

# State of Alabama Ambient Air Monitoring 2013 Consolidated Network Review



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## Definitions and Acronyms

AAQM	ambient air quality monitoring
AAQMP	Ambient Air Quality Monitoring Plan
ADEM	Alabama Department of Environmental Management
Appendix D	Volume 40, Code of Federal Regulations, part 58, Appendix D
AQS	air quality system
Avg	average
Bham	Birmingham
CBSA	Core Based Statistical Area
CFR	<i>Code of Federal Regulations</i>
CO	Carbon Monoxide
CSA	Consolidated Statistical Area
EPA	Environmental Protection Agency
FEM	Federal Equivalent Method
FRM	Federal Reference Method
HDNR	Huntsville Division of Natural Resources
hr	hour
hi-vol	high-volume PM <sub>10</sub> sampler
JCDH	Jefferson County Department of Health
Low-vol	low-volume particulate sampler
m <sup>3</sup>	cubic meter
min	minute
ml	milliliter
MSA	metropolitan statistical area
NAAQS	national ambient air quality standard
NCore	National core monitoring (multi-pollutant)
O <sub>3</sub>	ozone
PAMS	photochemical air monitoring station
Pb	lead
PM	particulate matter
PM <sub>2.5</sub>	particulate matter less than 2.5 micrometers diameter
PM <sub>10</sub>	particulate matter less than 10 micrometer diameter
PM <sub>10-2.5</sub>	particulate matter less than 10 microns but greater than 2.5 microns
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
SLAMS	state and local air monitoring station
SO <sub>2</sub>	sulfur dioxide
SPM	special purpose monitor
STN (PM <sub>2.5</sub> )	Speciation Trends Network
TEOM	Tapered Element Oscillating Microbalance (Rupprecht and Patashnick Co.)
TPY	Tons per Year
TSP	total suspended particulate
URG	URG-3000N PM <sub>2.5</sub> Speciation monitoring carbon-specific sampler
USEPA	United States Environmental Protection Agency
° C	degree Celsius
µg/m <sup>3</sup>	micrograms (of pollutant) per cubic meter (of air sampled)

## Introduction

In October 2006, U.S.EPA issued final Federal Regulations (40 CFR 58) concerning state and local agency ambient air monitoring networks. These regulations require states to submit an annual monitoring network review to U.S.EPA. This network plan is required to provide the framework for establishment and maintenance of an air quality surveillance system and to list any changes that are proposed to take place to the current network during the 2013 season.

## Public Review and Comment

The annual monitoring network review must be made available for public inspection for thirty (30) days prior to submission to U.S.EPA.

For 2013, this document was placed on ADEM's website on June 5<sup>th</sup> to begin a 30 day public review period. This document can be accessed at the following link:

<http://www.adem.state.al.us/newsEvents/publicNotices.cnt> then choose this document.

Or by contacting:

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## Overview of Alabama's Air Monitoring Network

Monitors in the state of Alabama are operated for a variety of monitoring objectives. These objectives include determining whether areas of the state meet the National Ambient Air Quality Standards (NAAQS), for public information (such as, participation in EPA's AirNow program), Air Quality Index (AQI) reporting for larger Metropolitan Statistical Areas MSAs, for use in Air Quality models and to provide data to Air Quality Researchers. Alabama monitors the six (6) criteria pollutants which have NAAQS identified for them; CO, Lead, NO<sub>2</sub>, Ozone, particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), and SO<sub>2</sub>. There are other non-criteria pollutants that are also monitored for special purposes (such as PM<sub>2.5</sub> speciated compounds). In addition meteorological data are also collected to support the monitoring and aid in analysis of the data.

In Alabama the air quality surveillance system is operated by the state environmental agency and two local programs. The agencies are the Alabama Department of Environmental Management (ADEM), the Jefferson County Department of Health (JCDH), and the Huntsville Department of Natural Resources (HDNR). Each of these agencies has performed the required annual review of their portion of the current ambient air quality network and developed a proposed network to be implemented during 2013. This document is a compilation of the reports from each agency.

Currently, the Air Quality Index (AQI) is reported for Huntsville, Birmingham, Mobile, Montgomery and Phenix City on the Internet at the sites listed below.

ADEM            <http://www.adem.state.al.us/programs/air/airquality/ozone/historical.cnt>  
JCDH            <http://www.jcdh.org/EH/AnR/AnR03.aspx>  
HDNR           <http://www.hsvcity.com/NatRes/airdata.php#blank>

An overview of the 2013 Alabama Monitoring Network can be seen in Figure 1.

### Summary of findings of the network review

#### ADEM

The Lead monitoring site at Pryor Field Airport (01-083-0005) was established and operated from 01/01/2012 to 12/31/2013. The 2012 data indicated that Lead monitoring is no longer required at this site. See *Lead Network* on page 15.

SO<sub>2</sub> monitoring began at the Chickasaw site (01-097-0003) for the Mobile MSA, and at the Tuscaloosa site (01-125-0010) for the Tuscaloosa MSA, on 01/01/2013.

There have been some changes to the Tuscaloosa CBSA boundary by OMB (February 2013), see *Sulfur Dioxide (SO<sub>2</sub>) Network* on page 19.

Due to loss of the lease, the site at Sumter (01-119-0002) had to be closed. ADEM acquired a new site in Sumter County in the community of Ward, Al. (01-119-0003) and started reporting to AQS on 03/01/2013 for Ozone and Continuous PM<sub>2.5</sub>.

**ADEM Cont.**

A PM<sub>10</sub> collocated monitor was added to the Montgomery site (01-101-1002) and started reporting to AQS on 01/01/2013.

Based on the new PM<sub>2.5</sub> Rule, continuous monitors will have to be added to the existing Gadsden and Tuscaloosa PM<sub>2.5</sub> FRM sites to start operation by January 1<sup>st</sup>, 2014.

**HDNR**

There are no changes planned for the Huntsville Air Monitoring Network.

**JDCH****Summary of changes for JCDH in 2012**

- North Birmingham and Wylam PM<sub>2.5</sub> FRM sampling reduced to 1 in 3 day schedule
- Metal speciation at Wylam increased to follow North Birmingham sampling 1 in 3 day alternate schedule
- Closed two sites, Providence and Pinson, eliminating Ozone and Continuous PM<sub>2.5</sub> sampling at those sites on December 31, 2012
- North Side School site lost due to city construction

**Proposed changes for 2013**

- Hi Volume Method PM<sub>10</sub> Sampling discontinued
- Lo Volume Method PM<sub>10</sub> Sampling, data converted to STP for submittal to AQS
- Establishment of a near-road NO<sub>2</sub> monitoring site by January 1, 2014
- Addition of NO<sub>2</sub> sampling at N. B'ham/NCORE to meet area-wide requirement for our CBSA
- Closing East Thomas site due to ALDOT road construction, relocate CO to NO<sub>2</sub> near-road site

**Table 1 - 2013 Alabama Monitoring Network**

Site Common Name	AQS ID	Ozone	PM2.5	PM 2.5 collocated	PM2.5 Spec.	BAM (Cont. PM2.5)	TEOM (Cont. PM2.5)	PM 10 LoVol	PM10 LoVol Collocated	PM10	PM10 collocated	PM 10 Continuous	Lead	Lead Collocated	Lead-PM10	SO2	NO2	NOy	CO
<b>JCDH Sites</b>																			
North Birmingham (NCore)	01-073-0023	x	x	x	x	x		x	x			x	x	x	x	x	A	x	x
East Thomas, Finley Ave	01-073-0028																		R
North Side School	01-073-0034									C	C								
Fairfield	01-073-1003	x														x			x
McAdory School	01-073-1005	x	x	x			x	x											
Leeds Elem. School	01-073-1010	x	x	x			x	x											
Wylam	01-073-2003		x	x	x		x	x	x			x							
Hoover	01-073-2006	x	C				x	C											
Corner High School	01-073-5003	x	C				x	C											
Tarrant Elem. School	01-073-6002	x						x				x							
Sloss Shuttlesworth	01-073-6004							x				x							x
Near Road Site	to be created		A17														A		A
<b>ADEM Sites</b>																			
Fairhope	01-003-0010	x	x																
Ashland	01-027-0001		x																
Muscle Shoals	01-033-1002	x	x																
Crossville	01-049-1003		x																
DBT	01-051-0001	x																	
Gadsden - CC	01-055-0010		x			A													
Southside	01-055-0011	x																	
Dothan -CC	01-069-0003		x																
Dothan	01-069-0004	x																	
Mobile - Chickasaw	01-097-0003	x	x			x										x			
Mobile-WKRG	01-097-0016									x	x								
Mobile - Bay Road	01-097-2005	x																	
Montgomery - MOMS	01-101-1002	x	x	x	x					x	x								
Decatur	01-103-0011	x	x			x													
Phenix City - Downtown	01-113-0001		x	x	x		x												
Phenix City - Ladonia	01-113-0002	x																	
Helena	01-117-0004	x																	
Pelham	01-117-0006		x																
Ward, Sumter Co.	01-119-0003	x				x													
Childersburg	01-121-0002		x																
Tuscaloosa - VA Hospital	01-125-0004		x			A													
Duncanville, Tuscaloosa	01-125-0010	x														x			
Troy	01-109-0003												x	x					
Pryor Field Airport	01-083-0005												C						
<b>HDNR Sites</b>																			
Fire station #10 (Pulaski Pike)	01-089-0002									x									
Madison Street - Garage	01-089-0003									x									
Fire station #7 (S.Memor.Pwy)	01-089-0004									x									
Huntsville Old Airport	01-089-0014	x	x	x	x		x			x	x								
Huntsville Capshaw Rd	01-089-0022	x																	

## Network Plan Description

As per 40 CFR Part 58.10, an annual monitoring network plan which provides for the establishment and maintenance of an air quality surveillance system consisting of the air quality monitors in the state, is required to be submitted by all states to U.S.EPA.

Specifically §58.10 (a) requires for each existing and proposed monitoring site:

1. A statement of purpose for each monitor.
2. Evidence that siting and operation of each monitor meets the requirements of appendices A, C, D, and E of 40 CFR Part 58, where applicable.
3. Proposals for any State and Local Air Monitoring station (SLAMS) network modifications.

§58.10 (b) requires the plan must contain the following information for each existing and proposed site:

1. The Air Quality System (AQS) site identification number.
2. The location, including street address and geographical coordinates.
3. The sampling and analysis method(s) for each measured parameter.
4. The operating schedules for each monitor.
5. Any proposals to remove or move a monitoring station within a period of 18 months following plan submittal.
6. The monitoring objective and spatial scale of representativeness for each monitor.
7. The identification of any sites that are suitable and sites that are not suitable for comparison against the annual PM<sub>2.5</sub> NAAQS as described in §58.30.
8. The Metropolitan Statistical Area (MSA), Core Based Statistical Area (CBSA), Combined Statistical Area (CSA) or other area represented by the monitor.
9. The designation of any Pb monitors as either source-oriented or non-source-oriented according to Appendix D to 40 CFR part 58.
10. Any source-oriented monitors for which a waiver has been requested or granted by the U.S.EPA Regional Administrator as allowed for under paragraph 4.5(a)(ii) of Appendix D to 40 CFR part 58.
11. Any source-oriented or non-source-oriented site for which a waiver has been requested or granted by the U.S.EPA Regional Administrator for the use of Pb-PM<sub>10</sub> monitoring in lieu of Pb-TSP monitoring as allowed for under paragraph 2.10 of Appendix C to 40 CFR part 58.

## Monitoring Requirements

**Appendix A** of 40 CFR Part 58 outlines the Quality Assurance Requirements for SLAMS, SPMs, and PSD Air Monitoring. It details the calibration and auditing procedures used to collect valid air quality data, the minimum number of collocated monitoring sites, the calculation used for data quality assessments, and the reporting requirements. All sites in Alabama operate following the requirements set forth in this appendix.

**Appendix C** of 40 CFR Part 58 specifies the criteria pollutant monitoring methods which must be used in SLAMS and NCore stations. All criteria pollutant monitoring in Alabama follows the methods specified in this appendix.

**Appendix D** of 40 CFR Part 58 deals with the network design criteria for ambient air quality monitoring. The overall design criteria, the minimum number of sites for each parameter, the type of sites, the spatial scale of the sites, and the monitoring objectives of the sites are detailed. In designing the air monitoring network for Alabama, the requirements of this appendix were followed. The specifics for each pollutant network are in their individual chapters.

**Appendix E** of 40 CFR Part 58 deals with the placement of the monitoring probe, its spacing from obstructions and what materials the probe can be made of. All monitors operated in Alabama meet Appendix E criteria.

## Population and CBSA

Alabama has a population of 4,822,023 of which 3,910,965 is located in the 13 MSAs listed in Table 2.

**Table 2 – 2012 Estimated MSA Population**

<b>Metropolitan Statistical Areas</b>	
Anniston-Oxford, AL	117,296
Auburn-Opelika, AL	147,257
Birmingham-Hoover, AL	1,136,650
Columbus, GA-AL	310,531
Daphne-Fairhope-Foley, AL	190,790
Decatur, AL	154,233
Dothan, AL	147,620
Florence-Muscle Shoals, AL	146,988
Gadsden, AL	104,392
Huntsville, AL	430,734
Mobile, AL	413,936
Montgomery, AL	377,149
Tuscaloosa, AL	233,389

Minimum monitoring requirements vary for each pollutant and can be based on a combination of factors such as population, the level of monitored pollutants and Core Based Statistical Area (CBSA) boundaries as defined in the latest US Census information. The term "Core Based Statistical Area" (CBSA) is a collective term for both Metropolitan Statistical Areas (MSA) and Micropolitan Statistical Areas ( $\mu$ SA).

In February 2013 the Office of Management and Budget issued a Bulletin on the "Revised Delineations of Metropolitan Statistical Areas, Micropolitan Statistical Areas, and Combined Statistical Areas, and Guidance on Uses of the Delineations of These Areas". Based on the 2010

Census some changes were made to certain statistical areas listed above. The major changes that affected Alabama were:

- The Daphne-Fairhope-Foley, AL area was upgraded to a MSA from a  $\mu$ SA.
- The boundary of the Tuscaloosa MSA changed. Pickens County was added and Greene County was removed.
- The Enterprise-Ozark, AL  $\mu$ SA was split into the Enterprise, AL  $\mu$ SA and Ozark, AL  $\mu$ SA.

Table 3 List the CBSAs in Alabama along with the names of the counties included in that area, and the 2012 estimated population.. The Metropolitan Statistical Areas are listed first by highest population, then Micropolitan Statistical Areas are listed by highest population.

