Jefferson County Department of Health's
Ambient Air Monitoring
2018 Network Review

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Definitions and Acronyms

AAQM	Ambient Air Quality Monitoring
AAQMP	Ambient Air Quality Monitoring Plan
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	*Code of Federal Regulations*
CO	Carbon Monoxide
CSA	Combined Statistical Area
CSN	Chemical Speciation Network
EPA	Environmental Protection Agency
FEM	Federal Equivalent Method
FRM	Federal Reference Method
hr	hour
hi-vol	high-volume PM_{10} sampler
JCDH	Jefferson County Department of Health
Low-vol	low-volume particulate sampler
m_3	cubic meter
min	minute
ml	milliliter
MSA	Metropolitan Statistical Area
NAAQS	National Ambient Air Quality Standards
NCore	National Core multipollutant monitoring stations
O_3	ozone
PAMS	Photochemical Assessment Monitoring Stations
Pb	lead
PM	particulate matter
$PM_{2.5}$	particulate matter ≤2.5 micrometers diameter
PM_{10}	particulate matter ≤10 micrometer diameter
$PM_{10-2.5}$	particulate matter ≤10 microns but > 2.5 microns
PSD	Prevention of Significant Deterioration
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
SLAMS	State or Local Air Monitoring Station
SO_2	Sulfur Dioxide
SPM	Special Purpose Monitor
STN ($PM_{2.5}$)	Speciation Trends Network
TEOM	Tapered Element Oscillating Microbalance (Rupprecht and Patashnick Co.)
tpy	tons per year
TSP	Total Suspended Particulate
URG	URG-3000N $PM_{2.5}$ Speciation monitoring carbon-specific sampler
USEPA	United States Environmental Protection Agency
° C	degree Celsius
$\mu g/m^3$	micrograms (of pollutant) per cubic meter (of air sampled)
≥	greater than or equal to
>	greater than
≤	less than or equal to
<	less than

Introduction

In October 2006, the United States Environmental Protection Agency (EPA) issued final Federal Regulations (40 CFR Part 58) concerning state and local agency ambient air monitoring networks. These regulations require states to submit an annual monitoring network review to EPA. This document provides the framework for establishment and maintenance of Alabama's air quality surveillance system, lists changes that occurred during 2017, and changes proposed to take place to the current ambient air monitoring network during 2018/2019.

Public Review and Comment

The annual monitoring network review must be made available for public inspection for thirty (30) days prior to submission to EPA. For 2018, this document will be placed on JCDH's website on **Friday, May 25, 2018** to begin a 30-day public review period. This document can be accessed at the following link: https://www.jcdh.org/jcdh-ambient-air-network-plan/.

Overview of JCDH's Air Monitoring Network

Ambient air monitors in Jefferson County, 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), to provide 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: Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO_2), Ozone (O_3), particulate matter (PM_{10}, $PM_{2.5}$, and $PM_{10-2.5}$), and Sulfur Dioxide (SO_2). There are other non-criteria pollutants, such as $PM_{2.5}$ speciated compounds, that are also monitored for special purposes. In addition, meteorological data is also collected to support the monitoring and aid in analysis of the ambient air monitoring data.

The air quality surveillance system for Jefferson County, Alabama is operated by the Jefferson County Department of Health (JCDH),

In addition, the Air Quality Index (AQI) is reported for Jefferson County, Alabama at the following website: http://www.jcdh.org/EH/AnR/AnR03.aspx

Summary of Findings of the Network Review

Summary of changes that occurred during for CY 2017

- Discontinuation of Low Vol PM10 at the Wylam site, both the primary and collocated monitors
- Discontinuation of Ozone sampling at the Hoover site

Summary of changes either occurring or proposed for CY 2018

- Discontinuation of non FEM continuous PM2.5 sampling at the Hoover site
- Replacing the Corner site shelter with the shelter currently at Hoover
- Preparation for PAMS Monitoring to Begin in January 2019
- Monitoring for Hexavalent Chromium at the Wylam Monitoring Site

Network Modification Plan

The 2016 revision to 40 CFR 58 included the following section concerning the 5-year network assessment.

> **§58.14 System modification.**
> (a) The state, or where appropriate local, agency shall develop a network modification plan and schedule to modify the ambient air quality monitoring network that addresses the findings of the network assessment required every 5 years by §58.10(d). The network modification plan shall be submitted as part of the Annual Monitoring Network Plan that is due no later than the year after submittal of the network assessment.

JCDH completed the required network assessment in 2018. EPA has created a website for publishing plans and assessments. https://www3.epa.gov/ttnamti1/5yrnetassess.html

Table 1 - 2018 Monitoring Network

Site Common Name	AQS ID	Ozone	PM2.5	PM 2.5 collocated	PM2.5 Spec.	PM2.5 IMPROVE	5014i (Cont. PM 2.5)	TEOM (Cont. PM2.5)	PM 10 LoVol	PM10 LoVol Collocated	PM10 IMPROVE	PM 10 Continuous	SO2	NO2	NOy	CO	RadNet
JCDH Sites																	
North Birmingham (NCore)	01-073-0023	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x
Fairfield	01-073-1003	x											x			x	
McAdory School	01-073-1005	x	x	x				x									
Leeds Elem. School	01-073-1010	x	x	x				x	x								
Wylam	01-073-2003		x	x	x			x				x					
Hoover	01-073-2006							x									
Corner High School	01-073-5003	x						x									
Tarrant Elem. School	01-073-6002	x										x					
Sloss Shuttlesworth	01-073-6004							x				x	x				
Arkadelphia (Near Road)	01-073-2059		x											x		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 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 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 $PM_{2.5}$ 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-PM10 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 calibration and auditing procedures used to collect valid air quality data, the minimum number of collocated monitoring sites, calculations used for data quality assessments, and reporting requirements. All sites in Alabama operate following the requirements set forth Appendix A.

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 follow the methods specified in Appendix C.

Appendix D of 40 CFR Part 58 specifies 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 Appendix D were followed. The specifics for each pollutant network are in the their individual chapters.

Appendix E of 40 CFR Part 58 specifies the placement of the monitoring probe, its spacing from obstructions and probe material. All monitors operated in Alabama meet Appendix E criteria.

Population and CBSA

Jefferson County has a 2017 MSA population estimate of 659,197. However, the population of the CBSA which includes the counties of Jefferson, Bibb, Blount, Chilton, Jefferson, Shelby, St. Clair, and Walker has a 2016 population estimate of 1,147,417.

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 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 (μSA).

Types of Monitoring Stations

PAMS – *Photochemical Assessment Monitoring Station*: PAMS are established to obtain more comprehensive data in areas with high levels of ozone pollution by also monitoring oxides of Nitrogen (NOx) and volatile organic compounds (VOCs). PAMS monitoring requirements were revised in the 2016 ozone NAAQS rule and a PAMS site will be required in the state of Alabama in Jefferson County. This site will need to be operational by 2019.

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

STN – *PM2.5 Speciation Trends Network*: A $PM_{2.5}$ speciation station designated to be part of the speciation trends network. This network provides chemical species data of fine particulates. There is currently one STN site located in Alabama at the North Birmingham NCore site (01-073-0023) operated by JCDH.

Supplemental Speciation - Any $PM_{2.5}$ speciation station that is used to gain supplemental data and is not dedicated as part of the speciation trends network.

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.

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. EPA-sponsored CASTNET ozone monitors are Part 58 compliant, therefore the data can be used for regulatory purposes. CASTNET Ozone data is now reported to AQS.

JCDH's SLAMS by Pollutant

Lead Network

In 2008, EPA revised the NAAQS for lead (Pb). The Pb standard was lowered from 1.5 ug/m^3 for a quarterly average to 0.15 ug/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 Pb emissions ≥1 ton per year. Population oriented monitoring is required for CBSAs >500,000. In December 2010, EPA revised the Pb rule to require source-oriented monitors for sources greater than ½ ton per year and stated that population oriented monitors would be located at NCore sites. In March, 2016, EPA removed the requirement for Pb monitoring at NCore sites that were not located near a Pb emissions source.

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. 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_2 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_2 monitor, only one CO monitor is required to be collocated with a near-road NO_2 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_2 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 NO2 monitoring site.

Those monitors required in CBSAs having 1 million or more persons are required to be operational by January 1, 2017.

Based on this, the requirement for a CO monitor to be collocated with the near road NO_2 monitor in the Birmingham-Hoover CBSA and operational by January 1, 2017 is satisfied at the Near Road Site (AQS ID 01-073-2059), operated by JCDH.

