State of South Carolina

Annual Ambient Air Monitoring Network Plan

Calendar Year 2020

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Certification

This document contains the planned changes and final description of the sites and monitors of the South Carolina Ambient Air Monitoring Network (Monitoring Network) for criteria pollutants and related parameters for calendar year 2020. The South Carolina Department of Health and Environmental Control (Department) certifies that the network described herein meets or exceeds the minimum requirements needed to support the State Implementation Plan, national air quality assessments, and policy decisions as required in 40 Code of Federal Regulations (CFR) Part 58, Ambient Air Quality Surveillance, at the time of submittal to the United States Environmental Protection Agency (EPA), Region 4. Due to circumstances that may arise during the implementation of the plan in 2019 and during the 2020 monitoring year, some elements of the network may require modification. A notification of modifications will be posted on the Department website and provided to the EPA Region 4 office. Where necessary, a request for approval of deviations from this plan and supporting documentation will be submitted to the EPA Region 4 office.

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Acronyms

AQI – Air Quality Index
AQS – Air Quality System
BAQ – Bureau of Air Quality
CBSA – Core-Based Statistical Area
CFR – Code of Federal Regulation
CO – Carbon Monoxide
CSA – Combined Statistical Area
CBSA – Core Based Statistical Area
CSN – Chemical Speciation Network
CMS – Continuous Monitoring Site
DAQA – Division of Air Quality Analysis
Department – South Carolina Department of Health and Environmental Control
DNPH – Analysis method using 2,4-dinitrophenylhydrazine
EPA – Environmental Protection Agency
FEM – Federal Equivalent Method
FRM – Federal Reference Method
GC/MS – Gas Chromatography / Mass Spectroscopy
GFAA – Graphite Furnace Atomic Absorption Spectrometry
HPLC – High Performance Liquid Chromatography
IC – Ion Chromatography
IMPROVE – Interagency Monitoring of Protected Visual Environments
ICP/MS – Inductively Coupled Plasma Mass Spectroscopy
ID – Site Identification
MET – Meteorology
MOA – Memorandum of Agreement
MSA – Metropolitan Statistical Area
mSA – Micropolitan Statistical Area
$\mu g/m^3$ – Micrograms per cubic meter
NAAQS – National Ambient Air Quality Standards
NATTS – National Air Toxics Trends Site
NCore – National Core Monitoring Network
NO – Nitric oxide
NO_2 – Nitrogen Dioxide
NO_x – Nitrogen Oxides
NO_y – NO_x and other oxidized species
NPAP – National Performance Audit Program
OMB – Office of Management and Budget
PEP – Performance Evaluation Program
$PM_{2.5}$ – Particulate Matter < 2.5 microns
PM_{10} – Particulate Matter < 10 microns
PPB – Parts Per Billion
PPM – Parts Per Million
PSD – Prevention of Significant Deterioration
PTFE – Polytetrafluoroethylene
PUF – Polyurethane Foam
QA – Quality Assurance
QAPP – Quality Assurance Project Plan
QC – Quality Control
SLAMS – State and Local Air Monitoring Station
SO_2 – Sulfur Dioxide
SPM – Special Purpose Monitor
STN – Speciation Trends Network
SVOC – Semi-volatile Organic Compound
TEOM – Tapered Element Oscillating Microbalance
TPY – Tons Per Year
TSP – Total Suspended Particulate
UV – Ultraviolet
VOC – Volatile Organic Compound
WGS84 – World Geodetic System of 1984 revised in 2004.

Table of Contents

Introduction

The Department or its predecessors have operated an air quality monitoring network in South Carolina since 1959. During that time, the network has continually evolved to meet the requirements and needs of the Department's Air Program and to comply with federal requirements. In 2020, after the new sites are established, the network will be comprised of 74 monitors and samplers at 28 sites.

In October 2006, the EPA published revisions to the ambient monitoring regulations (71 FR 61236, October 17, 2006) requiring quality assurance (QA), monitor designations, minimum requirements for both number and distribution of monitors among metropolitan statistical areas (MSAs), and probe siting changes. The regulation also included the requirement for an annual monitoring network plan and periodic network assessments.

This South Carolina Annual Ambient Air Monitoring Network Plan (Network Plan) covers the eighteen-month period from July 1, 2019 through December 31, 2020. This period includes a six-month implementation period during which sites indicated as 'New' will be identified, secured, and prepared for the installation of monitoring equipment. It is expected that any monitoring indicated as 'New' or 'To be established' will be installed, calibrated, and operating in 2020, except for some Ozone monitors, which may begin operation at the start of the South Carolina Ozone monitoring season (March 1-October 31). This Network Plan, as required and described in 40 CFR Part 58.10, and Periodic Network Assessment, must contain the following information for each monitoring station in the network:

- The Air Quality System (AQS) site identification number (ID) for existing stations,
- Location of each monitoring station, including street address and geographical coordinates,
- The sampling and analysis method used for each measured parameter,
- The operating schedule for each monitor,
- Any proposal to remove or relocate a monitoring station within a period of eighteen months following the network plan submittal,
- The monitoring objective and spatial scale of representativeness for each monitor,
- The identification of any sites that are suitable for comparison against the Particulate Matter < 2.5 microns ($PM_{2.5}$) National Ambient Air Quality Standard (NAAQS), and
- The MSA, Core-Based Statistical Area (CBSA), Combined Statistical Area (CSA), or other area represented by the monitor.

This document constitutes the 2020 South Carolina Annual Ambient Air Monitoring Network Plan. The site pages are organized into two main parts:

- Network Summaries: A table which presents the total number of sites and monitors for the State, including a list of all proposed changes to the current network, and
- Air Monitoring Station Descriptions: An outline of the designations, parameters, monitoring methods, and the purpose for each monitor at the site.

The Monitoring Network is reviewed annually. Planned changes are described in this Network Plan and provided for public review and comment prior to submission to the EPA Region 4 Administrator.

Public Participation Opportunities

In response to public interest and the potential impact of the monitoring regulation changes, the Department's Air Program solicits involvement from both internal (to the Department) and external workgroups. Opportunities for public involvement include:

- A webpage maintained for publication and access to current and draft monitoring plan reference documents and announcements[1].
- Availability of the proposed 2020 Network Plan for public review and comment ran from April 26, 2019 through May 28, 2019. All public comments received will be summarized and addressed in Appendix A before submitting the final network plan to the EPA. A complete set of comments will be submitted to the EPA with the 2020 Network Plan.

The Department is committed to continuing the opportunities for input and participation in the development of the annual revisions of the Network Plan and the periodic assessments of the air quality surveillance system.

Network Operation

The primary responsibility for the operation of the Monitoring Network is assigned to the Division of Air Quality Analysis (DAQA) in the Bureau of Environmental Health Services. The DAQA establishes, maintains, and operates the sites and instruments that make up the network and performs the analysis of samples collected as part of routine monitoring or special projects. Data generated by the network for comparison to the NAAQS is verified to be accurate and reported by DAQA to the national AQS database for storage and public access.

Criteria pollutant monitoring for comparison to the NAAQS is performed using the EPA designated Federal Reference Methods (FRM) or Federal Equivalent Methods (FEM) to ensure the precision and accuracy of the measurements across the air quality surveillance system.

Regular calibration and audits of the measurement systems are performed to verify that the instruments are operating correctly, and data being collected is accurate. All monitors and samplers are calibrated at least once a year. Calibration is also performed whenever the monitor/sampler fails a bi-weekly Quality Control (QC)/precision check or multi-point audit, when maintenance is performed that may affect the monitor response, or if the monitor is located away from the building in which it was calibrated. If possible, a QC/precision check or flow check should precede any maintenance that would affect monitor response.

The QA activities supporting the Monitoring Network meet or exceed the QA requirements defined in 40 CFR Part 58, Appendix A (Quality Assurance Requirements for SLAMS and

[1]http://www.scdhec.gov/HomeAndEnvironment/Air/AmbientAir/

SPM Air Monitoring). Raw data is collected hourly from sites across the state and provided to internal data users (forecasters and data analysts) and to the AIRNow database for presentation to the public. Ozone monitors provide hourly data during Ozone Season (March 1-October 31).

Before the data is submitted to AQS, it is verified to be accurate through review of the instrument QC and QA performance documentation. Instrument QA/QC alone is not sufficient to assure monitoring data quality. In addition to periodic site assessments, the Department conducts additional visits to monitoring sites to document comparisons with applicable siting criteria.

It is the Department's intent that all criteria pollutant monitors and samplers be sited and operated in accordance with the requirements of 40 CFR Part 58. As required in 40 CFR Part 58, Appendix A, the DAQA establishes, maintains, and operates the sites and instruments and performs the analysis of samples collected. Data generated by the network for comparison to the NAAQS is verified to be accurate and reported by the DAQA to the national AQS database for storage and public access. Regular calibration and audits are performed to verify that the instruments are operating correctly, and data being collected is accurate. As required in 40 CFR Part 58, Appendix C, all criteria pollutant monitoring in the Monitoring Network for comparison to the NAAQS is performed using the EPA designated FRM or FEM. Also, all criteria pollutant monitoring in the Monitoring Network meets the monitoring objectives, spatial scales, and design criteria as described in 40 CFR Part 58, Appendix D. Finally, in this document, each site page contains a statement addressing compliance to 40 CFR Part 58, Appendix E for SLAMS monitors. If the site is not in compliance, a plan is presented to address the deficiency. For SPM monitors, the 40 CFR Part 58.20 states that compliance is optional, but monitoring organizations are encouraged to meet as many of the Appendix E requirements as possible.

An element of the Quality System[2] employed by the DAQA is periodic assessments of systems and monitor performance. As the primary QA organization for ambient air monitoring activities, the DAQA operates under the approved Environmental Quality Control Quality Assurance Management Plan, the Ambient Air Quality Monitoring Quality Assurance Project Plan, and approved plans for specific projects. The EPA Region 4 office may conduct audits of any component of the operation of the network or quality management system. The DAQA also participates in the National Performance Audit Program (NPAP) and the Performance Evaluation Program (PEP) administered by the EPA to provide independent audits.

Station Description Content

Specific siting information for each site and monitor is stored in the EPA's AQS, the national ambient air database. The AQS Site Description includes the exact location of the site, local and regional population, and description of the site location, monitor types, and monitoring objectives. This site and monitor information is routinely updated

[2] The Quality System is the means by which the Department implements the quality management process through the Quality Assurance Management Plan for SC DHEC, March 2014.

whenever there is a change in site characteristics or pollutants monitored. Pictures for each monitoring site can be viewed at: https://gis.dhec.sc.gov/monitors/

The AQS is used as the primary repository for all South Carolina ambient air monitoring information, including site descriptions. All ambient air monitoring data is stored in AQS, including criteria pollutants, non-NAAQS parameters, ambient air toxics, total suspended particulate (TSP), and supporting QA data.

Each network station description contained in this document includes a Site Description and Monitor Details. An explanation of the information in each station description is presented below.

Site Description – The site description includes specific information about each ambient air monitoring site. The site description header includes the following:

1) Site Name – The name that is given to the site.
2) CSA/MSA – The area where the site is located as defined by the United States Census. (September, 2018).[3]
3) AQS Site ID – The unique site ID used in AQS is in the form of 45-cc-ssss where:
    a. 45 is the federal identification code for South Carolina,
    b. ccc is the county identification code, and
    c. ssss is the site identification code within the county.
4) Location – Typically, the street address of the site, where available.
5) County – County in which the site is located.
6) Coordinates – Latitude (N), then Longitude (W) listed in decimal degrees using WGS84 projection.
7) Date Established – The date when each existing monitoring station was established is shown in the description. For new stations proposed in this Monitoring Plan, a date is provided when it is expected for the station to be in operation. Individual monitors at a site may have differing start and stop dates.
8) Site Evaluation (most recent date visited) – Each monitoring station in the network is periodically visited to determine whether all required probe exposure criteria for monitors are met. If necessary, corrective action is scheduled to address deficiencies. If a new monitoring site has not yet been evaluated, it will be denoted with the word “PENDING”.

Monitor Details – Each station description has a table that lists the parameter(s) and the descriptive information associated with that particular parameter. An explanation of the information in the tables is presented below.

[3] The US Census Bureau periodically adjusts CBSA names and boundaries. This plan uses the latest available revision.

1) Parameter – Criteria (compounds for which a NAAQS has been established), non-criteria, and/or supporting parameters (primarily meteorological measurements) measured at the site are listed.

2) Scale – Each monitor or sampler in the monitoring network is described in terms of the approximate physical dimensions of the air parcel nearest the monitoring station throughout which pollutant concentrations are expected to be reasonably similar. This is most often referred to as the "Scale" of the monitor. Different pollutants monitored at the same location may represent different scales depending on the characteristics of the pollutant. Area dimensions or scales of representativeness used in the network description are:

    a. Microscale – Air volumes associated with area dimensions ranging from several meters up to about 100 meters.

    b. Middle scale – Areas up to several city blocks in size with dimensions ranging from approximately 100 meters to 0.5 kilometers.

    c. Neighborhood scale – Extended areas of a city that have relatively uniform land use with dimensions ranging from 0.5 to 4.0 kilometers.

    d. Urban scale – Citywide or equivalent rural areas with dimensions ranging from 4 to 50 kilometers.

    e. Regional scale – Areas ranging from 50 to hundreds of kilometers in diameter.

    The true representative area may best be described by an irregular shape of the approximate dimensions indicated above to account for local sources, topography, and differing land use.

    The representative scale of a monitor is closely associated with the monitoring objective.

3) Objective – The ambient air monitoring network is designed to meet three primary objectives:

    a. Provide air pollution data to the public in a timely manner. Near real-time data is made available on the internet through AIRNow and Air Quality Index (AQI) reporting and forecasting in the major metropolitan areas.

    b. Support compliance with ambient air quality standards and emissions strategy development. Monitors are operated to measure concentrations for comparison to NAAQS and to provide information to aid in the development of strategies to improve air quality.

    c. Support air pollution research studies. Data from the monitoring network support greater understanding of the impacts and effects of ambient air pollution.

    Individual monitors within a monitoring network that support these basic objectives generally serve one or more of the following purposes:

        i. Determine highest concentrations of pollutants,

ii. Determine representative concentrations in areas of high population density,

iii. Determine impact on air quality of significant sources or source categories,

iv. Determine general background concentrations,

v. Determine extent of regional pollutant transport, and

vi. Determine welfare-related impacts in more rural and remote areas (ex. visibility impairment and impacts to vegetation).

The design intent in siting stations is to correctly match the area represented by the sample of monitored air with the scale most appropriate to meet the monitoring objective of the monitor. The relationship of appropriate scale to the six basic purposes is as follows:

Monitoring Purpose	**Siting Scale**
Highest concentration	Micro, Middle, Neighborhood
Population exposure	Neighborhood, Urban
Source impact	Micro, Middle, Neighborhood
General/background	Neighborhood, Urban, Regional
Regional transport	Urban, Regional
Welfare-related impacts	Urban, Regional

Monitor and sampler data is regularly reviewed to assure the assigned scale is correct and appropriate for the intended objective.

4) Designation – Monitor designations that may be found in the tables include the State and Local Air Monitoring Station (SLAMS), special purpose monitor (SPM), National Core Monitoring Network (NCore), non-regulatory, QA collocated, and IMPROVE monitoring. Definitions of these designations are:

   a. SLAMS – Monitors for which NAAQS have been established. These stations must meet requirements that relate to four major areas: QA, monitoring methodology, sampling interval, and siting of instruments and instrument probes.

   b. SPM – Monitors which support investigations addressing complaints, areas and pollutants of concern, network refinement, modeling verification, and compliance. These monitors are committed to investigation and projects as described in the associated Quality Assurance Project Plan (QAPP). They may be located as separate monitoring stations or be included at existing monitoring locations. The SPM may also monitor for air toxics, particulate, criteria pollutants, precipitation, and meteorology. Supplemental speciation

is a type of SPM monitor that operates according to Chemical Speciation Network (CSN) protocols but is not contained in the STN Network. This monitoring data will be reported to AQS where possible. Although siting and probe exposure will conform to all requirements for SLAMS monitors whenever possible, the 40 CFR Part 58.20 states that compliance for SPM monitors is optional.

c. NCore – NCore is a national multi-pollutant network that utilizes advanced measurement systems for particles, pollutant gases, and meteorology. It provides data for long-term trends of criteria and non-criteria pollutants, and supports air quality model evaluation, scientific studies, and ecosystem assessments. Most NCore monitors are SLAMS.

d. Non-regulatory Monitor – A monitor that measures data on a pollutant that will not be used for regulatory purposes.

e. Collocated QA Sampler – A particulate matter sampler that is paired with but operated independent of a similar sampler. It is used to indicate measurement accuracy.

f. IMPROVE – The Interagency Monitoring of Protected Visual Environments (IMPROVE) network collects visibility related data. These monitors are operated in the State of South Carolina in cooperation with the federal government, and are listed in the Site Description, but are not included in the Site Tables.

The SLAMS and SPM data may be used in the reporting of an area's AQI. The AQI is a method of reporting that converts concentration levels of pollution to a simple number scale of 0-500. Index reporting is required for all urban areas with a population exceeding 350,000. Intervals on the AQI scale are related to potential health effects of the daily measured concentration of the measured pollutants. All stations in a metropolitan area provide data for daily index reporting. Data collected from continuous Ozone and $PM_{2.5}$ monitors is collected hourly and reported as AQI maps on the EPA's AIRNow website. A daily AQI is provided for the areas in and around Aiken, Charleston, Columbia, Florence/Darlington, Greenville-Spartanburg, Myrtle Beach, and York/Chester/Lancaster.

5) Probe Height – The monitor or sampler probe is the point where ambient air enters the analytical or sample collection system. Ideally, air would be sampled approximately at nose height, but due to operational, exposure, and security considerations, air may be sampled further from ground level. Proper probe height is specified in the monitoring regulations (typically between 2 and 15 meters) and is checked as part of the periodic site evaluations.

6) Analysis Methods – All sampling and analytical procedures used to determine ambient concentrations of criteria pollutants for comparison to the NAAQS will use either Federal Reference or Federal Equivalent Methods (FRM or FEM). For the reactive gases, borosilicate glass or FEP Teflon are used in the sampling train.

Where appropriate for specific monitoring objectives, well characterized, non-equivalent methods may be used. The analysis method for the parameters most commonly measured and listed in the station descriptions are described below.

a) Particulate Matter less than 10 microns (PM_{10}) – PM_{10} samplers operated by the Department are designated as either FRM or FEM and are operated consistent with the requirements in 40 CFR Part 50, Appendix J and 40 CFR Part 58. Intermittent samplers collect a 24-hour sample no less than every sixth day on a filter. The filter is conditioned and weighed before and after the sample run. The weight of material collected on the filter and the volume of air sampled is used to calculate the average concentration, expressed as micrograms per cubic meter ($\mu g/m^3$) for the sample period. The filters are equilibrated before each weighing for a minimum of 24 hours at a mean temperature between 15 - 30°C and a mean relative humidity between 25 and 45 percent.

   Continuous PM_{10} samplers provide 24-hour concentration measurements every day. During sampling, ambient air passes through an inlet designed to pass only particles smaller than 10 microns in diameter. The flow rate, critical to precise particle size separation, is monitored and controlled constantly. Particulate in the sample stream is collected on a Teflon-coated glass fiber filter. The mass collected on the filter is also continuously monitored. The difference between the current filter weight and the previous weight gives the total mass of the collected particulate for that period. The mass concentration is calculated by dividing the mass gained by the flow through the filter for the period. The concentration measurements are averaged over 1-hour and 24-hour periods. Data is stored locally on redundant data acquisition systems and recovered hourly by a central office computer system (AirVision). Only 24-hour daily averages are used for comparison to the ambient standards.

b) Particulate Matter less than 2.5 microns ($PM_{2.5}$) – All $PM_{2.5}$ samplers operated by the Department for comparison to the NAAQS are designated FRM samplers. Manual samplers are operated consistent with the requirements in 40 CFR Part 50, Appendix L. Samples are collected on 46.2-millimeter polytetrafluoroethylene (PTFE) filters over a 24-hour sampling period. Air flow through the filter is maintained at 16.7 liters per minute at local ambient temperature and pressure. The flow rate must be maintained within ±5 percent throughout the sample period. Sample filters are collected within 96 hours of the end of the sample run and are kept cooled during transit to minimize potential sample loss.

   The PTFE filters are equilibrated before each weighing for a minimum of 24 hours at a mean temperature between 20°C and 23°C and 30 to 40 percent mean relative humidity. Filters are weighed before and after the sample period. Filters are used within thirty days of initial weighing. Collected samples are typically weighed within two weeks of sampling. If the samples are maintained below 4°C after collection, they can be held for up to thirty days from the end of the sample period. The mass collected and the volume sampled are used to calculate the concentration, expressed in $\mu g/m^3$.

Unless designated a FEM, continuous $PM_{2.5}$ monitors do not provide concentration data suitable for comparison to the NAAQS. Non-FEM continuous monitors that provide reasonably comparable measurements may be used to provide data for calculation of an area Air Quality Index (AQI). Continuous $PM_{2.5}$ samplers provide 24-hour concentration measurements every day. During sampling, ambient air passes through an inlet system designed to pass only particles smaller than 2.5 microns in diameter. The flow rate, critical to precise particle size separation, is monitored and controlled constantly. Particulate in the sample stream is collected on a Teflon-coated glass fiber filter. The mass collected on the filter is also continuously monitored. The difference between the current filter weight and the previous weight gives the total mass of the collected particulate for that period. The mass concentration is calculated by dividing the mass gained by the flow through the filter for the period. The concentration measurements are averaged over 1-hour and 24-hour periods. Data is stored locally on redundant data acquisition systems and recovered hourly by a central office computer system (AirVision). Only 24-hour daily averages from FEM monitors are used for comparison to the ambient standards.

c) $PM_{2.5}$ Speciation sampling – In addition to operating $PM_{2.5}$ samplers that provide measurement of only the $PM_{2.5}$ mass concentration, the Department also operates a $PM_{2.5}$ Speciation sampler to collect samples for analysis to determine the chemical makeup of the particulate. Speciation sample collections are part of the national CSN. Samples are collected on a set of two cartridges on the Met-One SASS sampler for nitrates, sulfates, and metals and on a single cartridge in the URG 3000N sampler for carbon containing material. The samples are collected over a 24-hour sampling period. The individual cartridges contain denuders and filters designed to efficiently capture the major components of $PM_{2.5}$.

   After collection, the samples are shipped cold to an EPA contract laboratory for analysis. At the laboratory, the samples are analyzed using thermal optical analysis (for carbon), ion chromatography (IC) for nitrates and sulfates, and x-ray fluorescence for metals to determine the presence and concentration of specific compounds. Sample results are available on the EPA website.

d) Sulfur Dioxide (SO_2) – Instruments used to continuously monitor SO_2 concentrations in the atmosphere use the Ultraviolet (UV) Fluorescence Federal Reference Method. The continuous data output from the instrument is stored locally on redundant data acquisition systems and recovered hourly by central office computer system (AirVision).

   Calibration of these instruments and audits of their performance are done using the EPA protocol gas mixtures containing a certified concentration of SO_2 in nitrogen. This gas is diluted to provide known concentrations of SO_2. These known concentrations are supplied to the instrument, which is adjusted so the instrument output corresponds with the specific concentrations.

e) Carbon Monoxide (CO) – Continuous monitoring for CO is performed using the FRM non-dispersive infrared correlation method. Data is stored locally on redundant data acquisition systems and recovered hourly by the DAQA central office computer system (AirVision).

Calibration of the instrument and audits of its performance are done using the EPA Protocol gas mixtures containing a certified concentration of CO in air. The gas is diluted to provide known concentrations of CO. Known concentrations are supplied to the instrument, which is adjusted so the instrument output corresponds with the specific concentrations.

Ozone – Ozone is monitored using the FEM UV photometry method. The continuous data output from the instrument is stored locally on redundant data acquisition systems and recovered hourly by the central office computer system (AirVision). Monitors are routinely calibrated and their performance audited using portable Ozone transfer standards.

Nitrogen Dioxide (NO_2) – The FRM UV chemiluminescence method is used for measurement of NO_2 concentration in the ambient air. The continuous data output from the instrument is stored locally on redundant data acquisition systems and recovered hourly by a central office computer system (AirVision).

Calibration of the instrument and audits of their performance are done using the EPA protocol gas mixtures containing a known concentration of Nitric Oxide (NO) and Nitrogen Oxides (NO_x) in nitrogen. The gas is diluted to present several known concentrations of the oxides. A converter is used to convert NO_2 to NO for reaction with internally generated Ozone and measurement of the light produced by the reaction of NO and Ozone. Known concentrations are supplied to the instrument, which is adjusted so the instrument output corresponds with the supplied concentrations.

f) Lead – Lead concentrations are determined by the analysis of TSP collected using high volume particulate samplers as described in 40 CFR Part 50, Appendix G. Particulate samples are acid extracted from a portion of the filter to dissolve metals from the collected materials. The lead content is determined using Flameless (Graphite Furnace) Atomic Absorption Spectrometry or may be analyzed by an EPA national contract laboratory using Inductively Coupled Plasma Mass Spectroscopy (ICP/MS).

g) Meteorology – Meteorology consists of wind direction, wind speed, precipitation, temperature, and pressure. Collection and/or analysis methods are discussed below.

   a. Wind Direction and Speed – Wind data is collected using systems that incorporate high precision ‘Air Quality’ systems. The systems use separate or combined wind vanes and anemometers mounted 10 meters above ground. The systems provide supporting information about the local meteorology.

   b. Precipitation – Precipitation is measured by tipping bucket gauges that provide a signal indicating the occurrence, rate, and amount of precipitation.

The gauges are not heated, so they may not accurately provide the time and rate for frozen precipitation events. The monitors are checked periodically for operation and accuracy using a known volume of water and compared with actual volumes of collected precipitation where there are collocated samplers.

c. Ambient Temperature and Pressure – Ambient temperature is available from sensors that are part of the sampling systems for the FRM $PM_{2.5}$ samplers. Ambient temperature measurement is necessary for the systems to maintain the required flow rate used to reproducibly separate the desired particulate size fractions as conditions change. Although the primary use of the measurement is for sampler flow control, the sensors are accurate and regularly audited. Temperature and pressure sensors are compared to reference systems at least once per month.

h) Volatile Organic Compounds – Volatile organic compounds (VOCs) are collected into passivated or silica lined stainless steel canisters. The canisters are cleaned, tested, and evacuated at the laboratory prior to installation at the sampling site. At the sampling location, the canisters are filled and pressurized with ambient air throughout the sampling period (typically 24 hours). Measured portions of the captured air are concentrated at low temperature and analyzed using gas chromatography with a mass spectrometer detector (GC/MS) to identify and quantitate target compounds. The collection and analysis method is based on the EPA Method TO-15.

i) Semi-volatile Organic Compounds – Semi-volatile organic compounds (SVOCs) are collected using polyurethane foam (PUF) and a solid adsorbent to trap the compounds from air pulled through the material by a high-volume sampler. The SVOCs are extracted from the collection cartridge using a solvent, and the rinses are concentrated for analysis. Measured portions of the extract are analyzed using GC/MS to identify and quantitate the collected compounds. The collection and analysis method is based on the EPA Method TO-13.

j) Carbonyls – Carbonyls (including aldehydes and ketones) are extracted from ambient air by reaction with a compound that stabilizes them enough to capture and hold. The reaction of the target compounds with Dinitrophenyl hydrazine (DNPH) removes them from the sampled air and concentrates them in the sample cartridge. Solvent extraction of the DNPH derivatives from the cartridge is followed by analysis using High Pressure Liquid Chromatograph to identify and quantitate the collected Carbonyls. The collection and analysis method is based on the EPA Method TO-11.

k) Metals – Metals in particulate are collected on filters using the TSP or PM_{10} High Volume samplers. Metals are extracted from a portion of the filter using sonication in an acid solution. Detection, identification, and quantitation of the target metals use Graphite Furnace AA or inductively coupled plasma with a mass spectrometer (ICP/MS). The collection and analysis method is based on the EPA Method IO-3.

l) Precipitation Chemistry – A portion of the precipitation sample collected each week is analyzed for pH and conductivity. To determine concentrations of dissolved material that contributes to acid rain, the collected material is analyzed for cations and anions using ion chromatography (IC).

7) Sampling frequency – Sampling frequency indicates how often a measurement is made. Sampling typically involves collection of a sample over a period (typically 24 hours, midnight to midnight EST) and the delivery of the sample to the laboratory for preparation and analysis. Samples are collected every day (1:1), every third day (1:3), every sixth day (1:6), every twelfth day (1:12), or weekly, depending on the data quality objectives of the project. Results are reported as averages for the sample period. The EPA publishes the 1:3 and 1:6 day sampling schedules used by the South Carolina Ambient Air Monitoring Network and nationwide[4].

Monitoring typically uses on-site analyzers that continuously sample the air and measure the pollutant of interest. Results of the analysis are reported as hourly averages. Five-minute averages are also reported for SO_2 concentrations. One-minute averages are collected from many of the continuously monitored parameters for use in verification and validation of the reported monitoring data.

Changes for 2020

Any planned changes in parameters monitored, the configuration, or operations at the site planned for 2020 are described herein and summarized in the Summary of 2020 Network Changes. Unless otherwise indicated, changes at a site including the beginning of new monitoring activity will be effective January 1, 2020. Ozone monitoring for 2020 at new or special project sites may start at the beginning of the Ozone monitoring season (March 1-October 31).

[4] http://www.epa.gov/ttn/amtic/calendar.html

In 2020, the Department will begin to operate four SO_2 monitors on a two-year rotation. This schedule will allow for a conservation of resources while still collecting data that can be used for state needs. In the table below, the rotating schedule and SO_2 monitoring information are provided.

SO_2 monitors on rotating schedules				
Site I.D. Number	**45-091-0008**	**45-019-0046**	**45-079-0021**	**45-073-0001**
Site Name	York Landfill	Cape Romain	Congaree Bluff	Long Creek
Address	310 Langrum Branch Road., York	390 Bulls Island, Awendaw	1850 South Cedar Creek Road, Gadsden	Round Mountain Tower Rd., Mountain Rest
MSA	Charlotte-Concord-Gastonia	Charleston-North Charleston	Columbia	None
Latitude-Longitude	+34.9776, -81.2074	+32.94101, -79.65719	+33.81467, -80.78113	+34.805333, -83.23777
Scale	Urban	Regional	Neighborhood	Regional
Objective	Upwind Background	Source Oriented	General / Background	Regional Transport
Designation	SPM	SPM	SPM	SPM
Sampling Frequency	Continuous	Continuous	Continuous	Continuous
Next year of operation	2020-2021	2020-2021	2022-2023	2022-2023

2020 Network Summary

This summary table presents the elements of the 2020 Monitoring Plan *after* implementation of changes described in this plan.

Network Summary: Calendar Year 2020 Air Monitoring Stations																
Region	Sites	$PM_{2.5}$	$PM_{2.5}$ Cont.	Speciation	PM_{10}	TSP/Lead	Ozone	SO_2	NO_2/NO/NO_y	CO	Carbonyls	SVOC	VOC	Precip. Chem.	Precipitation	MET
Augusta-Richmond County, GA-SC MSA	2	1	1	0	0	0	2	0	0	0	0	0	0	0	0	0
Charleston-N. Charleston MSA	**5	2	2	0	1	0	2	2	2	0	0	0	0	0	1	1
Charlotte-Concord-Gastonia, NC-SC MSA	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Columbia MSA	6	3	2	1	2	0	3	2	2	1	1	2	0	2	2	1
Florence MSA	5	1	1	0	0	*7	1	0	0	0	0	0	0	0	0	0
Greenville-Anderson MSA	**4	3	1	0	1	0	**3	1	1	0	0	0	0	0	0	0
Myrtle Beach-Conway-North Myrtle Beach, SC-NC MSA	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Spartanburg MSA	2	**1	1	0	0	0	1	0	0	0	0	0	0	0	0	0
Remainder of State	2	1	2	0	2	0	2	0	0	0	2	2	2	0	2	0
TOTALS	28	12	10	1	6	7	16	5	5	1	3	4	2	2	5	2

*In order to maximize resources, alternate Lead samplers are run on different days (See Site pages for specific information).
**This is the number of monitors or monitoring sites that will operate after the new Sites are operational.

2018 Criteria Pollutant Design Values

This section presents the 2018 design values for the South Carolina criteria pollutant monitoring network.

Site ID	County	Site Name	Ozone (ppm)	$PM_{2.5}$ Annual ($\mu g/m^3$)	$PM_{2.5}$ 24-hour ($\mu g/m^3$)	PM_{10} (# Expect-ed Exceed-ances)	SO_2 1-hour (ppb)	NO_2 1-hour (ppb)	NO_2 Annual (ppb)	CO 8-hour (ppm)	CO 1-hour (ppm)	Lead ($\mu g/m^3$) (2017-NOT 3 yr. DV)
003-0003	Aiken	Jackson Middle School	0.062									
007-0005	Anderson	Big Creek	0.057									
015-0002	Berkeley	Bushy Park	0.058									
019-0003	Charleston	Jenkins Avenue				0	13	*35	*7			
019-0046	Charleston	Cape Romain	0.061				4	*10	1			
019-0048	Charleston	FAA		7.2	16							
019-0049	Charleston	Charleston Public Works		7.2	15							
025-0001	Chesterfield	Chester-field	0.062	*6.9	*14	0						
029-0002	Colleton	Ashton	0.056									
031-0003	Darlington	Pee Dee	0.060									
037-0001	Edgefield	Trenton	0.060	8.2	19							
041-0003	Florence	Williams		*7.8	*17							

Site ID	County	Site Name	Ozone (ppm)	$PM_{2.5}$ Annual ($\mu g/m^3$)	$PM_{2.5}$ 24-hour ($\mu g/m^3$)	PM_{10} (# Expect-ed Exceed-ances)	SO_2 1-hour (ppb)	NO_2 1-hour (ppb)	NO_2 Annual (ppb)	CO 8-hour (ppm)	CO 1-hour (ppm)	Lead ($\mu g/m^3$) (2017-NOT 3 yr. DV)
041-8001	Florence	JCI Railroad										*0.05
041-8002	Florence	JCI Entrance										*0.08
041-8003	Florence	JCI River										*0.03
043-0011	Georgetown	Howard #3				0						
045-0015	Greenville	Greenville ESC		8.3	23	0	2	41	8			
045-0016	Greenville	Hillcrest	0.062	7.9	17							
063-0008	Lexington	Irmo		8.5	19		*3					
063-0010	Lexington	Cayce City Hall				0						
073-0001	Oconee	Long Creek	0.063	*6.0	*14		2					
077-0002	Pickens	Clemson	0.062									
077-0003	Pickens	Wolf Creek	0.062									
079-0007	Richland	Parklane	0.061	7.8	16	*	2			1	1	*0
079-0021	Richland	Congaree Bluff	0.055				3					
079-1001	Richland	Sandhill	0.064					*37	*4			

Site ID	County	Site Name	Ozone (ppm)	$PM_{2.5}$ Annual ($\mu g/m^3$)	$PM_{2.5}$ 24-hour ($\mu g/m^3$)	PM_{10} (# Expect-ed Exceed-ances)	SO_2 1-hour (ppb)	NO_2 1-hour (ppb)	NO_2 Annual (ppb)	CO 8-hour (ppm)	CO 1-hour (ppm)	Lead ($\mu g/m^3$) (2017-NOT 3 yr. DV)
083-0009	Spartanburg	North Spartan-burg	0.065									
083-0011	Spartanburg	T.K. Gregg		8.0	16							
* denotes design values that did not meet data completeness requirements.												