**Table 3- Alabama CBSAs as of February 2013**

Core Based Statistical Area (CBSA) Title	Counties	2012 population est.	Metropolitan/Micropolitan Statistical Area
Birmingham-Hoover, AL	Jefferson, Shelby, Bibb, Blount, Chilton, St. Clair, and Walker	1,136,650	Metropolitan Statistical Area
Huntsville, AL	Madison and Limestone	430,734	Metropolitan Statistical Area
Mobile, AL	Mobile County	413,936	Metropolitan Statistical Area
Montgomery, AL	Montgomery, Autauga, Elmore, and Lowndes	377,149	Metropolitan Statistical Area
Columbus, GA-AL	Russell County, AL and Chattahoochee County, GA, Harris County, GA, Marion County, GA, Muscogee County, GA	310,531	Metropolitan Statistical Area
Tuscaloosa, AL	Tuscaloosa, Pickens, and Hale	233,389	Metropolitan Statistical Area
Daphne-Fairhope-Foley, AL	Baldwin	190,790	Metropolitan Statistical Area
Decatur, AL	Lawrence and Morgan	154,233	Metropolitan Statistical Area
Dothan, AL	Henry, Geneva, and Houston	147,620	Metropolitan Statistical Area
Auburn-Opelika, AL	Lee	147,257	Metropolitan Statistical Area
Florence-Muscle Shoals, AL	Colbert and Lauderdale	146,988	Metropolitan Statistical Area
Anniston-Oxford-Jacksonville, AL	Calhoun	117,296	Metropolitan Statistical Area
Gadsden, AL	Etowah	104,392	Metropolitan Statistical Area
Albertville, AL	Marshall	94,776	Micropolitan Statistical Area
Talladega-Sylacauga, AL	Coosa and Talladega	92,728	Micropolitan Statistical Area
Cullman, AL	Cullman	80,440	Micropolitan Statistical Area
Scottsboro, AL	Jackson	53,019	Micropolitan Statistical Area
Enterprise, AL	Coffee	51,252	Micropolitan Statistical Area
Ozark, AL	Dale	50,444	Micropolitan Statistical Area
Selma, AL	Dallas	42,864	Micropolitan Statistical Area
Valley, AL	Chambers	34,064	Micropolitan Statistical Area
Troy, AL	Pike	33,182	Micropolitan Statistical Area

Figure 1 – US CBSAs and Counties as of February 2013

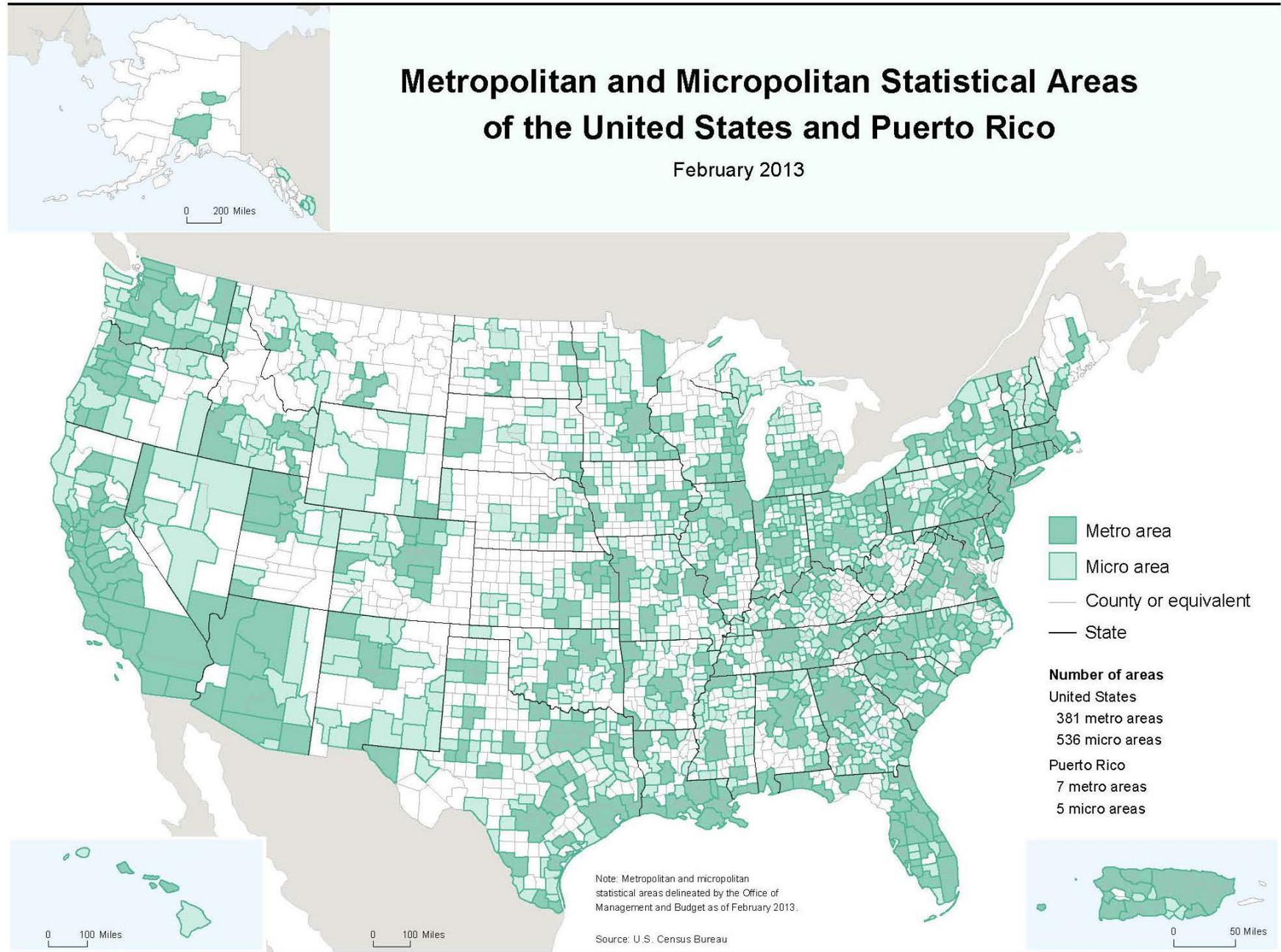
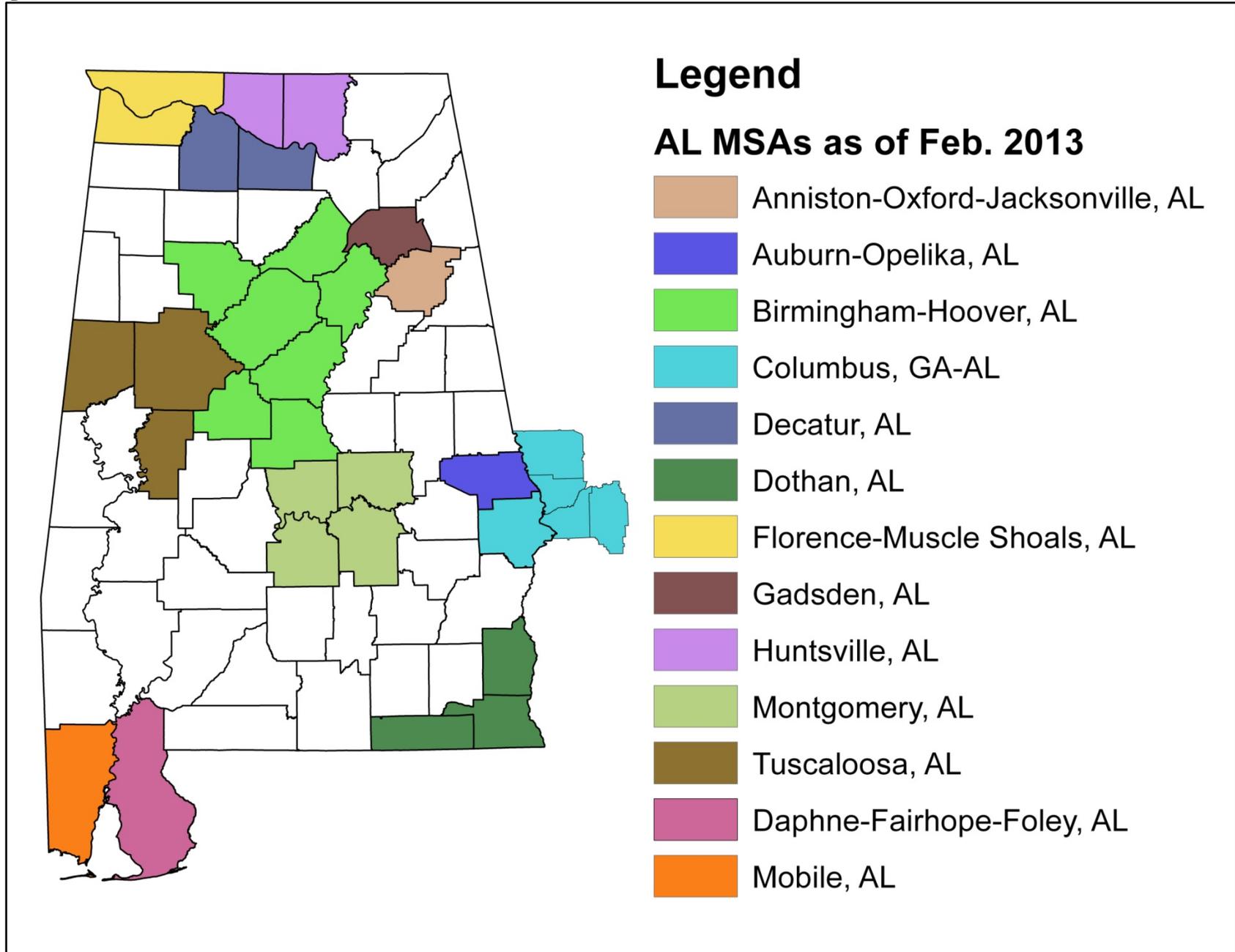


Figure 2-Alabama with MSAs as of 2013



## Types of Monitoring Stations

**PAMS** – *Photochemical Assessment Monitoring Station*: Sites established to obtain more comprehensive data of areas with high levels of ozone pollution by also monitoring NO<sub>x</sub> and VOCs. **PAMS monitoring is not required in the state of Alabama.**

**SLAMS** - *State or Local Ambient Monitoring Station*: The SLAMS make up the ambient air quality monitoring sites that are primarily needed for NAAQS comparisons.

**These will be described in detail by pollutant and Monitoring Agency later.**

**STN** – *PM<sub>2.5</sub> Speciation Trends Network*: A PM<sub>2.5</sub> speciation station designated to be part of the speciation trends network. This network provides chemical species data of fine particulates.

**There is currently 1 STN site located in Alabama at the North Birmingham site (01-073-0023).**

**Supplemental Speciation** - Any PM<sub>2.5</sub> speciation station that is used to gain supplemental data and is not dedicated as part of the speciation trends network.

**There are currently 4 PM<sub>2.5</sub> supplemental speciation sites located in Alabama.** These are at Huntsville, Montgomery, Phenix City, and Wylam.

**NCore** – *National Core multi-pollutant monitoring station*: Sites that measure multiple pollutants at trace levels in order to provide support to integrated air quality management data needs. Each state is required to operate one NCore site. **The NCore site for Alabama is located in the Birmingham MSA at the North Birmingham site (01-073-0023) operated by JDCH. Additional information concerning this site can be found in the JCDH portion of the network description.**

**CASTNET** – *Clean Air Status and Trends Network*: is a national air quality monitoring network designed to provide data to assess trends in air quality, atmospheric deposition, and ecological effects due to changes in air pollutant emissions. CASTNET provides long-term monitoring of air quality in rural areas to determine trends in regional atmospheric nitrogen, sulfur, and ozone concentrations and deposition fluxes of sulfur and nitrogen pollutants in order to evaluate the effectiveness of national and regional air pollution control programs. Recently for Ozone CASTNET upgraded its equipment and its procedures to meet the same requirements as SLAMS. EPA-sponsored CASTNET ozone monitors have now become Part 58 compliant and therefore the data can be used for regulatory purposes. CASTNET Ozone data are now reported to AQS. **There is one CASNET site in Alabama and it is operated by an EPA contractor. It is Sand Mountain (AQS ID 01-049-9991) in De Kalb county.**

## Alabama's SLAMS by Pollutant

### Lead Network

In 2008, the US EPA revised the National Ambient Air Quality Standard for lead. The lead standard was lowered from 1.5  $\mu\text{g}/\text{m}^3$  for a quarterly average to 0.15  $\mu\text{g}/\text{m}^3$  based on the highest rolling 3 month average over a 3 year period. EPA set minimum monitoring requirements for source and population oriented monitoring. Source oriented monitoring is required near sources that have emissions greater than or equal to 1 ton per year. Population oriented monitoring is required for CBSAs greater than 500,000. In December of 2010 EPA revised the lead rule to include sources greater than  $\frac{1}{2}$  ton per year and stated that the Population oriented monitors would be located at the NCore sites.

Based on current emissions data or modeling ADEM has identified 1 source (Sanders Lead Co.) which emits greater than 1/2 ton of lead per year. ADEM has an existing monitor (AQS ID 01-109-0003) near that source. This monitor appears to be sited in the proper location and ADEM will continue to operate that monitor. To meet QA requirements, collocated Lead monitoring is also occurring at this site.

Based on current emission data, JCDH and the City of Huntsville have no sources that would require monitoring.

In addition, Pb monitoring is required at any NCore site in each CBSA with a population equal to or greater than 500,000 people. For the Birmingham-Hoover MSA, this site is being operated by JDCH and is located at the NCore (North Birmingham AQS ID 01-073-0023) site and has been collecting data since 12-29-2011.

In the 2010 rule revision (FR Vol. 75, No. 247, pg 81126-81138), EPA identified 15 airports across the nation that had a potential for lead emissions that could lead to a violation of the Lead NAAQS. At least one year of lead monitoring was required at each of these airports, and if the results were greater than 50% of the Lead NAAQS then the monitor would continue to be required. Alabama's Pryor Field Regional was one of these airports.

ADEM performed 12 months of Lead monitoring during 2012 at Pryor Field (AQS ID 01-083-0005) and a summary of the results are shown in the table below. 50% of the Lead NAAQS is 0.075  $\mu\text{g}/\text{m}^3$ . The highest three month rolling average for Pryor Field was 0.01  $\mu\text{g}/\text{m}^3$ . Therefore based on the 2012 data, ADEM will be closing down the site at Pryor Field.

**Table 4- Pryor Field Lead Data For 2012**

Pryor Field Lead Data For 2012													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
smpl 1	0.004	0.002	0.009	AN	0.001	0.022	0.01	0.006	0.004	0.004	0.003	0.007	µg/m <sup>3</sup>
smpl 2	AV	0.003	0.002	0.004	0.008	0.018	0.004	0.002	0.004	0.008	0.002	0.017	µg/m <sup>3</sup>
smpl 3	0.003	0.003	0.002	0.003	0.012	0.003	0.001	0.002	0.011	0.003	0.011	0.011	µg/m <sup>3</sup>
smpl 4	0.002	0.003	0.004	0.004	0.003	0.006	0.002	0.004	0.004	0.006	0.024	0.002	µg/m <sup>3</sup>
smpl 5	0.008	0.006	0.005	0.005	0.034	0.012	0.002	0.011	0.005	0.003	AJ	0.002	µg/m <sup>3</sup>
smpl 6								0.003				AN	µg/m <sup>3</sup>
<b>Monthly Avg.</b>	0.0043	0.0034	0.0044	0.0040	0.0116	0.0122	0.0038	0.0050	0.0056	0.0048	0.0100	0.0078	µg/m <sup>3</sup>
<b>3-month rolling Avg. *</b>			0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	µg/m <sup>3</sup>
<p>* 40CFR50, app. R. sec. 5, <i>Rounding Convention</i>. (b) Three-month means shall be rounded to the nearest hundredth µg/m<sup>3</sup> (0.xx).</p>													
AV = power failure				AN = machine malfunction				AJ = filter damage					

## Carbon Monoxide (CO) Network

On August 12, 2011 EPA issued a final rule that retained the existing NAAQS for Carbon Monoxide (CO) and made changes to the ambient air monitoring requirements for CO.

EPA revised the minimum requirements for CO monitoring by requiring CO monitors to be sited near roads in certain urban areas.

40 CFR Part 58 Appendix D, 4.2 details the requirements for CO monitoring.

4.2.1 General Requirements. (a) Except as provided in subsection (b), one CO monitor is required to operate collocated with one required near-road NO<sub>2</sub> monitor, as required in Section 4.3.2 of this part, in CBSAs having a population of 1,000,000 or more persons. If a CBSA has more than one required near-road NO<sub>2</sub> monitor, only one CO monitor is required to be collocated with a near-road NO<sub>2</sub> monitor within that CBSA.

(b) If a state provides quantitative evidence demonstrating that peak ambient CO concentrations would occur in a near-road location which meets microscale siting criteria in Appendix E of this part but is not a near-road NO<sub>2</sub> monitoring site, then the EPA Regional Administrator may approve a request by a state to use such an alternate near-road location for a CO monitor in place of collocating a monitor at near-road NO<sub>2</sub> monitoring site.

EPA is specifying that monitors required in CBSAs of 2.5 million or more persons are to be operational by January 1, 2015. Those monitors required in CBSAs having 1 million or more persons are required to be operational by January 1, 2017.

Based on this, one CO monitor would be required to be collocated with the near road NO<sub>2</sub> monitoring road site in the Birmingham-Hover, AL CBSA and operational by January 1, 2017.

JDCH is in the process of getting EPA approval for its near-road NO<sub>2</sub> monitoring site. Once this site is established JDCH plans to relocate the CO monitor currently at East Thomas (AQS ID 01-073-0028) to this new site to meet the new monitoring requirements by 2014. The East Thomas site will be closed due to Alabama Department of Transportation road expansion on Arkadelphia Road starting in August 2013. JCDH plans to operate the CO at that site through July 2013 (or as long as possible) and then discontinue sampling.

Currently CO is monitored at the following 4 sites :

**Table 5 - JCDH CO Monitoring sites**

AQS No.	County	Site Name	Latitude	Longitude	Start Date	Objective	Scale	Frequency
01-073-0028	Jefferson	East Thomas, Finley Ave.	33.529444	-86.850278	3/1/81	High Pop. Exposure	Micro	Continuously Year-round
01-073-1003	Jefferson	Fairfield, PFD	33.485556	-86.915062	12/11/74	High Pop. Exposure	Neighborhood	Continuously Year-round
01-073-6004	Jefferson	N. B'ham, Sloss	33.565278	-86.796389	9/25/96	High Conc.	Neighborhood	Continuously Year-round
01-073-0023	Jefferson	N. B'ham, SR	33.553031	-86.814853	1/1/11	High Pop. Exposure	Neighborhood	Continuously Year-round

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

On January 22, 2010 the US EPA finalized the monitoring rules for Nitrogen Dioxide. The new rules include new requirements for the placement of new NO<sub>2</sub> monitors in urban areas.