Currently CO is monitored at the following sites :

Table 2 - JCDH CO Monitoring sites

AQS No.	County	Site Name	Latitude	Longitude	Start Date	Objective	Scale	Frequency
01-073-0023	Jefferson	N. B'ham, SR	33.553031	-86.814853	3/1/2000	Population Exposure	Neighborhood	Continuously Year-round
01-073-1003	Jefferson	Fairfield, PFD	33.485556	-86.915062	12/11/74	Population Exposure	Neighborhood	Continuously Year-round
01-073-2059	Jefferson	Near Road Site	33.521427	-86.815000	1/1/2014	Other	Neighborhood	Continuously Year-round

Nitrogen Dioxide (NO_2) Network

On January 22, 2010 the US EPA finalized the monitoring rules for Nitrogen Dioxide (NO_2). The new rules include new requirements for the placement of new NO_2 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 ≥500,000 people. A second monitor is required near another major road in areas with either a CBSA population ≥2.5 million people, or one or more road segment with an annual average daily traffic (AADT) count ≥250,000 vehicles.

These NO_2 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_2 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_2 monitoring, the 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, only one near road NO_2 monitor is located in the Birmingham-Hoover CBSA. JCDH has established a site at Arkadelphia Road known as Near Road Site (AQS ID 01-073-2059), that monitors for NO_2, CO and $PM_{2.5}$. The establishment of a permanent near-road NO_2 monitoring site meeting design and siting criteria as specified in 40 CFR Part 58 was 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.

For community wide monitoring, Birmingham-Hoover is the only CBSA in Alabama with a population greater than 1 million, thereby requiring one NO_2 monitor. North Birmingham NCore (AQS ID 01-073-0023), operated by JCDH, monitors for NO_y and NO_2 based on community wide requirements.

Sulfur Dioxide (SO_2) Network

Effective August 23, 2010, EPA strengthened the primary National Ambient Air Quality Standard (NAAQS) for sulfur dioxide (SO_2). EPA established a new 1-hour standard at a level of 75 parts per billion (ppb), based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations..

According to EPA, for a short-term 1-hour SO_2 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_2. EPA is setting specific minimum requirements that inform states on where they are required to place SO_2 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 PWEI values of 1,000,000 or more;

· 2 monitors in CBSAs with PWEI values less than 1,000,000 but greater than 100,000; and

· 1 monitor in CBSAs with PWEI values greater than 5,000.

The Birmingham-Hoover CBSA requires two SO_2 monitors. North Birmingham NCore (AQS ID 01-073-0023) and Fairfield (AQS ID 01-073-1003), operated by JCDH to fulfill the requirement.

Effective September 21, 2015, per 40 CFR Part 51, states are required to report all sources that generate >2,000 tpy SO2, not dependent upon population density. For each source in this category, air quality must be determined through air quality modeling or ambient air monitoring. For sources that are characterized by monitoring operation of the site must be equivalent with the SLAMS requirements of 40 CFR Part 58.

PM_{10} Network

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

Table 3 - APPENDIX D TO PART 58. PM10 MINIMUM MONITORING REQUIREMENTS

TABLE D–4 OF APPENDIX D TO PART 58. PM_{10} MINIMUM MONITORING REQUIREMENTS (NUMBER OF STATIONS PER MSA)[1]

Population category	High concentration[2]	Medium concentration[3]	Low concentration[4,5]
>1,000,000	6–10	4–8	2–4
500,000–1,000,000	4–8	2–4	1–2
250,000–500,000	3–4	1–2	0–1
100,000–250,000	1–2	0–1	0

1 Selection of urban areas and actual numbers of stations per area within the ranges shown in this table will be jointly determined by EPA and the State Agency.
2 High concentration areas are those for which ambient PM10 data show ambient concentrations exceeding the PM_{10} NAAQS by 20 percent or more.
3 Medium concentration areas are those for which ambient PM10 data show ambient concentrations exceeding 80 percent of the PM_{10} NAAQS.
4 Low concentration areas are those for which ambient PM_{10} data show ambient concentrations less than 80 percent of the PM_{10} NAAQS.
5 These minimum monitoring requirements apply in the absence of a design value.

The Birmingham-Hoover MSA has a population >1,000,000 and PM_{10} concentrations ≥ 80 percent of the PM_{10} National Ambient Air Quality Standards (NAAQS). According to Table 3 above, the Birmingham-Hoover MSA is required to operate between 4 and 8 PM_{10} monitoring sites. Required sites are located in Jefferson County and operated by JCDH where the population and emissions are primarily concentrated. Currently, JCDH operates PM_{10} monitors at five sites which are acceptable for comparison to the NAAQS.

JCDH operates three PM_{10} monitors at the North Birmingham NCore site (AQS ID 01 073 0023): the primary monitor on a 1 in 3 day schedule, a collocated monitor on a 1 in 6 day schedule and one continuous monitor. The Leeds Elementary School site (AQS ID 01-073-1010) has one PM_{10} monitor on a 1 in 6 day schedule. The Wylam site (AQS ID 01-073-2003) has one continuous monitor. The Tarrant Elementary School site (AQS ID 01 073 6002) has one PM10 continuous monitor. The Sloss Shuttlesworth site (AQS ID 01-073-6004) has one continuous PM10 monitor.

Ozone Network

Effective December 28, 2015 the level of the NAAQS for ozone was changed from 0.075 to 0.070 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 0.070 ppm..

Minimum monitoring requirements for ozone are based on population and whether the design value is <85% of the NAAQS, or ≥85% of the NAAQS (See Table 4). Since the NAAQS for ozone is 0.070 parts per million of ozone then 85% of the NAAQS truncated is **0.059** ppm

Table 4 - APPENDIX D TO PART 58. MINIMUM O3 MONITORING REQUIREMENTS

TABLE D–2 OF APPENDIX D TO PART 58
SLAMS MINIMUM O_3 MONITORING REQUIREMENTS

MSA population[1, 2]	Most recent 3-year design value concentrations ≥85% of any **O3** NAAQS[3]	Most recent 3-year design value concentrations <85% of any **O3** NAAQS[3,4]
>10 million	4	2
4–10 million	3	1
350,000–<4 million	2	1
50,000–<350,000[5]	1	0

1 Minimum monitoring requirements apply to the Metropolitan statistical area (MSA).
2 Population based on latest available census figures.
3 The ozone (O3) National Ambient Air Quality Standards (NAAQS) levels and forms are defined in 40 CFR part 50.
4 These minimum monitoring requirements apply in the absence of a design value.
5 Metropolitan statistical areas (MSA) must contain an urbanized area of 50,000 or more population.

Table 5 lists JCDH's Ozone sites, AQS ID, 2015-2017 Design Values, MSA name, maximum design value of the MSA, number of Ozone monitors required by the CFR, and the current number of Ozone monitors.

Table 5- JCDH Ozone Monitoring Sites and Current Design Values and MSA Max Design Value

Site Name	AQS ID	2015-2017 Design Values	MSA	MSA Max DV	# of sites required per CFR	Current # of sites
North Birmingham/Ncore	01-073-0023	0.066	Birmingham-Hoover	0.068	2	7
Fairfield	01-073-1003	0.066				
McAdory School	01-073-1005	0.065				
Leeds Elem. School	01-073-1010	0.063				
Corner High School	01-073-5003	0.064				
Tarrant Elem. School	01-073-6002	0.068				
Helena	01-117-0004	0.066				

Ozone Monitoring requirements for Alabama MSAs

Birmingham-Hoover MSA

Using the 2016 Birmingham-Hoover MSA population estimate in 2017 and the design value from Table 4, two Ozone monitors are required in this MSA. There are currently seven Ozone sites in this MSA. One site, Helena (AQS ID 01-117-0004), operated by ADEM, is located in Shelby County. Seven sites, North Birmingham NCore (AQS ID 01-073-0023), Fairfield (AQS ID 01-073-1003), McAdory School (AQS ID 01-073-1005), Leeds Elementary School (AQS ID 01-073-1010), Corner High School (AQS ID 01-073-5003) and Tarrant Elementary School (AQS ID 01-073-6002), operated by 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.

$PM_{2.5}$ Network

Minimum monitoring requirements for $PM_{2.5}$ 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 6). Section 4.7.2 of Appendix D of 40 CFR Part 58 also requires a collocated continuous $PM_{2.5}$ 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.

Table 6 - APPENDIX D TO PART 58, PM2.5 MINIMUM MONITORING REQUIREMENTS

TABLE D–5 OF APPENDIX D TO PART 58 $PM_{2.5}$ MINIMUM MONITORING REQUIREMENTS		
MSA population [1,2]	Most recent 3-year design value ≥85% of any PM2.5 NAAQS[3]	Most recent 3-year design value<85% of any PM2.5 NAAQS[3,4]
>1,000,000	3	2
500,000–1,000,000	2	1
50,000–<500,000 [5]	1	0

1 Minimum monitoring requirements apply to the Metropolitan statistical area (MSA).
2 Population based on latest available census figures.
3 The PM2.5 National Ambient Air Quality Standards (NAAQS) levels and forms are defined in 40 CFR part 50.
4 These minimum monitoring requirements apply in the absence of a design value.
5 Metropolitan statistical areas (MSA) must contain an urbanized area of 50,000 or more population.