Required Monitoring

The EPA regulation 40 CFR Part 58, Appendix D requires that each State maintain a minimum number of monitors to properly characterize air quality and to meet any required objectives of the monitoring network[5]. In general, these minimum requirements are based on the MSA population and current ambient air monitoring design values. The following sections discuss the minimum monitoring criteria for each of the criteria pollutants (Ozone, Particulate Matter ($PM_{2.5}$ and PM_{10}), Lead, SO_2, NO_2, and CO), the CBSAs, and the MSA population. The final section shows the current South Carolina minimum monitoring requirements.

Minimum Monitoring for Ozone – The Ozone minimum monitoring criteria has two requirements:

1) Required Ozone SLAMS sites – A minimum number of required Ozone SLAMS sites for each CBSA that is determined by CBSA population and the peak Ozone concentrations.
2) NCore Requirement – Each NCore site must include an Ozone monitor. The Parklane (45-079-0007) Site in Columbia, South Carolina is the NCore site for South Carolina.

Minimum Monitoring for $PM_{2.5}$ – The $PM_{2.5}$ minimum monitoring criteria has six requirements:

1) Required $PM_{2.5}$ SLAMS sites – A minimum number of required $PM_{2.5}$ SLAMS sites for each CBSA.
2) Continuous Requirement – A continuous $PM_{2.5}$ monitoring requirement which is equal to at least one-half (round up) the minimum required $PM_{2.5}$ SLAMS sites. Also, at least one required continuous analyzer in each CBSA must be collocated with one of the required FRM or FEM monitors, unless at least one of the required FRM/FEM monitors is itself a continuous FEM monitor, in which case, no collocation requirement applies.
3) Regional Background and Transport – At least one $PM_{2.5}$ site must be established in each state to monitor for regional background and at least one $PM_{2.5}$ site to monitor regional transport. The Cape Romain (45-019-0046) Site in Charleston County is the regional background site and the Chesterfield (45-025-0001) site in Chesterfield County is the regional transport site.
4) NCore Requirement – Each state is required to operate at least one NCore site which measures $PM_{2.5}$ using both continuous and integrated/filter-based samplers. The Parklane (45-079-0007) Site in Columbia, South Carolina is the NCore site for South Carolina.
5) Near-road $PM_{2.5}$ Monitoring – The EPA required the collocation of one $PM_{2.5}$ monitor with a near-road NO_2 monitor in urban areas having populations of 1,000,000 or more by January 1, 2017. The Charlotte-Concord-Gastonia, NC-SC MSA is the only MSA in South Carolina that met the population requirement for a collocated $PM_{2.5}$ monitor. The near-road monitoring requirement for the Charlotte-Concord-Gastonia, NC-SC MSA is being fulfilled at the Remount Road (37-119-0045) Site by the Mecklenburg County Air Quality Commission.

[5] 40 CFR Part 58.11 paragraph (a)(3)(c) and Appendix D to 40 CFR Part 58.

6) Speciation Monitoring – Chemical speciation monitoring is conducted at the Parklane (45-079-0007) Site and is funded as part of the $PM_{2.5}$ Speciation Trends Network (STN).

Minimum Monitoring for PM_{10} – The PM_{10} minimum monitoring criteria has one requirement that is based on the CBSA population, the number of exceedances of the NAAQS, and the percentage of PM_{10} concentrations over or under the NAAQS. Unlike other criteria pollutants, the minimum monitoring requirements for PM_{10} is given as a range of required monitoring sites for a CBSA.

Minimum Monitoring for Lead – The Lead minimum monitoring criteria has one requirement that any facility with annual Lead emissions exceeding 0.5 tpy will be required to have a Lead sampler. Based on the state-submitted 2014 National Emissions Inventory, there are no facilities in South Carolina with Lead emissions greater than 0.5 tpy.

On May 7, 2010, the Department issued an air synthetic minor construction permit to Johnson Controls Battery Group for the Florence Recycling Center (Permit No. 1040-0129-CA). Under a settlement agreement[6] with several petitioners, the Florence Recycling Center supports source-oriented ambient Lead monitoring being conducted by the Department at several sites around the facility. Additional details of the monitoring of this facility can be found in the Florence MSA section of this Monitoring Plan under the Site name "Johnson Controls."

Minimum Monitoring for SO_2 – The SO_2 minimum monitoring criteria has three requirements:

1) Requirement for Monitoring by the Population Weighted Emissions Index – The population weighted emissions index (PWEI) is determined using the most current population of each CBSA and the most recent level of SO_2 emissions for each county within the CBSA. The emissions data is available from the National Emissions Inventory. For any CBSA with a calculated PWEI value equal to or greater than 1,000,000, a minimum of three SO_2 monitors are required. For any CBSA with a calculated PWEI value equal to or greater than 100,000, but less than 1,000,000, a minimum of two SO_2 monitors are required. For any CBSA with a calculated PWEI value equal to or greater than 5,000, but less than 100,000, a minimum of one SO_2 monitor is required.

[6] https://www.scdhec.gov/sites/default/files/docs/HomeAndEnvironment/Docs/JCI/JCI-Settlement%20Agreement_07142010.pdf

The following table presents each CBSA's 2018 population, 2014 SO_2 emissions, calculated index, and minimum monitoring requirements. The process for calculating the index can be found at the bottom of the table.

CBSA	2018 CBSA Population	2014 CBSA SO_2 Emissions (Tons)	PWEI	SO_2 Minimum Monitors Required
*Charlotte-Concord-Gastonia, NC-SC MSA	2,569,213	7,624	19,588	1
Greenville-Anderson MSA	906,626	2,928	2,655	0
Columbia MSA	832,666	17,769	14,796	1
Charleston-North Charleston MSA	787,643	15,784	12,432	1
*Augusta-Richmond County, GA-SC MSA	604,167	3,353	2,026	0
*Myrtle Beach-Conway-North Myrtle Beach, SC-NC MSA	480,891	4,837	2,326	0
Spartanburg MSA	341,298	386	132	0
Hilton Head Island-Bluffton MSA	217,686	1,164	253	0
Florence MSA	204,961	3,982	816	0
Sumter MSA	106,512	191	20	0

The PWEI is calculated using US Census population data and state emission inventory data at the CBSA level. The population for each CBSA (based on the most recent US Census or Census estimate) is multiplied by the CBSA total SO_2 emissions (reported in tons using the latest National Emissions Inventory data). This product is divided by 1,000,000 to derive the index.

CBSA with index greater than 1,000,000 will require 3 monitors.
CBSA with index less than 1,000,000 but greater than 100,000 will require 2 monitors.
CBSA with index less than 100,000 but greater than 5,000 will require 1 monitor.
CBSA with index less than 5,000 will require no monitors.

*Monitors may be operated in the non-South Carolina portion of the CBSA.

2) Regional Administrator Required Monitoring – The Regional Administrator may require additional SO_2 monitoring sites above the minimum number of monitors required by the PWEI in areas that have the potential to have high SO_2 concentrations, in areas impacted by sources which are not conducive to modeling, or in locations with susceptible and vulnerable populations that are not otherwise being monitored. South Carolina does not have any SO_2 Regional Administrator Required Monitoring.

3) NCore Requirement – Each NCore site must include a SO_2 monitor. The Parklane (45-079-0007) Site in Columbia, South Carolina is the NCore site for South Carolina.

Minimum Monitoring for NO_2 – The NO_2 minimum monitoring criteria has four requirements:

1) Near-road NO_2 Monitors – Each state must have one microscale near-road NO_2 monitoring site in each CBSA with a population of at least 1,000,000 or more persons. An additional near-road NO_2 monitoring site is required for any CBSA with a population of 2,500,000 or more, or in any CBSA with a population of 1,000,000 or more that has one or more roadway segments with 250,000 or greater Annual Average Daily Traffic (AADT) counts. The Charlotte-Gastonia-Concord NC-SC MSA meets the population requirement of at least 1,000,000 or more persons. The Remount Road Site is located in Charlotte, North Carolina and has a near-road NO_2 monitor.
2) Requirements for Area-wide NO_2 Monitoring – Each state must have one monitoring site in each CBSA with a population of 1,000,000 or more persons which will monitor a location of expected highest NO_2 concentrations representing the neighborhood or larger spatial scales. The Garinger High School (37-119-0041) Site in Charlotte, North Carolina also operates an area-wide NO_2 monitor.
3) Regional Administrator Required Monitoring – The Regional Administrators, in collaboration with states, require a minimum of forty additional NO_2 monitoring sites above the minimum monitoring requirements (nationwide) in any area, with a primary focus on siting these monitors in locations to protect susceptible and vulnerable populations. The Greenville ESC (45-045-0015) Site is a Regional Administrator Required Monitoring site.
4) NCore Requirement (NO/NO_y Monitoring) – Each NCore site must include a NO/NO_y monitor that will collect data to be used to produce conservative estimates for NO_2 and further Ozone research. The Parklane (45-079-0007) Site in Columbia, South Carolina is the NCore site for South Carolina.

Minimum Monitoring for CO – The CO minimum monitoring criteria has two requirements:

1) Near-road CO Monitors – Each state with CBSAs having a population of 1,000,000 or more people must have one CO monitor collocated with one required near-road NO_2 monitor to be operational by January 1, 2017. The Charlotte-Concord-Gastonia, NC-SC MSA is the only CBSA in South Carolina that meets the population requirement for a collocated CO monitor. The Mecklenburg County Air Quality office operates a CO monitor at the Remount Road (37-119-0045) near road Site in Charlotte, North Carolina that became operational on January 1, 2017.
2) NCore Requirement – Each NCore site in a CBSA with a population of 500,000 or more must include a CO monitor. The Parklane (45-079-0007) Monitoring Site in the Columbia, SC MSA is the NCore site for South Carolina and supports one CO monitor. The Garinger (37-119-0041) Monitoring Site in Mecklenburg County is also an NCore site and supports a CO monitor.

Minimum Monitoring for the Photochemical Assessment Monitoring Stations (PAMS) – South Carolina is not subject to the PAMS requirement.

The CBSAs and the Minimum Monitoring Requirements – The term CBSA is a collective term for the defined MSAs and Micropolitan Statistical Areas (mSA). A MSA area contains

a core urban area of 50,000 or more population, and a mSA contains an urban core of at least 10,000 but less than 50,000 population. Each metropolitan or micropolitan area consists of one or more counties and includes the counties containing the core urban area, as well as any adjacent counties that have a high degree of social and economic integration (as measured by commuting to work) with the urban core[7].

A MSA or mSA geographic composition, or list of geographic components at a particular point in time, is referred to as its "delineation". The MSA or mSA are delineated by the U.S. Office of Management and Budget (OMB) and are the result of the application of published standards based on Census Bureau data. The standards for delineating the areas are reviewed and revised once every ten years, prior to each decennial census. Generally, the areas are delineated using the most recent set of standards following each decennial census. Between censuses, the delineations are updated annually to reflect the most recent Census Bureau population estimates. Areas based on the 2010 standards and Census Bureau data were delineated in September, 2018[8,9].

While the Department understands the need for establishing minimum monitoring requirements, the EPA appropriately has mechanisms within the network plan approval and network assessment process to allow states the flexibility to implement a monitoring network that meets the three basic monitoring objectives and addresses National and State needs. The recent changes in the MSA definitions are an example of the reasons for the incorporation of flexibility in the regulations and illustrates the necessity that the EPA use the discretion available in the monitoring regulations to afford states flexibility and regulatory certainty.

Per 40 CFR Part 58, Appendix D, paragraph 2 (e), minimum monitoring requirements in multi-state MSAs can be met through a cooperative agreement. In the absence of an agreement between states, the minimum monitoring requirements must be met independently in each portion of the MSA. South Carolina has established a memorandum of agreement (MOA) with the Georgia Department of Natural Resources, Environmental Protection Division[10], North Carolina Department of Environmental and Natural Resources Division of Air Quality, and Mecklenburg County, North Carolina[11,12]

[7] https://www.census.gov/programs-surveys/metro-micro.html
[8] https://www.census.gov/programs-surveys/metro-micro.html
[9] OMB Bulletin No. 18-04-"Revised Delineations of Metropolitan Statistical Areas, Micropolitan Statistical Areas, and Combined Statistical Areas, and Guidance on Uses of the Delineations of These Areas", September 14, 2018.
[10] The Memorandum of Agreement on Air Quality Monitoring for Criteria Pollutants for the Augusta-Richmond County Metropolitan Statistical Area (MSA) was signed on March 6, 2017 by the South Carolina DHEC Bureau of Air Quality and the Georgia Environmental Protection Division-Air Protection Branch.
[11] The Memorandum of Agreement on Air Quality Monitoring for Criteria Pollutants for the Myrtle Beach-Conway-North Myrtle Beach, SC-NC Metropolitan Statistical Area (MSA) was signed on July 1, 2015 by the South Carolina DHEC Bureau of Air Quality and the North Carolina Department of Environmental and Natural Resources-Division of Air Quality.
[12] The Memorandum of Agreement on Air Quality Monitoring for Criteria Pollutants for the Charlotte-Gastonia-Concord Metropolitan Statistical Area (MSA) was signed on July 1, 2016 by the South Carolina DHEC Bureau of Air Quality, the North Carolina Department of Environmental and Natural Resources-Division of Air Quality and the Mecklenburg County, North Carolina Land Use and Environmental Service Agency-Air Quality.

which specifies the responsibilities of each party to develop a monitoring network that meets the appropriate monitoring objectives for the MSA.

The map below presents South Carolina's CBSAs based on the latest available definitions published in September, 2018.

Population and the Minimum Monitoring Requirements – The minimum monitoring criteria only applies to MSAs. The table below presents the latest 2018* population estimates for each MSA in South Carolina and the total population of MSAs shared with North Carolina and Georgia.

MSA	2018 Population
Charlotte-Concord-Gastonia, NC-SC MSA	2,569,213
Greenville-Anderson MSA	906,626
Columbia MSA	832,666
Charleston-North Charleston MSA	787,643
Augusta-Richmond County, GA-SC MSA	604,167
Myrtle Beach-Conway-North Myrtle Beach, SC-NC MSA	480,891
Spartanburg MSA	341,298
Hilton Head Island-Bluffton MSA	217,686

MSA	2018 Population
Florence MSA	204,961
Sumter MSA	106,512
*United States Census Bureau and CFR 40 Part 58, Appendix D	

South Carolina Minimum Monitoring Requirements – Based on the *latest available United States Census population estimates and the 2018 ambient air quality design values (page 16), the minimum monitoring requirements for each MSA are:

MSA	Ozone	$PM_{2.5}$	$PM_{2.5}$ Cont.	PM_{10}	Lead	SO_2	$NO/NO_y/NO_2$	CO
**Augusta-Richmond County, GA-SC MSA	2	1	1	1-2	0	0	0	0
Charleston-North Charleston, MSA	2	1	1	1-2	0	1	0	0
**Charlotte-Concord-Gastonia, NC-SC MSA	2	2	1	2-4	0	1	4***	2
Columbia MSA (NCore)	2	1	1	1-2	0	1	1	1
Florence MSA	1	0	0	0	0	0	0	0
Greenville-Anderson MSA	2	1	1	1-2	0	0	1	0
Hilton Head Island-Bluffton MSA	0	0	0	0	0	0	0	0
Myrtle Beach-Conway-North Myrtle Beach, SC-NC MSA	1	0	0	0-1	0	0	0	0
Spartanburg MSA	1	0	0	0-1	0	0	0	0
Sumter MSA	0	0	0	0	0	0	0	0

*United States Census Bureau population estimates and CFR 40 Part 58, Appendix D.
** Minimum ambient air monitoring requirements are met cooperatively with the States of Georgia and North Carolina.
***Charlotte MSA is required to have two near-road monitors, one area-wide monitor and an NOy at the NCore site.

Summary of 2020 Network Changes

Augusta-Richmond County, GA-SC MSA (South Carolina portion includes Aiken and Edgefield Counties)

No changes planned for 2020.

Charleston-North Charleston MSA

Bushy Park (45-015-0002) Site – This Site will be discontinued after the Moncks Corner National Guard Site is established.

Moncks Corner National Guard (45-015-1002) Site – This Site is targeted to become operational on March 1, 2020 and will house the required Ozone monitor for the MSA.

North Charleston Fire Station (45-019-0020) Site – This Site is targeted to become operational on January 1, 2020 and will house the required $PM_{2.5}$ monitors from the FAA and CPW Sites.

Cape Romain (45-019-0046) Site – The SO_2 monitor has been put on a two-year rotating schedule and will begin operation on January 1, 2020.

FAA (45-019-0048) Site – This Site or the CPW Site will operate for one year, then be discontinued when the North Charleston Fire Station Site is established.

CPW (45-019-0049) Site – This Site or the FAA Site will operate for one year, then be discontinued when the North Charleston Fire Station Site is established.

Charlotte-Concord-Gastonia, NC-SC MSA

York Landfill (45-091-0008) Site – The SO_2 monitor has been put on a two-year rotating schedule and will begin operation on January 1, 2020.

Columbia MSA

Irmo (45-063-0008) Site – The carbonyls, SVOCs, and SO_2 will be discontinued on 12/31/2019.

Parklane (45-079-0007) Site – The SLAMS Lead monitor is no longer required at the NCore site. It was discontinued on December 31, 2018.

Congaree Bluff (45-079-0021) Site – The SO_2 monitor has been put on a two-year rotating schedule and will begin operation on January 1, 2022.

Florence MSA

No changes planned for 2020.

Greenville-Anderson MSA

Big Creek (45-007-0005) Site – This Site will run concurrently with the Garrison Arena Site for the 2020 Ozone season, and then be discontinued after October 31, 2020.

Garrison Arena (45-007-0006) Site – This Site is targeted to become operational in 2020.

Clemson (45-077-0002) Site – This Site will close after the 2019 Ozone season.

Wolf Creek (45-077-0003) Site – This Site will close after the 2019 Ozone season.

Hilton Head Island-Bluffton MSA

No changes planned for 2020.

Myrtle Beach-Conway-North Myrtle Beach SC-NC MSA

No changes planned for 2020.

Spartanburg MSA

No changes planned for 2020.

Sumter MSA

No changes planned for 2020.

Remainder of State

Chesterfield (45-025-0001) Site – Due to resource reallocation, the $PM_{2.5}$ Speciation was discontinued on January 2, 2019.

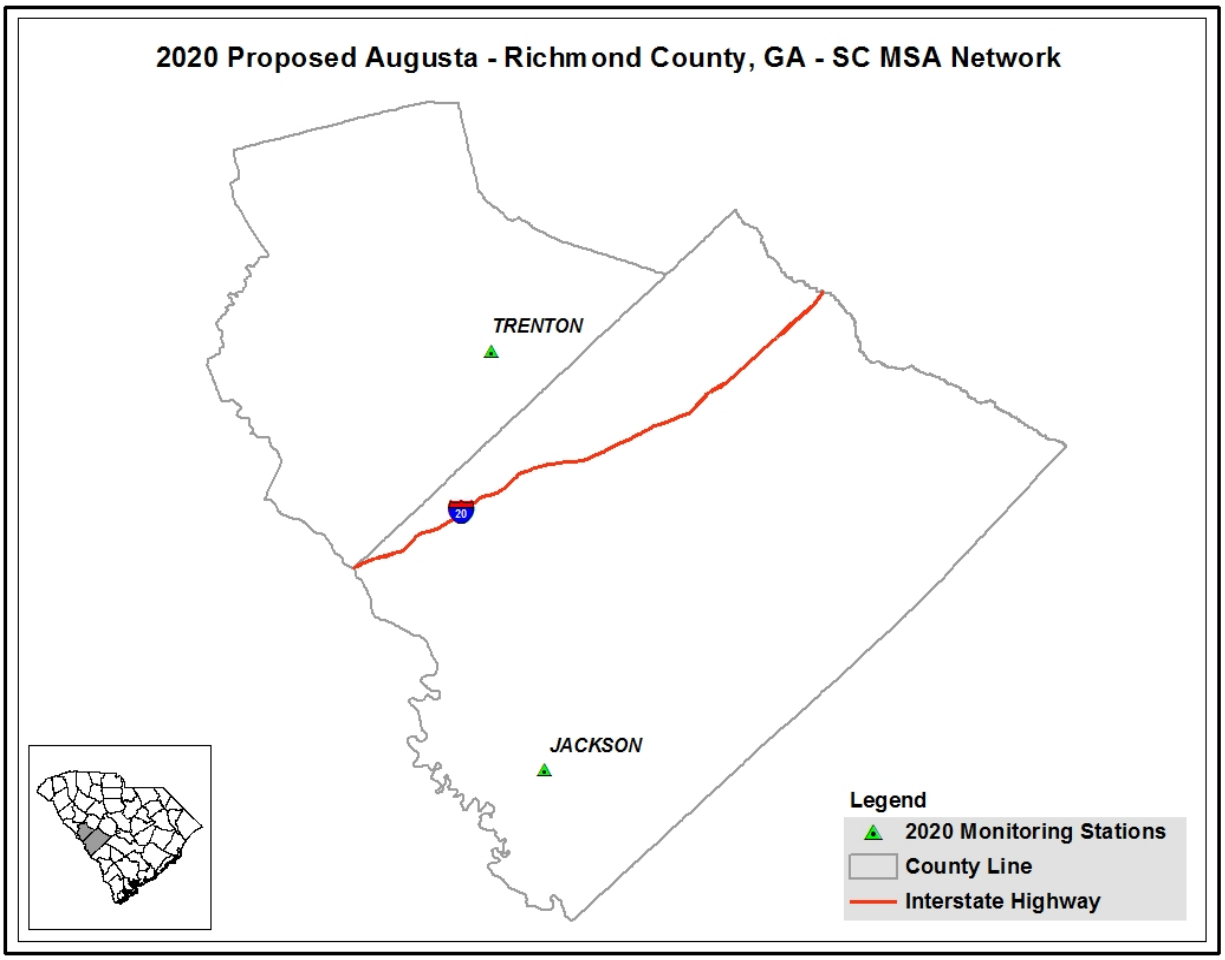
Ashton (45-029-0002) Site – This Site was discontinued on January 08, 2019.

Howard #3 (45-45-043-0011) Site – This Site was discontinued on April 3, 2019.

Long Creek (45-073-0001) Site – The SO_2 monitor has been put on a two-year rotating schedule and will begin operation on January 1, 2022.

Site Descriptions

Augusta-Richmond County, GA-SC MSA (part)



Classification of Monitoring Type by Site

Site ID	Site Name	$PM_{2.5}$	$PM_{2.5}$ Cont.	Speciation	PM_{10}	Lead	Ozone	SO_2	NO_2	CO
45-003-0003	Jackson Middle School						●			
45-037-0001	Trenton	O	O				●			
TOTAL		1	1	0	0	0	2	0	0	0
O SPM / Other ● SLAMS ●●/OO duplicate / QA monitors										

Jackson Middle School

CSA/MSA: none/Augusta-Richmond County MSA
AQS Site ID: 45-003-0003
Location: 8217 Atomic Road, Jackson
County: Aiken
Coordinates: +33.34219, -81.78872
Date Established: October 24, 1985
Site Evaluation: October 20, 2018

The Jackson Middle School Site is located in southwestern Aiken County, within the town limits of Jackson at the Jackson Middle School. Jackson is located in a suburban setting to monitor Ozone concentrations upwind of the Augusta urbanized area. The sample inlet is 128 meters from the nearest road.

This site meets siting criteria found in 40 CFR Part 58 Appendix E. The northeast tree does not meet the requirements for tree height in the 40 CFR Part 58 Appendix E, Section 4 (Spacing from Obstructions), but there is still more than 270° unobstructed air flow around the probe.

Changes for 2020:
There are no changes planned for 2020.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone 44201-2	Urban	Upwind Background	SLAMS	3.35	Ultraviolet Absorption (087)	Continuous

Trenton

CSA/MSA: none/Augusta-Richmond County MSA
AQS Site ID: 45-037-0001
Location: 660 Woodyard Road (Hwy 121)
County: Edgefield
Coordinates: +33.73993, -81.85362
Date Established: March 28, 1980
Site Evaluation: October 20, 2018

The Trenton Site is located in southeastern Edgefield County. Trenton was originally established to monitor for Ozone crossing into South Carolina from Georgia. The Trenton Site monitors for Ozone, intermittent $PM_{2.5}$, and continuous $PM_{2.5}$. The sample inlets are 30 meters from the nearest road.

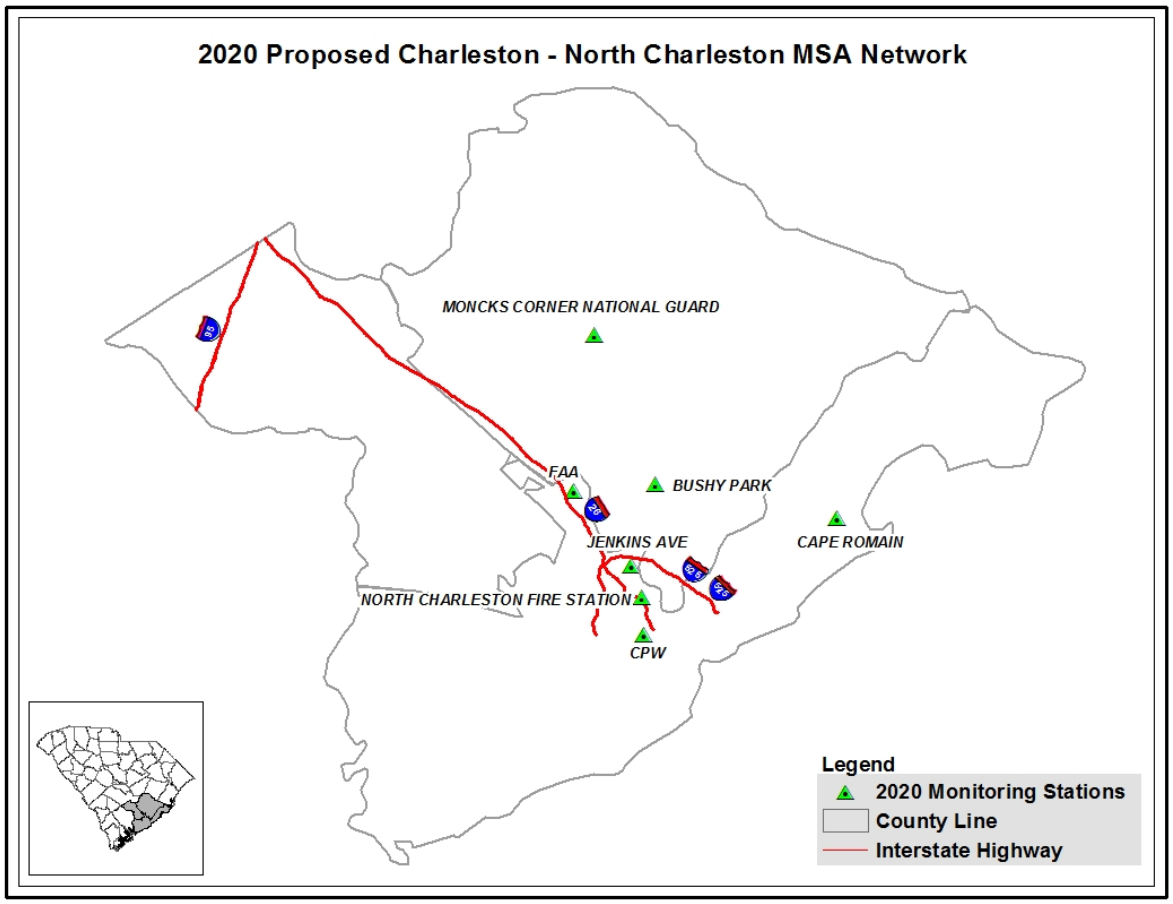
This Site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2020:
There are no changes planned for 2020.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
$PM_{2.5}$ 88101-1	Urban	Extreme Downwind	SPM	4.72	Gravimetric w/ VSCC (145)	1:3
Continuous $PM_{2.5}$ 88502-3	Urban	Extreme Downwind	SPM	4.57	TEOM Gravimetric 50°C (702)	Continuous
Ozone 44201-1	Urban	Maximum Ozone Concentration/ Extreme Downwind	SLAMS	3.45	Ultraviolet Absorption (087)	Continuous

Charleston-North Charleston MSA



Classification of Monitoring Type by Site

Site ID	Site Name	$PM_{2.5}$	$PM_{2.5}$ Cont.	Speciation	PM_{10}	Lead	Ozone	SO_2	NO_2	CO	Precip.	MET
45-015-0002	Bushy Park						●					
45-015-1002	Moncks Corner National Guard						●					
45-019-0003	Jenkins Ave. Fire Station				●			●	O			
45-019-0020	North Charleston Fire Station	● ●	O									
45-019-0046	Cape Romain		●				●	O	O		O	●
45-019-0048	FAA	O										
45-019-0049	CPW	●	O									
TOTAL		2	2	0	1	0	2	2	2	0	1	1
O SPM / Other ● SLAMS ●●/OO duplicate / QA monitors ●/O Pending												

Bushy Park Pump Station

CSA/MSA: none/Charleston-North Charleston MSA
AQS Site ID: 45-015-0002
Location: River Oak Drive (Goose Creek)
County: Berkeley
Coordinates: +32.98724, -79.93671
Date Established: June 20, 1978
Site Evaluation: May 15, 2019

The Bushy Park Pump Station Site is located in southeastern Berkeley County downwind from the Charleston urban area. This Site monitors for Ozone and the monitoring objective is maximum Ozone concentration. The sample inlets are 15 meters from the nearest road.

This Site does not meet 40 CFR Part 58, Appendix E, Section 4, Section 5, and Section 11 requirements due to tree obstructions and drip line requirements. It is not feasible to cut or trim the trees. Currently, the Moncks Corner National Guard Site is being established as a replacement for this Site and is expected to begin operation at the beginning of the 2020 Ozone season.

Changes for 2020:

This Site will be discontinued after the Moncks Corner National Guard Site is established.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone	Urban	Max Ozone Concentration	SLAMS	3.15	Ultraviolet Absorption (087)	Continuous

Moncks Corner National Guard

CSA/MSA: none/Charleston-North Charleston MSA
AQS Site ID: 45-015-1002
Location: Airport Drive and Wal Flo Lane
County: Berkeley
Coordinates: 33.18, -80.03
Date Established: PENDING
Site Evaluation: PENDING

The Moncks Corner National Guard Site is located in Moncks Corner downwind from the Charleston urban area. This Site monitors for Ozone and the monitoring objective is maximum Ozone concentration. The sample inlet is ~177 meters from the nearest road.

This Site will meet 40 CFR Part 58, Appendix E requirements.

Changes for 2020:
This Site is to be established by the beginning of the 2020 Ozone season.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone 44201-1	Urban	Max Ozone Concentration	SLAMS		Ultraviolet Absorption (087)	Continuous

Jenkins Ave. Fire Station

CSA/MSA: none/Charleston-North Charleston MSA
AQS Site ID: 45-019-0003
Location: 4830 Jenkins Ave.
County: Charleston
Coordinates: +32.88228, -79.97755
Date Established: February 14, 1969
Site Evaluation: February 13, 2019

The Jenkins Ave. Fire Station Site is located in the city of North Charleston behind a fire station in an urban and central city setting. The Jenkins Ave. Fire Station Site supports monitors for PM_{10}, SO_2, and NO_2. The sample inlets are 33.5 meters from the nearest road.

This Site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2020:
There are no changes planned for 2020.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
PM_{10} 81102-3	Neighbor-hood	Highest Concentration	SLAMS	4.10	TEOM-Gravimetric (079)	Continuous
Sulfur Dioxide 42401-1	Neighbor-hood	Population Exposure	SLAMS	4.68	Pulsed Fluorescent (560)	Continuous
Nitrogen Dioxide 42602-2	Neighbor-hood	Highest Concentration Source Oriented	SPM	4.68	Chemilumi-nescence (599)	Continuous

North Charleston Fire Station

CSA/MSA: none/Charleston-North Charleston MSA
AQS Site ID: 45-019-0020
Location: 2800 Carner Avenue
County: Charleston
Coordinates: 32.84, -79.96
Date Established: PENDING
Site Evaluation: PENDING

The North Charleston Fire Station Site is located in the central portion of the Charleston peninsula. It is located on the grounds of the North Charleston Fire Station #3 and next to the Charleston Military Magnet School. This Site was selected for its heavy exposure to population and industry and is a replacement for the FAA Beacon and the Charleston Public Works (CPW) Sites. This Site will support collocated $PM_{2.5}$ intermittent samplers and a continuous $PM_{2.5}$ monitor. The site is ~ 38 meters from the nearest road.

This Site will meet siting criteria found in 40 CFR Part 58 Appendix E.

Changes for 2020:
This Site is expected to be established in 2020.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
$PM_{2.5}$ 88101-1	Neighbor-hood	Population Exposure	SLAMS		Gravimetric w/ VSCC (145)	1:3
Collocated $PM_{2.5}$ 88101-2	Neighbor-hood	Population Exposure	QA Collocated SLAMS		Gravimetric w/ VSCC (145)	1:3
$PM_{2.5}$ 88502-3	Neighbor-hood	Population Exposure	SPM		TEOM Gravimetric 30°C (704)	Continuous

Cape Romain

CSA/MSA: none/Charleston-North Charleston MSA
AQS Site ID: 45-019-0046
Location: 390 Bulls Island Road (Awendaw)
County: Charleston
Coordinates: +32.94101, -79.65719
Date Established: July 11, 1983
Site Evaluation: June 22, 2018

The Cape Romain Site is located in Charleston County at the Cape Romain National Wildlife Refuge (NWR) near Moore's Landing. The Cape Romain NWR is a Class I area about 20 miles northeast of Charleston. The majority of the Refuge area is offshore, extending from Bull Island 20 miles northeast to Cape Romain. The Refuge is bordered on the west by the Intracoastal Waterway. Inland are large tracts of forests with scattered residences. Several miles inland, a primary coastal route, US Highway (Hwy) 17, parallels the coast, with some development along the section of highway that is closest to the Refuge.