These include:

### Near Road Monitoring

- At least one monitor must be located near a major road in each CBSA with a population greater than or equal to 500,000 people. A second monitor is required near another major road in areas with either:

- (1) CBSA population greater than or equal to 2.5 million people, or

- (2) one or more road segment with an annual average daily traffic (AADT) count greater than or equal to 250,000 vehicles.

These NO<sub>2</sub> monitors must be placed near those road segments ranked with the highest traffic levels by AADT, with consideration given to fleet mix, congestion patterns, terrain, geographic location, and meteorology in identifying locations where the peak concentrations of NO<sub>2</sub> are expected to occur. Monitors must be placed no more than 50 meters (about 164 feet) away from the edge of the nearest traffic lane.

For near road NO<sub>2</sub> monitoring Birmingham-Hoover is the only CBSA in Alabama with a population greater than 500,000. However, the population is less than 2.5 million and there are no road segments with AADT greater than 250,000 vehicles. Therefore, one near road NO<sub>2</sub> monitor will need to be located in the Birmingham-Hoover CBSA. JCDH has proposed a site to EPA in an Addendum to the 2012 Network Plan and tentatively approved by EPA pending a 30 day public comment period. The Addendum went out for public comment on March 24, 2013, no public comments were received, and bids for a turn-key shelter and equipment have been sent out. The establishment of a permanent near-road NO<sub>2</sub> monitoring site will meet design and siting criteria as spelled out in 40 CFR Part 58 and will be operational by January 1, 2014.

### Community Wide Monitoring

- A minimum of one monitor must be placed in any urban area with a population greater than or equal to 1 million people to assess community-wide concentrations.
- An additional 53 monitoring sites will be required to assess community-wide levels in urban areas.
- Some NO<sub>2</sub> monitors already in operation may meet the community-wide monitor siting requirements.

For community wide monitoring, The Birmingham-Hoover is the only CBSA in Alabama with a population greater than 1 million, so there will need to be one NO<sub>2</sub> monitor located there. JDCH is adding community wide NO<sub>2</sub> sampling to the NCore site at North Birmingham (AQS ID 01-073-0023) and will begin operation by summer of 2013.

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

On June 2, 2010, EPA strengthened the primary National Ambient Air Quality Standard (NAAQS) for sulfur dioxide (SO<sub>2</sub>). EPA is revising the primary SO<sub>2</sub> standard by establishing a new 1-hour standard at a level of 75 parts per billion (ppb).

In the final rule, EPA is requiring fewer monitors than proposed, because the Agency plans to use a hybrid approach combining air quality modeling and monitoring to determine compliance with the new SO<sub>2</sub> health standard.

According to EPA, for a short-term 1-hour SO<sub>2</sub> standard, it is more technically appropriate, efficient, and effective to use modeling as the principal means of assessing compliance for medium to larger sources, and to rely more on monitoring for groups of smaller sources and sources not as conducive to modeling. Such an approach is consistent with EPA's historical approach and longstanding guidance for SO<sub>2</sub>. EPA is setting specific minimum requirements that inform states on where they are required to place SO<sub>2</sub> monitors. The final monitoring regulations require monitors to be placed in Core Based Statistical Areas (CBSAs) based on a Population Weighted Emissions Index (PWEI) for the area. The final rule requires:

- 3 monitors in CBSAs with index values of 1,000,000 or more;
- 2 monitors in CBSAs with index values less than 1,000,000 but greater than 100,000; and
- 1 monitor in CBSAs with index values greater than 5,000.

All newly sited SO<sub>2</sub> monitors must be operational by January 1, 2013.

Based on this the Birmingham-Hoover CBSA requires 2 SO<sub>2</sub> monitors. JDCH has two sites at North Birmingham (AQS ID 01-073-0023) and Fairfield (AQS ID 01-073-1003) with SO<sub>2</sub> monitoring that fulfills the monitoring requirement.

The Huntsville CBSA has a PWEI less than 5,000 so no SO<sub>2</sub> monitor is required.

Based on the PWEI estimates that were available in 2012, Alabama placed 2 new SO<sub>2</sub> monitors at the existing Duncanville, Tuscaloosa site (AQS ID 01-125-0010) for the Tuscaloosa CBSA and at the existing Chickasaw site (AQS ID 01-097-0003) for the Mobile CBSA. These sites in the Tuscaloosa and Mobile CBSAs became operational on January 1<sup>st</sup>, 2013.

As mentioned in the Population and CBSA Section, in February 2013 the Office of Management and Budget (OMB) issued a Bulletin on the "Revised Delineations of Metropolitan Statistical Areas, Micropolitan Statistical Areas, and Combined Statistical Areas, and Guidance on Uses of the Delineations of These Areas". Based on the 2010 Census, OMB changed the boundaries of the Tuscaloosa CBSA. They added Pickens County and removed Greene County; changing the population and SO<sub>2</sub> emissions that are used in the PWEI calculations for the Tuscaloosa CBSA. The new PWEI for the Tuscaloosa CBSA is now less than 5,000, thus requiring no SO<sub>2</sub> monitoring there.

Since SO<sub>2</sub> monitoring is no longer required in the Tuscaloosa CBSA, ADEM will continue monitoring through out calendar year 2013, but will then discontinue SO<sub>2</sub> monitoring at that site.

**Table 6 - CBSA's PWEI and number of monitors required**

<b>CBSA Name</b>	<b>2008 NEI v1.5 SO<sub>2</sub> (tpy)</b>	<b>Population (2012)</b>	<b>PWEI in Million persons-tpy</b>	<b>Required Monitors</b>
Birmingham-Hoover, AL	230,949	1,136,650	262,509	2
Mobile, AL	48,067	413,936	19,897	1
Florence-Muscle Shoals, AL	32,662	146,988	4,801	0
Columbus, GA-AL	5,202	310,531	1,615	0
Scottsboro, AL	28,653	53,019	1,519	0
Montgomery, AL	3,762	377,149	1,419	0
Gadsden, AL	11,111	104,392	1,160	0
Decatur, AL	5,018	154,233	774	0
Talladega-Sylacauga, AL	6,790	92,728	630	0
Tuscaloosa, AL	1,168	233,389	273	0
Troy, AL	7,728	33,182	256	0
Huntsville, AL	367	430,734	158	0
Daphne-Fairhope-Foley, AL	169	190,790	32	0
Selma, AL	562	42,864	24	0
Anniston-Oxford, AL	98	117,296	11	0
Auburn-Opelika, AL	75	147,257	11	0
Dothan, AL	62	147,620	9	0
Albertville, AL	72	94,776	7	0
Cullman, AL	36	80,440	3	0
Enterprise, AL	49	51,252	2	0
Valley, AL	47	34,064	2	0
Ozark, AL	31	50,444	2	0

## PM<sub>10</sub> Network

PM<sub>10</sub> has been a criteria pollutant since 1987. Since that time there has been widespread monitoring of the PM<sub>10</sub> levels in Alabama. In 2006 the US EPA modified the NAAQS for PM<sub>10</sub> to revoke the annual standard. Currently, there is still a daily standard of 150 ug/m<sup>3</sup> based on 3 years of data. All monitors in the state have recorded PM<sub>10</sub> levels that meet the NAAQS. Table 7 shows the minimum monitoring requirements.

**Table 7 - APPENDIX D TO PART 58. PM10 MINIMUM MONITORING REQUIREMENTS**

TABLE D-4 OF APPENDIX D TO PART 58. PM <sub>10</sub> MINIMUM MONITORING REQUIREMENTS (NUMBER OF STATIONS PER MSA) <sup>1</sup>			
Population category	High concentration <sup>2</sup>	Medium concentration <sup>3</sup>	Low concentration <sup>4,5</sup>
>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

<sup>1</sup> 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.

<sup>2</sup> High concentration areas are those for which ambient PM<sub>10</sub> data show ambient concentrations exceeding the PM<sub>10</sub> NAAQS by 20 percent or more.

<sup>3</sup> Medium concentration areas are those for which ambient PM<sub>10</sub> data show ambient concentrations exceeding 80 percent of the PM<sub>10</sub> NAAQS.

<sup>4</sup> Low concentration areas are those for which ambient PM<sub>10</sub> data show ambient concentrations less than 80 percent of the PM<sub>10</sub> NAAQS.

<sup>5</sup> These minimum monitoring requirements apply in the absence of a design value.

The Birmingham-Hoover MSA's PM<sub>10</sub> concentrations are less than 80 percent of the PM<sub>10</sub> National Ambient Air Quality Standards (NAAQS). According to table 7 above, MSA's with populations greater than 1,000,000 and medium concentrations (less than 80 percent of PM<sub>10</sub> NAAQS), are required to operate between 4 and 8 sites. Based on the concentration of the MSA's population and emissions being in Jefferson County, and historical PM<sub>10</sub> monitoring in Walker, Shelby, and Chilton Counties indicating levels in the low concentration range, these required sites are located in Jefferson County and operated by the JCDH. In the past JCDH had operated more than 8 PM<sub>10</sub> monitors. In October 2012, the North Side PM<sub>10</sub> site was lost due to the City of Birmingham reclaiming the property for the construction of a new entertainment district. In the past, JCDH had operated two methods of PM<sub>10</sub> sampling, the High Volume Anderson PM<sub>10</sub> monitors and the Low Volume BGI PQ200s. This was believed to be duplicative sampling so JCDH spoke with the EPA Region 4 representative and requested to discontinue the High Volume method and continue the Low Volume method instead. The BGI PQ200 PM<sub>10</sub> sampler is a Federal Reference Method approved in 1998, RFPS-1298-125. The local condition data from the PQ200s will be converted to STP for entry into AQS and will be compared to the NAAQS starting with the 2013 calendar year. This will result in Jefferson County operating seven PM<sub>10</sub> sites located in the main industrial valley. Two sites, Wylam and Tarrant Elementary School will be collocated on the six day schedule. Four of the PM<sub>10</sub> sites, North Birmingham, Wylam, Sloss and Tarrant Elementary School, have continuous PM<sub>10</sub> monitors for quality assurance purposes. The collocated pair of PQ200s at the NCore site will continue to be operated at local conditions for lead monitoring.

All other monitors in Alabama have indicated the PM<sub>10</sub> levels to be in the low concentration range. For MSAs less than 250,000 population zero PM<sub>10</sub> monitors are required. Both the Mobile and Montgomery MSAs have populations between 250,000 and 500,000 and are required to have 0 to 1 monitors. The Mobile MSA has 1 site at WKRG (01-097-0016) with two monitors, one of them being the collocated monitor. The Montgomery MSA has 1 site at MOMS (01-101-1002) with two monitors, one of them being the collocated monitor that was added and started reporting to AQS 01/01/2013. The Huntsville MSA also falls in this size range and the City of Huntsville currently operates four PM<sub>10</sub> monitors and 1 collocated monitor at Huntsville Old Airport (AQS ID 01-089-0014). The Columbus GA/AL MSA has a population of 310,531 and historically has had low PM<sub>10</sub> concentration; the PM<sub>10</sub> monitor operated by the State of Georgia was closed 12/31/2012.

## Ozone Network

Minimum monitoring requirements for ozone are based on population and whether the design value is less than 85% of the NAAQS or greater than or equal to 85% of the NAAQS (See Table 8). The NAAQS for ozone is 0.075 parts per million of ozone therefore 85% of the NAAQS truncated is 0.063 ppm. To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm (effective May 27, 2008).

**Table 8 - APPENDIX D TO PART 58. SLAMS MINIMUM O3 MONITORING REQUIREMENTS**

<b>TABLE D-2 OF APPENDIX D TO PART 58.— SLAMS MINIMUM O3 MONITORING REQUIREMENTS</b>		
<b>MSA population<sup>1,2</sup></b>	<b>Most recent 3-year design value concentrations <math>\geq</math>85% of any O3 NAAQS<sup>3</sup></b>	<b>Most recent 3-year design value concentrations <math>&lt;</math>85% of any O3 NAAQS<sup>3,4</sup></b>
>10 million	4	2
4–10 million	3	1
350,000–<4 million	2	1
50,000–<350,000 <sup>5</sup>	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 9 below lists Alabama’s Ozone sites, the name of the MSA they are located in, the 2012 estimated population of the MSAs, the 2010-2012 Ozone Design Values, the number of monitors required by the CFR and the number of monitors existing.

**Table 9- Alabama MSAs with Ozone Monitoring Sites and current Design Value**

Site Name	AQS ID	2010-2012 Design Values	MSA	Est. 2012 Pop.	MSA Max DV	# of sites required per CFR	Current # of sites
Helena	01-117-0004	0.075	Birmingham-Hover	1,136,650	0.080	2	8
Tarrant Elem. School	01-073-6002	0.08					
Fairfield	01-073-1003	0.075					
McAdory School	01-073-1005	0.077					
Hoover	01-073-2006	0.077					
North Birmingham	01-073-0023	0.075					
Corner High School	01-073-5003	0.073					
Leeds Elem. School	01-073-1010	0.076					
Phenix City - Ladonia	01-113-0002	0.067	Columbus, GA/AL	310,531	0.067	1	2*
Columbus, GA, Airport	13-215-0008	0.067					
Decatur	01-103-0011	0.071	Decatur	154,233	0.071	1	1
Dothan	01-069-0004	0.065	Dothan	147,620	0.065	1	1
Fairhope	01-003-0010	0.071	Daphne-Fairhope-Foley	190,790	0.071	1	1
Muscle Shoals	01-033-1002	0.067	Florence-Muscle Shoals	146,988	0.067	1	1
Southside	01-055-0011	0.062	Gadsden	104,392	0.062	0	1
Huntsville Old Airport	01-089-0014	0.073	Huntsville	430,734	0.073	2	2
Huntsville Capshaw RD	01-089-0022	started in 2012					
Mobile - Chickasaw	01-097-0003	0.071	Mobile	413,936	0.072	2	2
Mobile - Bay Road	01-097-2005	0.072					
DBT	01-051-0001	0.068	Montgomery	377,149	0.069	2	2
Montgomery - MOMS	01-101-1002	0.069					
Duncanville, Tuscaloosa	01-125-0010	0.059	Tuscaloosa	233,389	0.059	0	1
Sumter Co. (Background) <sup>#</sup>	01-119-0003	0.061**	not in MSA		NA		1
No monitor			Anniston-Oxford	117,296	NA	0	
No monitor			Auburn-Opelika	147,257	NA	0	

\*1 in AL and 1 in GA

DV ≥ 85% of the NAAQS

\*\*Based on 2009-2011 due to relocation in 2012

# relocated site, new AQS ID

## **Ozone Monitoring requirements for Alabama MSAs**

### **Birmingham-Hoover MSA**

The Birmingham-Hoover MSA's population is between 350,000 and 4,000,000 and the design value is greater than 85% of the NAAQS. Two Ozone monitors are required for this MSA. There are currently 8 Ozone sites in this MSA. One site is located in Shelby County and is operated by ADEM. Seven sites, operated by the JCDH, are located in Jefferson County. Additional information about these monitors is found in the JCDH Network description. No changes are planned for this MSA.

### **Columbus, GA/AL MSA**

The Columbus GA/AL MSA's population is between 50,000 and 350,000 and design value is greater than 85% of the NAAQS. One Ozone monitor is required for this MSA. There is currently 1 site maintained by ADEM, west of Phenix City in Russell County and 1 site is located in Georgia and operated by the State of Georgia. No changes are planned for this MSA.

### **Decatur MSA**

The Decatur MSA's population is between 50,000 and 350,000 and the design value is greater than 85% of the NAAQS. One Ozone monitor is required for this MSA. There is currently one site, and it will be retained.

### **Dothan MSA**

The Dothan MSA's population is between 50,000 and 350,000 and the design value is greater than 85% of the NAAQS. One Ozone monitor is required for this MSA. There is currently one site, and it will be retained.

### **Daphne-Fairhope-Foley MSA**

The population of the Daphne-Fairhope-Foley MSA is between 50,000 and 350,000 and the design value is greater than 85% of the NAAQS. One Ozone monitor is required for this MSA. There is currently one site, and it will be retained.

### **Florence-Muscle Shoals MSA**

The Florence-Muscle Shoals MSA's population is between 50,000 and 350,000 and the design value is greater than 85% of the NAAQS. One Ozone monitor is required for this MSA. There is currently one Ozone site in this MSA, and it will be retained.