The current $PM_{2.5}$ Rule requires CBSAs with populations greater than a million but less than 4 million operate a $PM_{2.5}$ monitor at its NO_2 near road site by January 1, 2017. The only CBSA in Alabama that requires a NO_2 near road monitoring site is the Birmingham-Hoover MSA. The requirement is satisfied by Near Road Site (AQS ID 01-073-2059), operated by JCDH.

Table 7 lists JCDH's $PM_{2.5}$ sites, AQS Site ID, the 2015-2017 $PM_{2.5}$ 24-hour and Annual and Design Values for each site, MSA name, number of monitors required by the CFR and the current number of $PM_{2.5}$ monitors.

Table 7- JCDH $PM_{2.5}$ Monitoring Sites and Current Design Values and Annual MSA Design Value

Site Name	AQS Site ID	PM2.5 24 hr DV 2015-2017	PM2.5 Annual DV 2014-2016	MSA	Annual MSA DV	24hr MSA DV	# of sites required per CFR	Current # of sites
North Birmingham NCore	01-073-0023	22	10.4	Birmingham-Hoover	11.0	22	3	5
McAdory School	01-073-1005	18	9.0					
Leeds Elem. School	01-073-1010	19	9.4					
Wylam	01-073-2003	18	9.5					
Arkadelphia (Near Road)	01-073-2059	22	11.0					
			DV ≥ 85% of the NAAQS					

$PM_{2.5}$ Monitoring Requirements for JCDH

Birmingham-Hoover MSA

Using the Birmingham-Hoover MSA population estimate in 2017 and the design value, three FRM and two continuous monitors are required for this MSA. The Pelham FRM monitor (AQS ID 01-117-0006), operated by ADEM, was closed 06/2015. JCDH operates 5 FRM monitors are located in Jefferson County, 4 collocated FRM monitors, 5 continuous monitors, 1 IMPROVE network speciation monitor, 1 STN speciation monitor, and 1 supplemental speciation monitor.

Commented [MM1]: These numbers do not match up with site evaluations.

North Birmingham NCore (AQS ID 01-073-0023), has four $PM_{2.5}$ monitors: one FRM monitor on a 1 in 3 day schedule with a collocated FRM on a 1 in 6 day schedule, a continuous monitor, an IMPROVE Speciation monitor on a 1 in 3 day schedule and an STN Speciation monitor on a 1 in 3 day schedule. McAdory School (AQS ID 01-073-1005) operates three $PM_{2.5}$ monitors: one FRM on a 1 in 3 day schedule with a collocated FRM on a 1 in 6 day schedule and a continuous monitor. Leeds (AQS ID 01-073-1010) operates three $PM_{2.5}$ monitors: one FRM on a 1 in 6 day schedule with a collocated FRM on a 1 in 6 day schedule and a continuous monitor. Hoover (AQS ID 01-073-2006) operates a continuous $PM_{2.5}$ monitor. Akadelphia Near Road Site (AQS ID 01-073-2059) operates an FRM $PM_{2.5}$ monitor on a 1 in 6 day schedule. Wylam (AQS ID 01-073-2003) operates an FRM on a 1 in 3 day schedule with a collocated FRM on a 1 in 6 day schedule, a continuous $PM_{2.5}$ monitor and a $PM_{2.5}$ STN Speciation monitor. Further details of the JCDH $PM_{2.5}$ network can be found in the Network Description section of this document.

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. Each agency operates as an independent Primary Quality Assurance Organization (PQAO) as defined by 40 CFR Part 58. Part of the EPA required quality control program for particulate monitors is the use of collocated particulate monitors. 40 CFR Part 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 the JCDH. The equipment was categorized as “good” or “poor”. As resources allow, equipment in “poor” condition will be replaced. A report of each Agency’s equipment evaluation will be submitted to the US EPA by July 1 each year.

NETWORK DESCRIPTIONS

A description of the ambient air monitoring networks for each air pollution agency, followed by detailed site evaluations, 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 comparible to the NAAQS?

JCDH AIR MONITORING NETWORK DESCRIPTION

(As of May 2018)

Abbreviations	
Scale	
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
Type	
CS	Core SLAMS
NCS	NCore SLAMS
S	SLAMS
SPM	Special Purpose Monitor
Operating Schedule	
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)
Methods	
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
UP	Chemiluminescence- photolytic
NAAQS[1]	
Y,N	Data suitable for comparison to NAAQS

[1] Collocated monitors must be operated in the same manner as the Federal Reference Method; one 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	SCALE	Type	Monitoring objective	Began Sampling	Ended Sampling	METHOD	SCHEDULE	NAAQS	Comment
North Birmingham NCore	01-073-0023	3009 28th St. North	33.553056 -86.815000	N	NCS	Population Exposure	03/01/00	Active	U	C	Y	*Year Round*
Fairfield	01-073-1003	5229 Court B	33.485556 -86.915000	N	S	Population Exposure	04/26/74	Active	U	C	Y	*March - October*
McAdory	01-073-1005	4800 McAdory School Rd.	33.332736 -87.002226	U	S	Highest Concentration	06/17/87	Active	U	C	Y	*March - October*
Leeds	01-073-1010	201 Ashville Rd.	33.545278 -86.549167	N	S	Highest Concentration	03/01/01	Active	U	C	Y	*March - October*
Corner	01-073-5003	1005 Corner School Rd.	33.801667 -86.942500	N	S	Other	03/01/00	Active	U	C	Y	*March - October*
Tarrant	01-073-6002	1269 Portland St.	33.578333 -86.773889	N	S	Population Exposure	03/24/80	Active	U	C	Y	*March - October*

SO_2

Site common name	AQS Site ID	Address	Latitude Longitude	SCALE	Type	Monitoring objective	Began Sampling	Ended Sampling	METHOD	SCHEDULE	NAAQS	Comment
North Birmingham NCore	01-073-0023	3009 28th St. North	33.553056 -86.815000	N	NCS	Other	01/01/11	Active	P	C	Y	
Fairfield	01-073-1003	5229 Court B	33.485556 -86.915000	N	S	Highest Concentration	12/11/74	Active	P	C	Y	
Shuttleworth	01-073-6004	4113 Shuttlesworth Drive	33.565278 - 86.796389	N	SPM	Other	01/01/2017	Active	P	C	N	

CO

Site common name	AQS Site ID	Address	Latitude Longitude	SCALE	Type	Monitoring objective	Began Sampling	Ended Sampling	METHOD	SCHEDULE	NAAQS	Comment
North Birmingham NCore	01-073-0023	3009 28th St. North	33.553056 -86.815000	N	NCS	Population Exposure	03/01/00	Active	F	C	Y	
Fairfield	01-073-1003	5229 Court B	33.485556 -86.915000	N	S	Population Exposure	04/26/74	Active	I	C	Y	
Arkadelphia (Near Road)	01-073-2059	1110 5th Street West	33.521427 -86.844112	N	S	Other	01/01/14	Active	F	C	Y	

NO_y

Site common name	AQS Site ID	Address	Latitude Longitude	SCALE	Type	Monitoring objective	Began Sampling	Ended Sampling	METHOD	SCHEDULE	NAAQS	Comment
North Birmingham NCore	01-073-0023	3009 28th St. North	33.553056 -86.815000	MC	NCS	Other	01/01/11	Active	P	C	N	

NO_2

Site common name	AQS Site ID	Address	Latitude Longitude	SCALE	Type	Monitoring objective	Began Sampling	Ended Sampling	METHOD	SCHEDULE	NAAQS	Comment
North Birmingham NCore	01-073-0023	3009 28th St. North	33.553056 -86.815000	MC	NCS	Other	01/01/14	Active	UP	C	Y	*Began January 2014*
Arkadelphia (Near Road)	01-073-2059	1110 5th Street West	33.521427 -86.844112	N	S	Other	01/01/14	Active	UP	C	Y	*Began January 2014*

Low Volume PM_{10}

Site common name	AQS Site ID	Address/ MSA	Latitude Longitude	SCALE	TYPE	Monitoring objective	Began Sampling	Ended Sampling	METHOD	SCHEDULE	NAAQS	Comment
North Birmingham NCore	01-073-0023	3009 28th St. North	33.553056 -86.815000	N	NCS	Highest Concentration	01/01/03	Active	L	3	Y	*LC & STP*
North Birmingham NCore	01-073-0023	3009 28th St. North	33.553056 -86.815000	N	NCS	Collocated Sampler	01/01/03	Active	L	6	Y	*LC & STP*
Leeds	01-073-1010	201 Ashville Rd.	33.545278 -86.549167	N	S	Highest Concentration	01/01/04	Active	L	6	Y	*LC converted to STP*

