GEORGIA
DEPARTMENT OF NATURAL RESOURCES

ENVIRONMENTAL PROTECTION DIVISION

2019 Ambient Air Monitoring Plan

Air Protection Branch
Ambient Monitoring Program

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Acronyms and Glossary

AADT	Annual Average Daily Traffic
Aerosols	A gaseous suspension of fine solid or liquid particles
AM	Annual Mean
Anthropogenic	Resulting from human activity
APB	Air Protection Branch
AQCR	Air Quality Control Region
AQS	Air Quality System
ARITH MEAN	Arithmetic Mean
ARM	Approved Regional Method
BAM	Beta Attenuation Monitor
CAA	Clean Air Act
CBSA	Core Based Statistical Area
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CSA	Combined Statistical Area
CV	Coefficient of Variation
DNPH	Dinitrophenylhydrazine
EPA	United States Environmental Protection Agency
FEM	Federal Equivalent Method
FRM	Federal Reference Method- the official measurement technique for a given pollutant
GA AAMP	Georgia Ambient Air Monitoring Program
GA EPD	Georgia Environmental Protection Division
GEO MEAN	Geometric Mean
HAP	Hazardous Air Pollutant
HPLC	High Performance Liquid Chromatography
LOD	Limit of Detection
$\mu g/m^3$	Micrograms per cubic meter
m/s	Meter per second
MSA	Metropolitan Statistical Area, as defined by the US Census Bureau
NAAQS	National Ambient Air Quality Standard
NATTS	National Air Toxics Trends Station
NCore	National Core Multipollutant Monitoring Network
NDV	Normalized Design Value
NMHC	Non-Methane Hydrocarbons
NO_2	Nitrogen Dioxide
NO_x	Oxides of Nitrogen
NO_y	Reactive oxides of Nitrogen
NWS	National Weather Service
O_3	Ozone
PAH	Polycyclic Aromatic Hydrocarbons
PAMS	Photochemical Assessment Monitoring Station
Pb	Lead
$PM_{2.5}$	Particles with an aerodynamic diameter of 2.5 microns or less
PM_{10}	Particles with an aerodynamic diameter of 10 microns or less
$PM_{10-2.5}$	Particles with an aerodynamic diameter between 2.5 and 10 microns
ppb	Parts per Billion

ppm	Parts per Million
Precursor	A substance from which another substance is formed
PUF	Polyurethane Foam
QTR	Calendar Quarter
Rawinsonde	A source of meteorological data for the upper atmosphere
SLAMS	State and Local Air Monitoring Stations
SO_2	Sulfur Dioxide
SPMS	Special Purpose Monitoring Stations
STN	Speciation Trends Network
TBD	To Be Determined
TEOM	Tapered Element Oscillating Microbalance
TNMOC	Total Non-Methane Organic Compounds
TRS	Total Reduced Sulfur
UV	Ultraviolet
VOC	Volatile Organic Compound
W/m^2	Watts per square meter
ZPS	Zero/Precision/Span

Agency Contacts

Access to More Information about the Ambient Air Monitoring Network

While this report includes a great deal of information about the Ambient Air Monitoring Network, much more information is readily available, including summaries of the pollutant data from the monitors around the state.

Agency Contacts for Georgia Environmental Protection Division

Regarding this report and questions relating to the collected ambient air quality data:

DeAnna Oser, Ambient Monitoring Program Manager
DeAnna.Oser@dnr.ga.gov
404-363-7004

Janet Aldredge-Byars, Data Analysis Unit Manager
Janet.Aldredge@dnr.ga.gov
404-362-6587

Regarding the collection of the ambient data:

Jaime Gore, Manager, Operations 1 Unit Manager
Jaime.Gore@dnr.ga.gov
404-363-7071

Ken Buckley, Manager, Operations 2 Unit Manager
Ken.Buckley@dnr.ga.gov
404-362-2738

Lynsey Scarbrough, Manager, Operations Support Unit Manager
Lynsey.Scarbrough@dnr.ga.gov
404-783-1466