### **Gadsden MSA**

The Gadsden MSA's population is between 50,000 and 350,000 and the design value is less than 85% of the NAAQS. Therefore no monitor is required for that area. There is currently one Ozone monitor in this MSA, and it will be retained.

### **Huntsville MSA**

The Huntsville MSA's population is between 350,000 and 4,000,000 and the design value is greater than 85% of the NAAQS. Two Ozone monitors are required for this MSA. There are currently 2 Ozone sites operated by the City of Huntsville (HDNR), and these will be retained.

**Mobile MSA**

The Mobile MSA's population is between 350,000 and 4,000,000 and the design value is greater than 85% of the NAAQS. Two Ozone monitors are required for this MSA. There are currently 2 Ozone sites, and these will be retained.

**Montgomery MSA**

The Montgomery MSA's population is between 350,000 and 4,000,000 and the design value is greater than 85% of the NAAQS. Two Ozone monitors are required for this MSA. There are currently 2 Ozone sites, and these will be retained.

**Tuscaloosa MSA**

The Tuscaloosa MSA's population is between 50,000 and 350,000 and the design value is less than 85% of the NAAQS. Therefore no monitor is required for that area. There is currently one Ozone monitor in this MSA, and it will be retained.

**Auburn-Opelika and Anniston-Oxford MSAs**

The MSAs of Auburn-Opelika and Anniston-Oxford were evaluated by ADEM. Both MSAs have populations less than 150,000. It was determined that due to the close proximity of the ozone monitors in the neighboring MSAs whose design values are below the NAAQS, additional monitors would not be needed. The monitors in the adjacent MSAs still provide adequate monitoring coverage. Since these areas do not have design values, no Ozone monitors are required by Appendix D of 40 CFR 58.

**Sites not located in an MSA**

Sumter County represents rural, background ozone values for the state. After loss of the lease for this site, ADEM relocated the site and re-started monitoring on 3/01/2013. The historical design values for this monitor have been less than 85% of the NAAQS. The new AQS ID is 01-119-0003 with the local site name of "Ward, Sumter Co."

There is an Ozone monitor located at the CASNET site near Crossville in DeKalb county and it is maintained by EPA. It is Sand Mountain (AQS ID 01-049-9991).

## PM<sub>2.5</sub> Network

Minimum monitoring requirements for PM<sub>2.5</sub> are based on population and whether the design value is less than 85% of the NAAQS or greater than or equal to 85% of the NAAQS (See Table 10). In addition to these monitors, the state is required to operate a regional background and a regional transport site. Section 4.7.2 of Appendix D of 40CFR58 also requires a collocated continuous PM<sub>2.5</sub> monitor in each MSA that is required to have a FRM monitor. The number of collocated continuous monitors required for an MSA will be equal to at least half of the required FRM monitors for that MSA. This requirement goes away if the continuous monitor is a FEM that is labeled as the primary and comparable to the NAAQS. The state is also required to operate PM<sub>2.5</sub> speciation monitors to characterize the constituents of PM<sub>2.5</sub>. The number of speciation monitors is determined in consultation with EPA Region IV. PM<sub>2.5</sub> design values in Table 9 are based on 2010 – 2012 data. A design value of **30** ug/m<sup>3</sup> is the lowest value which is greater than or equal to 85% of the 24-hour standard of 35 ug/m<sup>3</sup>. A design value of **10.2** ug/m<sup>3</sup> is the lowest value that is greater than or equal to 85% of the annual standard of 12 ug/m<sup>3</sup> (effective March 18, 2013).

**Table 10 - APPENDIX D TO PART 58, PM<sub>2.5</sub> MINIMUM MONITORING REQUIREMENTS**

TABLE D-5 OF APPENDIX D TO PART 58. PM <sub>2.5</sub> MINIMUM MONITORING REQUIREMENTS		
MSA population <sup>1,2</sup>	Most recent 3-year design value ≥85% of any PM <sub>2.5</sub> NAAQS <sup>3</sup>	Most recent 3-year design value <85% of any PM <sub>2.5</sub> NAAQS <sup>3,4</sup>
>1,000,000	3	2
500,000–1,000,000	2	1
50,000–<500,000 <sup>5</sup>	1	0

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

2 Population based on latest available census figures.

3 The PM<sub>2.5</sub> 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.

The New PM<sub>2.5</sub> Rule requires CBSAs with populations greater than a million but less than 4 million operate a PM<sub>2.5</sub> monitor at its NO<sub>2</sub> near road site by January 1, 2017. The only CBSA in Alabama that requires a NO<sub>2</sub> near road monitoring site is the Birmingham-Hoover MSA.

ADEM currently operates 4 MetOne BAM continuous monitors which were designated as FEMs. In an August 4, 2011 submittal to EPA Region 4, ADEM demonstrated that these monitors did not have sufficient comparability with the collocated FRMs and would not be used for comparison with the NAAQS but would continue to be used for AQI submittals and for submittal to the AirNow system. This was reiterated in the 2012 Monitoring Plan. In the December 2012 revision to the PM 2.5 rule EPA specified new procedures for demonstration of non comparability and standard data reporting requirements. ADEM will be making a separate submission following EPA's template for requesting that data from continuous FEMs are not compared to the NAAQS. Currently the FRM at each site is designated as the primary monitor and are these running on the required frequency.

Table 11 below lists Alabama's PM<sub>2.5</sub> sites, the name of the MSA they are located in, the 2012 estimated population of the MSAs, the 2010-2012 PM<sub>2.5</sub> Annual and 24-hour Design Values, the number of monitors required by the CFR and the number of monitors existing.

**Table 11- MSAs with PM<sub>2.5</sub> Monitoring Sites and current Design Value**

Site Name	AQS Site ID	PM2.5 24 hr DV 2010-2012	PM2.5 Annual DV 2010-2012	MSA	2012 est Pop.	Annual MSA DV	24hr MSA DV	# of sites required per CFR	Current # of sites
North Birmingham	01-073-0023	26	13.0	Birmingham -Hoover	1,136,650	13	26	3	5
McAdory School	01-073-1005	23	11.2						
Leeds Elem. School	01-073-1010	23	11.6						
Wylam	01-073-2003	25	12.0						
Pelham	01-117-0006	21	10.5						
Muscogee DH GA	13-215-0001	26	12.5	Columbus, GA/AL	310,531	28	1	4*	
Columbus Airport GA	13-215-0008	24	11.3						
Cussetta Rd GA	13-215-0011	28	11.6						
Phenix City - Downtown	01-113-0001	27	12.2						
Decatur	01-103-0011	20	10.2	Decatur	154,233	10.2	20	1	1
Dothan	01-069-0003	19	9.8	Dothan	146,562	9.8	19	0	1
Fairhope	01-003-0010	20	9.8	Daphne-Fairhope-Foley	190,790	9.8	20	0	1
Muscle Shoals	01-033-1002	20	9.9	Shoals	146,988	9.9	20	0	1
Gadsden - CC	01-055-0010	22	10.9	Gadsden	104,392	10.9	22	1	1
Huntsville Old Airport	01-089-0014	21	10.7	Huntsville	430,734	10.7	21	1	1
Mobile - Chickasaw	01-097-0003	18	9.5	Mobile	413,936	9.5	18	0	1
Montgomery – MOMS	01-101-1002	22	11.1	Montgomery	377,149	11.1	22	1	1
Tuscaloosa - VA Hospital	01-125-0004	23	10.4	Tuscaloosa	233,389	10.4	23	1	1
Ashland	01-027-0001	21	10.0	Not in MSA		10	21		1
Crossville	01-049-1003	21	10.6	Not in MSA		10.6	21		1
Childersburg	01-121-0002	22	11.5	Micropolitan	92,728	11.5	22		1
Ward, Sumter Co. Background (continuous)	01-119-0003			Not in MSA					1
No Monitor				Anniston-Oxford	117,797	NA	NA	0	0
No Monitor				Auburn-Opelika	147,257	NA	NA	0	0

\*1 in AL and 3 in GA

DV ≥ 85% of the NAAQS

## **PM<sub>2.5</sub> Monitoring requirements for Alabama MSAs**

### **Birmingham-Hoover MSA**

The Birmingham MSA population is greater than 1 million, and the PM<sub>2.5</sub> annual design value is greater than 85% of the NAAQS. For this area, 3 FRM and 2 continuous monitors are required. Currently there are 5 FRM monitoring sites in this MSA. The Pelham FRM monitor is operated by ADEM. The remaining 4 FRM monitors are located in Jefferson County and are operated by the JCDH. JCDH also operates 2 collocated monitors, 6 continuous monitors and 2 speciation monitors in Jefferson County. Further details of the JCDH PM<sub>2.5</sub> network can be found in the Network Description section of this document. No changes are planned for this MSA.

### **Columbus, GA/AL MSA**

The Columbus, GA/AL MSA has a population between 50,000 and 500,000 and the PM<sub>2.5</sub> annual design value is greater than 85% of the NAAQS. This MSA is required to have one FRM and one continuous monitor. There are currently 4 FRMs, 1 collocated FRM, 2 non-FRM/FEM/ARM continuous monitors, and 2 speciation monitors in this MSA. ADEM operates 1 FRM, 1 collocated FRM, 1 speciation monitor, and 1 non-FRM/FEM/ARM continuous monitor at the Phenix City, AL downtown site. The State of Georgia operates 3 FRMs, 1 speciation monitor and 1 continuous monitor in Columbus. No changes are planned for this MSA.

### **Daphne-Fairhope-Foley MSA**

The Daphne-Fairhope-Foley MSA has a population between 50,000 and 500,000 and the PM<sub>2.5</sub> annual and 24-hour design values are less than 85% of the NAAQS. No PM<sub>2.5</sub> FRM monitor is required in this MSA. There is currently 1 FRM located in this MSA. No changes are planned for this MSA.

### **Decatur MSA**

The Decatur MSA has a population between 50,000 and 500,000 and the PM<sub>2.5</sub> annual design value is greater than 85% of the NAAQS. This MSA is required to have one FRM and one continuous monitor. There is currently 1 FRM and 1 continuous monitor located in this MSA. No changes are planned for this MSA.

### **Dothan MSA**

The Dothan MSA has a population between 50,000 and 500,000 and the PM<sub>2.5</sub> annual and 24-hour design values are less than 85% of the NAAQS. No PM<sub>2.5</sub> FRM monitor is required in this MSA. There is currently 1 FRM located in this MSA. No changes are planned for this MSA.

### **Florence-Muscle Shoals MSA**

The Florence-Muscle Shoals MSA has a population between 50,000 and 500,000 and the PM<sub>2.5</sub> annual and 24-hour design values are less than 85% of the NAAQS. No PM<sub>2.5</sub> FRM monitor is required in this MSA. There is currently 1 FRM located in this MSA. No changes are planned for this MSA.

**Gadsden MSA**

The Gadsden MSA has a population between 50,000 and 500,000 and the PM<sub>2.5</sub> annual design value is greater than 85% of the NAAQS. This MSA is required to have one FRM and one continuous monitor. There is currently 1 FRM located in this MSA. ADEM plans to locate a continuous monitor at this site that will become operational in 2014.

**Huntsville MSA**

The Huntsville MSA has a population between 50,000 and 500,000 and the PM<sub>2.5</sub> annual design value greater than 85 % of the NAAQS. This MSAs is required to have one FRM and one continuous monitor. Currently there is one FRM, one collocated FRM monitor, one speciation monitor and one non-FRM/FEM/ARM continuous monitor located in this MSA operated by the City of Huntsville (HDNR). No changes are planned for this MSA.

**Mobile MSA**

The Mobile MSA has a population between 50,000 and 500,000 and the PM<sub>2.5</sub> annual and 24-hour design values are less than 85% of the NAAQS. No PM<sub>2.5</sub> FRM monitor is required in this MSA. There is currently 1 FRM, and one continuous monitor located in this MSA. No changes are planned for this MSA.

**Montgomery MSA**

The Montgomery MSA is between 50,000 and 500,000 and the PM<sub>2.5</sub> annual design value is greater than 85 % of the NAAQS. This MSA is required to have one FRM and one continuous monitor. There is currently 1 FRM, 1 collocated FRM, 1 continuous monitor, and one PM<sub>2.5</sub> speciation monitor located in this MSA.

**Tuscaloosa MSA**

The Tuscaloosa MSA has a population between 50,000 and 500,000 and the PM<sub>2.5</sub> annual design value is greater than 85% of the NAAQS. This MSAs is required to have one FRM and one continuous monitor. There is currently 1 FRM located in this MSA. ADEM plans to locate a continuous monitor at this site that will become operational in 2014.

**Auburn-Opelika and Anniston-Oxford MSAs**

In 1999 when the PM<sub>2.5</sub> monitoring program was implemented in Alabama, the MSAs of Auburn-Opelika and Anniston-Oxford were evaluated to determine the need for monitors. Both MSAs have populations less than 150,000. It was determined that due to the close proximity of monitors in the neighboring MSAs whose design values are below the NAAQS, additional monitors would not be needed. The monitors in the adjacent MSAs still provide adequate monitoring coverage. Since these areas do not have design values, no FRM monitors are required by Appendix D of 40 CFR 58.

**Monitors not located in MSAs**

Sumter County represents rural, background PM<sub>2.5</sub> values for the west part of the state. ADEM operated a FRM in Sumter County but closed it in 2006. A continuous monitor in Sumter County was being operated until loss of the lease caused the site to close. ADEM relocated the site and started remonitoring on 3/01/2013. The historical design values for this monitor have been less than 85% of the NAAQS. The new AQS ID is 01-119-0003 with the local site name of Ward.

The Micropolitan Statistical Area of Talladega-Sylacauga has a population of 92,728. It is adjacent to the Anniston-Oxford and the Birmingham-Hoover MSAs. There is currently 1 FRM located in Talladega County in Childersburg. The design value for this monitor is greater than 85% of the NAAQS. ADEM intends to maintain this site.

There is an FRM located near Ashland in Clay County to serve as a regional transport site in between the large MSAs of Birmingham and Atlanta. The PM<sub>2.5</sub> annual and 24-hour design values are less than 85% of the NAAQS for this monitor. ADEM intends to maintain this site.

The Crossville site in De Kalb County is a rural background site in northeast Alabama. The PM<sub>2.5</sub> annual is greater than 85% of the NAAQS, while the 24-hour design value is less than 85% of the NAAQS. ADEM intends to maintain this site.

## **Quality Assurance**

Each of the three monitoring agencies have US EPA approved Quality Assurance Program Plans that detail the activities used to control and document the quality of the data collected. Part of the EPA required quality control program for particulate monitors is the use of collocated particulate monitors. 40 CFR 58, appendix A requires a percentage of manual particulate monitors to be collocated with FRM monitors so that quality statistics can be calculated.

Each agency network includes monitors for this purpose.

## **Monitoring Equipment Evaluation**

An evaluation of the condition of ambient monitors and auxiliary equipment was performed by each of the three monitoring agencies. The equipment was categorized as “good” or “poor”. As resources allow equipment in “poor” condition will be replaced.

## NETWORK DESCRIPTIONS

A description of the ambient air monitoring networks for each air pollution agency will be presented in this section.

Included will be:

- AQS ID
- Address
- Latitude and Longitude
- Scale
- Type
- Monitoring Objective
- Beginning Sampling Date and Ending Sampling Date
- Method
- Operating Schedule
- Is it comparable to the NAAQS?

## ADEM AIR MONITORING NETWORK DESCRIPTION

<b>Abbreviations</b>	
<b>Scale</b>	
N	Neighborhood (0.5 – 4 Kilometers)
U	Urban (overall citywide conditions, 4 -50 kilometers)
R	Regional (usually rural, with homogenous geography, tens to hundreds of kilometers)
M	Middle Scale
<b>Type</b>	
CAS	CASNET operated by EPA
S	SLAMS
QA	QA Collocated Monitor
SPM	Special Purpose Monitor
<b>Operating Schedule</b>	
C	Continuous monitor
D	Daily 24-hour samples
3	1 24-hour sample every 3 days (on national schedule)
6	1 24-hour sample every 6 days (on national schedule)
<b>Methods</b>	
H	Hi-volume SSI sampler
L	Low Volume SSI
T	TEOM continuous monitor
B	BAM continuous monitor
U	UV photometric ozone analyzer
P	Pulsed Fluorescent
S	Hi-Volume Total Suspended Particulate monitor
G	Lead Analysis by Graphite furnace
<b>NAAQS<sup>1</sup></b>	
Y,N	Data suitable for comparison to NAAQS

<sup>1</sup> Collocated monitors must be operated in the same manner as the federal reference method but 1 monitor at the site is designated as the main monitor for comparison to the NAAQS.