Continuous PM_{10}

Site common name	AQS Site ID	Address/ MSA	Latitude Longitude	SCALE	TYPE	Monitoring objective	Began Sampling	Ended Sampling	METHOD	SCHEDULE	NAAQS	Comment
North Birmingham NCore	01-073-0023	3009 28th St. North	33.553056 -86.815000	N	NCS	Highest Concentration	02/01/13	Active	B	C	Y	*Began February 2013*
Wylam	01-073-2003	1242 Jersey St.	33.499722 -86.924167	N	S	Population Exposure	07/13/01	Active	B	C	Y	
Tarrant	01-073-6002	1269 Portland St.	33.578333 -86.773889	N	S	Population Exposure	03/24/80	Active	T	C	Y	
Shuttlesworth	01-073-6004	4113 Shuttlesworth Dr.	33.565278 -86.796389	N	S	Highest Concentration	01/25/96	Active	T	C	Y	

$PM_{2.5}$

Site common name	AQS Site ID	Address/ MSA	Latitude Longitude	SCALE	TYPE	Monitoring objective	Began Sampling	Ended Sampling	METHOD	SCHEDULE	NAAQS	Comment
North Birmingham NCore	01-073-0023	3009 28th St. North	33.553056 -86.815000	N	NCS	Population Exposure Highest Concentration	01/01/99	Active	L	3	Y	
North Birmingham NCore	01-073-0023	3009 28th St. North	33.553056 -86.815000	N	NCS	Collocated Sampler	01/01/99	Active	L	6	Y	
McAdory	01-073-1005	4800 McAdory School Rd.	33.332736 -87.002226	N	SPM	Population Exposure	01/01/99	Active	L	3	Y	
McAdory	01-073-1005	4800 McAdory School Rd.	33.332736 -87.002226	N	SPM	Collocated Sampler	01/01/99	Active	L	6	Y	
Leeds	01-073-1010	201 Ashville Rd.	33.545278 -86.549167	N	SPM	Population Exposure	01/01/04	Active	L	6	Y	
Leeds	01-073-1010	201 Ashville Rd.	33.545278 -86.549167	N	SPM	Collocated Sampler	01/01/04	Active	L	6	Y	
Wylam	01-073-2003	1242 Jersey St.	33.499722 -86.924167	N	S	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	
Arkadelphia (Near Road)	01-073-2059	1110 5th Street West	33.521427 -86.844112	N	S	Other	01/01/14	Active	L	6	Y	*Began January 2014*

Continuous $PM_{2.5}$

Site common name	AQS Site ID	Address/ MSA	Latitude Longitude	SCALE	TYPE	Monitoring objective	Began Sampling	Ended Sampling	METHOD	SCHEDULE	NAAQS	Comment
North Birmingham NCore	01-073-0023	3009 28th St. North	33.553056 -86.815000	N	NCS	Population Exposure Highest Concentration	02/01/13	Active	B	C	Y	*Began February 2013*
McAdory	01-073-1005	4800 McAdory School Rd.	33.332736 -87.002226	N	SPM	Population Exposure	01/01/99	Active	T	C	N	
Leeds	01-073-1010	201 Ashville Rd.	33.545278 -86.549167	N	SPM	Highest Concentration	01/01/04	Active	T	C	N	
Wylam	01-073-2003	1242 Jersey St.	33.499722 -86.924167	N	SPM	Population Exposure	07/13/01	Active	T	C	N	
Hoover	01-073-2006	3425 Tamassee Lane	33.386389 -86.816667	N	SPM	Population Exposure	07/25/01	Active	T	C	N	
Corner	01-073-5003	1005 Corner School Rd.	33.801667 -86.942500	N	SPM	Other	07/22/01	Active	T	C	N	
Shuttleworth	01-073-6004	4113 Shuttlesworth Drive	33.565278 - 86.796389	M	SPM	Source Impact	01/01/17	Active	T	C	N	

PM_{10} IMPROVE

Site common name	AQS Site ID	Address	Latitude Longitude	SCALE	Type	Monitoring objective	Began Sampling	Ended Sampling	METHOD	SCHEDULE	NAAQS	Comment
North Birmingham NCore	01-073-0023	3009 28th St. North	33.553056 -86.815000	N	NCS	High Concentration	04/21/04	Active		3	N	

$PM_{2.5}$ IMPROVE Speciation

Site common name	AQS Site ID	Address	Latitude Longitude	SCALE	Type	Monitoring objective	Began Sampling	Ended Sampling	METHOD	SCHEDULE	NAAQS	Comment
North Birmingham NCore	01-073-0023	3009 28th St. North	33.553056 -86.815000	N	NCS	High Concentration	04/21/04	Active		3	N	

$PM_{2.5}$ STN Speciation

Site common name	AQS Site ID	Address	Latitude Longitude	SCALE	Type	Monitoring objective	Began Sampling	Ended Sampling	METHOD	SCHEDULE	NAAQS	Comment
North Birmingham NCore	01-073-0023	3009 28th St. North	33.553056 -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	SCALE	Type	Monitoring objective	Began Sampling	Ended Sampling	METHOD	SCHEDULE	NAAQS	Comment
North Birmingham NCore	01-073-0023	3009 28th St. North	33.553056 -86.815000	N	NCS	High Concentration	04/19/07	Active		C	N	

APPENDIX A

Jefferson County Department Of Health (JCDH)

Annual Air Monitoring Network Plan

May 2018

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 JCDH Network Review

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 2017 emissions inventory data, a lead source monitoring site is not required.

The EPA revised the NAAQS for Nitrogen Dioxide and it 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_2 concentrations near heavily trafficked roads, to assess area-wide (or community-wide) NO_2 concentrations, and to assess NO_2 concentrations for vulnerable and susceptible populations. Jefferson County has installed the requisite monitoring site in October 2013 which became operational on January 1, 2014. NO_y /NO2 monitoring began at the NCore site January 1, 2011.

To determine localized concentrations of PM2.5 in the North Birmingham area, the Department conducted PM2.5 monitoring at the Shuttlesworth site for one year [from July 1, 2013 to September 30, 2014]. This was operated as a special purpose, non-SLAMS monitor. Concentrations and concentration variations were very similar to those at next closest, proximate site, the North Birmingham monitoring site. JCDH will continue to monitor for PM2.5 at this site using a continuous monitoring method where the results will be publically accessible through the AirNow website located in the JCDH webpage.

Continuous $PM_{2.5}$ SPM (Special Purpose Monitors)
Continuous $PM_{2.5}$ 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 $PM_{2.5}$ monitors. However, seven continuous $PM_{2.5}$ monitors are actually operated in Jefferson County for the purpose of AirNow mapping and six to support our Birmingham Air Quality website. Continuous $PM_{2.5}$ monitors are collocated with manual $PM_{2.5}$ monitors at North Birmingham, Wylam, McAdory and Leeds for quality assurance purposes.

Continuous SO_2 SPM (Special Purpose Monitors)
The Department established an SO2 analyzer at the Shuttlesworth monitoring site.
The analyzer will be operated for one (1) year, after which time the data will be reviewed. If the data show consistent exceedances of the SO2 standards, the analyzer would be operated a full three (3) years to obtain a design value.

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.