The Cape Romain Site has continuous monitors for Ozone, $PM_{2.5}$, and meteorological parameters. An *SO_2 monitor is also operated on a two-year rotating schedule that will operate from January 1, 2020 - December 31, 2021. Additionally, this Site serves as a required regional background for $PM_{2.5}$. The sample inlets are 86 meters from the nearest road.

This Site does not meet siting criteria found in 40 CFR Part 58 Appendix E Section 4 (Spacing from Obstructions). The east tree and the south tree are obstructions to both the Ozone and $PM_{2.5}$ monitors. The United States Fish and Wildlife Service has been notified and agree that the trees need to be trimmed.

Changes for 2020:
There are no changes planned for 2020.

Monitors:
(Table continues on next page)

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
$PM_{2.5}$ 88502-3	Regional	General / Background	SLAMS	4.75	FDMS w/ SCC (183)	Continuous
Ozone 44201-1	Regional	General / Background	SLAMS	4.10	Ultraviolet (047)	Continuous
*Sulfur Dioxide 42401-2	Regional	Source Oriented	SPM	4.10	Pulsed Fluorescent (560)	Continuous
Nitrogen Dioxide	Regional	General / Background	SPM	4.10	Chemilumine-scence	Continuous

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
42602-1					(599)	
Wind Speed, Wind Direction and Precipita-tion	Neighbor-hood	Local Conditions	SLAMS	10.0	Instruments for wind speed, direction, and precipitation (020)	Continuous

FAA Beacon

CSA/MSA: none/Charleston-North Charleston MSA
AQS Site ID: 45-019-0048
Location: 2670 Elms Plantation Blvd
County: Charleston
Coordinates: +32.98024, -80.06502
Date Established: April 9, 1999
Site Evaluation: January 30, 2019

The Charleston FAA Beacon Site is located in Charleston County approximately five miles northwest of the Charleston International Airport near Charleston Southern University. This Site has a SPM $PM_{2.5}$ sampler. The sample inlet is 160 meters from the nearest road.

Although the 40 CFR Part 58.20 states that compliance to the siting regulations is optional, it is the Department's intent to meet as many of the Appendix E requirements as possible. This Site does not meet 40 CFR Part 58 Appendix E, Section 4, Section 5 and Section 11 for site obstructions due to trees and drip line requirements. This Site will be discontinued when the North Charleston Fire Station Monitoring Site is operational.

Changes for 2020:
The Department is planning to consolidate the FAA and CPW Sites into the North Charleston Fire Station Monitoring Site by January 1, 2020. Either FAA and/or the CPW Site will run concurrently for one year with the North Charleston Fire Station Site.

The collocated $PM_{2.5}$ was temporarily moved to the T. K. Gregg monitoring Site in 2018 to meet State minimum monitoring requirements. When the North Charleston Fire Station Site is established, the $PM_{2.5}$ sampler will be moved back to the Charleston-North Charleston MSA.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
$PM_{2.5}$ 88101-1	Neighbor-hood	Population Exposure	SPM	2.35	Gravimetric (145)	1:1

Charleston Public Works (CPW)

CSA/MSA: none/Charleston-North Charleston MSA
AQS Site ID: 45-019-0049
Location: 360 Fishburne Street
County: Charleston
Coordinates: +32.79097, -79.95871
Date Established: November 20, 1998
Site Evaluation: January 30, 2019

The Charleston Public Works (CPW) Site is located on the western side of the Charleston peninsula near downtown Charleston. The CPW Site supports the required $PM_{2.5}$ monitors for the MSA. The sample inlets are 24.8 meters from the nearest road.

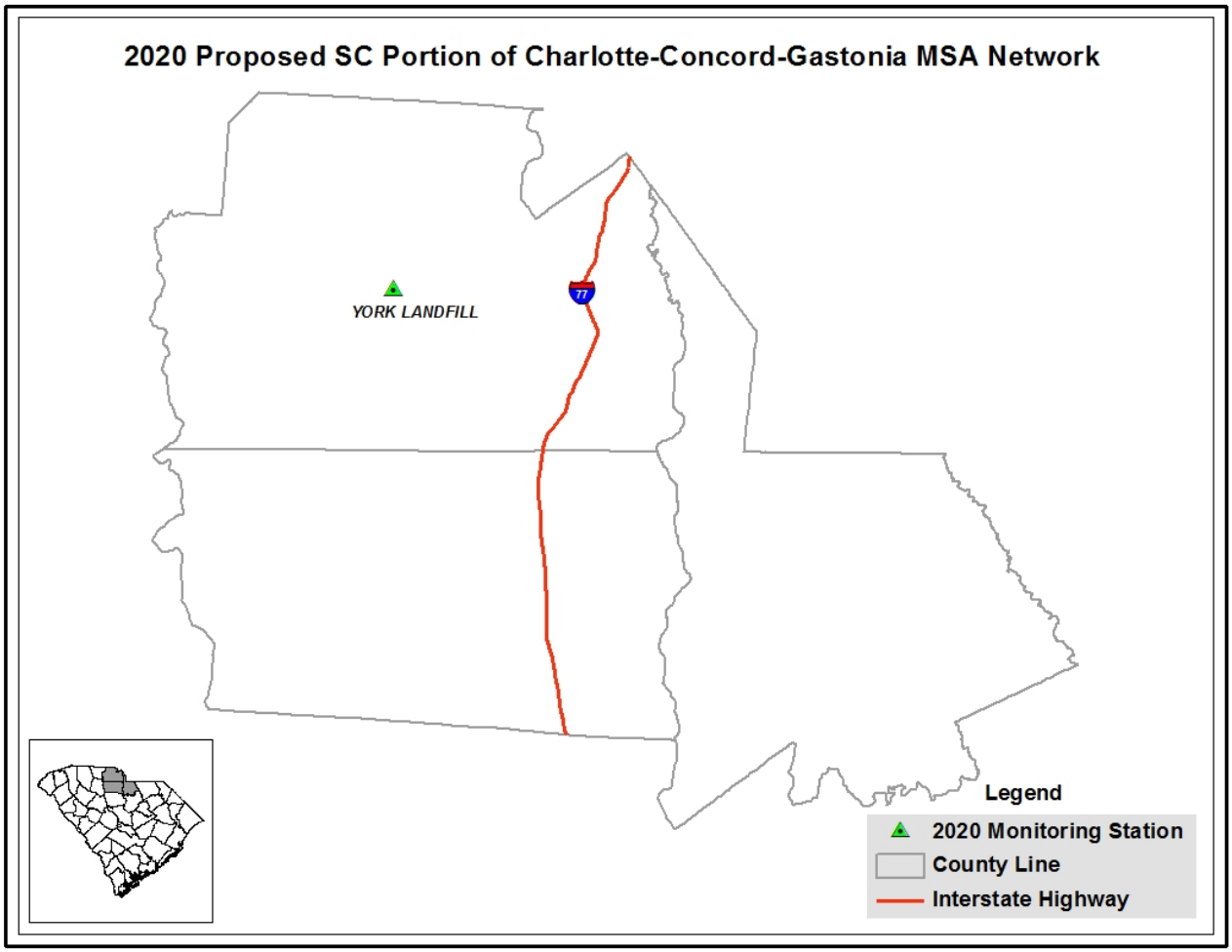
This Site does not meet 40 CFR Part 58 Appendix E, Section 4, Section 5 and Section 11 for site obstructions due to trees and drip line requirements. The northeast tree does not meet the requirements for tree height or drip line in the 40 CFR Part 58 Appendix E, but there is still more than 270° unobstructed air flow around the probe. This Site will be discontinued when the North Charleston Fire Station Monitoring Site is operational.

Changes for 2020:
The Department is planning to consolidate the FAA and CPW Sites into the North Charleston Fire Station Monitoring Site in 2020. Either FAA and/or the CPW Site will run concurrently for one year after the North Charleston Fire Station Site is established.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis Method & (Method Code)	Sampling Frequency
$PM_{2.5}$ 88101-1	Neighbor-hood	Population Exposure	SLAMS	2.25	Gravimetric (145)	1:1
$PM_{2.5}$ 88502-3	Neighbor-hood	Population Exposure	SPM	2.83	TEOM Gravimetric 50°C (702)	Continuous

Charlotte-Concord-Gastonia MSA



Classification of Monitoring Type by Site

Site ID	Site Name	$PM_{2.5}$	$PM_{2.5}$ Cont.	Speciation	PM_{10}	Lead	Ozone	SO_2	NO_2	CO	MET
45-091-0008	York Landfill						●	O			
TOTAL		0	0	0	0	0	1	1	0	0	0
O SPM / Other ● SLAMS ●●/OO duplicate / QA monitors											

York Landfill

CSA/MSA: Charlotte-Concord CSA / Charlotte-Concord-Gastonia MSA
AQS Site ID: 45-091-0008
Location: 310 Langrum Branch Rd.
County: York
Coordinates: +34.9776, -81.2074
Date Established: February 27, 2017
Site Evaluation: February 28, 2019

The York Landfill site is located in south central York County in a rural setting. This site was established to replace the York Continuous Monitoring Site (45-091-0006) and represents background levels near the Charlotte urban area. The York Landfill Site currently operates a monitor for Ozone. An *SO_2 monitor is currently being operated and will begin a two-year rotating schedule that will operated from January 1, 2020 -December 31, 2021. The sample inlets are 34.8 meters from the nearest road

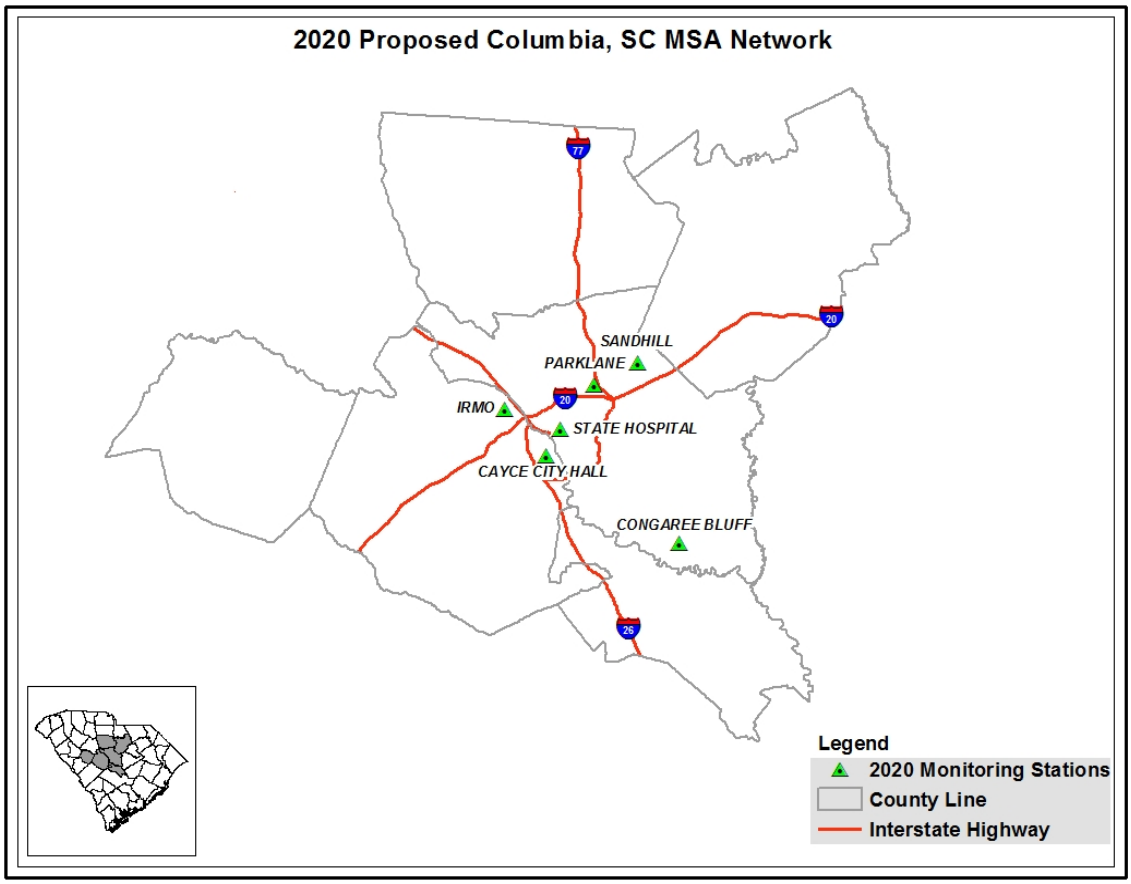
This site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2020:
The *SO_2 monitor will begin rotational operation on January 1, 2020.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone 44201-1	Urban	Upwind Background	SLAMS	4.54	Ultraviolet Absorption (087)	Continuous
*Sulfur Dioxide	Urban	Upwind Background	SPM	4.54	Pulsed Fluorescence (560)	Continuous

Columbia MSA



Classification of Monitoring Type by Site

Site ID	Site Name	$PM_{2.5}$	$PM_{2.5}$ Cont.	Speciation	PM_{10}	Lead	Ozone	SO_2	$NO_2/NO/NO_y$	CO	Carbonyls	SVOC	Precip. Chem.	Precip.	MET
45-063-0008	Irmo	●	O												
45-063-0010	Cayce City Hall				●										
45-079-0007	Parklane (NCore)	●●	●	●	O		●	●	●	●		O	O	O	●
45-079-0020	State Hospital										O	O			
45-079-0021	Congaree Bluff						O						O	O	
45-079-1001	Sandhill						●		O						
TOTAL		3	2	1	2	0	3	1	2	1	1	2	2	2	1
O SPM / Other ● SLAMS ●●/OO duplicate / QA monitors															

Irmo

CSA/MSA: Columbia-Orangeburg-Newberry CSA / Columbia MSA
AQS Site ID: 45-063-0008
Location: 200 Leisure Lane
County: Lexington
Coordinates: +34.051017, -81.15492
Date Established: April 7, 1989
Site Evaluation: November 28, 2017

The Irmo site is located in Lexington County near the Town of Irmo. This site has collocated sampler for $PM_{2.5}$ and a continuous $PM_{2.5}$ monitor. The sample inlets are 39 meters from the nearest road.

This site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2020:
The landowner has requested that this Site be discontinued or relocated. We will submit a request to the EPA to approve the site relocation once it has been identified. Every effort will be made by the Department to assure the continuation of $PM_{2.5}$ data during the transition. The 3-year 1-hour design value for SO_2 at this Site is 3 ppb. Because of the low design value, the SO_2 along with the Carbonyls and the SVOCs may be discontinued in 2020.

Monitors:
(Table continues on next page)

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
$PM_{2.5}$ 88101-1	Neighbor-hood	Population Exposure	SLAMS	4.9	Gravimetric w/ VSCC (145)	1:1
$PM_{2.5}$ 88101-3	Neighbor-hood	Population Exposure	SPM	4.4	FDMS Gravimetric (581)	Continuous

Cayce City Hall

CSA/MSA: Columbia-Orangeburg-Newberry CSA / Columbia MSA

AQS Site ID: 45-063-0010
Location: 1 830 Morlaine Rd.
County: Lexington
Coordinates: +33.96914, -81.06629
Date Established: December 6, 2007
Site Evaluation: November 28, 2017

The Cayce City Hall site is located in the City of Cayce and measures PM_{10}. This site was established to measure PM_{10} concentrations in populated areas and to determine the potential impact of occasional high concentrations on neighborhoods surrounding the industrialized area. The sample inlet is 24 meters from the nearest road.

This site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2020:
There are no changes planned for 2020.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
PM_{10} 81102-1	Neighbor-hood	Population Exposure	SLAMS	2.42	TEOM-Gravimetric (079)	Continuous

Parklane (NCore)

CSA/MSA: Columbia-Orangeburg-Newberry CSA / Columbia MSA
AQS Site ID: 45-079-0007
Location: 8311 Parklane Road
County: Richland
Coordinates: +34.09398, -80.96230
Date Established: April 3, 1980
Site Evaluation: December 19, 2017

The Parklane site is located in north central Richland County within the city limits of Columbia. Parklane was originally sited to provide downwind population exposure measurements at the edge of the Columbia urban area population and has been expanded to support the full complement of NCore parameters. The suite of samplers measure $PM_{2.5}$, speciated $PM_{2.5}$, precipitation chemistry, precipitation, and SVOC. The suite of continuous monitors measure $PM_{2.5}$, Ozone, SO_2, CO, and NO/NO_y. The site also provides support for demonstration, training, and equipment evaluation convenient to the Department's Columbia air laboratory. The sample inlets are 131 meters from the nearest road.

This site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2020:
There are no changes planned for 2020. In October 2016, the EPA revised and eliminated the non-source Lead monitoring requirements at all NCore sites. Since the Lead levels have been extremely low and the sampler is no longer required, the Department discontinued the sampler on January 2, 2019.

Monitors:
*Bolded parameters are an NCore requirement.
(Table continues on next page)

Parameter *Required	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
$PM_{2.5}$ 88101-1	Neighbor-hood	Population Exposure	NCore SLAMS	4.9	Gravimetric w/ VSCC (145)	1:3
$PM_{2.5}$ 88502-3	Neighbor-hood	Population Exposure	SLAMS	4.72	FDMS Gravimetric (183)	Continuous
Collocated $PM_{2.5}$ 88101-2	Neighbor-hood	Population Exposure	QA Collocated SLAMS	5.3	Gravimetric w/ VSCC (145)	1:3
Speciated $PM_{2.5}$	Neighbor-hood	Population Exposure	NCore SLAMS	2.4	CSN Protocol (811,812,826,838,839,841, 842)	1:3

Parameter *Required	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
PM_{10} 85101-1	Urban	Population Exposure	SPM	5.3	Gravimetric (127)	1:3
$PM_{10-2.5}$ 86101-1	Neighbor-hood	Population Exposure	NCore SLAMS	4.4	Gravimetric FRM Pair (176)	1:3
Ozone 44201-1	Urban	Max Ozone Concentra-tion	NCore SLAMS	4.45	Ultraviolet Absorption (087)	Continuous
Sulfur Dioxide 42401-1	Neighbor-hood	Population Exposure/ Other	NCore SLAMS	4.45	Pulsed Fluorescent (560)	Continuous
Nitric Oxide /NO_y 42600-2 42601-2	Neighbor-hood	Population Exposure	NCore SLAMS	10.0	Chemi-luminesence (674)	Continuous
Carbon Monoxide 42101-1	Neighbor-hood	Population Exposure	NCore SLAMS	4.45	Gas filter Correlation (593)	Continuous
SVOC	Neighbor-hood	Population Exposure	SPM	1.4	PUF-GC/MS	1:6
Precipitation chemistry	Neighbor-hood	Regional Transport	Non-regulatory	1.4	Not applicable	Weekly-Tues-Tues
Precipitation	Neighbor-hood	General / Background	SPM	1.1	Tipping bucket (011)	Continuous and Sample
Wind Speed / Direction	Neighbor-hood	Local Conditions	SLAMS	10.0	Instruments for wind speed/wind direction (020)	Continuous

State Hospital

CSA/MSA: Columbia-Orangeburg-Newberry CSA / Columbia MSA
AQS Site ID: 45-079-0020
Location: 2100 Bull Street
County: Richland
Coordinates: +34.01549, -81.03418
Date Established: January 7, 1999
Site Evaluation: November 28, 2017

The State Hospital site is located in Columbia near the intersection of Elmwood Avenue and Bull Street on the grounds of the South Carolina State Hospital. State Hospital has samplers for Carbonyls and SVOC. The sample inlets are 10 meters from the nearest road.

Access to this site may be lost due to recent sale and expected redevelopment of the property.

Changes for 2020:
There are no changes planned for 2020. Continued monitoring at this Site is dependent on funding.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Carbonyls	Middle	Highest Concentration	Non-regulatory	4.2	HPLC Ultraviolet Absorption (102)	1:6
SVOC	Micro	Highest Concentration	Non-regulatory	4.3	EPA610-EPA625	1:6

Congaree Bluff

CSA/MSA: Columbia-Orangeburg-Newberry CSA / Columbia MSA
AQS Site ID: 45-079-0021
Location: 1850 South Cedar Creek Road
County: Richland
Coordinates: +33.81467, -80.78113
Date Established: December 27, 1999
Site Evaluation: February 8, 2018

The Congaree Bluff site is located in southern Richland County. The site is located in a rural setting within the boundaries of the Congaree National Park. The Congaree Bluff monitoring continues a data record begun in 1981 with the establishment of the Congaree Swamp site (45-079-1006). The original site was established in cooperation with the Department of the Interior and the support of the General Assembly to provide long term monitoring in this unique area. The Congaree Swamp site was located in the flood plain and had to be relocated to the current Congaree Bluff site in 2001. Monitoring activities at this site are intended to represent conditions found in the National Park only. The Congaree Bluff site has monitors for Ozone, precipitation, and precipitation chemistry. An *SO_2 monitor is also operated on a two-year rotating schedule that will operate from January 1, 2022 - December 31, 2023. The sample inlets are 188 meters from the nearest road.

The EPA has issued a waiver for 40 CFR Part 58, Appendix E, Section 4-Spacing from Obstructions and Section 11-Summary for tree obstructions. Also, the EPA issued a waiver for 40 CFR Part 58, Appendix E, Section 5-Spacing from Trees and Section 11-Summary for a drip line issue.

Changes for 2020:The SO_2 monitor has been put on a two-year rotating schedule and will begin operation on January 1, 2022.
Monitors:
(Table continues on next page)

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone 44201-1	Neighbor-hood	General / Background	SPM	4.15	Ultraviolet (047)	Continuous
*Sulfur Dioxide 42401-1	Neighbor-hood	General / Background	SPM	4.15	Pulsed Fluorescent (560)	Continuous
Precipita-tion Chemistry	Regional	Regional Transport	Non-regulatory	1.70	IC	Weekly-Tue-Tue
Precipita-tion	Neighbor-hood	General/ Background	SPM	1.6	Tipping Bucket (011)	Continuous and Sample

Sandhill Experimental Station

CSA/MSA: Columbia-Orangeburg-Newberry CSA / Columbia MSA
AQS Site ID: 45-079-1001
Location: 900 Clemson Road
County: Richland
Coordinates: +34.13126, -80.86832
Date Established: January 1, 1959
Site Evaluation: November 15, 2018

The Sandhill Experimental Station Site is located in northeastern Richland County, downwind from the Columbia metropolitan area. This Site is located in a rapidly urbanizing portion of the city of Columbia. The Sandhill Site measures Ozone and NO_2. The sample inlets are 31 meters from the nearest road.

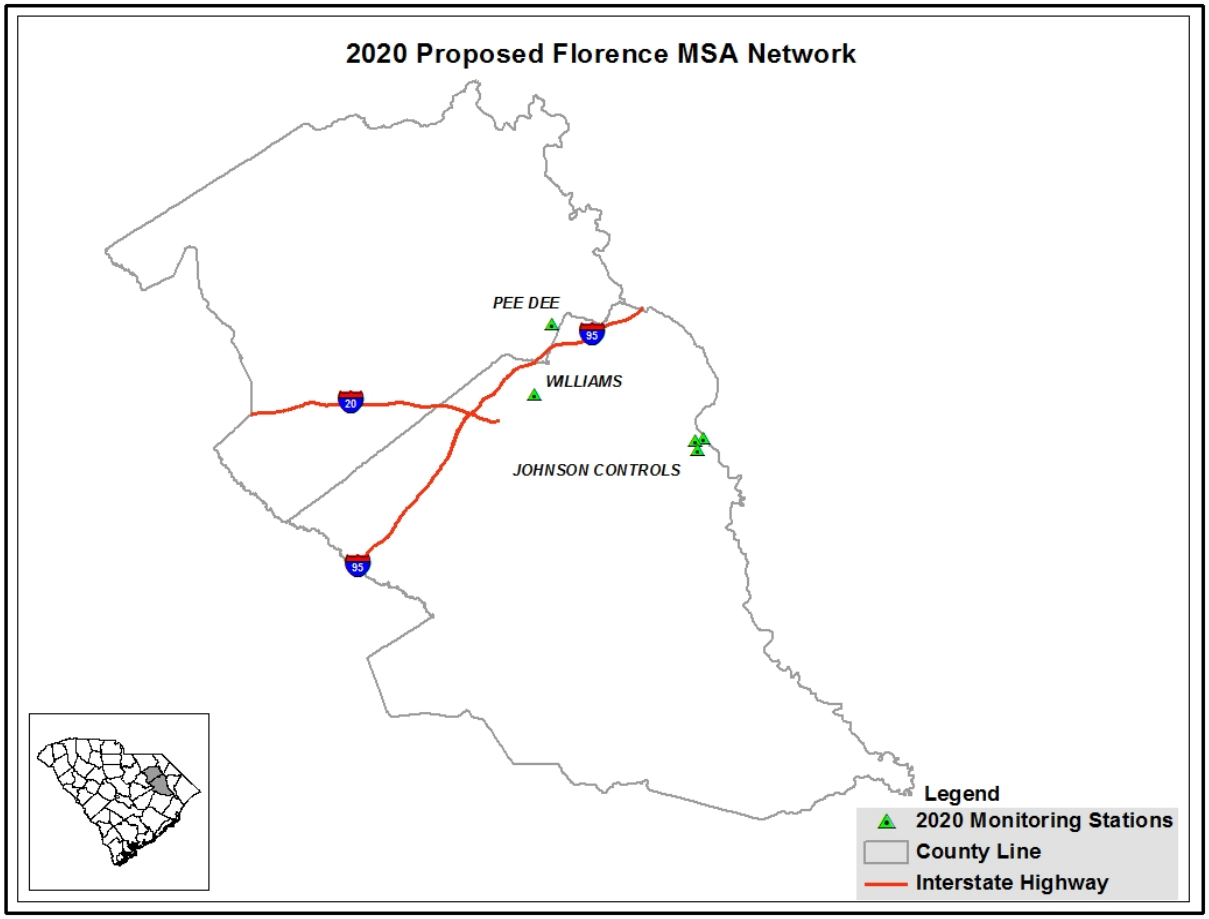
This Site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2020:
There are no changes planned for 2020.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone 44201-1	Urban	Max Ozone Concentration	SLAMS	4.12	Ultraviolet Absorption (087)	Continuous
Nitrogen Dioxide 42602-1	Urban	General / Background Max Precursor Emissions	SPM	4.12	Chemi-luminesence (599)	Continuous

Florence MSA



Classification of Monitoring Type by Site

Site ID	Site Name	$PM_{2.5}$	$PM_{2.5}$ Cont.	Speciation	PM_{10}	Lead	Ozone	SO_2	NO_2	CO
45-031-0003	Pee Dee Exp. Station						●			
45-041-0003	Williams Middle School	●	●							
45-041-8001, 8002, 8003	Johnson Controls					O *				
TOTAL		1	1	0	0	*7	1	0	0	0
O SPM / Other ● SLAMS ●●/OO duplicate / QA monitors * See details on site page for number of samplers										

Pee Dee Experimental Station

CSA/MSA: none/Florence MSA
AQS Site ID: 45-031-0003
Location: 2200 Pocket Road (Darlington)
County: Darlington
Coordinates: +34.28569, -79.74485
Date Established: February 25, 1993
Site Evaluation: January 10, 2019

The Pee Dee Experimental Station Site is located in northeastern Darlington County. This Site serves as the required Ozone monitor in the Florence MSA. The sample inlets are 215.8 meters from the nearest road.

This Site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2020:
There are no changes planned for 2020.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone 44201-1	Urban	Max Ozone Concentration/ General / Background	SLAMS	4.14	Ultraviolet Absorption (087)	Continuous

Williams Middle School

CSA/MSA: none/Florence MSA
AQS Site ID: 45-041-0003
Location: 1119 N. Irby Street
County: Florence
Coordinates: +34.21427, -79.76735
Date Established: August 4, 2008
Site Evaluation: January 17, 2019

The Williams Middle School Site is located in Florence County. The Department established the Williams Site to meet the 40 CFR Part 58 Appendix D requirements for collocated continuous monitoring. The Florence MSA has one $PM_{2.5}$ sampler. A collocated continuous monitor is also required to provide timely reporting of concentrations to the public. The sample inlets are 110 meters from the nearest road.

This Site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2020:
There are no changes planned for 2020.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
$PM_{2.5}$ 88101-1	Neighbor-hood	Population Exposure/ Highest Concentration	SLAMS	2.65	Gravimetric w/ VSCC (145)	1:3
$PM_{2.5}$ 88502-3	Neighbor-hood	Population Exposure	SLAMS	2.43	TEOM Gravimetric 30° C (704)	Continuous

Johnson Controls (3 Sites-JCI Railroad, JCI Entrance, JCI Woods)

CSA/MSA: none/Florence MSA
AQS Site ID: 45-041-8001, 8002, 8003
Location: Liberty Chapel @ Bethel Rd., Liberty Chapel @ Paper Mill Rd., Liberty Chapel @ Paper Mill Rd.
County: Florence
Coordinates: +34.15567, -79.56981; +34.16413, -79.572330; +34.16747, -79.56266
Dates Established: January 4-10, 2012
Site Evaluation: January 10, 2019 (Entrance and Railroad), February 14, 2018 (Woods)

Johnson Controls Incorporated (JCI) is located in Florence County. On May 7, 2010, the Department issued an air synthetic minor construction permit to Johnson Controls Battery Group for the Florence Recycling Center (Permit No. 1040-0129-CA). Under a settlement agreement with several petitioners[13], the Florence Recycling Center will conduct source-oriented ambient Lead monitoring at three locations around the facility.

The JCI samplers are set on a 1:6 sampling schedule. In order to reduce the amount of time that staff must collect the filters, additional samplers have been added to each Site. Sampling frequency may be increased if needed for special investigations.

The 40 CFR Part 58.20 states that compliance to the siting regulations is optional, but it is the Department's intent to meet as many of the Appendix E requirements as possible. The JCI Railroad (45-041-8001) Site has one sampler. There is also a second sampler that runs consecutively. The JCI Railroad (45-041-8001) Site meets 40 CFR Part 58, Appendix E requirements.

The JCI Entrance (45-041-8002) Site has two samplers. There is also a third sampler that runs consecutively. The JCI Entrance (45-041-8002) Site meets all 40 CFR Part 58, Appendix E requirements.

The JCI Woods (45-041-8003) Site has one sampler. There is also a second sampler that runs consecutively. The JCI Woods (45-041-8003) Site meets 40 CFR Part 58, Appendix E requirements except Section 4-Spacing from Obstructions and Section 11-Summary siting requirements due to tree obstructions. However, the tree obstructions in the predominant wind direction toward the source have been removed. A waiver from the EPA is being sought for the tree obstructions to the north.

[13] Coastal Conservation League and League of Women Voters of South Carolina vs South Carolina Department of Health and Environmental Control and Johnson Controls Battery Group, Inc., (State of SC, 2010).

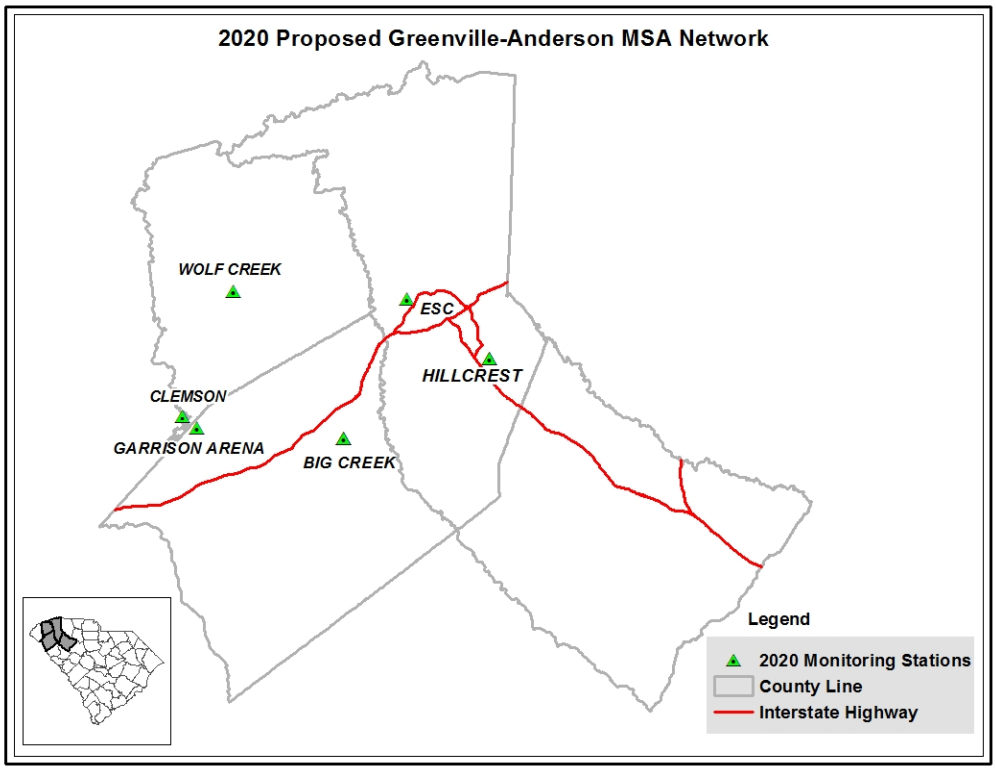
Changes for 2020:
There are no changes planned for 2020.