**PM<sub>10</sub>**

Site common name	County	AQS Site ID	Address	Latitude	Longitude	S C A L E	T Y P E	Monitoring objective / CBSA	Date Began	Date Ended	S M E T H O D	H E N D A U S A	Q U A L I T Y	Comment
Mobile – WKRG Main	Mobile	01-097-0016	WKRG transmitting Stn, Telegraph Rd.	30.72028	-88.05889	N	S	Population Exposure / Mobile, AL	1/1/1982	active	S	6	Y	
Mobile – WKRG	Mobile	01-097-0016	WKRG transmitting Stn, Telegraph Rd.	30.72028	-88.05889	N	Q A	Population Exposure/ Mobile, AL	1/1/1982	active	S	6	Y	collocated
Montgomery - MOMS	Montgomery	01-101-1002	1350 Coliseum Blvd, Montgomery, AL	32.412782	-86.263356	N	S	Population Exposure/ Montgomery, AL	6/1/1993	active	S	6	Y	
Montgomery - MOMS	Montgomery	01-101-1002	1350 Coliseum Blvd, Montgomery, AL	32.412782	-86.263356	N	Q A	Population Exposure/ Montgomery, AL	1/1/2013	active	S	6	Y	collocated

**Lead**

Site common name	County	AQS Site ID	Address	Latitude	Longitude	S C A L E	T Y P E	Monitoring objective / CBSA	Date Began	Date Ended	S M E T H O D	H E N D A U S A	Q U A L I T Y	Comment
Troy	Pike	01-109-0003	Henderson Road, Troy, AL	31.790560	-85.979170	N	S	Highest Concentration / Troy,AL uSA	1/1/2009	active	S G	6	Y	
Troy	Pike	01-109-0003	Henderson Road, Troy, AL	31.790560	-85.979170	N	Q A	Highest Concentration / Troy,AL uSA	1/1/2009	active	S G	6	Y	collocated
Pryor Field Airport	Limestone	01-083-0005	US 31, Local On Calhoun Community College	34.645848	-86.947311	N	S M P	Highest Concentration / Huntsville MSA	1/1/2012	12/31/2012	S G		Y	

**PM 2.5**

Site common name	County	AQS Site ID	Address	Latitude	Longitude	S C A L E	T Y P E	Monitoring objective / CBSA	Date Began	Date Ended	M E T H O D	S C H E D U L E	N A A Q S	Comment
Fairhope	Baldwin	01-003-0010	Fairhope High School, Fairhope, AL	30.49778	-87.88139	M	S	Population exposure/ Daphne-Fairhope $\mu$ SA	1/1/2000	active	L	3	Y	
Ashland	Clay	01-027-0001	Ashland Airport	33.28111	-85.80222	R	S	Highest Concentration/ not in CBSA	1/1/1999	active	L	3	Y	
Muscle Shoals	Colbert	01-033-1002	2nd Street and Wilson Dam Road	34.76056	-87.65056	N	S	Highest Concentration/ Florence MSA	1/1/1999	active	L	3	Y	
Crossville	DeKalb	01-049-1003	13112 Hwy 68, Crossville AL	34.2875	-85.96833	N	S P M	General/background/ Fort Payne $\mu$ SA	1/1/1999	active	L	3	Y	
Gadsden - CC	Etowah	01-055-0010	1001 Wallace Dr Gadsden, AL	33.99361	-85.99111	U	S	Population Exposure/ Gadsden MSA	1/1/2000	active	L	3	Y	
Gadsden - CC	Etowah	01-055-0010	1001 Wallace Dr Gadsden, AL	33.99361	-85.99111	U	S	Population Exposure/ Gadsden MSA			B	C	N	Continuous to start in January 1st, 2014
Dothan	Houston	01-069-0003	126 North St Andrews St. Civic Center	31.22621	-85.39082	N	S	Population Exposure/ Dothan MSA	1/7/2005	active	L	3	Y	
Mobile - Chickasaw	Mobile	01-097-0003	Iroquois and Azalea, Chickasaw	30.76972	-88.0875	N	S	Population Exposure/ Mobile MSA	7/19/2002	active	L	3	Y	
Mobile - Chickasaw	Mobile	01-097-0003	Iroquois and Azalea, Chickasaw	30.76972	-88.0875	N	S P M	Population Exposure/ Mobile MSA	3/1/2011	active	B	C	N	Continuous monitor.

## PM 2.5 continued

Site common name	County	AQS Site ID	Address	Latitude	Longitude	S C A L E	T Y P E	Monitoring objective / CBSA	Date Began	Date Ended	M E T H O D	S C H E D U L E	N O T E S	Comment
Montgomery - MOMS	Montgomery	01-101-0002	1350 Coliseum Blvd, Montgomery, AL	32.412782	-86.263356	N	S	Population Exposure/ Montgomery MSA	1/16/2009	active	L	3	Y	
Montgomery - MOMS	Montgomery	01-101-0002	1350 Coliseum Blvd, Montgomery, AL	32.412782	-86.263356	N	Q A	Population Exposure/ Montgomery MSA	1/16/2009	active	L	6	Y	Collocated
Montgomery - MOMS	Montgomery	01-101-0002	1350 Coliseum Blvd, Montgomery, AL	32.412782	-86.263356	N	S P M	Population Exposure/ Montgomery MSA	4/1/2009	active	B	C	N	Collocated Continuous
Decatur	Morgan	01-103-0011	Wallace Ctr.Hwy 31, Decatur	34.51861	-86.97694	M	S	Population Exposure/ Decatur MSA	8/7/2001	active	L	3	Y	
Decatur	Morgan	01-103-0011	Wallace Ctr.Hwy 31, Decatur	34.51861	-86.97694	M	S P M	Population Exposure/ Decatur MSA	4/1/2009	active	B	C	N	Collocated Continuous
Phenix City - Downtown	Russell	01-113-0001	St. Patrick's Church, Phenix City	32.47639	-84.99917	N	S	Highest Concentration/ Columbus, GA-AL MSA	1/1/1999	active	L	3	Y	
Phenix City - Downtown	Russell	01-113-0001	St. Patrick's Church, Phenix City	32.47639	-84.99917	N	Q A	Highest Concentration/ Columbus, GA-AL MSA	5/17/2004	active	L	3	Y	collocated
Phenix City - Downtown	Russell	01-113-0001	St. Patrick's Church, Phenix City	32.47639	-84.99917	N	S P M	Highest Concentration/ Columbus, GA-AL MSA	1/25/2010	active	T	C	N	Collocated Non-FEM Continuous
Pelham	Shelby	01-117-0006	Pelham High School	33.31278	-86.82111	U	S	Highest Concentration/ Birmingham MSA	1/1/1999	active	L	3	Y	
Ward, Sumter CO.	Sumter	01-119-0003	NNE of Ward Post office, Sumter Co., Alabama	32.362706	-88.277954	R	S P M	Background/General/ not in MSA	3/1/2013	active	B	C	N	Continuous. For Background.
Childersburg	Talladega	01-121-0002	300 1 <sup>st</sup> Street Southeast, Childersburg, AL	33.27944	-86.34944	N	S	Highest Concentration/ Talladega $\mu$ SA	1/1/1999	active	L	3	Y	
VA, Tuscaloosa	Tuscaloosa	01-125-0004	3701 Loop Road East	33.18903	-87.48421	N	S	Population Exposure/ Tuscaloosa MSA	10/1/2002	active	L	3	Y	
VA, Tuscaloosa	Tuscaloosa	01-125-0004	3701 Loop Road East	33.18903	-87.48421	N	S P M	Population Exposure/ Tuscaloosa MSA			B	3	N	Continuous to start in January 1st, 2014

**OZONE**

Site common name	County	AQS Site ID	Address	Latitude	Longitude	STATE	Monitoring objective / CBSA	Date Began	Date Ended	STATUS	SCHEMATA	Comment
Fairhope	Baldwin	01-003-0010	Fairhope High School, Fairhope, AL	30.49778	-87.88139	NSM	Population Exposure/ Mobile MSA	3/1/2000	active	UCY		
Muscle Shoals	Colbert	01-033-1002	Wilson Dam Rd And 2nd St.	34.76056	-87.65056	NSM	Population Exposure/ Decatur MSA	3/1/2003	active	UCY		
DBT	Elmore	01-051-0001	Dewberry Trail, Wetumpka	32.49833	-86.13667	US	Highest Concentration/ Montgomery MSA	3/1/1990	active	UCY		
Southside	Etowah	01-055-0011	1450 Parker Anderson Lane, Southside, AL	33.9039	-86.0539	NS	Max Concentration/ Gadsden MSA	4/26/2002	active	UCY		
Dothan	Houston	01-069-0004	161 Buford Lane	31.19041	-85.42317	NS	Population Exposure/ Dothan MSA	3/14/2005	active	UCY		
Mobile - Chickasaw	Mobile	01-097-0003	Iroquois And Azalea Chickasaw	30.76972	-88.0875	NS	Population Exposure/ Mobile MSA	3/2/1982	active	UCY		
Mobile - Bay Road	Mobile	01-097-2005	Bay Rd. ,Mobile AL	30.47444	-88.14111	US	Population Exposure/ Mobile MSA	3/1/1999	active	UCY		
Montgomery - MOMS	Montgomery	01-101-1002	1350 Coliseum Blvd, Montgomery, AL	32.412782	-86.263356	NS	Population Exposure/ Montgomery MSA	6/2/1993	active	UCY		
Decatur	Morgan	01-103-0011	Wallace Development Center	34.51861	-86.97694	US	General/Background/ Decatur MSA	4/1/2000	active	UCY		
Phenix City - Ladonia	Russell	01-113-0002	9 Woodland Drive (School) , Ladonia, AL	32.46785	-85.0839	USM	Population Exposure/ Columbus, GA-AL MSA	3/1/2003	active	UCY		
Helena	Shelby	01-117-0004	Helena, Bearden Farm	33.31694	-86.825	US	Population Exposure/ Birmingham MSA	1/1/1983	active	UCY		
Ward, Sumter Co.	Sumter	01-119-0003	NNE of Ward Post Office, Sumter Co., Alabama	32.362706	-87.484217	USM	General/Background/ not in MSA	3/1/2013	active	UCY		
Duncanville, Tuscaloosa	Tuscaloosa	01-125-0010	11690 Southfork Dr. Duncanville, AL	33.08953	-87.45972	US	Population Exposure/ Tuscaloosa MSA	2/1/2001	active	UCY		
Sand Mountain	Dekalb	01-049-9991	Sand Mountain Agricultural Ex per. Station Crossville, AL	34.2888	-85.9698	RCS	Highest Concentration/ Fort Payne $\mu$ SA	1/1/2011	active	UCN	operated by EPA	

**SO<sub>2</sub>**

Site common name	County	AQS Site ID	Address	Latitude	Longitude	S C A L E	T Y P E	Monitoring objective / CBSA	Date Began	Date Ended	M E T H O D	S C H E D U L E	N A A Q S	Comment
Mobile - Chickasaw	Mobile	01-097-0003	Iroquois And Azalea Chickasaw	30.76972	-88.0875	N	S	Population Exposure/ Mobile MSA	1/1/2013	active	P	C	Y	
Duncanville, Tuscaloosa	Tuscaloosa	01-125-0010	11690 Southfork Dr. Duncanville, Al	33.08953	-87.45972	U	S	Population Exposure/ Tuscaloosa MSA	1/1/2013	active	P	C	Y	

**JCDH AIR MONITORING NETWORK DESCRIPTION**

(As of June 2013)

<b>Abbreviations</b>	
<b>Scale</b>	
N	Neighborhood (0.5 – 4 Kilometers)
U	Urban (overall citywide conditions, 4 -50 kilometers)
R	Regional (usually rural, with homogenous geography, tens to hundreds of kilometers)
MC	Microscale
<b>Type</b>	
CS	Core SLAMS
NCS	NCore SLAMS
S	SLAMS
SPM	Special Purpose Monitor
<b>Operating Schedule</b>	
C	Continuous monitor
D	Daily 24-hour samples
3	1 24-hour sample every 3 days (on national schedule)
6	1 24-hour sample every 6 days (on national schedule)
<b>Methods</b>	
H	Hi-volume SSI sampler
L	Low Volume SSI
T	TEOM continuous monitor
U	UV photometric ozone analyzer
S	Hi-Volume Total Suspended Particulate monitor
G	Lead Analysis by Graphite furnace
P	Pulsed Fluorescent
I	Non Dispersive Infrared
F	Gas Filter Correlation
B	Beta Attenuation
<b>NAAQS<sup>2</sup></b>	
Y,N	Data suitable for comparison to NAAQS

<sup>2</sup> Collocated monitors must be operated in the same manner as the federal reference method but 1 monitor at the site is designated as the main monitor for comparison to the NAAQS.

**Ozone**

Site common name	AQS Site ID	Address	Latitude Longitude	S C A L E	T Y P E	Monitoring objective	Began Sampling	Ended Sampling	M E T H O D	S C H E D U L E	N A Q S	Comment
<b>N. B'ham NCore</b>	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	N C S	Neighborhood	03/01/00	Active	U	C	Y	<i>Year Round</i>
<b>Fairfield PFD</b>	01-073-1003	5229 Court B	33.485556 -86.915000	N	S	High Population Exposure	04/26/74	Active	U	C	Y	<i>March - October</i>
<b>McAdory School</b>	01-073-1005	4800 McAdory School Rd.	33.331111 -87.003611	U	S	High Concentration	06/17/87	Active	U	C	Y	<i>March - October</i>
<b>Leeds Elem. School</b>	01-073-1010	201 Ashville Rd	33.545278 -86.549167	N	S	High Population Exposure	03/01/01	Active	U	C	Y	<i>March - October</i>
<b>Hoover</b>	01-073-2006	3425 Tamassee Lane	33.386389 -86.816667	N	S	High Population Exposure	09/01/88	Active	U	C	Y	<i>March - October</i>
<b>Corner School</b>	01-073-5003	1005 Corner School Rd	33.801667 -86.942500	U	S	Typical Population	03/01/00	Active	U	C	Y	<i>March - October</i>
<b>Tarrant Elem. School</b>	01-073-6002	1269 Portland St.	33.578333 -86.773889	N	S	High Population Exposure	03/24/80	Active	U	C	Y	<i>March - October</i>

**SO<sub>2</sub>**

Site common name	AQS Site ID	Address	Latitude Longitude	S C A L E	T Y P E	Monitoring objective	Began Sampling	Ended Sampling	M E T H O D	S C H E D U L E	N A Q S	Comment
<b>N. B'ham NCore</b>	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	N C S	High Population Exposure	01/01/11	Active	P	C	Y	
<b>Fairfield PFD</b>	01-073-1003	5229 Court B	33.485556 -86.915000	N	S	High Population Exposure	12/11/74	Active	P	C	Y	

Site common name	AQS Site ID	Address	Latitude Longitude	S C A L E	T Y P E	Monitoring objective	Began Sampling	Ended Sampling	M E T H O D	S C H E D U L E	N A A Q S	Comment
N. B'ham NCore	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	N C S	Neighborhood	03/01/00	Active	F	C	Y	
Fairfield PFD	01-073-1003	5229 Court B	33.485556 -86.915000	N	S	High Population Exposure	04/26/74	Active	I	C	Y	
East Thomas	01-073-0028	841 Finley Ave	33.529444 -86.850278	M	S	High Population Exposure	03/01/81	Active	I	C	Y	
N. Bham Sloss	01-073-6004	4113 Shuttlesworth Dr	33.565278 -86.796389	N	S	High Population Exposure	09/25/96	Active	I	C	Y	

NO<sub>y</sub>

Site common name	AQS Site ID	Address	Latitude Longitude	S C A L E	T Y P E	Monitoring objective	Began Sampling	Ended Sampling	M E T H O D	S C H E D U L E	N A A Q S	Comment
N. B'ham NCore	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	N C S	High Population Exposure	01/01/11	Active	G	C	Y	