North Birmingham/NCore
0.25 mile radius

East

North

South

West

Fairfield
0.25 mile radius

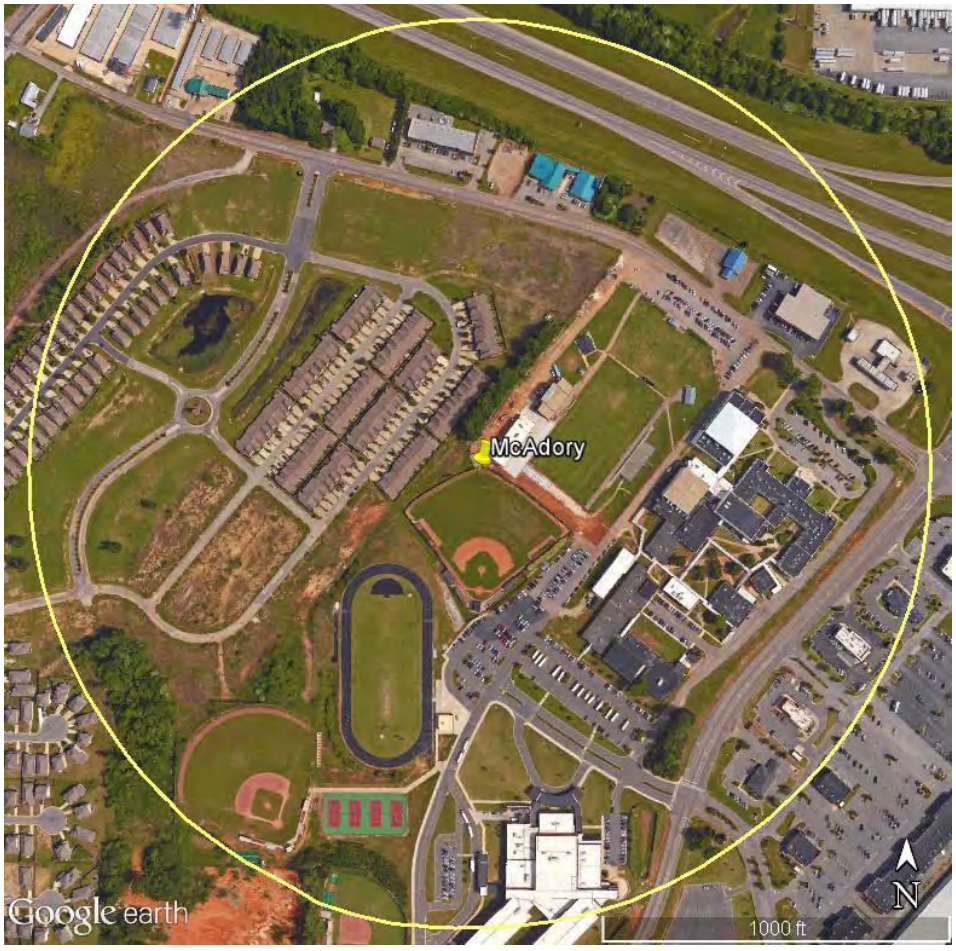
East

North

South

West

McAdory
0.25 mile radius



East

North

South

West

Leeds
0.25 mile radius

East

North

South

West

Hoover
0.25 mile radius

East

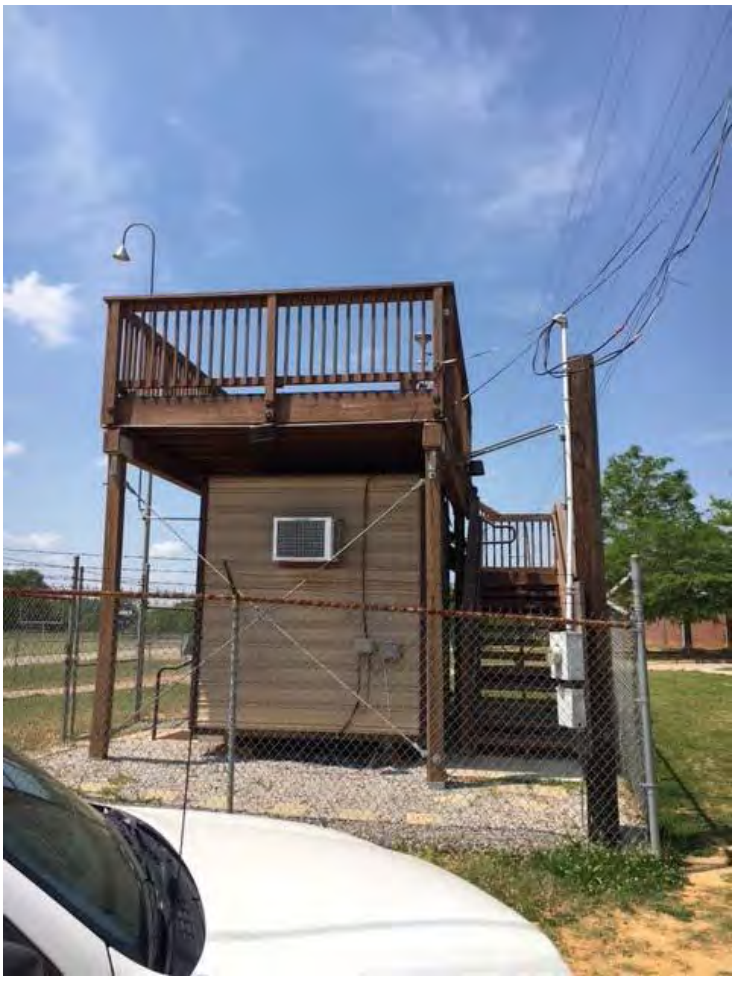
North

South

West

Corner
0.25 mile radius

East



North

South

West

Tarrant
0.25 mile radius

East

North

South

West

Arkadelphia
0.25 mile radius

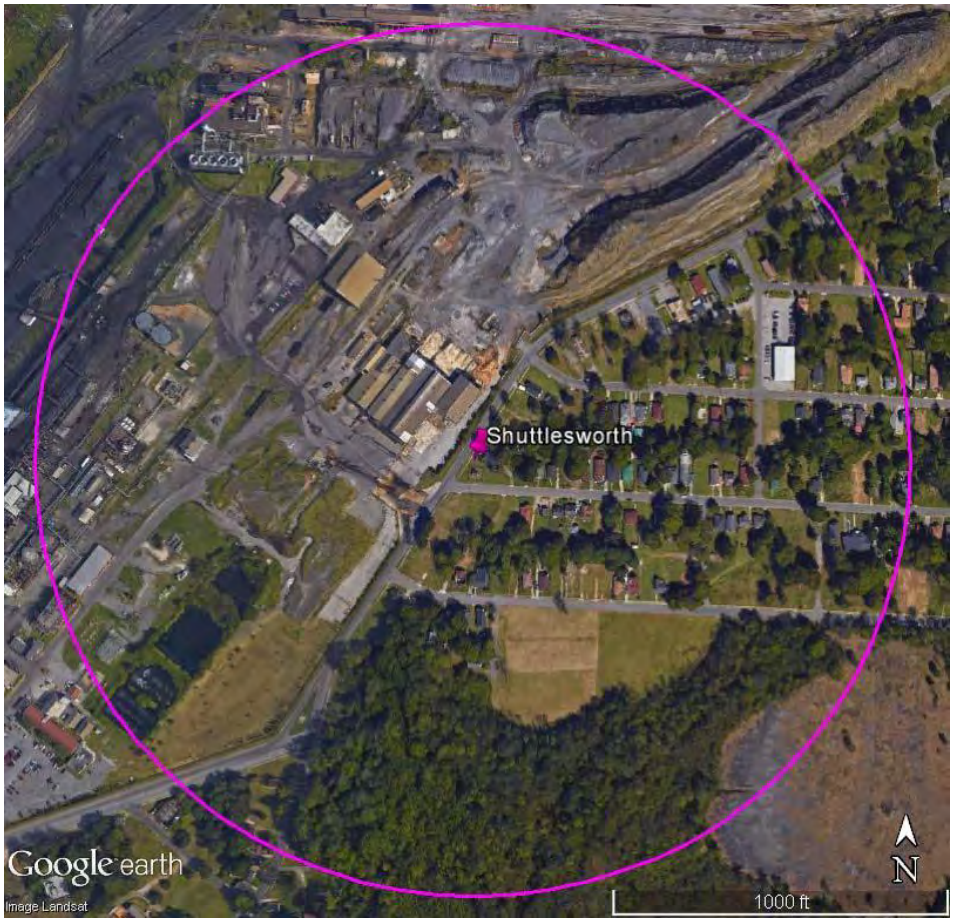

Near Road - East


Near Road - North


Near Road - South


Near Road - West

Shuttlesworth
0.25 mile radius



East

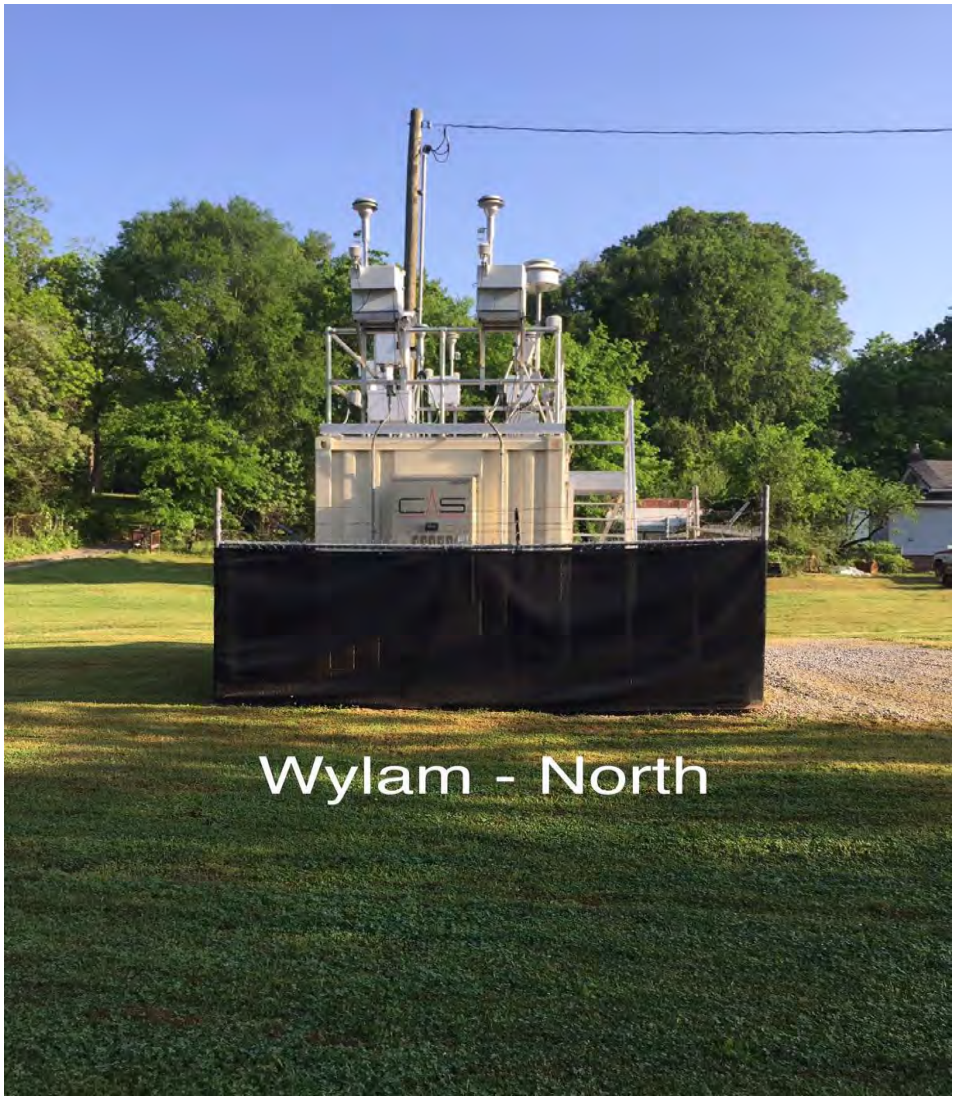
North

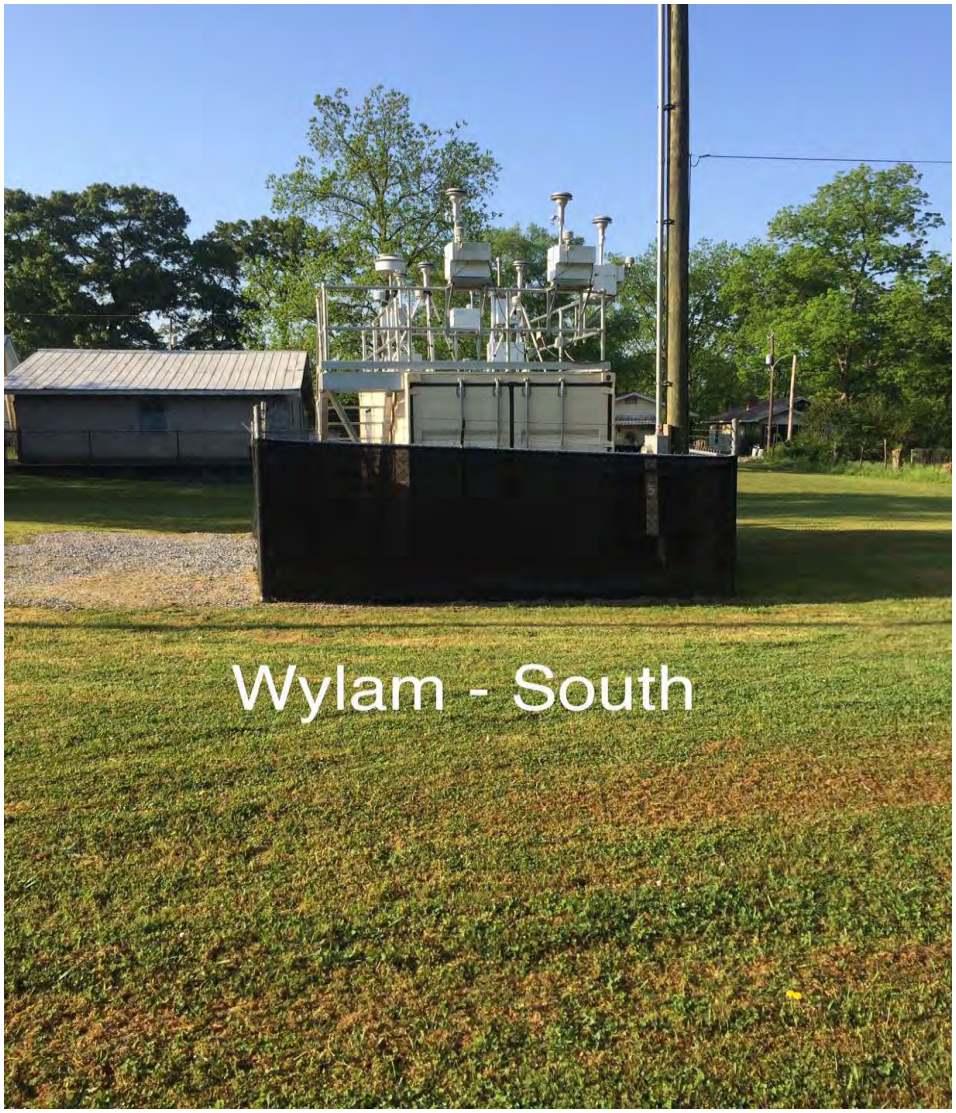
South

West

Wylam
0.25 mile radius


Wylam - East

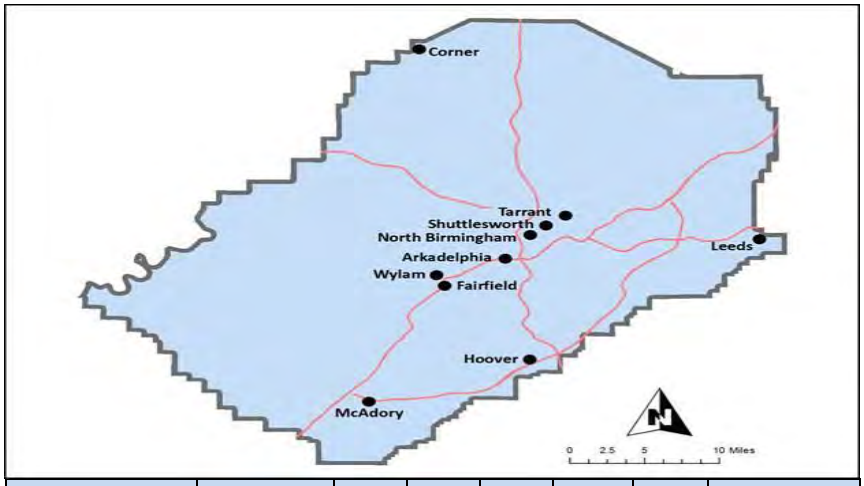

Wylam - North


Wylam - South


Wylam - West

Appendix B

Figure 1 – JCDH Monitor Sites with Parameters Monitored



Site Name	Site ID	CO	NO_2	O_3	$PM_{2.5}$	PM_{10}	SO_2
Arkadelphia	01-073-2059	●	●		●		
Corner	01-073-5003			●			
Fairfield	01-073-1003	●		●			●
Hoover	01-073-2006			●			
Leeds	01-073-1010			●	●	●	
McAdory	01-073-1005			●	●		
North Birmingham	01-073-0023	●	●	●	●	●	●
Shuttlesworth	01-073-6004	●				●	
Tarrant	01-073-6002			●		●	
Wylam	01-073-2003				●	●	

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

NOV 0 2 2018

Mr. Jonathan Stanton
Director
Jefferson County Department of Health
1400 6th Avenue South