Monitors:

Site ID	Parameter	Scale	Objective	Desig-nation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
041-8001	Lead 14129	Middle	Source oriented	SPM	2.42	ICP/MS (193)	1:6
*041-8001	Lead 14129	Middle	Source oriented	SPM	2.62	ICP/MS (193)	1:6
041-8002	Lead 14129	Middle	Source oriented	SPM	2.3	ICP/MS (193)	1:6
041-8002	Lead 14129	Middle	Source oriented	SPM	2.3	ICP/MS (193)	1:6
*041-8002	Lead 14129	Middle	Source oriented	SPM	2.6	ICP/MS (193)	1:6
041-8003	Lead 14129	Middle	Source oriented	SPM	2.42	ICP/MS (193)	1:6
*041-8003	Lead 14129	Middle	Source oriented	SPM	2.74	ICP/MS (193)	1:6

*duplicate samplers for better staff utilization

Greenville-Anderson MSA



Classification of Monitoring Type by Site

Site ID	Site Name	$PM_{2.5}$	$PM_{2.5}$ Cont.	Speciation	PM_{10}	Lead	Ozone	SO_2	NO_2	CO	Met
45-007-0005	Big Creek						●				
44-007-0006	Garrison Arena						●				
45-045-0015	Greenville ESC	●	O		●			●	●		
45-045-0016	Hillcrest	● ●					●				
45-077-0002	Clemson CMS						●*				
45-077-0003	Wolf Creek						O*				
TOTAL		3	1	0	1	0	3	1	1	0	0
*When the Garrison Arena Site is operational, the Clemson CMS and the Wolf Creek Sites will be discontinued.											

Big Creek

CSA/MSA: Greenville-Spartanburg-Anderson CSA / Greenville-Anderson MSA
AQS Site ID: 45-007-0005
Location: 215 McAlister Road
County: Anderson
Coordinates: +34.62324, -82.53206
Date Established: June 4, 2008
Site Evaluation: February 15, 2018

The Big Creek Site is located northeast of the City of Anderson. The Site was established to represent maximum Ozone concentrations in the Anderson MSA, downwind of Anderson and upwind background for the Greenville MSA. In February 2013, the MSA definitions were changed, and this Site is now contained within the Greenville-Anderson MSA. The sample inlet is 43.9 feet from the nearest road.

This Site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2020:
In 2020, this Site will run concurrently with the Garrison Arena Site and will be discontinued after the Ozone season.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone 44201-1	Urban	Max Ozone Concentration / Upwind Background	SLAMS	4.1	Ultraviolet Absorption (087)	Continuous

Garrison Arena

CSA/MSA: Greenville-Spartanburg-Anderson CSA / Greenville-Anderson MSA
AQS Site ID: 45-007-0006
Location: Woodburn Road, Pendleton
County: Anderson
Coordinates: 34.63, -82.81
Date Established: PENDING
Site Evaluation: PENDING

The Garrison Arena Site is located on the grounds of Clemson University at the T. Ed Garrison Arena near the northern border of Anderson County. This monitor measures Ozone concentrations upwind of the Greenville-Spartanburg urbanized area.

This Site is XX.X meters from the nearest road.

This Site will meet siting criteria found in 40 CFR Part 58 Appendix E.

Changes for 2020:
This Site is expected to be operational by the March 1, 2020.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone 44201-1	Urban	General / Background	SLAMS		Ultraviolet Absorption (087)	Continuous

Greenville Employment Security Commission (ESC)

CSA/MSA: Greenville-Spartanburg-Anderson CSA / Greenville-Anderson MSA
AQS Site ID: 45-045-0015
Location: 133 Perry Avenue
County: Greenville
Coordinates: +34.84389, -82.41458
Date Established: April 11, 2008
Site Evaluation: November 14, 2017

The Greenville ESC Site is located in the city of Greenville and was established on April 11, 2008. This Site supports a $PM_{2.5}$ sampler and continuous monitoring for $PM_{2.5}$. It also supports PM_{10}, SO_2, NO_2, and measurements for wind speed and wind direction. The sample inlets are 15.0 meters from the nearest road. The EPA Region 4 has selected this Site as one of the locations for a Regional Administrator required NO_2 monitor to help protect susceptible and vulnerable populations, as required by 40 CFR, Part 58, Appendix D, Section 4.3.4.

This Site meets siting criteria found in 40 CFR Part 58 Appendix E except Section 4-Spacing from Obstructions, but there is still 270° of airflow around the probes.

Changes for 2020:
There are no changes planned for 2020.

Monitors:
(Table continues on next page)

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
$PM_{2.5}$ 88101-1	Neighbor-hood	Population Exposure / Welfare Related Impacts/ Collocated	SLAMS	3.5	Gravimetric w/ VSCC (145)	1:1
$PM_{2.5}$ 88101-3	Neighbor-hood	Population Exposure/ Welfare Related Impacts	SPM	4.55	FDMS Gravimetric (581)	Continuous
PM_{10} 81102-1	Neighbor-hood	Population Exposure	SLAMS	4.26	TEOM Gravimetric (079)	Continuous
Sulfur Dioxide 42401-1	Neighbor-hood	Population Exposure	SLAMS	4.54	Pulsed fluorescent (560)	Continuous

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Nitrogen Dioxide 42602-1	Neighbor-hood	Population Exposure	SLAMS	4.54	Chemiluminescence (599)	Continuous

Hillcrest Middle School

CSA/MSA: Greenville-Spartanburg-Anderson CSA / Greenville-Anderson MSA
AQS Site ID: 45-045-0016
Location: 510 Garrison Road
County: Greenville
Coordinates: +34.75185, -82.25670
Date Established: February 17, 2009
Site Evaluation: November 14, 2017

The Hillcrest Middle School Site represents suburban areas near the interstate corridors in the Greenville MSA. Initiated in 2008, this Site was selected as a monitoring location based on results of the Greenville MSA Ozone study. This Site supports an Ozone monitor, a $PM_{2.5}$ sampler, and a collocated $PM_{2.5}$ sampler. The sample inlets are 54 meters from the nearest road.

This Site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2020:
There are no changes planned for 2020.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
$PM_{2.5}$ 88101-1	Urban	Population Exposure	SLAMS	3.41	Gravimetric w/ VSCC (145)	1:3
Collocated $PM_{2.5}$ 88101-2	Urban	Population Exposure	QA Collocated SLAMS	3.5	Gravimetric w/ VSCC (145)	1:3
Ozone 44201-1	Urban	Population Exposure	SLAMS	3.83	Ultraviolet Adsorption (087)	Continuous

Clemson CMS

CSA/MSA: Greenville-Spartanburg-Anderson CSA / Greenville-Anderson MSA
AQS Site ID: 45-077-0002
Location: 106 Hope Well Road
County: Pickens
Coordinates: +34.65366, -82.83865
Date Established: July 14, 1979
Site Evaluation: February 21, 2017

The Clemson CMS Site is located on the grounds of Clemson University near the western border of Pickens County. This monitor measures Ozone concentrations upwind of the Greenville-Spartanburg urbanized area.

This Site was part of the Greenville MSA Ozone study, initiated in 2008 and designed to investigate Ozone concentration variability across the Upstate and provide information to help refine the monitoring network to better meet monitoring objectives. The sample inlets are 33.9 meters from the nearest road.

This Site does not meet siting criteria found in 40 CFR Part 58 Appendix E because there are three trees that are tree obstructions but there is still more than 270° unobstructed air flow around the probe. This Site is scheduled to be discontinued.

Changes for 2020:

Clemson University has asked that the monitoring building be removed from this Site as soon as possible. After the Garrison Arena Monitoring Site has been established, the Clemson Site will be discontinued.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone	Urban	General / Background	SLAMS	4.5	Ultraviolet Absorption (087)	Continuous

Wolf Creek

CSA/MSA: Greenville-Spartanburg-Anderson CSA / Greenville-Anderson MSA
AQS Site ID: 45-077-0003
Location: 901 Allgood Bridge Road
County: Pickens
Coordinates: +34.85154, -82.74458
Date Established: August 10, 2010
Site Evaluation: February 16, 2017

The Wolf Creek Site is located in central Pickens County and was established to gain an understanding of ambient Ozone concentrations in this area.

In 2013, Anderson County was reincorporated into a Greenville-Anderson MSA. The Department will continue to evaluate the Greenville-Spartanburg-Anderson CSA network to determine the configuration of Ozone monitors that most appropriately represents Ozone concentrations in the area. The sample inlet is 56.4 meters from the nearest road.

This Site meets all 40 CFR Part 58, Appendix E requirements.

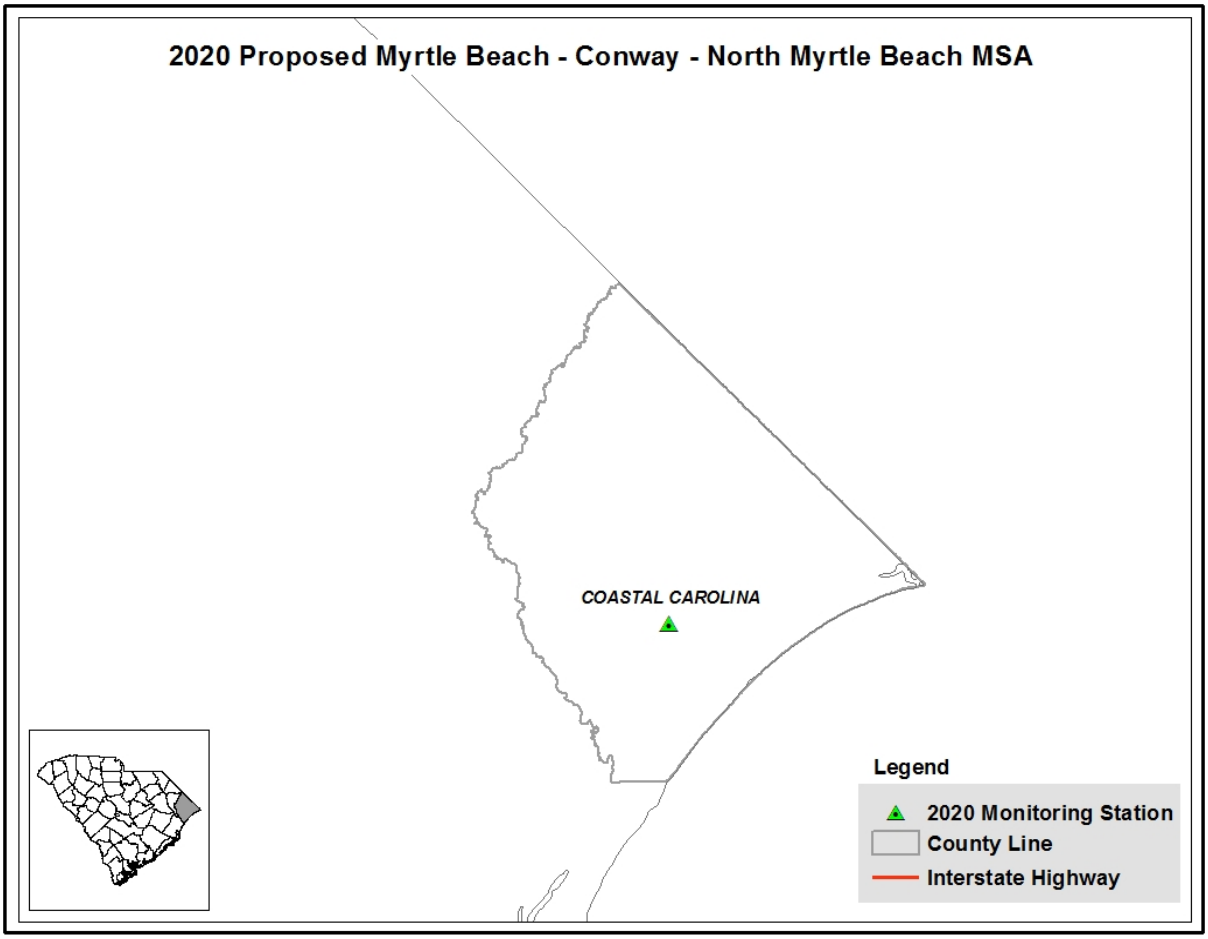
Changes for 2020:

The Department has determined this Ozone monitor is duplicative. After the Garrison Arena Site is established, the Wolf Creek Site will be discontinued.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone	Urban	General / Background	SPM	4.2	Ultraviolet Absorption (087)	Continuous

Myrtle Beach-Conway-North Myrtle Beach, SC-NC MSA



Classification of Monitoring Type by Site

Site ID	Site Name	$PM_{2.5}$	$PM_{2.5}$ Cont.	Speciation	PM_{10}	Lead	Ozone	SO_2	NO_2	CO	MET
45-051-0008	Coastal Carolina						●				
TOTAL		0	0	0	0	0	1	0	0	0	0
O SPM / Other ● SLAMS ●●/OO duplicate / QA monitors											

Coastal Carolina

CSA/MSA: Myrtle Beach-Conway-North Myrtle Beach, SC-NC MSA
AQS Site ID: 45-051-0008
Location: Century Circle
County: Horry
Coordinates: 33.8007, -78.9939
Date Established: June 27, 2016
Site Evaluation: January 17, 2019

In February 2013, OMB combined Horry County with Brunswick County, NC to establish the Myrtle Beach-Conway-North Myrtle Beach, SC-NC MSA. In order to meet the minimum monitoring criteria in 40 CFR Part 58, Appendix D, at least one Ozone monitor is required in the MSA. In conjunction with the State of North Carolina, local government, and stakeholders, Department established the Coastal Carolina Monitoring Site to be representative of expected maximum Ozone concentrations in northeast South Carolina. The sample inlet is 18.3 meters from the nearest road.

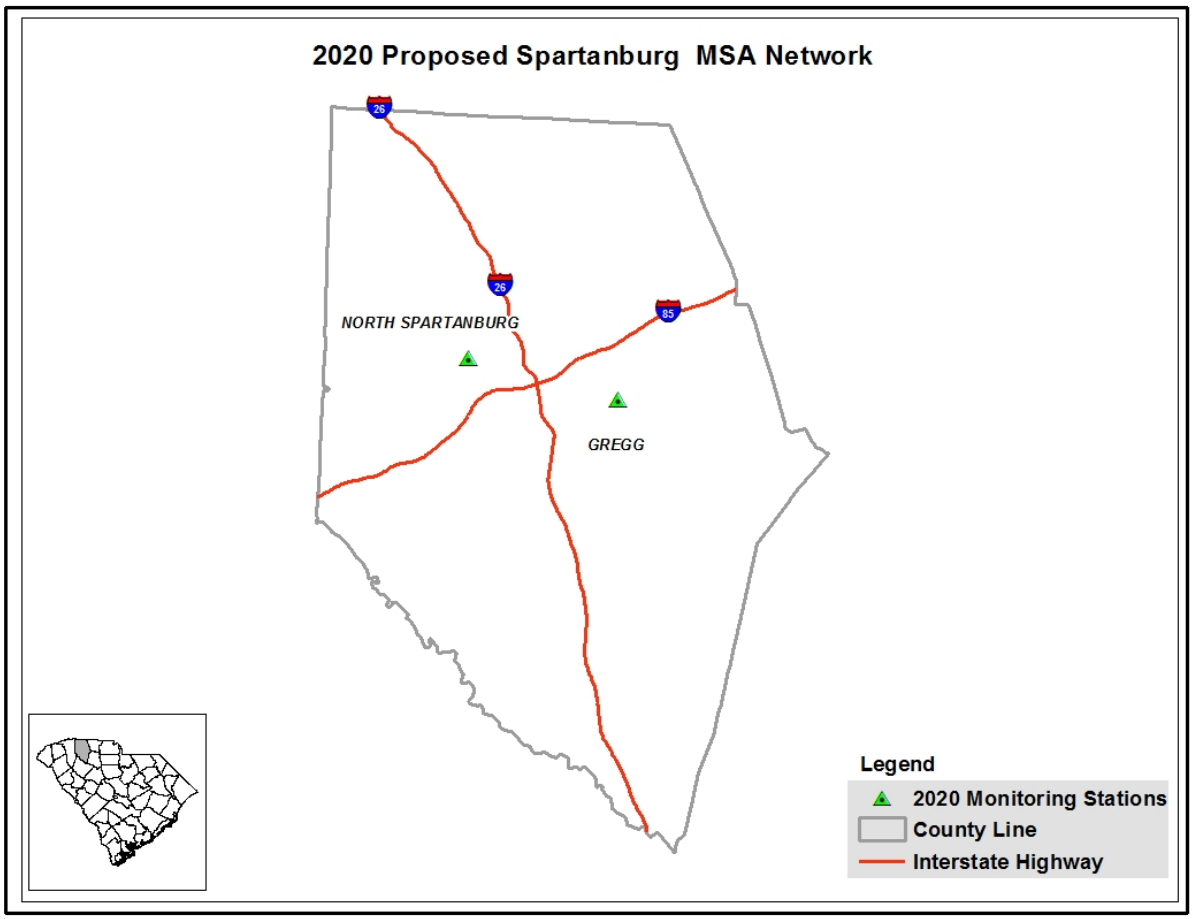
This Site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2020:
There are no changes planned for 2020.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone 44201-1	Urban	Population Exposure	SLAMS	4.1	Ultraviolet (087)	Continuous

Spartanburg MSA



Classification of Monitoring Type by Site

Site ID	Site Name	$PM_{2.5}$	$PM_{2.5}$ Cont.	Speciation	PM_{10}	Lead	Ozone	SO_2	NO_2	CO
45-083-0009	North Spartanburg Fire Station #2						●			
45-083-0011	T.K. Gregg	● O	O							
TOTAL		2	1	0	0	0	1	0	0	0
O SPM / Other ● SLAMS ●●/OO duplicate / QA monitors										

North Spartanburg Fire Station #2

CSA/MSA: Greenville-Spartanburg-Anderson CSA / Spartanburg MSA
AQS Site ID: 45-083-0009
Location: 1556 John Dodd Road
County: Spartanburg
Coordinates: +34.98874, -82.07573
Date Established: April 4, 1990
Site Evaluation: February 5, 2019

The North Spartanburg Fire Station #2 Site is located in rural Spartanburg County, northwest of the City of Spartanburg. This Site supports an Ozone monitor and was established as a maximum Ozone concentration monitor for the Greenville-Spartanburg-Anderson urban area on April 4, 1990. This monitor is designated SLAMS and fulfills the requirement for a maximum concentration site for the Spartanburg MSA. The sample inlet is 92.5 meters from the nearest road.

This Site meets siting criteria found in 40 CFR Part 58 Appendix E except Section 4-Spacing from Obstructions. There is a northwest tree that does not meet the requirements for tree height but there is still more than 270° unobstructed air flow around the probe.

Changes for 2020:
There are no changes planned for 2020.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone 44201-1	Urban	Max Ozone Concentration	SLAMS	4.2	Ultraviolet Absorption (047)	Continuous

T.K. Gregg Recreation Center

CSA/MSA: Greenville-Spartanburg-Anderson CSA / Spartanburg MSA
AQS Site ID: 45-083-0011
Location: 267 Northview Street
County: Spartanburg
Coordinates: +34.95557, -81.92480
Date Established: December 29, 2008
Site Evaluation: February 5, 2019

The T. K. Gregg Recreation Center Site is located in Spartanburg County. With the cooperation of local government and stakeholders, the Department established this $PM_{2.5}$ Site in the downtown Spartanburg area to meet the 40 CFR Part 58, Appendix D requirements for monitoring objectives, reporting and collocation requirements. The Site has a $PM_{2.5}$ intermittent monitor and a collocated continuous $PM_{2.5}$ monitor. There is also a $PM_{2.5}$ intermittent monitor from the Charleston MSA that is being temporarily housed at this Site to meet 40 CFR Part 58 Appendix A collocation requirements. The sample inlets are 48.2 meters from the nearest road.

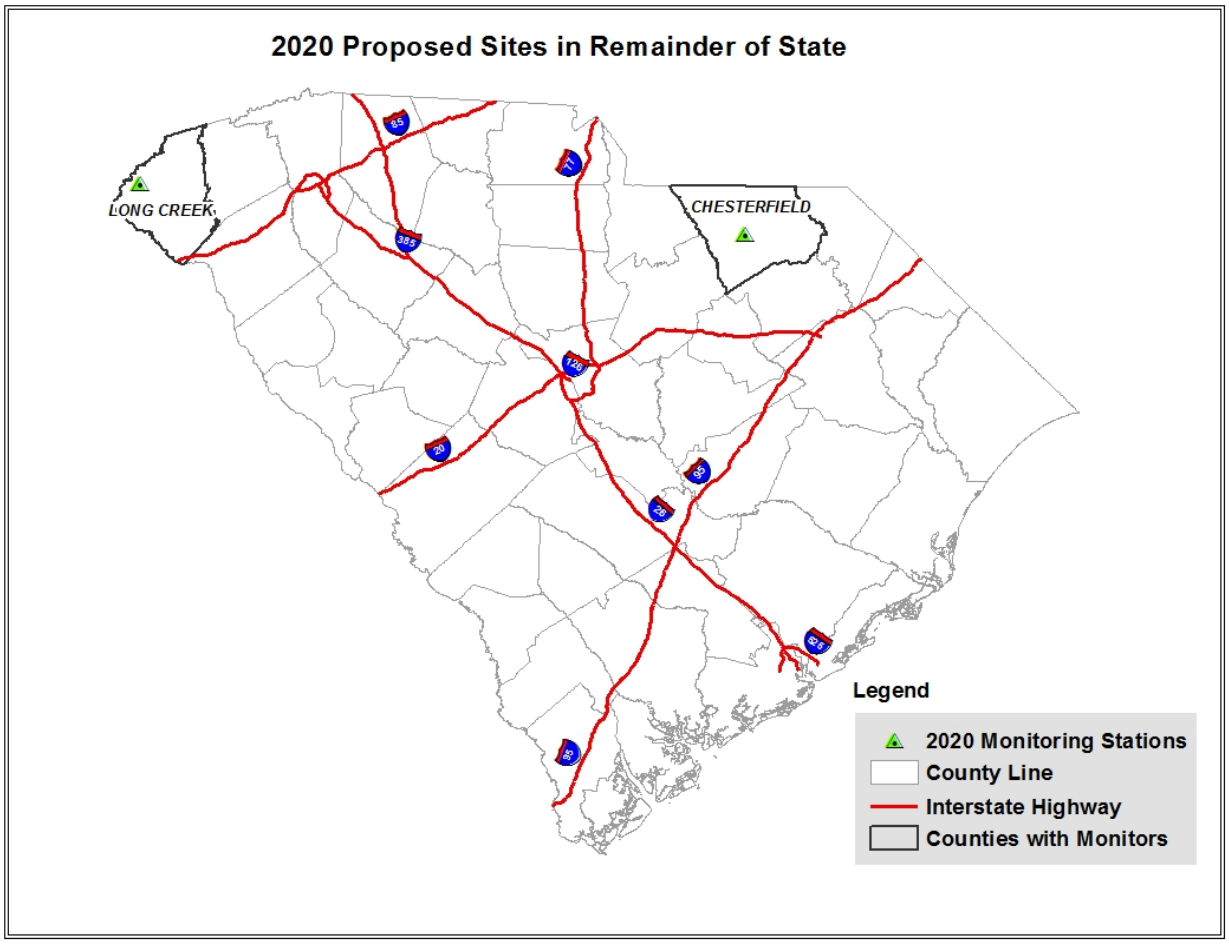
This Site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2020:
There are no changes planned for 2020. The $PM_{2.5}$ sampler was moved temporarily to this Site to fulfill the State collocation requirements. Once the North Charleston Fire Station Monitoring Site is established in the Charleston-North Charleston MSA, this monitor will be moved back to that MSA.

Monitors:

Parameter	Scale	Objective	Designa-tion	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
$PM_{2.5}$ 88101-1	Neighbor-hood	Highest Concentration	SLAMS	2.4	Gravimetric w/VSCC (145)	1:1
$PM_{2.5}$ 88502-3	Neighbor-hood	Highest Concentration	SPM	2.5	TEOM Gravimetric 50°C (702)	Continuous
Collocated $PM_{2.5}$ 88101-2	Neighbor-hood	Population Exposure	QA Collocated SPM	2.5	Gravimetric w/ VSCC (145)	1:6

Remainder of State



Classification of Monitoring Type by Site

Site ID	Site Name	$PM_{2.5}$	$PM_{2.5}$ Cont.	Speciation	PM_{10}	Lead	Ozone	SO_2	NO_2	CO	Carbonyls	SVOC	VOCs	Precipitation
45-025-0001	Chesterfield	●	●		O O		O				O O	O O	O O	O
45-073-0001	Long Creek		O				O							O
TOTAL		1	2	0	2	0	2	0	0	0	2	2	2	2
O SPM / Other ● SLAMS ●●/OO duplicate / QA monitors														

Chesterfield (NATTS)

CSA/MSA: none/none
AQS Site ID: 45-025-0001
Location: SC Hwy 145, McBee (Route 2 Box 100)
County: Chesterfield
Coordinates: +34.61538, -80.19878
Date Established: January 6, 2000
Site Evaluation: November 8, 2018

The Chesterfield Site is located in central Chesterfield County. The Chesterfield Site has continuous monitors for $PM_{2.5}$, Ozone, and meteorological parameters. Sampling is done for $PM_{2.5}$ and collocated samplers for PM_{10} for quality control and to meet 40 CFR Part 58 Appendix A requirements. This Site also serves as the required regional transport site for $PM_{2.5}$. The sample inlets are 43.9 meters from the nearest road.

The Chesterfield Site is also a rural National Air Toxics Trends Site (NATTS) which includes Carbonyls, VOC, SVOC, and metals sampling.

This Site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2020:
There are no changes planned for 2020. There was a correction in the designation of continuous $PM_{2.5}$ from SPM to SLAMS. Also, the $PM_{2.5}$ speciation sampling was discontinued on December 31, 2018.

Monitors:
(Table continues on next page)

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
$PM_{2.5}$ 88101-1	Regional	Regional Transport	SLAMS	2.9	Gravimetric w/ VSCC (145)	1:3
$PM_{2.5}$ 88502-3	Regional	Population Exposure	SLAMS	4.8	FDMS Gravimetric (183)	Continuous
PM_{10} 81102-1	Regional	General / Background	SPM	2.4	Gravimetric (063)	1:6
Collocated PM_{10} 81102-2	Regional	General / Background	QA Collocated SPM	2.4	Gravimetric (063)	1:6
Ozone 44201-1	Regional	General / Background	SPM	4.8	Ultraviolet Absorption (087)	Continuous
Carbonyls	Urban	NATTS	SPM	4.78	DNPH/HPLC	1:6

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Carbonyls	Urban	NATTS	SPM	4.78	DNPH/HPLC	1:6
SVOC	Urban	NATTS	SPM	1.9	PUF/GCMS	1:6
SVOC	Urban	NATTS	SPM	1.9	PUF/GCMS	1:6
Volatile Organic Compounds	Urban	NATTS	Non-regulatory	3.23	Canister/ GCMS	1:6
Volatile Organic Compounds	Urban	NATTS	Non-regulatory	3.28	Canister/ GCMS	1:6
Precipita-tion	Neighbor-hood	General/ Background	SPM	1.73	Tipping Bucket (011)	Continuous

Long Creek

CSA/MSA: Greenville-Spartanburg-Anderson CSA/ none
AQS Site ID: 45-073-0001
Location: Round Mountain Tower Rd.
County: Oconee
Coordinates: +34.805333, -83.23777
Date Established: August 1, 1983
Site Evaluation: October 23, 2018

The Long Creek site is located on Round Mountain in northwest Oconee County. The Long Creek site was also established as part of the Southern Oxidant Study. It provides a unique vantage point for monitoring the impacts of transported pollutants. Long Creek has continuous monitors for Ozone and $PM_{2.5}$. An *SO_2 monitor is also operated on a two-year rotating schedule that will operated from January 1, 2022 - December 31, 2023.The sample inlets are 30 meters from the nearest road.

Due to the importance of measuring region-wide $PM_{2.5}$ and Ozone concentrations, the unique location, and collocated monitoring activity, the Department has determined that current monitoring at this site should be continued.

The 40 CFR Part 58.20 states that compliance to the siting regulations is optional, but it is the Department's intent to meet as many of the Appendix E requirements as possible. This site does not meet the 40 CFR Part 58, Appendix E requirements. Tree cutting has occurred since the last monitoring plan, improving site exposure. However, there are still trees that the Department needs to evaluate for distance from probe relative to height.

Changes for 2020:
There are no changes planned for 2020. The SO_2 monitoring is on a rotating schedule and will be reactivated in 2022.

Monitors:

Parameter	Scale	Objective	Designa-tion	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
$PM_{2.5}$ 88101-3	Urban	General / Background	SPM	4.0	FDMS Gravimetric (581)	Continuous
Ozone 44201-1	Regional	General / Background	SPM	4.18	Ultraviolet (047)	Continuous
*Sulfur Dioxide 42401-1	Regional	Regional Transport	SPM		Pulsed Fluorescent (560)	Continuous
Precipita-tion	Neighbor-hood	General/ Background	SPM	1.73	Tipping Bucket (011)	Continuous and Sample

Network Development

The Monitoring Network provides data to support an array of decisions ranging from development of emissions strategies to protect and improve air quality to the level of activity appropriate for individuals in sensitive populations. To support these varied data users, the network must provide both stable, long-term measures to document trends and rapid reporting of conditions to the public. In response to land use, population, and urban areas growth, the network must be evaluated and adjusted to meet the changing conditions and needs.

The Monitoring Network described in this plan continues to build upon a significant transition from the network that has evolved over the last thirty-five years. It reflects the successes in reducing ambient concentrations of TSP, Lead, CO, NO_2, and SO_2, and the increasing concern about the impact of fine particles and Ozone on public health and the environment.

A series of studies are planned for the major urban areas, as resources permit, to gain better understanding of the air quality, and provide information to improve the monitoring network. In addition to the intensive studies that provide a detailed 'snapshot,' it is intended that SPM sites be established and monitored in rotation to provide regular checks and long term tracking of the trends in air quality in all areas of the state including smaller cities, towns, and rural areas. The implementation of this long term strategy is contingent on sufficient federal funding to support the core-required monitoring and will be developed and evaluated as resources become available. Project plans will be developed for the monitoring and data analysis activity to better define the scope of these strategies prior to implementation. These studies are long-term needs the Department has identified and are important tools for evaluating and improving the representativeness of the ambient air monitoring network and our knowledge of air quality in the State.

Currently, the area where long term strategies are being considered include:

- Charleston Port Monitoring – the Charleston Port Expansion project has a projected completion date now delayed to 2020-2021. The Department will work with local stakeholders to identify and establish an appropriate $PM_{2.5}$ monitoring site to measure ambient pollutant levels before and after port activities commence.

APPENDIX A: Summary of Public Comments Received

Below is a summary of the comments received and the Department's response. A copy of the actual comments (emails and mail) received will be submitted to the EPA Region 4 staff along with the final 2020 Monitoring Plan.

There were no public comments received.

APPENDIX B: Termination and Establishment Requests

The Table below contains information on the monitoring sites the Department has scheduled to terminate or establish.

Site	ID	Date Established	Notes
North Charleston Fire Station	45-019-0020	PENDING	This Site has been established to consolidate the $PM_{2.5}$ sampling from the FAA (45-019-0048) and CPW (45-019-0049) monitoring sites.
FAA Beacon (Tower)	45-019-0048	April 9, 1999	This Site monitors for $PM_{2.5.}$ It has drip line and multiple tree obstructions that cannot be remedied. Therefore, the Department is notifying the EPA of the termination of this site after the establishment of the North Charleston Fire Station (45-019-0020) Monitoring Site.
Charleston Public Works (CPW)	45-019-0049	February 14, 1969	This Site monitors for $PM_{2.5.}$ It has drip line and tree obstructions that cannot be remedied. Therefore, the Department is notifying the EPA of the termination of this site after the establishment of the North Charleston Fire Station (45-019-0020) Monitoring Site.
Ashton	45-029-0002	March 07, 1990	This Site has drip line and tree obstructions that cannot be remedied. Therefore, the Department is notifying the EPA of the termination of this site on January 8, 2019.
Howard #3	45-043-0011	July 15, 2008	The Department has determined that this Site is no longer needed. Therefore, the Department is notifying the EPA of the termination of this site on April 3, 2019.

Establishments and Terminations of Ambient Air Monitoring Sites

Establishment of the North Charleston Fire Station (45-019-0020) Monitoring Site

The Department requests EPA concurrence to establish the North Charleston Fire Station (45-019-0020) Monitoring Site. The North Charleston Fire Station (45-019-0020) Monitoring Site is located in North Charleston off of Carner Avenue on the grounds of the North Charleston Fire Station #2. This Site will meet all of siting criteria in Appendixes A, B, D and E of 40 CFR Part 58 and will consolidate most of the $PM_{2.5}$ monitoring for the Charleston-North Charleston MSA.

