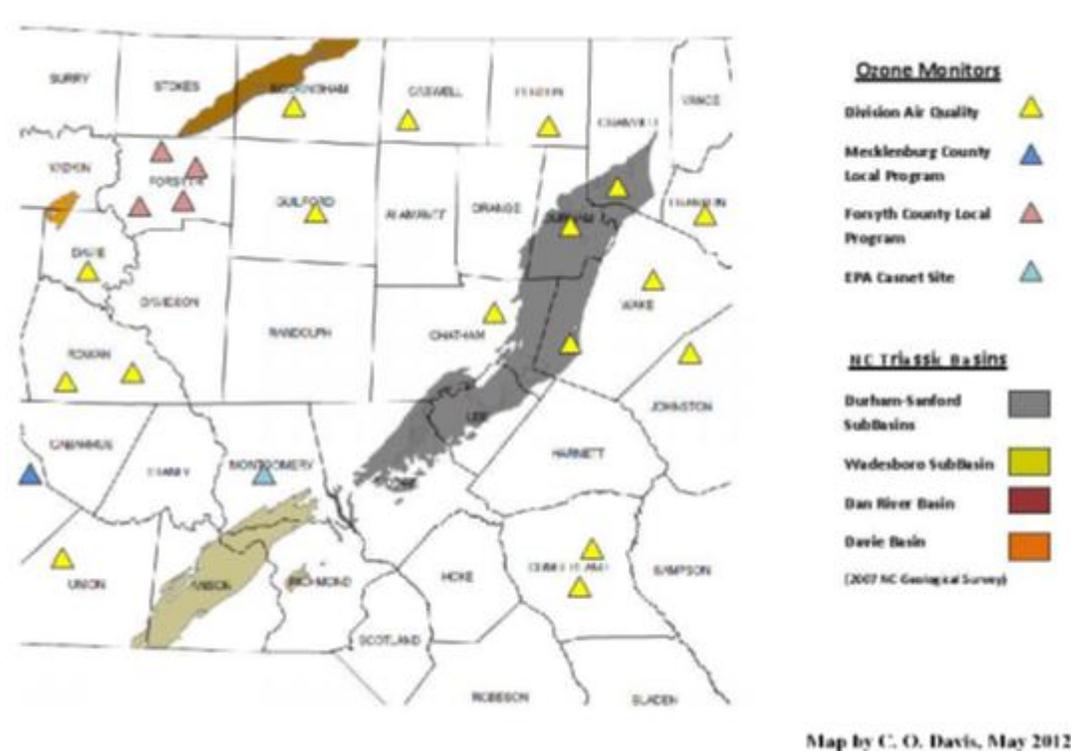


Figure 20. Ozone monitors surrounding Harnett County

- Hoke County (growth of 7.6 % between April 1, 2010, and July 1, 2012 and the 20th fastest growing county in the nation) – This county is part of the Fayetteville MSA. The NC DAQ currently operates two ozone monitors in the Fayetteville MSA as required by 40 CFR 58 Appendix D. The VISTAS Unmonitored Areas Analysis for ozone in 2012 (see Figure 21) indicates that expected ozone levels in Hoke County would be similar to the concentrations measured by the Wade monitor in Cumberland County. Currently this monitor has a design value of 0.070 parts per million. As a result the NC DAQ has no plans to monitor for ozone in Hoke County at this time.

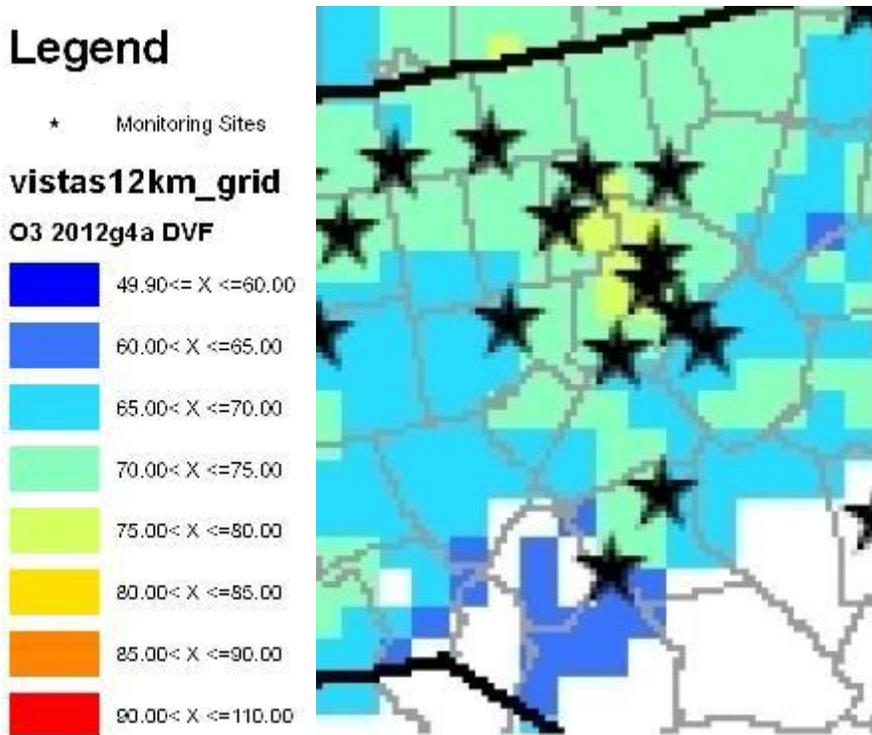


Figure 21. VISTAS Unmonitored Areas Analysis Map for Harnett and Hoke Counties

- Onslow County (estimated growth of 5,833 people (3.3 %) between July 1, 2011, and July 1, 2012) – this county is in the Jacksonville MSA. Currently, the NC-DAQ does not monitor for ozone in Jacksonville because the ozone levels measured by the Castle Hayne monitor in New Hanover County indicate that the ozone concentrations on the coast are currently at 83 % of the NAAQS. The VISTAS unmonitored area analysis for Onslow County shown in Figure 22 indicates that the ozone levels in Onslow are lower than the levels at Castle Hayne. As a result the NC DAQ has no plans to monitor for ozone in Onslow County at this time.

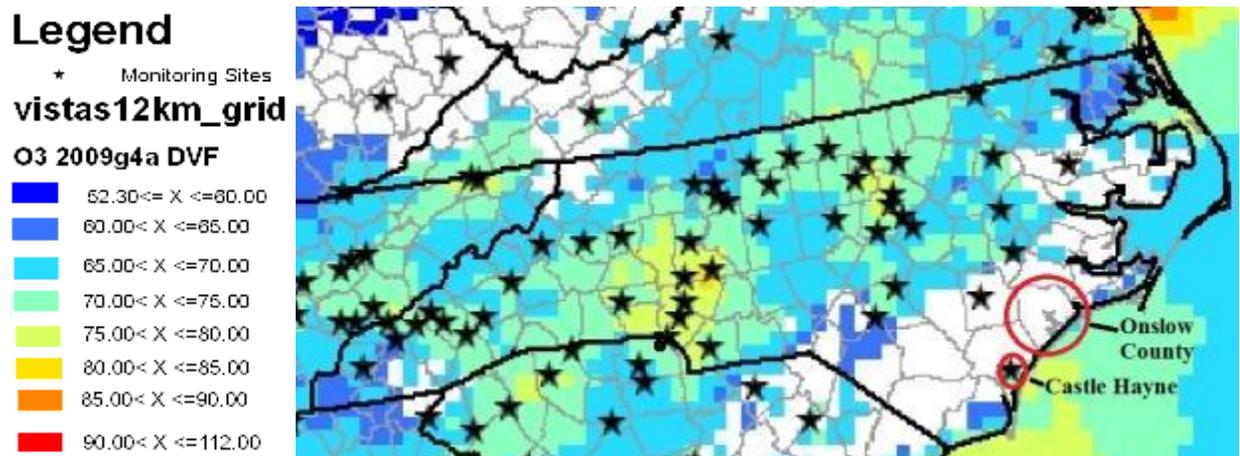


Figure 22. VISTAS Unmonitored Area Analysis for Ozone in 2012

There are also two ozone monitors that need to be relocated because their current locations no longer meet 40 CFR Appendix E requirements: Waggin Trail and Bent

Creek. In 2012 a propane storage tank was installed at the Waggin Trail site 18.2 meters to the north northeast of the probe (Figure 23). Then in January the NC-DAQ discovered that Alexander County is establishing a vehicle maintenance facility at the Waggin Trail location as shown in Figure 24. The ozone monitor is located in a county building used as a storage location for financial records and will remain. However, a paved area will be constructed leading to, and around the current ozone site to accommodate the gas pumps that will be located approximately 50 feet north northeast of the ozone probe. The fueling area will supply gasoline, diesel, and propane for Alexander County vehicles. Estimates are 4800 square feet for the storage building and 2000 square feet for the maintenance garage. A parking area will be constructed adjacent to the maintenance garage. The project is scheduled to be completed by late summer 2013. No construction activities had started by April 1 so ozone monitoring resumed at this site for the 2013 ozone season and will continue until activities at the site are such that they will compromise the ozone concentrations at the site. As of May 1 no construction activities had started. This season will be the last ozone season that monitoring will be done at this site.



Figure 23. Propane Tank at the Waggin Trail Site



Figure 24. Future plans for the Waggin Trail Monitoring Site

Because the new gasoline, diesel, and propane fueling and maintenance activities will make the site unsuitable for ozone monitoring, the NC-DAQ identified a new site for the ozone monitor. As shown in Figure 25, this site is located almost exactly one mile south of the current site, behind the Alexander County Board of Education building, 700 Liledoun Road, Taylorsville. On April 10, 2013, the Alexander County School System Board approved the NC-DAQ request to place a monitoring site at this location. Currently a MET Tower is operated by the State Climate Office in the same area where the ozone monitor will be located. Locating the ozone site next to the met tower will not interfere with the Climate Office’s met sensors as long as sufficient space is maintained between the monitor and the met tower. The Waggin Trail and new Taylorsville site will operate simultaneously for as long as possible during the 2013 season.



Figure 25. Relationship between Waggin Trail site and Taylorsville 2013 Site

Because of the growth of the trees at the old Bent Creek site, the WNCRAQA will be moving the site to a new Bent Creek location that is within a mile of the old Bent Creek location in late May 2013. An aerial of the new Bent Creek location is shown in Figure 26. Because the move is within one mile of the current site, the site identification number will not change.



Figure 26. Aerial view of new Bent Creek Location

At this time, the NC DAQ recommends:

- Shutting down the Enochville ozone monitor at the end of the ozone season;
- Relocating the Waggin Trail monitor to the Taylorsville 2013 site and operating the two sites simultaneously for as long as possible during the 2013 ozone season;
- Relocating the Bent Creek site within Bent Creek park to provide a more open space for the monitor;
- Not establishing any new ozone sites (other than a special purpose monitoring site in Lee County for baseline shale gas development monitoring, discussed in detail in a separate monitoring plan); and
- Maintaining the rest of the network as it is through the end of the 2014 ozone monitoring season.

The locations of the current ozone-monitoring sites are provided in Table 17. All monitors listed in Table 17 are suitable for comparison to the National Ambient Air Quality Standards and meet the requirements of Appendices A, C, D, and E of Part 58. All of these monitors use the U.S. EPA equivalent method designation EQOA-0880-047. The locations of the monitors are shown in Figure 27.

Table 18 provides the monitor type, operating schedules, monitoring objectives, and scales for all of the current and proposed monitors in the North Carolina Ozone Monitoring Network. All monitors operate on an hourly schedule from April 1 through October 31 each year. Several of the monitors operate year-round. Table 19 lists the statement of purpose for each monitor in the North Carolina Ozone Monitoring Network and also provides any proposed changes to the network.

Table 17 North Carolina Ozone Monitoring Network – Monitor Locations^a

Charlotte-Concord-Gastonia Metropolitan Statistical Area

AQS Site ID Number	Site Location				
	Site Name	Street Address	City	Longitude	Latitude
37-109-0004	Crouse	1487 Riverview Road	Lincolnton	-81.276750	35.438556
37-119-0041 ^b	Garinger	1130 Eastway Drive	Charlotte	-80.785683	35.240100
37-119-1005 ^b	Arrowood	400 Westinghouse Blvd.	Charlotte	-80.919532	35.113164
37-119-1009 ^b	County Line	29 N@ Mecklenburg Cab Co	Charlotte	-80.695000	35.347222
37-159-0021	Rockwell	301 West Street	Rockwell	-80.395039	35.551868
37-159-0022	Enochville	925 North Enochville Avenue	Not in a City	-80.667560	35.534482
37-179-0003	Monroe Middle School	701 Charles Street	Monroe	-80.540833	34.973889

Raleigh Metropolitan Statistical Area

AQS Site ID Number	Site Location				
	Site Name	Street Address	City	Longitude	Latitude
37-069-0001	Franklinton	431 South Hillsborough Street	Franklinton	-78.463719	36.096189
37-101-0002	West Johnston	1338 Jack Road ^c	Clayton	-78.461944	35.590833
37-183-0014	Millbrook	3801 Spring Forest Road	Raleigh	-78.574167	35.856111
37-183-0016	Fuquay	201 North Broad Street	Raleigh	-78.792500	35.596944

Greensboro-High Point Metropolitan Statistical Area

AQS Site ID Number	Site Location				
	Site Name	Street Address	City	Longitude	Latitude
37-081-0013	Mendenhall	205 Wiloughby Blvd.	Greensboro	-79.810456	36.100711
37-157-0099	Bethany	6371 NC 65	Bethany	-79.859167	36.308889

Winston-Salem Metropolitan Statistical Area

AQS Site ID Number	Site Location				
	Site Name	Street Address	City	Longitude	Latitude
37-059-0003	Mocksville	220 Cherry Street	Mocksville	-80.557278	35.897068
37-067-0022 ^d	Hattie Ave.	1300 block of Hattie Avenue	Winston-Salem	-80.226667	36.110556
37-067-0028 ^d	Shiloh Church	6496 Baux Mountain Road	Winston-Salem	-80.215833	36.203056
37-067-0030 ^d	Clemmons	Fraternity Church Road	Clemmons	-80.342000	36.026000
37-067-1008 ^d	Union Cross	3656 Piedmont Memorial Drive	Union Cross	-80.143889	36.050833

Durham-Chapel Hill Metropolitan Statistical Area

AQS Site ID Number	Site Location				
	Site Name	Street Address	City	Longitude	Latitude
37-037-0004	Pittsboro	325 Russett Run Road	Pittsboro	-79.159722	35.757222
37-063-0015	Durham Armory	801 Stadium Drive	Durham	-78.905417	36.032944
37-145-0003	BushyFork	Highway 49 South	BushyFork	-79.091970	36.306965

Asheville Metropolitan Statistical Area

AQS Site ID Number	Site Location				
	Site Name	Street Address	City	Longitude	Latitude
37-021-0030 ^e	Bent Creek	Route 191 South	Asheville	-82.599860	35.500102
37-087-0008 ^f	Waynesville E.S.	2236 Asheville Road	Waynesville	-82.963370	35.507160

Fayetteville Metropolitan Statistical Area

AQS Site ID Number	Site Location				
	Site Name	Street Address	City	Longitude	Latitude
37-051-0008	Wade	7112 Covington Lane	Wade	-78.728035	35.158686
37-051-1003	Golfview	3625 Golfview Road	Hope Mills	-78.962500	34.968889

Table 17 North Carolina Ozone Monitoring Network – Monitor Locations ^a

Hickory Metropolitan Statistical Area

AQS Site ID Number	Site Location				
	Site Name	Street Address	City	Longitude	Latitude
37-003-0004	Waggin Trail	116 Waggin Trail Road	Taylorsville	-81.189758	35.928999
37-003-0005	Taylorsville 2013	700 Liledoun Road	Taylorsville	-81.19088	35.913753,
37-027-0003	Lenoir	219 Nuway Circle	Lenoir	-81.530278	35.935833

Wilmington Metropolitan Statistical Area

AQS Site ID Number	Site Location				
	Site Name	Street Address	City	Longitude	Latitude
37-129-0002	Castle Hayne	6028 Holly Shelter Road	Castle Hayne	-77.838611	34.364167

Greenville Metropolitan Statistical Area

AQS Site ID Number	Site Location				
	Site Name	Street Address	City	Longitude	Latitude
37-147-0006	Pitt County	403 Government Cir	Greenville	-77.358050	35.638610

Rocky Mount Metropolitan Statistical Area

AQS Site ID Number	Site Location				
	Site Name	Street Address	City	Longitude	Latitude
37-065-0099	Leggett	7589 NC Hwy 33-NW	Leggett	-77.582778	35.988333

Not in Metropolitan Statistical Areas – Mountain Top Sites

AQS Site ID Number	Site Location				
	Site Name	Street Address	City	Longitude	Latitude
37-075-0001 ^g	Joanna Bald	Forest Road 423 Spur	Robbinsville	-83.795620	35.257930
37-087-0035	Fry Pan	State Rd 450, Blue Ridge Pkwy Mile 409	Pisgah Forest	-82.792500	35.379167
37-087-0036	Purchase knob	6905 Purchase Road	Waynesville (GSMNP)	-83.077500	35.590000
37-199-0004	Mount Mitchell	2388 State Hwy 128	Burnsville	-82.264944	35.765413

Not in a Metropolitan Statistical Area – Valley, Piedmont, and Coastal Sites

AQS Site ID Number	Site Location				
	Site Name	Street Address	City	Longitude	Latitude
37-011-0002	Linville Falls	100 Linville Falls road	Linville Falls	-81.933056	35.972222
37-033-0001	Cherry Grove	7074 Cherry Grove Road	Reidsville	-79.467417	36.307033
37-077-0001	Butner	800 Central Ave	Butner	-78.768056	36.141111
37-107-0004	Lenoir Community College	231 Highway 58 S	Kinston	-77.568792	35.231459
37-117-0001	Jamesville	1210 Hayes Street	Jamesville	-76.897820	35.810690
37-173-0002	Bryson City	Parks & Rec Bldg, Center Street	Bryson City	-83.443697	35.435509

^a All monitors use an Instrumental Ultra Violet method (Air Quality System (AQS) Method Code 047). All monitors listed in this table are suitable for comparison to the National Ambient Air Quality Standards. All monitors in this table meet the requirements of Appendices A, C, D, and E of Part 58. All monitors use the U.S. EPA equivalent method designation EQOA-0880-047.

^b Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^c The monitor is located 10 meters South of Jack Road, which had a 2002 average daily traffic count of 3,700. This location meets the requirements in Table E-1 for spacing between roadways and probes for neighborhood and urban scale monitors in operation before December 18, 2006, but does not meet the spacing requirements for a new monitoring site.

^d Operated by the Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403).

^e Operated by the Western North Carolina Regional Air Quality Agency (AQS Reporting Agency 0779).

^f This monitor started on April 1, 2011 to replace the ozone monitor at the Waynesville Health Department.

^g This monitor started on April 3, 2003. The monitor is owned by the United States Forest Service and operated by the North Carolina Division of Air Quality (NC DAQ).

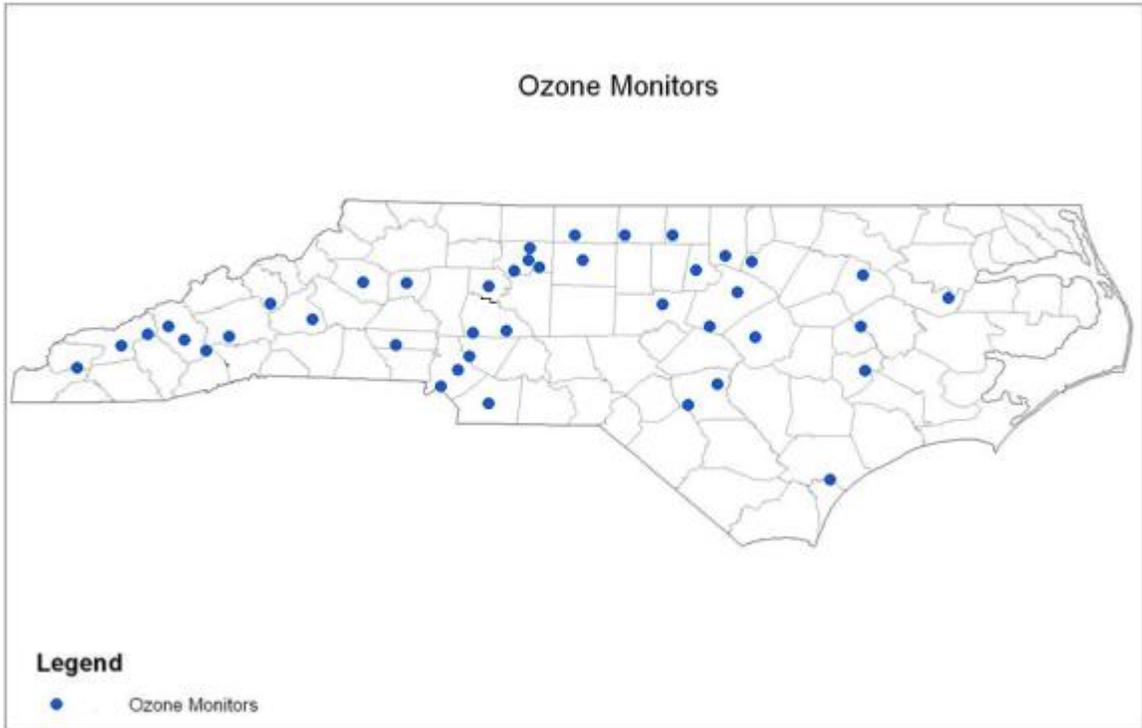


Figure 27. Location of 2013 Ozone Monitoring Stations

Table 18 Monitor Type, Operating Schedules, Monitoring Objectives, and Scales for the North Carolina Ozone Monitoring Network ^a

Charlotte-Concord-Gastonia Metropolitan Statistical Area

AQS Site ID Number	Site Name	Monitor Type	Operating Schedule ^b	Monitoring Objective	Scale
37-109-0004	Crouse	SLAMS	4/1 to 10/31	General/Background	Urban
37-119-0041 ^c	Garinger	NCORE	1/1 to 12/31	Highest Concentration	Neighborhood
37-119-1005 ^c	Arrowood	SLAMS	4/1 to 10/31	Highest Concentration	Neighborhood
37-119-1009 ^c	County Line	SLAMS	4/1 to 10/31	Highest Concentration	Urban
37-159-0021	Rockwell	Proposed NCORE	1/1 to 12/31	Highest Concentration	Urban
37-159-0022	Enochville	Other	4/1 to 10/31	Highest Concentration	Urban
37-179-0003	Monroe Middle School	Special Purpose	4/1 to 10/31	Population Exposure	Neighborhood

Raleigh Metropolitan Statistical Area

AQS Site ID Number	Site Name	Monitor Type	Operating Schedule ^b	Monitoring Objective	Scale
37-069-0001	Franklinton	SLAMS	4/1 to 10/31	Population Exposure	Urban
37-101-0002	West Johnston	SLAMS	4/1 to 10/31	General/Background	Urban
37-183-0014	Millbrook	NCORE	1/1 to 12/31	Maximum Ozone Concentration/ Population Exposure	Neighborhood
37-183-0016	Fuquay	Other	4/1 to 10/31	Highest Concentration	Neighborhood

Greensboro-High Point Metropolitan Statistical Area

AQS Site ID Number	Site Name	Monitor Type	Operating Schedule ^b	Monitoring Objective	Scale
37-081-0013	Mendenhall	SLAMS	4/1 to 10/31	Population Exposure	Urban
37-157-0099	Bethany	SLAMS	4/1 to 10/31	Highest Concentration	Urban

Winston-Salem Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Monitoring Objective	Scale
37-067-0022 ^d	Hattie Ave.	Other	4/1 to 10/31	Population Exposure	Neighborhood
37-067-0028 ^d	Shiloh Church	SLAMS	4/1 to 10/31	Population Exposure	Neighborhood
37-067-0030 ^d	Clemmons	SLAMS	4/1 to 10/31	Population Exposure	Neighborhood
37-067-1008 ^d	Union Cross	SLAMS	4/1 to 10/31	Population Exposure	Neighborhood
37-059-0003	Mocksville	SLAMS	4/1 to 10/31	Population Exposure	Urban

Durham-Chapel Hill Metropolitan Statistical Area

AQS Site ID Number	Site Name	Monitor Type	Operating Schedule ^b	Monitoring Objective	Scale
37-037-0004	Pittsboro	SLAMS	4/1 to 10/31	Upwind Background/ General/Background	Urban
37-063-0015	Durham Armory	SLAMS	4/1 to 10/31	Population Exposure	Neighborhood
37-145-0003	Bushy Fork	SLAMS	4/1 to 10/31	Background/ Highest Concentration	Urban

Asheville Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Monitoring Objective	Scale
37-021-0030 ^e	Bent Creek	SLAMS	4/1 to 10/31	Maximum Ozone Concentration/ Highest Concentration	Urban
39-087-0013 ^f	Waynesville E.S.	SLAMS	4/1 to 10/31	Population Exposure	Urban

Fayetteville Metropolitan Statistical Area

AQS Site ID Number	Site Name	Monitor Type	Operating Schedule ^b	Monitoring Objective	Scale
37-051-0008	Wade	SLAMS	4/1 to 10/31	Highest Concentration	Urban

Table 18 Monitor Type, Operating Schedules, Monitoring Objectives, and Scales for the North Carolina Ozone Monitoring Network ^a

37-051-1003	Golfview	SLAMS	4/1 to 10/31	Population Exposure	Neighborhood
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Hickory Metropolitan Statistical Area

AQS Site ID Number	Site Name	Monitor Type	Operating Schedule ^b	Monitoring Objective	Scale
37-003-0004	Waggin Trail	Other	4/1 to 10/31	General/ Background	Urban
37-027-0003	Lenoir	SLAMS	4/1 to 10/31	General/ Background	Regional

Wilmington Metropolitan Statistical Area

AQS Site ID Number	Site Name	Monitor Type	Operating Schedule ^b	Monitoring Objective	Scale
37-129-0002	Castle Hayne	SLAMS	4/1 to 10/31	Population Exposure	Neighborhood

Greenville Metropolitan Statistical Area

AQS Site ID Number	Site Name	Monitor Type	Operating Schedule ^b	Monitoring Objective	Scale
371470006	Pitt Ag Extension	SLAMS	4/1 to 10/31	General/Background	Regional

Rocky Mount Metropolitan Statistical Area

AQS Site ID Number	Site Name	Monitor Type	Operating Schedule ^b	Monitoring Objective	Scale
37-065-0099	Leggett	SLAMS	4/1 to 10/31	General/ Background	Regional

Not in a Metropolitan Statistical Area – Mountain Top Sites

AQS Site ID Number	Site Name	Monitor Type	Operating Schedule ^b	Monitoring Objective	Scale
37-075-0001 ^g	Joanna Bald	Other	4/1 to 10/31	Welfare Related Impacts/ General/Background	Regional
37-087-0035	Fry Pan	Other	4/1 to 10/31	Welfare Related Impacts/ General/Background	Regional
37-087-0036	Purchase Knob	Other	4/1 to 10/31	Welfare Related Impacts/ General/Background	Regional
37-199-0004	Mount Mitchell	Special Purpose	4/1 to 10/31	Welfare Related Impacts/ General/ Background/ Regional Transport	Regional

Not in a Metropolitan Statistical Area – Valley, Piedmont, and Coastal Sites

AQS Site ID Number	Site Name	Monitor Type	Operating Schedule ^b	Monitoring Objective	Scale
37-011-0002	Linville Falls	Other	4/1 to 10/31	Welfare Related Impacts/ General/Background	Urban
37-033-0001	Cherry Grove	Other	4/1 to 10/31	General/Background	Urban
37-077-0001	Butner	SLAMS	4/1 to 10/31	Highest Concentration	Urban
37-107-0004	Lenoir community College	Other	4/1 to 10/31	General/ Background	Neighborhood
37-117-0001	Jamesville	SLAMS	4/1 to 10/31	General/Background	Regional
37-173-0002	Bryson City	SLAMS	4/1 to 10/31	General/ Background	Neighborhood

^a All monitors use an Instrumental Ultra Violet method (Air Quality System (AQS) Method Code 047).

^b All monitors operate on an hourly schedule.

^c Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^d Operated by the Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403).

^e Operated by the Western North Carolina Regional Air Quality Agency (AQS Reporting Agency 0779).

^f This monitor started on April 1, 2011 to replace the ozone monitor at the Waynesville Health Department.

^g This monitor started on April 3, 2003. The monitor is owned by the United States Forest Service and operated by the North Carolina Division of Air Quality (NC DAQ).

Table 19 Statement of Purpose for the North Carolina Ozone Monitoring Network and Proposed Changes to the Network ^a

Charlotte-Concord-Gastonia Metropolitan Statistical Area

AQS Site Id Number	Site Name	Statement of Purpose	Proposal to Move or Change
37-109-0004	Crouse	Compliance w/NAAQS.	None
37-119-0041 ^b	Garinger	Compliance w/NAAQS.	None
37-119-1005 ^b	Arrowood	Compliance w/NAAQS.	None
37-119-1009 ^b	County Line	Compliance w/NAAQS.	None
37-159-0021	Rockwell	Modeling. Ozone Precursor Monitoring. Compliance w/NAAQS.	None
37-159-0022	Enochville	Compliance w/NAAQS.	None
37-179-0003	Monroe Middle School	Forecasting. Compliance w/NAAQS.	None

Raleigh Metropolitan Statistical Area

AQS Site Id Number	Site Name	Statement of Purpose	Proposal to Move or Change
37-069-0001	Franklinton	Downwind site for Raleigh MSA. Modeling. Real-time AQI reporting for the Raleigh MSA. Compliance w/NAAQS	None
37-101-0002	West Johnston	Real-time AQI reporting for the Raleigh MSA. Compliance w/NAAQS.	None
37-183-0014	Millbrook	Maximum Concentration Site for Raleigh MSA. Ozone Precursor Monitoring Site. Real-time AQI reporting for the Raleigh MSA. Compliance w/NAAQS.	None
37-183-0016	Fuquay	Upwind Site for Raleigh MSA. Modeling. Real-time AQI reporting for the Raleigh MSA. Compliance w/NAAQS.	None

Greensboro-High Point Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Statement of Purpose	Proposal to Move or Change
37-081-0013	Mendenhall	Maximum concentration site downwind of the Greensboro-High Point MSA. Real-time AQI reporting for the Greensboro-Winston-Salem-High-Point CMSA. Compliance w/NAAQS.	None
37-157-0099	Bethany	Maximum ozone concentration site downwind of the Winston-Salem MSA. Modeling. Real-time AQI reporting for the Greensboro-Winston-Salem-High-Point CMSA. Compliance w/NAAQS.	None

Winston-Salem Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Statement of Purpose	Proposal to Move or Change
37-067-0022 ^c	Hattie Ave.	Urban Center City Site for Modeling. Real-time AQI reporting for the Greensboro-Winston-Salem-High-Point CMSA. Compliance w/NAAQS.	None
37-067-0028 ^c	Shiloh Church	Compliance w/NAAQS.	None
37-067-0030 ^c	Clemmons	. Real-time AQI reporting for the Greensboro-Winston-Salem-High-Point CMSA. Compliance w/NAAQS.	None
37-067-1008 ^c	Union Cross	Compliance w/NAAQS.	None
37-059-0003	Mocksville	Upwind site for the Greensboro-High Point MSA. Real-time AQI reporting. Compliance w/NAAQS.	None

Table 18 Monitor Type, Operating Schedules, Monitoring Objectives, and Scales for the North Carolina Ozone Monitoring Network ^a

Durham-Chapel Hill Metropolitan Statistical Area

AQS Site Id Number	Site Name	Statement of Purpose	Proposal to Move or Change
37-037-0004	Pittsboro	Upwind Background site for Durham-Chapel Hill MSA. Modeling. Real-time AQI reporting for the Durham-Chapel Hill MSA. Compliance with the NAAQS.	None
37-063-0015	Durham Armory	Maximum concentration site in the Durham-Chapel Hill MSA. Ozone precursor monitoring site. Real-time AQI reporting for the Durham-Chapel Hill MSA. Compliance w/NAAQS.	None
37-145-0003	BushyFork	Compliance w/NAAQS.	None

Asheville Metropolitan Statistical Area

AQS Site Id Number	Site Name	Statement of Purpose	Proposal to Move or Change
37-021-0030 ^d	Bent Creek	Industrial expansion monitoring for PSD modeling. Real-time AQI reporting. Compliance with the NAAQS.	None
37-087-0013	Waynesville E.S.	Low elevation (valley) site for Haywood County. Real-time AQI reporting. Modeling. Compliance w/NAAQS.	None

Fayetteville Metropolitan Statistical Area

AQS Site Id Number	Site Name	Statement of Purpose	Proposal to Move or Change
37-051-0008	Wade	Maximum concentration site in the Fayetteville MSA. Real-time AQI reporting for the Fayetteville MSA. Compliance w/NAAQS.	None
37-051-1003	Golfview	Upwind site in the Fayetteville MSA. Real-time AQI reporting for the Fayetteville MSA. Compliance with the NAAQS	None

Hickory Metropolitan Statistical Area

AQS Site Id Number	Site Name	Statement of Purpose	Proposal to Move or Change
37-003-0004	Waggin Trail	Compliance w/NAAQS.	None
37-027-0003	Lenoir	Highest Ozone Precursor Concentration Site for Hickory MSA. . Real-time AQI reporting. Compliance w/NAAQS.	None

Wilmington Metropolitan Statistical Area

AQS Site Id Number	Site Name	Statement of Purpose	Proposal to Move or Change
37-129-0002	Castle Hayne	Real-time AQI reporting. Compliance w/NAAQS.	None

Greenville Metropolitan Statistical Area

AQS Site Id Number	Site Name	Statement of Purpose	Proposal to Move or Change
37-147-0006 ^e	Ag Extension	Real-time AQI reporting. Compliance w/NAAQS.	None

Rocky Mount Metropolitan Statistical Area

AQS Site Id Number	Site Name	Statement of Purpose	Proposal to Move or Change
37-065-0099	Leggett	Real-time AQI reporting. Compliance with the NAAQS.	None

Table 18 Monitor Type, Operating Schedules, Monitoring Objectives, and Scales for the North Carolina Ozone Monitoring Network ^a

Not in a Metropolitan Statistical Area – Mountain Top Sites

AQS Site Id Number	Site Name	Statement of Purpose	Proposal to Move or Change
37-075-0001 ^f	Joanna Bald	Operated in cooperation with the USFS. Located in a Class I area. Provides ozone data for PSD modeling for industrial expansion. Provides AQI data for recreational users. Modeling. Compliance w/NAAQS.	None
37-087-0035	Fry Pan	Operated in cooperation with the USFS. Located in a Class I area and collocated at an IMPROVE site. Provides ozone data for PSD modeling for industrial expansion. Provides AQI data for recreational users. Real-time AQI reporting for the Asheville MSA. Modeling. Compliance w/NAAQS.	None
37-087-0036	Purchase Knob	Operated in cooperation with the USFS. Located in a Class I area. Provides ozone data for PSD modeling for industrial expansion. Provides AQI data for recreational users. Real-time AQI reporting for the Asheville MSA. Modeling. Compliance w/NAAQS.	None
37-199-0004	Mount Mitchell	Provides ozone data for PSD modeling for industrial expansion. Provides AQI data for recreational users. Modeling. Compliance w/NAAQS.	None

Not in a Metropolitan Statistical Area – Valley, Piedmont, and Coastal Sites

AQS Site Id Number	Site Name	Statement of Purpose	Proposal to Move or Change
37-011-0002	Linville Falls	Operated in cooperation with the USFS. Located in a Class I area and collocated at an IMPROVE site. Provides ozone data for PSD modeling for industrial expansion. Provides AQI data for recreational users. Modeling. Compliance w/NAAQS.	None
37-033-0001	Cherry Grove	Extreme downwind site for the Greensboro-High Point MSA. Modeling. Ozone Precursor monitoring site. Real-time AQI reporting for the Greensboro-Winston-Salem-High-Point CMSA. Compliance with the NAAQS	None
37-077-0001	Butner	Maximum concentration site downwind for the Durham-Chapel Hill MSA. Modeling. Real-time AQI reporting for the Raleigh-Durham-Chapel Hill CMSA. Compliance w/NAAQS.	None
37-107-0004	Lenoir Community College	Compliance w/NAAQS.	None
37-117-0001	Jamesville	Compliance w/NAAQS.	None
37-173-0002	Bryson City	Regional Transport and General Background Site. Low elevation (valley) mountain site on the NC side of the Great Smokey Mountains National Park. Modeling. Forecasting. Compliance w/NAAQS.	None

^a All monitors use an Instrumental Ultra Violet method (Air Quality System (AQS) Method Code 047).