Site common name	AQS Site ID	Address/ MSA	Latitude Longitude	S C A L E	T Y P E	Monitoring objective	Began Sampling	Ended Sampling	M E T H O D	S C H E D U L E	N A Q S	Comment
N. B'ham NCore	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	N C S	High Concentration	01/01/03	Active	L	3	Y	LC/Lead
N. B'ham NCore	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	N C S	Collocated Sampler	01/01/03	Active	L	6	Y	LC/Lead
Wylam	01-073-2003	1242 Jersey St.	33.499722 -86.924167	N	S	High Population Exposure	01/01/03	Active	L	6	Y	LC converted to STP
Wylam	01-073-2003	1242 Jersey St.	33.499722 -86.924167	N	S	Collocated Sampler	01/01/03	Active	L	6	Y	LC converted to STP
Tarrant Elem. School	01-073-6002	1269 Portland St.	33.578333 -86.773889	N	S	High Population Exposure	01/01/13	Active	L	6	Y	LC converted to STP
Tarrant Elem. School	01-073-6002	1269 Portland St.	33.578333 -86.773889	N	S	Collocated Sampler	01/01/13	Active	L	6	Y	LC converted to STP
Fairfield PFD	01-073-1003	3009 28 <sup>th</sup> St. North	33.485556 -86.915000	N	S	Neighborhood	01/01/13	Active	L	6	Y	LC converted to STP
N. Bham Sloss	01-073-6004	4113 Shuttlesworth Dr	33.565278 -86.796389		S	Point Source	01/01/13	Active	L	6	Y	LC converted to STP
McAdory School	01-073-1005	4800 McAdory School Rd.	33.331111 -87.003611	N	S P M	Typical Population	01/01/03	Active	L	6	Y	LC converted to STP
Leeds Elem. School	01-073-1010	201 Ashville Rd	33.545278 -86.549167	N	S	Typical Population	01/01/04	Active	L	6	Y	LC converted to STP

Site common name	AQS Site ID	Address/ MSA	Latitude Longitude	S C A L E	T Y P E	Monitoring objective	Began Sampling	Ended Sampling	M E T H O D	S C H E D U L E	N A A Q S	Comment
N. B'ham NCore	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	S P M	High Concentration	02/01/13	Active	B	C	N	<i>Began February 2013</i>
Wylam	01-073-2003	1242 Jersey St.	33.499722 -86.924167	N	S P M	High Population Exposure	07/13/01	Active	T	C	Y	
Tarrant Elem. School	01-073-6002	1269 Portland St.	33.578333 -86.773889	N	S	High Population Exposure	03/24/80	Active	T	C	Y	
N. Bham Sloss	01-073-6004	4113 Shuttlesworth Dr	33.565278 -86.796389	N	S	High Population Exposure	01/25/96	Active	T	C	Y	

**Lead**

Site common name	AQS Site ID	Address	Latitude Longitude	S C A L E	T Y P E	Monitoring objective	Began Sampling	Ended Sampling	M E T H O D	S C H E D U L E	N A A Q S	Comment
N. B'ham NCore	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	N C S	Neighborhood	01/01/11	Active	L	3	Y	<i>XRF Analysis</i>
N. B'ham NCore	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	N C S	Collocated Sampler	01/01/11	Active	L	6	Y	<i>XRF Analysis</i>

Site common name	AQS Site ID	Address/ MSA	Latitude Longitude	S C A L E	T Y P E	Monitoring objective	Began Sampling	Ended Sampling	M E T H O D	S C H E D U L E	N A A Q S	Comment
N. B'ham NCore	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	N C S	High Concentration	01/01/99	Active	L	3	Y	
N. B'ham NCore	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	N C S	Collocated Sampler	01/01/99	Active	L	6	Y	
Wylam	01-073-2003	1242 Jersey St.	33.499722 -86.924167	N	S	High Population Exposure	01/01/99	Active	L	3	Y	
Wylam	01-073-2003	1242 Jersey St.	33.499722 -86.924167	N	S	Collocated Sampler	01/01/99	Active	L	6	Y	
McAdory School	01-073-1005	4800 McAdory School Rd.	33.331111 -87.003611	N	S P M	Typical Population	01/01/99	Active	L	3	Y	
McAdory School	01-073-1005	4800 McAdory School Rd.	33.331111 -87.003611	N	S P M	Collocated Sampler	01/01/99	Active	L	6	Y	
Leeds Elem. School	01-073-1010	201 Ashville Rd	33.545278 -86.549167	N	S P M	Typical Population	01/01/04	Active	L	6	Y	
Leeds Elem. School	01-073-1010	201 Ashville Rd	33.545278 -86.549167	N	S P M	Collocated Sampler	01/01/04	Active	L	6	Y	

Site common name	AQS Site ID	Address/ MSA	Latitude Longitude	S C A L E	T Y P E	Monitoring objective	Began Sampling	Ended Sampling	M E T H O D	S C H E D U L E	N A A Q S	Comment
N. B'ham NCore	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	S P M	High Concentration	02/01/13	Active	B	C	N	Began February 2013
McAdory School	01-073-1005	4800 McAdory School Rd.	33.331111 -87.003611	N	S P M	Typical Population	01/01/99	Active	T	C	N	Non FEM
Leeds Elem. School	01-073-1010	201 Ashville Rd	33.545278 -86.549167	N	S P M	Typical Population	01/01/04	Active	T	C	N	Non FEM
Wylam	01-073-2003	1242 Jersey St.	33.499722 -86.924167	N	S P M	High Population Exposure	07/13/01	Active	T	C	N	Non FEM
Hoover	01-073-2006	3425 Tamassee Lane	33.386389 -86.816667	N	S P M	High Population Exposure	07/25/01	Active	T	C	N	Non FEM
Corner	01-073-5003	1005 Corner School Rd	33.801667 -86.942500	U	S P M	Typical Population	07/22/01	Active	T	C	N	Non FEM

**PM<sub>10</sub> IMPROVE**

Site common name	AQS Site ID	Address	Latitude Longitude	S C A L E	T Y P E	Monitoring objective	Began Sampling	Ended Sampling	M E T H O D	S C H E D U L E	N A A Q S	Comment
N. B'ham NCore	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	N C S	High Concentration	04/21/04	Active		3	N	

**PM<sub>2.5</sub> IMPROVE Speciation**

Site common name	AQS Site ID	Address	Latitude Longitude	S C A L E	Ty pe	Monitoring objective	Began Sampling	Ended Sampling	M E T H O D	S C H E D U L E	N A A Q S	Comment
N. B'ham NCore	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	N C S	High Concentration	04/21/04	Active		3	N	

**PM<sub>2.5</sub> STN Speciation**

Site common name	AQS Site ID	Address	Latitude Longitude	S C A L E	Ty pe	Monitoring objective	Began Sampling	Ended Sampling	M E T H O D	S C H E D U L E	N A A Q S	Comment
N. B'ham NCore	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	N C S	High Concentration	01/01/01	Active		3	N	<i>1 in 3 Alternate Schedule</i>
Wylam	01-073-2003	1242 Jersey St.	33.499722 -86.924167	N	S	High Concentration	10/01/01	Active		3	N	<i>1 in 3 Alternate Schedule</i>

Site common name	AQS Site ID	Address	Latitude Longitude	S C A L E	Typ e	Monitoring objective	Began Sampling	Ended Sampling	M E T H O D	S C H E D U L E	N A A Q S	Comment
N. B'ham NCore	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	N C S	High Concentration	04/19/07	Active		C	N	

**HDNR AIR MONITORING NETWORK DESCRIPTION**

(As of May 2013)

Site ID	Pollutant(s) Monitored	Methodology	Operating Schedule	Monitoring Objective	Spatial Scale	MSA Represented	Site/Monitor Type	Begin Sampling	End Sampling
01-089-0002	PM10*	SSI Hi – Vol	6 – Day	Population	Neighborhood	Huntsville	SLAMS	01/01/91	Active
01-089-0003	PM10	SSI Hi – Vol	Weekday	Population	Neighborhood	Huntsville	SPM Non-Regulatory	04/01/93	Active
01-089-0004	PM10*	SSI Hi – Vol	6 – Day	High Conc.	Middle	Huntsville	SLAMS	06/28/90	Active
01-089-0014	PM10*	SSI Hi – Vol	6 – Day	Population	Urban	Huntsville	SLAMS	07/01/88	Active
	PM2.5*	SSI Lo – Vol	3 -- Day	Population	Urban	Huntsville	SLAMS	01/01/99	Active
	PM2.5	SSI Lo – Vol	6 – Day	Population	Urban	Huntsville	Supplemental Speciation	01/09/03	Active
	PM2.5	SSI Lo – Vol	Continuous	Population	Urban	Huntsville	SPM Non-Regulatory	10/09/03	Active
	Ozone*	UV Photometric	Continuous	Population	Neighborhood	Huntsville	SLAMS	01/01/75	Active
01-089-0022	Ozone*	UV Photometric	Continuous	High Conc.	Urban	Huntsville	SLAMS	07/01/11	Active

\*Sites used for NAAQS comparison.

Site ID	Location	Geographical Coordinate	Three Closest Roads	Proposed Changes
01-089-0002	5006 Pulaski Pike Huntsville, AL 35810	Latitude +34.788333 Longitude -86.616111	Pulaski Pike Stag Run Winchester Road	None Proposed
01-089-0003	Madison St. – Garage Huntsville, AL 35801	Latitude +34.728740 Longitude -86.585010	Madison Street Gates Street Fountain Circle	None Proposed
01-089-0004	11525 S. Memorial Pkwy Huntsville, AL 35803	Latitude +34.620278 Longitude -86.566389	South Memorial Parkway Redstone Road Hobbs Road	None Proposed
01-089-0014	Old Airport – Airport Rd. Huntsville, AL 35802	Latitude +34.687670 Longitude -86.586370	Airport Road Memorial Parkway Leeman Ferry Road	None Proposed
01-089-0022	1130 Capshaw Road Huntsville, AL 35757	Latitude +34.772727 Longitude -86.756174	Capshaw Road Wall Triana Highway Balch Road	None Proposed

# **APPENDIX A**

## **JEFFERSON COUNTY DEPARTMENT OF HEALTH (JCDH) ANNUAL AIR MONITORING NETWORK PLAN**

## **JEFFERSON COUNTY DEPARTMENT OF HEALTH (JCDH)**

### **ANNUAL AIR MONITORING NETWORK PLAN**

**June 2013**

Regulations codified at 40 CFR Part 58, Appendices D (Network Design Criteria for Ambient Air Quality Monitoring) and E (Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring) were reviewed to determine if modifications to the existing air monitoring network are required.

#### **Summary of changes for JCDH in 2012**

- North Birmingham and Wylam PM<sub>2.5</sub> FRM sampling reduced to 1 in 3 day schedule
- Metal speciation at Wylam increased to follow North Birmingham sampling 1 in 3 day alternate schedule
- Closed two sites, Providence and Pinson, eliminating Ozone and Continuous PM<sub>2.5</sub> sampling at those sites on December 31, 2012
- North Side School site lost due to city construction

#### **Proposed changes for 2013**

- Hi Volume Method PM<sub>10</sub> Sampling discontinued
- Lo Volume Method PM<sub>10</sub> Sampling, data converted to STP for submittal to AQS
- Establishment of a near-road NO<sub>2</sub> monitoring site by January 1, 2014
- Addition of NO<sub>2</sub> sampling at N. B'ham/NCORE to meet area-wide requirement for our CBSA
- Closing East Thomas site due to ALDOT road construction, relocate CO to NO<sub>2</sub> near-road site

## Network Review

### NCore Site

Each State is required to operate one NCore (multi-pollutant site). After much discussion with EPA, North Birmingham was selected as the NCore for Alabama and became operational on January 1, 2011. The site monitors continuous Ozone (O<sub>3</sub>), trace level carbon monoxide (CO), trace level sulfur dioxide (SO<sub>2</sub>), and trace level oxides of nitrogen including nitric acid (NO<sub>y</sub>), as well as fine (PM<sub>2.5</sub>) particles, coarse (PM<sub>10-2.5</sub>) particles, PM<sub>10</sub> particles and PM<sub>10</sub> lead. In February 2013, Thermo Scientific 5014is were deployed at North Birmingham for the continuous measurement of PM<sub>2.5</sub> and PM<sub>10</sub>. These use the Beta Attenuation method and are designated as FEMs by EPA. We will be collocating these with FRMs at this site and comparing the data for a period of two years. They will be designated as Non-Regulatory monitors in AQS until sufficient data is compiled to determine whether or not they should be used for NAQQS comparison. A revised NAAQS for Nitrogen Dioxide was promulgated in February 2010. In this rule, EPA required changes to the monitoring network that will focus monitoring resources to capture short-term NO<sub>2</sub> concentrations near heavily trafficked roads, to assess area-wide (or community-wide) NO<sub>2</sub> concentrations, and to assess NO<sub>2</sub> concentrations for vulnerable and susceptible populations. A NO<sub>2</sub> monitor will be placed at the NCore site to meet this area-wide requirement and should be operational by the end of the 2013 summer.

### PAMS (Photochemical Assessment Monitoring Stations)

PAMS monitoring is required in areas classified as serious or above for the 8-hour ozone standard. Jefferson/Shelby Counties are presently classified as an ozone attainment area. Therefore, PAMS monitoring is not required.

### SLAMS (State and Local Air Monitoring Stations)

The minimum ozone monitoring requirements are based on MSA (Metropolitan Statistical Area) populations and 3-year design value concentrations. The Birmingham-Hoover MSA has a population of 1,136,650 based on the 2012 estimated U.S. census figures. The Birmingham-Hoover MSA's 3-year Ozone design value concentration for 2010-2012 is .080 ppm. MSA's with populations greater than 1,000,000 having a design value  $\geq 85\%$  of the O<sub>3</sub> NAAQS are required to operate two ozone sites. For the purpose of AirNow mapping and to support the EMPACT website, JCDH operates a total of seven ozone monitoring sites located in Jefferson County, and a eighth ozone monitoring site in Shelby County at Helena (operated by the Alabama Department of Environmental Management).

Based on the latest PWEI calculations the number of SO<sub>2</sub> monitors required is two. The minimum SO<sub>2</sub> requirement is currently being met with the monitor at the NCore site and the Fairfield site.

Lead (Pb) monitoring is required in major urbanized areas where Pb levels have been shown or are expected to be of concern due to the proximity of Pb point source emissions. According to the new lead regulations, sources emitting a half ton or more of lead per year would be candidates for lead ambient air monitoring. There are no longer any significant point sources of

lead emissions greater than the half ton threshold in Jefferson County. Therefore, based on past monitoring and 2010 emissions inventory data, a lead source monitoring site is not required.

JCDH operates four CO monitors even though concentrations continue to be well below the NAAQS. The East Thomas site will be closed due to Alabama Department of Transportation road expansion on Arkadelphia Road starting in August 2013. JCDH plans to operate the CO at that site through July 2013 and then discontinue sampling. A CO monitor will be added at the new NO<sub>2</sub> near-road site by January 1, 2014.

A revised NAAQS for Nitrogen Dioxide was promulgated in February 2010. In this rule, EPA required changes to the monitoring network that will focus monitoring resources to capture short-term NO<sub>2</sub> concentrations near heavily trafficked roads, to assess area-wide (or community-wide) NO<sub>2</sub> concentrations, and to assess NO<sub>2</sub> concentrations for vulnerable and susceptible populations. The Birmingham-Hoover CBSA will be required to have two NO<sub>2</sub> monitors, one to address community-wide NO<sub>2</sub> and one to address near-road concentrations. Funding has been received for the near-road monitoring site. A site has been proposed in an Addendum to the 2012 Network Plan and tentatively approved by EPA pending a 30 day public comment period. The Addendum went out for public comment on March 24, 2013, no comments were received, and bids for a turn-key shelter and equipment have been sent out. The establishment of a permanent near-road NO<sub>2</sub> monitoring site will meet design and siting criteria as spelled out in 40 CFR Part 58 and will be operational by January 1, 2014.

NO<sub>y</sub> monitoring began at the NCore site January 1, 2011.

Jefferson County's PM<sub>10</sub> concentrations are less than 80 percent of the PM<sub>10</sub> National Ambient Air Quality Standards (NAAQS). Based on MSA's with populations greater than 1,000,000 and medium concentrations (less than 80 percent of PM<sub>10</sub> NAAQS), Jefferson County is required to operate between 4 and 8 sites. In October 2012, the North Side PM<sub>10</sub> site was lost due to the City of Birmingham reclaiming the property for the construction of a new entertainment district. In the past, JCDH had operated two methods of PM<sub>10</sub> sampling, the High Volume Anderson PM<sub>10</sub> monitors and the Low Volume BGI PQ200s. This was believed to be duplicative sampling so JCDH spoke with the EPA Region 4 representative and requested to discontinue the High Volume method and continue the Low Volume method instead. The BGI PQ200 PM<sub>10</sub> sampler is a Federal Reference Method approved in 1998, RFPS-1298-125. The local condition data from the PQ200s will be converted to STP for entry into AQS and will be compared to the NAAQS starting with the 2013 calendar year. This will result in Jefferson County operating seven PM<sub>10</sub> sites located in the main industrial valley. Two sites, Wylam and Tarrant Elementary School will be collocated on the six day schedule. Four of the PM<sub>10</sub> sites, North Birmingham, Wylam, Sloss and Tarrant Elementary School, have continuous PM<sub>10</sub> monitors for quality assurance purposes. The collocated pair of PQ200s at the NCore site will continue to be operated at local conditions for lead monitoring.