Birmingham, Alabama 35233

Dear Mr. Stanton:

Thank you for submitting the Jefferson County Department of Health 2018 Ambient Air Monitoring Network Plan (Network Plan) dated July 6, 2018. The Network Plan is required by 40 Code of Federal Regulations (CFR) §58.10.

The U.S. Environmental Protection Agency understands that the Jefferson County Department of Health (JCDH) provided the public a 30-day review and comment period for the Network Plan. Thank you for including the public comments received and your response to comments. The EPA has reviewed the Network Plan, public comments, and response to comments provided by the JCDH.

With this letter, the EPA is approving the JCDH's Network Plan. The EPA commends the JCDH in their early adoption of the Photochemical Assessment Monitoring Station (PAMS) monitoring requirements and understands that, while there are some implementation issues to work through, effort is already underway to have operations in place before June 1, 2019. The EPA also appreciates the JCDH partnering with the EPA to perform a hexavalent chromium study at the Wylam air monitoring site (AQS ID 01-073-2003). In addition to the above comments, we have enclosed additional feedback on your Network Plan.

Thank you for your work with us to monitor air pollution and promote healthy air quality in the Birmingham area. If you have any questions or concerns, please contact Gregg Worley at (404) 562-9141 or Darren Palmer at (404) 562-9052.