^b Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^c Operated by the Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403).

^d Operated by the Western North Carolina Regional Air Quality Agency (AQS Reporting Agency 0779).

^e This monitor started on April 1, 2008, to replace the Farmville monitor.

^f This monitor started on April 3, 2003. The monitor is owned by the United States Forest Service and operated by the North Carolina Division of Air Quality (NC-DAQ).

VI. Particle Monitoring Network for Particles with Aerodynamic Diameters of 10 Micrometers or Less (PM₁₀)

Monitoring for particles of 10 micrometers or less aerodynamic diameter (PM₁₀) is currently being conducted in North Carolina at seven sites operated by the North Carolina Division of Air Quality (NC-DAQ) and at five sites operated by local programs. The data collected are used to determine human health effect exposures in Metropolitan Statistical Areas (MSAs) with over 500,000 people and to collect background levels for Prevention of Significant Deterioration (PSD) purposes. The NC-DAQ uses PM₁₀ as a surrogate for PSD modeling for the state standard for total suspended solids (TSP).

Table 20 provides the highest PM₁₀ concentrations measured in North Carolina for the past five years. The monitoring regulations promulgated by the U.S. EPA in 2006 require a monitor to be attaining the NAAQS for the past five years before the monitor can be shut down. All PM₁₀ monitors operated in North Carolina in the last five years have attained the NAAQS and have reported values less than 80 % of the standard. Thus, the only monitors that the U.S. EPA requires the state to operate are the ones required to meet the minimum monitoring requirements in 40CFR58 Appendix D Table D-4 provided in Figure 28.

TABLE D-4 OF APPENDIX D TO PART 58. PM₁₀ MINIMUM MONITORING REQUIREMENTS (NUMBER OF STATIONS PER MSA)¹

Population category	High concentration ²	Medium concentration ³	Low concentration ^{4,5}
>1,000,000	6-10	4-8	2-4
500,000-1,000,000	4-8	2-4	1-2
250,000-500,000	3-4	1-2	0-1
100,000-250,000	1-2	0-1	0

¹ Selection of urban areas and actual numbers of stations per area within the ranges shown in this table will be jointly determined by EPA and the State Agency.

² High concentration areas are those for which ambient PM₁₀ data show ambient concentrations exceeding the PM₁₀ NAAQS by 20 percent or more.

³ Medium concentration areas are those for which ambient PM₁₀ data show ambient concentrations exceeding 80 percent of the PM₁₀ NAAQS.

⁴ Low concentration areas are those for which ambient PM₁₀ data show ambient concentrations less than 80 percent of the PM₁₀ NAAQS.

⁵ These minimum monitoring requirements apply in the absence of a design value.

Figure 28. Table D-4 from 40CFR58 Appendix D

The 2012 estimated population of the Metropolitan Statistical Area (MSA) and the most recent PM₁₀ ambient concentration values for the area determines the number of required monitors for an area. Table 21 provides the 2011 estimated total population for the MSAs in North Carolina, the maximum ambient daily concentration values as percentage of the NAAQS for 2012, the number of required monitors based on 40CFR58 Appendix D Table D-4 and the number of current monitors operated by the NC-DAQ and the local programs.

Currently, the NC-DAQ and the local programs are operating the minimum number of required monitors in every MSA except for the Virginia Beach-Norfolk-New Port News, and the Raleigh MSA. The NC-DAQ has a written agreement with the Virginia Department of Environmental Quality (VDEQ), Office of Air Quality Monitoring, that VDEQ will maintain the minimum required number of monitors for the

Virginia Beach-Norfolk-New Port News MSA (see Appendix G. Monitoring Agreement Between Virginia and North Carolina for the Virginia Beach-Norfolk-New Port News Metropolitan Statistical Area). The NC-DAQ received a waiver from the EPA for the second required monitor in the Raleigh MSA. The EPA granted the waiver because PM₁₀ values recorded in the Raleigh MSA have been less than 50 % of the NAAQS except for when the existing monitor was impacted by an exceptional event on June 12, 2008.

In 2011 the NC-DAQ modified its PM₁₀ PSD monitoring network by establishing a network of rotating background PM₁₀ sites. One to three PM₁₀ monitors will operate each year and each site will operate once every three years. The six PM₁₀ background sites are:

- Candor and Marion, operating in 2011;
- Jamesville operating in 2012; and
- Kenansville, Cherry Grove, and Grier School (Gastonia), operating in 2013.

These six sites are also fine particle monitoring sites.

The monitoring regulations promulgated in 2006 include a method for measuring coarse particles. The coarse particle monitoring method measures coarse particles by the difference between the measured PM₁₀ concentration and the fine particle concentration measured using the same sampling and analytical method. As fine particle FRM monitors become available in 2012 and 2013, the NC-DAQ plans to gradually convert the current manual PM₁₀ high volume samplers to PM₁₀ low volume samplers that can be used to measure both PM₁₀ and coarse particles.

The locations of the current and proposed PM₁₀-monitoring sites are provided in Table 22 and Figure 29. All monitors listed in Table 22 are suitable for comparison to the NAAQS. All of the monitors meet the requirements of Appendices C and E of 40CFR58. Two of the monitors currently do not meet Appendix A requirements. The monitor at Millbrook (37-183-0014) and the monitor at the Durham Armory do not meet Appendix A requirements because they do not have an approved QA/SOP.

Table 23 provides the monitor type, operating schedules, monitoring objectives, scales, and statement of purpose for all of the current and proposed monitors in the North Carolina PM₁₀ Monitoring Network. All of the monitors operate year-round. Table 24 summarizes the status for each current and proposed monitoring site regarding whether it is suitable for comparison to the NAAQS and meets the requirements in Appendices A, C, D, and E of 40CFR58 and also provides the proposed changes to the network.

Table 20 Ambient PM₁₀ Concentrations Measured in North Carolina

Charlotte-Concord-Gastonia Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 24-hr 1 st max for 2008-2012		
		Value (micrograms per cubic meter, standard conditions)	Percent of NAAQS ^a	Year
371190003 ^{b, c}	Fire Station #11	50	33 %	2010
371190041 ^{b, d}	Garinger	40	27 %	2010
371190042 ^{b, d}	Montclair	57	38 %	2010
371191001 ^{b, c}	Davidson	39	26 %	2010
371191005 ^{b, c}	Arrowood	48	32 %	2010

Raleigh Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 24-hr 1 st max for 2008-2012		
		Value (micrograms per cubic meter, standard conditions)	Percent of NAAQS ^b	Year
371830014 ^e	Millbrook	105	71%	2008

Greensboro-High Point Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 24-hr 1 st max for 2008-2012		
		Value (micrograms per cubic meter, standard conditions)	Percent of NAAQS ^b	Year
370810013 ^f	Mendenhall	63	42 %	2010

Winston-Salem Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 24-hr 1 st max for 2008-2012		
		Value (micrograms per cubic meter, standard conditions)	Percent of NAAQS ^b	Year
370670022 ^{h, i}	Hattie Avenue	73	49 %	2008
370670023 ^{h, i}	Peter's Creek	83	55 %	2008

Durham-Chapel Hill Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 24-hr 1 st max for 2008-2012		
		Value (micrograms per cubic meter, standard conditions)	Percent of NAAQS ^b	Year
370630015 ^d	Durham Armory	33	22 %	2011

Asheville Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 24-hr 1 st max for 2008-2012		
		Value (micrograms per cubic meter, standard conditions)	Percent of NAAQS ^b	Year
370891006 ^f	Allen Street	37	25 %	2008

Fayetteville Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 24-hr 1 st max for 2008-2012		
		Value (micrograms per cubic meter, standard conditions)	Percent of NAAQS ^b	Year
370510009 ^f	William Owen	51	34 %	2010

Hickory Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 24-hr 1 st max for 2008-2012		
		Value (micrograms per cubic meter, standard conditions)	Percent of NAAQS ^b	Year
370350004 ^f	Hickory	40	27 %	2008

Table 20 Ambient PM₁₀ Concentrations Measured in North Carolina

Wilmington Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 24-hr 1 st max for 2008-2012		
		Value (micrograms per cubic meter, standard conditions)	Percent of NAAQS ^b	Year
371290002 ^f	Castle Hayne	14.8	10 %	2008

Not in a Metropolitan Statistical Area – Valley, Piedmont and Coastal Sites

AQS Site Identification Number	Site Name	Highest 24-hr 1 st max for 2008-2012		
		Value (micrograms per cubic meter, standard conditions)	Percent of NAAQS ^b	Year
370610002 ^g	Kenansville	30	20 %	2010
371110004 ^f	Marion	26	17 %	2011
371170001 ^f	Jamesville	35	23 %	2012
371290001 ^f	Candor	27	18 %	2011

^a The National Ambient Air Quality Standard for a 24-hour period is 150 micrograms per cubic meter. The standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 micrograms per cubic meter is equal to or less than one averaged over 3 years.

^b Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^c Monitor uses a high-volume SA/GMW-1200 (AQS Method Code 063), U.S. EPA reference method designation RFPS-1087-063

^d Monitor uses a low-volume Thermo R&P 2025 (AQS Method Code 127), U.S. EPA reference method designation RFPS-1298-127

^e Monitor used a Ruprecht & Patshneck TEOM Series 1400 (AQS Method Code 079), U.S. EPA equivalent method designation EQPM-1090-079 until 3/31/2009 when it was replaced with a low-volume Thermo R&P 2025 (AQS Method Code 127), U.S. EPA reference method designation RFPS-1298-127

^f Monitor uses a high-volume-Wedding-inlet (AQS Method Code 062), U.S. EPA reference method designation RFPS-1087-062

^g Monitor used a high-volume-Wedding-inlet (AQS Method Code 062), U.S. EPA reference method designation RFPS-1087-062 until 2010. In 2013 the monitor was replaced with a Ruprecht & Patshneck TEOM Series 1400 (AQS Method Code 079), U.S. EPA equivalent method designation EQPM-1090-079

^h Monitor used a Ruprecht & Patshneck TEOM Series 1400 (AQS Method Code 079), U.S. EPA equivalent method designation EQPM-1090-079

ⁱ Operated by the Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403)

Table 21 Ambient Concentrations and Required Number of PM₁₀ Monitors for North Carolina Metropolitan Statistical Areas (MSA)

MSA	Population Estimate (2012) ^a	2012 PM ₁₀ 24-Hour Maximum Ambient Concentration As percent of NAAQS	Number of Monitors operated in North Carolina	
			Required ^b	Current
Charlotte-Concord-Gastonia	2,296,569	33	2-4	3
Virginia Beach-Norfolk-New Port News, VA-NC	1,699,925	25	2-4	0 ^c
Raleigh	1,188,564	23	2-4	1 ^d
Greensboro-High Point	736,065	19	1-2	1
Winston-Salem	647,697	21	1-2	1
Durham-Chapel Hill	522,826	24	1-2	1
Asheville	432,406	20 ^e	0-1	0
Myrtle Beach-Conway-North Myrtle Beach, SC-NC	394,542	Not Available	0-1	0
Fayetteville	374,585	20	0-1	1
Hickory	363,627	20	0-1	1
Wilmington	263,429	10 ^f	0-1	0
Jacksonville	183,263	25 ^g	0	0
Greenville	172,554	Not Available	0	0
Burlington	153,920	Not Available	0	0
Rocky Mount	151,662	30 ^h	0	0
New Bern	128,119	Not Available	0	0
Goldsboro	124,246	21 ^g	0	0

^a Source: U.S. Census Bureau, Population Division, Released April 2012, available on the world wide web at <http://www.census.gov/popest/data/counties/totals/2011/index.html>

^b 40 CFR 58 Appendix D Table D-4

^c The Virginia Department of Environment operates 2 PM₁₀ monitors

^d The NC-DAQ received a waiver in 2008 for the second required PM₁₀ monitor

^e PM₁₀ 24-hour maximum ambient concentration is from 2009

^f Only 8 samples were collected from mid February to the end of March 2008.

^g PM₁₀ 24-hour maximum ambient concentration is from 2007

^h PM₁₀ 24-hour maximum ambient concentration is from 2006

Table 22 North Carolina PM₁₀ Monitoring Network – Monitor Locations

Charlotte-Concord-Gastonia Metropolitan Statistical Area

AQS Site Id Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
370710016	Grier Middle School	1622 East Garrison Blvd.	Gastonia	W 081 09' 20"	N 35 15' 16"	Charlotte-Concord-Gastonia
371190003 ^a	#11 Fire Station	Fire Station #11, 620 Moretz Avenue	Charlotte	W 080 49' 29"	N 35 15' 06"	Charlotte-Concord-Gastonia
371190041 ^a	Garinger	1130 Eastway Drive	Charlotte	W 080 46' 59"	N 35 14' 28"	Charlotte-Concord-Gastonia
371190042 ^{a, b}	Montclair	1935 Emerywood Drive	Charlotte	W 080 52' 01"	N 35 09' 05"	Charlotte-Concord-Gastonia

Raleigh Metropolitan Statistical Area

AQS Site Id Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
371830014	Millbrook	3801 Spring Forest Road	Raleigh	W 078 34' 27"	N 35 51' 22"	Raleigh

Greensboro-High Point Metropolitan Statistical Area

AQS Site Id Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
370810013	Mendenhall	205 Willoughby Blvd.	Greensboro	W 079 48' 04"	N 36 06' 33"	Greensboro-High Point

Winston-Salem Metropolitan Statistical Area

AQS Site Id Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
370670022 ^e	Hattie Avenue	Corner of 13 th & Hattie Avenue	Winston-Salem	W 080 13' 36"	N 36 06' 38"	Winston-Salem

Durham-Chapel Hill Metropolitan Statistical Area

AQS Site Id Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
370630015 ^d	Durham Armory	801 Stadium Drive	Durham	W 078 54' 14"	N 36 01' 58"	Durham-Chapel Hill

Fayetteville Metropolitan Statistical Area

AQS Site Identification Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
370510009	William Owens	4533 Raeford Road	Fayetteville	W 078 57' 19"	N 35 07' 49"	Fayetteville

Hickory Metropolitan Statistical Area

AQS Site Id Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
370350004 ^f	Hickory Water Tower	Water Tank 15 First Avenue	Hickory	W 081 21' 58"	N 35 43' 45"	Hickory

Not in a Metropolitan Statistical Area Valley, Piedmont and Coastal Sites

AQS Site Identification Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
370330001 ^c	Cherry Grove	7074 Cherry Grove Road	Reidsville	W 079 28' 5"	N 36 18' 25"	None
370610002 ^c	Kenansville	328 Limestone Road	Kenansville	W 077 57' 65"	N 34 57' 29"	None
371110004 ^c	East Marion	700 State Street	Marion	W 081 59' 38"	N35 41' 15"	None

Table 22 North Carolina PM₁₀ Monitoring Network – Monitor Locations

371170001 ^c	Jamesville	33215 US Highway 64	Jamesville	W 076 54' 23"	N 35 48' 38"	None
371230001 ^c	Candor	112 Perry Drive	Candor	W 079 50' 11"	N 35 15' 47"	None

^a Operated by Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^b This site has a collocated low volume PM₁₀ monitor.

^c One of six background PM₁₀ monitors that operates for one year every three years.

^d Monitor started in 2011 to meet minimum PM₁₀ monitoring requirements in the Durham-Chapel Hill MSA.

^e Operated by the Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403)

^f This site has a collocated high volume PM₁₀ monitor.

PM₁₀ Monitors



Figure 29. PM 10 Monitor Locations

Table 23 Statement of Purpose for North Carolina PM₁₀ Monitoring Network

Charlotte-Concord-Gastonia Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule	Statement of Purpose	Monitoring Objective	Scale
370710016	Grier Middle School	SPECIAL PURPOSE	24-hour, midnight to midnight, 1 in 6 day ^c	Industrial expansion monitoring for PSD modeling.	Population Exposure	Neighborhood
371190003 ^a	#11 Fire Station	SLAMS	24-hour, midnight to midnight, 1 in 6 day	Required by Appendix D. Compliance w/NAAQS. Industrial expansion monitoring for PSD modeling.	Highest Concentration/Population Exposure	Neighborhood
371190041 ^a	Garinger	SLAMS	24-hour, midnight to midnight, 1 in 3 day	Required by Appendix D for NCore sites in 2011. Compliance w/NAAQS. Industrial expansion monitoring for PSD modeling.	Population Exposure	Neighborhood
371190042 ^{a, b}	Montclaire	SLAMS	24-hour, midnight to midnight, 1 in 3 day	Required by Appendix D. Collocated low volume PM10 site required by Appendix A. Compliance w/NAAQS. Industrial expansion monitoring for PSD modeling.	Population Exposure	Neighborhood

Raleigh Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule	Statement of Purpose	Monitoring Objective	Scale
371830014	Millbrook	Proposed NCORE	24-hour, midnight to midnight, 1 in 3 day	Required by Appendix D. Compliance w/NAAQS. Industrial expansion monitoring for PSD modeling.	Population Exposure	Neighborhood

Greensboro-High Point Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule	Statement of Purpose	Monitoring Objective	Scale
370810013	Mendenhall	SLAMS	24-hour, midnight to midnight, 1 in 6 day	Required by Appendix D. Compliance w/NAAQS. Industrial expansion monitoring for PSD modeling.	Population Exposure/General/Background	Neighborhood/Urban

Winston-Salem Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule	Statement of Purpose	Monitoring Objective	Scale
370670022 ^d	Hattie Avenue	SLAMS	Hourly	Required by Appendix D. Compliance w/NAAQS. Industrial expansion monitoring for PSD modeling.	Population Exposure	Neighborhood

Durham-Chapel Hill Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule	Statement of Purpose	Monitoring Objective	Scale
370630015 ^c	Durham Armory	SLAMS	24-hour, midnight to midnight, 1 in 3 day	Required by Appendix D. Compliance w/NAAQS. Industrial expansion monitoring for PSD modeling.	Population Exposure	Neighborhood

Table 23 Statement of Purpose for North Carolina PM₁₀ Monitoring Network

Fayetteville Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule	Statement of Purpose	Monitoring Objective	Scale
370510009	William Owens	SLAMS	24-hour, midnight to midnight, 1 in 6 day	Required by Appendix D. Compliance w/NAAQS. Industrial expansion monitoring for PSD modeling.	Population Exposure	Urban

Hickory Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule	Statement of Purpose	Monitoring Objective	Scale
370350004 ^e	Hickory Water Tower	SLAMS	24-hour, midnight to midnight, 1 in 6 day	Required by Appendix D. Compliance w/NAAQS. Industrial expansion monitoring for PSD modeling.	General/Background	Neighborhood

Not in a Metropolitan Statistical Area – Valley, Piedmont, and Coastal Sites

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule	Statement of Purpose	Monitoring Objective	Scale
370330001	Cherry Grove	Special Purpose	24-hour, midnight to midnight, 1 in 6 day	Industrial expansion monitoring for PSD modeling for northern piedmont areas	Population Exposure General/Background	Urban
370610002 ^f	Kenansville	SLAMS	hourly	Industrial expansion monitoring for PSD modeling for coastal areas	Population Exposure General/Background	Neighborhood
371110004	East Marion	SLAMS	24-hour, midnight to midnight, 1 in 6 day	Industrial expansion monitoring for PSD modeling for foothill areas	Population Exposure	Neighborhood
371170001	Jamesville	Non-regulatory	24-hour, midnight to midnight, 1 in 6 day	Industrial expansion monitoring for PSD modeling for northern coastal areas	General/Background	Regional
371230001	Candor	SLAMS	24-hour, midnight to midnight, 1 in 6 day	Industrial expansion monitoring for PSD modeling for sand hill areas	Population Exposure General/Background	Regional

^a Operated by Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^b This site has a collocated low volume PM₁₀ monitor.

^c Monitor started January 1, 2011.

^d Operated by the Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403)

^e This site has a collocated high volume PM₁₀ monitor

Table 24 Status of North Carolina PM₁₀ Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network ^a

Charlotte-Concord-Gastonia Metropolitan Statistical Area

AQS Site Id Number	Site Name	Meets Requirements of Part 58 Appendices ^b			Proposal to Move or Change
		A	C	D	
370710016	Grier Middle School	Yes	Yes: RFPS-1087-062	No	Started 3/5/13 and operates every third year
371190003 ^c	#11 Fire Station	Yes	Yes: RFPS-1287-063	Yes	None
371190041 ^c	Garinger	Yes	Yes: RFPS-1298-127	Yes	None
371190042 ^c	Montclair	Yes	Yes: RFPS-1298-127	Yes	None

Raleigh Metropolitan Statistical Area

AQS Site Id Number	Site Name	Meets Requirements of Part 58 Appendices ^d			Proposal to Move or Change
		A	C	D	
371830014	Millbrook	No	Yes: RFPS-1298-127	Yes	None

Greensboro-High Point Metropolitan Statistical Area

AQS Site Id Number	Site Name	Meets Requirements of Part 58 Appendices ^e			Proposal to Move or Change
		A	C	D	
370810013	Mendenhall	Yes	Yes: RFPS-1087-062	Yes	None

Winston-Salem Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Meets Requirements of Part 58 Appendices ^f			Proposal to Move or Change
		A	C	D	
370670022	Hattie Avenue	Yes	Yes: EQPM-1090-079	Yes	None

Durham-Chapel Hill Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Meets Requirements of Part 58 Appendices ^d			Proposal to Move or Change
		A	C	D	
370630015	Durham Armory	No	Yes: RFPS-1298-127	Yes	None

Fayetteville Metropolitan Statistical Area

AQS Site Id Number	Site Name	Meets Requirements of Part 58 Appendices ^e			Proposal to Move or Change
		A	C	D	
370510009	William Owens	Yes	Yes: RFPS-1087-062	Yes	None

Hickory Metropolitan Statistical Area

AQS Site Id Number	Site Name	Meets Requirements of Part 58 Appendices ^e			Proposal to Move or Change
		A	C	D	
370350004	Hickory Water Tower	Yes	Yes: RFPS-1087-062	Yes	None

Not in a Metropolitan Statistical Area – Valley, Piedmont and Coastal Sites

AQS Site Identification Number	Site Name	Meets Requirements of Part 58 Appendices ^e			Proposal to Move or Change
		A	C	D	
370330001	Cherry Grove	Yes	Yes: RFPS-1087-062	Not Required	Monitor started on 1/1/2013 and operates every third year
370610002	Kenansville	Yes	Yes: EQPM-1090-079	Not Required	Monitor is operating in 2013 and operates every third year
371110004	East Marion	Yes	Yes: RFPS-1087-062	Not Required	Monitor operated in 2011 and will operate again in 2014
371170001	Jamesville	Yes	Yes: RFPS-1087-062	Not Required	Monitor operated in 2012 and will operate again in 2015
371230001	Candor	Yes	Yes: RFPS-1087-062	Not Required	Monitor operated in 2011 and will operate again in 2014

^a All monitors provide data that are suitable for comparing to the NAAQS.

^b All monitors meet the requirements of Appendix E of 40CFR58.

Table 24 Status of North Carolina PM₁₀ Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network^a

^c Operated by Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^d The Quality Assurance Project Plan and Standard Operating Procedures are being written for the low volume PM₁₀ monitor operated by the NC-DAQ. The monitor meets the requirements of Appendix E of 40CFR58.

^e The Quality Assurance Project Plan and Standard Operating Procedures are being revised to reflect changes made to the monitoring regulations in 2006. All monitors meet the requirements of Appendix E of 40 CFR 58.

^f Operated by the Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403)

VII. Fine Particle (PM_{2.5}) Monitoring Network

The North Carolina Division of Air Quality (NC-DAQ) currently operates one of the largest fine particle monitoring networks in the Southeast. This strong network has greatly benefited the state by enabling the NC-DAQ to learn how fine particles are transported to and within the state, to identify the parts of the state with the highest concentrations of fine particles, and to know where fine particle concentrations do and do not exceed the National Ambient Air Quality Standards (NAAQS).

Table 25 provides the highest fine particle design values for the monitors in North Carolina for the past five years. This information is important because the monitoring regulations promulgated by the U.S. EPA in 2006 require a monitor to be attaining the NAAQS for the past five years before the monitor can be shut down. A total of 15 of the currently operating monitors, listed in Table 26, meet this requirement. However, as indicated in Table 26, 40CFR58 Appendix D requires six of these 15 monitors. Only 14 of these monitors, as indicated in Table 26, meet the additional requirement of having less than 10 % probability of exceeding 80 % of the NAAQS during the next three years. Thus, there are 8 monitors that are not required by Appendix D that meet all of the requirements of 40CFR58 to be shut down. The NC-DAQ reviewed these 8 monitors and their current monitoring objectives and decided to shut down three of these monitors at the end of 2013: 37-065-0004 on Springfield Road in Rocky Mount, 37-107-0004 on the Lenoir Community College campus in Kinston, and 37-183-0020 on Finley Farm in Raleigh. The design values for the last six years for these three monitors are graphed in Figure 30. Figure 31 through Figure 36 show time series and correlations of these three monitors with other nearby monitors.

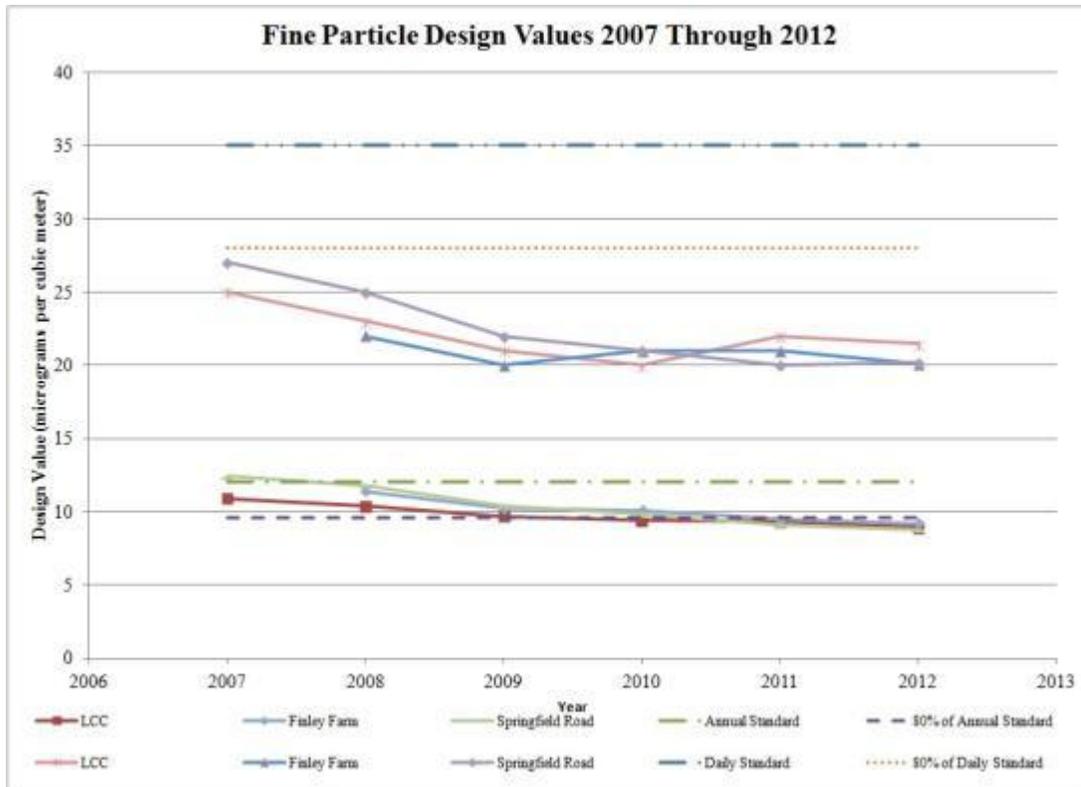


Figure 30. Historical Design Values for Sites Proposed to be Shut Down

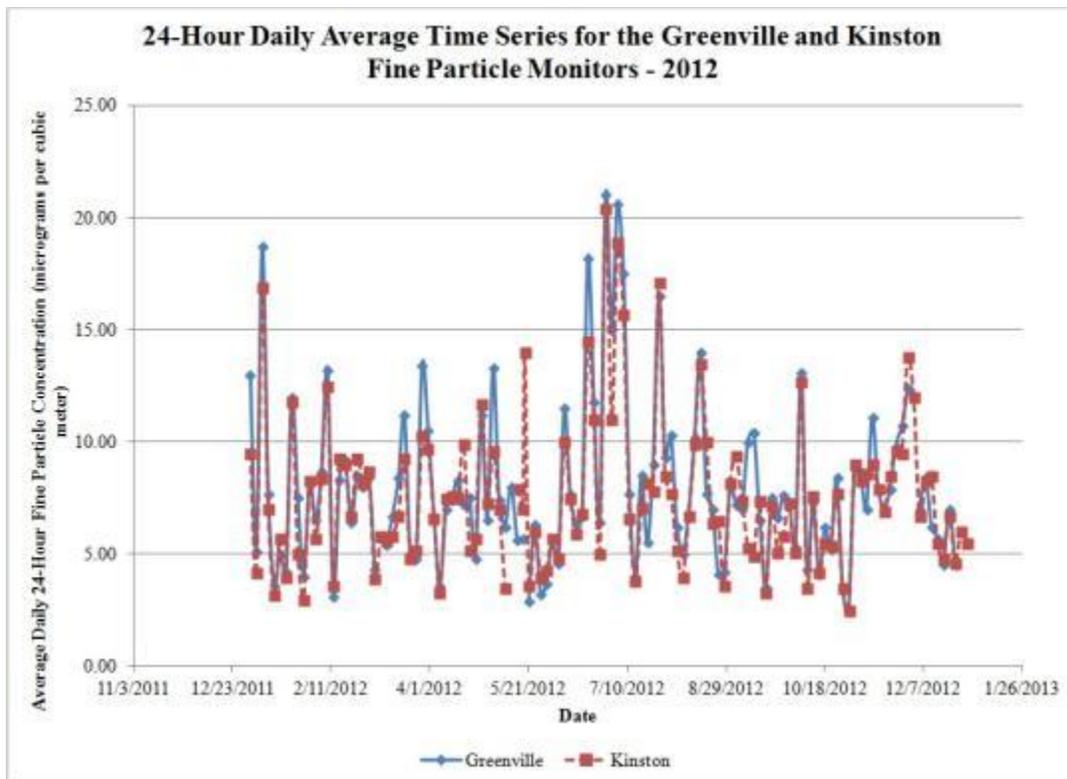


Figure 31. Average 24-Hour Fine Particle Concentrations at Greenville and Kinston

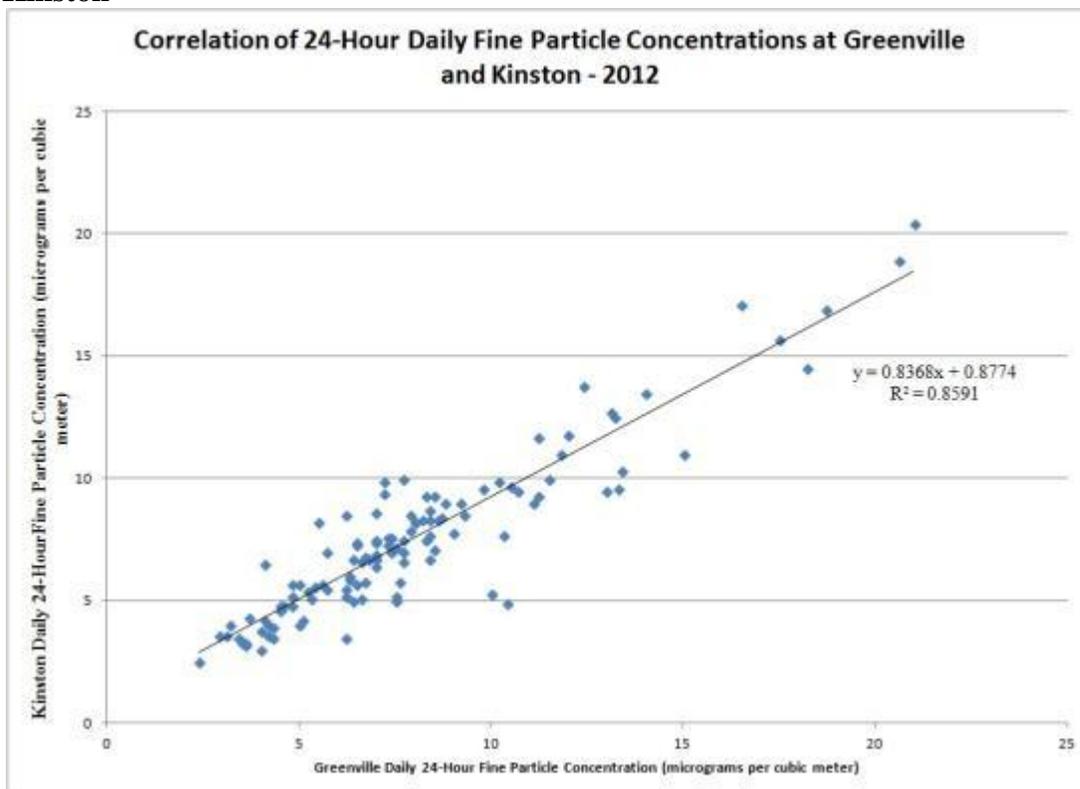


Figure 32. 24-Hour Fine Particle Correlation for the Kinston and Greenville Monitors