History of $PM_{2.5}$ monitoring in the Charleston-North Charleston MSA

The Charleston-North Charleston MSA consists of Berkeley, Charleston, and Dorchester Counties. The $PM_{2.5}$ minimum monitoring requirements are based on population and the latest 3-year design values. The 2018 MSA population has been estimated to be 787,643 people. Table 1 indicates that the 2018 $PM_{2.5}$ 3-year design values are as follows:

Table 1: 2018 $PM_{2.5}$ 3-year design values

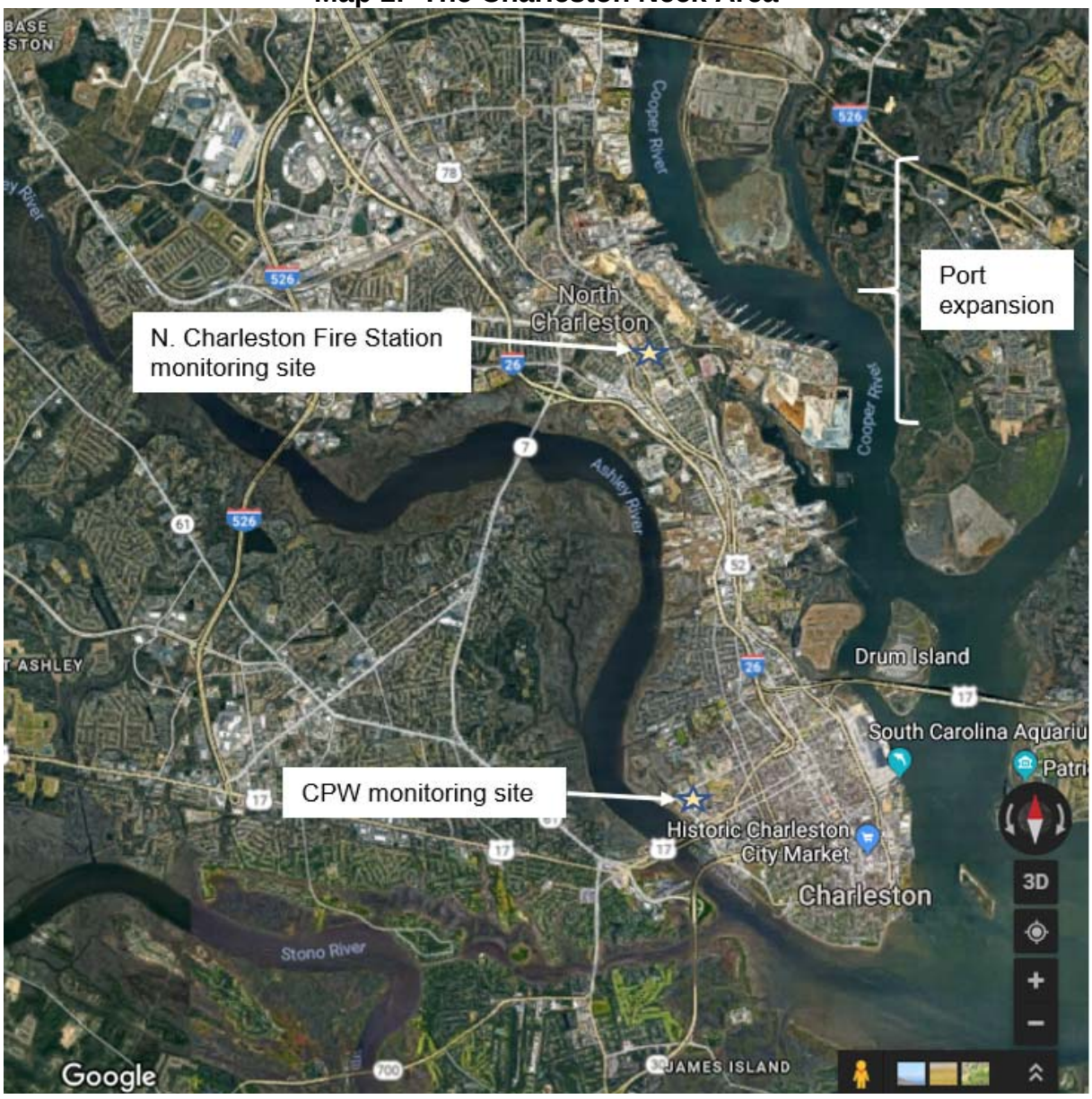
Site Name	Site ID	24-Hour 3-Year Design Value	Annual 3-Year Design Value
FAA	45-019-0048	16	7.2
CPW	45-019-0049	15	7.2

The design values are less than 85 percent of any $PM_{2.5}$ NAAQS. Therefore, the $PM_{2.5}$ minimum monitoring requirements for the Charleston-North Charleston MSA are one SLAMS $PM_{2.5}$ monitor and one continuous $PM_{2.5}$ monitor. In 2019, this MSA had five $PM_{2.5}$ monitors-a continuous SLAMS $PM_{2.5}$ monitor at Cape Romain (45-019-0046) Monitoring Site that is used as the regional background for the State, one SPM $PM_{2.5}$ sampler at the FAA Tower (45-019-0048) Monitoring Site, and the required one continuous $PM_{2.5}$ monitor and one SLAMS $PM_{2.5}$ sampler at Charleston Public Works (CPW) (45-019-0049) Monitoring Site. Two of these monitoring sites-FAA and CPW-have drip line and tree obstruction issues and do not meet the siting criteria in Appendix E to 40 CFR Part 58, Section 4-Spacing From Obstructions, Section 5-Spacing From Trees and Section 11-Summary. Staff has been working with the land owners of the FAA Tower (45-019-0048) Monitoring Site and CPW (45-019-0049) Monitoring Site for several years, but city regulations require that if a tree is removed, it must be replaced with another tree that is approved of by the city. After exhausting all possible avenues, the Department has decided to close both the FAA Tower (45-019-0048) Monitoring Site and the CPW (45-019-0049) Monitoring Site and consolidate the $PM_{2.5}$ sampling to the North Charleston Fire Station (45-019-0020) Monitoring Site. This Site will house a SLAMS $PM_{2.5}$ (88101-1), a duplicate SLAMS $PM_{2.5}$ (88101-2) and a SPM $PM_{2.5}$ (88502-3). The objectives are Population Exposure on the Neighborhood scale. The monitors and the Site will meet all siting requirements of Appendices A, C, D, and E of 40 CFR Part 58.

Site Selection

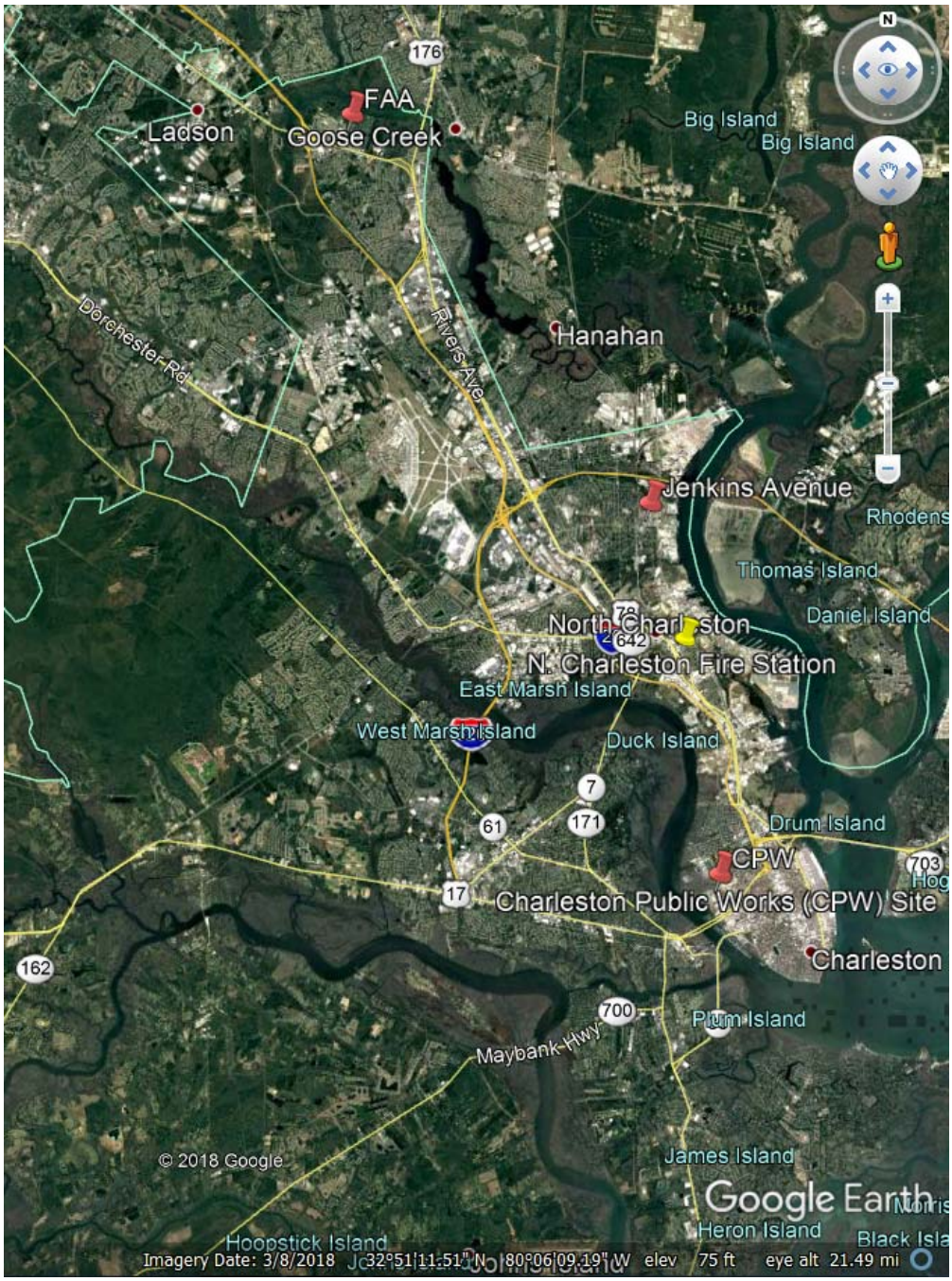
The Charleston "Neck" area is an area in North Charleston that is bordered to the east by the Cooper River and to the west by the Ashley River, with a major Interstate (I-26) running through the middle of the area. Historically, this area has had concerns about the community health because of the heavy industries that are located near a vulnerable population. Also, a Port expansion is under construction. The Department wanted to keep the new site in this general area. As Map 1 indicates, the North Charleston Fire Station (45-019-0020) Monitoring Site is located in the "Neck" area.

Map 1: The Charleston Neck Area



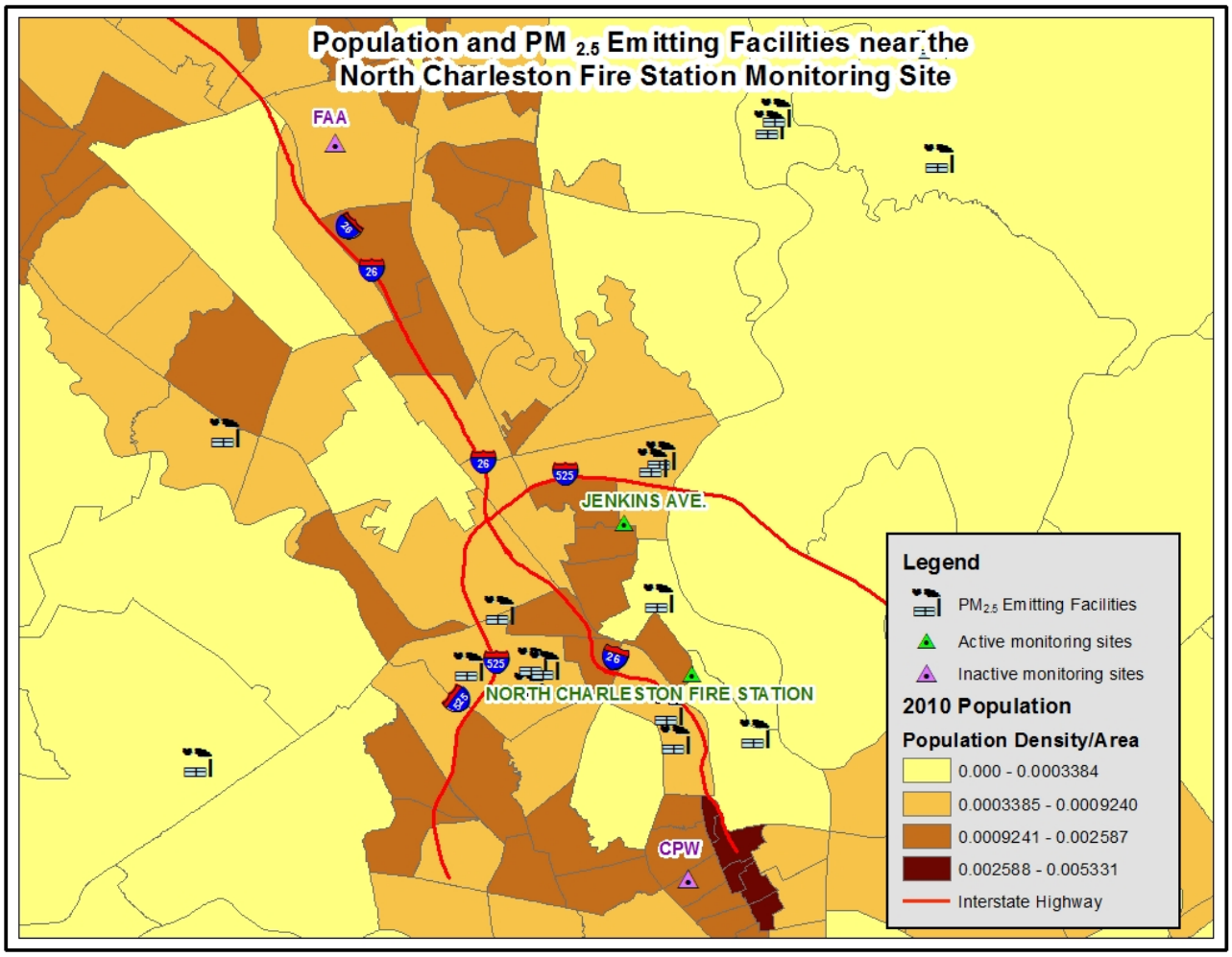
The North Charleston Fire Station #2 is located on a large piece of open land that is expected to be used as a recreational area. It is located between the FAA (45-019-0048) Monitoring Site and the CPW (45-019-0049) Monitoring Site in North Charleston.

Map 2: Aerial map of the North Charleston Fire Station (45-019-0020) Monitoring Site



As shown in Map 3, the population density for the North Charleston Fire Station area is similar to the areas around the FAA (45-019-0048) Monitoring Site and the CPW (45-019-0049) Monitoring Site, but the North Charleston Fire Station Monitoring Site is much closer to more $PM_{2.5}$ emitting facilities.

Map 3: Population Density and $PM_{2.5}$ Emitting Facilities near the North Charleston Fire Station (45-019-0020) Monitoring Site



The City of North Charleston and the Deputy Fire Chief have agreed to allow the Department to use this area without charge for the new monitoring site. As Map 4 indicates, the North Charleston Fire Station (45-019-0020) Monitoring Site will be located on the northwest part of the property, near the Military Magnet Academy.

Map 4: Aerial of the North Charleston Fire Station (45-019-0020) Monitoring Site

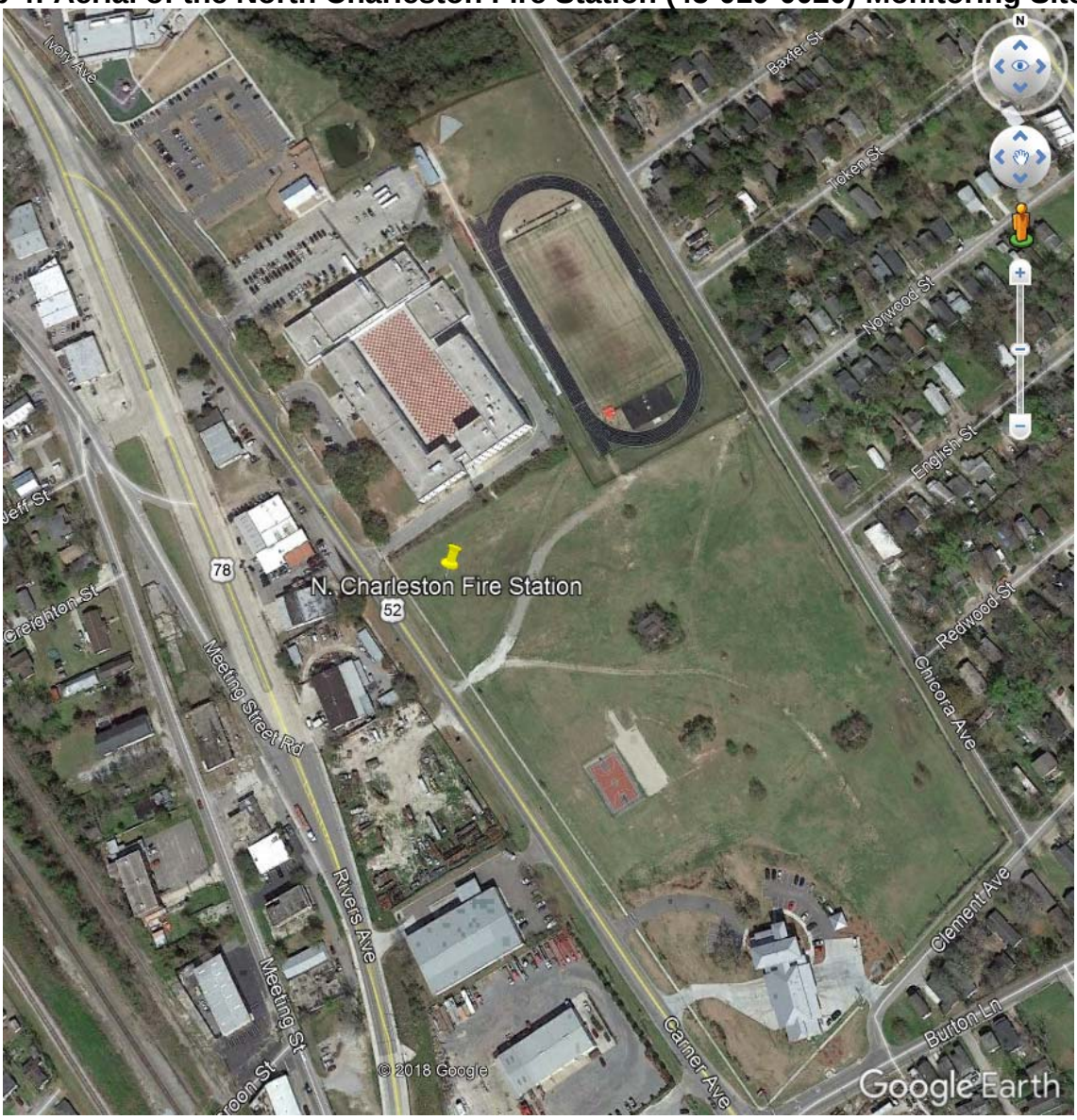


Table 2 shows the potential site in the cardinal directions. This new Site will meet all of the regulatory requirements.

Table 2: Potential Site Pictures from the Cardinal Directions

Looking North

Looking East


Looking South

Looking West

Approaching Site Picture

The North Charleston Fire Station (45-019-0020) Monitoring Site will support three $PM_{2.5}$ monitors, which will include the required intermittent, collocated, and continuous $PM_{2.5}$ monitors to meet the MSA minimum monitoring requirements. Details on the North Charleston Fire Station (45-019-0020) Monitoring Site are given in Table 3 below.

Table 3: North Charleston Fire Station (45-019-0020) Monitoring Site Information

Name	North Charleston Fire Station
Site ID	45-019-0020
Address	2800 Carner Ave, North Charleston, SC 29405
County	Charleston
Name of MSA	Charleston-North Charleston MSA
Name of CSA	None
Coordinates	+32.849, -79.967
Begin Date	To be determined
Parameter	$PM_{2.5}$ (88101-1)
Scale	Neighborhood
Begin Date	To be determined
Objective	Population Exposure
Designation	SLAMS
Probe Height	To be determined
Analysis Method and code	Gravimetric (145)
Sampling Frequency	1:1

Distance to road	~ 38 meters
Distance to drip line	~ 41 meters
Distance to nearest obstruction	~ 49 meters
Parameter	$PM_{2.5}$ (88502-3)
Scale	Neighborhood
Begin Date	To be determined
Objective	Population Exposure
Designation	SPM
Probe Height	To be determined
Analysis Method and code	Gravimetric (145)
Sampling Frequency	1:1
Distance to road	~ 38 meters
Distance to drip line	~ 41 meters
Distance to nearest obstruction	~ 49 meters
Parameter	$PM_{2.5}$ Collocated
Scale	Neighborhood
Begin Date	To be determined
Objective	Population Exposure
Designation	QA Collocated SLAMS
Probe Height	To be determined
Analysis Method and code	Gravimetric (145)
Sampling Frequency	1:6
Distance to road	~ 38 meters
Distance to drip line	~ 41 meters
Distance to nearest obstruction	~ 49 meters

The Department requests EPA concurrence to establish the North Charleston Fire Station (45-019-0020) Monitoring Site.

Termination of the FAA Beacon (45-019-0048) Monitoring Site

The Department requests EPA concurrence to terminate monitoring at the FAA Beacon (45-019-0048) Monitoring Site in 2020 after the North Charleston Fire Station (45-019-0020) Monitoring Site is established. Once the North Charleston Fire Station (45-019-0020) Monitoring Site is operational, either the FAA Beacon (45-019-0048) or CPW (45-019-0049) Monitoring Site will continue to operate for one year before being terminated.

Details on the FAA Beacon (45-019-0048) Monitoring Site are given in Table 4.

Table 4: FAA Beacon (45-019-0048) Monitoring Site Information

Name	FAA Beacon (Tower)
Site ID	45-019-0048
Address	2670 Elms Plantation Blvd, Charleston, SC 29406
County	Charleston
Name of MSA	Charleston-North Charleston MSA
Name of CSA	None
Coordinates	+32.98024, -80.06502
Begin Date	April 9, 1999
Parameter	$PM_{2.5}$ (88101-1)
Scale	Neighborhood
Begin Date	April 9, 1999
Objective	Population Exposure
Designation	SPM
Probe Height	2.35
Analysis Method and code	Gravimetric (145)
Sampling Frequency	1:1
Distance to road	160 meters
Distance to drip line	5.9
Distance to nearest obstruction	11.5

Background

The FAA Beacon (45-019-0048) Monitoring Site is in Charleston County, approximately five miles northwest of the Charleston International Airport near Charleston Southern University. This site has a SPM $PM_{2.5}$ sampler.

Discussion of Applicable Regulations

Under the 40 CFR Part 58.14, Subpart B-System Modification, Section (c) says, “State, or where appropriate, local agency requests for SLAMS monitor station discontinuation, subject to the review of the Regional Administrator, will be approved if **any** of the following criteria are met and if the requirements of Appendix D to this part, if **any**, continue to be met. Other requests for discontinuation may also be approved on a case-by-case basis if discontinuance does not compromise data collection needed for implementation of a

NAAQS and if the requirements of Appendix D to this part, if **any**, continue to be met. The Department examined each of the following criteria.

(c)(1) Any **$PM_{2.5}$**, O_3, CO, PM_{10}, SO_2, Pb, or NO_2 SLAMS monitor which has shown attainment during the previous five years, that has a probability of less than 10 percent of exceeding 80 percent of the applicable NAAQS during the next three years based on the levels, trends, and variability observed in the past, and which is not specifically required by an attainment plan or maintenance plan. In a nonattainment or maintenance area, if the most recent attainment or maintenance plan adopted by the State and approved by EPA contains a contingency measure to be triggered by an air quality concentration and the monitor to be discontinued is the only SLAMS monitor operating in the nonattainment or maintenance area, the monitor may not be discontinued."

As Table 5 indicates, the FAA (45-019-0048) $PM_{2.5}$ monitor does meet this requirement.

Table 5: Ten percent chance of exceeding 80 percent of the applicable NAAQS

$PM_{2.5}$ Standard	2013	2014	2015	2016	2017	Average	Standard Deviation	Upper conf 90	$PM_{2.5}$ NAAQS	Condition Met
3-Year 24-Hour	20	18	16	17	16	17.4	1.67	18.55	35	Yes
3-Year Annual	8.9	8.4	8	7.8	7.3	8.08	0.61	8.50	12	Yes

(c)(2) Any SLAMS monitor for CO, PM_{10}, SO_2, or NO_2 which has consistently measured lower concentrations than another monitor for the same pollutant in the same county (or portion of a county within a distinct attainment area, nonattainment area, or maintenance area, as applicable) during the previous five years, and which is not specifically required by an attainment plan or maintenance plan, if control measures scheduled to be implemented or discontinued during the next five years would apply to the areas around both monitors and have similar effects on measured concentrations, such that the retained monitor would remain the higher reading of the two monitors being compared.

This is not applicable to the FAA (45-019-0048) monitor because it measures $PM_{2.5}$.

(c)(3) For any pollutant, any SLAMS monitor in a county (or portion of a county within a distinct attainment, nonattainment, or maintenance area, as applicable) provided the monitor has not measured violations of the applicable NAAQS in the previous five years, and the approved SIP provides for a specific, reproducible approach to representing the air quality of the affected county in the absence of actual monitoring data.

As Table 6 and Table 7 indicate, the FAA (45-019-0048) $PM_{2.5}$ monitor does meet this requirement.

Table 6: 2013-2017 $PM_{2.5}$ 3-year 24-Hour Design Values

Site Name	Site ID	2013	2014	2015	2016	2017
CPW	45-019-0049	20	16	15	14	15
FAA	45-019-0048	20	18	16	17	16

Table 7: 2013-2017 $PM_{2.5}$ 3-year Annual Design Values

Site Name	Site ID	2013	2014	2015	2016	2017
CPW	45-019-0049	8.2	7.6	7.2	7.3	7.1
FAA	45-019-0048	8.9	8.4	8.0	7.8	7.3

(c)(4) A $PM_{2.5}$ SLAMS monitor which EPA has determined cannot be compared to the relevant NAAQS because of the siting of the monitor, in accordance with §58.30.

This is not applicable to the FAA (45-019-0048) $PM_{2.5}$ monitor.

(c)(5) A SLAMS monitor that is designed to measure concentrations upwind of an urban area for purposes of characterizing transport into the area and that has not recorded violations of the relevant NAAQS in the previous five years, if discontinuation of the monitor is tied to start-up of another station also characterizing transport.

This is not applicable to the FAA (45-019-0048) $PM_{2.5}$ monitor.

(c)(6) A SLAMS monitor not eligible for removal under any of the criteria in paragraphs (c)(1) through (c)(5) of this section **may be moved to a nearby location with the same scale of representation if logistical problems beyond the State's control make it impossible to continue operation at its current site.**

*The FAA (45-019-0048) $PM_{2.5}$ monitor **does** meet this requirement because of the inability to remove or trim trees.*

Since the establishment of this Site, the trees on the adjacent properties to the north and west have grown.

The panorama in Picture 1 was taken in 2015 (at that time it had two $PM_{2.5}$ samplers). All of the area above the red line in the picture are considered obstructions.

Picture 1: Panorama of Site

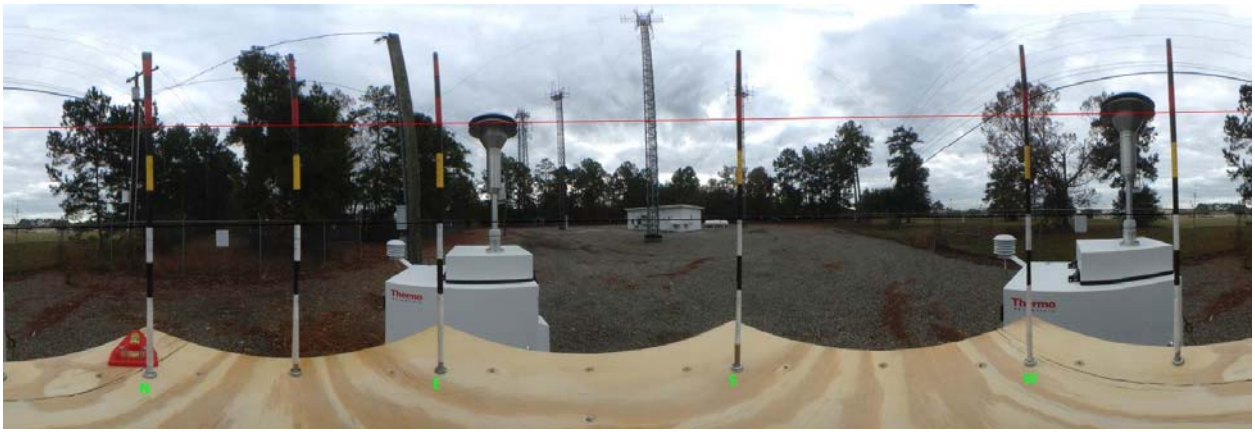


Table 8 indicates that pine trees to the north violate the drip line (5.9 meters). Also, the line of trees to the north and individual trees to the west are obstacles because the tree heights are more than twice the height the obstacle protrudes above the probe and there is not 270° of unobstructed air flow around probe. Therefore, the $PM_{2.5}$ sampler does not meet the siting criteria for 40 CFR Appendix E to Part 58-Section 4(a)-Spacing from Obstructions, Section 5-Spacing from Trees, and Section 11-Summary. The Department has contacted the land owners and attempted to have the trees removed or cut back, but the city regulations require that trees cut down must be replaced with another tree.

Table 8: Pictures of FAA (45-019-0048) Monitoring Site

Tree to North Violate the Drip Line


Line of Trees to the North are Tree Obstructions

Trees to the West are Tree Obstructions

Region 4 has requested that we notify them when the Department plans on terminating SPM monitors which have been in operation for more than 24 months. Therefore, the Department is informing the EPA that the FAA Beacon (45-019-0048) Monitoring Site cannot meet siting criteria and will be discontinued after the establishment of the North Charleston Fire Station (45-019-0020) Monitoring Site. Once the North Charleston Fire Station (45-019-0020) Monitoring Site is operational, either the FAA Beacon (45-019-

0048) or CPW (45-019-0049) Monitoring Site will continue to operate for one year before being terminated.

Termination of the Charleston Public Works (45-019-0049) Monitoring Site

The Department requests EPA concurrence to terminate monitoring at the Charleston Public Works (CPW) (45-019-0049) Monitoring Site after the North Charleston Fire Station (45-019-0020) is established. Once the North Charleston Fire Station (45-019-0020) Site is operational, either the FAA Beacon (45-019-0048) or CPW (45-019-0049) Monitoring Site will continue to operate for one year before being terminated. The Site does not meet drip line or obstacle siting requirements and the situation cannot be remedied. The North Charleston Fire Station (45-019-0020) Site will house the $PM_{2.5}$ monitors from the Charleston Public Works (CPW) (45-019-0049) Monitoring Site.

Details on the CPW (45-019-0049) Monitoring Site are given in Table 9.

Table 9: CPW (45-019-0049) Monitoring Site Information

Name	Charleston Public Works (CPW)
Site ID	45-019-0049
Address	360 Fishburne Street, Charleston, SC 29403
County	Charleston
Name of MSA	Charleston-North Charleston MSA
Name of CSA	None
Coordinates	+32.79097, -79.95871
Begin Date	November 20, 1998
Parameter	$PM_{2.5}$ (88101-1)
Scale	Neighborhood
Begin Date	November 26, 1998
Objective	Population Exposure
Designation	SLAMS
Probe Height	2.25
Analysis Method and code	Gravimetric (145)
Sampling Frequency	1:1
Distance to road	24.8
Distance to drip line	4.43
Distance to nearest obstruction	9.2
Parameter	$PM_{2.5}$ (88502-3)
Scale	Neighborhood
Begin Date	February 26, 2008
Objective	Population Exposure
Designation	SPM
Probe Height	2.74
Analysis Method and code	TEOM Gravimetric 50°C (702)
Sampling Frequency	Hourly, continuous
Distance to road	24.8

Distance to drip line	5.2
Distance to nearest obstruction	10.4

Background

The CPW (45-019-0049) Monitoring Site is located on the western side of the Charleston peninsula near downtown Charleston. This Site supports a SPM continuous $PM_{2.5}$ sampler and a SLAMS $PM_{2.5}$ monitor. These monitors do not meet siting criteria for 40 CFR Appendix E to Part 58, Section 4-Spacing from Obstructions and 40 CFR Appendix E to Part 58, Section 5-Spacing from Trees. The 8º north-northeast tree is so close to the monitor that the inclinometer could not measure the top of the tree from the $PM_{2.5}$ intermittent sampler. Also, the drip line for the 8º north-northeast live oak tree was less than 10 meters for both the $PM_{2.5}$ continuous and the $PM_{2.5}$ intermittent samplers. The Department has reached out to the land owners on numerous occasions, but because of the city regulations, an agreement on corrective action has not been reached.

Discussion of Applicable Regulations

Under the 40 CFR Part 58.14, Subpart B-System Modification, Section (c) says, "State, or where appropriate, local agency requests for SLAMS monitor station discontinuation, subject to the review of the Regional Administrator, will be approved if **any** of the following criteria are met and if the requirements of Appendix D to this part, if **any**, continue to be met. Other requests for discontinuation may also be approved on a case-by-case basis if discontinuance does not compromise data collection needed for implementation of a NAAQS and if the requirements of Appendix D to this part, if **any**, continue to be met. The Department examined each of the following criteria.

(c)(1) Any $PM_{2.5}$, O_3, CO, PM_{10}, SO_2, Pb, or NO_2 SLAMS monitor which has shown attainment during the previous five years, that has a probability of less than 10 percent of exceeding 80 percent of the applicable NAAQS during the next three years based on the levels, trends, and variability observed in the past, and which is not specifically required by an attainment plan or maintenance plan. In a nonattainment or maintenance area, if the most recent attainment or maintenance plan adopted by the State and approved by EPA contains a contingency measure to be triggered by an air quality concentration and the monitor to be discontinued is the only SLAMS monitor operating in the nonattainment or maintenance area, the monitor may not be discontinued."

As Table 10 indicates, the CPW (45-019-0049) $PM_{2.5}$ monitor does meet this requirement.

Table 10: Ten percent chance of exceeding 80 percent of the applicable NAAQS

$PM_{2.5}$ Standard	2013	2014	2015	2016	2017	Average	Standard Deviation	Upper conf 90	$PM_{2.5}$ NAAQS	Condition Met
3-Year 24-Hour	20	16	15	14	15	16	2.35	17.61	35	Yes
3-Year Annual	8.2	7.6	7.2	7.3	7.1	7.48	0.44	7.78	12	Yes

(c)(2) Any SLAMS monitor for CO, PM_{10}, SO_2, or NO_2 which has consistently measured lower concentrations than another monitor for the same pollutant in the same county (or portion of a county within a distinct attainment area, nonattainment area, or maintenance area, as applicable) during the previous five years, and which is not specifically required by an attainment plan or maintenance plan, if control measures scheduled to be implemented or discontinued during the next five years would apply to the areas around both monitors and have similar effects on measured concentrations, such that the retained monitor would remain the higher reading of the two monitors being compared.

This is not applicable to the CPW (45-019-0049) monitor because it measures $PM_{2.5}$.

(c)(3) For any pollutant, any SLAMS monitor in a county (or portion of a county within a distinct attainment, nonattainment, or maintenance area, as applicable) provided the monitor has not measured violations of the applicable NAAQS in the previous five years, and the approved SIP provides for a specific, reproducible approach to representing the air quality of the affected county in the absence of actual monitoring data.

As Table 11 and Table 12 indicate, the CPW (45-019-0049) $PM_{2.5}$ monitor does meet this requirement.

Table 11: 2013-2017 $PM_{2.5}$ 3-year 24-Hour Design Values

Site Name	Site ID	2013	2014	2015	2016	2017
CPW	45-019-0049	20	16	15	14	15
FAA	45-019-0048	20	18	16	17	16

Table 12: 2013-2017 $PM_{2.5}$ 3-year Annual Design Values

Site Name	Site ID	2013	2014	2015	2016	2017
CPW	45-019-0049	8.2	7.6	7.2	7.3	7.1
FAA	45-019-0048	8.9	8.4	8.0	7.8	7.3

(c)(4) A $PM_{2.5}$ SLAMS monitor which EPA has determined cannot be compared to the relevant NAAQS because of the siting of the monitor, in accordance with §58.30.

This is not applicable to the CPW (45-019-0049) $PM_{2.5}$ monitor.