Sincerely,

Beverly H. Banister

Beverly H. Banister
Director
Air, Pesticides and Toxics Management Division

Enclosure

2018 Ambient Air Monitoring Network Plan
Jefferson County Department of Health
U.S. EPA Region 4 Comments and Recommendations

This document contains the U.S. Environmental Protection Agency comments and recommendations on the Jefferson County Department of Health's 2018 ambient air monitoring network plan (Network Plan). Ambient air monitoring rules, which include regulatory requirements that address network plans, data certification, and minimum monitoring requirements, among other requirements, are found in 40 CFR Part 58. Minimum monitoring requirements for criteria pollutants are listed in 40 CFR Part 58, Appendix D. Minimum monitoring requirements are listed for ozone (O_3), particulate matter less than 2.5 microns ($PM_{2.5}$), particulate matter less than 10 microns (PM_{10}), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), carbon monoxide (CO), and lead (Pb).

The minimum monitoring requirements are based on core based statistical area (CBSA) boundaries, as defined by the U.S. Office of Management and Budget's (OMB) July 1, 2017, population estimates from the U.S. Census Bureau, and historical ambient air monitoring data. Minimum monitoring requirements for O_3, $PM_{2.5}$, and PM_{10}, only apply to metropolitan statistical areas (MSAs), which are a subset of CBSAs containing an urban core of a population greater than 50,000. The OMB currently defines 13 MSAs in the state of Alabama. These MSAs and the respective July 1, 2017, population estimates from the U.S. Census Bureau are shown in Table 1.

Table 1: Metropolitan Statistical Areas and July 1, 2017 Population Estimates

MSA Name	Population
Anniston-Oxford-Jacksonville, AL	114,728
Auburn-Opelika, AL	161,604
Birmingham-Hoover, AL	1,149,807
Columbus, GA-AL	303,811
Daphne-Fairhope-Foley, AL	212,628
Decatur, AL	151,867
Dothan, AL	147,914
Florence-Muscle Shoals, AL	147,038
Gadsden, AL	102,755
Huntsville, AL	455,448
Mobile, AL	413,955
Montgomery, AL	373,903
Tuscaloosa, AL	242,799

Proposed Monitoring Network Changes

There are three primary quality assurance organizations (PQAO) in the state of Alabama with the responsibility of maintaining an adequate ambient air monitoring network: the Alabama Department of Environmental Management (ADEM), the Jefferson County Department of Health (JCDH), and the Huntsville Department of Natural Resources and Environmental Management (HDNREM). This review focuses on the JCDH's ambient air monitoring network.

In the response to the Network Plan and Network Plan Addendum submitted by the JCDH in 2017, the EPA approved several changes to the monitoring network that have since been implemented. These changes are summarized in Table 2 below.

Table 2: EPA Approved Changes from 2017 Network Plan & Network Plan Addendum

Agency	AQS Site ID	Pollutant	Monitor Type[1]	Action Taken
JCDH	01-073-2006	O_3	SLAMS	O_3 monitoring discontinued.
	01-073-2003	PM_{10}	SLAMS	Discontinued manual and collocated PM_{10} monitors. Continuous PM_{10} sampling ongoing.

[1] SLAMS = State and Local Air Monitoring Station, SPM = Special Purpose Monitor

We appreciate the JCDH reporting both continuous PM_{10} and $PM_{2.5}$ measurements from its Shuttlesworth site (AQS ID 01-073-6004) to the EPA's AirNow Tech database. While the $PM_{2.5}$ measurements are made utilizing a non-regulatory method, the data are useful in informing the EPA, the JCDH, and the local community about the general levels of $PM_{2.5}$ in the immediate vicinity of the ERP Compliant Coke facility (formerly Walter Energy). Moving forward, the JCDH is encouraged to report all available special purpose monitor (SPM) continuous $PM_{2.5}$ concentration and associated quality assurance data collected at the Shuttlesworth site to the EPA's Air Quality System (AQS).

Proposed monitoring network changes are found on Page 6 of the Network Plan (see Table 3).

Table 3: Proposed Changes in the 2018 Network Plan

Agency	AQS Site ID	Pollutant	Monitor Type	Action Taken	EPA Comments
JCDH	01-073-2006	$PM_{2.5}$ TEOM	SLAMS	Shutdown	Approved

The JCDH requested to shut down the $PM_{2.5}$ TEOM at the Hoover monitoring site (01-073-2006). This monitor is not regulatorily required and is therefore approved. After this monitor is shut down, the JCDH monitoring network will continue to meet the requirements of 40 CFR Part 58, Appendix D, Section 4.7.2.

In addition to the change identified in Table 3 requiring the EPA's approval, the JCDH states on Page 6 that Photochemical Assessment Monitoring Station (PAMS) monitoring will begin January 2019. We want to commend the JCDH on this plan. The EPA believes the JCDH will derive great benefit from: familiarizing staff with the operation and maintenance of the equipment; developing its PAMS quality assurance documents as early as possible, and gaining experience in the field prior to June 1 so that your program can hit the ground running. The EPA recognizes the magnitude of this effort undertaken by the JCDH to have a fully operational PAMS site by June 1, 2019, and appreciates the JCDH's early adoption of PAMS.

Public Availability of Network Plans

The EPA noted that the 2018 Network Plan does not appear to be available on the JCDH website. The plan was made available for a 30-day public comment period as required, but the EPA was unable to locate the final plan. A page on the JCDH website with a section for Network Plans only contains the 2015 Network Plan: https://jcdh.org/SitePages/Misc/AirProgReports.aspx. Previously, the JCDH's plan was incorporated into the ADEM Network Plan submitted to the EPA

and posted on the ADEM website. However, in 2018, the JCDH submitted a separate Network Plan to the EPA. Please update the JCDH website to include the 2018 Network Plan.

Air Quality Index (AQI) Reporting
40 CFR §58.50 & 40 CFR Part 58, Appendix G

AQI reporting is required for MSAs with populations over 350,000. Four MSAs in Alabama are required to report an AQI: Birmingham, Huntsville, Mobile, and Montgomery. The JCDH's Network Plan on Page 5 contains the link to the JCDH website where this information can be obtained. However, the hourly data from the SO_2 analyzer operated by the JCDH at the Shuttlesworth site (AQS ID 01-0073-6004) are not being reported to the EPA's AirNow Tech (www.airnowtech.org) database. The EPA recommends that the data from this analyzer be reported to the EPA's AirNow Tech so that the public in North Birmingham can be more informed about their air quality in near real time. Please contact us if you have any questions about reporting these data.

National Core (NCore) Monitoring Network
40 CFR Part 58, Appendix D, Section 3.0

The state is required to have one NCore site. The NCore site must measure, at a minimum, $PM_{2.5}$ particle mass using continuous and integrated/filter-based samplers, speciated $PM_{2.5}$, $PM_{10-2.5}$ particle mass, O_3, SO_2, CO, NO/NOy, wind speed, wind direction, relative humidity, and ambient temperature. The North Birmingham site (AQS ID 01-073-0023) was approved as the state's NCore site by the EPA's Office of Air Quality Planning and Standards (OAQPS) on October 30, 2009, and meets all requirements for the state.

O_3 Monitoring Requirements
40 CFR Part 58, Appendix D, Section 4.1 and Table D-2

The JCDH's O_3 air monitoring network for the Birmingham MSA is listed on Page 23 of the Network Plan. The JCDH operates six sites in Jefferson County and the ADEM operates one site in Shelby County. Table 4 below lists the monitors in the approved O_3 network for the MSA. The EPA has determined that the O_3 monitoring networks outlined in the Network Plan meet the minimum requirements found in 40 CFR Part 58, Appendix D, Section 4.1 and Table D-2 for all MSAs.

Table 4. Birmingham MSA Approved O_3 Network

AGENCY	AQS SITE ID	SITE NAME
JCDH	01-073-0023	North Birmingham NCore
	01-073-1003	Fairfield
	01-073-1005	McAdory
	01-073-1010	Leeds
	01-073-5003	Corner
	01-073-6002	Tarrant
ADEM	01-117-0004	Helena

CO Monitoring Requirements
40 CFR, Part 58, Appendix D, Sections 3.0(b) and 4.2

Ambient air monitoring network design criteria for CO are found in 40 CFR Part 58, Appendix D, Sections 3.0(b) and 4.2. This section requires CBSAs with populations over one million to operate one CO monitor collocated with a near-road monitor. This requirement is met for the Birmingham CBSA by

the CO monitor at the Arkadelphia near-road site (AQS ID 01-073-2059). CO monitoring is also required for the NCore network as listed in Section 3.0(b). The CO monitor located at the Birmingham NCore site (AQS ID 01-073-0023) meets this requirement. In summary, the CO monitoring network outlined in the Network Plan meets the minimum requirements for the Birmingham CBSA.

NO_2 Monitoring Requirements
40 CFR Part 58, Appendix D, Section 4.3

Three types of NO_2 monitoring are required: near-road, area-wide, and Regional Administrator. These are described in 40 CFR Part 58, Appendix D, Sections 4.3.2, 4.3.3, and 4.4.4, respectively.