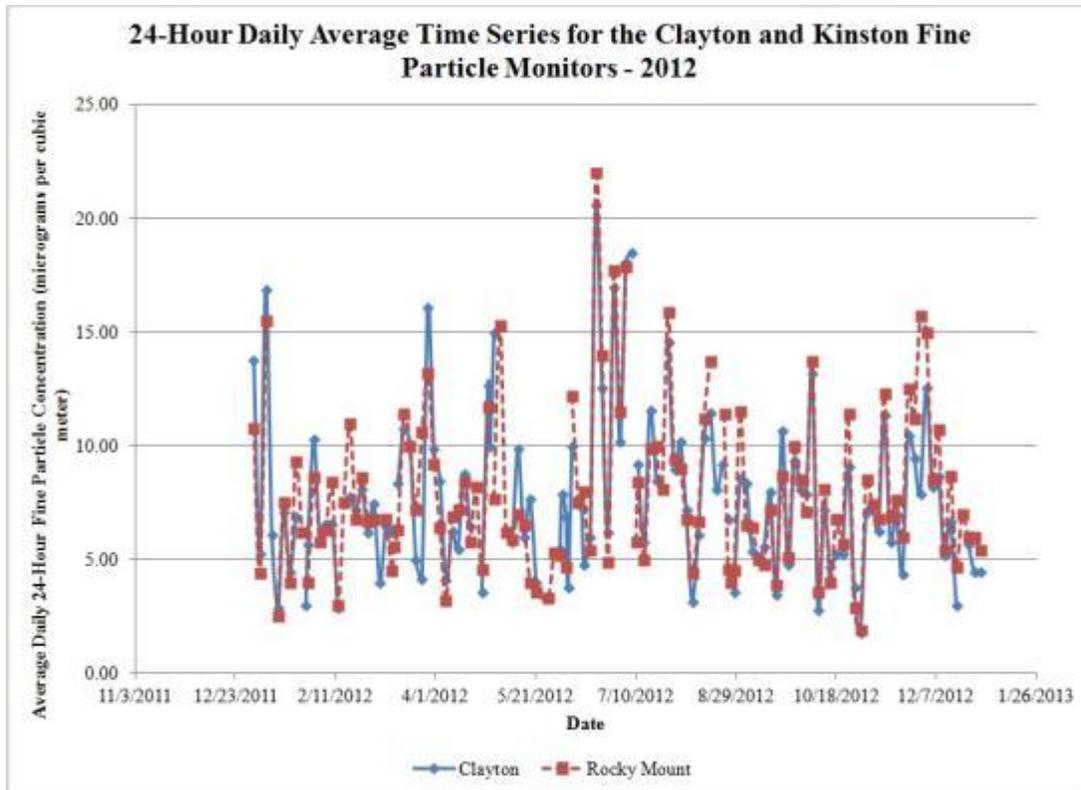


Figure 33. Daily Fine Particle Concentrations at Clayton and Rocky Mount in 2012

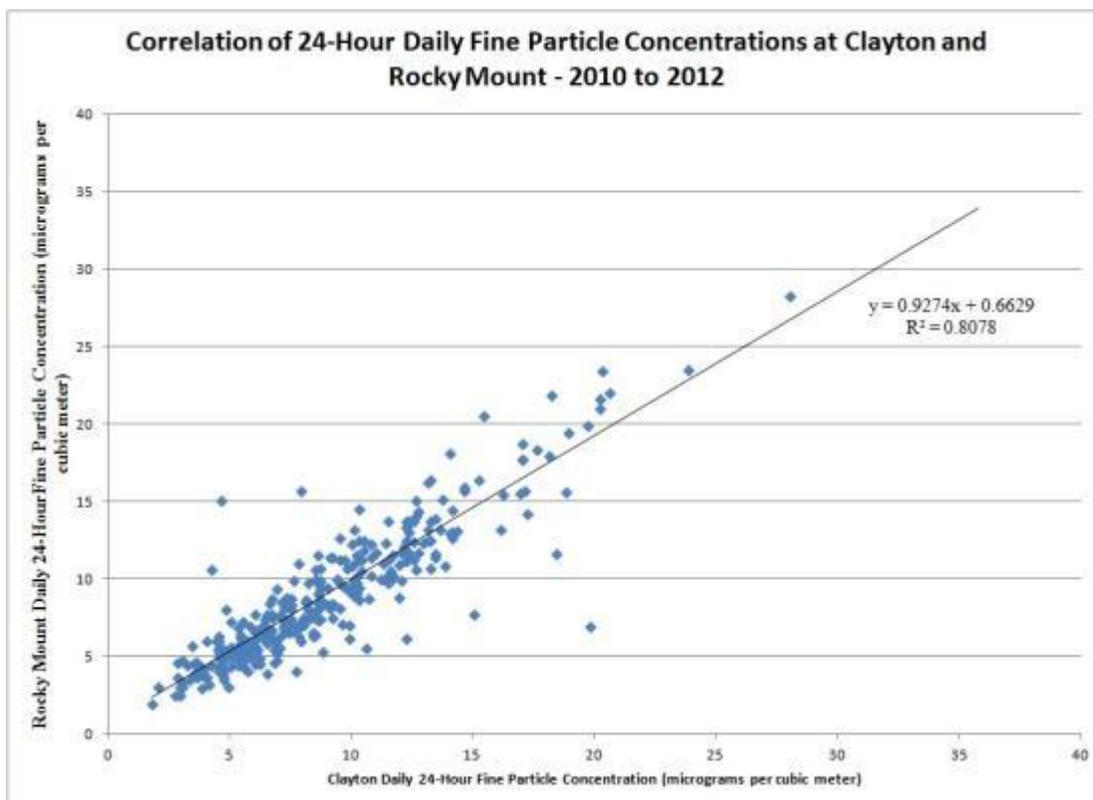


Figure 34. Correlation of Daily Fine Particle Concentrations at Clayton and Rocky Mount

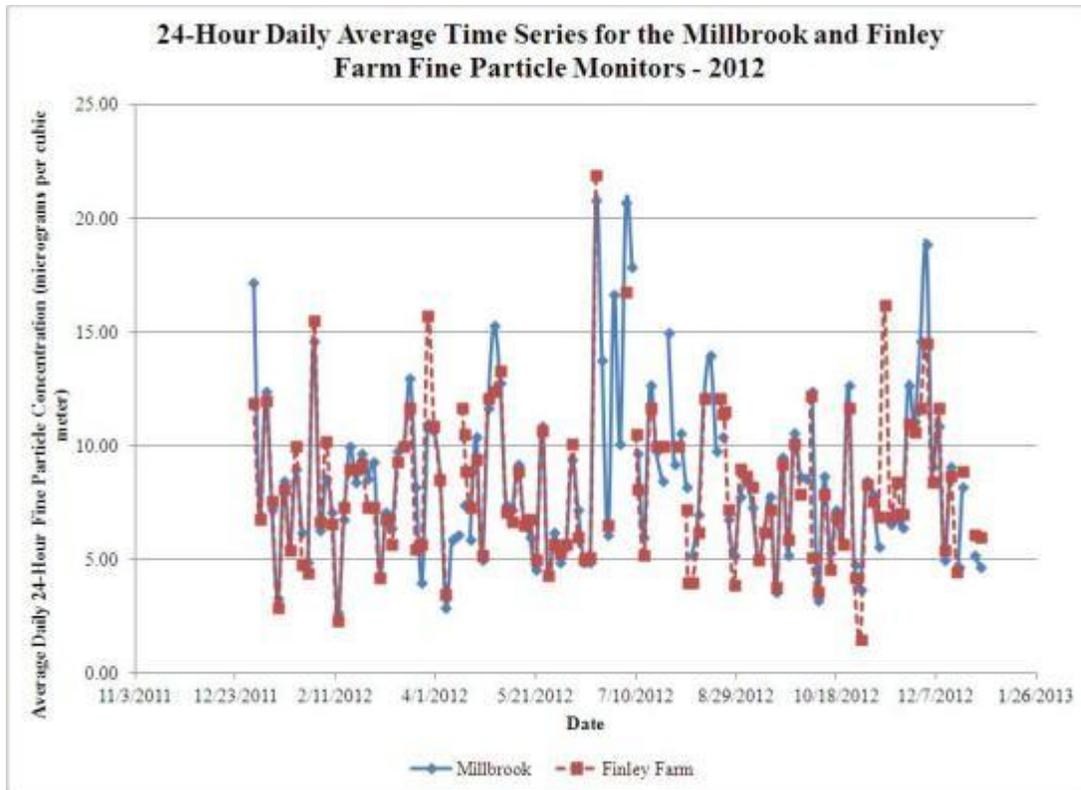


Figure 35. Fine Particle Concentrations at Millbrook and Finley Farm in 2012

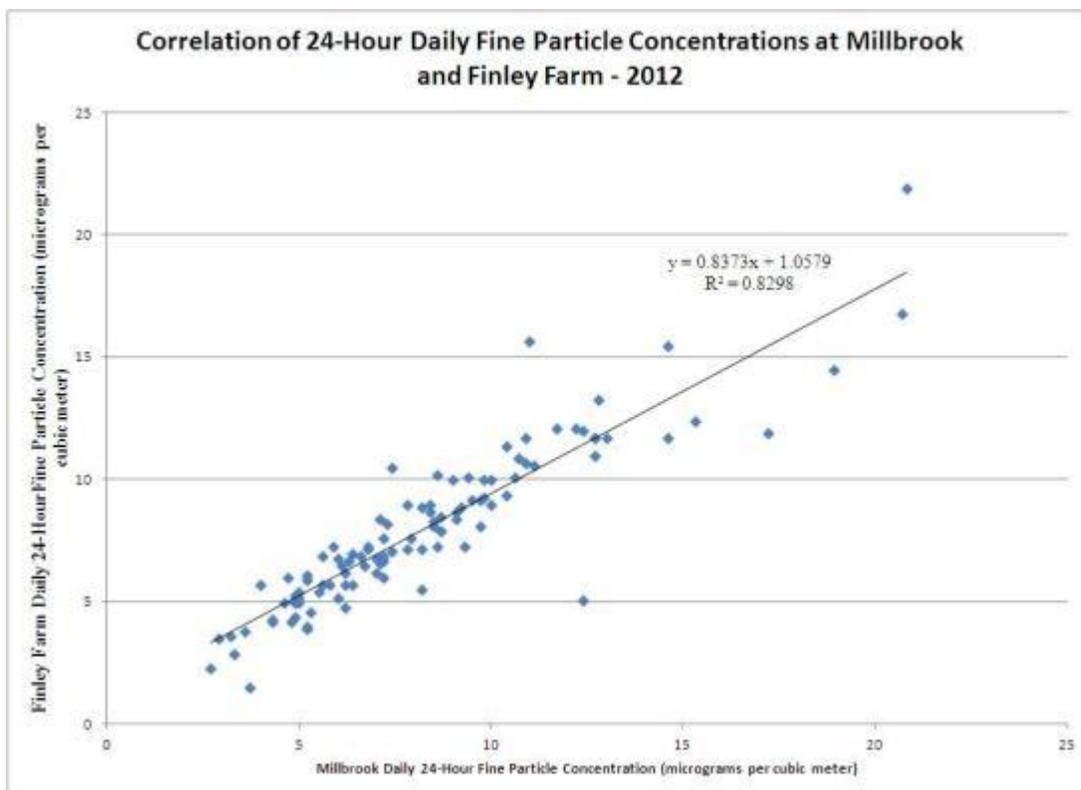


Figure 36. Correlation of Fine Particle Concentrations between Finley Farm and Millbrook

The NC-DAQ decided to shut down these three monitors for several reasons. Shutting down the Finley Farm monitor in Raleigh and Springfield Road monitor in Rocky Mount frees up resources to do other required monitoring in the Raleigh region. The NC-DAQ will start monitoring for nitrogen dioxide at two locations in Raleigh and shale gas development baseline monitoring in Lee County in 2013. Also, as shown in Figure 31 through Figure 36 the fine particle concentrations measured by these monitors track well and are correlated with the fine particle concentrations measured by other nearby monitors. Thus, the fine particle concentrations measured by these monitors can be represented by the concentrations measured by nearby monitors. Because of the extensive fine particle network operated by the state, shutting down these three fine particle monitors still allows adequate baseline monitoring coverage throughout the eastern part of the state for modeling purposes for prevention of significant deterioration applications.

In addition to shutting down these three monitors, the NC-DAQ is also looking for a location on the campus of Wayne Community College (WCC) for the fine particle monitors at Dillard Middle School in Goldsboro. Relocating the particle monitors will improve regional office efficiency while allowing Appendix E siting criteria to be maintained. The proposed ozone monitoring regulation from 2008 required an ozone monitor in Goldsboro. The NC-DAQ anticipates the 2013 ozone proposal will include a similar requirement. Thus, the NC-DAQ is proactively moving the fine particle monitors to the northeast side of Goldsboro, which is a better location for an ozone monitor than the Dillard Middle School site. Moving the particle monitors to WCC will enable the NC-DAQ to maintain and operate a single site in Goldsboro instead of two sites. As shown in Figure 37, WCC is approximately 3.6 miles northeast of Dillard Middle School, and about 2.3 miles from the center of Goldsboro. The direct line to Highway 70 is about 1 mile east northeast. If a suitable location is found on campus, the NC-DAQ will move the particle monitors to the new location by January 1, 2014.

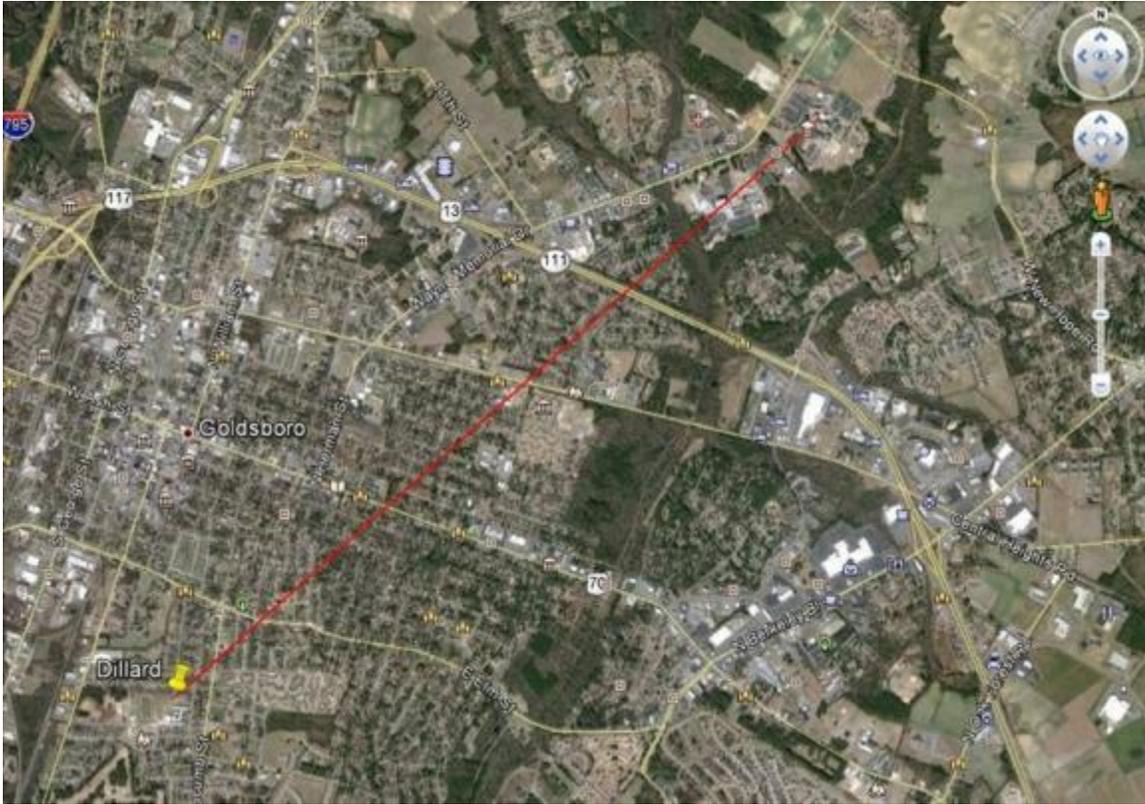


Figure 37. Location of Wayne Community College in relationship to Dillard Middle School

The locations of the current fine particle-monitoring sites are provided in Table 28. All monitors listed in Table 28 are suitable for comparison to the National Ambient Air Quality Standards (NAAQS). All of the monitors meet the requirements of Appendices A, C, D, and E of 40CFR58. All of these monitors except the monitor at Bryson and Millbrook use the U.S. EPA reference method designation RFPS-0498-118. The monitors at Bryson and Millbrook use the U.S. EPA Automated Equivalent Method: EQPM-0308-170. Figure 38 shows the locations of the currently operating monitors.

Table 29 provides the monitor type, operating schedules, monitoring objectives, scales, and statement of purpose for all of the current and proposed monitors in the North Carolina Fine Particle Monitoring Network. All monitors except the Millbrook and Bryson monitor operate on a 24-hour schedule from midnight to midnight on each scheduled sampling day. The Millbrook and Bryson monitors collect data each hour. All of the monitors operate year-round. Table 30 summarizes the status for each current and proposed monitoring site regarding whether it is suitable for comparison to the NAAQS and meets the requirements in 40 CFR58 Appendices A, C, D, and E and also provides the proposed changes to the network.

Table 31 lists the sites in the North Carolina Fine Particle monitoring network with continuous monitors, their sampling schedules, monitoring objectives, scale of representation, and statement of purpose. Table 32 indicates whether the monitor is suitable for comparison to the NAAQS, it meets 40CFR58 Appendix C and D requirements and any proposed changes.

Table 25 Fine Particle Concentrations Measured by the North Carolina Fine Particle Monitoring Network in the Last Five Years (2008-2012) ^a

Charlotte-Concord-Gastonia Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 24-hr design value			Highest annual design value		
		Value (μm^3)	% of NAAQS	Year	Value (μm^3)	% of NAAQS	Year
370710016	Grier Middle School	27	77 %	2006-2008	13.3	111 %	2006-2008
371190041 ^b	Garinger	33	95 %	2006-2008	13.7	114 %	2006-2008
371190042 ^b	Montclair	27	77 %	2006-2008	13.9	116 %	2006-2008
371190043 ^b	Oakdale	31	89 %	2006-2008	13.3	111 %	2006-2008
371590021	Rockwell	28	81 %	2006-2008	13.6	113 %	2006-2008

Raleigh Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 24-hr design value			Highest annual design value		
		Value (μm^3)	% of NAAQS	Year	Value (μm^3)	% of NAAQS	Year
37101000	West Johnston	17	49 %	2007-2009	9.3	77.5 %	2008-2010
371830014	Millbrook	30	86 %	2006-2008	12.7	106 %	2006-2008
371830020	Finley Farm	22.4	64 %	2006-2008	11.4	95.0 %	2006-2008

Greensboro-High Point Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 24-hr design value			Highest annual design value		
		Value (μm^3)	% of NAAQS	Year	Value (μm^3)	% of NAAQS	Year
370810013	Mendenhall	28	81 %	2006-2008	13.0	108 %	2006-2008
370810014	Colfax	24.1	69 %	2006-2008	12.3	102 %	2006-2008

Winston-Salem Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 24-hr design value			Highest annual design value		
		Value (μm^3)	% of NAAQS	Year	Value (μm^3)	% of NAAQS	Year
370670022 ^c	Hattie Ave.	29	83 %	2006-2008	13.3	111 %	2006-2008
370670030 ^c	Clemmons School	29	83 %	2006-2008	13.2	110 %	2006-2008

Durham-Chapel Hill Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 24-hr design value			Highest annual design value		
		Value (μm^3)	% of NAAQS	Year	Value (μm^3)	% of NAAQS	Year
370370004	Pittsboro	26	74 %	2006-2008	11.6	96.7 %	2006-2008
370630001	Durham Health	30	86 %	2006-2008	13.3	111 %	2006-2008
370630015	Durham Armory	24	69 %	2006-2008	11.7	97.5 %	2006-2008
371350007	HR	28	81 %	2006-2008	12.5	104 %	2006-2008

Asheville Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 24-hr design value			Highest annual design value		
		Value (μm^3)	% of NAAQS	Year	Value (μm^3)	% of NAAQS	Year
370210034 ^d	Board of Ed	27	77 %	2006-2008	11.2	93.3 %	2006-2008
370870010	Waynesville Fire Station	29	83 %	2006-2008	12.7	106 %	2006-2008
370870012	Waynesville Recreation	25	71 %	2006-2008	11.7	78 %	2006-2008

Table 25 Fine Particle Concentrations Measured by the North Carolina Fine Particle Monitoring Network in the Last Five Years (2008-2012) ^a

Fayetteville Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 24-hr design value			Highest annual design value		
		Value (μm^3)	% of NAAQS	Year	Value (μm^3)	% of NAAQS	Year
370510009	William Owen	28	81 %	2006-2008	13.0	108 %	2006-2008

Hickory Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 24-hr design value			Highest annual design value		
		Value (μm^3)	% of NAAQS	Year	Value (μm^3)	% of NAAQS	Year
370350004	Hickory Water Tower	30	86 %	2006-2008	14.2	118 %	2006-2008

Wilmington Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 24-hr design value			Highest annual design value		
		Value (μm^3)	% of NAAQS	Year	Value (μm^3)	% of NAAQS	Year
371290002	Castle Hayne	26	74 %	2009-2011	9.0	75.0 %	2006-2008

Jacksonville Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 24-hr design value			Highest annual design value		
		Value (μm^3)	% of NAAQS	Year	Value (μm^3)	% of NAAQS	Year
371330005	Northwoods	24	69 %	2006-2008	10.1	84.2 %	2006-2008

Greenville Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 24-hr design value			Highest annual design value		
		Value (μm^3)	% of NAAQS	Year	Value (μm^3)	% of NAAQS	Year
371470005	Greenville South	24	69 %	2006-2008	11.0	91.7 %	2006-2008
371470006	Pitt Co Ag Center	23	66 %	2006-2008	11.0	91.7 %	2006-2008

Burlington Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 24-hr design value			Highest annual design value		
		Value (μm^3)	% of NAAQS	Year	Value (μm^3)	% of NAAQS	Year
370010002	Hopedale	28	81 %	2006-2008	12.9	108 %	2006-2008

Rocky Mount Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 24-hr design value			Highest annual design value		
		Value (μm^3)	% of NAAQS	Year	Value (μm^3)	% of NAAQS	Year
370650004	Springfield Rd	25	77 %	2006-2008	11.8	98.3 %	2006-2008

Goldsboro Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Highest 24-hr design value			Highest annual design value		
		Value (μm^3)	% of NAAQS	Year	Value (μm^3)	% of NAAQS	Year
371910005	Dillard	28	81 %	2006-2008	12.2	102 %	2006-2008

Table 25 Fine Particle Concentrations Measured by the North Carolina Fine Particle Monitoring Network in the Last Five Years (2008-2012) ^a

Not in a Metropolitan Statistical Area – Valley, Piedmont and Coastal Sites

AQS Site Identification Number	Site Name	Highest 24-hr design value			Highest annual design value		
		Value (μ/m^3)	% of NAAQS	Year	Value (μ/m^3)	% of NAAQS	Year
370330001	Cherry Grove	27	77 %	2006-2008	12.3	102 %	2006-2008
370570002	Lexington Water Tower	29	83 %	2006-2008	14.5	121 %	2006-2008
370610002	Kenansville	24	69 %	2006-2008	10.5	87.5 %	2006-2008
371070004	Lenoir Community College	23	66 %	2006-2008	10.4	86.7 %	2006-2008
371110004	East Marion	29	83 %	2006-2008	13.0	108 %	2006-2008
371170001	Jamesville	23	66 %	2006-2008	10.4	86.7 %	2006-2008
371210001	Spruce Pine	27	77 %	2006-2008	11.9	99.2 %	2006-2008
371230001	Candor	26	74 %	2006-2008	11.8	98.3 %	2006-2008
371550005	Linkhaw	27	77 %	2006-2008	12.3	102 %	2006-2008
371730002	Bryson City	27	77 %	2006-2008	12.1	101 %	2006-2008
371890003	Boone	25	71 %	2006-2008	10.7	89.2 %	2006-2008

^a All monitors use an R & P Model 2025 PM2.5 Sequential Monitor with a WINS impactor (Air Quality System (AQS) Method Code 118, U.S. EPA reference method designation RFPS-0498-118) except the Bryson and Millbrook monitors which started using a Met One BAM-1020 Monitor in 2011 (AQS Method Code 170). All monitors in this table meet the requirements of Appendices A, C, D, and E of 40CFR58.

^b Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^c Operated by the Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403).

^d Operated by the Western North Carolina Regional Air Quality Agency (AQS Reporting Agency 0779).

Table 26 Fine Particle Monitors that Have Demonstrated Attainment of the National Ambient Air Quality Standards for the Past Five Years

Site Code	Site Name	County	Required by 40CFR58 Appendix D?	Less than 10% probability of exceeding 80% of NAAQS in next 3 years?
37-021-0034 ^b	Board of Ed	Buncombe	No –	Yes
37-037-0004	Pittsboro	Chatham	No	Yes
37-061-0002	Kenansville	Duplin	Yes - general/ background monitor for the coastal part of the state	Yes
37-063-0015	Durham Armory	Durham	Yes – for the Durham-Chapel Hill MSA	Yes
37-065-0004	Springfield Road/ Rocky Mount	Edgecombe	No	Yes
370870012	Waynesville Recreation	Haywood	No – design value monitor for the Asheville MSA	No
371010002	West Johnston	Johnston	Yes – 1 of 2 required monitors for the Raleigh Cary MSA	Yes
37-107-0004	Lenoir Community College	Lenoir	No	Yes
37-117-0001	Jamesville	Martin	Yes - regional transport monitor for the coastal part of the state, providing information on the fine particle concentrations entering the state from Virginia and leaving the state toward Virginia	Yes
37-121-0001	Spruce Pine	Mitchell	No	Yes
37-123-0001	Candor	Montgomery	Yes - general/ background monitor for the central piedmont area of the state	Yes
37-129-0002	Castle Hayne	New Hanover	No	Yes
37-147-0006	Pitt Co Ag Center	Pitt	No	Yes
37-183-0020	Finley Farm	Wake	Not at this time	Yes
37-189-0003	Boone	Watauga	Yes – background and regional transport monitor for the mountains	Yes

**Table 27 Design Values and Required Fine Particle Monitors for North Carolina
Metropolitan Statistical Areas (MSA)**

MSA	Population Estimate (2012) ^a	2012 Fine Particle Design Value (As percent of NAAQS)		Number of Monitors operated in North Carolina	
		24-Hour	Annual	Required	Current
Charlotte-Concord-Gastonia, NC-SC	2,296,569	66	91	3	4
Virginia Beach-Norfolk-New Port News, VA-NC	1,699,925	74 ^b	86 ^b	3	0 ^c
Raleigh, NC	1,188,564	63	83	2	3
Greensboro-High Point	736,065	59	78	1	2
Winston-Salem	647,697	57	81	1	2
Durham- Chapel Hill	522,826	54	77	1	2
Asheville	432,406	62	82	0	2
Myrtle Beach-Conway-North Myrtle Beach, SC-NC	394,542	Not available		0	0
Fayetteville	374,585	61	83	0	1
Hickory	363,627	59	86	1	1
Wilmington	263,429	65	64	0	1
Jacksonville	183,263	Not available		0	0
Greenville	172,554	63	70	0	1
Burlington	153,920	56	80	0	1
Rocky Mount	151,662	58	74	0	1
New Bern	128,119	Not available		0	0
Goldsboro	124,246	58	79	0	1

^a Source: U.S. Census Bureau, Population Division, Released March 2013, available on the world wide web at <http://www.census.gov/popest/data/counties/totals/2012/index.html>

^b Design value for 2009-2011.

^c Virginia Department of Environmental Quality (VDEQ), Office of Air Quality Monitoring operates three monitors in this MSA.

^d Based on measurements taken in 2007, when the monitor was shut down.

Table 28 North Carolina Fine Particle Monitoring Network – Monitor Locations ^a

Charlotte-Concord-Gastonia Metropolitan Statistical Area

AQS Site Identification Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
370710016	Grier Middle School	1622 East Garrison Blvd.	Gastonia	W 081 09' 20"	N 35 15' 16"	Charlotte-Concord-Gastonia
371190041 ^b	Garinger	1130 Eastway Drive	Charlotte	W 080 46' 59"	N 35 14' 28"	Charlotte-Concord-Gastonia
371190042 ^b	Montclair	1935 Emerywood Drive	Charlotte	W 080 52' 01"	N 35 09' 05"	Charlotte-Concord-Gastonia
371190043 ^b	Oakdale	513 Radio Road	Charlotte	W 080 53' 15"	N 35 18' 15"	Charlotte-Concord-Gastonia
371590021	Rockwell	301 West Street	Rockwell	W 080 23' 72"	N 35 33' 11"	None

Raleigh Metropolitan Statistical Area

AQS Site Identification Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
371010002	West Johnston	3411 Jack Road ^c	Clayton	W 078 26' 15"	N 35 30' 0"	Raleigh
371830014	Millbrook	3801 Spring Forest Road	Raleigh	W 078 34' 27"	N 35 51' 22"	Raleigh
371830020 ^c	Finley Farm	Lake Wheeler Road Field Lab	Raleigh	W 078 40' 47"	N 35 43' 41"	Raleigh

Greensboro-High Point Metropolitan Statistical Area

AQS Site Identification Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
370810013	Mendenhall	205 Wiloughby Blvd.	Greensboro	W 079 48' 04"	N 36 06' 33"	Greensboro
370810014 ^c	Colfax	2171 Sandy Ridge Road	High Point	W 080 01' 00"	N 36 00' 00"	Greensboro

Durham-Chapel Hill Metropolitan Statistical Area

AQS Site Identification Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
370370004	Pittsboro	325 Russett Run Road	Pittsboro	W 079 09' 55"	N 35 45' 32"	Durham-Chapel Hill
370630015 ^d	Durham Armory	801 Stadium Drive	Durham	W 078 54' 14"	N 36 01' 58"	Durham-Chapel Hill

Winston-Salem Metropolitan Statistical Area

AQS Site Identification Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
370670022 ^e	Hattie Ave.	Corner of 13 th & Hattie Avenue	Winston-Salem	W 080 13' 36"	N 36 06' 38"	Winston-Salem
370670030 ^e	Clemmons	Fraternity Church Road	Clemmons	W 080 20' 31"	N 36 01' 34"	Winston-Salem

Table 28 North Carolina Fine Particle Monitoring Network – Monitor Locations ^a

Asheville Metropolitan Statistical Area

AQS Site Identification Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
370210034 ^f	Board of Ed	175 Bingham Road	Asheville	W 082 37' 7"	N 35 36' 27"	Asheville
370870012 ^g	Waynesville Recreation Center	550 Vance Street	Waynesville	W 082 58' 45"	N 35 30' 21"	Asheville

Fayetteville Metropolitan Statistical Area

AQS Site Identification Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
370510009	William Owen	4533 Raeford Road	Fayetteville	W 078 57' 19"	N 35 07' 49"	Fayetteville

Hickory Metropolitan Statistical Area

AQS Site Identification Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
370350004	Hickory Water Tower	Water Tank 15 First Avenue	Hickory	W 081 21' 58"	N 35 43' 45"	Hickory

Wilmington Metropolitan Statistical Area

AQS Site Identification Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
371290002	Castle Hayne	6028 Holly Shelter Road	Castle Hayne	W 077 50' 36"	N 34 21' 87"	Wilmington

Greenville Metropolitan Statistical Area

AQS Site Identification Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
371470006 ^h	Pitt County	403 Government Cir	Greenville	W 077 21' 00"	N 35 38' 00"	Greenville

Burlington Metropolitan Statistical Area

AQS Site Identification Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
370010002	Hopedale	827 South Graham-Hopedale Road	Burlington	W 079 24' 30"	N 36 05' 20"	Burlington

Rocky Mount Metropolitan Statistical Area

AQS Site Identification Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
370650004	Springfield Rd	900 Springfield Road	Rocky Mount	W 077 45' 0"	N 35 56' 00"	Rocky Mount

Goldsboro Metropolitan Statistical Area

AQS Site Identification Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
371910005	Dillard	1101 South Devereau Street	Goldsboro	W 077 59' 63"	N 35 22' 16"	Goldsboro

Table 28 North Carolina Fine Particle Monitoring Network – Monitor Locations ^a

Not in a Metropolitan Statistical Area – Valley, Piedmont and Coastal Sites

AQS Site Id Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
370330001	Cherry Grove	7074 Cherry Grove Road	Reidsville	W 079 28' 5"	N 36 18' 25"	None
370570002	Lexington Water Tower	938 South Salisbury Street	Lexington	W 080 15' 77"	N 35 48' 87"	None
370610002	Kenansville	328 Limestone Road	Kenansville	W 077 57' 65"	N 34 57' 29"	None
371070004	Lenoir Community College	231 Highway 58 S	Kinston	W 077 34' 11"	N 35 13' 58"	None
371110004	East Marion	700 State Street	Marion	W 081 59' 38"	N35 41' 15"	None
371170001	Jamesville	33215 US Highway 64	Jamesville	W 076 54' 23"	N 35 48' 38"	None
371210001	Spruce Pine	138 Highland Avenue	Spruce Pine	W 082 04' 24"	N 35 54' 55"	None
371230001	Candor	112 Perry Drive	Candor	W 079 50' 11"	N 35 15' 47"	None
371550005	Linkhaw	1170 Linkhaw Road	Lumberton	W 078 59' 25"	N 34 38' 33"	None
371730002	Bryson City	Parks & Rec Bldg, Center Street	Bryson City	W083 26' 38"	N35 26' 06"	None
371890003	Boone	361 Jefferson Road	Boone	W 081 39' 47"	N 36 13' 19"	None

^a All monitors use an R & P Model 2025 PM2.5 Sequential Monitor with a WINS impactor (Air Quality System (AQS) Method Code 118) except the Bryson and Millbrook monitors which use a Met One BAM-1020 Monitor (Air Quality System (AQS) Method Code 170). All monitors listed in this table are suitable for comparison to the National Ambient Air Quality Standards. All monitors in this table meet the requirements of Appendices A, C, D, and E of 40CFR58. All monitors except the Bryson and Millbrook monitors use the U.S. EPA reference method designation RFPS-0498-118. Millbrook and Bryson monitors use the U.S. EPA Automated Equivalent Method: EQPM-0308-170.

^b Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^c This monitor started on January 1, 2008, to meet minimum monitoring requirements in 40CFR58 Appendix D.

^d This monitor started on January 1, 2008, to replace the Durham Health monitor.

^e Operated by the Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403).

^f Operated by the Western North Carolina Regional Air Quality Agency (AQS Reporting Agency 0779).

^g This monitor started on January 1, 2008, to replace the Waynesville Fire Station monitor.

^h This monitor started on January 1, 2008, to replace the South Greenville monitor. This site is a collocated fine particle and ozone monitoring site.