(c)(5) A SLAMS monitor that is designed to measure concentrations upwind of an urban area for purposes of characterizing transport into the area and that has not recorded violations of the relevant NAAQS in the previous five years, if discontinuation of the monitor is tied to start-up of another station also characterizing transport.

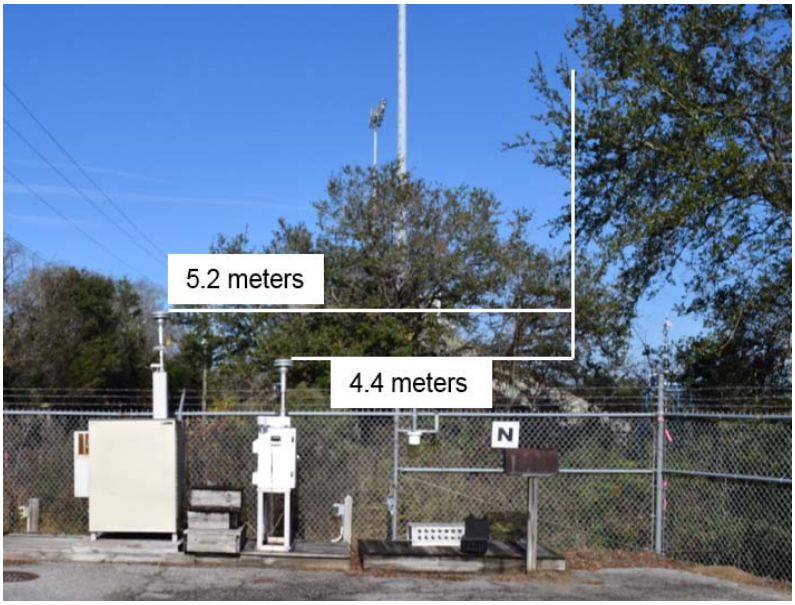
This is not applicable to the CPW (45-019-0049) $PM_{2.5}$ monitor.

(c)(6) A SLAMS monitor not eligible for removal under any of the criteria in paragraphs (c)(1) through (c)(5) of this section **may be moved to a nearby location with the same**

scale of representation if logistical problems beyond the State's control make it impossible to continue operation at its current site.

*The CPW (45-019-0049) $PM_{2.5}$ monitor **does** meet this requirement because of drip line and tree obstructions. The northeast tree is too close to the monitors and is an obstruction to both monitors (Picture 2). If the monitors are moved over, the southwest trees violate the drip line (Picture 3).*

Picture 2: Violation of Drip Line



Picture 3: Southwest Trees

Therefore, since the CPW (45-019-0049) Monitoring Site cannot meet siting criteria, the Department ask concurrence from EPA that this Site be discontinued after the

establishment of the North Charleston Fire Station (45-019-0020) Monitoring Site. Once the North Charleston Fire Station (45-019-0020) Monitoring Site is operational, either the FAA Beacon (45-019-0048) or CPW (45-019-0049) Monitoring Site will continue to operate for one year before being terminated.

Termination of the Ashton (45-029-0002) Site

The Ashton (45-029-0002) Monitoring Site was established on March 7, 1990 in northwestern Colleton County. Colleton County is not in an MSA. This Site has SPM samplers that monitor for concentrations of $PM_{2.5}$ and Ozone. Details on the Ashton (45-029-0002) Monitoring Site are given in Table 13.

Table 13: Ashton (45-029-0002) Monitoring Site Information

Name	Ashton
Site ID	45-029-0002
Address	Ashton Road (S-13-18), Islandton
County	Colleton
Name of MSA	None
Name of CSA	None
Coordinates	+33.00784 -80.96504
Begin Date	March 07, 1990
Parameter	$PM_{2.5}$ (88502-3)
Scale	Regional
Begin Date	June 24, 1999
Objective	General / Background
Designation	SPM
Probe Height	4.3
Analysis Method and code	TEOM Gravimetric 50°C (702)
Sampling Frequency	Continuous
Distance to road	8.4
Distance to drip line	6.9
Distance to nearest obstruction	10.9
Parameter	Ozone (44201-2)
Scale	Urban
Begin Date	March 08, 1990
Objective	General / Background
Designation	SPM
Probe Height	4.7
Analysis Method and code	Ultraviolet (047)
Sampling Frequency	Continuous
Distance to road	8.4
Distance to drip line	9.2
Distance to nearest obstruction	12.8

As Table 14 indicates, The Ozone design values have been well below the NAAQS.

Table 14: 3-Year Ozone Design Values for the Ashton (45-029-0002) Monitoring Site

Site Name	Parameter	2013	2014	2015	2016	2017
Ashton	Ozone	0.056	0.055	0.054	0.056	0.055

The trees to the north and to the south violate the drip lines for both the $PM_{2.5}$ and Ozone monitors. Also, the trees to the north and south are obstructions. The Department has reached out to the land owners numerous times and a reasonable solution to the tree issue cannot be found.

Region 4 has requested that the Department notify them of any planned terminations of SPM's which have been in operation for more than 24 months. Therefore, the Department is notifying the EPA that the Ashton (45-029-0002) Monitoring Site was discontinued on January 8, 2019.

Termination of the Howard #3 (45-043-0011) Site

The Howard #3 (45-043-0011) Monitoring Site was established on July 15, 2008 in Georgetown County to support a SPM PM_{10} sampler.

Details on the Howard #3 (45-043-0011) Monitoring Site are given in Table 15.

Table 15: Howard #3 (45-043-0011) Monitoring Site Information

Name	Howard #3
Site ID	45-043-0011
Address	594 Gilbert Street, Georgetown
County	Georgetown
Name of MSA	None
Name of CSA	Myrtle Beach-Conway SC, NC CSA
Coordinates	+33.36892, -79.29662
Begin Date	July 15, 2008
Parameter	PM_{10}
Scale	Neighborhood
Begin Date	July 16, 2008
Objective	Population Exposure/ Highest Concentration
Designation	SPM
Probe Height	2.22
Analysis Method and code	TEOM Gravimetric (079)
Sampling Frequency	Continuous
Distance to road	49.7 meters
Distance to drip line	None
Distance to nearest obstruction	None

Over the last ten years, this sampler has had no exceedances. Table 16 indicates the weighted arithmetic means for 2009-2018.

Table 16: Howard #3 2009-2018 PM_{10} Weighted Arithmetic Means

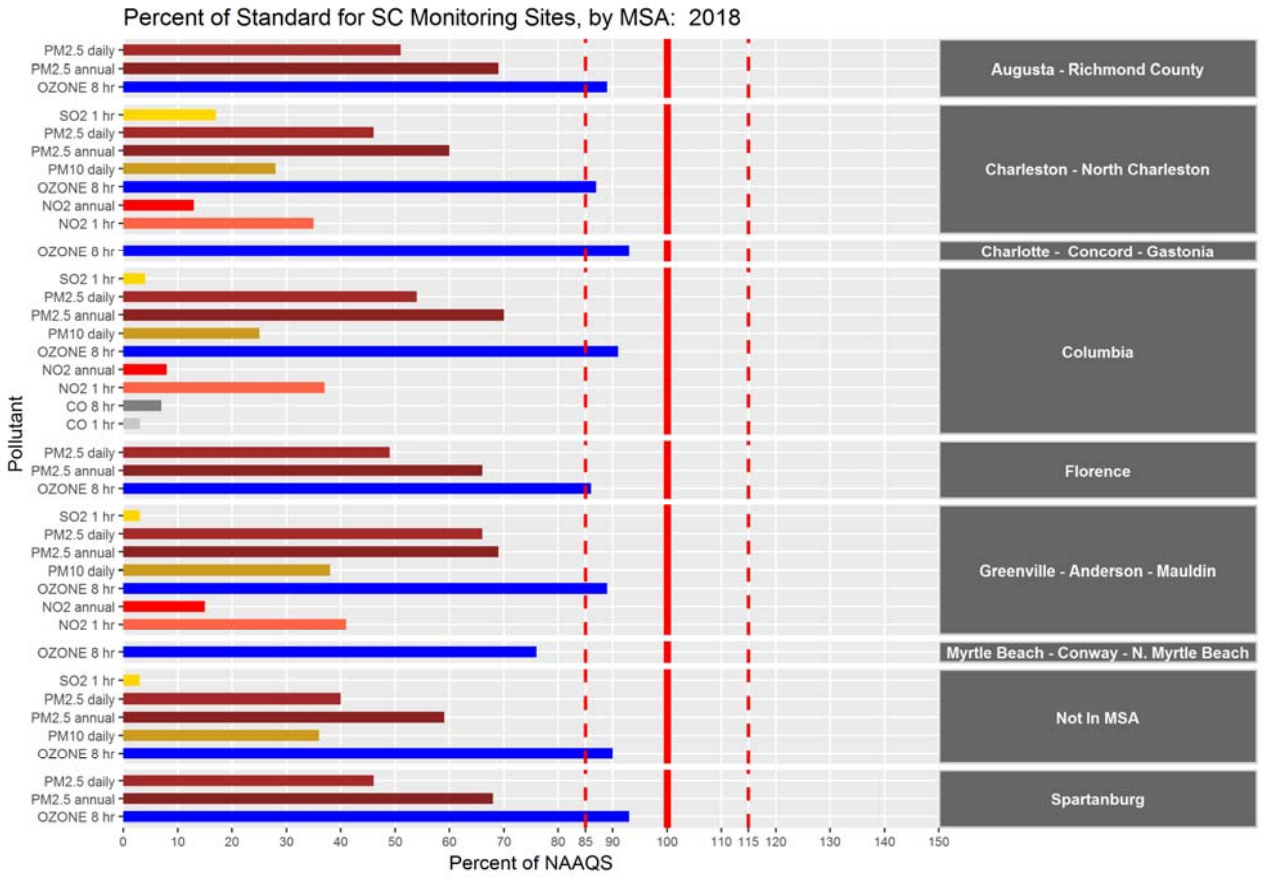
Howard #3 2009-2018 PM_{10} Weighted Arithmetic Means	
Year	**Wtd Arith Mean**
2009	19.9
2010	19.4
2011	21.9
2012	19.9
2013	17.8

Howard #3 2009-2018 PM_{10} Weighted Arithmetic Means	
Year	**Wtd Arith Mean**
2014	19.3
2015	18.4*
2016	18.1*
2017	18.4*
2018	17.4
Note: The * indicates that the mean does not satisfy summary criteria.	

Region 4 has requested that the Department notify them of any planned terminations of SPM's which have been in operation for more than 24 months. Therefore, the Department is notifying the EPA that the Howard #3 (45-043-0011) Monitoring Site was discontinued on April 3, 2019.

APPENDIX C: Design Value Graphs

The following graph demonstrates the highest design value for each criteria pollutant in each MSA in comparison with its NAAQS. The MSAs are listed on the far right. Each individual criteria pollutant and averaging time are listed on the far left. The colored bar after the criteria pollutant's name shows the highest 2017 design value. The solid red vertical line is the NAAQS standard. The red dash lines show 15 percent of the Standard (85% and 115%).



APPENDIX D: Site Evaluations Summary for CFR 40 Part 58, Appendix E Table

Site Evaluations are conducted yearly on each monitoring site to ensure compliance to requirements found in CFR 40 Part 58, Appendix E. After appropriate administrative review, the Site Evaluations are sent to the EPA Region 4. The following tables summarize information about the latest Site Evaluations for each monitoring site.

The first table gives the column number and the shortened Column Name listed in the columns of the second table. It also gives the Section number and the regulatory requirement it represents from the CFR 40, Part 58, Appendix E. The second table lists each monitoring site, their individual criteria pollutant monitors, and the fulfillment and/or measurements of the CFR 40 Part 58, Appendix E requirements. For brevity, the column titles in the second table have been shortened as follows:

Column	Column Name	CFR 40 Part 58, Appendix E Requirements
Column 1:	Site ID, Site Name and Date Visited	Site Identification information and date the Site Evaluation was conducted.
Column 2:	Parameter	Criteria Pollutant.
Column 3:	Sampling Train	Section 9. For reactive gases, is sampling train made of borosilicate glass, FEP Teflon® or their equivalent?
Column 4:	Sampling Time	Section 9. For reactive gases, is sampling time <20 seconds?
Column 5:	Probe Height	Section 2. Horizontal and Vertical Placement: Height from ground to probe must be 2-15 meters.
Column 6:	Support Structure	Section 2. Horizontal and Vertical Placement: Is Horizontal and vertical distance from supporting structure >1 meter.
Column 7:	Collocation Placement	Section 11. Horizontal and Vertical Placement: Collocated monitors must be within 4 meters of each other.
Column 8:	Flow Rates	Section 11. Horizontal and Vertical Placement: For PM collocation, flow rates greater than 200 liters/min must be at least 2 meters apart or at least 1 meter flow rates for less than 200 liters/min.
Column 9:	Minor Sources	Section 3. Spacing from Minor Sources: Probe should be away from minor sources.
Column 10:	Obstructions*	Section 4. Spacing from Obstructions: Distance from probe to obstacle must be at least twice the height the obstacle protrudes above the probe.
Column 11:	Airflow	Section 4. Spacing from Obstructions: Must have unrestricted airflow 270 degrees around probe.
Column 12:	Dripline	Section 5. Spacing from Trees: Distance from dripline of trees to probe must be <10 meters.
Column 13:	Roadway	Section 6. Spacing from Roadways: Does it meet distance from roadway to probe?

*The monitor is still considered in compliance if the distance from probe to obstacle is not at least twice the height the obstacle protrudes above the probe but there is still 270° of airflow around probe.

Site ID, Site Name and Date Visited	Param-eter	Samp-ling Train	Samp-ling Time	Probe Height (m)		Support Structure	Colloca-tion Place-ment (m)		Flow Rate	Minor Sources	*Obstruc tions	Air-flow	Dripline (m)		Roadway (m)	
003-0003 Jackson	Ozone	Yes	Yes	Yes	3.35	Yes	N/A	N/A	N/A	Yes	*No	Yes	Yes	11.5	Yes	128.0

Site ID, Site Name and Date Visited	Param-eter	Samp-ling Train	Samp-ling Time	Probe Height (m)		Support Structure	Colloca-tion Place-ment (m)		Flow Rate	Minor Sources	*Obstruc tions	Air-flow	Dripline (m)		Roadway (m)	
10/25/2018																
037-0001 Trenton 10/25/2018	$PM_{2.5}$	N/A	N/A	Yes	4.72	Yes	N/A	N/A	Yes	Yes	Yes	Yes	Yes	No trees	Yes	30.3
037-0001 Trenton 10/25/2018	$PM_{2.5}$ C	N/A	N/A	Yes	4.57	Yes	N/A	N/A	Yes	Yes	Yes	Yes	Yes	No trees	Yes	30.3
037-0001 Trenton 10/25/2018	Ozone	Yes	Yes	Yes	3.45	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	No trees	Yes	30.3
015-0002 Bushy Park 5/15/2019	Ozone	Yes	Yes	Yes	3.13	Yes	N/A	N/A	N/A	Yes	No	No	No	1.40	Yes	15.2
019-0003 Jenkins Ave. 2/13/2019	PM_{10}	N/A	N/A	Yes	4.1	Yes	N/A	N/A	Yes	Yes	Yes	Yes	Yes	16.0	Yes	33.5
019-0003 Jenkins Ave. 2/13/2019	SO_2	Yes	Yes	Yes	4.68	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	16.0	Yes	33.5
019-0003 Jenkins Ave. 2/13/2019	NO_2	Yes	Yes	Yes	4.68	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	16.0	Yes	33.5
019-0046 Cape Romain 5/02/2019	$PM_{2.5}$	N/A	N/A	Yes	4.71	Yes	N/A	N/A	N/A	Yes	No	No	Yes	15.5	Yes	86.0
019-0046 Cape Romain	Ozone	Yes	Yes	Yes	4.22	Yes	N/A	N/A	N/A	Yes	No	No	Yes	12.6	Yes	86.0

Site ID, Site Name and Date Visited	Param-eter	Samp-ling Train	Samp-ling Time	Probe Height (m)		Support Structure	Colloca-tion Place-ment (m)		Flow Rate	Minor Sources	*Obstruc tions	Air-flow	Dripline (m)		Roadway (m)	
019-0046 Cape Romain 5/02/2019	SO_2	Yes	Yes	Yes	4.10	Yes	N/A	N/A	N/A	Yes	No	No	Yes	12.6	Yes	86.0
019-0048 FAA 1/30/2019	$PM_{2.5}$	N/A	N/A	Yes	2.42	Yes	N/A	N/A	Yes	Yes	No	Yes	No	5.9	Yes	160.0
019-0049 CPW 1/30/2019	$PM_{2.5}$	N/A	N/A	Yes	2.25	Yes	N/A	N/A	Yes	Yes	*No	Yes	No	4.43	Yes	24.8
019-0049 CPW 1/30/2019	$PM_{2.5}$ C	N/A	N/A	Yes	2.83	Yes	N/A	N/A	Yes	Yes	*No	Yes	No	5.63	Yes	24.8
091-0008 York Landfill 2/28/2019	Ozone	Yes	Yes	Yes	4.54	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	26.40	Yes	34.8
091-0008 York Landfill 2/28/2019	SO_2	Yes	Yes	Yes	4.54	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	26.40	Yes	34.8
063-0008 Irmo 6/19/2019	$PM_{2.5}$ C	N/A	N/A	Yes	4.87	Yes	Yes	1.4	Yes	Yes	Yes	Yes	Yes	N/A	Yes	39.0
063-0008 Irmo 6/19/2019	$PM_{2.5}$	N/A	N/A	Yes	4.6	Yes	Yes	1.4	Yes	Yes	Yes	Yes	Yes	N/A	Yes	39.0
063-0008 Irmo 6/19/2019	SO_2	Yes	Yes	Yes	3.38	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	N/A	Yes	39.0
063-0010 Cayce CH	PM_{10}	N/A	N/A	Yes	2.22	Yes	N/A	N/A	Yes	Yes	Yes	Yes	Yes	10.5	Yes	24.0

Site ID, Site Name and Date Visited	Param-eter	Samp-ling Train	Samp-ling Time	Probe Height (m)		Support Structure	Colloca-tion Place-ment (m)		Flow Rate	Minor Sources	*Obstruc tions	Air-flow	Dripline (m)		Roadway (m)	
6/19/2019																
079-0007 Parklane 6/26/2019	$PM_{2.5}$	N/A	N/A	Yes	4.26	Yes	Yes	2.4	Yes	Yes	Yes	Yes	Yes	16.7	Yes	131.0
079-0007 Parklane 6/26/2019	$PM_{2.5}$	N/A	N/A	Yes	4.7	Yes	Yes	2.4	Yes	Yes	Yes	Yes	Yes	16.7	Yes	131.0
079-0007 Parklane 6/26/2019	$PM_{2.5}$ C	N/A	N/A	Yes	4.5	Yes	N/A	N/A	Yes	Yes	Yes	Yes	Yes	22.9	Yes	131.0
079-0007 Parklane 6/26/2019	Speciate d $PM_{2.5}$	N/A	N/A	Yes	2.40	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	15.3	Yes	145.8
079-0007 Parklane 6/26/2019	PM_{10} C	N/A	N/A	Yes	5.1	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	17.9	Yes	131.0
079-0007 Parklane 6/26/2019	Ozone	Yes	Yes	Yes	4.26	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	22.3	Yes	131.0
079-0007 Parklane 6/26/2019	SO_2	Yes	Yes	Yes	4.26	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	22.3	Yes	131.0
079-0007 Parklane 6/26/2019	CO	Yes	Yes	Yes	4.26	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	22.3	Yes	131.0
079-0007 Parklane 6/26/2019	NO/NO_y	Yes	Yes	Yes	10.0	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	22.3	Yes	131.0
079-0021 Congaree Bluff 6/29/2019	Ozone	Yes	Yes	Yes	4.15	Yes	N/A	N/A	N/A	Yes	**No	Yes	No	7.4	Yes	187.5

Site ID, Site Name and Date Visited	Param-eter	Samp-ling Train	Samp-ling Time	Probe Height (m)		Support Structure	Colloca-tion Place-ment (m)		Flow Rate	Minor Sources	*Obstruc tions	Air-flow	Dripline (m)		Roadway (m)	
079-0021 Congaree Bluff 6/29/2019	SO_2	Yes	Yes	Yes	4.15	Yes	N/A	N/A	N/A	Yes	**No	Yes	No	7.4	Yes	187.5
079-1001 Sandhill 11/15/2018	Ozone	Yes	Yes	Yes	4.2	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	16.4	Yes	31.1
079-1001 Sandhill 11/15/2018	NO_2	Yes	Yes	Yes	4.2	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	16.4	Yes	31.1
031-0003 Pee Dee 1/10/2019	Ozone	Yes	Yes	Yes	4.16	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	No trees	Yes	193.3
041-0003 Williams MS 1/16/2019	$PM_{2.5}$ C	N/A	N/A	Yes	2.23	Yes	N/A	N/A	Yes	Yes	Yes	Yes	Yes	19.4	Yes	110.0
041-0003 Williams MS 1/16/2019	$PM_{2.5}$	N/A	N/A	Yes	2.15	Yes	N/A	N/A	Yes	Yes	Yes	Yes	Yes	20.4	Yes	110.0
041-8001 JCI Railroad 1/10/2019	Lead POC 1	N/A	N/A	Yes	2.58	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	17.4	Yes	99.0
041-8001 JCI Railroad 1/10/2019	Lead POC 2	N/A	N/A	Yes	2.59	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	17.4	Yes	99.0

Site ID, Site Name and Date Visited	Param-eter	Samp-ling Train	Samp-ling Time	Probe Height (m)		Support Structure	Colloca-tion Place-ment (m)		Flow Rate	Minor Sources	*Obstruc tions	Air-flow	Dripline (m)		Roadway (m)	
041-8002 JCI Entrance 11/28/2018	Lead POC 1	N/A	N/A	Yes	2..53	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	17.2	Yes	37.0
041-8002 JCI Entrance 11/28/2018	Lead POC 2	N/A	N/A	Yes	2.52	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	19.3	Yes	37.0
041-8002 JCI Entrance 11/28/2018	Lead POC 3	N/A	N/A	Yes	2.54	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	19.3	Yes	37.0
041-8003 JCI Woods 2/21/2019	Lead POC 1	N/A	N/A	Yes	2.43	Yes	N/A	N/A	N/A	Yes	*No	Yes	Yes	20.4	Yes	1030.0
041-8003 JCI Woods 2/21/2019	Lead POC 2	N/A	N/A	Yes	2.43	Yes	N/A	N/A	N/A	Yes	*No	Yes	Yes	20.4	Yes	1030.0
041-8003 JCI Woods 2/21/2019	Lead #3	N/A	N/A	Yes	2.42	Yes	N/A	N/A	N/A	Yes	*No	Yes	Yes	21.4	Yes	1030.0
007-0005 Big Creek 4/25/2019	Ozone	Yes	Yes	Yes	4.10	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	No trees	Yes	43.9
045-0015 ESC 4/4/2019	$PM_{2.5}$	N/A	N/A	Yes	3.50	Yes	Yes	2.84	Yes	Yes	**No	Yes	Yes	19.5	Yes	15.9
045-0015 ESC 4/4/2019	$PM_{2.5}$ C	N/A	N/A	Yes	4.6	Yes	Yes	2.84	Yes	Yes	Yes	Yes	Yes	16.5	Yes	13.8
045-0015 ESC	PM_{10}	N/A	N/A	Yes	4.35	Yes	N/A	N/A	Yes	Yes	Yes	Yes	Yes	20.8	Yes	12.4

Site ID, Site Name and Date Visited	Param-eter	Samp-ling Train	Samp-ling Time	Probe Height (m)		Support Structure	Colloca-tion Place-ment (m)		Flow Rate	Minor Sources	*Obstruc tions	Air-flow	Dripline (m)		Roadway (m)	
4/4/2019																
045-0015 ESC 4/4/2019	SO_2	Yes	Yes	Yes	4.35	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	16.0	Yes	13.0
045-0015 ESC 4/4/2019	NO_2	Yes	Yes	Yes	4.35	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	16.0	Yes	13.0
045-0016 Hillcrest 4/4/2019	$PM_{2.5}$	N/A	N/A	Yes	3.42	Yes	Yes	1.72	Yes	Yes	Yes	Yes	Yes	67.0	Yes	54.0
045-0016 Hillcrest 4/4/2019	$PM_{2.5}$	N/A	N/A	Yes	3.42	Yes	Yes	1.72	Yes	Yes	Yes	Yes	Yes	67.0	Yes	54.0
045-0016 Hillcrest 4/4/2019	Ozone	Yes	Yes	Yes	3.96	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	67.0	Yes	54.0
077-0002 Clemson 6/13/2019	Ozone	Yes	Yes	Yes	4.55	Yes	N/A	N/A	N/A	Yes	*No	Yes	Yes	12.6	Yes	33.9
077-0003 Wolf Creek 5/22/2019	Ozone	Yes	Yes	Yes	4.15	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	26.3	Yes	56.4
051-0008 Coastal Carolina 1/16/2019	Ozone	Yes	Yes	Yes	4.10	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	10.3	Yes	18.3
083-0009 NSFS#22/5/2019	Ozone	Yes	Yes	Yes	3.9	Yes	N/A	N/A	N/A	Yes	Yes	No	Yes	21.8	Yes	92.5
083-0011 TK Gregg 2/5/2019	$PM_{2.5}$	N/A	N/A	Yes	2.43	Yes	Yes	1.7	Yes	Yes	Yes	Yes	Yes	37.0	Yes	48.2

Site ID, Site Name and Date Visited	Param-eter	Samp-ling Train	Samp-ling Time	Probe Height (m)		Support Structure	Colloca-tion Place-ment (m)		Flow Rate	Minor Sources	*Obstruc tions	Air-flow	Dripline (m)		Roadway (m)	
083-0011 TK Gregg 2/5/2019	$PM_{2.5}$	N/A	N/A	Yes	2.43	Yes	Yes	1.7	Yes	Yes	Yes	Yes	Yes	37.0	Yes	48.2
083-0011 TK Gregg 2/5/2019	$PM_{2.5}$ C	N/A	N/A	Yes	2.44	Yes	N/A	N/A	Yes	Yes	Yes	Yes	Yes	37.0	Yes	48.2
025-0001 Chesterfiel d 11/8/2018	$PM_{2.5}$	N/A	N/A	Yes	2.1	Yes	N/A	N/A	Yes	Yes	Yes	Yes	Yes	23.0	Yes	43.9
025-0001 Chesterfiel d 11/8/2018	$PM_{2.5}$ C	N/A	N/A	Yes	4.90	Yes	N/A	N/A	Yes	Yes	Yes	Yes	Yes	25.8	Yes	33.1
025-0001 Chesterfiel d 11/8/2018	Speciate d $PM_{2.5}$	N/A	N/A	Yes	2.0	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	32.8	Yes	43.9
025-0001 Chesterfiel d 11/8/2018	PM_{10}	N/A	N/A	Yes	1.49	Yes	Yes	1.0	Yes	Yes	Yes	Yes	Yes	27.7	Yes	43.9
025-0001 Chesterfiel d 11/8/2018	PM_{10}	N/A	N/A	Yes	1.4	Yes	Yes	1.0	Yes	Yes	Yes	Yes	Yes	25.4	Yes	43.9
025-0001 Chesterfiel d 11/8/2018	Ozone	Yes	Yes	Yes	4.65	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	25.0	Yes	33.1
073-0001 Long Creek	$PM_{2.5}$ C	N/A	N/A	Yes	4.18	Yes	N/A	N/A	Yes	Yes	Yes	No	No	7.48	Yes	30.0

Site ID, Site Name and Date Visited	Param-eter	Samp-ling Train	Samp-ling Time	Probe Height (m)		Support Structure	Colloca-tion Place-ment (m)		Flow Rate	Minor Sources	*Obstruc tions	Air-flow	Dripline (m)		Roadway (m)	
10/23/2018																
073-0001 Long Creek 10/23/2018	Ozone	Yes	Yes	Yes	4.06	Yes	N/A	N/A	N/A	Yes	Yes	No	No	9.08	Yes	30.0
073-0001 Long Creek 10/23/2018	SO_2	Yes	Yes	Yes	4.06	Yes	N/A	N/A	N/A	Yes	Yes	No	No	9.08	Yes	30.0

*The monitor is still considered in compliance if the distance from probe to obstacle is not at least twice the height the obstacle protrudes above the probe but there is still 270° of airflow around probe.

**Site has waiver for these obstructions

Appendix E: Alphabetical Order of Monitoring Sites

Monitoring Site Name	MSA/County	Page
Big Creek	Greenville-Anderson MSA	55
Bushy Park	Charleston-North Charleston MSA	31
Cape Romain	Charleston-North Charleston MSA	35
Cayce City Hall	Columbia MSA	43
Charleston Public Works (CPW)	Charleston-North Charleston MSA	38
Chesterfield	Chesterfield County	68
Clemson CMS	Greenville-Anderson MSA	60
Coastal Carolina	Myrtle Beach-Conway-North Myrtle Beach SC-NC MSA	63
Congaree Bluff	Columbia MSA	47
FAA	Charleston-North Charleston MSA	37
Garrison Arena	Greenville-Anderson MSA	56
Greenville Employment Security Commission (ESC)	Greenville-Anderson MSA	57
Hillcrest Middle School	Greenville-Anderson	59
Irmo	Columbia MSA	42
Jackson Middle School	Augusta-Richmond County, GA-SC MSA (part)	28
Jenkins Ave. Fire Station	Charleston-North Charleston MSA	33
Johnson Controls-JCI Railroad	Florence MSA	52
Johnson Controls-JCI Entrance	Florence MSA	52
Johnson Controls-JCI Woods	Florence MSA	52
Long Creek	Oconee County	70
Moncks Corner National Guard	Charleston-North Charleston MSA	32
North Charleston Fire Station	Charleston-North Charleston MSA	34
North Spartanburg Fire Station #2	Spartanburg MSA	65
Parklane (NCore)	Columbia MSA	44
Pee Dee Experimental Station	Florence MSA	50
Sandhill Experimental Station	Columbia MSA	48
State Hospital	Columbia MSA	46
T.K. Gregg Recreational Center	Spartanburg MSA	66
Trenton	Augusta-Richmond County, GA-SC MSA (part)	29
Williams Middle School	Florence MSA	51
Wolf Creek	Greenville-Anderson MSA	61
York Landfill	Charlotte-Concord-Gastonia MSA	40

Appendix F: The EPA Correspondence for Addendums to Previous Monitoring Plan

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

APR 22 2019

Ms. Rhonda Thompson
Chief
Bureau of Air Quality Control
South Carolina Department of Health and
Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

Dear Ms. Thompson:

Thank you for submitting the state of South Carolina's 2018 annual ambient air monitoring network plan dated July 10, 2018; an addendum to the 2017 annual ambient air monitoring network plan submitted August 16, 2018; and the addendum to the 2018 plan, submitted November 19, 2018. The U.S. Environmental Protection Agency has evaluated these three documents together as the South Carolina "Network Plan." The Network Plan is required by 40 Code of Federal Regulations (CFR) §58.10.

The EPA understands that the South Carolina Department of Health and Environmental Control (DHEC) provided the public a 30-day review period for each of the three submittals that are part of the Network Plan. The EPA staff submitted one public comment to the July 2018 submittal which was addressed in the November 2018 addendum. It is the EPA's understanding that no other comments on the Network Plan were received.

The Network Plan requests the relocation of two ozone (O_3) monitors, one in the Greenville area and one in the Charleston area; the discontinuation of one additional O_3 monitor in the Greenville area; and changes to the $PM_{2.5}$ network including relocation of the state's collocated monitor and background $PM_{2.5}$ monitor. The EPA supports the redesign of the O_3 networks in the Greenville and Charleston area as well as the reconfiguration of the South Carolina $PM_{2.5}$ monitoring network. The EPA approves the 2018 Network Plan as proposed in the July 2018 submittal and supported with additional information in the August 2018 and November 2018 addendums, with the exception of the PM_{10} monitoring network in the Augusta-Richmond County, GA-SC area. After a recent PM_{10} NAAQS violation at the Augusta, GA monitoring site, the EPA Region 4 has been consulting with the EPA Office of Air Quality Planning and Standards staff on whether additional monitoring is required. Once we have finished those discussions, the EPA will contact both Georgia and South Carolina to discuss the next steps.

Details regarding the EPA's review of the Network Plan are provided in the enclosed comments. Thank you for working with us to monitor air pollution and promote healthy air quality in South Carolina. If you have any questions or concerns, please contact Gregg Worley at (404) 562-9141 or Ryan Brown at (404) 562-9147.

Sincerely,

Carol L. Kemker

Carol L. Kemker
Acting Director
Air, Pesticides and Toxics Management Division

Enclosure

cc: Mr. Robert Brown
Division Director, Air Planning Development
and Outreach, SC DHEC

Ms. Connie Turner, Director
Division of Air Quality Analysis, SC DHEC

Ms. Renee Madden, Manager
Air Data Analysis and Support Section, SC DHEC

The Honorable William Harris
Chief of the Catawba Indian Nation

Mr. Darin Steen
Director, Environmental Services, Catawba Indian Nation

CY 2018 State of South Carolina Ambient Air Monitoring Network Plan
The U.S. EPA Comments and Recommendations

This document contains the U.S. Environmental Protection Agency comments and recommendations regarding the state of South Carolina'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 (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. OMB currently defines 10 MSAs in the state of South Carolina. 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 Populations

MSA Name	Population
Charlotte-Gastonia-Concord NC-SC	2,525,305
Greenville-Anderson-Mauldin, SC	895,923
Columbia, SC	825,033
Charleston-North Charleston-Summerville, SC	775,831
Augusta-Richmond County, GA-SC	600,151
Myrtle Beach-Conway-North Myrtle Beach, SC-NC	464,165
Spartanburg, SC	334,391
Hilton Head Island-Bluffton-Beaufort, SC	215,302
Florence, SC	205,831
Sumter, SC	106,847

Proposed Monitoring Network Changes

The South Carolina Department of Health and Environmental Control (SC DHEC) proposed numerous changes to its monitoring network in the Network Plan. Table 2 summarizes the requested discontinuations and relocations of monitors and Table 3 summarizes the requested monitor startups. Specifics of each change and rationale are also contained in the following pollutant sections.