The minimum PM<sub>2.5</sub> monitoring requirements are based on MSA populations and 3-year PM<sub>2.5</sub> annual and 24-hour design value concentrations. The Birmingham-Hoover MSA's 3-year annual design value concentration for 2010-2012 is 13 µg/m<sup>3</sup>, and the 24-hour design value is 26 µg/m<sup>3</sup>. MSA's with populations greater than 1,000,000 having a design value ≥ 85% of the PM<sub>2.5</sub>

NAAQS are required to operate three PM<sub>2.5</sub> sites. Although Jefferson County is only required to operate three PM<sub>2.5</sub> monitoring sites, four PM<sub>2.5</sub> monitoring sites are actually operated. Three sites (North Birmingham, Wylam and McAdory) operate on a 1 in 3 day schedule. The Leeds site operates on a 1 in 6 day schedule. While the North Birmingham site is the only required collocated site for manual PM<sub>2.5</sub>, all four of the manual PM<sub>2.5</sub> monitoring sites are collocated on a 1 in 6 day schedule.

**Continuous PM<sub>2.5</sub> SPM (Special Purpose Monitors)**

Continuous PM<sub>2.5</sub> monitoring is required in relation to the minimum SLAMS monitoring requirement stated above; i.e., equal to at least one-half (round up) the minimum monitoring requirement. Jefferson County is required to operate two continuous PM<sub>2.5</sub> monitors. However, six continuous PM<sub>2.5</sub> monitors are actually operated in Jefferson County for the purpose of AirNow mapping and to support our EMPACT website. Continuous PM<sub>2.5</sub> monitors are collocated with manual PM<sub>2.5</sub> monitors at North Birmingham, Wylam, McAdory and Leeds for quality assurance purposes.

**Network Review Findings**

The existing network as summarized in the attached Air Monitoring Network Description complies with 40 CFR Part 58 requirements. The described network should adequately characterize typical population exposure concentrations and compliance status with the NAAQS for pollutants of concern.

## JCDH AIR MONITORING NETWORK DESCRIPTION

(As of June 2013)

### JCDH

<b>Abbreviations</b>	
<b>Scale</b>	
N	Neighborhood (0.5 – 4 Kilometers)
U	Urban (overall citywide conditions, 4 -50 kilometers)
R	Regional (usually rural, with homogenous geography, tens to hundreds of kilometers)
MC	Microscale
<b>Type</b>	
CS	Core SLAMS
NCS	NCore SLAMS
S	SLAMS
SPM	Special Purpose Monitor
<b>Operating Schedule</b>	
C	Continuous monitor
D	Daily 24-hour samples
3	1 24-hour sample every 3 days (on national schedule)
6	1 24-hour sample every 6 days (on national schedule)
<b>Methods</b>	
H	Hi-volume SSI sampler
L	Low Volume SSI
T	TEOM continuous monitor
U	UV photometric ozone analyzer
S	Hi-Volume Total Suspended Particulate monitor
G	Lead Analysis by Graphite furnace
P	Pulsed Fluorescent
I	Non Dispersive Infrared
F	Gas Filter Correlation
B	Beta Attenuation
<b>NAAQS<sup>3</sup></b>	
Y,N	Data suitable for comparison to NAAQS

<sup>3</sup> Collocated monitors must be operated in the same manner as the federal reference method but 1 monitor at the site is designated as the main monitor for comparison to the NAAQS.

**Ozone**

Site common name	AQS Site ID	Address	Latitude Longitude	S C A L E	Typ	Monitoring objective	Began Sampling	Ended Sampling	M E T H O D	S C H E D U L E	N A Q S	Comment
<b>N. B'ham NCore</b>	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	N C S	Neighborhood	03/01/00	Active	U	C	Y	<i>Year Round</i>
<b>Fairfield PFD</b>	01-073-1003	5229 Court B	33.485556 -86.915000	N	S	High Population Exposure	04/26/74	Active	U	C	Y	<i>March - October</i>
<b>McAdory School</b>	01-073-1005	4800 McAdory School Rd.	33.331111 -87.003611	U	S	High Concentration	06/17/87	Active	U	C	Y	<i>March - October</i>
<b>Leeds Elem. School</b>	01-073-1010	201 Ashville Rd	33.545278 -86.549167	N	S	High Population Exposure	03/01/01	Active	U	C	Y	<i>March - October</i>
<b>Hoover</b>	01-073-2006	3425 Tamassee Lane	33.386389 -86.816667	N	S	High Population Exposure	09/01/88	Active	U	C	Y	<i>March - October</i>
<b>Corner School</b>	01-073-5003	1005 Corner School Rd	33.801667 -86.942500	U	S	Typical Population	03/01/00	Active	U	C	Y	<i>March - October</i>
<b>Tarrant Elem. School</b>	01-073-6002	1269 Portland St.	33.578333 -86.773889	N	S	High Population Exposure	03/24/80	Active	U	C	Y	<i>March - October</i>

**SO<sub>2</sub>**

Site common name	AQS Site ID	Address	Latitude Longitude	S C A L E	Typ	Monitoring objective	Began Sampling	Ended Sampling	M E T H O D	S C H E D U L E	N A Q S	Comment
<b>N. B'ham NCore</b>	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	N C S	High Population Exposure	01/01/11	Active	P	C	Y	
<b>Fairfield PFD</b>	01-073-1003	5229 Court B	33.485556 -86.915000	N	S	High Population Exposure	12/11/74	Active	P	C	Y	

**CO**

Site common name	AQS Site ID	Address	Latitude Longitude	S C A L E	Ty pe	Monitoring objective	Began Sampling	Ended Sampling	M E T H O D	S C H E D U L E	N A Q S	Comment
<b>N. B'ham NCore</b>	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	N C S	Neighborhood	03/01/00	Active	F	C	Y	
<b>Fairfield PFD</b>	01-073-1003	5229 Court B	33.485556 -86.915000	N	S	High Population Exposure	04/26/74	Active	I	C	Y	
<b>East Thomas</b>	01-073-0028	841 Finley Ave	33.529444 -86.850278	M	S	High Population Exposure	03/01/81	Active	I	C	Y	
<b>N. Bham Sloss</b>	01-073-6004	4113 Shuttlesworth Dr	33.565278 -86.796389	N	S	High Population Exposure	09/25/96	Active	I	C	Y	

**NO<sub>y</sub>**

Site common name	AQS Site ID	Address	Latitude Longitude	S C A L E	Ty pe	Monitoring objective	Began Sampling	Ended Sampling	M E T H O D	S C H E D U L E	N A Q S	Comment
<b>N. B'ham NCore</b>	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	N C S	High Population Exposure	01/01/11	Active	G	C	Y	

Low Volume PM<sub>10</sub>

Site common name	AQS Site ID	Address/ MSA	Latitude Longitude	S C A L E	T Y P E	Monitoring objective	Began Sampling	Ended Sampling	M E T H O D	S C H E D U L E	N A Q S	Comment
N. B'ham NCore	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	N C S	High Concentration	01/01/03	Active	L	3	Y	LC/Lead
N. B'ham NCore	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	N C S	Collocated Sampler	01/01/03	Active	L	6	Y	LC/Lead
Wylam	01-073-2003	1242 Jersey St.	33.499722 -86.924167	N	S	High Population Exposure	01/01/03	Active	L	6	Y	LC converted to STP
Wylam	01-073-2003	1242 Jersey St.	33.499722 -86.924167	N	S	Collocated Sampler	01/01/03	Active	L	6	Y	LC converted to STP
Tarrant Elem. School	01-073-6002	1269 Portland St.	33.578333 -86.773889	N	S	High Population Exposure	01/01/13	Active	L	6	Y	LC converted to STP
Tarrant Elem. School	01-073-6002	1269 Portland St.	33.578333 -86.773889	N	S	Collocated Sampler	01/01/13	Active	L	6	Y	LC converted to STP
Fairfield PFD	01-073-1003	3009 28 <sup>th</sup> St. North	33.485556 -86.915000	N	S	Neighborhood	01/01/13	Active	L	6	Y	LC converted to STP
N. Bham Sloss	01-073-6004	4113 Shuttlesworth Dr	33.565278 -86.796389		S	Point Source	01/01/13	Active	L	6	Y	LC converted to STP
McAdory School	01-073-1005	4800 McAdory School Rd.	33.331111 -87.003611	N	S P M	Typical Population	01/01/03	Active	L	6	Y	LC converted to STP
Leeds Elem. School	01-073-1010	201 Ashville Rd	33.545278 -86.549167	N	S	Typical Population	01/01/04	Active	L	6	Y	LC converted to STP

Site common name	AQS Site ID	Address/MSA	Latitude Longitude	SCALE	TYPE	Monitoring objective	Began Sampling	Ended Sampling	METHOD	SCHEDULE	STATUS	Comment
N. B'ham NCore	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	SPM	High Concentration	02/01/13	Active	B	C	N	Began February 2013
Wylam	01-073-2003	1242 Jersey St.	33.499722 -86.924167	N	SPM	High Population Exposure	07/13/01	Active	T	C	Y	
Tarrant Elem. School	01-073-6002	1269 Portland St.	33.578333 -86.773889	N	S	High Population Exposure	03/24/80	Active	T	C	Y	
N. Bham Sloss	01-073-6004	4113 Shuttlesworth Dr	33.565278 -86.796389	N	S	High Population Exposure	01/25/96	Active	T	C	Y	

**Lead**

Site common name	AQS Site ID	Address	Latitude Longitude	SCALE	Type	Monitoring objective	Began Sampling	Ended Sampling	METHOD	SCHEDULE	STATUS	Comment
N. B'ham NCore	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	NCS	Neighborhood	01/01/11	Active	L	3	Y	XRF Analysis
N. B'ham NCore	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	NCS	Collocated Sampler	01/01/11	Active	L	6	Y	XRF Analysis

PM<sub>2.5</sub>

Site common name	AQS Site ID	Address/MSA	Latitude Longitude	S C A L E	T Y P E	Monitoring objective	Began Sampling	Ended Sampling	M E T H O D	S C H E D U L E	N A Q S	Comment
N. B'ham NCore	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	N C S	High Concentration	01/01/99	Active	L	3	Y	
N. B'ham NCore	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	N C S	Collocated Sampler	01/01/99	Active	L	6	Y	
Wylam	01-073-2003	1242 Jersey St.	33.499722 -86.924167	N	S	High Population Exposure	01/01/99	Active	L	3	Y	
Wylam	01-073-2003	1242 Jersey St.	33.499722 -86.924167	N	S	Collocated Sampler	01/01/99	Active	L	6	Y	
McAdory School	01-073-1005	4800 McAdory School Rd.	33.331111 -87.003611	N	S P M	Typical Population	01/01/99	Active	L	3	Y	
McAdory School	01-073-1005	4800 McAdory School Rd.	33.331111 -87.003611	N	S P M	Collocated Sampler	01/01/99	Active	L	6	Y	
Leeds Elem. School	01-073-1010	201 Ashville Rd	33.545278 -86.549167	N	S P M	Typical Population	01/01/04	Active	L	6	Y	
Leeds Elem. School	01-073-1010	201 Ashville Rd	33.545278 -86.549167	N	S P M	Collocated Sampler	01/01/04	Active	L	6	Y	

Site common name	AQS Site ID	Address/MSA	Latitude Longitude	SCALE	Type	Monitoring objective	Began Sampling	Ended Sampling	METHOD	SCHEMATA	QA/QC	Comment
N. B'ham NCore	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	SPM	High Concentration	02/01/13	Active	B	C	N	Began February 2013
McAdory School	01-073-1005	4800 McAdory School Rd.	33.331111 -87.003611	N	SPM	Typical Population	01/01/99	Active	T	C	N	
Leeds Elem. School	01-073-1010	201 Ashville Rd	33.545278 -86.549167	N	SPM	Typical Population	01/01/04	Active	T	C	N	
Wylam	01-073-2003	1242 Jersey St.	33.499722 -86.924167	N	SPM	High Population Exposure	07/13/01	Active	T	C	N	
Hoover	01-073-2006	3425 Tamassee Lane	33.386389 -86.816667	N	SPM	High Population Exposure	07/25/01	Active	T	C	N	
Corner	01-073-5003	1005 Corner School Rd	33.801667 -86.942500	U	SPM	Typical Population	07/22/01	Active	T	C	N	

**PM<sub>10</sub> IMPROVE**

Site common name	AQS Site ID	Address	Latitude Longitude	SCALE	Type	Monitoring objective	Began Sampling	Ended Sampling	METHOD	SCHEMATA	QA/QC	Comment	
N. B'ham NCore	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	NCS	High Concentration	04/21/04	Active			3	N	

**PM<sub>2.5</sub> IMPROVE Speciation**

Site common name	AQS Site ID	Address	Latitude Longitude	SCALE	Type	Monitoring objective	Began Sampling	Ended Sampling	METHOD	SCHEDULE	NAAQS	Comment
N. B'ham NCore	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	NCS	High Concentration	04/21/04	Active		3	N	

**PM<sub>2.5</sub> STN Speciation**

Site common name	AQS Site ID	Address	Latitude Longitude	SCALE	Type	Monitoring objective	Began Sampling	Ended Sampling	METHOD	SCHEDULE	NAAQS	Comment
N. B'ham NCore	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	NCS	High Concentration	01/01/01	Active		3	N	1 in 3 Alternate Schedule
Wylam	01-073-2003	1242 Jersey St.	33.499722 -86.924167	N	S	High Concentration	10/01/01	Active		3	N	1 in 3 Alternate Schedule

**RadNet**

Site common name	AQS Site ID	Address	Latitude Longitude	S C A L E	Ty pe	Monitoring objective	Began Sampling	Ended Sampling	M E T H O D	S C H E D U L E	N A A Q S	Comment
N. B'ham NCore	01-073-0023	3009 28 <sup>th</sup> St. North	33.553.056 -86.815000	N	N C S	High Concentration	04/19/07	Active		C	N	

# **APPENDIX B**

## **Huntsville Department of Natural Resources (HDNR) Annual Air Monitoring Network Plan**

## ANNUAL AIR MONITORING NETWORK PLAN

May 6, 2013

Regulations codified at 40 CFR Part 58, Appendices A (Quality Assurance Requirements for SLAMS, SPMs and PSD Air Monitoring), C (Ambient Air Quality Monitoring Methodology), D (Network Design Criteria for Ambient Air Quality Monitoring) and E (Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring) were reviewed to determine if modifications to the existing air monitoring network are required.

### **NCore Ambient Air Monitoring Stations**

Each State is required to operate one NCore site (multipollutant). Huntsville was not selected for the NCore site.

### **PAMS (Photochemical Assessment Monitoring Stations)**

PAMS monitoring is required in areas classified as serious, severe, or extreme for the 8-hour ozone standard. Huntsville is presently classified as an ozone attainment area. Consequently, PAMS monitoring is not required.

### **SLAMS (State and Local Air Monitoring Stations)**

The minimum ozone monitoring requirements are based on MSA (Metropolitan Statistical Area) populations and 3-year design value concentrations. The Huntsville MSA population is 417,593 based on the 2010 decennial census population. Huntsville's 3-year design value concentration for 2010-2012 is .073 ppm. MSA's with populations of 50,000 to less than 350,000 having a design value  $\geq 85\%$  of the O<sub>3</sub> NAAQS are required to operate one ozone site. MSA's with populations of 350,000 to less than 4,000,000 are required to operate two ozone sites. Huntsville operates two ozone monitoring sites, as required.

There is a two-tier minimum nitrogen dioxide (NO<sub>2</sub>) monitoring requirement. Near-road microscale monitoring is required in each CBSA (Core-based statistical area) with a population of 500,000 or more. Area-wide high concentration monitoring is required in each CBSA with a population of 1,000,000 or more. The Huntsville CBSA population is 417,593. Huntsville is not required to operate a SLAMS NO<sub>2</sub> monitor.

The minimum monitoring requirements for carbon monoxide (CO) require one monitor be collocated with a near-road NO<sub>2</sub> monitor in each CBSA with a population of 1,000,000 or more. Huntsville is not required to operate a SLAMS CO monitor.

The minimum sulfur dioxide (SO<sub>2</sub>) monitoring requirements are based on a Population Weighted Emissions Index (PWEI), which is calculated by multiplying the population of the CBSA and the total SO<sub>2</sub> emissions (using the most recent published version of the National Emissions Inventory) within the CBSA area. The resulting product is then divided by one million, representing million persons-tons per year. Areas having a PWEI greater than 1,000,000 are required to operate 3 monitors; areas having a PWEI equal to or greater than 100,000 but less than 1,000,000 are required to operate 2 monitors; areas having a PWEI greater than 5,000 but less than 100,000 are required to operate 1 monitor. The Huntsville PWEI is 2474 (based on 2008 estimated census population and 2008 National Emissions Inventory). Huntsville is not required to operate a SLAMS SO<sub>2</sub> monitor.