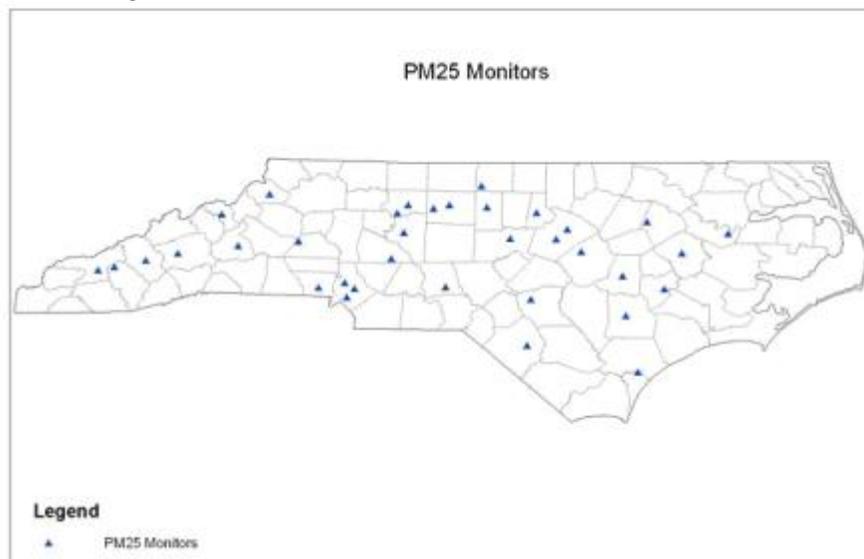


Figure 38. Locations of 2013 Fine Particle Monitoring Stations

Table 29 Statement of Purpose for North Carolina Fine Particle Monitoring Network ^a

Charlotte-Concord-Gastonia Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose	Monitoring Objective	Scale
370710016	Grier Middle School	SLAMS	1-in-6 day ^c	AQI Reporting. Compliance w/NAAQS.	Population Exposure	Neighborhood
371190041 ^d	Garinger	NCORE	1-in-3 day ^e	1 of 3 Required Monitors in Charlotte-Concord-Gastonia MSA. AQI Reporting. Compliance w/NAAQS.	Population Exposure	Neighborhood
371190042 ^d	Montclaire	SLAMS	1-in-3 day ^f	1 of 3 Required Monitors in Charlotte-Concord-Gastonia MSA. AQI Reporting. Compliance w/NAAQS.	Population Exposure	Neighborhood
371190043 ^d	Oakdale	SLAMS	1-in-3 day	1 of 3 Required Monitors in Charlotte-Concord-Gastonia MSA. AQI Reporting. Compliance w/NAAQS.	Population Exposure	Neighborhood
371590021	Rockwell	SLAMS	1-in-3 day ⁿ	Compliance with NAAQS.	Population Exposure	Neighborhood

Raleigh Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose	Monitoring Objective	Scale
371010002	West Johnston ^c	SLAMS	1-in-3 day	1 of 2 required Monitors in Raleigh MSA. AQI Reporting. Compliance w/NAAQS.	Population Exposure	Neighborhood
371830014	Millbrook	NCORE	Hourly; collocated 1-in-3 day ^g	1 of 2 Required Monitors in Raleigh MSA. AQI Reporting. Compliance w/NAAQS. Air Quality Forecasting	Population Exposure	Neighborhood
371830020 ^h	Finley Farm	SLAMS	1-in-3 day	AQI Reporting; Compliance w/NAAQS.	Population Exposure	Neighborhood

Greensboro-High Point Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose	Monitoring Objective	Scale
370810013	Mendenhall	SLAMS	1-in-6 day ^c	Required Monitor in Greensboro-High Point MSA. AQI Reporting. Compliance w/NAAQS.	Population Exposure/General/Background	Neighborhood
370810014 ^h	Colfax	SLAMS	1-in-3 day	AQI Reporting. Compliance w/NAAQS.	Population Exposure	Neighborhood

Winston-Salem Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose	Monitoring Objective	Scale
370670022 ^j	Hattie Ave.	SLAMS	1-in-1 day ^l	Required monitor for the Winston-Salem MSA. AQI Reporting. Compliance w/NAAQS.	Population Exposure	Neighborhood
370670030 ^j	Clemmons	SLAMS	1-in-3 day ^f	AQI Reporting. Compliance w/NAAQS.	Population Exposure	Neighborhood

Durham-Chapel Hill Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose	Monitoring Objective	Scale
370370004	Pittsboro	SLAMS	1-in-3 day	AQI Reporting. Compliance w/NAAQS	Population Exposure	Regional
370630015 ⁱ	Durham Armory	SLAMS	1-in-3 day ^c	Design Value monitor for the Durham-Chapel Hill MSA. AQI Reporting. Compliance w/NAAQS.	Population Exposure	Neighborhood

Table 29 Statement of Purpose for North Carolina Fine Particle Monitoring Network ^a

Asheville Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose	Monitoring Objective	Scale
370210034 ^m	Board of Ed	SLAMS	1-in-3 day ⁿ	AQI Reporting. Compliance w/NAAQS.	Population Exposure	Neighborhood
370870012 ^o	Waynesville Recreation Center	SLAMS	1-in-3 day	Design Value monitor for the Asheville MSA. AQI Reporting. Compliance with NAAQS.	Population Exposure	Neighborhood

Fayetteville Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose	Monitoring Objective	Scale
370510009	William Owen	SLAMS	1-in-6 day ^c	AQI Reporting. Compliance w/NAAQS.	Population Exposure	Neighborhood

Hickory Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose	Monitoring Objective	Scale
370350004	Hickory Water Tower	SLAMS	1-in-3 day ⁿ	Required monitor for the Hickory MSA. AQI Reporting. Compliance w/NAAQS.	Population Exposure	Neighborhood

Wilmington Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose	Monitoring Objective	Scale
371290002	Castle Hayne	SPECIAL PURPOSE	1-in-3 day ^c	To evaluate performance of the BAM in the coastal Carolina area	Population Exposure	Neighborhood

Greenville Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose	Monitoring Objective	Scale
371470006 ^p	Agricultural Extension	SLAMS	1-in-3 day	Compliance with NAAQS.	Population Exposure	Neighborhood

Burlington Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose	Monitoring Objective	Scale
370010002	Hopedale	SLAMS	1-in-6 day ^c	Compliance w/NAAQS.	Population Exposure	Neighborhood

Rocky Mount Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose	Monitoring Objective	Scale
370650004	Springfield Rd	SLAMS	1-in-3 day	Compliance with the NAAQS.	Population Exposure/ General/ Background	Neighborhood

Goldsboro Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose	Monitoring Objective	Scale
371910005	Dillard	SLAMS	1-in-3 day ^c	Compliance w/NAAQS.	Population Exposure	Urban

Table 29 Statement of Purpose for North Carolina Fine Particle Monitoring Network ^a

Not in a Metropolitan Statistical Area – Valley, Piedmont, and Coastal Sites

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose	Monitoring Objective	Scale
370330001	Cherry Grove	SLAMS	1-in-3 day ^c	Required regional transport monitor for the piedmont and central area of the state. Compliance w/NAAQS.	Population Exposure/ Regional Transport/ General/ Background	Urban
370570002	Lexington	SLAMS	1-in-3 day ^l	Required monitor for Nonattainment area. Compliance w/NAAQS	Population Exposure	Neighborhood
370610002 ^c	Kenansville	SLAMS	1-in-3 day	Required General/ Background monitor for the coastal area	Welfare Related Impacts/ General/ Background	Regional
371070004	Lenoir Community College	SLAMS	1-in-3 day	Compliance with NAAQS.	Population Exposure	Neighborhood
371110004	East Marion	SLAMS	1-in-3 day ^f	Compliance with NAAQS.	Population Exposure	Neighborhood
371170001	Jamesville	SLAMS	1-in-3 day ^c	Required regional transport monitor for coastal region, providing information on fine particle concentrations entering & leaving state. Compliance w/NAAQS.	Regional Transport/ General/ Background/ Population Exposure	Urban
371210001	Spruce Pine	SLAMS	1-in-3 day	Compliance with NAAQS.	Population Exposure	Neighborhood
371230001	Candor	SLAMS	1-in-3 day	Required General/ Background monitor for piedmont/central region	Welfare Related Impacts/General/ Background	Regional
371550005	Linkhaw	SLAMS	1-in-3 day	Compliance with NAAQS.	Population Exposure	Neighborhood
371730002	Bryson City	SLAMS	Hourly	Required Transport Monitor for Western Mountain Area. Compliance w/NAAQS. Air Quality Forecasting.	Regional Transport/ Population Exposure	Neighborhood
371890003	Boone	SLAMS	1-in-3 day	Required general/background monitor for western mountain area. Compliance w/NAAQS.	General/Background/ Population Exposure	Neighborhood

^a All monitors use an R & P Model 2025 PM2.5 Sequential Monitor with a WINS impactor (Air Quality System (AQS) Method Code 118) except the Bryson and Millbrook monitors which use a Met One BAM-1020 Monitor (Air Quality System (AQS) Method Code 170). All monitors listed in this table are suitable for comparison to the National Ambient Air Quality Standards. All monitors in this table meet the requirements of Appendices A, C, D, and E of 40CFR58. All monitors except the Bryson and Millbrook monitors use the U.S. EPA reference method designation RFPS-0498-118. Millbrook and Bryson monitors use the U.S. EPA Automated Equivalent Method: EQPM-0308-170.

^b All monitors operate on a 24-hour schedule, collecting a sample from midnight to midnight, Eastern Standard Time except the Bryson and Millbrook monitors, which operate hourly.

^c Collocated with a continuous fine particle monitor.

^d Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^e Collocated with an every 3rd day speciation monitor and a continuous fine particle monitor.

^f Collocated with an every 6th day precision monitor and a continuous fine particle monitor.

^g Collocated with a 1-in-3 day manual monitor and 1-in-3 day speciation monitor.

^h This monitor started on January 1, 2008, to meet minimum monitoring requirements in 40CFR58 Appendix D.

ⁱ This monitor started on January 1, 2008, to replace the Durham Health monitor.

^j Operated by the Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403).

^l Collocated with an every 6th day speciation monitor and a continuous fine particle monitor.

^m Operated by the Western North Carolina Regional Air Quality Agency (AQS Reporting Agency 0779).

ⁿ Collocated with an every 6th day precision monitor, an every 6th day speciation monitor, and a continuous fine particle

Table 29 Statement of Purpose for North Carolina Fine Particle Monitoring Network ^a

monitor.

^o This monitor started on January 1, 2008, to replace the Waynesville Fire Station monitor.

^p This monitor started on January 1, 2008, to replace the South Greenville monitor. This site is a collocated fine particle and ozone-monitoring site.

Table 30 Status of North Carolina Fine Particle Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network ^a

Charlotte-Concord-Gastonia Metropolitan Statistical Area				
AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^b	Proposal to Move or Change
			D	
370710016	Grier Middle School	Yes	No – not a required monitor.	None
371190041 ^c	Garinger	Yes	Yes- 1 of 3 Required Monitors for the Charlotte-Concord-Gastonia MSA.	None
371190042 ^c	Montclair	Yes	Yes- 1 of 3 Required Monitors for the Charlotte-Concord-Gastonia MSA.	None
371190043 ^c	Oakdale	Yes	Yes- 1 of 3 Required Monitors for the Charlotte-Concord-Gastonia MSA.	None
371590021	Rockwell	Yes	No – not a required monitor.	None

Raleigh Metropolitan Statistical Area				
AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^b	Proposal to Move or Change
			D	
371010002	West Johnston	Yes	Yes - 1 of 2 Required Monitors for the Raleigh MSA.	None
371830014	Millbrook	Yes	Yes - 1 of 2 Required Monitors for the Raleigh MSA.	None
371830020 ^d	Finley Farm	Yes	No – not a required monitor.	Monitor will shut down 12/31/13

Greensboro-High Point Metropolitan Statistical Area				
AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^b	Proposal to Move or Change
			D	
370810013	Mendenhall	Yes	Yes - Required Monitor for the Greensboro-High Point MSA.	None
370810014 ^d	Colfax	Yes	No – not a required monitor.	None

Winston-Salem Metropolitan Statistical Area				
AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^b	Proposal to Move or Change
			D	
370670022 ^f	Hattie Ave.	Yes	Yes- Required monitor for the Winston-Salem MSA.	None
370670030 ^f	Clemmons	Yes	No – not a required monitor.	None

Durham-Chapel Hill Metropolitan Statistical Area				
AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^b	Proposal to Move or Change
			D	
370370004	Pittsboro	Yes	No – not a required monitor.	None.
370630015 ^e	Durham Armory	Yes	Yes – Required monitor for the Durham-Chapel Hill MSA.	None

Asheville Metropolitan Statistical Area				
AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^b	Proposal to Move or Change
			D	
370210034 ^g	Board of Ed	Yes	No – not a required monitor.	None
370870012 ^h	Waynesville Recreation Center	Yes	No – not a required monitor.	None

Table 30 Status of North Carolina Fine Particle Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network ^a

Fayetteville Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^b D	Proposal to Move or Change
370510009	William Owen	Yes	No – not a required monitor.	None

Hickory Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^b D	Proposal to Move or Change
370350004	Hickory Water Tower	Yes	Yes - Required monitor for the Hickory MSA.	None

Wilmington Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^b D	Proposal to Move or Change
371290002	Castle Hayne	Yes	No – not a required monitor.	Method may change in 2014

Greenville Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^b D	Proposal to Move or Change
371470006 ⁱ	Pitt County Agricultural Center	Yes	No – not a required monitor.	None

Burlington Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^b D	Proposal to Move or Change
370010002	Hopedale	Yes	No – not a required monitor.	None

Rocky Mount Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^b D	Proposal to Move or Change
370650004	Springfield Rd	Yes	No – not a required monitor.	Monitor will shut down 12/31/2013

Goldsboro Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^b D	Proposal to Move or Change
371910005	Dillard	Yes	No – not a required monitor.	Method may change in 2014

Not in a Metropolitan Statistical Area – Valley, Piedmont and Coastal Sites

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^b D	Proposal to Move or Change
370330001	Cherry Grove	Yes	Yes - Required regional transport monitor for the piedmont and central area of the state.	Method may change in 2014
370570002	Lexington Water Tower	Yes	Yes- Required monitor for Lexington non-attainment area.	None

Table 30 Status of North Carolina Fine Particle Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network ^a

370610002	Kenansville	Yes	Yes - Required General/ Background monitor for the coastal area	Method may change in 2014
371070004	Lenoir Community College	Yes	No – not a required monitor.	Monitor will shut down 12/31/2013
371110004	East Marion	Yes	No – not a required monitor.	None
371170001	Jamesville	Yes	Yes - Required regional transport monitor for the coastal part of the state	Method may change in 2014
371210001	Spruce Pine	Yes	No – not a required monitor.	None
371230001	Candor	Yes	Yes - Required General/ Background monitor for the piedmont/central area of state	Method may change in 2015
371550005	Linkhaw	Yes	No – not a required monitor.	None
371730002	Bryson City	Yes	Yes - Required Transport Monitor for Western Mountain Area.	None
371890003	Boone	Yes	Yes- Required general/ background monitor for the western mountain area.	None

^a All monitors use an R & P Model 2025 PM2.5 Sequential Monitor with a WINS impactor (Air Quality System (AQS) Method Code 118) except the Bryson and Millbrook monitors which use a Met One BAM-1020 Monitor (Air Quality System (AQS) Method Code 170). All monitors except the Bryson and Millbrook monitors use the U.S. EPA reference method designation RFPS-0498-118. Millbrook and Bryson monitors use the U.S. EPA Automated Equivalent Method: EQPM-0308-170.

^b All monitors meet the requirements of Appendix A to 40CFR58. The Quality Assurance Project Plan and Standard Operating Procedures are being revised to reflect the changes to Appendix A of 40CFR58 promulgated in 2006. All monitors meet the requirements of Appendix C to 40CFR58. All monitors meet the requirements of Appendix E of 40CFR58.

^c Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^d This monitor started on January 1, 2008, to meet minimum monitoring requirements in 40CFR58 Appendix D.

^e This monitor started on January 1, 2008, to replace the Durham Health monitor. It is collocated with a continuous fine particle monitor.

^f Operated by the Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403)

^g Operated by the Western North Carolina Regional Air Quality Agency (AQS Reporting Agency 0779).

^h This monitor started on January 1, 2008, to replace the Waynesville Fire Station monitor.

ⁱ This monitor started on April 1, 2008, to replace the South Greenville monitor. This site is a collocated fine particle and ozone-monitoring site.

Table 31 Locations and Schedules for Continuous Monitors in the North Carolina Fine Particle Monitoring Network ^a

Charlotte-Concord-Gastonia Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose/Appendix D Requirements ^c	Monitoring Objective	Scale
370710016	Grier Middle School	SLAMS	Hourly	Fine Particle Forecasting. Not required.	Population Exposure	Neighbor-hood
371190041 ^d	Garinger	NCORE	Hourly	Required Monitor for the Charlotte-Concord-Gastonia MSA.	Population Exposure	Neighbor-hood
371190042 ^d	Montclaire	SLAMS	Hourly	Fine Particle Forecasting. Not required.	Population Exposure	Neighbor-hood
371590021	Rockwell	NONREG-ULATORY	Hourly	Not Required.	Population Exposure	Neighbor-hood

Table 31 Locations and Schedules for Continuous Monitors in the North Carolina Fine Particle Monitoring Network ^a

Raleigh Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose/ Appendix D Requirements ^c	Monitoring Objective	Scale
371830014	Millbrook	NCORE	Hourly	Required Monitor for the Raleigh MSA.	Population Exposure	Neighborhood

Greensboro-High Point Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose/ Appendix D Requirements ^c	Monitoring Objective	Scale
370810013	Mendenhall	SLAMS	Hourly	Required Monitor for the Greensboro-High Point MSA.	Population Exposure/ General/ Background	Neighborhood

Winston-Salem Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose/ Appendix D Requirements ^c	Monitoring Objective	Scale
370670022 ^e	Hattie Ave.	SLAMS	Hourly	Required Monitor for the Winston-Salem MSA.	Population Exposure	Neighborhood
370670030 ^e	Clemmons	SLAMS	Hourly	Not required	Population Exposure	Neighborhood

Durham-Chapel Hill Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose/ Appendix D Requirements ^c	Monitoring Objective	Scale
370630015	Durham Armory	SLAMS	Hourly	Required monitor for the Durham-Chapel Hill MSA	Population Exposure	Neighborhood

Asheville Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose/ Appendix D Requirements ^c	Monitoring Objective	Scale
370210034 ^f	Board of Ed	SLAMS	Hourly	Not required	Population Exposure	Neighborhood

Fayetteville Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose/ Appendix D Requirements ^c	Monitoring Objective	Scale
370510009	William Owen	SLAMS	Hourly	Not Required.	Population Exposure	Neighborhood

Hickory Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose/ Appendix D Requirements ^c	Monitoring Objective	Scale
370350004	Hickory Water Tower	SLAMS	Hourly	Not required	Population Exposure	Neighborhood

Wilmington Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose/ Appendix D Requirements ^c	Monitoring Objective	Scale
371290002	Castle Hayne	NONREG-ULATORY	Hourly	Not Required.	Population Exposure	Neighborhood

Burlington Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose/ Appendix D Requirements ^c	Monitoring Objective	Scale
370010002 ^d	Hopedale	SLAMS	Hourly	Not Required.	Population Exposure	Neighborhood

Table 31 Locations and Schedules for Continuous Monitors in the North Carolina Fine Particle Monitoring Network ^a

Rocky Mount Metropolitan Statistical Area						
AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose/Appendix D Requirements ^c	Monitoring Objective	Scale
370650099	Leggett	NONREG-ULATORY	Hourly	Not Required.	General Background	Urban

Goldsboro Metropolitan Statistical Area						
AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose/ Appendix D Requirements ^c	Monitoring Objective	Scale
371910005	Dillard	NONREG-ULATORY	Hourly	Not Required.	Population Exposure	Urban

Not in a Metropolitan Statistical Area – Valley, Piedmont and Coastal Sites						
AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose/Appendix D Requirements ^c	Monitoring Objective	Scale
370330001	Cherry Grove	NONREG-ULATORY	Hourly	Regional transport monitor for the piedmont and central area of the state. Not required	Population Exposure/ Regional Transport/ General/ Background	Urban
370570002	Lexington Water Tower	SLAMS	Hourly	Not required.	Population Exposure	Neighborhood
370610002	Kenansville	NONREG-ULATORY	Hourly	Not required.	Population Exposure General/ Background	Neighborhood
371110004	East Marion	NONREG-ULATORY	Hourly	Not required.	Population Exposure	Neighborhood
371170001	Jamesville	NONREG-ULATORY	Hourly	Regional transport monitor for the coastal part of the state. Not required.	Regional Transport/ General/Background/ Population Exposure	Urban
371290001	Candor	NONREG-ULATORY	Hourly	General Background monitor for the piedmont	General Background/ Population Exposure	Regional
371730002	Bryson City	SLAMS	Hourly	Transport Monitor for Western Mountain Area. Not Required.	Regional Transport/ Population Exposure	Neighborhood

^a All monitors use an R & P Model 1400A PM2.5 Tapered-Element Oscillating Microbalance operated with the inlet heated to 50 degrees except the monitors at Bryson City, Castle Hayne, Kenansville, Dillard School, Jamesville, Cherry Grove, and Millbrook and the proposed monitor at Candor, which use a Met One BAM-1020 Monitor. All monitors in this table meet the requirements of 40CFR58 Appendices A and E.

^b All monitors operate year-round.

^c All monitors provide real-time air quality data to the public through AirNow and the state and local program websites.

^d Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669).

^e Operated by the Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403).

^f Operated by the Western North Carolina Regional Air Quality Agency (AQS Reporting Agency 0779).

Table 32 Status of North Carolina Continuous Fine Particle Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network

Charlotte-Concord-Gastonia Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^a		Proposal to Move or Change
			C	D	
370710016	Grier Middle School	No	No – AQS Method Code 702	No – not a required monitor.	None
371190041 ^b	Garinger	No	No – AQS Method Code 717	Yes- 1 of 1 Required Monitors for the Charlotte-Concord-Gastonia MSA.	None
371190042 ^b	Montclair	No	No – AQS Method Code 717	No – not a required monitor.	None
371590021	Rockwell	No	No – AQS Method Code 702	No – not a required monitor.	None

Raleigh Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^a		Proposal to Move or Change
			C	D	
371830014	Millbrook	Yes	Yes – AQS Method Code 170	Yes - 1 of 1 Required Monitors for the Raleigh MSA	None

Greensboro-High Point Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^a		Proposal to Move or Change
			C	D	
370810013 ^c	Mendenhall	No	No – AQS Method Code 702	Yes - Required Monitor	None

Winston-Salem Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^a		Proposal to Move or Change
			C	D	
370670022 ^d	Hattie Ave.	No	No – AQS Method Code 702	Yes - Required Monitor	None
370670030 ^d	Clemmons	No	No – AQS Method Code 702	No – not a required monitor.	None

Durham-Chapel Hill Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^a		Proposal to Move or Change
			C	D	
370630015 ^c	Durham Armory	No	No – AQS Method Code 702	Yes - Required Monitor	None

Asheville Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^a		Proposal to Move or Change
			C	D	
370210034 ^e	Board of Ed	No	No – AQS Method Code 702	No – not a required monitor.	None

Fayetteville Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^a		Proposal to Move or Change
			C	D	
370510009 ^c	William Owen	No	No – AQS Method Code 702.	No – not a required monitor	None

Table 32 Status of North Carolina Continuous Fine Particle Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network

Hickory Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^a		Proposal to Move or Change
			C	D	
370350004 ^c	Hickory Water Tower	No	No – AQS Method Code 702	No – not a required monitor.	None

Wilmington Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^a		Proposal to Move or Change
			C	D	
371290002	Castle Hayne	No	Yes – AQS Method Code 170	No – not a required monitor.	May become the SLAMS monitor at the site 10/23/2014

Burlington Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^a		Proposal to Move or Change
			C	D	
370010002	Hopedale	No	No – AQS Method Code 702	No – not a required monitor	None

Rocky Mount Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^a		Proposal to Move or Change
			C	D	
370650099	Leggett	Yes	No – AQS Method Code 717	No – not a required monitor.	None

Goldsboro Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^a		Proposal to Move or Change
			C	D	
371910005	Dillard	No	Yes – AQS Method Code 170	No – Not a required monitor	May become the SLAMS monitor at the site in 2014

Not in a Metropolitan Statistical Area – Valley, Piedmont, and Coastal Sites

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^a		Proposal to Move or Change
			C	D	
370330001	Cherry Grove	No	Yes – AQS Method Code 170	No – Not a required monitor	May become the SLAMS monitor at the site in 2014
370570002	Lexington Water Tower	No	No – AQS Method Code 702	No - Required monitor for Lexington maintenance area.	None
370610002	Kenansville	No	Yes – AQS Method Code 170	No – not a required monitor.	May become the SLAMS monitor at the site in 2014
371110004	East Marion	No	No – AQS Method Code 702	No – not a required monitor.	None
371170001	Jamesville	No	Yes – AQS Method Code 170	No – not a required monitor.	May become the SLAMS monitor at the site in 2014
371290001	Candor	No	Yes – AQS Method Code 170	No – not a required monitor.	Will add a BAM to the site in 2013
371730002	Bryson City	Yes	Yes – AQS Method Code 170	No – not a required monitor.	None

Table 32 Status of North Carolina Continuous Fine Particle Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network

^a All monitors meet the requirements of Appendix A to 40CFR58 except as noted below. The Quality Assurance Project Plan and Standard Operating Procedures have been revised to reflect the changes to Appendix A of 40CFR58 promulgated in 2006. Except for at Bryson City, Castle Hayne, Kenansville, Dillard School, Jamesville, Cherry Grove, and Millbrook and the proposed monitor at Candor, these monitors are not reference or equivalent methods and do not meet the requirements of Appendix C to 40CFR58. All monitors meet the requirements of Appendix E of 40CFR58.

^b Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^c These monitors do not meet the requirements in Appendix A for the inlets of collocated monitors to be within 1 meter of each other vertically.

^d Operated by the Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403)

^e Operated by the Western North Carolina Regional Air Quality Agency (AQS Reporting Agency 0779).

VIII. Lead Monitoring Network

The North Carolina Division of Air Quality (NC-DAQ) currently operates one lead monitor located at the Raleigh Millbrook National Core (NCore) monitoring site. In 2008 the United States Environmental Protection Agency (EPA) lowered the lead National Ambient Air Quality Standard (NAAQS) to 0.15 micrograms per cubic meter and expanded the lead monitoring network to support the new standard. In December 2010, the EPA finalized changes to the lead monitoring network. These changes included lowering the threshold for fence line monitoring for lead-emitting facilities from 1 ton of lead per year to 0.5 tons of lead per year and changing the population oriented monitoring from urban areas with populations greater than 500,000 to NCore monitoring sites in urban areas with populations greater than 500,000. Fence line monitoring at facilities emitting more than 1 ton of lead per year or that impact the ambient concentrations surrounding the facility such that ambient levels are at one half of the NAAQS or greater started on January 1, 2010. Fence line monitoring at facilities emitting more than 0.5 ton of lead per year and population oriented monitoring at required NCore sites started on December 27, 2011.

In 2009 the NC-DAQ requested and received permission to not do fence-line lead monitoring at three facilities which were listed in the 2005 National Emission Inventory (NEI) or the 2007 Toxic Release Inventory (TRI) as emitting over 1 ton of lead per year. These facilities are:

- International Resistive Company (IRC) located in Boone, NC,
- Nucor Steel located in Cofield, NC, and
- Carolina Power and Light Company (Progress Energy) Roxboro Steam Station located in Semora, NC,

The EPA granted the request and did not require the NCDAQ to monitor at any of these facilities because none of the facilities actually emitted 1 ton or more of lead per year. A copy of the EPA approval letter is provided in Appendix D. 2010 Network Plan EPA Approval Letter.

In 2011 the EPA listed eight facilities in North Carolina as emitting over 0.5 tons of lead per year based either on the 2008 NEI or the 2009 TRI. These facilities are:

- Duke Energy Carolinas, LLC - Belews Creek Steam Station, located in Stokes County;
- Progress Energy - Roxboro Plant, located in Person County;
- Duke Energy Carolinas, LLC - Marshall Steam Station, in Catawba County;
- U.S. Army Fort Bragg, located in Cumberland County;
- Blue Ridge Paper Products Inc, located in Canton, North Carolina (Haywood County);
- Duke Power Company, LLC - Allen Steam Station, located in Gaston County;

- Royal Development Co., located in High Point, North Carolina (Guilford County); and
- U.S. Marine Corps Camp Lejeune Marine Corps Base, located in Onslow County.

In addition to the eight facilities on the EPA list, the NC DAQ identified an additional facility, Saint- Gobain Containers, located in Wilson, NC (Wilson County), with reported 2009 lead emissions greater than 0.5 tons.

As mentioned earlier, the NC DAQ received permission not to monitor at one of these facilities, Progress Energy - Roxboro Plant in 2009. In 2011 the NC DAQ requested that this facility and six other of these facilities (Fort Bragg, Camp Lejeune, Royal Development Co., the Duke Energy Carolinas, LLC - Belews Creek Steam Station, the Duke Energy Carolinas, LLC - Marshall Steam Station, and the Duke Power Company, LLC - Allen Steam Station) be removed from the list because they emit less than 0.5 tons per year and requested waivers for the other two (Blue Ridge Paper Products, Inc., and St. Gobain Containers) based on results of modeling. The EPA granted this request and did not require the NCDAQ to monitor at any of these facilities. A copy of the EPA approval letter is provided in Appendix E. 2011 Network Plan EPA Approval Letter.

Under the 2010 lead monitoring rule, North Carolina is required to operate two population-oriented lead monitors as shown in Figure 39. These monitors are located at the NCore monitoring sites—in Charlotte at Garinger High School and in Raleigh at Millbrook East Middle School. The monitors at Millbrook and Garinger started operation on December 27, 2011. The first sampling day was December 29. These monitors operate on a 1-in-6 day schedule and measure lead concentrations by analyzing the filters from the low volume PM₁₀ monitors that operate at the site. The samples will be analyzed in batches of 50-80 using x-ray fluorescence, which is the Federal Reference Method for the low-volume PM₁₀ lead monitoring method.

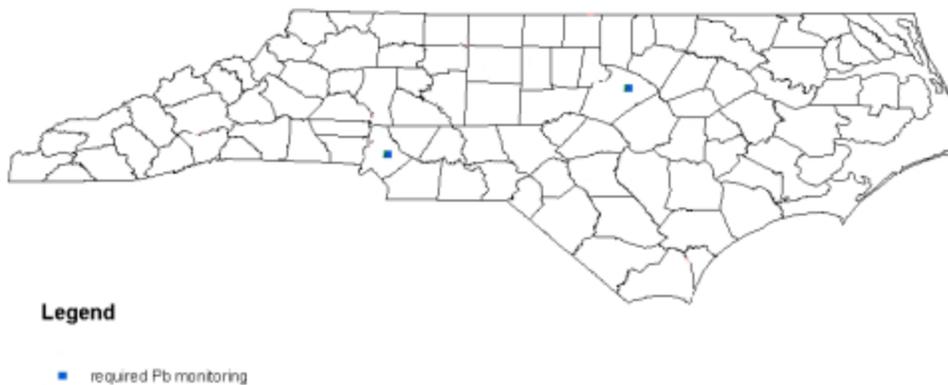


Figure 39. Location of Required Population-Exposure Lead Monitors in North Carolina

The locations of the required PM₁₀ lead-monitoring sites are provided in Table 33. All monitors listed in Table 33 are suitable for determining a violation of the National Ambient Air Quality Standards (NAAQS). Both of the monitors meet the requirements

of Appendices A, C, D, and E of 40CFR58 after the Quality Assurance Project Plan and Standard Operating Procedures are submitted to the EPA, and the procedures are approved by the EPA. Both of these monitors use the U.S. EPA reference method designations RFPS-1298-127 and RFLQ-1108-804.

Table 34 provides the monitor type, operating schedules, monitoring objectives, scales, and statement of purpose for all of the required monitors in the North Carolina PM₁₀ Lead Monitoring Network. Both monitors operate on a 24-hour schedule from midnight to midnight on each scheduled sampling day. Both of the monitors operate year-round. Table 35 summarizes the status for each required monitoring site regarding whether it is suitable for comparison to the NAAQS and meets the requirements in 40 CFR58 Appendices A, C, D, and E and also provides the proposed changes to the network.

Table 33 North Carolina Lead Monitoring Network – Monitor Locations ^a

Charlotte-Concord-Gastonia Metropolitan Statistical Area

AQS Site Identification Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
371190041 ^b	Garinger	1130 Eastway Drive	Charlotte	W 080 46' 59"	N 35 14' 28"	Charlotte-Concord-Gastonia

Raleigh Metropolitan Statistical Area

AQS Site Identification Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
371830014	Millbrook	3801 Spring Forest Road	Raleigh	W 078 34' 27"	N 35 51' 22"	Raleigh

^a All monitors use an R & P Model 2025 PM_{2.5} Sequential Monitor with a PM₁₀ down tube (Air Quality System (AQS) Method Code 811). All monitors listed in this table are suitable for comparison to the National Ambient Air Quality Standards. All monitors in this table meet the requirements of Appendices A, C, D, and E of 40CFR58. All monitors use the U.S. EPA reference method designations RFPS-1298-127 and RFLQ-1108-804.

^b Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

Table 34 Statement of Purpose for North Carolina Lead Monitoring Network ^a

Charlotte-Concord-Gastonia Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose	Monitoring Objective	Scale
371190041 ^c	Garinger	NCORE	1-in-6 day ^c	1 of 2 Required Population Exposure Monitors in North Carolina. AQI Reporting. Compliance w/NAAQS.	Population Exposure	Neighborhood

Raleigh Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule ^b	Statement of Purpose	Monitoring Objective	Scale
371830014	Millbrook	NCORE	1-in-6 day	1 of 2 Required Population Exposure Monitors in North Carolina. AQI Reporting. Compliance w/NAAQS.	Population Exposure	Neighborhood

^a All monitors use an R & P Model 2025 PM2.5 Sequential Monitor with a PM₁₀ down tube (Air Quality System (AQS) Method Code 811) All monitors in this table meet the requirements of Appendices A, C, and E of Part 58. All monitors use the U.S. EPA reference method designations RFPS-1298-127 and RFLQ-1108-804.

^b All monitors operate on a 24-hour schedule, collecting a sample from midnight to midnight, Eastern Standard Time.

^c Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669).

Table 35 Status of North Carolina Lead Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network ^a

Charlotte-Concord-Gastonia Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^b	Proposal to Move or Change
			D	
371190041 ^c	Garinger	Yes	Yes- 1 of 2 Required Monitors for North Carolina.	None

Raleigh Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^b	Proposal to Move or Change
			D	
371830014	Millbrook	Yes	Yes - 1 of 2 Required Monitors for North Carolina.	None

^a All monitors use an R & P Model 2025 PM2.5 Sequential Monitor with a PM₁₀ down tube (Air Quality System (AQS) Method Code 811).