The Birmingham area is the only CBSA required to have a near-road NO_2 monitoring station in Alabama. The JCDH operates a NO_2 monitor at the Arkadelphia near-road site (AQS ID 01-073-2059) to meet this requirement. The Arkadelphia near-road monitoring site was approved in the EPA's response to Alabama's 2013 Network Plan.

The Birmingham area is the only CBSA in Alabama required to have an area-wide NO_2 monitoring site. The JCDH operates an NO_2 monitor at the North Birmingham NCore site (AQS ID 01-073-0023) to meet this requirement.

The EPA has not identified any monitor in Jefferson County that is needed to meet the Regional Administrator NO_2 monitoring requirement. Thus, the JCDH is not deficient with this requirement. The full list of NO_2 monitors identified by the Regional Administrators can be found on the EPA's website at: http://www.epa.gov/ttnamti1/svpop.html.

All NO_2 monitoring requirements are being met in the Birmingham CBSA.

SO_2 Monitoring Requirements
40 CFR Part 58, Appendix D, Section 4.4

Ambient air monitoring network design criteria for SO_2 are found in 40 CFR Part 58, Appendix D, Section 4.4. This section requires that "[t]he population weighted emissions index (PWEI) shall be calculated by states for each core based statistical area (CBSA)." As a result, the SO_2 monitoring site(s) required in each CBSA will satisfy minimum monitoring requirements if the monitor(s) is sited within the boundaries of the parent CBSA and is of the following site types: population exposure, maximum concentration, source-oriented, general background, or regional transport. An SO_2 monitor at an NCore station may satisfy minimum monitoring requirements if that monitor is located within a CBSA with minimally required monitors consistent with Appendix D, Section 4.4. The Birmingham CBSA is required to have two SO_2 monitors. The JCDH's SO_2 monitoring network consists of the monitors listed in Table 5. This network, as described in more detail in the JCDH's Network Plan, meets all design criteria of 40 CFR Part 58.

Table 5: SO_2 PWEI Monitors

CBSA	COUNTY	SITE NAME	SITE ID
Birmingham	Jefferson	North Birmingham	01-073-0023
	Jefferson	Fairfield	01-073-1003

In March 2016, the JCDH agreed to install a SO_2 monitor at the existing Shuttlesworth site (AQS ID 01-073-6004) to determine SO_2 concentrations near the coke plants. This monitor was installed and

operational on January 1, 2017. Several exceedances of the 1-hour SO_2 NAAQS have been measured since monitoring began. As a result, per an agreement between the JCDH and the EPA, the JCDH will operate the Shuttlesworth SO_2 monitor for three years to collect data for a complete design value (2017-2019). After a complete design value is calculated, the EPA along with the JCDH will evaluate all information to help determine the next steps.

Pb Monitoring Requirements
40 CFR Part 58, Appendix D, Section 4.5

Forty (40) CFR Part 58, Appendix D, Section 4.5 requires that "[a]t a minimum, there must be one source-oriented SLAMS [State and Local Air Monitoring Station] site located to measure the maximum Pb concentration in ambient air resulting from each non-airport Pb source which emits 0.50 or more tons per year and from each airport which emits 1.0 or more tons per year…" No sources have been identified in Jefferson County that exceed either of these thresholds. Therefore, this requirement does not apply to the JCDH.

PM_{10} Monitoring Requirements
40 CFR Part 58, Appendix A, 3.3
40 CFR Part 58, Appendix D, Section 4.6 and Table D-4

Region 4 has determined that the PM_{10} monitoring network described on Pages 15, 26, and 27 of the Network Plan meets or exceeds the minimum requirements found in 40 CFR Part 58, Appendix D, Table D-4 for the Birmingham MSA. The collocation requirements for manual PM_{10} monitors are also being met for this area with the collocated manual sampler located at the North Birmingham NCore site (AQS ID 01-073-0023). Collocation requirements apply to each PQAO and are based on the manual sampling methods employed.

$PM_{2.5}$ Monitoring Requirements
40 CFR Part 58, Appendix A, 3.2.3
40 CFR Part 58, Appendix D, Section 4.7 and Table D-5

Region 4 has determined that the $PM_{2.5}$ monitoring network described on Pages 26-30 of the Network Plan meets or exceeds the minimum requirements found in 40 CFR Part 58, Appendix D, Table D-5 for the Birmingham MSA. The $PM_{2.5}$ collocation requirement found in 40 CFR Part 58, Appendix A, 3.2.3.2 for manual reference and equivalent methods is also being met. Collocation requirements apply to each PQAO and are based on the sampling methods employed. The collocated manual sampler at the NCore site should operate on a 1-in-3 day schedule per 40 CFR §58.12(d)(2). This change should be made by or on January 1, 2019. The EPA understands the JCDH may be evaluating a Teledyne 640x sampler at the NCore site. This instrument may help reduce some of the collocated sampling burden for both $PM_{2.5}$ and PM_{10}. The EPA Region 4 air monitoring staff would be happy to discuss any changes to your operations as you consider the possible switch to a continuous sampler, like the Teledyne 640x, as a primary sampler in your network.

$PM_{2.5}$ Near-road Monitoring Requirement
40 CFR Part 58, Appendix D, Section 4.7.1(b)(2)

Regulatory requirements in 40 CFR Part 58, Appendix D, Section 4.7.1(b)(2) require that "CBSAs with a population of 1,000,000 or more persons, at least one $PM_{2.5}$ monitor is to be collocated at a near-road

NO_2 station." The $PM_{2.5}$ monitor at the Arkadelphia near-road site (AQS ID 01-073-2059) in Birmingham fulfills this requirement.

$PM_{2.5}$ Continuous Monitoring Requirements
40 CFR Part 58, Appendix D, Section 4.7.2

Regulatory provisions for continuous $PM_{2.5}$ monitoring require that "[t]he state, or where appropriate, local agencies must operate continuous $PM_{2.5}$ analyzers equal to at least one-half (round up) the minimum required sites listed in Table D-5 of this appendix. At least one required continuous analyzer in each MSA must be collocated with one of the required FRM, Federal Equivalent Method (FEM), Approved Regional Method (ARM) monitors, unless at least one of the required FRM/FEM/ARM monitors is itself a continuous FEM or ARM monitor in which case no collocation requirement applies." Based on the information provided on Pages 28-29 in the Network Plan, Region 4 has determined that the $PM_{2.5}$ continuous monitoring network meets or exceeds the minimum monitoring requirements in the Birmingham MSA.

$PM_{2.5}$ Background and Transport Sites
40 CFR Part 58, Appendix D, Section 4.7.3

Forty (40) CFR Part 58, Appendix D, Section 4.7.3 requires that "[e]ach state shall install and operate at least one $PM_{2.5}$ site to monitor for regional background levels and at least one $PM_{2.5}$ site to monitor for regional transport." This requirement is being met by the sites identified in the ADEM's 2018 Network Plan. The Crossville site (AQS ID 01-149-1003) in Dekalb County is a rural background site and the Ashland site (AQS ID 01-027-0001) in Clay County is a regional transport site. Regulatory FRM monitors are operated at these two sites. No additional requirements apply for the JCDH.

$PM_{2.5}$ Chemical Speciation Network (CSN)
40 CFR Part 58, Appendix D, Section 4.7.4

The JCDH operates and maintains two EPA funded $PM_{2.5}$ speciation sites. The primary speciation site is located at the North Birmingham NCore site (AQS ID 01-073-0023). The JCDH also operates a supplemental speciation site located in the Wylam community (AQS ID 01-073-2003). These sites meet the CSN requirement.

Photochemical Assessment Monitoring Station (PAMS)
40 CFR Part 58, Appendix D, Section 5.0

With the promulgation of a revised O_3 NAAQS on October 1, 2015, the EPA finalized changes to the PAMS program. By June 1, 2019, the JCDH will be required to implement PAMS monitoring at its NCore site in Birmingham. While the EPA recognizes there are several implementation challenges to work through, we will work closely with the JCDH to minimize the burden of implementing this new monitoring program. The EPA understands that work has begun installing the necessary equipment at the North Birmingham NCore site and that the JCDH will be adopting the national PAMS quality assurance project plan and standard operating procedures being developed by Battelle in coordination with the EPA's Office of Air Quality Planning & Standards. This requirement is expected to be met by the implementation date.

Other Comments

In several instances, the Network Plan lists the monitoring objective for pollutants as "Other." This objective is vague and could use some refinement. Also, the measurement scales for some pollutants may no longer be appropriate and should be reevaluated. The EPA recommends that the JCDH reevaluate the monitoring objectives and measurement scales listed for all monitors in its network. At a minimum, we encourage JCDH to conduct this reevaluation during development of its required 5-year Network Assessment due by July 1, 2020. The EPA Region 4 air monitoring staff would be happy to discuss the reevaluation process with JCDH staff.

The EPA appreciates the JCDH partnering with us to conduct a hexavalent chromium study at the Wylam air monitoring site (AQS ID 01-073-2003). Monitoring began in April 2018 and is scheduled to continue through March 2019.