Lead monitoring (Pb) is required in areas where Pb levels have been shown or are expected to be of concern due to the proximity of Pb point source emissions. Generally, industrial sources emitting 0.5 ton or more of lead per year and airports emitting 1.0 ton or more per year would be candidates for lead ambient air monitoring. There are no significant point sources of lead emissions in Huntsville. Based on past monitoring and emissions inventory data, a SLAMS lead site is not required.

Huntsville's PM<sub>10</sub> concentrations are less than 80 percent of the PM<sub>10</sub> NAAQS (National Ambient Air Quality Standards). Based on Huntsville's MSA population being between 250,000-500,000 and low concentrations, Huntsville is required to operate between 0 and 1 site. Huntsville operates 3 PM<sub>10</sub> sites located south, central, and north within Huntsville. These monitors can be operated at very low cost and provide good spatial coverage within the city. Experience has shown that members of the public want ambient air monitoring to be performed in their part of the city, and the PM<sub>10</sub> monitoring sites provide a monitoring presence at relatively low cost. Furthermore, the PM<sub>10</sub> data provide an indirect indication of PM<sub>2.5</sub> spatial variability at a tiny fraction of the cost of operating multiple PM<sub>2.5</sub> sites. Note: PM<sub>10</sub> Site 01-089-0004 was projected to close upon sale of Fire Station #7. An agreement was made with the new property owners and monitoring will continue at this site.

The minimum PM<sub>2.5</sub> monitoring requirements are based on MSA populations and 3-year design value concentrations. Huntsville's 3-year design value concentration for 2010-2012 is 21 µg/m<sup>3</sup> for the 24-hour standard and 10.7 µg/m<sup>3</sup> for the annual standard. MSA's with populations of 50,000 to less than 500,000 having a design value ≥ 85% of the PM<sub>2.5</sub> NAAQS are required to operate one PM<sub>2.5</sub> site on a 1 in 3 day sampling frequency. Huntsville operates one PM<sub>2.5</sub> site on a 1 in 3 day schedule to meet this requirement. Note: Operating frequency increases to daily sampling when the 24-hour design value is within ± 5 percent of the 24-hour PM<sub>2.5</sub> NAAQS (34, 35, and 36 µg/m<sup>3</sup>).

SLAMS sites were also evaluated to determine consistency of spatial scales with stated monitoring objectives. Reference the attached monitoring network description. In addition to the information listed below, the description also indicates site locations, monitoring methodologies, and operational schedules.

Site	Pollutant	Monitoring Objective	Current Spatial Scale Based on ADT* For nearest Streets	Scale Meets Objective Yes / No
0002	PM <sub>10</sub>	Population	Neighborhood	Yes
0004	PM <sub>10</sub>	High Conc.	Middle	Yes
0014	PM <sub>10</sub>	Population	Urban	Yes
0014	PM <sub>2.5</sub>	Population	Urban	Yes
0014	O <sub>3</sub>	Population	Neighborhood	Yes
0022	O <sub>3</sub>	High Conc.	Urban	Yes

**Notes:**

ADT = Average Daily Traffic

Site 0002	Monitor 30.5 m from Pulaski Pike	ADT 14,600	Probe Ht. 4.3 m
Site 0004	Monitor 30.5 m from Mem. Pkwy.	ADT 41,500	Probe Ht. 4.3 m

Site 0014	Monitors 91 m from Airport Road Monitors 548 m from Mem. Pkwy.	ADT 17,800 ADT 82,750**	Probe Ht of PM monitors – 4.3 m Probe Ht of continuous monitor(s) 4.5 m
Site 0022	Monitor 30 m from Capshaw Road	ADT 10,500	Probe Ht. 4.0 m

### SPM (Special Purpose Monitors)

The special purpose PM<sub>10</sub> monitor is operated Monday – Friday from 3:00 – 3:00 p.m. This data is used in reporting the daily Air Quality Index to the local print and television media.

Continuous PM<sub>2.5</sub> monitoring is required in relation to the minimum SLAMS monitoring requirement stated above; i.e., equal to at least one-half (round up) the minimum monitoring requirement. Huntsville is therefore required to operate one continuous PM<sub>2.5</sub> monitor. This monitor is a non-FRM/FEM/ARM. This data is used to support public reporting and forecasting of the Air Quality Index.

<u>Site</u>	<u>Pollutant</u>	<u>Monitoring Objective</u>	<u>Current Spatial Scale Based on ADT* For nearest Streets</u>	<u>Scale Meet Objective Yes / No</u>
0003 (AQI Reporting Site.)	PM <sub>10</sub>	Population	Neighborhood	Yes
0014	PM <sub>2.5</sub>	Population	Urban	Yes

\*Traffic count data as provided by the Engineering Department represents 2011-2012 data.

\*\*ADT counts on Memorial Parkway immediately north and south of Airport Road averaged.

### PM<sub>2.5</sub> Chemical Speciation

Chemical speciation monitoring and analyses at sites designed to be part of the PM<sub>2.5</sub> Speciation Trends Network (STN) are required. Huntsville is not a part of the STN and is not required to operate a chemical speciation site. However, PM<sub>2.5</sub> chemical speciation is encouraged at additional sites where the chemically resolved data would be useful in developing State implementation plans and supporting atmospheric or health effects related studies. Huntsville operates a supplemental speciation site. This data has proved useful in documenting exceptional events.

### Network Review Findings

The existing network as summarized in the attached Air Monitoring Network Description complies with 40 CFR Part 58 requirements.

### Attachments

1. Air Monitoring Network Description
2. Monitoring site location map.
3. Air Monitoring Equipment Assessment

**AIR MONITORING NETWORK DESCRIPTION**

(As of May 2013)

Site ID	Pollutant(s) Monitored	Methodology	Operating Schedule	Monitoring Objective	Spatial Scale	MSA Represented	Site/Monitor Type	Begin Sampling	End Sampling
01-089-0002	PM <sub>10</sub> *	SSI Hi – Vol	6 – Day	Population	Neighborhood	Huntsville	SLAMS	01/01/91	Active
01-089-0003	PM <sub>10</sub>	SSI Hi – Vol	Weekday	Population	Neighborhood	Huntsville	SPM	04/01/93	Active
01-089-0004	PM <sub>10</sub> *	SSI Hi – Vol	6 – Day	High Conc.	Middle	Huntsville	SLAMS	06/28/90	Active
01-089-0014	PM <sub>10</sub> *	SSI Hi – Vol	6 – Day	Population	Urban	Huntsville	SLAMS	07/01/88	Active
	PM <sub>2.5</sub> *	SSI Lo – Vol	3 -- Day	Population	Urban	Huntsville	SLAMS	01/01/99	Active
	PM <sub>2.5</sub>	SSI Lo – Vol	6 – Day	Population	Urban	Huntsville	Supplemental Speciation	01/09/03	Active
	PM <sub>2.5</sub>	SSI Lo – Vol	Continuous	Population	Urban	Huntsville	SPM	10/09/03	Active
	Ozone*	UV Photometric	Continuous	Population	Neighborhood	Huntsville	SLAMS	01/01/75	Active
01-089-0022	Ozone*	UV Photometric	Continuous	High Conc.	Urban	Huntsville	SLAMS	07/01/11	Active

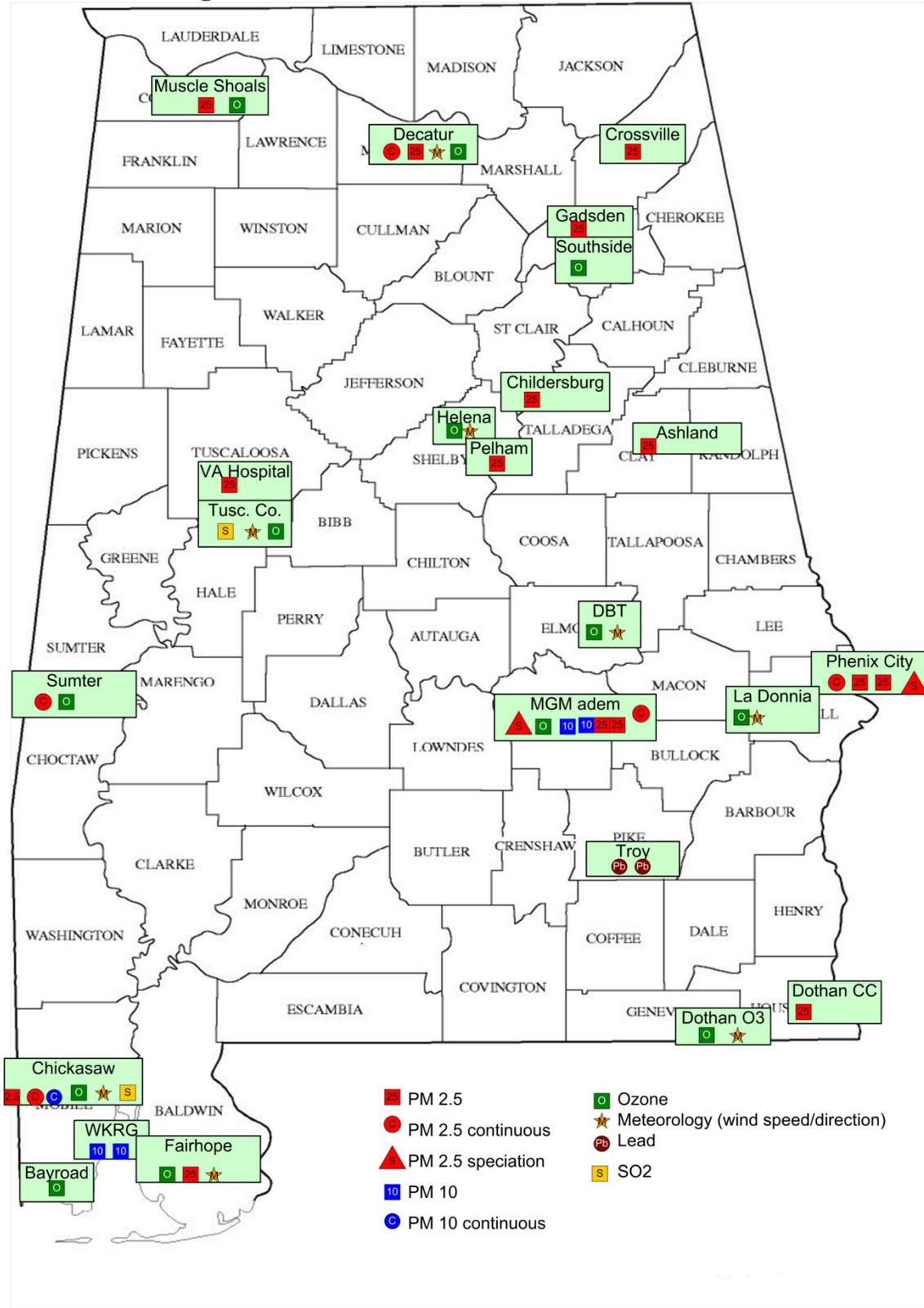
\*Sites used for NAAQS comparison.

Site ID	Location	Geographical Coordinate	Three Closest Roads	Proposed Changes
01-089-0002	5006 Pulaski Pike Huntsville, AL 35810	Latitude +34.788333 Longitude -86.616111	Pulaski Pike Stag Run Winchester Road	None Proposed
01-089-0003	Madison St. – Garage Huntsville, AL 35801	Latitude +34.728740 Longitude -86.585010	Madison Street Gates Street Fountain Circle	None Proposed
01-089-0004	11525 S. Memorial Pkwy Huntsville, AL 35803	Latitude +34.620278 Longitude -86.566389	South Memorial Parkway Redstone Road Hobbs Road	Site will be closed due to projected closure of facility (TBD)
01-089-0014	Old Airport – Airport Rd. Huntsville, AL 35802	Latitude +34.687670 Longitude -86.586370	Airport Road Memorial Parkway Leeman Ferry Road	None Proposed
01-089-0022	1130 Capshaw Road Huntsville, AL 35757	Latitude +34.772727 Longitude -86.756174	Capshaw Road Wall Triana Highway Balch Road	None Proposed

# **APPENDIX C**

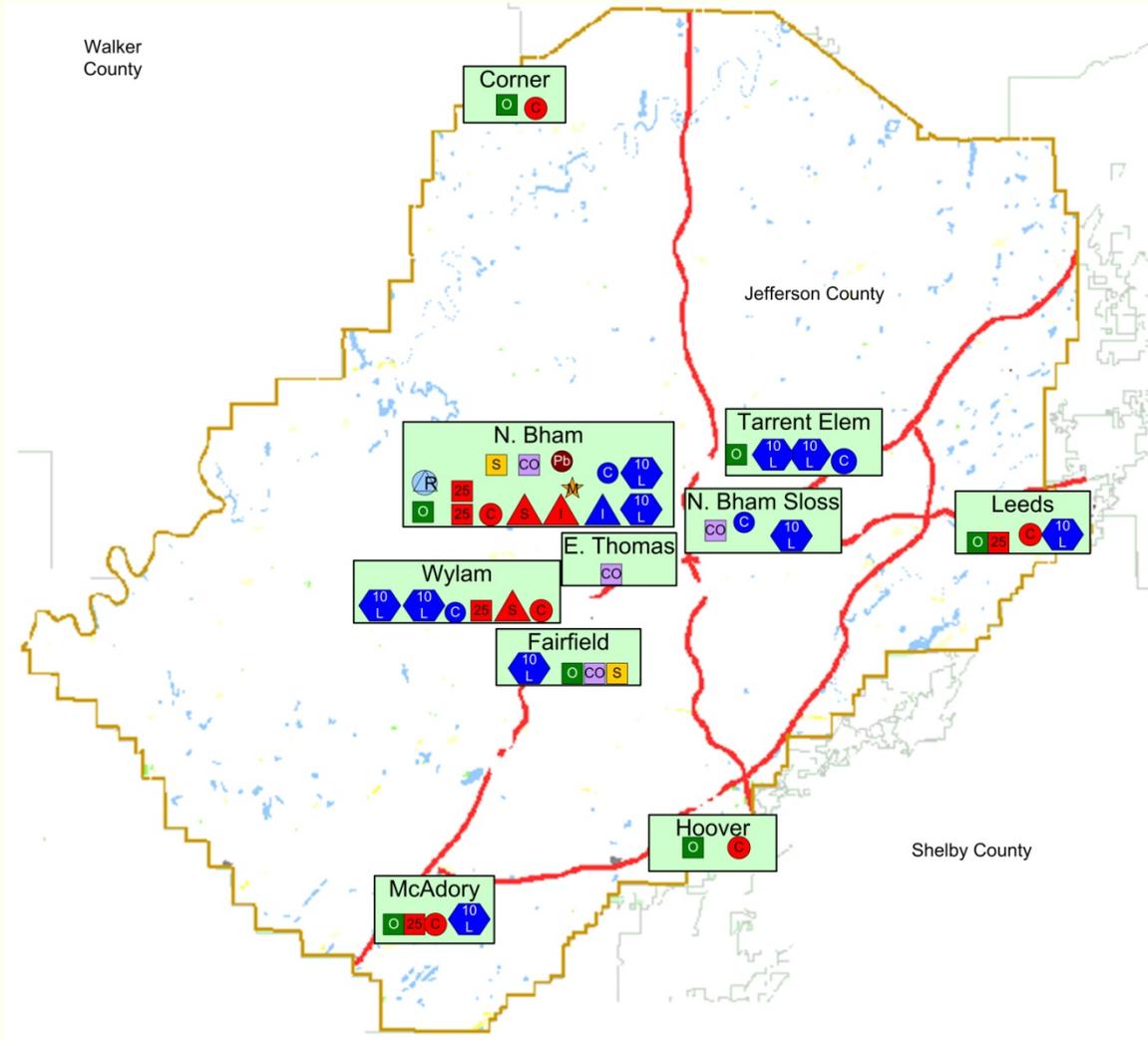
## **Maps**

### ADEM Monitoring Sites



Jefferson County

# Jefferson County Monitors



- |                     |                                    |
|---------------------|------------------------------------|
| PM 2.5              | Ozone                              |
| PM 2.5 continuous   | Meteorology (wind speed/direction) |
| PM 2.5 speciation   | Lead                               |
| PM 10               | Sulfur Dioxide                     |
| PM 10 continuous    | Carbon Monoxide                    |
| Improve speciation  | Radnet                             |
| Low vol pm 10       |                                    |
| Improve pm 10 spec. |                                    |

### City of Huntsville