^b All monitors meet the requirements of Appendix A to 40CFR58. The Quality Assurance Project Plan and Standard Operating Procedures are being written to reflect the new PM₁₀ lead method established by the EPA. All monitors use the U.S. EPA reference method designations RFPS-1298-127 and RFLQ-1108-804. All monitors meet the requirements of Appendix E of 40CFR58.

^c Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

IX. Urban Air Toxics Monitoring Network

Monitoring for Urban Air Toxics (UAT) is currently conducted in North Carolina by the North Carolina Division of Air Quality (NC-DAQ), Toxics Protection Branch (TPB) at three sites operated by the NC-DAQ and at three sites operated by local programs. Currently, the NC-DAQ TPB collects whole air samples in stainless steel 6 liter- pressurized canisters. The samples are then analyzed using cryogenic pre-concentration gas chromatography with mass spectrometric detection (GC/MS) via the Compendium Method for Toxic Organics (TO) 15 for the list of 68 compounds shown in Table 36.

Table 36 List of Urban Air Toxic Compounds Measured in North Carolina

Propene	Hexane	1,1,2-Trichloroethane (vinyl trichloride)
Freon 12	Methacrolein	Ethylpropylketone
Freon 22	Vinyl Acetate	Tetrachloroethylene (perchloroethylene)
Freon 114	1,1-Dichloroethane	Methyl Butyl Ketone
Chloro Methane (Methylchloride)	Methyl Vinyl Ketone	Dibromoethane
Isobutene	Methyl Ethyl Ketone	Chlorobenzene (phenylchloride)
Vinyl chloride	1,2 Dichloroethene	Ethylbenzene
1,3-Butadiene	Chloroform	m- & p-Xylene
Bromomethane	1,1,1-Trichloroethane (Methyl chloroform)	o-Xylene
Chloroethane	Cyclohexane	Styrene
Freon 11	Carbon Tetrachloride	Bromoform
Pentane	Benzene	1,1,2,2-Tetrachloroethane
Ethanol	1,2-Dichloroethane (ethylene dichloride)	1,3,5-Trimethylbenzene (mesitylene)
Isoprene	1-Butanol	1,2,4-Trimethylbenzene (pseudocumene)
Acrolein	Trichloroethylene	m-Dichlorobenzene
1,1-Dichloroethene (Vinylidene chloride)	2-Pentanone	1,2,3-Trimethylbenzene
Freon 113	3-Pentanone	p-Dichlorobenzene
Methyl Iodide	1,2-Dichloropropane	Benzylchloride
Isopropyl Alcohol	1,4-Dioxane	o-Dichlorobenzene
Carbon Disulfide	Bromodichloromethane	1,2,4-Trichlorobenzene
Acetonitrile	trans-1,3 Dichloropropene	
Methylene chloride	Methyl Isobutyl Ketone	
Cyclopentane	Toluene	
MTBE	cis-1,3 Dichloropropene	

The TPB established and operates an urban air toxics monitoring network in conjunction with a national program originally proposed and designed by the EPA in 1999. DAQ recognizes the importance of this network and supports the continuation of the program. Currently, the North Carolina program has 5 urban sites and 1 rural site. The objectives of the network proposed by the EPA in 1999 were stated as follows:

1. Measure pollutants of concern to the air toxics program;

2. Use scientifically sound monitoring protocols to ensure nationally consistent data of high quality;
3. Collect a sufficient amount of data to estimate annual average concentrations;
4. Complement existing national and State/local monitoring programs;
5. Reflect “community-oriented” (i.e. neighborhood-scale) population exposure; and
6. Represent geographic variability in annual average ambient concentrations.

The North Carolina network was developed with these objectives in mind to focus on the urban areas within the State and to work in collaboration with the three local air quality agencies that regulate air quality programs in the metropolitan areas within their respective jurisdiction. The network should complement the air toxics programs of each agency and provide a “flexible approach” to address air toxics issues in the local areas and to provide a framework to conduct more dedicated monitoring to characterize the spatial concentration patterns of specific toxic air pollutants within an urban area and to concentrate on problem areas.

The number of monitoring sites was chosen based on available funds, equipment and personnel including those in local programs and Regional Offices. The locations were chosen based on size of metropolitan statistical areas (MSA) in NC, existing sites in urban areas and support of local programs. The sites selected for the NC UAT network were established in predominately urban areas as designated by the US Census Bureau, 2000 Census. An “urban” area has been defined by EPA as a county with either a MSA population of at least 250,000 or in a county with at least 50% urbanization as described by the Census. A “Rural” county is defined as a county that has less than 50% urbanization as designated by the Census.

Because there are no National Ambient Air Quality Standards (NAAQS) for UAT, the Environmental Protection Agency (EPA) does not require the NC-DAQ and the local programs to operate a minimum number of required monitors.

The NC-DAQ, TPB has made the following changes during the last few years to the UAT monitoring network. The Research Triangle Park (RTP) site shared with EPA was closed because EPA was forced to close and move the building for a major road project. When EPA re-established the site a safe distance from the road construction, a decision was made to seek other possibly better located sites for the UAT monitoring that might be more representative of urban populations in NC. Adding one or two sites in urban areas not currently monitored is being considered. At all NC UAT sites monitoring has been discontinued for Semi-Volatile Organic Compounds (SVOCs) and carbonyl compounds by methods TO-13 and TO-11, respectively. However, sampling for carbonyl compounds by TO-11 will resume this summer at two sites – Millbrook in Raleigh and Candor. One GC/MS system used for Volatile Organic Compound (VOC) analysis by method TO-15 is in the process of being upgraded to lower detection limits especially for acrolein. No special studies are on-going or anticipated at this time.

The locations of the current air toxic-monitoring sites are provided in Table 37. Sometime in the future the NCDAQ may add a VOC monitoring site in Greensboro, Durham or Greenville. Because a specific location has not yet been identified, the

proposed site is not included in the table. All of the monitors meet the requirements of Appendices A and E of 40CFR58. Appendix C and D requirements do not apply to air toxics monitoring. All of the monitors are non-regulatory because there are no NAAQS for toxic compounds.

Table 38 provides the monitor type, operating schedules, monitoring objectives, scales, and statement of purpose for all of the current monitors in the NC UAT Monitoring Network. All of the monitors operate year-round. Table 39 summarizes the status for each current monitoring site regarding whether it is suitable for comparison to the NAAQS and meets the requirements in Appendices A, C, D, and E of 40CFR58 and also provides the proposed changes to the existing network.

Table 37 NC UAT Monitoring Network – Monitor Locations

Charlotte-Concord-Gastonia Metropolitan Statistical Area						
AQS Site Id Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
371190041 ^a	Garinger High School	1130 Eastway Drive	Charlotte	-80.785683	35.240100	Charlotte-Concord-Gastonia
Raleigh Metropolitan Statistical Area						
AQS Site Id Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
371830014	Millbrook	3801 Spring Forest Road	Raleigh	-78.574167	35.856111	Raleigh
Winston-Salem Metropolitan Statistical Area						
AQS Site Id Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
370670022 ^b	Hattie Avenue	Corner of 13 th & Hattie Avenue	Winston-Salem	-80.226667	36.110556	Winston-Salem
Asheville Metropolitan Statistical Area						
AQS Site Id Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
370210035 ^c	AB Tech	AB Tech College	Asheville	82.558611	35.572222	Asheville
Wilmington Metropolitan Statistical Area						
AQS Site ID Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
371290010	Battleship Site	Battleship Drive	Wilmington	77.955833	34.235556	Wilmington
Not in a Metropolitan Statistical Area – Valley, Piedmont and Coastal Sites						
AQS Site ID Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
371230001	Candor	112 Perry Drive	Candor	-79.836613	35.262490	None

^a Operated by Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^b Operated by the Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403)

^c Operated by the Western North Carolina Regional Air Quality Agency (AQS Reporting Agency 0779).

Table 38 Statement of Purpose for NC UAT Monitoring Network

Charlotte-Concord-Gastonia Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule	Statement of Purpose	Monitoring Objective	Scale
371190041 ^a	Garinger	Non-regulatory	24-hour, midnight to midnight, 1 in 6 day	Monitor as many HAPs as possible.	Population Exposure	Neighborhood

Raleigh Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule	Statement of Purpose	Monitoring Objective	Scale
371830014	Millbrook	Non-regulatory	24-hour, midnight to midnight, 1 in 6 day	Monitor as many HAPs as possible.	Population Exposure General/ Background	Neighborhood

Winston-Salem Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Monitor Type	Operating Schedule	Statement of Purpose	Monitoring Objective	Scale
370670022 ^b	Hattie Avenue	Non-regulatory	24-hour, midnight to midnight, 1 in 6 day	Monitor as many HAPs as possible	Population Exposure	Neighborhood

Asheville Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Monitor Type	Operating Schedule	Statement of Purpose	Monitoring Objective	Scale
370210035 ^c	AB Tech	Non-regulatory	24-hour, midnight to midnight, 1 in 6 day	Monitor as many HAPs as possible	Population Exposure	Neighborhood

Wilmington Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Monitor Type	Operating Schedule	Statement of Purpose	Monitoring Objective	Scale
371290010	Battleship Site	Non-regulatory	24-hour, midnight to midnight, 1 in 6 day	Monitor as many HAPs as possible.	Population Exposure	Neighborhood

Not in a Metropolitan Statistical Area – Valley, Piedmont, Coastal Sites

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule	Statement of Purpose	Monitoring Objective	Scale
371230001	Candor	Non-regulatory	24-hour, midnight to midnight, 1 in 6 day	Monitor as many HAPs as possible	General/ Background	Regional

^a Operated by Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^b Operated by the Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403)

^c Operated by the Western North Carolina Regional Air Quality Agency (AQS Reporting Agency 0779).

Table 39 Status of NC UAT Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network ^a

Charlotte-Concord-Gastonia Metropolitan Statistical Area

AQS Site Id Number	Site Name	Meets Requirements of Part 58 Appendices ^b			Proposal to Move or Change
		A	C	D	
371190041 ^c	Garinger	Yes	Not Applicable – Uses AQS Method Code 150 ^d	Not Applicable	None

Raleigh Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Meets Requirements of Part 58 Appendices ^b			Proposal to Move or Change
		A	C	D	
371830014	Millbrook	Yes	Not Applicable – Uses AQS Method Code 150 ^d	Not Applicable	Carbonyl sampler will be added 7/1/2013

Winston-Salem Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Meets Requirements of Part 58 Appendices ^b			Proposal to Move or Change
		A	C	D	
370670022 ^e	Hattie Avenue	Yes	Not Applicable – Uses AQS Method Code 150 ^d	Not Applicable	None

Asheville Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Meets Requirements of Part 58 Appendices ^b			Proposal to Move or Change
		A	C	D	
370210035 ^f	AB Tech	Yes	Not Applicable – Uses AQS Method Code 150 ^d	Not Applicable	None

Wilmington Metropolitan Statistical Area

AQS Site Identification Number	Site Name	Meets Requirements of Part 58 Appendices ^b			Proposal to Move or Change
		A	C	D	
371290010	Battleship Site	Yes	Not Applicable – Uses AQS Method Code 150 ^d	Not Applicable	None

Not in a Metropolitan Statistical Area – Valley, Piedmont, and Coastal Sites

AQS Site Identification Number	Site Name	Meets Requirements of Part 58 Appendices ^b			Proposal to Move or Change
		A	C	D	
371230001	Candor	Yes	Not Applicable – Uses AQS Method Code 150 ^b	Not Applicable	Carbonyl sampler will be added 7/1/2013

^a There is no NAAQS for air toxics so none of the monitors provide data suitable for comparing to the NAAQS.

^b All monitors meet the requirements of Appendix E of 40CFR58.

^c Operated by Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^d AQS Method Code 150 (sample collection in a stainless steel 6 liter- pressurized canister and analysis using cryogenic pre-concentration gas chromatography with mass spectrometric detection)

All monitors meet the requirements of Appendix E of 40CFR58.

^e Operated by the Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403)

^f Operated by the Western North Carolina Regional Air Quality Agency (AQS Reporting Agency 0779).

X. NC-DAQ NCore Monitoring Network

This section provides information on the North Carolina Division of Air Quality National Core (NCore) monitoring network. For information on the NCore site operated by Mecklenburg County Air Quality, see Appendix B. 2013 Annual Monitoring Network Plan for Mecklenburg County Air Quality.

A. Overview

The NCore site operated by the NC-DAQ is located at the East Millbrook Middle School site. Specifics for this site are provided below.

<u>Parameter</u>	<u>Description</u>
A) AQS identification number	37-183-0014
B) Site Name	Millbrook
C) Address	3801 Spring Forest Road, Raleigh, N.C.
D) Longitude/Latitude	-78.574167/ 35.856111 decimal degrees
E) Scale of Representation	Neighborhood
F) Monitoring Objective	Population Oriented
G) Proximity to Local Emissions	None within 500 meters
H) MSA Description	Raleigh
I) Land Use	Urban

The NC-DAQ has been operating monitors at this site since September 16, 1998, and has no plans to relocate this site. The site is located at a school and the school has been very cooperative in allowing NC-DAQ to make necessary changes at the site so that the site will meet 40 CFR 58 Appendix E requirements. The school property is fully developed and the NC-DAQ does not anticipate that the Wake County School System will need to develop the area where the monitoring site is located or will evict us from their property anytime in the next 18 months or later.

B. Monitor Siting Considerations

This site was modified as necessary to meet the entire EPA monitor siting criteria in 40 CFR 58 Appendix E. The following issues were addressed:

- 1) Trees were removed or trimmed such that all probe inlets are > 10 meters from any tree drip line.
- 2) All particulate matter monitors (filter based and continuous) are located on a 16'x16' wooden deck constructed in 2009. All inlets are within 1-4 meters of each other, all inlets are within 1 meter vertically of each other, all inlets are between 2 and 15 meters above ground and all inlets are more than 20 meters from any roadway.

- 3) All continuous gaseous monitors (SO₂, NO_y, CO and O₃) are housed in a temperature controlled walk-in shelter, which meets all of the EPA siting criteria.

With the changes made to the monitoring site by removing the trees and building the deck, the site will be suitable for monitoring for fine particles for the purpose of comparing the measured concentrations to the National Ambient Air Quality Standards. The platform is far enough from the road so that the site will meet the necessary neighborhood scale requirements for population oriented monitoring.

C. Monitors/Methods

This NCore site has the following monitors in place and operating since January 1, 2011, or before, except for lead, which began December 27, 2011:

Parameter	Monitoring Objective	Scale of Representation	Operating Schedule	AQS Method Code
Trace Level Sulfur Dioxide (SO ₂)	Population Exposure	Neighborhood	Hourly data year round	560
Trace Level Carbon Monoxide (CO)	Population Exposure	Neighborhood	Hourly data year round	554
Trace level Reactive oxides of Nitrogen (NO _y)	Population Exposure	Neighborhood	Hourly data year round	574
Ozone (O ₃)	Population Exposure	Neighborhood	Hourly data year round	047
PM _{2.5} (fine PM), filter based	Population Exposure	Neighborhood	24-hour data on a 1-in-3 day schedule year round	118
PM _{2.5} (fine PM), continuous	Population Exposure	Neighborhood	Hourly data year round	170
Speciated PM _{2.5} , filter based	Population Exposure	Neighborhood	24-hour data on a 1-in-3 day schedule year round	810
PM ₁₀ , filter based low volume sampler	Population Exposure	Neighborhood	24-hour data on a 1-in-3 day schedule year round	127
PM _{10-2.5} (coarse PM), by difference, PM ₁₀ -PM _{2.5}	Population Exposure	Neighborhood	24-hour data on a 1-in-3 day schedule year round	176

Parameter	Monitoring Objective	Scale of Representation	Operating Schedule	AQS Method Code
PM ₁₀ Lead, filter-based low volume sampler	Population Exposure	Neighborhood	24-hour data on a 1-in-6 day schedule year round	811
Meteorological measurements of:				
Wind speed	Population Exposure	Neighborhood	Hourly data year round	020
Wind direction	Population Exposure	Neighborhood	Hourly data year round	020
Relative humidity	Population Exposure	Neighborhood	Hourly data year round	020
Ambient temperature	Population Exposure	Neighborhood	Hourly data year round	020

The monitor regulations were modified in 2012 to remove the requirement that all NCore sites monitor for Speciated PM_{10-2.5} (course PM) Filter based. The NC-DAQ has no plans to add a Speciated PM_{10-2.5} monitor to the site.

D. Readiness Preparation

In preparation for the installation of the NCore monitors, the following tasks were addressed:

<u>Parameter</u>	<u>Status</u>
A) Acquisition of trace level gaseous monitors	Completed
B) Acquisition of low concentration gas dilution calibrators	Completed
C) Certification of clean air generators	Completed
D) Method Detection Limit studies for trace level monitors	Completed
E) Installation of 10 meter NO _y Tower	Completed
F) Installation of filter based and continuous PM monitors	Completed
G) Installation of trace level gaseous monitors	Completed
H) Preparation of trace level gaseous monitor QAP/SOPs	Completed
I) Meteorological tower	existing

J) Ozone monitor

existing

E. Waiver Requests

Subject to the review of the administrator, NC-DAQ requested and received the following waivers from the specific minimum requirements for NCore sites. The EPA approval letter is provided in Appendix E. 2011 Network Plan EPA Approval Letter.

1. Millbrook Meteorological Tower

The sampling site located at the Millbrook Middle School has been designated as an EPA NCore site. In addition to specified monitor types, the collection of meteorological data is also required and includes, at a minimum, wind speed, wind direction, relative humidity and ambient temperature. The Millbrook site has been in operation since 1989 and the meteorological tower has the required sensors in place.

The tower is located approximately due south and 15.5 meters from the shelters that house the various monitors (see Figure 40). The wind direction/speed sensors are located at a height of 10 meters above ground and the relative humidity sensor is located at 2 meters. Ambient temperature sensors (2) are located at 2 meters and 10 meters above ground. The tower is located in an open, grassy area that is free from any obstructions in a 270° arc to the prevailing winds that come from the South/West direction. The tower is positioned 15.5 meters from the shelters on a 3% uphill grade. This grade adds approximately 1 meter to the height of the tower above the shelters. This siting does not meet the EPA requirement for the tower being a distance of 10 times the height of the shelter (3.7 meters). Additionally, a single tree, approximately 7 meters tall, is located 18 meters to the South/East of the tower.



Figure 40. Millbrook NCore Site

Since the position of the meteorological tower is free from any obstructions in a 270° arc to the prevailing winds that come from the South/West direction, the State of North Carolina is confident that the measurements provided will be representative of meteorological conditions in the area of interest. The State, therefore, requested and the EPA granted a waiver, and deemed the position of the tower to be acceptable.

1. *NO_y probe inlet placement*

NCore probe siting guidance for NO_y is a suggested probe inlet height of 10 meters. The NO_y probe inlet is currently mounted at a height of 5.08 meters from the ground at the proposed NCore site. NC-DAQ requested and received a waiver of the 10 meter probe height requirement primarily for safety considerations and also to facilitate maintenance on the sampling inlet (cleaning of the cross fitting) and to provide access for performance of calibration test points under reduced multi-gas calibrator system pressures (near ambient conditions).

The monitoring site is located at a middle school and temporary elementary school and next to a day care. The converter box for the NO_y monitor is very heavy and requires a special tower to support the weight in winds above 40 miles per hour or a tower with guy wires. Because the tower needs to be located next to the monitoring shelter to minimize the length of tubing involved to transport sample from the converter box to the monitor, there is no space at the site for guy wires to stabilize the tower. The guy wires would block ingress and egress from the monitoring shelter and create a safety hazard for the monitoring technicians. The NC-DAQ believes placing the converter box on a 10-m tower without guy wires at this site would be too dangerous because winds often gust to over 40 miles per hours during thunderstorms, hurricanes and other severe weather events.

The NC-DAQ decided to invest resources installing a new tower at the site because the difference in cost between properly grounding the existing tower and installing a new tower rated to hold the weight of the converter box without guy wires was small compared to the cost of properly ground the tower. Thus, after the new tower was installed in late 2010, the NC-DAQ increased the height of the probe inlet from 5.08 meters to 10 meters.

XI. Nitrogen Dioxide Monitoring Network

The North Carolina Division of Air Quality (NC-DAQ) currently does not operate any nitrogen dioxide monitors. Mecklenburg County Air Quality and Forsyth County Office of Environmental Assistance and Protection (FCOEAP) each operate one nitrogen dioxide monitor. In 2010 the United States Environmental Protection Agency (EPA) changed the nitrogen dioxide primary National Ambient Air Quality Standard (NAAQS) from an annual to an hourly standard of 100 parts per billion and established a new nitrogen dioxide monitoring network to support the new standard. The new network has three types of monitoring sites:

- Near road sites – micro-scale near-road NO₂ monitoring stations in each Core-Based Statistical Area (CBSA) with a population of 500,000 or more persons to monitor a location of expected maximum hourly concentrations sited near a major road with high Average Annual Daily Traffic (AADT) counts.
- Area wide sites – monitoring stations in each CBSA with a population of 1,000,000 or more persons to monitor a location of expected highest NO₂ concentrations representing the neighborhood or larger spatial scales.
- Regional Administrator Required Monitoring – additional NO₂ monitoring stations nationwide in any area, inside or outside of CBSAs, above the minimum monitoring requirements, selected by the Regional Administrators, in collaboration with States, with a primary focus on siting these monitors in locations to protect susceptible and vulnerable populations.

North Carolina has five CBSAs that are larger than 500,000 or more persons and two CBSAs that are larger than 1,000,000 or more persons (not counting Virginia Beach-Norfolk-New Port News). Thus, North Carolina is required to have near road monitoring stations in the Charlotte, Raleigh, Greensboro, Winston-Salem, and Durham areas and area wide sites in the Charlotte and Raleigh areas. In addition the site operated by the FCOEAP at Hattie Avenue was selected by the Region 4 Administrator for Regional Administrator Required Monitoring.

A. Near Road Monitoring

For a discussion of the selection of the near road monitoring site in the Charlotte area see Appendix B. 2013 Annual Monitoring Network Plan for Mecklenburg County Air Quality. Site selection for the Raleigh, Greensboro, and Durham areas are described in the following subsections.

1. Raleigh Core Based Statistical Area

The United States Environmental Protection Agency (US EPA) approved the Triple Oak Road near road site for the Raleigh Core-Based Statistical Area in 2012. **Error! Reference source not found.** provides the approval letter from the US EPA. For details on the selection of Triple Oak Road and other locations that were considered see the 2012 Annual Monitoring Network Plan for North Carolina Air Quality. Table 40 provides the most recently available traffic information for the area.

Table 40. Fleet Equivalent Average Annual Daily Traffic for Selected Road Segments in the Raleigh Metropolitan Statistical Area

Station	Route	Location	Station	Percent Passenger	2011 AADT	Fleet Equivalent AADT
(A) 1	I-40	From Exit 287 to 289	09MC0031	94%	157000	241,780
(B) 813	I-40	From Exit 285 to 287	09MC0031	94%	150000	231,000
(C) 807	I-40	From Exit 283 to 284	09MC0031	94%	141000	217,140
(D) 811	I-40	From Exit 284 to 285	09MC0031	94%	135000	207,900
(E) 634	I-40	From Exit 297 to 298	09MC0033	92%	113000	194,360
(F) 889	I-40	From Exit 300 to 301	10MC0021	91%	103000	186,430
(G) 630	I-40	From Exit 299 to 300	09MC0034	93%	110000	179,300
(H) 635	I-40	From Exit 295 to 297	09MC0032	93%	108000	176,040

An aerial view of the location is shown in Figure 41. The monitoring probe is located about 25 to 30 meters from the edge of I-40. The monitoring station is approximately 1 kilometer from I-540 and 0.5 kilometers from Airport Boulevard. The Airport Boulevard ramp ends approximately 300 meters southeast from the monitoring site. The location is at grade with the roadway. There are no barriers between the road and the monitoring station.

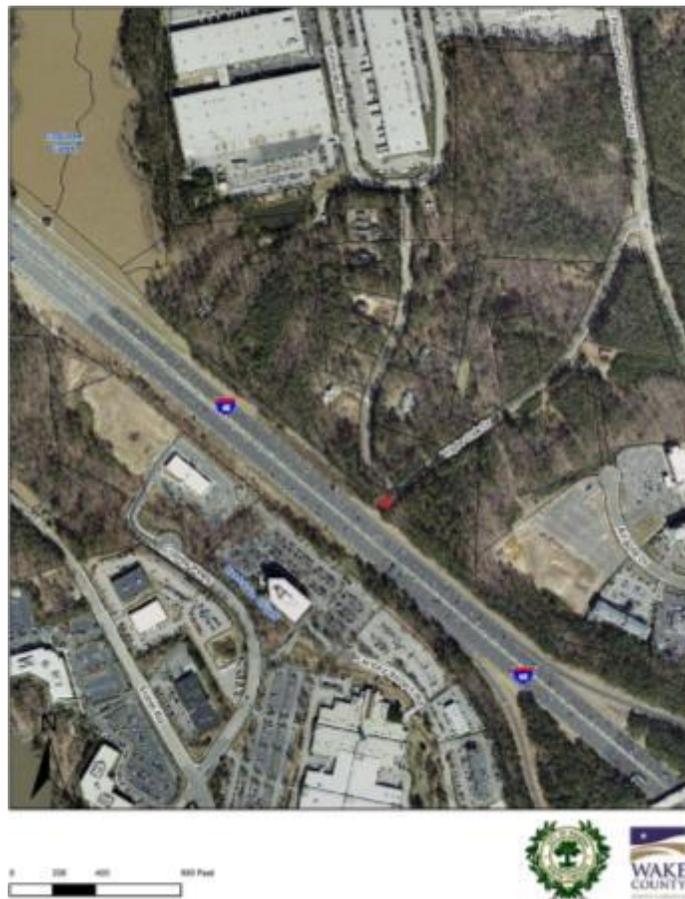


Figure 41 Wake County Near-Road Monitoring Station Location (red circle)

2. Greensboro-High Point Core Based Statistical Area

Preliminary analysis of the road segments in the Greensboro-High Point MSA using highest average annual daily traffic values adjusted for fleet mix indicates the monitoring station should be located along Knox Road near Exit 132. The segments in the Greensboro-High Point MSA with the highest average annual daily traffic adjusted for fleet mix are shown in Table 42.

Table 41. Fleet Equivalent Average Annual Daily Traffic for Selected Road Segments in the Greensboro-High Point MSA

STATION	ROUTE	LOCATION	Station	Percent Passenger	2011 AADT	Fleet Equivalent AADT
(A) 340	I-85 BUS	FROM EXIT 37 TO 39	09MC0066	88%	121,000	251,680
(F) 341	I-85 BUS	FROM EXIT 36B TO 37	09MC0065	90%	123,000	233,700
(B) 3400	I-85	FROM EXIT 131 TO 132	Extrapolate	85%	99,000	232,650
(C) 697	I-85	FROM EXIT 132 TO 135	Extrapolate	85%	99,000	232,650
(G) 508	I-40	FROM EXIT 211 TO 212	09MC0023	89%	116,000	230,840
(D) 811	I-85	FROM EXIT 135 TO 138	Extrapolate	85%	98,000	230,300
(E) 813	I-85	FROM EXIT 138 TO 140	10MC0001	85%	97,000	227,950
(H) 902	I-40	FROM EXIT 206 TO 208	09MC0022	88%	109,000	226,720

The locations of these segments are shown with lettered black squares in Figure 43. They stretch from the eastern part of Guilford County to the western part with heaviest fleet adjusted average annual daily traffic being from central Greensboro going east toward Burlington. At this time, the NC-DAQ is considering placing the monitor along Knox Road by exit 132 on I-85 (Square B). This location is desirable because it is one of the segments with the highest fleet adjusted average annual daily traffic and it is easily accessible from Knox Road. This monitoring station is not required to start monitoring until January 1, 2017.



Figure B42. Possible Locations of Future Greensboro Near-Roadway Nitrogen Dioxide Monitoring Sites

At this time due to lack of funds, the United States Environmental Protection Agency is revising the regulation to require near road monitors in MSAs with less than one million people to start operating on January 1, 2017. The NC-DAQ will do a more thorough analysis of road segments in the Greensboro-High Point MSA using 2014 traffic data to determine the best location for the monitoring station in 2017. At that time the NC-DAQ will also evaluate any potential sites based on congestion patterns, roadway design, terrain, and meteorology.

3. *Durham-Chapel Hill Core Based Statistical Area*

Preliminary analysis of the road segments in the Durham-Chapel Hill MSA using highest average annual daily traffic values adjusted for fleet mix indicates the monitoring station should be located near the Page Road exit along I-40. The segments in the Durham-Chapel Hill MSA with the highest average annual daily traffic adjusted for fleet mix are shown in Table 42.

Table 42. Fleet Equivalent Average Annual Daily Traffic for Road Segments in the Durham-Chapel Hill Metropolitan Statistical Area

STATION	ROUTE	LOCATION	Station	Percent Passenger	2011 AADT	Fleet Equivalent AADT
(A) 1011	I-40	FROM EXIT 282 TO EXIT 283	09MC0030	90%	174,000	330,600
(B) 947	I-40	FROM EXIT 281 TO EXIT 282	09MC0030	90%	169,000	321,100
(C) 547	I-40	FROM EXIT 280 TO EXIT 281	09MC0030	90%	160,000	304,000
(D) 553	I-40	FROM EXIT 279 TO EXIT 280	10MC0005	94%	157,000	241,780
(E) 942	I-40	FROM EXIT 273 TO EXIT 274	09MC0028	90%	110,000	209,000
(F) 6	I-85	FROM EXIT 160 TO EXIT 161	09MC0069	88%	91,000	189,280
(I) 727	I-40	FROM EXIT 278 TO EXIT 279	10MC0005	94%	122,000	187,880
(G) 91	I-85	FROM EXIT 161 TO EXIT 163	09MC0069	88%	88,000	183,040
(H) 5	I-85	FROM EXIT 157 to EXIT 160	09MC0069	88%	86,000	178,880

The locations of these segments are shown with lettered green and red squares in Figure 43. They stretch from the eastern part of Durham County into central Orange County with heaviest fleet adjusted average annual daily traffic being along I-40 near the Durham-Wake County line. Because the highest ranked sites are within two miles of the Raleigh near road monitoring site off of Triple Oak Road along I-40 between Exit 283 and Exit 284 and have similar traffic counts and heavy duty vehicle make-up, the NC-DAQ is requesting a waiver for the near road Durham-Chapel Hill monitoring site.

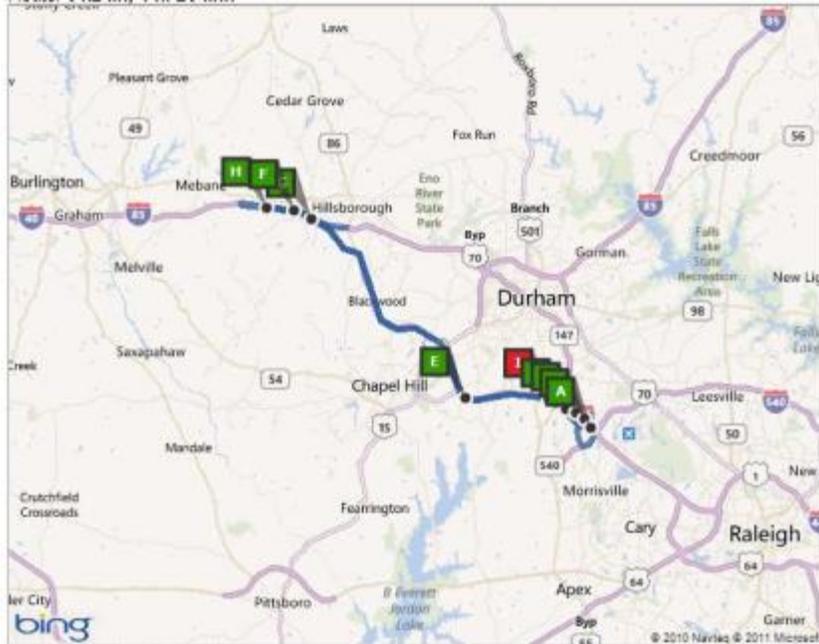


Figure 43. Locations of Segments with Highest Fleet Adjusted AADT in the Durham-Chapel Hill MSA

At this time due to lack of funds, the United States Environmental Protection Agency is revising the regulation to require near road monitors in MSAs with less than one million people to start operating on January 1, 2017. Thus, if the EPA does not provide a waiver for this monitoring site, the NC-DAQ will do a more thorough analysis of road segments in the Durham-Chapel Hill MSA using 2014 traffic data to determine the best location for the monitoring station in 2017. At that time the NC-DAQ will also evaluate any potential sites based on congestion patterns, roadway design, terrain, and meteorology.

B. Area wide sites

The area wide sites will be located at the NCore sites in Charlotte and Raleigh. Mecklenburg County Air Quality already operates a nitrogen dioxide monitor at the Garinger NCore site. The NC-DAQ currently does not operate a nitrogen dioxide monitor and currently does not own any nitrogen dioxide monitors.

The area wide sites are required to be up and operational by January 1, 2013. Although the NC-DAQ is making every effort to have the area wide nitrogen dioxide monitor up and operational by the required time, the NC-DAQ did not meet the January 1 start date for the following reasons:

- Office of Research and Development (ORD) approved a new method for measuring nitrogen dioxide in May 2012. The new method uses a photolytic convertor rather than a high temperature molybdenum convertor. The photolytic convertor is much more selective for nitrogen dioxide and suffers from less interference than the molybdenum convertor. As a result the United States Environmental Protection Agency is strongly encouraging agencies to purchase equipment that uses this new method.

- The State of North Carolina is on a July 1 to June 30 Fiscal Year so no major purchases of equipment were allowed after April 16, 2012. Purchases will once again be allowed sometime after July 1. However, the NC-DAQ does not own a nitrogen dioxide monitor and was unable to purchase any type of nitrogen dioxide monitor before the cutoff date for major purchases.
- Because the equipment is new, there are many people ordering the equipment all at one time. This rush of orders could result in the equipment being back-ordered, resulting in a longer delivery time than the standard six to eight week schedule.
- The State of North Carolina has no experience operating nitrogen dioxide monitors. Thus, NC-DAQ will need to receive training on the equipment and learn how to use it before it can be used in the field.
- The new equipment requires different calibration procedures than any of the existing equipment currently being used by NC-DAQ. The calibration equipment currently owned by NC-DAQ may not be capable of providing the necessary calibrations to the needed level of accuracy. Thus, the NC-DAQ may need to purchase new calibration equipment. Investigating this situation and purchasing the needed equipment will take time and could delay installation and use of the equipment in the field.
- The State of North Carolina does not have a quality assurance project plan or standard operating procedure for nitrogen dioxide. These documents will need to be written before monitoring can begin.
- The equipment will need to be incorporated into an existing site which will require time to integrate the new equipment without causing problems for the existing equipment.