Table 2: Monitors Proposed for Relocation or Discontinuation

AQS ID	Site Name	CBSA	Pollutant	Type	Comments
45-007-0005	Big Creek	Greenville-Anderson-Mauldin, SC	O_3	SLAMS	EPA supports this and will review and make a final decision for the next network plan. Proposed to shut down after 2019 O_3 season.
45-077-0002	Clemson	Greenville-Anderson-Mauldin, SC	O_3	SLAMS	Approved. Monitoring relocation to Garrison Arena (AQS ID 45-007-0006)

45-077-0003	Wolf Creek	Greenville-Anderson-Mauldin, SC	O_3	SLAMS	Approved to discontinue as part of the re-designed Greenville area O_3 monitoring network. Has consistently measured lower concentrations than other monitors in the MSA
45-019-0048	FAA	Charleston-North Charleston-Summerville, SC	$PM_{2.5}$	Collocated SPM	Acknowledged. The primary Sampler will continue to operate at FAA. The collocated sampler was moved to TK Gregg (AQS ID 45-083-0011) site in the Spartanburg MSA. Collocated sampler will be moved back to the Charleston area once a new $PM_{2.5}$ site is established.
45-015-0002	Bushy Park	Charleston-North Charleston-Summerville, SC	O_3	SLAMS	Approved to relocate. Does not meet siting criteria. Moncks Corner site (AQS ID 45-015-1002) established as a replacement in Charleston CBSA.
45-029-0002	Ashton	Walterboro, SC	$PM_{2.5}$	SLAMS	Approved. Monitor changed from SLAMS to SPM. This monitor is not in a minimally required MSA for $PM_{2.5}$. Cape Romain (AQS ID 45-019-0046) will be designated as the required background site.

Table 3: Monitors Proposed for Startup

AQS ID	Site Name	CBSA	Pollutant	Type	Comments
45-007-0006	Garrison Arena	Greenville-Anderson-Mauldin, SC	O_3	SLAMS	Approved. Relocation of Clemson O_3 monitor. Approximately one mile southeast of the Clemson site.
45-015-1002	Moncks Corner National Guard	Charleston-North Charleston-Summerville, SC	O_3	SLAMS	Approved. O_3 monitor for Charleston CBSA instead of Bushy Park. Rationale provided to show that this is in an area of expected maximum concentration.
45-019-0046	Cape Romain	Charleston-North Charleston-Summerville, SC	$PM_{2.5}$	SLAMS	$PM_{2.5}$ monitor will be a SLAMS instead of SPM and designated as the $PM_{2.5}$ regional background site for SC. This monitor must operate on a 1-in-3-day sampling frequency per 40 CFR 50.12(d)(2).
45-091-0008	York	Charlotte-Gastonia-Concord NC-SC	SO_2	SPM	Acknowledged. SO_2 monitor added to existing site.
45-083-0011	T. K. Gregg	Spartanburg, SC	$PM_{2.5}$	SLAMS collocated	Approved. Addition of collocated FRM sampler to existing site.

Waivers of Monitor Siting Criteria
40 CFR Part 58, Appendix E

Under 40 CFR Part 58, Appendix E, Section 10, waivers of siting criteria for existing sites can be granted if either of the following criteria are met:

> 10.1.1 The site can be demonstrated to be as representative of the monitoring area as it would be if the siting criteria were being met.
>
> 10.1.2 The monitor or probe cannot reasonably be located so as to meet the siting criteria because of physical constraints (e.g., inability to locate the required type of site the necessary distance from roadways or obstructions).

The Network Plan requests a waiver of monitoring siting requirements for the Congaree Bluff monitoring site (AQS ID 45-079-0021). The objective of the Congaree Bluff site is to measure O_3 and SO_2 within the Congaree National Park boundaries. Within the national park boundaries this monitor cannot be reasonably located so as to meet the siting criteria because of physical constraints. The EPA staff visited the Congaree Bluff site on January 25, 2016 and agree that this is the best monitoring location within the park boundaries. The EPA previously waived the requirements of 40 CFR Part 58, Appendix E, Section 4 (a) and Table E-4 to 40 CFR Part 58, Appendix E, Section 11 in regard to trees identified by SC DHEC as obstructing airflow. In its most recent Network Plan, the SC DHEC is requesting a further waiver for 40 CFR Part 58, Appendix E, Section 5 "Spacing from Trees" and Table E-4 to 40 CFR Part 58, Appendix E, Section 11 for one branch which is within 10 meters of the monitoring probes.

The Network Plan describes one branch that is 17.7 meters above the ground (about 13.5 meters above the probe) and 7.4 meters horizontally from the closest monitoring probe. The EPA believes this branch should have minimal impact and the site would still meet the objective of monitoring O_3 and SO_2 within the park boundaries. The EPA encourages the SC DHEC to meet siting criteria requirements as much as possible at this site but understands the National Park Service's and SC DHEC's hesitation to remove trees in an old growth forest. Thus, the EPA waives the spacing from trees requirement for the one branch identified by SC DHEC in the Network Plan. This site must still meet all other siting requirements found in Appendix E to 40 CFR Part 58. This waiver, as with all other waivers of regulatory requirements granted by the EPA, should be re-evaluated in the 2020 South Carolina network assessment.

Operating Schedules
40 CFR § 58.12

The monitoring network proposed in the Network Plan meets the required operating schedules for all continuous analyzers and all manual Pb, PM_{10}, $PM_{2.5,}$ and $PM_{2.5}$ Speciation Trends Network (STN) monitors. The SC DHEC did not propose any changes to its operating schedules in the Network Plan.

Air Quality Index (AQI) Reporting
40 CFR §58.50

AQI reporting is required in MSAs with populations over 350,000. There are four MSAs in the state of South Carolina required to report an AQI: Greenville-Anderson-Mauldin, Columbia, Charleston-North Charleston, and Myrtle Beach-Conway-North Myrtle Beach. The Network Plan indicates that the daily AQI for all of these areas is available on the EPA's AirNow web site, as well as areas in and around Aiken, SC (in the Augusta-Richmond County, GA-SC CBSA); Florence-Darlington, SC; and York-Chester-Lancaster, SC (in the Charlotte–Concord–Gastonia, NC-SC CBSA). The SC DHEC monitoring network satisfies the minimum AQI reporting requirements in 40 CFR Part 58.

National Core (NCore) Monitoring Network
40 CFR Part 58, Appendix D, 3

A requirement that each state operate at least one NCore site is found in 40 CFR Part 58, Appendix D, Section 3. The state's approved NCore site is in Columbia at the Parklane site (AQS ID 45-079-0007) and SC DHEC has not proposed any changes for the site in its Network Plan.

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

The Network Plan proposes to discontinue four O_3 monitors (one after the 2019 O_3 monitoring season) and to relocate O_3 monitors to two new O_3 monitoring sites. These O_3 shutdown and relocations would be in the Greenville-Anderson-Mauldin, SC MSA and the Charleston-North Charleston-Summerville, SC MSA.

In the Greenville area, the Network Plan proposes to:

- Shutdown the Wolf Creek O_3 monitor (AQS ID 45-077-0003) after the 2018 O_3 season;
- Shutdown the Big Creek O_3 monitor (AQS ID 45-007-0005) after the 2019 O_3 season; and
- Relocate the Clemson O_3 monitor (AQS ID 45-077-0002) approximately a mile away to the new Garrison Arena site (AQS ID 45-007-0006).

Relocate the Bushy Park O_3 monitor (AQS ID: 45-015-0002) to the new Moncks Corner National Guard site (AQS ID: 45-015-1002) he Greenville-Anderson-Mauldin, SC MSA is minimally required to have two O_3 monitors based on population and recent design values. Historically the Clemson and the Hillcrest (AQS ID: 45-045-0016) O_3 monitors have measured the highest concentrations in the MSA. The preliminary 2018 O_3 design value is 62 ppb at both Hillcrest and Clemson. The Wolf Creek monitor has typically measured the lowest O_3 concentrations in the MSA. Thus, the EPA supports the discontinuation of the Wolf Creek O_3 monitor. The SC DHEC states in the Network Plan that a final decision on the discontinuation of O_3 monitoring at Big Creek will be made in the next network plan. The EPA will evaluate the Big Creek discontinuation in its response to the next network plan. This Network Plan proposes to replace the Clemson site with a new site at Garrison Arena. The Garrison Arena site is approximately one mile from the Clemson site and the SC DHEC presented information that Garrison Arena is representative of the same airshed as the Clemson site for O_3 measurements. Thus, the EPA approves the proposed changes to O_3 monitoring in the Greenville and Anderson area: discontinuation of Wolf Creek and relocation of O_3 monitoring from Clemson to Garrison Arena.

In the Charleston area, the Network Plan proposes to replace the Bushy Park O_3 monitor (AQS ID 45-015-0002) with a new O_3 site at Moncks Corner National Guard (AQS ID: 45-015-1002). The SC DHEC submitted meteorological information and analysis that the Moncks Corner National Guard site might be in a location of maximum expected O_3 concentration and/or higher expected concentration than O_3 concentrations measured at Bushy Park. Additionally, Bushy Park has significant siting criteria issues which the SC DHEC has not been able to address. Thus, the EPA approves relocating the O_3 monitor from Bushy Park to Moncks Corner National Guard.

It is the EPA's understanding that the Moncks Corner National Guard and Garrison Arena sites were not established in time to start up for the 2019 O_3 season and that SC DHEC is continuing to operate the Clemson and Bushy Park monitoring sites for the 2019 O_3 season. SC DHEC intends to operate O_3 monitors at Moncks Corner National Guard and Garrison Arena for the 2020 O_3 season and the O_3 monitors at Clemson and Bushy Park will be discontinued after the 2019 O_3 season.

The SC DHEC O_3 monitoring network outlined in the Network Plan meets the minimum requirements found in 40 CFR Part 58, Appendix D, Table D-2 for all MSAs in South Carolina.

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

Ambient air monitoring network design criteria for SO_2 are found in Section 4.4 of 40 CFR Part 58, Appendix D. This section requires that "The population weighted emissions index (PWEI) shall be calculated by states for each core-based statistical area (CBSA)…" As a result, the 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.

Based upon PWEIs calculated using the latest population estimates and 2014 emission inventory data, the minimum numbers of monitors required for the CBSAs in South Carolina are summarized in Table 4.

Table 4: SO_2 Monitoring System Status – PWEI Requirements

CBSA Name	SLAMS Required	SLAMS Present	SO_2 SLAMS site
Charleston-North Charleston-Summerville, SC	1	1	Jenkins Ave Fire Station (AQS ID 45-019-0003)
Charlotte-Gastonia-Concord, NC-SC	1	1	Garinger High School (AQS ID 37-119-0041)
Columbia, SC	1	1	Parklane (AQS ID 45-079-0007)
Greenville-Anderson-Mauldin, SC	1	1	Greenville ESC (AQS ID 45-045-0015)

Based upon the information summarized in Table 4, the SO_2 monitoring network outlined in the Network Plan meets the SO_2 PWEI requirements specified in 40 CFR Part 58, Appendix D, Section 4.4. The DHEC operates SO_2 monitors in the Charleston-North Charleston-Summerville, SC; Columbia, SC; and Greenville-Anderson-Mauldin, SC CBSAs to meet the PWEI requirements. The SC DHEC has a Memorandum of Agreement with Mecklenburg County Air Quality (MCAQ) to share the monitoring requirements for the Charlotte-Gastonia-Concord NC-SC CBSA. The MCAQ operates an SO_2 monitor

at its Garinger High School site (AQS ID 37-119-0041) to meet the PWEI requirement in the Charlotte area.

The EPA finalized the SO_2 Data Requirements Rule (DRR) (see 80 *Federal Register*, No. 162) on August 21, 2015. This rule requires characterization of the air quality near sources with SO_2 emissions greater than 2,000 tons per year by conducting ambient air monitoring or modeling. On January 15, 2016, the SC DHEC submitted to the EPA a list of eight sources in the state around which SO_2 air quality must be characterized. These eight sources were characterized using modeling and/or took federally enforceable emissions limits. The SC DHEC is not operating any SO_2 monitoring sites to meet the DRR requirements.

The Network Plan proposes another SO_2 monitor at the existing York site (AQS ID 45-091-0008), which is in the Charlotte-Gastonia-Concord, NC-SC CBSA. The SC DHEC will operate this monitor as an SPM. SPMs do not require the EPA approval. The EPA acknowledges the startup of this monitor as part of the SO_2 network operated by the DHEC. The SO_2 monitoring network described in the Network Plan meets all design criteria of 40 CFR Part 58.

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

Ambient air monitoring network design criteria for NO_2 are found in 40 CFR Part 58, Appendix D, Section 4.3. There are three types of required NO_2 monitoring: near-road, area-wide, and Regional Administrator. These types of NO_2 monitoring are described in Sections 4.3.2, 4.3.3 and 4.3.4, respectively.

Ambient air monitoring design criteria for near-road NO_2 monitoring sites are found in 40 CFR Part 58, Appendix D, Section 4.3.2. The requirement for near-road monitoring in the Charlotte-Gastonia-Concord NC-SC CBSA is met by the Remount site (AQS ID 37-119-0045) operated by the MCAQ in Charlotte, North Carolina. No other CBSA in South Carolina is required to have near-road NO_2 monitoring, at this time.

Ambient air monitoring network design criteria for area-wide NO_2 sites are found in Section 4.3.3 of Appendix D to 40 CFR Part 58. The Garinger High School site (AQS ID 37-119-0041) operated by the MCAQ fulfills the area-wide NO_2 monitoring requirement for the Charlotte-Gastonia-Concord NC-SC CBSA. No other CBSA in South Carolina is required to have area-wide NO_2 monitoring.

Ambient air monitoring network design criteria for Regional Administrator required NO_2 monitoring, often referred to as RA-40 monitoring, are found in 40 CFR Part 58, Appendix D, section 4.3.4. Under these provisions, Regional Administrators must require a minimum of 40 additional NO_2 monitoring stations nationwide, with a primary focus on siting these monitors in locations to protect susceptible and vulnerable populations. Previously, the EPA selected the Greenville ESC site (AQS ID 450-045-0015) as a location for an RA-40 NO_2 monitoring site. The full list of NO_2 monitors identified by EPA's Regional Administrators can be found on EPA's website at http://www.epa.gov/ttnamti1/svpop.html. The NO_2 monitoring network described in the Network Plan meets all design criteria of 40 CFR Part 58.

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

40 CFR Part 58, Appendix D, Section 4.5 requires that "At a minimum, there must be one source-oriented SLAMS [State and Local Air Monitoring Station] site located to measure the maximum Pb concentration in ambient air resulting from each non-airport Pb source which emits 0.50 or more tons per year and from each airport which emits 1.0 or more tons per year…"

Although South Carolina has no sources that exceed the thresholds for Pb monitoring, the SC DHEC and Johnson Control Battery Group conduct source-oriented ambient Pb monitoring at three sites around the Florence Recycling Center in Florence, South Carolina. The company and the SC DHEC conduct this monitoring under terms of a settlement agreement reached with several petitioners who commented on the construction permit for the facility. Locations for the monitoring sites were selected based upon an agreement between the company and the stakeholders.

The Pb monitoring network described in the Network Plan meets all design criteria of 40 CFR Part 58.

PM_{10} Monitoring Requirements
40 CFR Part 58, Appendix A, 3.3.1
40 CFR Part 58, Appendix D, Table D-4

The EPA has determined that the PM_{10} monitoring network outlined in the Network Plan meets or exceeds the minimum requirements found in 40 CFR Part 58, Appendix D, Table D-4 for all MSAs except the Augusta-Richmond County, GA-SC MSA. EPA Region 4 is consulting with the EPA Office of Air Quality Planning and Standards (OAQPS) staff on whether additional monitoring is required in the Augusta area. All manual PM_{10} collocation requirements for the state are being met.

At the Augusta, GA PM_{10} site (AQS ID 13-245-0091) in the Augusta-Richmond County, GA-SC MSA, the monitor measured one exceedance of the PM_{10} NAAQS on January 25, 2017. According to information provided by the Georgia Environmental Protection Division, (GA EPD) this exceedance was due to smoke from prescribed burning at Fort Gordon. Because the manual PM_{10} sampler operated on a 1-in-6-day sampling schedule and the PM_{10} NAAQS design value is based on estimated exceedances, this one exceedance resulted in a violating design value at the monitor for 2015-2017. On October 1, 2017, GA EPD replaced the manual PM_{10} sampler at the site with a continuous PM_{10} sampler. So, in the future, the design value at the site will not be as influenced by a single exceedance since the monitor will collect data at a much higher time resolution.

The PM_{10} minimum monitoring requirements found in 40 CFR Part 58 Appendix D, Table D-4 indicate that minimum number of PM_{10} monitors would increase for the Augusta MSA if the area increased from low concentration (areas where ambient PM_{10} data show ambient concentrations less than 80 percent of the PM_{10} NAAQS) to medium concentration (exceeding 80 percent of the PM_{10} NAAQS) or high concentration (exceeding the PM_{10} NAAQS by 20 percent or more). Since the violating design value at this site is due to an exceedance on a single day during the three-year period and the area does not have a history of PM_{10} NAAQS violations, the EPA Region 4 is in consultation with OAQPS on whether additional monitoring is required. Once a determination has been made, the EPA will contact both Georgia and South Carolina to discuss the next steps.

$PM_{2.5}$ Monitoring Requirements
40 CFR Part 58, Appendix A, 3.2.5
40 CFR Part 58, Appendix D, Table D-5

The EPA has determined that the $PM_{2.5}$ monitoring network outlined in the Network Plan meets or exceeds the minimum requirements found in 40 CFR Part 58, Appendix D, Table D-5 for all MSAs.

Also, all $PM_{2.5}$ collocation requirements are met. The collocated sampler that was at the FAA site (AQS ID 45-019-0048), in the Charleston-North Charleston-Summerville, SC MSA, is now operating at the T.K. Gregg site (AQS ID: 45-083-0011), in the Spartanburg, SC MSA, to meet FRM collocation requirements.
The SC DHEC plans to move this collocated sampler back to the Charleston-North Charleston-Summerville, SC MSA once a new $PM_{2.5}$ site is established. It is the EPA's understanding that the SC DHEC has selected a location for a new $PM_{2.5}$ site in the North Charleston area.

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

Regulatory provisions for continuous $PM_{2.5}$ monitoring require that "The State, or where appropriate, local agencies must operate continuous $PM_{2.5}$ analyzers equal to at least one-half (round up) of the minimum required sites listed in Table D–5 of this Appendix. At least one required continuous analyzer in each MSA must be collocated with one of the required FRM/FEM/ARM [Federal Reference Method/Federal Equivalent Method/Approved Regional Method] monitors, unless at least one of the required FRM/FEM/ARM monitors is itself a continuous FEM or ARM monitor in which case no collocation requirement applies."

The five MSAs listed in Table 5, below, have minimum continuous monitoring requirements. These requirements are met in all MSAs in the state. The SC DHEC also operates continuous $PM_{2.5}$ monitors in the Florence, SC MSA and Spartanburg, SC MSA. Additionally, the continuous $PM_{2.5}$ collocation requirements are met in all MSAs.

Table 5: Continuous $PM_{2.5}$ Monitoring Requirements

SC MSA	Number of Minimally Required Continuous $PM_{2.5}$ Monitors	Number of Operated Continuous $PM_{2.5}$ Monitors
Charlotte-Gastonia-Concord NC-SC	1	4 (operated by MCAQ)
Greenville-Anderson-Mauldin, SC	1	1
Columbia, SC	1	2
Charleston-North Charleston-Summerville, SC	1	2
Augusta-Richmond County, GA-SC	1	1

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

Forty (40) CFR Part 58, Appendix D, Section 4.7.3 requires that "Each 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." The Network Plan identifies Chesterfield (AQS ID 45-025-0001) in Chesterfield County as a regional transport site.

The Network Plan identifies the existing Cape Romain (AQS ID 45-019-0046) continuous $PM_{2.5}$ monitor as the regional background monitor. The previously selected $PM_{2.5}$ general background monitor at the Ashton site (AQS ID: 45-029-0002) was recently identified as not meeting regulatory siting criteria and the SC DHEC does not expect to be able to trim or remove the nearby trees that obstruct airflow. The SC DHEC analyzed hourly $PM_{2.5}$ data around the entire state and determined that the Cape Romain monitor was the most representative of regional background. The Cape Romain monitor typically measures less of an increase in $PM_{2.5}$ during the afternoon and evening hours than monitors located in urban settings. This is similar to the daily trend measured at the $PM_{2.5}$ monitors identified to represent $PM_{2.5}$ general background in both Florida and North Carolina. The EPA supports the SC DHEC's analysis and agrees that of the existing monitors, the Cape Romain $PM_{2.5}$ monitor is likely the most representative of a rural or general background site. This monitor must minimally operate on a 1-in-3-day sampling frequency per 40 CFR 58.12(d)(2). It is the EPA's understanding that the SC DHEC is working with the U.S. Fish and Wildlife Service, which owns the Cape Romain site, to resolve recently identified regulatory siting criteria issues for the Cape Romain site.

The SC DHEC has satisfied the requirements of 40 CFR Part 58 for $PM_{2.5}$ regional background and transport sites.

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

The EPA conducted an assessment of the CSN in an effort to optimize and create a network that is sustainable going forward. As a result of this assessment, the EPA defunded a number of monitoring sites, eliminated the CSN $PM_{2.5}$ mass measurement, reduced the frequency of carbon blanks, reduced sample frequency at monitoring sites, and reduced the number of icepacks in shipments during the cooler months of the year.

The EPA defunded two CSN monitors at sites in South Carolina: Chesterfield (AQS ID 45-025-0001) and Greenville ESC (AQS ID 45-045-0015). It is the EPA's understanding that the Chesterfield speciation monitor continued to operate until December 2018. The SC DHEC decided to, in consultation with the EPA, to move the Chesterfield speciation monitor to the Parklane NCore site (AQS ID 45-079-0007). Parklane also has a CSN speciation monitor, but the SC DHEC reports that this monitor has been failing. The SC DHEC decided to only operate $PM_{2.5}$ speciation at Parklane, since Parklane was identified in the EPA's assessment as being of higher value than speciation measurements at Chesterfield and only one monitor is still in good condition. The SC DHEC should propose this modification in its next network plan, which will be made available for public comment.

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

With the promulgation of a revised O_3 NAAQS on October 1, 2015, the EPA also finalized changes to the PAMS program. NCore sites in CBSAs with greater than 1,000,000 population will be required to implement PAMS monitoring. Parklane (AQS ID 45-079-0007) is not required to operate PAMS monitoring since the Columbia CBSA's population is less than one million. The PAMS requirement is met by the state.

Monitoring Siting Criteria and Site Assessments
40 CFR Part 58, Appendix A, B, C, D, and E

In reference to the Network Plan, 40 CFR §58.10(a)(1) states "[t]he plan shall include a statement of whether the operation of each monitor meets the requirements of appendices A, B, C, D, and E of this part, where applicable. The Regional Administrator may require additional information in support of this statement." The Network Plan includes assessment information for all monitoring sites. The EPA appreciates the inclusion of this information and the work that the SC DHEC has done to evaluate siting criteria at all of its monitoring sites. The EPA understands that the SC DHEC is still working to resolve siting criteria issues identified by their own assessments and in recent EPA audits and appreciates the SC DHEC's continued progress in resolving these issues.

APPENDIX G: Memorandum of Agreements and Waivers

MOA #: 2017-609

MEMORANDUM OF AGREEMENT

BETWEEN

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

AND

CATAWBA INDIAN NATION

I. PURPOSE:

The South Carolina Department of Health and Environmental Control (hereafter referred to as DHEC) and Catawba Indian Nation (hereafter referred to as Catawba Nation) hereby enter into this Memorandum of Agreement (hereafter MOA) for the purpose of cooperation and assistance in the implementation of an ambient air monitoring program incorporating one Ozone Ambient Monitoring Site (AMS) meeting the United States Environmental Protection Agency (EPA) guidance for Ambient Air Quality Surveillance.

II. SCOPE OF SERVICES:

A. Responsibilities of DHEC. Under the terms of this MOA, DHEC shall:

1. Loan monitoring equipment ("the Equipment") comparable to that used in the South Carolina Ambient Air Monitoring Network to the Catawba Nation. The Equipment may include:
   a. One monitoring shelter sufficient to house monitoring systems, and
   b. Instrumentation for monitoring shelter temperature.

2. Coordinate with the Catawba Environmental Department Manager to provide, if requested, technical support for the institution of a Quality System and the development of data management processes, and

3. Remove the shelter and the Equipment when it is no longer desired or at the termination of this Agreement, whichever comes first.

B. Responsibilities of Catawba Nation. Under the terms of this MOA, the Catawba Nation shall:

1. Maintain an EPA approvable Quality Management Plan and Quality Assurance Project Plan for ambient air monitoring;
2. Ensure the proper routine daily operation, maintenance and security of the monitoring Equipment;
3. Recover, verify and report the ambient data collected from the monitoring equipment;
4. Pay electricity, water and other costs necessary for the proper operation and maintenance of the AMS; and
5. Provide DHEC staff with access to the site and the Equipment for the purpose of inspecting and servicing the Equipment as needed.

III. TERMS AND CONDITIONS:

A. Effective Dates.

This MOA shall be effective on April 15, 2017 or when all parties have signed, whichever date is later, and will terminate December 31, 2018.

B. Termination.

1. Subject to the provisions contained below, this MOA may be terminated by either party with thirty (30) days advance written notice of termination.

2. In the event sufficient funding is not available for performance of this MOA, the MOA shall terminate without further obligations of the parties subject to subparagraph number four (4) below.

3. DHEC may terminate this MOA for cause, default or negligence on the part of the Catawba Nation at any time without any advance written notice.

4. In the event of termination for any reason, the Catawba Nation agrees to allow DHEC staff access to the site for the purpose of retrieving the DHEC-owned Equipment.

C. Amendment.
Any changes to this MOA, which are mutually agreed upon between DHEC and the Catawba Nation, shall be incorporated in written amendment to this MOA and will not become effective until the amendment is signed by each party.

D. Record keeping, Audits, and Inspections.
Records with respect to all matters covered by this MOA must be retained for 6-years after the end of the period of this MOA and shall be available for audit and inspection at any time such audit is deemed necessary by DHEC. If audit has begun but is not completed at the end of the 6-year period, the records shall be retained until resolution of the audit findings.

E. Liability.
Neither party shall be liable for any claims, demands, expenses, liabilities and losses (including reasonable attorney's fees) which may arise out of any acts or failures to act by the other party, its employee or agents, in connection with the performance of services pursuant to this MOA. Neither party is an employee, agent, partner, or joint venturer of the other. Neither party has the right or authority to control or direct the activities of the other or the right or ability to bind the other to any agreement with a third party or to incur any obligation or liability on behalf of the other party, unless expressly authorized in this MOA.

F. Non-Discrimination.
No person shall be excluded from participation in, be denied the benefits of, or be subjected to discrimination in relation to any activities carried out under this MOA on the grounds of race, age, health status, disability, color, sex, religion, or national origin. This includes the provision of language assistance services to individuals of limited English proficiency eligible for services provided by DHEC.

G. Drug Free Workplace.
By signing this MOA, Catawba Nation certifies that they will comply with all applicable provisions of The Drug-free Workplace Act, S. C. Code of Laws Section 44-107-10 et. seq., as amended.

H. Choice of Law.
The MOA, any dispute, claim, or controversy relating to the MOA and all the rights and obligations of the parties shall, in all respects, be interpreted, construed, enforced and governed by and under the laws of the State of South Carolina, except its choice of law rules.

I. Disputes.
All disputes, claims, or controversies relating to the MOA shall be resolved in accordance with the South Carolina Procurement Code, S.C. Code Section 11-35-10 et seq., to the extent applicable, or if inapplicable, claims shall be brought in the South Carolina Court of Common Pleas for Richland County or in the United States District Court for the District of South Carolina, Columbia Division. By signing this MOA, Contracting Party consents to jurisdiction in South Carolina and to venue pursuant to this MOA. Contracting Party agrees that any act by DHEC regarding the MOA is not a waiver of either sovereign immunity or immunity under the Eleventh Amendment of the United States Constitution, and is not a consent to jurisdiction of any court of agency of any other state.

J. Preventing and Reporting Fraud, Waste and Abuse.
SCDHEC has procedures and policies concerning the prevention and reporting of fraud, waste and abuse (FWA) in agency-funded programs, including but not limited to those funded by federal grants such as Medicaid. No agency employee, agent, or contractor shall direct, participate in, approve, or tolerate any violation of federal or state laws regarding FWA in government programs.

Federal law prohibits any person or company from knowingly submitting false or fraudulent claims or statements to a federally funded program, including false claims for payment or conspiracy to get such a claim approved or paid. The False Claims Act includes "whistleblower" remedies for employees who are retaliated

against in their employment for reporting violations of the Act. Under State law, persons may be criminally prosecuted for false claims made for health care benefits, for Medicaid fraud, for insurance fraud, or for using a computer in a fraud scheme or to obtain money or services by false representations. Additional information regarding the federal and state laws prohibiting false claims and SCDHEC's policies and procedures regarding false claims may be obtained from the agency's Contracts Manager or Bureau of Business Management.

Any employee, agent, or contractor of SCDHEC who submits a false claim in violation of federal or state laws will be reported to appropriate authorities.

If the Catawba Nation, Catawba Nation's agents or employees have reason to suspect FWA in agency programs, this information should be reported in confidence to the agency. A report may be made by writing to the Office of Internal Audits, SCDHEC, 2600 Bull Street, Columbia, South Carolina 29201; or by calling the Agency Fraud, Waste and Abuse Hotline at 803-896-0650 or toll-free at 1-866-206-5202. The Catawba Nation is required to inform Catawba Nation's employees of the existence of DHEC's policy prohibiting FWA and the procedures for reporting FWA to the agency.

K. Insurance.
Each of the parties agree to maintain professional, malpractice and general liability insurance, and may be required to provide the other party with satisfactory evidence of such coverage. Neither party will provide individual coverage for the other party's employees and each party shall be responsible for coverage of its respective employees.

L. Liability.
Each party shall bear and be responsible solely for its own costs and expenses necessary to comply with this MOA.

M. Notice.
All notices shall be sent to:

FOR DHEC:	FOR Catawba Indian Nation:
Micheal Mattocks	Darin Steen
Division of Air Quality Analysis	Environmental Director
8231 Parklane Road	996 Avenue of the Nation
Columbia, South Carolina 29223	Rock Hill, South Carolina, SC

MOA #:_____

AS TO DHEC

BY: Myra Reese
Myra Reese
Director of Environmental Affairs
DEPARTMENT OF HEALTH AND
ENVIRONMENTAL CONTROL

DATE: 5-5-17

BY: _____

Micheal Mattocks
Interim Director
Division of Air Quality Analysis

DATE: 5/5/17

AS TO CATAWBA INDIAN NATION

BY: William Harris

William Harris
Chief
CATAWBA INDIAN NATION

DATE: 4.25.17

THIS AGREEMENT IS NOT OFFICIAL AND BINDING UNTIL SIGNED BY THE SCDHEC CONTRACTS MANAGER.

_____
Francine Miller
SCDHEC Contracts Manager

DATE: 5-12-17

RECEIVED
MAR 01 2017
BUREAU OF AIR QUALITY

DHEC MOA#: 2017-429

MEMORANDUM OF AGREEMENT

ON AIR QUALITY MONITORING FOR CRITERIA POLLUTANTS FOR

THE AUGUSTA - RICHMOND COUNTY

METROPOLITAN STATISTICAL AREA (MSA)

January 2017

Participating Agencies:

Georgia
Georgia Department of Natural Resources
Environmental Protection Division
Air Protection Branch (GA EPD)

South Carolina
Department of Health and Environmental Control (SCDHEC)
Bureau of Air Quality

I. PURPOSE/OBJECTIVES/GOALS

The purpose of this Memorandum of Agreement (MOA) is to renew the Augusta - Richmond County Metropolitan Statistical Area (MSA) Criteria Pollutant Air Quality Monitoring Agreement between SCDHEC and GA EPD (collectively referred to as the "affected agencies") to collectively meet United States Environmental Protection Agency (EPA) minimum monitoring requirements for particles of an aerodynamic diameter of 10 micrometers and less (PM10), particles of an aerodynamic diameter of 2.5 micrometers and less (PM2.5), and ozone; as well as any other criteria pollutant air quality monitoring deemed necessary to meet the needs of the MSA as determined reasonable by all parties. This MOA will establish the terms and conditions of this collective agreement to provide adequate criteria pollutant monitoring for the Augusta - Richmond County MSA as required by 40 CFR 58 Appendix D, Section 2(e).

II. BACKGROUND

The Augusta - Richmond County MSA consists of the following counties: Burke, Columbia, McDuffie, Lincoln, Richmond, Aiken and Edgefield. GA EPD has jurisdiction over Burke, Columbia, McDuffie, Lincoln, and Richmond Counties in Georgia and SCDHEC has jurisdiction over Aiken and Edgefield Counties, South Carolina. The SCDHEC and GA EPD are required by the Clean Air Act to measure for certain criteria pollutants in the ambient air in the Augusta - Richmond County Metropolitan Statistical Area (MSA). The EPA has established minimum monitoring requirements based on the size of the MSA and the quality of the air in the MSA for PM10, PM2.5, and ozone.

40 CFR 58 Appendix D, Section 2(e) states (in part):

> "...The EPA recognizes that there may be situations where the EPA Regional Administrator and the affected State or local agencies may need to augment or to divide the overall MSA/CSA monitoring responsibilities and requirements among these various agencies to achieve an effective network design. Full monitoring requirements apply separately to each affected State or local agency in the absence of an agreement between the affected agencies and the EPA Regional Administrator."

Currently each air pollution control agency (affected agency) conducts monitoring in its respective jurisdiction and coordinates its monitoring with the other air pollution control agency within the MSA.

III. ROLES AND RESPONSIBILITIES

The parties agree to the following terms and conditions:

- SCDHEC, and GA EPD (the "affected agencies") commit to conducting appropriate monitoring in their respective jurisdictions of the MSA; as needed, to collectively meet EPA minimum monitoring requirements for the entire MSA for PM10, PM2.5, and ozone, as well as any other criteria air pollutant monitoring deemed necessary to meet the needs of the MSA as determined reasonable by all affected agencies. The minimum air quality monitoring requirements (for PM10, PM2.5, and ozone described in 40 CFR 58) for the MSA shall apply to the MSA in its entirety and shall not apply to any sole affected agency within the MSA unless agreed upon by all affected agencies.