For all of these reasons, despite the NC-DAQ's best efforts, the area wide nitrogen dioxide monitor in the Raleigh MSA was not up and operational by January 1, 2013. As a result, the NC-DAQ requests that the requirement for an area wide nitrogen dioxide monitor in the Raleigh MSA be waived for up to six to nine months until all of these issues are satisfactorily resolved. The NC-DAQ believes this request is in the best interest of all parties because the monitor is expected to have a lifetime of 10 years and provides data in which the users of the data can have greater confidence that the numbers reported actually represent nitrogen dioxide. A potential loss of a few months of data in exchange for having higher quality for the next 10 years is a reasonable tradeoff.

C. Regional Administrator Required Monitoring

For information on the selection of Hattie Avenue as a regional administrator required monitoring site see Appendix C. 2013 Annual Monitoring Network Plan for Forsyth County Office of Environmental Assistance and Protection.

The locations of the required nitrogen dioxide monitoring sites are provided in Table 43. All monitors listed in Table 43 are suitable for determining a violation of the National Ambient Air Quality Standards (NAAQS). All of the monitors either currently

or will meet the requirements of Appendices A, C, D, and E of 40CFR58 after the Quality Assurance Project Plan and Standard Operating Procedures are submitted to the EPA for new procedures, and the procedures are approved by the EPA. All near road monitors and the Raleigh area wide monitor will use a chemiluminescence detector with a photolytic convertor. The Charlotte area wide monitor uses the U.S. EPA reference method designation RFNA-1289-074 (Air Quality System (AQS) Method Code 074). The Winston-Salem Regional Administrator Required monitor uses the U.S. EPA reference method designation RFNA-1194-099 (Air Quality System (AQS) Method Code 099).

Table 44 provides the monitor type, operating schedules, monitoring objectives, scales, and statement of purpose for all of the required monitors in the North Carolina nitrogen dioxide Monitoring Network. All monitors operate on an hourly year-round schedule. Table 45 summarizes the status for each required monitoring site regarding whether it is suitable for comparison to the NAAQS and meets the requirements in 40 CFR58 Appendices A, C, D, and E and also provides the proposed changes to the network.

Table 43 North Carolina Nitrogen Dioxide Monitoring Network – Monitor Locations ^a

Charlotte-Concord-Gastonia Metropolitan Statistical Area

AQS Site Identification Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
371190041 ^b	Garinger	1130 Eastway Drive	Charlotte	-80.785683	35.240100	Charlotte-Concord-Gastonia
371190044 ^b	Humane Society	2700 Toomey Avenue	Charlotte	-80.876392	35.207411	Charlotte-Concord-Gastonia
	Remount Road	902 Remount Road		-80.874401	35.212657	

Raleigh Metropolitan Statistical Area

AQS Site Identification Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
371830014	Millbrook	3801 Spring Forest Road	Raleigh	-78.574167	35.856111	Raleigh
371830021 ^c	Triple Oak Road	Triple Oak Road	Raleigh	-78.8195	35.8654	Raleigh

Greensboro-High Point Metropolitan Statistical Area

AQS Site Identification Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
370810015	Knox Road	Knox Road	Greensboro	-79.6627	36.0598	Greensboro

Winston-Salem Metropolitan Statistical Area

AQS Site Identification Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
370670022 ^e	Hattie Ave.	Corner of 13 th & Hattie Avenue	Winston-Salem	-80.226667	36.110556	Winston-Salem
370670031 ^{d, e}	Near Road	To be determined	Winston-Salem	To be determined	To be determined	Winston-Salem

Durham-Chapel Hill Metropolitan Statistical Area

AQS Site Identification Number	Site Location					MSA, CSA, or CBSA represented
	Site Name	Street Address	City	Longitude	Latitude	
370630016 ^d	Page Road	Page Road	Durham	-78.8425	35.8858	Durham-Chapel Hill

^a All near road monitors and the Raleigh area wide monitor will use a chemiluminescence detector with a photolytic convertor. The Charlotte area wide monitor uses the U.S. EPA reference method designation RFNA-1289-074 (Air Quality System (AQS) Method Code 074). The Winston-Salem Regional Administrator Required monitor uses the U.S. EPA reference method designation RFNA-1194-099 (Air Quality System (AQS) Method Code 099). All monitors listed in this table are suitable for comparison to the National Ambient Air Quality Standards. All monitors in this table meet the requirements of Appendices A, C, D, and E of 40CFR58.

^b Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^c This monitor will start in 2013.

^d This monitor will start in 2017.

^e Operated by the Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403).

Table 44 Statement of Purpose for the North Carolina Nitrogen Dioxide Monitoring Network ^a

Charlotte-Concord-Gastonia Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule	Statement of Purpose	Monitoring Objective	Scale
371190041 ^b	Garinger	SLAMS	Hourly	Area Wide site in Charlotte-Concord-Gastonia MSA. AQI Reporting. Compliance w/NAAQS.	Population Exposure	Neighborhood
371190044 ^b	Humane Society Remount Rd	SLAMS	Hourly	Near Road monitoring site. AQI Reporting. Compliance w/NAAQS.	Source Oriented	Micro-scale

Raleigh Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule	Statement of Purpose	Monitoring Objective	Scale
371830014 ^c	Millbrook	SLAMS	Hourly	Area Wide site in Raleigh MSA. AQI Reporting. Compliance w/NAAQS.	Population Exposure	Neighborhood
371830021 ^c	Triple Oak Road	SLAMS	Hourly	Near Road monitoring site. AQI Reporting. Compliance w/NAAQS.	Source Oriented	Micro-scale

Greensboro-High Point Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule	Statement of Purpose	Monitoring Objective	Scale
370810015 ^d	Knox Road	SLAMS	Hourly	Near Road monitoring site. AQI Reporting. Compliance w/NAAQS.	Source Oriented	Micro-scale

Winston-Salem Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule	Statement of Purpose	Monitoring Objective	Scale
370670022 ^e	Hattie Ave.	SLAMS	Hourly	Regional Administrator required monitor for the Winston-Salem MSA. AQI Reporting. Compliance w/NAAQS.	Population Exposure	Neighborhood
370670031 ^{d, e}	Near Road	SLAMS	Hourly	Near Road monitoring site. AQI Reporting. Compliance w/NAAQS.	Source Oriented	Micro-scale

Durham-Chapel Hill Metropolitan Statistical Area

AQS Site Id Number	Site Name	Monitor Type	Operating Schedule	Statement of Purpose	Monitoring Objective	Scale
370630016 ^d	Page Road	SLAMS	Hourly	Near Road monitoring site. AQI Reporting. Compliance w/NAAQS.	Source Oriented	Micro-scale

^a All near road monitors and the Raleigh area wide monitor will use a chemiluminescence detector with a photolytic convertor. The Charlotte area wide monitor uses the U.S. EPA reference method designation RFNA-1289-074 (Air Quality System (AQS) Method Code 074). The Winston-Salem Regional Administrator Required monitor uses the U.S. EPA reference method designation RFNA-1194-099 (Air Quality System (AQS) Method Code 099). All monitors listed in this table are suitable for comparison to the National Ambient Air Quality Standards. All monitors in this table meet the requirements of Appendices A, C, D, and E of 40CFR58.

^b Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^c This monitor will start in 2013.

^d This monitor will start in 2017.

^e Operated by the Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403).

Table 45 Status of North Carolina Nitrogen Dioxide Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network

Charlotte-Concord-Gastonia Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^a		Proposal to Move or Change
			C	D	
371190041 ^b	Garinger	Yes	Yes – AQS Method Code 074	Yes- Required Area Wide Monitor for the Charlotte-Concord-Gastonia MSA.	None
371190044 ^b	Humane Society Remount Rd	Yes	Yes – AQS Method Code 599	Yes- Required Near Road Monitor for the Charlotte-Concord-Gastonia MSA.	Monitor will be up and operational by 1/1/2014

Raleigh Metropolitan Statistical Area

AQS Site ID Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^a		Proposal to Move or Change
			C	D	
371830014	Millbrook	Yes	Yes – AQS Method Code 599	Yes- Required Area Wide Monitor for the Raleigh MSA.	Monitor will be up and operational by 7/1/2013
371830021	Triple Oak Road	Yes	Yes – AQS Method Code 599	Yes- Required Near Road Monitor for the Raleigh MSA.	Monitor will be up and operational by 1/1/2014

Greensboro-High Point Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^a		Proposal to Move or Change
			C	D	
370810015 ^c	Knox Road	Yes	Yes – AQS Method Code 599	Yes- Required Near Road Monitor for the Greensboro-High Point MSA.	Monitor will be up and operational by 1/1/2017

Winston-Salem Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^a		Proposal to Move or Change
			C	D	
370670022 ^d	Hattie Ave.	Yes	Yes – AQS Method Code 099	Yes – Required Regional Administrator monitor.	None
370670031 ^{d,e}	Near Road	Yes	Yes – AQS Method Code 099	Yes- Required Near Road Monitor for the Winston-Salem MSA.	Monitor will be up and operational by 1/1/2017

Durham-Chapel Hill Metropolitan Statistical Area

AQS Site Id Number	Site Name	Suitable for Comparison to NAAQS	Meets Requirements of Part 58 Appendices ^a		Proposal to Move or Change
			C	D	
370630016 ^e	Page Road	Yes	Yes – AQS Method Code 599	Yes – Required Near Road Monitor for the Durham-Chapel Hill MSA	Monitor will be up and operational by 1/1/2017

^a All near road monitors and the Raleigh area wide monitor will use a chemiluminescence detector with a photolytic convertor. The Charlotte area wide monitor uses the U.S. EPA reference method designation RFNA-1289-074 (Air Quality System (AQS) Method Code 074). The Winston-Salem Regional Administrator Required monitor uses the U.S. EPA reference method designation RFNA-1194-099 (Air Quality System (AQS) Method Code 099). All monitors listed in this table are suitable for comparison to the National Ambient Air Quality Standards. All monitors in this table meet the requirements of Appendices A, C, D, and E of 40CFR58.

^b Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^c This monitor will start in 2013.

^d This monitor will start in 2017.

^e Operated by the Forsyth County Office of Environmental Assistance and Protection (AQS Reporting Agency 0403).

XII. EPA Approval Dates for Quality Management Plan and Quality Assurance Project Plans

The dates that the Environmental Protection Agency approved the Quality Management Plan and Quality Assurance Project Plans for the North Carolina Division of Air Quality are provided in Table 46

Table 46. Dates the EPA Approved the Quality Management Plan and Quality Assurance Project Plans

Document	Date Approved by EPA
Quality Management Plan	August 18, 2011
Quality Assurance Project Plan for PM 2.5 Monitoring	January 16, 2002
Quality Assurance Project Plan for Criteria Pollutant Monitoring	November 6, 2006
Quality Assurance Project Plan for NCore Monitoring	(submitted October 12, 2010)

The North Carolina Division of Air Quality is currently in the process of revising the PM 2.5 and Criteria Monitoring Plans and may combine them into one document.

Concurrence and Approvals

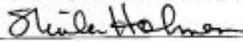
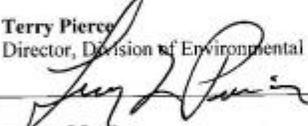
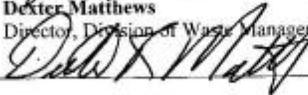
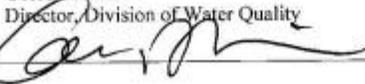
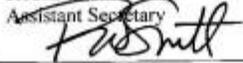
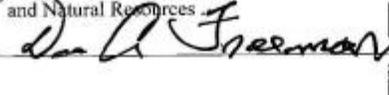
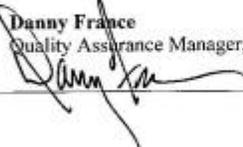
- | | | | | |
|---|-----------|---|-------|----------------|
| (1) | Name | Sheila Holman | Phone | (919) 733-3340 |
| | Title | Director, Division of Air Quality | | |
| | Signature |  | Date | 6-13-11 |
| (2) | Name | Terry Pierce | Phone | (919) 733-0711 |
| | Title | Director, Division of Environmental Health | | |
| | Signature |  | Date | 06/15/11 |
| (3) | Name | Dexter Matthews | Phone | (919) 508-8414 |
| | Title | Director, Division of Waste Management | | |
| | Signature |  | Date | 6-7-11 |
| (4) | Name | Coleen Sullins | Phone | (919) 807-6300 |
| | Title | Director, Division of Water Quality | | |
| | Signature |  | Date | 6/23/11 |
| <u>Approval for Departmental Implementation</u> | | | | |
| (8) | Name | Robin Smith | Phone | (919) 715-4141 |
| | Title | Assistant Secretary | | |
| | Signature |  | Date | 7/15/11 |
| (9) | Name | Dee Freeman | Phone | (919) 733-4984 |
| | Title | Secretary, Department of Environment and Natural Resources | | |
| | Signature |  | Date | 7.15.11 |
| <u>Approval for Environmental Protection Agency</u> | | | | |
| (10) | Name | Danny France | Phone | (706) 355-8738 |
| | Title | Quality Assurance Manager, EPA Region 4 | | |
| | Signature |  | Date | 8/18/11 |

Figure 44. Signature Page from the DENR Quality Management Plan



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4

Science and Ecosystem Support Division
980 Orling Station Road
Athens, Georgia 30605 2720



JAN 15 2002

Mr. Hoko P. Kimball, Chief
NCDENR
Division Of Air Quality
Ambient Monitoring Section
1641 Mail Service Center
Raleigh, North Carolina 27699-1641
Project No. 02-0225

Dear Mr. Kimball:

We have received your letter dated December 11, 2001, requesting EPA approval, and transmitting the Quality Assurance Project Plan (QAPjP): the PM_{2.5} Speciation QA Plan, Section I, Electronic Calibrations Branch Responsibilities and Section II, Operator Responsibilities; as well as the signed Identification and Approval, Section 1.0 Title Page.

In accordance with your request, EPA Region 4 hereby approve these additions to the NC-DAQ PM_{2.5} QAPjP and has enclosed the signed QAPjP Identification and Approval sheet. Should you or your staff have any question(s), please give Herbert Barden a call at 706) 355-8737.

Sincerely,

Gary Bennett
Office of Quality Assurance and
Data Integration

cc: Ed Carreras
Herbert Barden



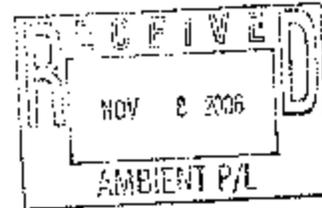
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

(Brook copied 11/13)

REGION 4

Science and Ecosystem Support Division
800 College Station Road
Athens, Georgia 30605-2720

NOV 6 2006



Mr. Luke P. Kimball
NC Department of Environment, Health,
And Natural Resources,
1641 Mail Service Center
Raleigh, NC 27699-1641

SESD Project #07 0065

Dear Mr. Kimball:

We have reviewed the Criteria Pollutants Quality Assurance Project Plan (QAPP) for the North Carolina Division of Air Quality ambient air monitoring program. This QAPP is:

- **Quality Assurance Project Plan for the North Carolina Division of Air Quality Ambient Air Quality Monitoring Program, Revision 0, dated September 30, 2006.**

EPA hereby approves this QAPP. Enclosed is the signature page of the QAPP which has been signed to indicate Region 4 approval. If you have any questions or comments, please contact Jerry W. Berger at (706) 255-8739.

Sincerely,

Marilyn Thornton, Chief
Office of Quality Assurance and
Data Integration

Enclosure

cc: Doug Nealey
Stephanie Wimpey

From: Redmond, Donnie
Sent: Tuesday, October 12, 2010 8:16 AM
To: Garver.daniel@epa.gov; Sciera.Katherine@epamail.epa.gov
Cc: Steger, Joette
Subject: NCDAQ NCore QAPP
Attachments: NCore QAPP_final 10_08_2010.pdf

Daniel,

Attached for EPA review and approval is NC DAQ's NCore QAPP. This electronic version is our submittal – no hard copy will be mailed unless specifically required.

Our Air Planning Agreement says to submit such changes to you. If you're not the correct contact, please let me know who is.

Thanks,
Donnie

Please note new email address: donnie.redmond@ncdenr.gov

Donnie Redmond, Ambient Monitoring Section Chief
NC DENR, Division of Air Quality
Ambient Monitoring Section
1641 Mail Service Center
Raleigh, NC 27699-1641
Phone: 919-733-1487
Fax: 919-715-7476
www.ncair.org

E-mail correspondence to and from this address may be subject to the
North Carolina Public Records Law and may be disclosed to third parties.

Figure 45. NCore QAPP Submittal Documentation

XIII. Equipment Condition of North Carolina Monitoring Sites

Ozone Monitors Thermo 49C and Calibrators Thermo 49CPS are in good condition. Manufacturer supports this equipment until August 2015.

Ozone Monitors Thermo 49I and Calibrators Thermo 49IPS are new and in good condition. DAQ has acquired 10 Each and expects to deploy them to the field in 2013 and 2014.

NCORE site equipment is new and in good condition.

SO₂ monitors Thermo 43C and CO Thermo 48C are in good condition and support until August 2015.

NO_y Thermo 42s and CO Thermo 48s are in poor condition and only used at Rockwell site. These are due to be replaced with new monitors, as manufacturer does not support these.

Thermo 146C calibrators used with SO₂, CO and NO_y are in good condition and supported until August 2015.

The NH₃ monitors- Model 17C we own (5), they were bought from 1998 to 2000. Two are in poor condition, the rest are operable and are in fair to good condition, we do stock maintenance parts. They will be supported by Thermo until 2015.

The Nitrate analyzers- Model 8400N we own (2), one operates at Rockwell CSS the other is at Millbrook CSS both are in fair to good condition. Their future is dependent on whether we get the nichrome strips manufactured. They are not supported by any manufacturer. We do annually buy maintenance parts for these.

The Sulfate analyzers- Model 5020c we own (2), one is operating at Millbrook CSS (condition good) the other has not been used. This new unit is slated for installation at Rockwell CSS. They will no longer be supported by Thermo after 2015. We do annually buy maintenance parts for these.

TSP and PM₁₀ are in fair condition and can be maintained by ECB.

PM_{2.5} units as a whole, while showing some age, are in good condition.

URG particulate monitors are in good condition.

BAM equipment is new and good condition.

TEOM monitors are in poor condition, no longer supported by the manufacturer, and need to be replaced.

Met One SASS 9800 units are in fair condition.

XIV. References

1. Title 40 Code of Federal Regulations Part 58, Ambient Air Quality Surveillance. Part 58 and Part 58 Amended: Federal Register/Vol. 71 No. 200/Tuesday, October 17, 2006/Rules and Regulations.
2. State of North Carolina, Department of Transportation. Traffic Count Information. <http://www.ncdot.org/travel/statemapping/trafficvolumemaps/default.html>. 1500 Mail Service Center, Raleigh, NC, 27699-1500.
3. List of Designated Reference and Equivalent Methods. Issue Date: April 1, 2011. <http://www.epa.gov/ttn/amtic/files/ambient/criteria/reference-equivalent-methods-list.pdf>. United States Environmental Protection Agency, National Exposure Research Laboratory, Human Exposure & Atmospheric Sciences Division (MD-D205-03), Research Triangle Park, NC 27711.
4. U.S. Census Bureau, Population Division. Annual Estimates of the Resident Population for Counties: April 1, 2010 to July 1, 2012. Available on the worldwide web at <http://www.census.gov/popest/data/counties/totals/2012/CO-EST2012-01.html>.
5. Office of Management and Budget, OMB BULLETIN NO. 13-01: Revised Delineations of Metropolitan Statistical Areas, Micropolitan Statistical Areas, and Combined Statistical Areas, and Guidance on Uses of the Delineations of These Areas, February 28, 2013, available on the worldwide web at <http://www.whitehouse.gov/sites/default/files/omb/bulletins/2013/b13-01.pdf>, accessed March 22, 2013.

Appendix A. Summary of Monitoring Sites and Types of Monitors

Table A- 1 Summary of Monitoring Sites and Types of Monitors

Site ID Site Name	CO			SO ₂		NO _v		NO ₂	O ₃	Pb	PM ₁₀		PM _{2.5}			Meteorology			UAT	
	R	H	T	R	T	H	T				M	C	M	C	S	WS/WD	AT/RH	RF/SR		
370010002 Hopedale														X	X		X			
370030004 Waggin Trail									E											
370030005 Taylorsville									P											
370110002 Linville Falls									X								X			
370130151 Bayview Ferry				X																
370210030 ^a Bent Creek									X											
370210034 ^a Board of Ed													X	X	X					
370210035 ^a AB Tech College																				VOC
370270003 Lenoir				X					X											
370330001 Cherry Grove									X		X		X	X		X				
370350004 Hickory Water Tower											X		X	X	X					
370370004 Pittsboro				X					X				X							
370510008 Wade									X											
370510009 Wm Owen											X		X	X		X	X	X		
370511003 Golfview				X					X											
370570002 Lexington Water Tower													X	X	X					
370590003 Mocksville									X											
370610002 Kenansville												X	X	X						
370630015 Durham Armory									X		X		X	X		P				
370650004 Springfield Rd													E							
370650099 Leggett									X					X						
370670022 ^b Hattie Ave.				X				X	X			X	X	X	X					VOC

Table A- 1 Summary of Monitoring Sites and Types of Monitors

Site ID Site Name	CO			SO ₂		NO _v		NO ₂	O ₃	Pb	PM ₁₀		PM _{2.5}			Meteorology			UAT
	R	H	T	R	T	H	T				M	C	M	C	S	WS/WD	AT/RH	RF/SR	
370670023 ^b Peters Creek	X											X							
370670028 ^b Shiloh Church									X										
370670030 ^b Clemmons									X				X	X					
370671008 ^b Union Cross									X						X	AT			
370690001 Franklinton									X										
370710016 Grier M. S.											X		X	X		X			
370750001 ^c Joanna Bald									X								X		
370770001 Butner									X										
370810013 Mendenhall									X		X		X	X		X	X	X	
370810014 Colfax													X			X			
370870008 Waynesville E.S.									X										
370870012 Waynesville Recreation Center													X						
370870035 Fry Pan									X										
370870036 Purchase Knob									X										
371010002 West Johnston									X				X						
371070004 Lenoir Community College									X				E			X	X	X	
371090004 Crouse									X										
371110004 East Marion											X		X	X		X			
371170001 Jamesville				X					X				X	X					
371190003 ^d #11 Fire Station											X								
371190041 ^d Garinger	X		X		X		X	X	X	X	X		X	X	X	X	X	X	VOC
371190042 ^d Montclair											X		X	X					
371190043 ^d Oakdale													X						

Table A- 1 Summary of Monitoring Sites and Types of Monitors

Site ID Site Name	CO			SO ₂		NO _y		NO ₂	O ₃	Pb	PM ₁₀		PM _{2.5}			Meteorology			UAT
	R	H	T	R	T	H	T				M	C	M	C	S	WS/WD	AT/RH	RF/SR	
371190044 City Shelter			P					P											
371191005 ^d Arrowood									X										
371191009 ^d County Line									X										
371210001 Spruce Pine													X						
371230001 Candor											X		X	P					VOC Ald
371290002 Castle Hayne									X				X	X					
371290006 New Hanover				X															
371290010 Battleship																			VOC
371450003 BushyFork									X										
371470006 Pitt Co Ag Cen									X				X						
371550005 Linkhaw													X						
371570099 Bethany				X					X										
371590021 Rockwell					P	X	P		X				X	X	X	X		P	
371590022 Enochville									E										
371730002 Bryson City									X				X		X	X	X		
371790003 Monroe M. S.									X										
371830014 Millbrook			X	X		X	P	X	X	X		X	X	X	X	X	X	X	VOC
371830016 Fuquay								X											
371830020 Finley Farm													E						
371830021 Triple Oak Rd			P					P						P					
371890003 Boone													X						
371910005 Dillard													X	X		X			
371990004 Mt Mitchell									X										

CO = Carbon Monoxide
 SO₂ = Sulfur Dioxide
 NO_y = Reactive Oxides of Nitrogen
 O₃ = Ozone
 Pb = Lead

H = 48S monitor for CO
 T = 48i or Teledyne API (TAPI) 300EU monitor
 for CO, 43 TLE monitor for SO₂
 M = Wedding or GMW 1200 for PM₁₀, 2025
 Sequential for PM_{2.5}

Table A- 1 Summary of Monitoring Sites and Types of Monitors

Site ID Site Name	CO			SO ₂		NO _v		NO ₂	O ₃	Pb	PM ₁₀		PM _{2.5}			Meteorology			UAT
	R	H	T	R	T	H	T				M	C	M	C	S	WS/WD	AT/RH	RF/SR	

PM₁₀ = Particles of 10 micrometers or less in aerodynamic diameter

PM_{2.5} = Fine Particles

X = monitor operating at site

E = monitor at site will end

P = monitoring proposed to start at site

R = 48C monitor for CO, 43C monitor for SO₂

C = TEOM or BAM

S = Met One SASS monitor and URG 3000N

WS/WD = Wind speed & direction

AT/RH = air temperature & relative humidity

RF/SR = Rainfall & solar radiation

UAT = Urban Air Toxics

VOC = Volatile Organic Compounds

^a Operated by the Western North Carolina Regional Air Quality Agency

^b Operated by the Forsyth County Office of Environmental Assistance and Protection

^c This monitor is owned by the United States Forest Service and operated by the North Carolina Division of Air Quality

^d Operated by the Mecklenburg County Air Quality

Appendix B. 2013 Annual Monitoring Network Plan for Mecklenburg County Air Quality

Please see the following internet web address:

<http://www.charmeck.org/Departments/LUESA/Air+Quality/Air+Quality+Data/Home.htm>

Appendix C. 2013 Annual Monitoring Network Plan for Forsyth County Office of Environmental Assistance and Protection

Please see the following internet web address:

http://daq.state.nc.us/monitor/monitoring_plan/Forsyth_2011_Plan.pdf

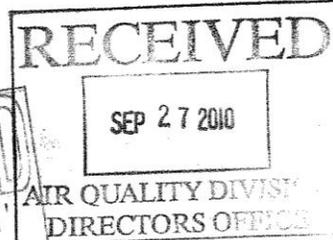
Appendix D. 2010 Network Plan EPA Approval Letter

Demi



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

SEP 22 2010



Ms. Sheila C. Holman
Director
Division of Air Quality
North Carolina Department of
Environment and Natural Resources
1641 Mail Service Center
Raleigh, North Carolina 27699-1641

Dear Ms. Holman/ *Sheila* :

Thank you for submitting the State of North Carolina's 2010 annual ambient air monitoring network plan (Network Plan), dated July 1, 2010. The Network Plan is required by 40 Code of Federal Regulations (CFR) §58.10. The Network Plan covers the ambient air monitoring network for the North Carolina Division of Air Quality (NC-DAQ) and its local agencies.

The Environmental Protection Agency (EPA) Region 4 understands that the NC-DAQ provided a 30-day public comment period and received comments from PCS Phosphate Company, Inc. and Mr. Clayton Moore. EPA found that NC-DAQ sufficiently considered and responded to the comments. According to 40 CFR §58.10(a)(2), since public inspection and comment have already been solicited, the EPA Region 4 is not required to offer another comment period.

Based upon our review of the Network Plan, EPA Region 4 has determined that the document satisfies the applicable requirements of 40 CFR Part 58. The Network Plan is approved. Comments and recommendations are enclosed.

Thank you for your work with us to monitor air pollution and promote healthy air quality in North Carolina and the nation. If you have any questions or concerns, please contact Doug Neeley at (404) 562-9097 or Katherine Sciera at (404) 562-9840.

Sincerely,

Gwendolyn Keyes Fleming
Regional Administrator

Enclosure

Internet Address (URL) • <http://www.epa.gov>

Recycled/Recyclable • Printed with Vegetable Oil Based Inks on Recycled Paper (Minimum 30% Postconsumer)

233

cc: Mr. Donnie Redmond
Supervisor IV, North Carolina Dept. of Air Quality

Mr. Don R. Willard
Director, Mecklenburg County Land Use and Environmental Services Agency

Mr. Robert R. Fulp
Director, Forsyth County Environmental Affairs Department

Mr. David Brigman
Director, Western North Carolina Regional Air Quality Agency

**FY 2010 State of North Carolina Ambient Air Monitoring Network Plan
U.S. EPA Region 4 Comments and Recommendations**

This document contains U.S. EPA Region 4 comments and recommendations to the State of North Carolina's 2010 ambient air monitoring network plan (Network Plan). Ambient air monitoring rules, which include regulatory requirements that address network plans, data certification, and minimum monitoring requirements, among other requirements, are found in 40 CFR Part 58. Minimum monitoring requirements for criteria pollutants are listed in 40 CFR Part 58, Appendix D. Minimum monitoring requirements do not exist for carbon monoxide (CO) unless required by the establishment of a National Core (NCore) multi-pollutant monitoring station, and/or a state implementation plan. However, new national ambient air quality standards (NAAQS) were promulgated this year for nitrogen dioxide (NO₂) and sulfur dioxide (SO₂) with minimum monitoring requirements effective January 1, 2013. Minimum monitoring requirements are listed for ozone (O₃), particulate matter less than 2.5 microns (PM_{2.5}), particulate matter less than 10 microns (PM₁₀), and lead (Pb).

The minimum monitoring requirements are based on metropolitan statistical area (MSA) boundaries as defined by the U.S. Office of Management and Budget (OMB), July 1, 2009, population estimates from the U.S. Census Bureau, and historical ambient air monitoring data. OMB currently defines 15 MSAs in the State of North Carolina. These MSAs and the respective July 1, 2009, population estimates from the U.S. Census Bureau are shown in Table 1.

Table 1: Metropolitan Statistical Areas and Populations

MSA Name	Population
Charlotte-Gastonia-Concord, NC-SC	1,745,524
Virginia Beach-Norfolk-Newport News, VA-NC	1,674,498
Raleigh-Cary, NC	1,125,827
Greensboro-High Point, NC	714,765
Durham-Chapel Hill, NC	501,228
Winston-Salem, NC	484,921
Asheville, NC	412,672
Hickory-Lenoir-Morganton, NC	365,364
Fayetteville, NC	360,355
Wilmington, NC	354,525
Greenville, NC	179,715
Jacksonville, NC	173,064
Burlington, NC	150,358
Rocky Mount, NC	146,536
Goldensboro, NC	113,811

Minimum Ozone Monitoring Requirements
40 CFR Part 58, Appendix D, Table D-2

The network described in the 2010 Network Plan meets the minimum O₃ monitoring requirements specified by 40 CFR Part 58, Appendix D, Table D-2 in all areas.

Minimum PM₁₀ Monitoring Requirements
40 CFR Part 58, Appendix A 3.3.1
40 CFR Part 58, Appendix D, Table D-4

The State of North Carolina's current PM₁₀ primary monitoring network meets the minimum requirements for all areas. All PM₁₀ collocation requirements for manual methods found in 40 CFR Part 58, Appendix A, 3.3.1 are currently being met. Fifteen percent of each network of manual PM₁₀ methods (at least one site) must be collocated. Also, the sites with collocated monitors should be among those measuring annual mean concentrations in the highest 25 percent of the network. These collocation requirements are met in the Network Plan for manual PM₁₀ sampling.

Minimum PM_{2.5} Monitoring Requirements
40 CFR Part 58, Appendix A 3.2.5
40 CFR Part 58, Appendix D, Table D-5

The State of North Carolina's current PM_{2.5} monitoring network meets the minimum requirements found in 40 CFR Part 58, Appendix D, Table D-5 for all MSAs. Manual PM_{2.5} collocation requirements are found in 40 CFR Part 58, Appendix A, section 3.2.5. Fifteen percent of each network of manual PM_{2.5} methods (at least one site) must be collocated. The manual collocation requirement for PM_{2.5} is currently being met in the Network Plan. In addition, there is a requirement for 80% of these collocated monitors to be at sites that are $\pm 20\%$ of the NAAQS. Currently, only 20% of the collocated monitors are at sites $\pm 20\%$ of the NAAQS. EPA recommends that the collocated sites be moved to the appropriate sites to meet this requirement. The following monitoring sites currently have PM_{2.5} design values within $\pm 20\%$ percent of the NAAQS and are recommended for consideration as collocation monitors: Air Quality System (AQS) ID 37-035-004, AQS ID 37-057-0002, AQS ID 37-063-0001, AQS ID 37-071-0016, AQS ID 37-087-0010, AQS ID 37-119-0041, AQS ID 37-119-0042, AQS ID 37-119-0043, AQS ID 37-135-0007, and AQS ID 37-159-0021.

PM_{2.5} Continuous Monitoring Requirements
40 CFR Part 58, Appendix D 4.7.2

Regulatory requirements for continuous PM_{2.5} monitoring require that "...State, or where appropriate, local agencies must operate continuous PM_{2.5} analyzers equal to at least one-half (round up) the minimum required sites listed in Table D-5 of this appendix. At least one required continuous analyzer in each MSA must be collocated with one of the required [Federal Reference Method (FRM)/Federal Equivalent Method (FEM)/Approved Regional Method (ARM)] monitors, unless at least one of the required FRM/FEM/ARM monitors is itself a continuous FEM or ARM monitor in which case no collocation requirement applies." These

minimum continuous PM_{2.5} monitoring requirements are currently met in the all of the MSAs in the State. Also, the continuous PM_{2.5} collocation requirements are currently met in all MSAs. Therefore, the continuous PM_{2.5} monitoring network described in the 2010 Network Plan meets all of the design criteria of 40 CFR Part 58.

PM_{2.5} Background and Transport Sites
40 CFR Part 58, Appendix D 4.7.3

40 CFR Part 58, Appendix D, 4.7.3 requires that “each State shall install and operate at least one PM_{2.5} site to monitor for regional background and at least one PM_{2.5} site to monitor for regional transport.” The 2010 Network Plan identifies the PM_{2.5} sites at Mendenhall (AQS ID: 37-081-0013), Cherry Grove (AQS ID: 37-033-0001), and Jamesville (AQS ID: 37-117-0001) as background sites and the PM_{2.5} sites at Cherry Grove (AQS ID: 37-033-0001), Jamesville (AQS ID: 37-117-0001), and Bryson City (AQS ID: 37-173-0002) as regional transport sites. Therefore, NC-DAQ has satisfied the requirements of 40 CFR Part 58 for background and transport sites.

Lead (Pb) Monitoring Requirements
40 CFR Part 58, Appendix D 4.5

Ambient air monitoring network design criteria for Pb are found at section 4.5 of Appendix D to 40 CFR Part 58. This section requires that, at a minimum, there must be one source-oriented state and local air monitoring station (SLAMS) located to measure the maximum Pb concentration in ambient air resulting from each Pb source which emits 1.0 or more tons per year (t/yr).

NC-DAQ was not required to conduct ambient air monitoring at three sources (see list below) based upon submitted information in the 2009 and 2010 Network Plans indicating that the following sources will not contribute more than 1.0 t/yr. EPA concurs with this assessment and will not require ambient air monitoring at these sources in the 2010 Network Plan.

International Resistive Company (IRC)
736 Greenway Road
Boone, NC 28607

Nucor Steel
1505 River Road
Cofield, NC 27922

Carolina Power and Light Company (Progress Energy) Roxboro Steam Station
1700 Dunnaway Road
Semora, NC 27343

**Air Quality Index (AQI) Reporting
40 CFR §58.50**

AQI reporting is required in MSAs with populations over 350,000. There are 10 MSAs in the State of North Carolina required to report an AQI: Charlotte-Gastonia-Concord, Virginia Beach-Norfolk-Newport News, Raleigh-Cary, Greensboro-High Point, Durham-Chapel Hill, Winston-Salem, Asheville, Hickory-Lenoir-Morganton, Fayetteville, and Wilmington. NC-DAQ meets these AQI reporting requirements.

Monitoring Network Changes Proposed by NC-DAQ

NC-DAQ has proposed several monitoring network changes in the 2010 Network Plan. Any monitors listed in the Network Plan as possibly being relocated or discontinued are subject to a case-by-case evaluation by a letter request from NC-DAQ when NC-DAQ has a proposed shut-down date for that particular monitor or an approved regional method. Monitors proposed for discontinuation are summarized in Table 2.

Table 2: Monitors proposed for discontinuation/location change

AQS ID	Pollutant	Type	Comments
37-173-0002	SO ₂	SLAMS	Monitor was shut down after EPA approval dated June 24, 2010
37-081-0013	PM _{2.5}	QA Collocated	Collocated monitor shut down
37-087-0004	Ozone	SLAMS	Evicted from property, moving site across the road to Junaluska Elementary School, keep AQS ID the same for 250 meter location move
37-061-0002	PM ₁₀	PSD	PSD monitor shut down and convert to special purpose monitor operating every third year
37-107-0004	Ozone	SLAMS	Relocate monitor on property due to structure that obstructs air flow to monitor
37-069-0001	Ozone	SLAMS	Relocate monitor or shut down due to road construction

EPA has reviewed these requests for discontinuation or monitor relocation and determined that all of the requested monitors meet the requirements of 40 CFR §58.14(c)(6) for monitor relocation or are requests to shut down PSD or QA monitors, which are not subject to EPA Region 4 approval. EPA Region 4 encourages NC-DAQ to maintain the AQS ID 37-087-0004 instead of assigning a new AQS ID for this site because the site is only moved 250 meters. By maintaining the AQS ID, the NAAQS design values can be calculated continuously. The minimum monitoring requirements for PM₁₀, PM_{2.5}, and O₃ found in Appendix D to 40 CFR Part 58 will continue to be met for the respective MSAs after these monitors are discontinued or relocated.

NC-DAQ also requested to change the monitoring frequency at AQS ID 37-081-0013 (primary monitor) to 1-in-3 days. At this proposed frequency, the monitors will meet the PM_{2.5} operating schedule requirements under 40 CFR §58.12(d)(1)(i). Therefore, EPA approves the change to 1-in-3 day monitoring at these sites.

National Core (NCore) Monitoring Network

NC-DAQ has designated two NCore sites, AQS ID 37-183-0014 and AQS ID 37-119-0041, in the 2010 Network Plan. The first site (AQS ID 37-183-0014) is located at the East Millbrook Middle School site in Raleigh, NC. The second site (AQS ID 37-119-0041) is located at the Garinger site in Charlotte, NC and is operated by the Mecklenburg County Land Use and Environmental Services Agency. Official EPA approval was granted on October 30, 2009. All quality assurance procedures shall be implemented in accordance with 40 CFR Part 58, Appendix A.

Air Quality System (AQS)

Based on listings of monitor types in the Network Plan, NC-DAQ has several monitors that are listed as "other." EPA encourages the State to be more specific in their monitor types in AQS. Monitors that are listed as "other" will be treated as a SLAMS monitor for regulatory evaluations. Secondly, the State should verify that monitor types in AQS match those in the Network Plan. For example, the SO₂ monitor at AQS ID 37-051-1003 is listed as a special purpose monitor in the Network Plan, but as a SLAMS monitor in AQS. A similar case exists for PM₁₀ monitor AQS ID 37-081-0013, which is listed as "other" in the Network Plan, but as a SLAMS monitor in AQS. EPA uses the AQS designation for regulatory purposes and will consider both of these monitors SLAMS until approved otherwise. The State is responsible for maintaining current monitor type classifications in AQS.

Appendix E. 2011 Network Plan EPA Approval Letter



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

OCT 20 2011

Ms. Sheila C. Holman
Director
Division of Air Quality
North Carolina Department of
Environment and Natural Resources
1641 Mail Service Center
Raleigh, North Carolina 27699-1641

RECEIVED OCT 31 2011

Dear Ms. Holman:

Thank you for submitting the State of North Carolina's 2011 annual ambient air monitoring network plan (Network Plan), dated July 1, 2011. The Network Plan is required by 40 Code of Federal Regulations (CFR) §58.10. The Network Plan covers the ambient air monitoring network for the North Carolina Division of Air Quality and its local agencies.

The U. S. Environmental Protection Agency Region 4 understands that the NC-DAQ provided a 30-day public comment period and did not receive any public comments. According to 40 CFR §58.10(a)(2), since public inspection and comment have already been solicited, EPA Region 4 is not required to offer another comment period.

Based upon our review of the Network Plan, EPA Region 4 has determined that the plan satisfies the applicable requirements of 40 CFR part 58. Therefore the Network Plan is approved.

Thank you for working with us to monitor air pollution and promote healthy air quality in North Carolina and the nation. If you have any questions or concerns, please contact Doug Neeley at (404) 562-9097 or Katherine Snyder at (404) 562-9840.

Sincerely,

A handwritten signature in black ink, appearing to read "Gwendolyn Keyes Fleming".

Gwendolyn Keyes Fleming
Regional Administrator

Enclosures

cc: Mr. Donnie Redmond
Supervisor IV, North Carolina Dept. of Air Quality

Mr. Don R. Willard
Director, Mecklenburg County Land Use and Environmental Services Agency

Mr. William M. Barnette, Director
Director, Forsyth County Environmental Affairs Department

Mr. David Brigman
Director, Western North Carolina Regional Air Quality Agency

**FY 2011 State of North Carolina Ambient Air Monitoring Network Plan
U.S. EPA Region 4 Comments and Recommendations**

This document contains U.S. EPA Region 4 comments and recommendations on the State of North Carolina's 2011 ambient air monitoring network plan (Network Plan). Ambient air monitoring rules, which include regulatory requirements that address network plans, data certification, and minimum monitoring requirements, among other requirements, are found in 40 CFR Part 58. Minimum monitoring requirements for criteria pollutants are listed in 40 CFR Part 58, Appendix D. Minimum monitoring requirements do not exist for carbon monoxide (CO) unless required by the establishment of a National Core (NCore) multi-pollutant monitoring station, and/or a state implementation plan. However, new national ambient air quality standards (NAAQS) were promulgated in 2010 for nitrogen dioxide (NO₂) and sulfur dioxide (SO₂) with minimum monitoring requirements effective January 1, 2013. Minimum monitoring requirements for nitrogen dioxide (NO₂) will be addressed in the 2012 network plans. Minimum monitoring requirements are listed in this document for ozone (O₃), particulate matter less than 2.5 microns (PM_{2.5}), particulate matter less than 10 microns (PM₁₀), sulfur dioxide (SO₂), and lead (Pb).

The minimum monitoring requirements are based on metropolitan statistical area (MSA) boundaries as defined by the U.S. Office of Management and Budget (OMB), July 1, 2009, population estimates from the U.S. Census Bureau, and historical ambient air monitoring data. OMB currently defines 15 MSAs in the State of North Carolina. These MSAs and the respective July 1, 2009, population estimates from the U.S. Census Bureau are shown in Table 1.

Table 1: Metropolitan Statistical Areas and Populations

MSA Name	Population
Charlotte-Gastonia-Concord, NC-SC	1,745,524
Virginia Beach-Norfolk-Newport News, VA-NC	1,674,498
Raleigh-Cary, NC	1,125,827
Greensboro-High Point, NC	714,765
Durham-Chapel Hill, NC	501,228
Winston-Salem, NC	484,921
Asheville, NC	412,672
Hickory-Lenoir-Morganton, NC	365,364
Fayetteville, NC	360,355
Wilmington, NC	354,525
Greenville, NC	179,715
Jacksonville, NC	173,064
Burlington, NC	150,358
Rocky Mount, NC	146,536
Goldensboro, NC	113,811

**Minimum Ozone Monitoring Requirements
40 CFR Part 58, Appendix D, Table D-2**

The network described in the 2011 Network Plan meets the minimum O₃ monitoring requirements specified by 40 CFR Part 58, Appendix D, Table D-2 in all areas except for the Asheville and Hickory MSAs. The Asheville and Hickory MSAs each have the correct number of required ozone monitors

(two), but only one of those is designated as a State and Local Air Monitoring Station (SLAMS) and the second monitor is designated as "other." For a monitor to contribute to the minimum monitoring requirement, it must be classified as a SLAMS monitor in EPA's Air Quality System (AQS), thus the monitor classifications should be updated in AQS.

In addition, a supplemental request to the Network Plan was submitted via email on August 23, 2011 seeking to shutdown the Frying Pan monitor (AQS ID: 37-087-0035) 2-3 weeks prior to October 31. The Frying Pan monitor is operated year round by the National Park Service (NPS) in Great Smoky Mountains National Park. The NPS wants to shutdown the monitor because it needs to replace the monitor's shelter. Replacing the shelter needs to be done before winter weather in the mountainous area makes the task too difficult. Getting this work done in October will help ensure that the monitor is operational by the beginning of the 2012 ozone monitoring season. EPA concurs that this is necessary and any impact to data completeness during this time frame will be noted appropriately by EPA.

Minimum PM₁₀ Monitoring Requirements

40 CFR Part 58, Appendix A, 3.3.1

40 CFR Part 58, Appendix D, Table D-4

The State of North Carolina's current PM₁₀ primary monitoring network meets the minimum requirements for all areas. All PM₁₀ collocation requirements for manual methods found in 40 CFR Part 58, Appendix A, 3.3.1 are currently being met. These include the requirement that fifteen percent of each network of manual PM₁₀ methods (at least one site) must be collocated.

Minimum PM_{2.5} Monitoring Requirements

40 CFR Part 58, Appendix A, 3.2.5

40 CFR Part 58, Appendix D, Table D-5

The State of North Carolina's current PM_{2.5} monitoring network meets the minimum requirements found in 40 CFR Part 58, Appendix D, Table D-5 for all MSAs. Manual PM_{2.5} collocation requirements are found in 40 CFR Part 58, Appendix A, 3.2.5. These include the requirement that fifteen percent of each network of manual PM_{2.5} methods (at least one site) must be collocated. The manual collocation requirements for PM_{2.5} are currently being met in the Network Plan.

PM_{2.5} Continuous Monitoring Requirements

40 CFR Part 58, Appendix D, 4.7.2

Regulatory requirements for continuous PM_{2.5} monitoring require that "...State, or where appropriate, local agencies must operate continuous PM_{2.5} analyzers equal to at least one-half (round up) the minimum required sites listed in Table D-5 of this appendix. At least one required continuous analyzer in each MSA must be collocated with one of the required FRM/FEM/ARM [Federal Reference Method/Federal Equivalent Method/Approved Regional Method] monitors, unless at least one of the required FRM/FEM/ARM monitors is itself a continuous FEM or ARM monitor in which case no collocation requirement applies." These minimum continuous PM_{2.5} monitoring requirements are currently met in the all of the MSAs in the State. Also, the continuous PM_{2.5} collocation requirements are currently met in all MSAs. Therefore, the continuous PM_{2.5} monitoring network described in the 2011 Network Plan meets all of the design criteria of 40 CFR Part 58.

PM_{2.5} Background and Transport Sites
40 CFR Part 58, Appendix D, 4.7.3

40 CFR Part 58, Appendix D, 4.7.3 requires that “each State shall install and operate at least one PM_{2.5} site to monitor for regional background and at least one PM_{2.5} site to monitor for regional transport.” The 2011 Network Plan identifies seven PM_{2.5} sites as regional transport sites that include: Mendenhall (AQS ID: 37-081-0013), Cherry Grove (AQS ID: 37-033-0001), Springfield Road (AQS ID: 37-065-0004), Kenansville (AQS ID: 37-061-0002), Boone (AQS ID: 37-189-0003), Candor (AQS ID: 37-123-0001), and Jamesville (AQS ID: 37-117-0001). The Network Plan identifies three regional transport sites for PM_{2.5} identified as: Cherry Grove (AQS ID: 37-033-0001), Jamesville (AQS ID: 37-117-0001), and Bryson City (AQS ID: 37-173-0002). Therefore, NC-DAQ has satisfied the requirements of 40 CFR Part 58 for background and transport sites.

Lead Monitoring Requirements
40 CFR Part 58, Appendix D, 4.5

EPA recently revised the monitoring requirements for Pb found at 40 CFR Part 58, Appendix D, Section 4.5 (see 75 Federal Register 81126). These revisions reduced the emissions threshold for facilities near which source oriented Pb monitoring is required from 1.0 tons per year (tpy) to 0.5 tpy. The rule also removed population-based monitoring requirements for Pb and replaced them with a requirement to monitor for Pb at urban NCore sites.

40 CFR Part 58, Appendix D, 4.5 requires that “At a minimum, there must be one source-oriented SLAMS [state and local air monitoring station] site located to measure the maximum Pb concentration in ambient air resulting from each non-airport Pb source which emits 0.50 or more tons per year and from each airport which emits 1.0 or more tons per year...”

In its network plan, North Carolina has requested that EPA grant a waiver of source-oriented Pb monitoring requirements for two sources. Section 4.5(a)(ii) of Appendix D to 40 CFR Part 58 provides the following provisions for a waiver of the Pb monitoring requirements:

“(ii) The Regional Administrator may waive the requirement in paragraph 4.5(a) for monitoring near Pb sources if the State or, where appropriate, local agency can demonstrate the Pb source will not contribute to a maximum Pb concentration in ambient air in excess of 50% of the NAAQS (based on historical monitoring data, modeling, or other means). The waiver must be renewed once every 5 years as part of the network assessment required under 58.10(d).”

North Carolina has submitted air modeling indicating that the following sources will not contribute to a maximum Pb concentration in the ambient air in excess of 50% the NAAQS:

Blue Ridge Paper Products, Inc.
Canton, North Carolina

Saint Gobain Containers
Wilson, North Carolina

EPA has reviewed this information and concurs that the Pb emissions from each of these sources will not contribute to a maximum Pb concentration in the ambient air in excess of 50% of the NAAQS. Therefore, EPA is granting the waivers of the source-oriented ambient air monitoring requirements at these sources. The waivers must be renewed once every five years as part of the network assessment required under 40 CFR §58.10(d).

North Carolina has also requested that EPA consider revised emissions data related to source-oriented Pb monitoring requirements. North Carolina has submitted information indicating that the actual Pb emissions from the following sources are below 0.50 tpy:

Duke Energy Carolinas, LLC Belews Creek Steam Station Belews Creek, NC	Progress Energy Roxboro Plant Semora, NC
Duke Energy Carolinas, LLC Marshall Steam Station Terrell, NC	Royal Development Co High Point, NC
Duke Energy Carolinas, LLC Allen Steam Station Belmont, NC	U.S. Army Fort Bragg Cumberland County, NC
	U.S. Marine Corps Camp Lejeune Onslow County, NC

EPA has reviewed this information and concurs that the actual Pb emissions from these sources are below 0.50 tpy. Therefore, ambient air monitoring is not required at these sources. Population oriented monitoring is still required at urban NCore sites beginning on December 27, 2011. Based on the 2011 Network Plan, North Carolina will satisfy the minimum monitoring requirements for Pb.

Sulfur Dioxide Monitoring Requirements **40 CFR Part 58, Appendix D, 4.4**

Ambient air monitoring network design criteria for SO₂ are found in Section 4.4 of Appendix D to 40 CFR Part 58. This section requires that "The population weighted emissions index (PWEI) shall be calculated by States for each core based statistical area (CBSA)." As a result, the SO₂ monitoring site(s) required in each CBSA will satisfy minimum monitoring requirements if the monitor(s) is sited within the boundaries of the parent CBSA and is one of the following site types: population exposure, maximum concentration, source-oriented, general background, or regional transport. An SO₂ monitor at a NCore station may satisfy minimum monitoring requirements if that monitor is located within a CBSA with minimally required monitors consistent with Appendix D, 4.4.

The SO₂ network is to be operational beginning January 1, 2013. The Charlotte-Gastonia-Concord CBSA is required to have a total of two SO₂ monitors. Currently, there is only one operating SO₂ monitor in the CBSA, located at the Garinger site (AQS ID: 37-119-0041). In an e-mail dated September 20, 2011, South Carolina Department of Health and Environmental Control committed to establishing a SO₂ monitor at the York site (AQS ID: 45-091-0006) to assist in meeting the minimum monitoring requirements for this CBSA. Once the SO₂ monitor at the York monitoring site in South

Carolina becomes operational, the Charlotte-Gastonia-Concord CBSA will meet the minimum monitoring requirements under 40 CFR Part 58. Similarly, once the additional SO₂ monitor at Mendenhall (AQS ID: 37-081-0013) becomes operational, the Greensboro-High Point CBSA will meet the minimum monitoring requirements under 40 CFR Part 58. All the other CBSAs meet the minimum monitoring requirements based on the information provided in the 2011 Network Plan.

Air Quality Index (AQI) Reporting 40 CFR §58.50

AQI reporting is required in MSAs with populations over 350,000. There are 10 MSAs in the State of North Carolina required to report an AQI: Charlotte-Gastonia-Concord, Virginia Beach-Norfolk-Newport News, Raleigh-Cary, Greensboro-High Point, Durham-Chapel Hill, Winston-Salem, Asheville, Hickory-Lenoir-Morganton, Fayetteville, and Wilmington. NC-DAQ meets these AQI reporting requirements.

Monitoring Network Changes Proposed by NC-DAQ

NC-DAQ has proposed several monitoring network changes in its 2011 Network Plan. Monitors proposed for discontinuation are summarized in Table 2.

Table 2: Monitors proposed for discontinuation/location change

AQS ID	Pollutant	Type	Comments
37-183-0018	Carbon Monoxide	SLAMS	Will use the FRM CO monitor at the Millbrook site to fulfill the SIP requirements
37-173-0002	PM _{2.5}	SLAMS – Regional transport	Monitor will be shut down at completion of 20 month BAM study (5/2011)

EPA has reviewed these requests for discontinuation or monitor relocation and determined that all of the requested monitors, in Table 2, meet the requirements of 40 CFR §58.14(c)(6) for monitor discontinuation. The minimum monitoring requirements for PM_{2.5} and O₃ found in Appendix D to 40 CFR Part 58 will continue to be met for the respective MSAs after these monitors are discontinued.

NC-DAQ also requested to change the monitoring frequency at AQS IDs 37-081-0013, 37-071-0016, 37-051-0009, and 37-001-0001 to 1 in 6 day for PM_{2.5} sampling. At this proposed frequency, the monitors will meet the PM_{2.5} operating schedule requirements under 40 CFR §58.12(d)(1)(i). Therefore, EPA approves the change in monitoring frequency at these sites.

National Core (NCore) Monitoring Network

Ambient air monitoring network criteria for NCore sites are found in Section 3 of Appendix D to 40 CFR Part 58. NC-DAQ has designated two NCore sites in the 2011 Network Plan. The first site (AQS ID 37-183-0014) is located at the East Millbrook Middle School site in Raleigh, NC. The second site (AQS ID 37-119-0041) is located at the Garinger site in Charlotte, NC and is operated by the Mecklenburg County Land Use and Environmental Services Agency. Official EPA approval was granted for these sites on October 30, 2009. The 2011 Network Plan meets the minimum monitoring requirements for NCore sites.

Air Quality System (AQS)

During the review of the 2011 Network Plan, there were a few discrepancies identified between information in the Network Plan and in AQS. The State is responsible for updating monitor type classifications in AQS. Based on listings of monitor types in the Network Plan, NC-DAQ has several monitors that are listed as "other." EPA encourages the State to be more specific in their monitor types in AQS. Monitors that are listed as "other" will be treated as a SLAMS monitor for regulatory evaluations. For a monitor to count toward the minimum monitoring requirement (e.g. ozone requirements above), it must be classified as a SLAMS monitor in AQS, thus the monitor classifications should be updated in AQS (Waggin Trail AQS ID: 37-003-0004).

Also, the State should verify that monitor types in AQS match those in the Network Plan. For example, the ozone monitor at Waynesville (AQS ID 37-087-0004) is listed as a SLAMS monitor in the Network Plan, but as "other" in AQS. In addition, there are discrepancies in monitor type in AQS and the Network Plan for the following sites, AQS IDs: 31-159-0021-42101-1, 37-159-0021-44201-1, and 37-179-003-44201-1.

In addition, the State should verify the PM_{2.5} background monitor designations in AQS. There are two sites in AQS designated as PM_{2.5} background sites that are not designated in the network plan as background sites. These sites include: Pittsboro (AQS ID: 37-037-0004) and West Johnston (AQS ID: 37-101-0002).

Appendix F. 2012 Network Plan EPA Approval Letter



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
SAM NUNN
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA GEORGIA 30303-8960

Ms. Sheila C. Holman
Director
Division of Air Quality
North Carolina Department of
Environment and Natural Resources
1641 Mail Service Center
Raleigh, North Carolina 27699-1641

SEP 21 2012

Dear Ms. Holman:

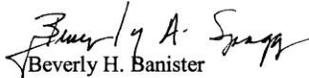
Thank you for submitting the state of North Carolina's 2012 annual ambient air monitoring network plan (Network Plan), dated July 2, 2012. The Network Plan is required by 40 Code of Federal Regulations (CFR) §58.10. The Network Plan covers the ambient air monitoring network for the North Carolina Division of Air Quality and its local agencies.

The U.S. Environmental Protection Agency Region 4 understands that the NC-DAQ provided a 30-day public comment period and did not receive any public comments. According to 40 CFR §58.10(a)(2), since public inspection and comment have already been solicited, EPA Region 4 is not required to offer another comment period.

With this letter, EPA Region 4 is approving the North Carolina Network Plan with the exception of the NO₂ monitoring plans. The state will need to provide additional information on NO₂ monitoring as described in the enclosure. Once EPA Region 4 is in agreement with the additional information provided, the state will need to make the information available for public inspection. Upon completion of the public inspection process, EPA Region 4 will submit the NO₂ addendum to the Network Plan to the EPA Administrator for approval per 40 CFR 58.10(a)(5). We have enclosed comments on your network plan and will continue to work with your agency on the remaining portions of the plan that have not been approved with this letter.

Thank you for working with us to monitor air pollution and promote healthy air quality in North Carolina and the nation. If you have any questions or concerns, please contact Doug Neeley at (404) 562-9097 or Ryan Brown at (404) 562-9147.

Sincerely,


Beverly H. Banister
Director
Air, Pesticides and Toxics
Management Division

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Enclosure

cc: Mr. Donnie Redmond, Supervisor IV
North Carolina Department of Air Quality

Mr. Don R. Willard, Director
Mecklenburg County Land Use and Environmental Services Agency

Mr. William M. Barnette, Director
Forsyth County Environmental Affairs Department

Mr. David Brigman, Director
Western North Carolina Regional Air Quality Agency

Mr. Mike Peyton
Director, EPA Region 4 Science and Ecosystems Support Division

CY 2012 State of North Carolina Ambient Air Monitoring Network Plan
U.S. EPA Region 4 Comments and Recommendations

This document contains U.S. EPA Region 4 comments and recommendations on the state of North Carolina's 2012 ambient air monitoring network plan (Network Plan). Ambient air monitoring rules, which include regulatory requirements that address network plans, data certification, and minimum monitoring requirements, among other requirements, are found in 40 CFR Part 58. Minimum monitoring requirements for criteria pollutants are listed in 40 CFR Part 58, Appendix D. Minimum monitoring requirements are listed for ozone (O₃), particulate matter less than 2.5 microns (PM_{2.5}), particulate matter less than 10 microns (PM₁₀), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), carbon monoxide (CO), and lead (Pb).

The minimum monitoring requirements are based on core based statistical area (CBSA) boundaries, as defined by the U.S. Office of Management and Budget (OMB); July 1, 2011, population estimates from the U.S. Census Bureau; and historical ambient air monitoring data. Minimum monitoring requirements for O₃, PM_{2.5}, PM₁₀, only apply to metropolitan statistical areas (MSAs), which are a subset of CBSAs that contain an urban core of 50,000 or more population. OMB currently defines 15 MSAs in the state of North Carolina. These MSAs and the respective July 1, 2011, population estimates from the U.S. Census Bureau are shown in Table 1.

Table 1: Metropolitan Statistical Areas and Populations

MSA Name	Population
Charlotte-Gastonia-Rock Hill, NC-SC	1,795,472
Virginia Beach-Norfolk-Newport News, VA-NC	1,679,894
Raleigh-Cary, NC	1,163,515
Greensboro-High Point, NC	730,966
Durham-Chapel Hill, NC	512,979
Winston-Salem, NC	482,025
Asheville, NC	429,017
Fayetteville, NC	374,157
Wilmington, NC	369,685
Hickory-Lenoir-Morganton, NC	364,567
Greenville, NC	192,690
Jacksonville, NC	179,719
Burlington, NC	153,291
Rocky Mount, NC	152,157
Goldensboro, NC	123,697

**Minimum O₃ Monitoring Requirements
40 CFR Part 58, Appendix D, Table D-2**

The state of North Carolina's proposed O₃ monitoring network meets the minimum requirements found in 40 CFR Part 58, Appendix D, Table D-2 for all MSAs. Additionally, the proposed O₃ monitoring network described in the Network Plan meets all of the design criteria of 40 CFR Part 58.

The Network Plan discusses that NC-DAQ may consider, depending on available resources, shutting down three O₃ monitors that are in excess of the required minimum monitoring. If NC-DAQ decides it would like to shutdown the monitors it will need to send a formal request to EPA.

Minimum PM₁₀ Monitoring Requirements

40 CFR Part 58, Appendix A, 3.3.1

40 CFR Part 58, Appendix D, Table D-4

The state of North Carolina's current PM₁₀ primary monitoring network meets the minimum requirements for all areas. All PM₁₀ collocation requirements for manual methods found in 40 CFR Part 58, Appendix A, 3.3.1 are currently being met. These include the requirement that fifteen percent of each network of manual PM₁₀ methods (at least one site) must be collocated.

Minimum PM_{2.5} Monitoring Requirements

40 CFR Part 58, Appendix A, 3.2.5

40 CFR Part 58, Appendix D, Table D-5

The state of North Carolina's current PM_{2.5} monitoring network meets the minimum requirements found in 40 CFR Part 58, Appendix D, Table D-5 for all MSAs. Manual PM_{2.5} collocation requirements are found in 40 CFR Part 58, Appendix A, 3.2.5. These include the requirement that fifteen percent of each network of manual PM_{2.5} methods (at least one site) must be collocated. The manual collocation requirements for PM_{2.5} are currently being met in the Network Plan.

The Network Plan discusses that NC-DAQ may consider, depending on available resources, shutting down two PM_{2.5} monitors. If NC-DAQ decides it would like to shutdown the monitors it will need to send a formal request to EPA.

PM_{2.5} Continuous Monitoring Requirements

40 CFR Part 58, Appendix D, 4.7.2

Regulatory requirements for continuous PM_{2.5} monitoring require that "...State, or where appropriate, local agencies must operate continuous PM_{2.5} analyzers equal to at least one-half (round up) the minimum required sites listed in Table D-5 of this appendix. At least one required continuous analyzer in each MSA must be collocated with one of the required FRM/FEM/ARM [federal reference method/federal equivalent method/approved regional method] monitors, unless at least one of the required FRM/FEM/ARM monitors is itself a continuous FEM or ARM monitor in which case no collocation requirement applies." These minimum continuous PM_{2.5} monitoring requirements are currently met in the all MSAs in the state. Also, the continuous PM_{2.5} collocation requirements are currently met in all MSAs. Therefore, the continuous PM_{2.5} monitoring network described in the 2012 Network Plan meets all of the design criteria of 40 CFR Part 58.

PM_{2.5} Background and Transport Sites

40 CFR Part 58, Appendix D, 4.7.3

Forty (40) CFR Part 58, Appendix D, 4.7.3 requires that "each state shall install and operate at least one PM_{2.5} site to monitor for regional background and at least one PM_{2.5} site to monitor for regional transport." The Network Plan identifies seven PM_{2.5} sites as general background sites that include: Mendenhall (AQS ID: 37-081-0013), Cherry Grove (AQS ID: 37-033-0001), Springfield Road (AQS ID: 37-065-0004), Kenansville (AQS ID: 37-061-0002), Boone (AQS ID: 37-189-0003), Candor (AQS

ID: 37-123-0001), and Jamesville (AQS ID: 37-117-0001). The Network Plan identifies three regional transport sites for PM_{2.5} identified as: Cherry Grove (AQS ID: 37-033-0001), Jamesville (AQS ID: 37-117-0001), and Bryson City (AQS ID: 37-173-0002). Therefore, NC-DAQ has satisfied the requirements of 40 CFR Part 58 for background and transport sites.

The Network Plan discusses that NC-DAQ may consider, depending on available resources, shutting down two regional transport/general background PM_{2.5} monitors and replacing them with BAMs. NC-DAQ will need to send a formal request to shut down these monitors to EPA, when it has finalized its decision. EPA will then consider the request.

**Lead Monitoring Requirements
40 CFR Part 58, Appendix D, 4.5**

Forty (40) CFR Part 58, Appendix D, 4.5 requires that “At a minimum, there must be one source-oriented SLAMS [state and local air monitoring station] site located to measure the maximum Pb concentration in ambient air resulting from each non-airport Pb source which emits 0.50 or more tons per year and from each airport which emits 1.0 or more tons per year...”

Section 4.5(a)(ii) of Appendix D to 40 CFR Part 58 provides the following provisions for a waiver of the Pb monitoring requirements:

“(ii) The Regional Administrator may waive the requirement in paragraph 4.5(a) for monitoring near Pb sources if the state or, where appropriate, local agency can demonstrate the Pb source will not contribute to a maximum Pb concentration in ambient air in excess of 50 percent of the NAAQS (based on historical monitoring data, modeling, or other means). The waiver must be renewed once every 5 years as part of the network assessment required under 58.10(d).”

In approving the state’s 2011 Network Plan, pursuant to the provisions of the above section, EPA granted waivers of the source-oriented ambient air monitoring requirements at two sources: Blue Ridge Paper Products, Inc. in Canton, North Carolina and Saint Gobain Containers in Wilson, North Carolina. The waivers must be renewed every five years as part of the network assessment required under 40 CFR §58.10(d). There are no sources in North Carolina that are required to have source-oriented Pb monitoring at this time.

Forty (40) CFR Part 58, Appendix D, 3(b) requires that “NCore sites in CBSAs with a population of 500,000 people (as determined in the latest Census) or greater shall also measure Pb either as Pb-TSP or Pb-PM₁₀.” This monitoring was required to begin December 27, 2011. The Network Plan indicates that Pb-PM₁₀ sampling is ongoing at the Charlotte NCore site (AQS ID: 37-119-0041) and the Raleigh NCore site (AQS ID: 37-183-0014). The Pb monitoring network described in the Network Plan meets all of the design criteria of 40 CFR Part 58.

**Sulfur Dioxide Monitoring Requirements
40 CFR Part 58, Appendix D, 4.4**

Ambient air monitoring network design criteria for SO₂ are found in Section 4.4 of Appendix D to 40 CFR Part 58. This section requires that “The population weighted emissions index (PWEI) shall be calculated by states for each core based statistical area (CBSA).” As a result, the SO₂ monitoring site(s) required in each CBSA will satisfy minimum monitoring requirements if the monitor(s) is sited within

the boundaries of the parent CBSA and is one of the following site types: population exposure, maximum concentration, source-oriented, general background, or regional transport. An SO₂ monitor at a NCore station may satisfy minimum monitoring requirements if that monitor is located within a CBSA with minimally required monitors consistent with Appendix D, 4.4.

EPA's Office of Air Quality Planning and Standards (OAQPS) have updated the PWEI calculations using the latest available emissions inventory data and population estimates. Several areas in Region 4 have decreased monitoring requirements as a result of these new calculations, including four CBSAs in North Carolina. The Virginia Beach-Norfolk-Newport News and Charlotte-Gastonia-Concorde CBSAs will be required to operate one monitor instead of two. The Greensboro-High Point and Winston-Salem CBSAs will be required to operate minimally no monitors instead of one. The requirements did not change for the Durham or Wilmington CBSAs. The SO₂ requirements and discussed monitoring requirement changes are shown in Table 2 below.

Table 2: PWEI and SO₂ Required Monitors in North Carolina

CBSA Name	Sept 2011 PWEI Values	Sept 2011 PWEI Required Monitors	July 2012 PWEI Values	July 2011 PWEI Required Monitors	Change in Monitors Required
Virginia Beach-Norfolk-Newport News, VA-NC	100,711	2	78,540	1	-1
Charlotte-Gastonia-Concord, NC-SC	127,397	2	34,426	1	-1
Durham, NC	28,837	1	18,885	1	0
Wilmington, NC	12,246	1	10,045	1	0
Greensboro-High Point, NC	6,576	1	2,897	0	-1
Winston-Salem, NC	8,894	1	2,691	0	-1

The SO₂ network is to be operational beginning January 1, 2013. Existing SO₂ monitoring sites described in the Network Plan meet the minimum requirements of 40 CFR Part 58, in all areas except the Durham CBSA. North Carolina has proposed to install a new SO₂ monitor at the Durham Armory site (AQS ID: 37-063-0015) to meet the PWEI requirement in this area. EPA approves this request.

**Nitrogen Dioxide (NO₂) Monitoring Requirements
40 CFR Part 58, Appendix D, 4.4**

Ambient air monitoring network design criteria for NO₂ are found in Section 4.3 of Appendix D to 40 CFR Part 58. There are three types of required NO₂ monitoring: near-road, area-wide, and Regional Administrator required. These types of NO₂ monitoring are described in sections 4.3.2, 4.3.3, and 4.3.4, respectively.

Any CBSA with a population of 500,000 or more persons is required to have a near-road NO₂ monitoring station that monitors expected maximum hourly concentrations near a major road. Any CBSA with a population of 2,500,000 or more persons or that has one or more roadway segments with a 250,000 or greater annual average daily traffic (AADT) count is required to have an additional near-road NO₂ monitoring station. The *Near-road NO₂ Monitoring Technical Assistance Document (TAD)* provides guidance to state and local agencies in selecting an appropriate near-road NO₂ monitoring location. This document can be found on the internet at <http://www.epa.gov/ttnamti1/files/nearroad/NearRoadTAD.pdf>.

Ambient air monitoring network design criteria for area-wide NO₂ sites are found in Section 4.3.3 of Appendix D to 40 CFR Part 58. Any CBSA with a population of 1,000,000 or more persons is required to monitor a location of expected highest NO₂ concentrations representing the neighborhood or larger spatial scales.