- The affected agencies commit to coordinating monitoring "responsibilities and requirements...to achieve an effective network design" regarding criteria air pollutant monitoring conducted in the MSA and commit to communicate unexpected or unplanned changes in monitoring activities within their jurisdictions to the other affected agency. As conditions warrant, the affected agencies may conduct telephone conference calls, meetings, or other

communications to discuss monitoring activities for the MSA. Each affected agency shall inform the other affected agency via telephone or e-mail of any monitoring changes occurring in its jurisdiction of the MSA at its earliest convenience after learning of the need for the change or making the changes. Such unforeseen changes may include evictions from monitoring sites, destruction of monitoring sites due to natural disasters, or similar occurrences that result in an extended (greater than 1 quarter) or permanent change in the monitoring network. At least once a year in the second quarter of the year or before June 15th, each affected agency shall make available to the other affected agency, a copy of its proposed monitoring plan for its jurisdiction within the MSA for the next year.

- Each party reserves the right to revoke or terminate this MOA at any time and for any reason by giving thirty (30) days written notice prior to the date of termination.

IV. LIMITATIONS

A. All commitments made in this MOA are subject to the availability of appropriated funds and each party's budget priorities. Nothing in this MOA, in and of itself, obligates SCDHEC or GA EPD to expend appropriations or to enter into any contract, assistance agreement, interagency agreement or other financial obligation.

B. This MOA is neither a fiscal nor a funds obligation document. Any endeavor involving reimbursement or contribution of funds between parties to this MOA will be handled in accordance with applicable laws, regulations, and procedures, and will be subject to separate subsidiary agreements that will be effected in writing by representatives of the parties.

C. Except as provided in Section III, this MOA does not create any right or benefit, substantive or procedural, enforceable by law or equity against SCDHEC or GA EPD, their officers or employees, or any other person. This MOA does not direct or apply to any person outside SCDHEC or GA EPD.

V. PROPRIETARY INFORMATION AND INTELLECTUAL PROPERTY

No proprietary information or intellectual property is anticipated to arise out of this MOA.

VI. POINTS OF CONTACT

The following individuals are designated points of contact for the MOA:

GA EPD: DeAnna Oser
GA EPD Ambient Monitoring Program
4244 International Parkway, Suite 120
Atlanta, GA 30354

DeAnna.Oser@dnr.ga.gov
Voice: (404) 363-7004
FAX: (404) 363-7100

SCDHEC: Micheal Mattocks
SCDHEC Bureau of Environmental Services
8231 Parklane Road
Columbia, SC 29223

mattocm@dhec.sc.gov
Voice: (803) 896-0902
FAX: (803) 896-0980

In the event that a point of contact needs to be changed, notification may be made via email to the other parties.

VII. MODIFICATION/DURATION/TERMINATION

This MOA will be effective when signed by all parties. This MOA may be amended at any time by the mutual written consent of the parties. The parties will review this MOA at least once every 10 years to determine whether it should be revised, renewed, or cancelled. This MOA may be revoked or terminated by an affected agency at any time and for any reason by giving thirty (30) days written notice prior to the date of termination.

VIII. REFERENCE

United States Environmental Protection Agency, Title 40 Code of Federal Regulations, Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 2 (e), "General Monitoring Requirements."

IX. APPROVALS

Georgia Department of Natural Resources, Environmental Protection Division (GA EPD)

BY: _____

TITLE: Director

DATE: 2/21/17

South Carolina Department of Health and Environmental Control (SCDHEC) Bureau of Air Quality

BY: _____

TITLE: Bureau Chief

DATE: 03/01/17

THIS AGREEMENT IS NOT OFFICIAL AND BINDING UNTIL SIGNED BY THE DHEC CONTRACTS MANAGER.

_____

Francine Miller
DHEC Contracts Manager
DATE: 3-6-17

MEMORANDUM OF AGREEMENT

ON AIR QUALITY MONITORING FOR CRITERIA POLLUTANTS FOR

THE CHARLOTTE-CONCORD-GASTONIA

METROPOLITAN STATISTICAL AREA (MSA)

July 1, 2016

RECEIVED
JUL 01 2016
BUREAU OF AIR QUALITY

Participating Agencies:

North Carolina
Department of Environmental Quality (NCDEQ)
Division of Air Quality (NCDAQ)

South Carolina
Department of Health and Environmental Control (SCDHEC)
Bureau of Air Quality

Mecklenburg County, North Carolina
Land Use and Environmental Services Agency
Air Quality (MCAQ)

I. PURPOSE/OBJECTIVES/GOALS

The purpose of this Memorandum of Agreement (MOA) is to establish the Charlotte-Concord-Gastonia Metropolitan Statistical Area (MSA) Criteria Pollutant Air Quality Monitoring Agreement among NCDAQ, SCDHEC, and the MCAQ (collectively referred to as the "affected agencies") to collectively meet United States Environmental Protection Agency (EPA) minimum monitoring requirements for criteria pollutants deemed necessary to meet the needs of the MSA as determined reasonable by all parties. This MOA will renew the terms and conditions of this collective agreement to provide adequate criteria pollutant monitoring for the Charlotte-Concord-Gastonia MSA as required by 40 CFR 58 Appendix D, Section 2(e).

II. BACKGROUND

The Charlotte-Concord-Gastonia MSA consists of

Cabarrus County, NC
Gaston County, NC
Iredell County, NC
Lincoln County, NC
Mecklenburg County, NC
Rowan County, NC
Union County, NC
Chester County, SC
Lancaster County, SC

York County, SC

NCDAQ has jurisdiction over Cabarrus, Gaston, Iredell, Lincoln, Rowan, and Union Counties; SCDHEC has jurisdiction over Chester, Lancaster, and York Counties; MCAQ has jurisdiction over Mecklenburg County.

The NCDAQ, SCDHEC, and MCAQ are required by the Clean Air Act to measure for certain criteria pollutants in the ambient air in the Charlotte-Concord-Gastonia MSA. The EPA has established minimum monitoring requirements based on the size of the MSA and the quality of the air in the MSA.

40 CFR 58 Appendix D, Section 2 (e) states (in part):

> "... The EPA recognizes that State or local agencies must consider MSA/CSA boundaries and their own political boundaries and geographical characteristics in designing their air monitoring networks. The EPA recognizes that there may be situations where the EPA Regional Administrator and the affected State or local agencies may need to augment or to divide the overall MSA/CSA monitoring responsibilities and requirements among these various agencies to achieve an effective network design. Full monitoring requirements apply separately to each affected State or local agency in the absence of an agreement between the affected agencies and the EPA Regional Administrator."

Currently each air pollution control agency (affected agency) conducts monitoring in its respective jurisdiction and coordinates monitoring with the other air pollution control agencies within the MSA.

III. ROLES AND RESPONSIBILITIES

The parties agree to the following terms and conditions:

- NCDAQ, SCDHEC, and MCAQ (the "affected agencies") commit to conducting appropriate monitoring in their respective jurisdictions of the MSA; as needed, to collectively meet EPA minimum monitoring requirements for the entire MSA for criteria air pollutant monitoring deemed necessary to meet the needs of the MSA as determined reasonable by all affected agencies. The minimum air quality monitoring requirements for the MSA shall apply to the MSA in its entirety and shall not apply to any sole affected agency within the MSA unless agreed upon by all affected agencies.

- The affected agencies commit to coordinating monitoring responsibilities and requirements to achieve an effective network design regarding criteria air pollutant monitoring conducted in the MSA and commit to communicate unexpected or unplanned changes in monitoring activities within their jurisdictions to the other affected agencies. As conditions warrant, the affected agencies may conduct telephone conference calls, meetings, or other communications to discuss monitoring activities for the MSA. Each affected party shall inform the others via telephone or e-mail of any monitoring changes occurring in its jurisdiction of the MSA at its earliest convenience after learning of the need for the change or making the changes. Such unforeseen changes may include evictions from monitoring sites, destruction of monitoring sites due to

natural disaster, or similar occurrences that result in extended change (greater than one quarter) or permanent change in the monitoring network. At least once a year in the second quarter or before June 15th, each agency shall make available to the other agency a copy of its proposed monitoring plan for its jurisdiction with the MSA for the next year.

- Each party reserves the right to revoke or terminate this MOA at any time for any reason by giving thirty (30) days written notice prior to the date of termination.

IV. LIMITATIONS

A. All commitments made in this MOA are subject to the availability of funds and each party's budget priorities. Nothing in this MOA, in and of itself, obligates NCDAQ, SCDHEC, or MCAQ to expend funds or to enter into any contract, assistance agreement, interagency agreement, or other financial obligation.

B. This MOA is neither a fiscal nor a funds obligation document. Any endeavor involving reimbursement or contribution of funds between parties to this MOA will be handled in accordance with applicable laws, regulations, and procedures, and will be subject to separate subsidiary agreements what will be effected in writing by representatives of the parties.

C. Except as provided in Section III, this MOA does not create any right or benefit, substantive or procedural, enforceable by law or equity against NCDAQ, SCDHEC, or MCAQ, their officers or employees, or any other person. This MOA does not direct or apply to any person outside NCDAQ, SCDHEC, or MCAQ.

V. PROPRIETARY INFORMATION AND INTELLUCTUAL PROPERTY

No proprietary information or intellectual property is anticipated to arise out of this MOA.

VI. POINTS OF CONTACT

The following individuals are designated points of contact for the MOA:

NCDEQ DAQ:
Joette Steger
NC DENR Division of Air Quality
1641 Mail Service Center
Raleigh, NC 27699-1641

joette.steger@ncdenr.gov
Voice/fax: 919-707-8449

SCDHEC:
Scott Reynolds
SCDHEC Bureau of Environmental Health Services
2600 Bull Street
Columbia, SC 29201

reynolds@dhec.sc.gov
Voice: 803-896-0902

MCAQ: Jeff Francis
Mecklenburg County Land Use and Environmental Services Agency – Air Quality
2145 Suttle Avenue
Charlotte, NC 28208-5237

Jeff.Francis@mecklenburgcountync.gov
Phone 704-336-5430
Fax 704-336-4391

In the event that a point of contact needs to be changed, notification may be made via email to the other parties.

VII. MODIFICATION/DURATION/TERMINATION

This MOA will be effective when signed by all parties. This MOA may be amended at any time by the mutual written consent of all parties. The parties will review this MOA at least once every 10 years to determine whether it should be revised, renewed, or cancelled. This MOA may be revoked or terminated by an affected party at any time and for any reason by giving thirty (30) days written notice prior to the date of termination.

VIII. REFERENCE

United States Environmental Protection Agency, Title 40 Code of Federal Regulations, Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 2 (e), "General Monitoring Requirements"

IX. APPROVALS

North Carolina Department of Environmental Quality
Division of Air Quality (NCDAQ)

BY: Sheila C. Holman

TITLE: Director, Division of Air Quality

DATE: 6/27/2016

South Carolina Department of Health and Environmental Control (SCDHEC)
Bureau of Air Quality

BY: _____

TITLE: Chief, Bureau of Air Quality

DATE: 07/05/2016

Mecklenburg County Land Use and Environmental Services Agency – Air Quality (MCAQ)
Mecklenburg County Air Quality

BY: Debra H Rhoads

TITLE: Director, Air Quality

DATE: 6/29/2016

D H E C
PROMOTE PROTECT PROSPER
Catherine E. Heigel, Director
Promoting and protecting the health of the public and the environment

MEMORANDUM

July 5, 2016

Subject: Change of Point of Contact for South Carolina

Memorandum of Agreement on Air Quality Monitoring for Criteria Pollutants for the Charlotte-Concord-Gastonia Metropolitan Statistical Area (MSA)

From: Rhonda B. Thompson, SC DHEC
Chief, Bureau of Air Quality

As of July 5, 2016, the Point of Contact for South Carolina will be Micheal Mattocks, instead of Scott Reynolds.

Micheal's contact information is below:

Micheal Mattocks
SC DHEC – Bureau of Environmental Health Services
2600 Bull Street
Columbia, SC 29201
(803)896-0856
mattock@dhec.sc.gov

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

MAY 26 2016

Ms. Rhonda Banks Thompson
Chief
Bureau of Air Quality Control
South Carolina Department of Health and
Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

Dear Ms. Thompson:

On March 16, 2016, the South Carolina Department of Health and Environmental Control (SC DHEC) notified the U.S. Environmental Protection Agency Region 4 that the comment period had ended for the Network Plan Addendum to the state of South Carolina's 2015 annual ambient air monitoring network plan (Network Plan Addendum). The Network Plan Addendum provided further information and proposed changes to the 2015 annual ambient air monitoring network plan (Network Plan), which was approved with three exceptions by the EPA on November 19, 2015. The Network Plan Addendum was received as two separate documents. One document proposed changes to the SC DHEC monitoring network and the other document requested waivers for monitoring siting requirements.

The EPA understands that the SC DHEC provided the public a 30-day review period for its draft Network Plan Addendum and that no comments were received.

The Network Plan Addendum proposes a number of changes to the SC DHEC's ambient air monitoring network, including:

- shutdown of four ozone (O_3) monitoring sites,
- relocation of one O_3 monitoring site,
- startup of one O_3 monitoring site,
- shutdown of one multipollutant ($PM_{2.5}$ and PM_{10}) site,
- a waiver of siting requirements at an O_3 and SO_2 site, and
- renewal of an existing waiver at a multi-pollutant site.

The EPA approves the requests in the Network Plan Addendum, with the following exceptions:

- The EPA is deferring making a decision on the proposed shut down of the Clemson O_3 site (AQS ID 45-072-0002) in order to allow more time for consideration and discussion with the SC DHEC.
- The EPA does not approve the discontinuation of O_3 monitoring at the Bushy Park Pump Station site (AQS ID 45-015-0002), since this site is required for the Charleston area to meet the O_3 minimum monitoring requirements found in 40 CFR Part 58, Appendix D. The EPA understands that the SC DHEC is currently looking for nearby property to move this monitor to. Once a suitable replacement site is found, the SC DHEC should request a relocation of the Bushy Park Pump Station O_3 monitor.

- The EPA conditionally approves the establishment of the Coastal Carolina O_3 monitoring site, once the SC DHEC has resolved any monitor siting issues. This site will meet the requirements for O_3 monitoring in the Myrtle Beach-Conway-North Myrtle Beach, SC-NC Metropolitan Statistical Area. The SC DHEC should include in the next ambient air monitoring network plan evidence that the Coastal Carolina site meets air monitoring siting requirements found in 40 CFR Part 58, Appendix E.
- The EPA supports the proposed relocation for the York CMS O_3 monitoring site (AQS ID 45-091-0006) to the proposed York O_3 site (AQS ID 45-091-0007). However, the Network Plan Addendum does not provide sufficient information to approve the new location at the proposed York O_3 site. In addition to the information provided in the Network Plan Addendum, the SC DHEC should submit to the EPA information to demonstrate that monitoring siting criteria are met, including: zoomed in aerial photo or a site location map; site photo(s) facing from the site in each direction (N, S, E, W); applicable measurements to any obstructions, trees or roadways; and the proposed probe height for the site.

All of the approved ambient air monitoring network changes, requested in the Network Plan Addendum should also be documented in the next annual ambient air monitoring network plan, due July 1, 2016.

Details regarding the EPA's review of the Network Plan Addendum are provided in the enclosed comments.

Thank you for working with us to monitor air pollution and promote healthy air quality in South Carolina. If you have any questions or concerns, please contact Gregg Worley at (404) 562-9141 or Ryan Brown at (404) 562-9147.

Sincerely,

Carol L. Kemker
Acting Director
Air, Pesticides and Toxics Management Division

Enclosure

cc: Mr. Robert Brown
Division Director, Air Planning Development SC DHEC

Mr. Scott Reynolds
Director, Division of Air Quality Analysis, SC DHEC

The Honorable William Harris
Chief of the Catawba Indian Nation

Mr. Darin Steen
Director, Environmental Services, Catawba Indian Nation

Ms. Sheila Holman, Director, Division of Air Quality, NCDEQ

2015 State of South Carolina Ambient Air Monitoring Network Plan Addendum
The U. S. EPA Region 4 Comments and Recommendations

This document contains the U.S. Environmental Protection Agency Region 4 comments and recommendations on the state of South Carolina's 2015 ambient air monitoring network plan addendum (Network Plan Addendum). 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.

Proposed Monitoring Discontinuations

The Network Plan Addendum proposes to discontinue five monitoring sites. The EPA is deferring the decision for the proposed shut down of the Clemson O_3 site (AQS ID 45-072-0002), in order to allow more time for consideration and discussion with the SC DHEC on this issue. The EPA acknowledges the discontinuation of O_3 monitoring at the Cowpens (AQS ID 45-021-0002) site, and approves the discontinuation of O_3 monitoring at the Famoda Farms (AQS ID 45-045-1003) site, as well as the discontinuation of $PM_{2.5}$ and PM_{10} monitoring at the Bates House site (AQS ID 45-079-0019). See Table 1 for a summary of these requests with the EPA's comments.

The O_3 minimum monitoring requirements are found in 40 CFR Part 58, Appendix D, Table D-2. These minimum requirements are based on metropolitan statistical area (MSA) boundaries as defined by the U.S. Office of Management and Budget, population estimates from the U.S. Census Bureau for these MSAs, and historical ambient air monitoring data.

Table 1: Monitors Proposed for Discontinuation

AQS ID	Site Name	MSA	Pollutant	Type	Comments
45-072-0002	Clemson	Greenville-Anderson-Mauldin, SC	O_3	SLAMS	Deferred for further discussion with the SC DHEC.
45-021-0002	Cowpens National Battlefield	Gaffney, SC	O_3	SPM	Approval not required for SPM - shutdown acknowledged.[1]
45-015-0002	Bushy Park Pump Station	Charleston-North Charleston-Summerville, SC	O_3	SLAMS	Not Approved. A suitable replacement site should be found in the MSA.
45-045-1003	Famoda Farms	Greenville-Anderson-Mauldin, SC	O_3	SLAMS	Approved
45-079-0019	Bates House	Columbia, SC	$PM_{2.5}$, PM_{10}	SLAMS	Approved. The SC DHEC will lose site access. Collocated $PM_{2.5}$ sampler will be moved to Parklane site (AQS ID 45-079-0007) to meet $PM_{2.5}$ collocation requirements.

[1] The Cowpens National Battlefield O_3 site is in a MSA that meets minimum O_3 monitoring requirements and is classified as a special purpose monitor (SPM). The SC DHEC does not require EPA approval to shut down this monitor since it is a SPM. The EPA acknowledges the discontinuation of this monitor and that the monitoring requirements for O_3 in Appendix D to 40 CFR Part 58 will continue to be met after this monitor is shutdown.

The SC DHEC requested to discontinue O_3 monitoring at the Famoda Farms monitoring site (AQS ID 45-045-1003). The EPA approves the shutdown of this site. The Famoda Farms monitor is one of four O_3 monitors operating in the Greenville-Anderson-Mauldin, SC MSA. This area is required at a minimum to have two O_3 monitors. Additionally, Famoda Farms has consistently recorded lower O_3 concentrations than the Clemson and Hillcrest Middle School monitoring sites, which are also in the Greenville area. The monitoring requirements in Appendix D to 40 CFR Part 58 will continue to be met in the Greenville area after the Famoda Farms monitor is shutdown.

At this time, the EPA does not approve the shutdown of the O_3 monitor at Bushy Park Pump Station. The Charleston MSA would not meet minimum O_3 monitoring requirements if O_3 monitoring at this site were discontinued. At a minimum, the Charleston MSA is required to have two regulatory O_3 monitors and would only have one regulatory O_3 monitor if monitoring at Bushy Park Pump Station were discontinued. The EPA recommends that the SC DHEC find a suitable replacement monitoring location for Bushy Park. In the meantime, the SC DHEC should continue to flag in the Air Quality System (AQS) the Bushy Park Pump Station O_3 data as not meeting siting requirements.

The SC DHEC expects to lose access to the property where the Bates House $PM_{2.5}$ and PM_{10} monitoring site (AQS ID 45-079-0019) is located. For $PM_{2.5}$, the Bates House monitoring has recorded daily and annual $PM_{2.5}$ design values below the national ambient air quality standards (NAAQS) for the last five years. Additionally, $PM_{2.5}$ concentrations recorded at the Irmo site (AQS ID 45-063-0008), which is also in the Columbia, SC MSA, have been typically higher than Bates House. Over the last five years, Irmo has had annual design values higher than Bates House, as well. The PM_{10} levels recorded at Bates House have been well below the applicable standard for more than ten years. The EPA understands that the SC DHEC will move the collocated $PM_{2.5}$ sampler from Bates House to the Parklane site (AQS ID 45-079-0007) to still meet the $PM_{2.5}$ collocation requirements. After the Bates House monitoring site is shutdown and the $PM_{2.5}$ collocation requirements are met by establishing a collocated $PM_{2.5}$ sampler at the Parklane site, the Columbia, SC MSA will still meet monitoring requirements in Appendix D to 40 CFR Part 58 for PM_{10} and $PM_{2.5}$. Thus, EPA approves the discontinuation of monitoring at Bates House.

Proposed Monitor Startups or Relocations

The Network Plan Addendum also proposes to relocate one O_3 monitor and startup one O_3 monitor. See Table 2 for a summary of these requests.

Table 2: Monitors Proposed for Startup or Relocation

AQS ID	Site Name	MSA	Pollutant	Type	Comments
45-091-0006	York	Charlotte-Gastonia-Concord NC-SC	O_3	SLAMS	The EPA supports this relocation to the new site, but requests additional information in the next network plan.
45-051-0008	Coastal Carolina	Myrtle Beach-Conway-North Myrtle Beach, SC-NC	O_3	SLAMS	EPA Conditionally approves site startup. The Myrtle Beach MSA will the meet minimum monitoring requirements once this site is established. Site must meet siting criteria.

In its response to the 2015, Network Plan EPA approved a temporary shutdown of the York CMS monitoring site (AQS ID 45-091-0006). The SC DHEC stated in the Network Plan that it expects to lose access to the site and was looking for a replacement location. The Network Plan Addendum proposes to restart O_3 monitoring at a new site, York (AQS ID 45-091-0007), which is 3.5 miles northeast of the York CMS site. The EPA understands that the York CMS site is currently still operational even though the temporary shutdown was approved, and that The SC DHEC hopes to operate O_3 monitors concurrently at both the York CMS and York sites before discontinuing monitoring at York CMS. The York CMS monitor is an upwind location for the Charlotte-Concord-Gastonia NC-SC Core Based Statistical Area (CBSA) and typically reads lower than the other O_3 monitors in the CBSA. The EPA believes that the proposed York location would be representative of the same air shed as the previous York CMS monitoring site. The EPA supports the proposed location for the York O_3 monitoring site. However, the Network Plan Addendum does not provide sufficient information to fully approve the proposed York O_3 site. In addition to the information provided in the Network Plan Addendum, the SC DHEC should submit to the EPA information to demonstrate that monitoring siting criteria are met including: zoomed in aerial photo or a site location map; site photo(s) facing from the site in each direction (N, S, E, W); applicable measurements to any obstructions, trees or roadways; and the proposed probe height for the site. This information should be included in the next ambient air monitoring network plan.

The Network Plan Addendum proposes to establish a new O_3 monitoring site, Coastal Carolina (AQS ID 45-051-0008), in the Myrtle Beach-Conway-North Myrtle Beach, SC-NC CBSA to meet O_3 minimum monitoring requirements for this area. The SC DHEC provided 2011 Community Multiscale Air Quality (CMAQ) modeling output for this area in the Network Plan Addendum. The CMAQ model output indicates that the proposed Coastal Carolina site is in the area of the maximum predicted O_3 for the CBSA.

During the 2015 EPA technical systems audit (TSA), the EPA staff visited the proposed location for the Coastal Carolina site. The EPA noted that there was a tree dripline within ten meters of the expected monitoring probe location. This configuration would not meet the monitoring siting criteria found in 40 CFR Part 58, Appendix E, Section 5 siting requirements, "Spacing from Trees." The EPA conditionally approves the Coastal Carolina site; however, full approval is withheld until the monitoring siting criteria issue has been resolved. The SC DHEC should provide evidence that the Coastal Carolina site meets the monitoring siting criteria requirements found in Appendix E to 40 CFR Part 58 in the next ambient air monitoring network plan.

Proposed Waivers of Monitor Siting Criteria

The Network Plan Addendum requests one waiver of 40 CFR Part 58, Appendix E siting requirements and the extension of an existing waiver of siting requirements. Table 3 summarizes these requests.

Under 40 CFR Part 58, Appendix E, Section 10, waivers of siting criteria for existing sites can be granted if either of the following criteria are met:

> 10.1.1 The site can be demonstrated to be as representative of the monitoring area as it would be if the siting criteria were being met.

10.1.2 The monitor or probe cannot reasonably be located to meet the siting criteria because of physical constraints (e.g., inability to locate the required type of site the necessary distance from roadways or obstructions).

Table 3: Waivers of Siting Criteria

AQS ID	Site Name	MSA	Pollutant	Type	Comments
45-079-0021	Congaree Bluff	Columbia, SC	O_3, SO_2	SPM	Waiver of siting criteria approved for the identified trees obstructing the monitor. Waiver through 2020.
45-045-0015	Greenville ESC	Greenville-Anderson-Mauldin, SC	SO_2, NO_2, $PM_{2.5}$, PM_{10}, O_3	SLAMS	Existing waiver of siting requirements extended through 2018.

The Network Plan Addendum requests a waiver of monitoring siting requirements for the Congaree Bluff monitoring site (AQS ID 45-079-0021). The objective of the Congaree Bluff site is to measure O_3 and SO_2 within the Congaree National Park boundaries. Within the national park boundaries, this monitor cannot be reasonably located to meet the siting criteria because of physical constraints. The EPA staff visited the Congaree Bluff site on January 25, 2016, and agree that this is the best monitoring location within the park boundaries. However, there are over forty trees surrounding the probe that do not meet the spacing from obstructions discussed in 40 CFR Part 58, Appendix E, Section 4 (a)"… The distance from the obstacle to the probe, inlet, or monitoring path must be at least twice the height that the obstacle protrudes above the probe, inlet, or monitoring path…"

The configuration of obstructing trees is such that the monitor probe siting does not meet Table E-4 of 40 CFR Part 58, Appendix E, Section 11, which states that monitor location "must have unrestricted airflow 270 degrees around the probe or sampler." The Congaree Bluff monitors have 180 degrees of unobstructed airflow due to the obstructing trees.

However, the EPA understands that the SC DHEC has trimmed the dripline of trees so that all tree driplines are no closer than ten meters from the monitoring probes, in order to comply with 40 CFR Part 58, Appendix E, Section 5 siting requirements, "Spacing from Trees." The SC DHEC has taken reasonable steps to meet many of the siting monitoring requirements, and the EPA believes that removing over 40 trees from a national park to meet all of the siting requirements is not necessary.

The EPA waives the requirements of 40 CFR Part 58, Appendix E, Section 4 (a) and Table E-4 to 40 CFR Part 58, Appendix E, Section 11 in regards to the trees identified by The SC DHEC in the Network Plan Addendum for the Congaree Bluff site. This site must still meet all other siting requirements found in Appendix E to 40 CFR Part 58. The EPA waives these specific requirements for a period of five years. This waiver should be re-evaluated in the 2020 South Carolina network assessment.

Similarly, the Network Plan Addendum requests to renew a waiver of siting criteria for the Greenville ESC monitoring site (AQS ID 45-045-0015). In 2009, the EPA granted a waiver of siting requirements for this site based on concurrent monitoring with the previous site. The Network Plan Addendum identifies two trees that are closer than twice the distance between the top of the tree and the height of the monitoring probe. At this time, the tree configuration and spacing at the site is close to meeting siting criteria such that the EPA believes that the monitoring data is representative of data if the siting criteria were met. Also, restrictions at the location prevent a reconfiguration of equipment or removal of trees.

The EPA waives the requirements of 40 CFR Part 58, Appendix E, Section 4 (a) and Section 11 (Table E-4) in regards to the trees identified by the SC DHEC in the Network Plan Addendum for the Greenville ESC site. The EPA waives these specific requirements for a period of two years. The EPA and the SC DHEC will continue to reevaluate the waiver of these requirements and alternative solutions in upcoming ambient air monitoring network plans. The Greenville ESC site must still meet all of the other siting requirements found in Appendix E to 40 CFR Part 58.

MEMORANDUM OF AGREEMENT

ON AIR QUALITY MONITORING FOR CRITERIA POLLUTANTS FOR

THE MYRTLE BEACH-CONWAY-NORTH MYRTLE BEACH

METROPOLITAN STATISTICAL AREA (MSA)

July 1, 2015

Participating Agencies:

North Carolina
Department of Environment and Natural Resources (NCDENR)
Division of Air Quality (NCDAQ)

South Carolina
Department of Health and Environmental Control (SCDHEC)
Bureau of Air Quality

I. PURPOSE/OBJECTIVES/GOALS

The purpose of this Memorandum of Agreement (MOA) is to establish the Myrtle Beach-Conway-North Myrtle Beach Metropolitan Statistical Area (MSA) Criteria Pollutant Air Quality Monitoring Agreement between NCDAQ and SCDHEC (collectively referred to as the "affected agencies") to collectively meet United States Environmental Protection Agency (EPA) minimum monitoring requirements for ozone, as well as other criteria pollutants air quality monitoring deemed necessary to meet the needs of the MSA as determined reasonable by all parties. This MOA will establish the terms and conditions of this collective agreement to provide adequate criteria pollutant monitoring for the Myrtle Beach-Conway-North Myrtle Beach MSA as required by 40 CFR 58 Appendix D, Section 2(e).

II. BACKGROUND

The Myrtle Beach-Conway-North Myrtle Beach MSA consists of Horry County and Brunswick County. NCDAQ has jurisdiction over Brunswick County and SCDHEC has jurisdiction over Horry County. Brunswick County was previously included in the Wilmington (NC) MSA with New Hanover and Pender Counties. However, the United States Office of Management and Budget revised the geographic delineation in February 2013 to include Brunswick County in the Myrtle Beach-Conway-North Myrtle Beach MSA instead.

The NCDAQ and SCDHEC are required by the Clean Air Act to measure for certain criteria pollutants in the ambient air in the Myrtle Beach-Conway-North Myrtle Beach MSA. The EPA has established minimum monitoring requirements based on the size of the MSA and the quality of the air in the MSA for ozone.

40 CFR 58 Appendix D, Section 2 (e) states (in part):

> "... The EPA recognizes that State or local agencies must consider MSA/CSA boundaries and their own political boundaries and geographical characteristics in designing their air monitoring networks. The EPA recognizes that there may be situations where the EPA Regional Administrator and the affected State or local agencies may need to augment or to

divide the overall MSA/CSA monitoring responsibilities and requirements among these various agencies to achieve an effective network design. Full monitoring requirements apply separately to each affected State or local agency in the absence of an agreement between the affected agencies and the EPA Regional Administrator."

Currently each air pollution control agency (affected agency) conducts monitoring in its respective jurisdiction and coordinates monitoring with the other air pollution control agencies with the MSA.

III. ROLES AND RESPONSIBILITIES

The parties agree to the following terms and conditions:

- NCDAQ and SCDHEC (the "affected agencies") commit to conducting appropriate monitoring in their respective jurisdictions of the MSA; as needed, to collectively meet EPA minimum monitoring requirements for the entire MSA for ozone, as well as other criteria air pollutant monitoring deemed necessary to meet the needs of the MSA as determined reasonable by both affected agencies. The minimum air quality monitoring requirements for the MSA shall apply to the MSA in its entirety and shall not apply to any sole affected agency within the MSA unless agreed upon by all affected agencies.

- The affected agencies commit to coordinating monitoring responsibilities and requirements to achieve an effective network design regarding criteria air pollutant monitoring conducted in the MSA and commit to communicate unexpected or unplanned changes in monitoring activities within their jurisdictions to the other affected agency. As conditions warrant, the affected agencies may conduct telephone conference calls, meetings, or other communications to discuss monitoring activities for the MSA. Each affected party shall inform the other via telephone or e-mail of any monitoring changes occurring in its jurisdiction of the MSA at its earliest convenience after learning of the need for the change or making the changes. Such unforeseen changes may include evictions from monitoring sites, destruction of monitoring sites due to natural disaster, or similar occurrences that result in extend (greater than one quarter) or permanent change in the monitoring network. At least once a year in the second quarter or before June 15th, each agency shall deliver to the other agency a copy of its proposed monitoring plan for its jurisdiction with the MSA for the next year.

- Each party reserves the right to revoke or terminate this MOA at any time for any reason by giving thirty (30) days written notice prior to the date of termination.

IV. LIMITATIONS

A. All commitments made in this MOA are subject to the availability of funds and each party's budget priorities. Nothing in this MOA, in and of itself, obligates NCDAQ or SCDHEC to expend funds or to enter into any contract, assistance agreement, interagency agreement, or other financial obligation.

B. This MOA is neither a fiscal nor a funds obligation document. Any endeavor involving reimbursement or contribution of funds between parties to this MOA will be handled in accordance

with applicable laws, regulations, and procedures, and will be subject to separate subsidiary agreements what will be effected in writing by representatives of the parties.

C. Except as provided in Section III, this MOA does not create any right or benefit, substantive or procedural, enforceable by law or equity against NCDAQ or SCDHEC, their officers or employees, or any other person. This MOA does not direct or apply to any person outside NCDAQ or SCDHEC.

V. PROPRIETARY INFORMATION AND INTELLUCTUAL PROPERTY

No proprietary information or intellectual property is anticipated to arise out of this MOA.

VI. POINTS OF CONTACT

The following individuals are designated points of contact for the MOA:

NC DENR DAQ: Donnie Redmond
NC DENR Division of Air Quality
1641 Mail Service Center
Raleigh, NC 27699-1641

donnie.redmond@ncdenr.gov
Voice/fax: 919-707-8468

SCDHEC: Scott Reynolds
SCDHEC Bureau of Air Quality
2600 Bull Street
Columbia, SC 29201

reynolds@dhec.sc.gov
Voice: 803-896-0902

VII. MODIFICATION/DURATION/TERMINATION

This MOA will be effective when signed by all parties. This MOA may be amended at any time by the mutual written consent of all parties. The parties will review this MOA at least once every 10 years to determine whether it should be revised, renewed, or cancelled. This MOA may be revoked or terminated by an affected party at any time and for any reason by giving thirty (30) days written notice prior to the date of termination.

VIII. REFERENCE

United States Environmental Protection Agency, Title 40 Code of Federal Regulations, Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 2 (e), "General Monitoring Requirements"

IX. APPROVALS

North Carolina Department of Environment and Natural Resources
Division of Air Quality (NCDAQ)

BY: Sheila C. Holman

TITLE: Director, Division of Air Quality

DATE: 6/12/2015

South Carolina Department of Health and Environmental Control (SCDHEC)
Bureau of Air Quality

BY: Myra A Reece

TITLE: Bureau Chief, Air Quality Bureau

DATE: 6/22/15