Ambient air monitoring network design criteria for Regional Administrator required NO₂ monitoring, often referred to as RA-40 monitoring, are found in Section 4.3.4 of Appendix D to 40 CFR Part 58. This section states, “the Regional Administrators, in collaboration with states, must require a minimum of forty additional NO₂ monitoring stations nationwide in any area, inside or outside of CBSAs, above the minimum monitoring requirements, with a primary focus on siting these monitors in locations to protect susceptible and vulnerable populations. The Regional Administrators, working with states, may also consider additional factors ... to require monitors beyond the minimum network requirement.”

Pending action by the EPA Administrator, EPA Region 4 supports the selection of the Garinger (AQS ID: 37-119-0041) and Millbrook (AQS ID: 37-183-0014) sites in fulfillment of the area-wide NO₂ monitoring requirement for the Charlotte-Gastonia-Rock Hill and Raleigh-Cary CBSAs. We note your acknowledgement that the Hattie Avenue site (AQS ID: 37-067-0022) should be considered among the NO₂ monitors intended to help protect susceptible and vulnerable populations. EPA Region 4 also supports the proposed near-road NO₂ site located at Triple Oak Road in the Raleigh-Cary CBSA and required by 40 CFR 58, Appendix D, 4.3.2.

The state will need to provide EPA with an addendum to its Network Plan containing additional information on its near-road NO₂ monitoring plans in the Charlotte-Gastonia-Rock Hill CBSA.

The addendum should also include additional information about the proposed near-road monitoring site. Section 13.5 of the near-road NO₂ TAD and Table 13.1 of the TAD discuss important site and road parameters when evaluating a near-road site. Using the TAD as a reference, additional information provided on near-road NO₂ monitoring should include; at minimum, the following information for each site:

- Proposed AQS ID
- Street address and site geographical coordinates (longitude and latitude)
- Target road segment description including type of road
- Site pictures facing 4-8 directions – N, S, E, W, NE, NW, SE, SW
- Probable distance between the inlet probe and the outside nearest edge of the target road
- Site property description including property owner and feasibility of site access
- Roadway design and configuration
- Presence of any roadside structures
- Nearest windrose representative of the site and orientation of the site with respect to the predominate wind direction
- Traffic data and ranking information (see Table 6-3 of the Technical Assistance Document), as well as the source and vintage of the data
- Sampling and analysis method(s) for each measured parameter
- Operating schedules for each monitor at the site.

- Monitoring objective and spatial scale of representativeness for each monitor at the site.
- MSA, CBSA, CSA or other area represented by the monitor
- Discussion of other siting criteria

Once EPA Region 4 is in agreement with the proposed near-road site, the state will need to make the information available for public inspection. Upon completion of the public inspection process, EPA Region 4 will submit the NO₂ addendum to the Network Plan to the EPA Administrator for approval per 40 CFR 58.10(a)(5). We will continue to work with your agency as needed to get the near-road NO₂ site operational as expeditiously as possible.

Air Quality Index (AQI) Reporting
40 CFR §58.50

AQI reporting is required in MSAs with populations over 350,000. There are 10 MSAs in the state of North Carolina required to report an AQI: Charlotte-Gastonia-Concord, Virginia Beach-Norfolk-Newport News, Raleigh-Cary, Greensboro-High Point, Durham-Chapel Hill, Winston-Salem, Asheville, Hickory-Lenoir-Morganton, Fayetteville, and Wilmington. NC-DAQ meets these AQI reporting requirements.

Monitoring Network Changes Proposed by NC-DAQ

In the Network Plan, NC-DAQ has proposed to discontinue monitoring for CO at the Rockwell site (AQS ID: 37-159-0021). EPA has reviewed this request for discontinuation and determined that it meets the requirements of 40 CFR §58.14(c)(6) for monitor discontinuation.

National Core (NCore) Monitoring Network

Ambient air monitoring network criteria for NCore sites are found in Section 3 of Appendix D to 40 CFR Part 58. NC-DAQ designated two NCore sites in the Network Plan. The first site (AQS ID 37-183-0014) is located at the East Millbrook Middle School site in Raleigh, NC. The second site (AQS ID 37-119-0041) is located at the Garinger site in Charlotte, NC and is operated by the Mecklenburg County Land Use and Environmental Services Agency. Official EPA approval was granted for these sites on October 30, 2009. The 2012 Network Plan meets the minimum monitoring requirements for NCore sites.

Appendix G. Monitoring Agreement Between Virginia and North Carolina for the Virginia Beach-Norfolk-New Port News Metropolitan Statistical Area



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
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MAR 06 2007

4APT-ATMB

Keith Overcash, Director
Division of Air Quality
NC Department of Environment &
Natural Resources
641 Mail Service Center
Raleigh, NC 27699-1641



Dear Mr. Overcash:

This correspondence is in response to two letters from the North Carolina Department of Environment and Natural Resources, Division of Air Quality (NCDAQ). The first letter dated January 4, 2007; "40 CFR Part 58.12(d)(1) Daily PM_{2.5} Sampling - Catawba County", and the second letter dated January 11, 2007; "Virginia/North Carolina MSA Agreement" are discussed in this letter.

40 CFR Part 58.12(d)(1) Daily PM_{2.5} Sampling - Catawba County

Your letter stated that the Catawba site Air Quality System (AQS) site, 37-035-0004, met the operational requirement for everyday sampling frequency effective January 1, 2007. Region 4 acknowledges your concerns regarding the increase of the 103 Grant Operations and Maintenance funding that will be the result of the increased PM_{2.5} sampling frequency. Funds will be allocated for new monitoring requirements mandated in the revisions to the ambient air monitoring regulations in the FY07 103 Grant. These funds will be distributed to the State and Local Agencies as expeditiously as possible. However, a definitive date cannot be given at this time.

Virginia/North Carolina MSA Agreement

Region 4 approves the agreement between the Commonwealth of Virginia Department of Environmental Quality (VADEQ) and NCDAQ in respect to North Carolina's and Virginia's ambient air monitor network design for the Norfolk-Virginia Beach-Newport News, VA-NC Metropolitan Statistical Area (MSA) in accordance with 40 CFR Part 58 Appendix D Section 2 (e). Region 4 concurs with VADEQ's assessment that their PM_{2.5} and ozone monitoring network meet the minimum requirement for this MSA. Region 4 also concurs that the addition of a PM₁₀ monitor at the proposed Hampton, Virginia site will be sufficient to meet applicable PM₁₀ network design criteria for this area.

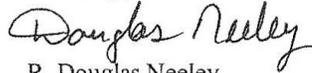


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If you have further questions, please contact Artra B. Cooper of EPA Region 4 at (404) 562-9047.

Sincerely,



R. Douglas Neeley

Chief

Air Toxics and Monitoring Branch

Air Pesticides & Toxics Management Division

cc: Hoke Kimball, NCDAQ
Charles Valerie, NCDAQ
James E. Sydnor, Director. VADEQ
Walter Wilkie, US EPA Region III Air Division



1/11/07

North Carolina Department of Environment and Natural Resources
Division of Air Quality

Michael F. Easley, Governor

William G. Ross, Jr., Secretary
B. Keith Overcash, P.E., Director

January 11, 2007

Mr. R. Douglas Neeley, Chief
Air Toxics and Monitoring Branch
US EPA Region IV
Atlanta Federal Center
61 Forsyth Street
Atlanta, GA 30303-8960

Subject: Norfolk-Virginia Beach-Newport News, Virginia/North Carolina MSA agreement

Dear Mr. Neeley:

Attached you will find a copy of the December 21, 2006 agreement between Virginia and North Carolina addressing the September 2006 revisions to the Ambient Air Monitoring Regulations from 40 CFR Part 58 Appendix D listed under EPA-HQ-OAR-2004-0018; FRL-RIN 2060-AJ25. The Norfolk-Virginia Beach- Newport News, Virginia/NC MSA includes Currituck County, North Carolina as part of this MSA.

This letter requests your approval of the attached agreement letter between Virginia and North Carolina with respect to the following passage under Network Design Criteria page 451 2 (e):

"The EPA recognizes that there may be situations where the EPA Regional Administrator and the affected State or Local agencies may need to augment or to divide the overall MSA/CSA monitoring responsibilities and requirements among these various agencies to achieve an effective network design. Full monitoring requirements apply separately to each affected State or local agency in the absence of an agreement between the affected agencies and the EPA Regional Administrator."

Sincerely,

B. Keith Overcash, P.E.

Attachments

CC: James E. Sydnor, Dir. Virginia DEQ Air Quality, PO Box 1105, Richmond VA 32318
Hoke Kimball, NC DAQ
Charles Valrie, NC DAQ
Norfolk_Va Beach-Newport New, VFA-NC MSA agreement

Ambient Monitoring Section

1641 Mail Service Center, Raleigh, North Carolina 27699-1641
2728 Capital Blvd., Raleigh, North Carolina 27604
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Mailed Jan. 11

North Carolina Department of Environment and Natural Resources
Division of Air Quality

Michael F. Easley, Governor

William G. Ross, Jr., Secretary
B. Keith Overcash, P.E., Director

January 11, 2007

Mr. James E. Sydnor, Director
Air Quality Division
Virginia Department of Environmental Quality
Richmond, Virginia 23218

Subject: Norfolk-Virginia Beach-Newport News, Virginia/North Carolina MSA agreement

Dear Jim:

We are in receipt of your letter of December 21, 2006 which addresses the September 2006 revisions to the Ambient Air Monitoring Regulations from 40 CFR Part 58 Appendix D listed under EPA-HQ-OAR-2004-0018; FRL-RIN 2060-AJ25 on the following topic:

"The EPA recognizes that there may be situations where the EPA Regional Administrator and the affected State or Local agencies may need to augment or to divide the overall MSA/CSA monitoring responsibilities and requirements among these various agencies to achieve an effective network design. Full monitoring requirements apply separately to each affected State or local agency in the absence of an agreement between the affected agencies and the EPA Regional Administrator."

Thank you for the invitation to participate in Virginia's annual ambient air monitoring network review. Please know that the North Carolina annual monitoring network review is available for your staff to use at any time also. We are in agreement with your letter and will have a copy sent to our EPA representative in Region IV to represent the fulfillment of the above requirement and also for their approval.

Please let us know if you have any questions regarding our monitoring as part of the Norfolk-Virginia Beach-Newport News MSA.

Sincerely,

B. Keith Overcash, P.E.

CC: Hoke Kimball, NC DAQ
Charles Valrie, NC DAQ
Joette Steger, NC DAQ

Norfolk_Va Beach-Newport New, VEA-NC MSA agreement2

Ambient Monitoring Section

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L. Preston Bryant, Jr.
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4000
1-800-592-5482

December 21, 2006

Mr. B. Keith Overcash
Division of Air Quality
North Carolina Department of Environment and Natural Resources
2728 Capital Boulevard (1641 MSC)
Raleigh, North Carolina 27699

Mr. Overcash: *Keith*

The September 2006 Revisions to the NAAQS for Particulate Matter ((FLR-RIN 2060-AJ25, page 451), states that "The EPA recognizes that State or local agencies must consider MSA/CSA boundaries and their own political boundaries and geographical characteristics in designing their air monitoring networks. The EPA recognizes that there may be situations where the EPA Regional Administrator and the affected State or Local agencies may need to augment or to divide the overall MSA/CSA monitoring responsibilities and requirements among these various agencies to achieve an effective network design. Full monitoring requirements apply separately to each affected State or local agency in the absence of an agreement between the affected agencies and the EPA Regional Administrator." The document also gives minimum requirements for monitoring ozone, PM2.5 and PM10 with regard to MSA population (tables attached). Virginia and North Carolina share the Norfolk-VA Beach-Newport News, VA-NC MSA, which is comprised of the following areas:

Counties

- Currituck County, NC
- Gloucester County, VA
- Isle of Wight County, VA
- James City County, VA
- Mathews County, VA
- Surry County, VA
- York County, VA

Cities

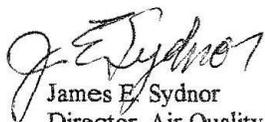
- Chesapeake, VA
- Hampton, VA
- Newport News, VA
- Norfolk, VA
- Poquoson, VA
- Portsmouth, VA
- Suffolk, VA
- VA Beach, VA
- Williamsburg, VA

The US Census Bureau does not include Surry County, VA in the Norfolk-VA Beach-Newport News, VA-NC MSA. Other listings include Surry County and Southampton County. The most prevalent listing (as shown) is from the US Office of Management and Budget.

The Norfolk-VA Beach-Newport News, VA-NC MSA 2000 population as given by the Brookings Institute is 1.6 million. The Virginia air monitoring network meets the minimum number of monitors in this MSA for ozone and PM2.5. However, where the table calls for two PM10 monitors, there is only one PM10 monitoring site in the MSA. A second PM10 is scheduled to be installed in the Hampton, VA area this month.

The VA DEQ suggests that the ambient air monitoring network (Hampton PM10 included) is sufficient to reflect proper characterization air pollution in the Norfolk-Virginia Beach-Newport News, VA-NC MSA. However it is also the intent of this letter to assure North Carolina that the VA DEQ will share any and all quality assured ambient air data collected in the Virginia portion of this MSA. It is also the intent of the VA DEQ that the North Carolina Department of Environment is notified and invited to participate in Virginia's annual ambient air monitoring network review.

Sincerely,



James E. Sydnor
Director, Air Quality Division
Virginia Department of Environmental Quality

JES/tj

Attachments

cc: Walter Wilkie, US EPA III

Hoke Kimball, Ambient Monitoring Section, NC DENR

Thomas Jennings, Air Quality Monitoring, VA DEQ

Table D-2 of Appendix D to Part 58. SLAMS Minimum O₃ Monitoring Requirements.

MSA population ^{1,2}	Most recent 3-year design value concentrations $\geq 85\%$ of any O ₃ NAAQS ³	Most recent 3-year design value concentrations $< 85\%$ of any O ₃ NAAQS ^{3,4}
>10 million	4	2
4 - 10 million	3	1
350,000 - <4 million	2	1
50,000 - <350,000 ⁵	1	0

¹ Minimum monitoring requirements apply to the Metropolitan statistical area (MSA).

² Population based on latest available census figures.

³ The ozone (O₃) National Ambient Air Quality Standards (NAAQS) levels and forms are defined in 40 CFR part 50.

⁴ These minimum monitoring requirements apply in the absence of a design value.

⁵ Metropolitan statistical areas (MSA) must contain an urbanized area of 50,000 or more population.

Table D-4 of Appendix D to Part 58. PM_{10} Minimum Monitoring Requirements (Number of Stations per MSA)¹

Population Category	High Concentration ²	Medium Concentration ³	Low Concentration ^{4,5}
> 1,000,000	6-10	4-8	2-4
500,000 - 1,000,000.....	4-8	2-4	1-2
250,000 - 500,000.....	3-4	1-2	0-1
100,000-250,000.....	1-2	0-1	0

¹ Selection of urban areas and actual numbers of stations per area within the ranges shown in this table will be jointly determined by EPA and the State Agency.

² High concentration areas are those for which ambient PM10 data show ambient concentrations exceeding the PM10 NAAQS by 20 percent or more.

³ Medium concentration areas are those for which ambient PM10 data show ambient concentrations exceeding 80 percent of the PM10 NAAQS.

⁴ Low concentration areas are those for which ambient PM10 data show ambient concentrations less than 80 percent of the PM10 NAAQS.

⁵ These minimum monitoring requirements apply in the absence of a design value.

Table D-5 of Appendix D to Part 58. PM_{2.5} Minimum

Monitoring Requirements

MSA population ^{1,2}	Most recent 3-year design value $\geq 85\%$ of any PM _{2.5} NAAQS ³	Most recent 3-year design value $< 85\%$ of any PM _{2.5} NAAQS ^{3,4}
> 1,000,000	3	2
500,000 - 1,000,000	2	1
50,000 - < 500,000 ⁵	1	0

¹ Minimum monitoring requirements apply to the Metropolitan statistical area (MSA).

² Population based on latest available census figures.

³ The PM_{2.5} National Ambient Air Quality Standards (NAAQS) levels and forms are defined in 40 CFR part 50.

⁴ These minimum monitoring requirements apply in the absence of a design value.

⁵ Metropolitan statistical areas (MSA) must contain an urbanized area of 50,000 or more population.

Appendix H. Waiver for Second Wilmington Ozone Monitor



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

NOV - 9 2011

Ms. Shelia Holman
Director
Division of Air Quality
North Carolina Department of
Environment and Natural Resources
1641 Mail Service Center
Raleigh, North Carolina 27699-1641

Dear Ms. Holman:

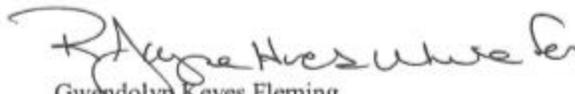
In a December 21, 2010, letter to you, the U.S. Environmental Protection Agency approved a waiver of the requirement that the state operate two ozone monitors in the Wilmington Metropolitan Statistical Area (MSA). At that time, EPA stated that it would re-evaluate the appropriateness of the waiver once EPA completed its reconsideration of the Ozone National Ambient Air Quality Standard (NAAQS).

On September 22, 2011, the Agency completed its reconsideration of the Ozone NAAQS and announced that the NAAQS would not change. This action left the Ozone NAAQS, which was promulgated in 2008, at a level of 0.075 parts per million (ppm).

Because the Wilmington MSA has a low risk for exceeding the 0.075 ppm NAAQS due to ambient air ozone concentrations which have been trending lower (i.e., decreasing design value), sea breezes, attainment status, and a population total that is only slightly over the threshold requirement for a second ozone monitor, EPA believes that the waiver of the second monitor is appropriate. The waiver is in effect until the next 5-year network assessment is completed and approved in 2015.

If you have any questions relating to this matter, please contact Katherine Snyder of my staff at (404) 562-9840.

Sincerely,


Gwendolyn Keyes Fleming
Regional Administrator

cc: Archie Lee, SESD



Appendix I. Request for Waiver from Longer Ozone Season for Mountain Sites



North Carolina Department of Environment and Natural Resources

Division of Air Quality

Beverly Eaves Perdue
Governor

Sheila C. Holman
Director

Dee Freeman
Secretary

December 21, 2011

Mr. Doug Neeley
Chief, Air Toxics and Monitoring Branch
U.S. Environmental Protection Agency Region IV
Sam Nunn Atlanta Federal Center
61 Forsyth Street S.W.
Atlanta, GA 30303-8960

Subject: Ozone Monitoring Season Exemption for High Elevation Sites

Dear Mr. ^{Doug}Neeley,

The current ozone monitoring season for North Carolina is April through October. EPA's proposed ozone rule would extend this season from March through October. Although the earlier start date is still just a proposal, North Carolina requests that the ozone season for our high elevation mountain sites remain at April through October.

Our concern is that the remote high elevation sites might not be accessible for a March start date. The roads are sometimes not passable, or closed by Federal or local authorities, well into March due to winter weather conditions (e.g., ice, snow, fallen trees or rocks, damage to the driving surface, etc.). The earlier start date would require us to get to the mountain tops in February to calibrate equipment and perform other quality assurance (QA) functions. Depending on the weather it may be possible in some years. In other years it is questionable whether we could do it safely, if at all.

The specific sites covered by this request, and their elevations above sea level:

- Joanna Bald (AQS site #37-075-0001) (4,688 ft)
- Purchase Knob (AQS site #37-087-0036) (5,085 ft)
- Frying Pan (AQS site #37-087-0035) (5,200 ft)
- Mt. Mitchell (AQS site #37-199-0004) (6,502 ft)
- Linville (AQS site #37-011-0002) (3,238 ft)

The current regulation, 40 CFR Part 58, Appendix D, Section 4.1(i) gives Region IV the authority to approve a deviation to the ozone monitoring season.

In EPA's "Guideline for Selecting and Modifying the Ozone Monitoring Season Based on an 8-Hour Ozone Standard" (EPA-454/R-98-001), it is noted:

1641 Mail Service Center, Raleigh, North Carolina 27699-1641
217 West Jones Street, Raleigh, NC 27603
Phone: 919-707-8401 / FAX 919-715-0718 / Internet: www.ncair.org

One
North Carolina
Naturally

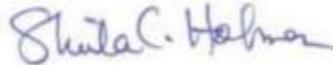
"For the initial formulation of the ozone monitoring seasons ... The basic premise was that areas with monthly mean maximum temperatures predominantly below 55 degrees Fahrenheit (F) are expected to have hourly concentrations less than 0.08 ppm ..."

North Carolina operates meteorology stations at two of the five sites, Joanna Bald and Linville. The monthly mean maximum temperature for March for 2007-2011 was 53°F at Joanna Bald and 55°F at Linville (the lowest elevation of the five sites). Additionally, data from the North Carolina State Climate Office shows the highest monthly mean maximum temperatures during the past four years to be to 44°F at Mt. Mitchell (the highest elevation). These maximum temperatures are about 9°F colder in February when we would be accessing these remote mountain areas to recalibrate equipment and perform other QA functions.

We do operate three of these sites year-round (Purchase Knob, Joanna Bald, and Frying Pan). But we cannot always get to the sites to perform QA functions during the winter, so we do not certify the off-season data. The monitors run simply to provide raw, unvalidated data for public information on the National Park Service's Great Smoky Mountains National Park and U.S. Forest Service's websites.

Thank you in advance for considering this request to exempt Joanna Bald, Purchase Knob, Frying Pan, Mt. Mitchell, and Linville from ozone monitoring earlier than April. Although the rule is not yet final, having this exemption in hand will ensure a measure of safety to our staff, and assist us in planning and managing our limited resources.

Sincerely,



Sheila C. Holman

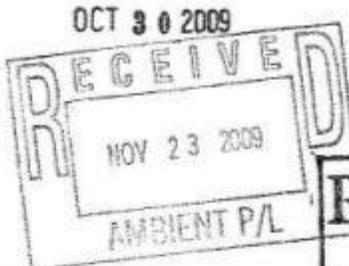
cc:
Mike Abraczinskas
Donnie Redmond
Ryan Brown, EPA

Appendix J. NCore Monitoring Plan Approval Letter



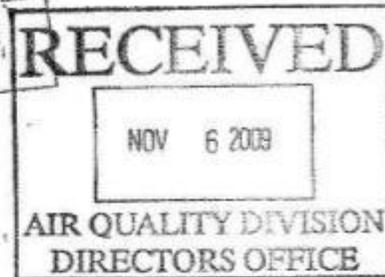
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

*Donna
G. St. Steila*



OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

Mr. Keith Overcash, Director
Division of Air Quality
NC Department of Environment & Natural Resources
1641 Mail Service Center
Raleigh, NC 27699-1641



Dear Mr. Overcash:

This letter transmits our approval of North Carolina's proposed NCore station at East Millbrook Middle School in Raleigh, AQS# 37-183-0014, as required by the Ambient Air Monitoring Regulations. According to these rules (see 40 CFR 58.11(c)), NCore network design and changes must be approved by the Environmental Protection Agency's (EPA) Administrator. This authority has been delegated to the Director of the Air Quality Assessment Division in EPA's Office of Air Quality Planning and Standards.

In considering your proposed NCore monitoring station, we worked with your Regional Office on a review of your annual monitoring network plan and an assessment of the proposed location and characteristics of the area to be monitored. After careful consideration of your proposal, we are pleased to approve this station as part of the NCore network.

In your agency's plan for NCore, a request was made to waive measuring NOy, which is a required measurement. After assessing available NOy observations and modeling outputs and to assure consistency across all NCore stations, we are affirming the requirement to measure NOy at all NCore stations. Please make arrangements with your Regional Office on a schedule to implement the measurement of NOy at your NCore station.

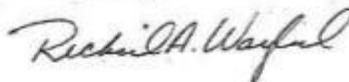
By EPA's rules (see 40 CFR 58.13), an approved NCore station is expected to be operating with all required measurements by January 1, 2011. Enclosure A provides an update on required measurements and Enclosure B provides EPA's Air Quality System instructions on coding for NCore monitors and data. Please share this information with your staff responsible for the NCore station measurements and data submission.

Internet Address (URL) • <http://www.epa.gov>

Recycled/Recyclable • Printed with Vegetable Oil Based Inks on Recycled Paper (Minimum 25% Postconsumer)

Thank you for your program's efforts in developing the NCore station plan and establishing the site. For questions, you may contact Tim Hanley at hanley.tim@epa.gov and 919-541-4417, or David Shelow at shelow.david@epa.gov and 919-541-3776.

Sincerely,



Richard A. Wayland
Director
Air Quality Assessment Division

2 Enclosures

cc: Doug Neeley, EPA Region 4

Appendix K. Public Notice of Availability of Network Plan

Public notice of availability of the network plan was provided on the North Carolina Division of Air Quality website from May 30 through June 28, 2013. In addition, notification was sent out via public e-mail distribution lists maintained for permitting, rules, ambient monitoring, and air toxics. Oral announcements were also made at the Outside Involvement Committee and North Carolina Scientific Advisory Board meetings in May

Steger, Joette

From: Burluson, Joelle
Sent: Wednesday, May 29, 2013 6:40 PM
To: Burluson, Joelle
Cc: Steger, Joette
Subject: NC DAQ Ambient Air Monitoring Annual Network Plan Available for Public Comment

Hello Air Quality Stakeholders:

Please see the message below and note that replies to this message will go directly to
DENR.DAQ.Ask_Ambient@lists.ncmail.net

**North Carolina Department of Environment and Natural Resources
North Carolina Division of Air Quality
Public Notice**

Changes to the division's Ambient Air Quality Monitoring Network planned during 2013 and 2014 will be available for public comments from May 30 to June 28, 2013. The proposed changes are required to be submitted to the U.S. Environmental Protection Agency (EPA) by July 1, 2013.

INFORMATION: The Ambient Air Monitoring Annual Network Monitoring Plan will be posted for 30 days on the division's website at www.ncair.org starting on Thursday, May 30, 2013. It will also be available for review at the Division of Air Quality Raleigh Central Office located at 217 West Jones Street, Raleigh, North Carolina. Copies may also be obtained from Donnie Redmond at the address below.

COMMENT PROCEDURES: All persons interested in these matters are invited to comment. Email comments to:
DENR.DAQ.Ask_Ambient@lists.ncmail.net or mailed to:

Donnie Redmond
NC Division of Air Quality
1641 Mail Service Center
Raleigh, North Carolina 27699-1641
(919)-707-8468
(919)-707-8468 Fax

Have a nice day.

Joelle Burluson, EIT, CPM, Supervisor
Planning Section, Rules Development Branch
NC DENR, Division of Air Quality
1641 Mail Service Center
Raleigh, NC 27699-1641
Phone/Fax: 919-707-8720
www.ncair.org
joelle.burluson@ncdenr.gov

Please complete the DENR Customer Service Survey by May 31 to give us feedback on how we are doing and how we can improve: <https://www.surveymonkey.com/s/2013DENRCustomerService>

Please contact sac@ncdenr.gov if you have problems accessing the survey.

***Please note: Effective October 24, 2011, DAQ's Central Office relocated to the new Green Square Office Complex at 217 West Jones Street, Raleigh, NC. ***

Steger, Joette

From: Cornelius, Wayne
Sent: Wednesday, May 29, 2013 3:16 PM
To: Steger, Joette
Subject: FW: PUBLIC NOTICE: Ambient Air Quality annual monitoring network plan

About 30 people on the annual reports distribution list.

From: Cornelius, Wayne
Sent: Wednesday, May 29, 2013 15:13
To: 'ggodard@ucpcog.org'
Subject: PUBLIC NOTICE: Ambient Air Quality annual monitoring network plan

GREG T GODARD EXEC DIR
REGION L COG
PO BOX 9
121 NASH STREET
WILSON NC 27894

I have been asked to forward the following Public Notice to current subscribers to the distribution list for ambient monitoring publications. If you have any pertinent comments, please respond as the notice directs. Do not reply directly to me (other than to change your contact information if necessary). Thanks!

Wayne L Cornelius, PhD
Statistician
NC Division of Air Quality

North Carolina Department of Environment and Natural Resources

North Carolina Division of Air Quality

Public Notice

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Donnie Redmond
NC Division of Air Quality
1641 Mail Service Center
Raleigh, North Carolina 27699-1641
(919)-707-8468
(919)-707-8468 Fax

E-mail correspondence to and from this address may be subject to the North Carolina Public Records Law and may be disclosed to third parties unless the contents are exempt by statute or other regulation.

To give us feedback on how we are doing and how we can improve, please respond to a DENR Customer Service Survey available until May 31 at <https://www.surveymonkey.com/s/2013DENRCustomerService>. If you have problems accessing the survey, contact eac@ncdenr.gov.

Steger, Joette

From: Cornelius, Wayne
Sent: Wednesday, May 29, 2013 2:34 PM
To: Steger, Joette
Subject: PUBLIC NOTICE: Ambient Air Quality annual monitoring network plan

Dr Joette L Steger

I have been asked to forward the following Public Notice to current subscribers to the Pollen Report distribution list (and past subscribers whose email addresses are still on file). If you have any pertinent comments, please respond as the notice directs. Do not reply directly to me (other than to change your contact information if necessary). Thanks!

Wayne L Cornelius, PhD
Statistician
NC Division of Air Quality

North Carolina Department of Environment and Natural Resources

North Carolina Division of Air Quality

Public Notice

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Raleigh, North Carolina 27699-1641
(919)-707-8468
(919)-707-8468 Fax

E-mail correspondence to and from this address may be subject to the North Carolina Public Records Law and may be disclosed to third parties unless the contents are exempt by statute or other regulation.

				Gatano)
13 EPA Comment Period Ends for Hanson Brick East, LLC, dba Hanson Brick-Monroe (Monroe) Air Quality Permit (Jenny Sheppard) EPA Comment Period Ends for University of North Carolina at Chapel Hill (Chapel Hill) Air Quality Permit (Rahul Thaker) Public Comment Period Ends for Liggett Group, LLC (Mebane) Air Quality Permit (Betty Gatano)	14 Public Hearings Concerning the Amendments to the Rules 15A NCAC 02D .1104 Toxic Air Pollutant Guidelines and 15A NCAC 02Q .0711 Emission Rates Requiring a Permit (arsenic AAL revision) Outside Involvement Committee Meeting 1:30 pm Raleigh, NC	15	16	17 Public Comment Period ends for Arauco Panels SOC EPA Comment Period Ends for Bernhardt Furniture Company (Lenoir) Air Quality Permit (Judy Lee) Public Notice of Intent to Issue an Air Quality Permit to IAC Albemarle, LLC Automotive Carpets Division (Albemarle) (Betty Gatano) IAC (Draft Permit) IAC (Permit Rev.) EPA Comment Period Begins for IAC Albemarle, LLC Automotive Carpets Division (Albemarle) Air Quality Permit (Betty Gatano)
20 Public Notice of Intent to Issue an Air Quality Permit to Bridgestone Americas Tire Operations, LLC (Wilson) (Joseph Voelker) Bridgestone (Draft Permit) Bridgestone (Permit Rev.) EPA Comment Period Begins for Bridgestone Americas Tire Operations, LLC (Wilson) Air Quality Permit (Joseph Voelker)	21	22	23	24 Public Notice of Intent to Issue an Air Quality Permit to Kincaid Furniture Company, Inc., Plant 1 (Hudson) (Joseph Voelker) Kincaid (Draft Permit) Kincaid (Permit Rev.) EPA Comment Period Begins for Kincaid Furniture Company, Inc., Plant 1 (Hudson) Air Quality Permit (Joseph Voelker)
27 EPA Comment Period Ends for Liggett Group, LLC (Mebane) Air Quality Permit (Betty Gatano)	28	29 NCSAB Raleigh, NC 2PM	30 Public Comment Period Begins NC DAQ 2013 Monitoring Plan	31

Note: Links to Public Notices, Draft Permits, and Permit Reviews are removed once the corresponding permit is issued shown on calendar for issued permits are for reference only. Please contact Kathy Hash, DAQ Permitting at (919) 707-8734 or Kathy.Hash@ncdenr.gov for information on these en

North Carolina Department of Environment and Natural Resources

Division of Air Quality



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- [Shale Gas, Air Quality Issues](#)
- [North Carolina meets tougher federal standard for sulfur dioxide](#)
- [Air quality permits now available on DAQ's website](#)
- [Want Clean Air? You Can Help. The Road to Clean Air \(Newspaper In Education insert\)](#)

Environmental Emergency

About DAQ

Our mission, Organizational structure, Regional offices, more...

News & Public Outreach

Current press releases, Air Awareness Program, Brochures, more...

Monitoring Data

Current (by Site), Current (by Monitor), Haze Cams, Air Quality Index, Archives, Pollen, more...

Emissions Inventory

Emission Summaries, Forms, Instructions, Greenhouse Gases, Tools, Point Source Emissions Tool, more...

Planning & Attainment

Ozone, Particulates (PM 2.5), Sulfur Dioxide (SO₂), Climate Change, more...

Air Toxics Program

Investigations, Studies, Science Advisory Board, Risk assessment, 112r, more...

Rules, Policies, & Regulations

Air quality rules, Draft rules, Rules in the hearing process, more...

Motor Vehicles

Auto emissions inspections, DER Grants, MSER Grants, APU Rebates, Idle Reduction, more...

Permits

Current Permits, Permits Without Zoning, Application forms, Fees, Modeling & meteorology, more...

Compliance & Enforcement

Penalties, Stage I vapor recovery, Emission Measurement, CAM, more...

Appendix L. Public Comments Received

No public comments were received. No changes were made to the network plan after it went out for public comment other than to add information on public notice and public comments received (Appendices K and L).

Glossary

AQS - Air Quality System
AQI - Air Quality Index
ARM - Approved Regional Method
BAM - Beta Attenuation Method
CO - Carbon Monoxide
CFR - Code of Federal Regulations
EPA - Environmental Protection Agency
FEM – Federal Equivalent Method
FRM - Federal Reference Method
IMPROVE - Interagency Monitoring of Protected Visual Environments
MSA - Metropolitan Statistical Area
NAAQS - National Ambient Air Quality Standards
NC-DAQ - North Carolina Division of Air Quality
NCore - National Core (Ambient Monitoring Network Station)
NO₂ - Nitrogen Dioxide
NO_y - Oxides of Nitrogen
O₃ - Ozone
Pb - Lead
PM - Particulate Matter
PM 2.5 - Fine Particulate (particles of 2.5 microns aerodynamic diameter and below)
PM 10 - Particles of 10 microns aerodynamic diameter and below
PSD - Prevention of Significant Deterioration
SLAMs - State and Local Air Monitoring Station
SIP – State Implementation Plan
SO₂ - Sulfur Dioxide
SPM - Special Purpose Monitor
TECO - Thermo Environmental, Incorporated
TEOM - Tapered Element Oscillating Microbalance
TLE - Trace Level (monitor)
VDEQ - Virginia Department of Environmental Quality
WINS - Well Impactor Ninety Six (PM 2.5 separator)