Regarding quality oversight of the monitoring program:

DeAnna Oser, Quality Assurance Unit Manager
DeAnna.Oser@dnr.ga.gov
404-363-7004

Regarding the meteorology monitoring program:

Bill Murphey, Meteorology Unit Manager
Bill.Murphey@dnr.ga.gov
404-363-7079

1.0 Executive Summary

The Georgia Ambient Air Monitoring Program (GA AAMP) of the Georgia Environmental Protection Division (GA EPD) is submitting this *2019 Ambient Air Monitoring Plan* to the United States Environmental Protection Agency (EPA) Region 4 office as required by federal regulations under 40CFR58.10 (a)(1). The plan provides documentation of the establishment and maintenance of an air quality surveillance system in Georgia that meets all federal requirements found in Appendix A through E of 40CFR58, where applicable. In developing this plan, the GA AAMP assessed monitoring types and objectives, site appropriateness for air quality characterization, representative spatial scale to match objectives at each monitor, and appropriate new technologies. The plan describes the established sites across the State of Georgia, as well as the proposal to maintain or discontinue sites in the state's ambient air quality surveillance system. The plan confirms that the network continues to meet the State and Local Air Monitoring Stations (SLAMS) criteria established by federal regulations, and that the information in the state and federal monitoring records properly classifies each monitoring station. The plan also serves as a directory of existing SLAMS, Photochemical Assessment Monitoring Stations (PAMS), Speciation Trends Network (STN) and Supplemental Speciation sites, National Air Toxics Trends Stations (NATTS), National Core Multipollutant Monitoring Station (NCore), Near-road Monitoring Network, Georgia Air Toxics Network, and the meteorological parameters performed at each location.

Prior to the Clean Air Act of 1970, the state health department conducted air monitoring in Georgia. In the early 1970's, the GA AAMP took over the responsibility of ambient air monitoring to better identify and control air pollutants in Georgia. The GA AAMP currently relies on a sampling network of 38 stations to:

- determine whether air quality standards are being met
- track air quality improvements
- measure the impact of industrial expansion
- provide air pollution information to the public
- assist in enforcement actions

Since the publication of the *2018 Ambient Air Monitoring Plan*, there have been some changes to the state's ambient air monitoring network that should be noted.

New monitors/sites:

The GA AAMP installed a second, collocated Teledyne T640 continuous $PM_{2.5}$ sampler at the Athens site (13-059-0002) as of February 15, 2019.

On March 1, 2019, the Teledyne T640 continuous $PM_{2.5}$ sampler replaced the BAM 1020 at the Albany site (13-095-0007).

When all the analytical quality assurance requirements can be met, the GA AAMP plans to replace both the primary and collocated NATTS high-volume PM_{10} metals samplers with low-volume PM_{10} metals samplers at the South DeKalb site (13-089-0002).

Changes to Monitoring:

In January 2017, the Augusta (13-245-0091) PM_{10} integrated sampler collected an unexplainably high value. Therefore, GA AAMP replaced the integrated sampler, which collected data every 6 days, with a continuous hourly PM_{10} sampler as a proactive solution.

As of June 2018, the GA AAMP changed the analyzer type for nitrogen dioxide (NO_2) at the NR-285 site (13-089-0003). The GA AAMP changed from the Teledyne T200 to the Thermo 42i collection method. Both use a chemiluminescence detection method.

As of January 1, 2019, the GA AAMP will no longer use the GA EPD Laboratory to conduct analysis of the collected $PM_{2.5}$ and PM_{10} filter based samples. The GA AAMP began using the InterMountain Laboratory (IML) to analyze the gravimetric $PM_{2.5}$ and PM_{10} data.

GA AAMP has changed the site name for the Confederate Avenue site (13-121-0055). This site is now called United Avenue.

Discontinued monitors/sites:

On October 31, 2018, the filter-based FRM $PM_{2.5}$ samplers were shut down at the Augusta site (13-245-0091), the Gainesville site (13-139-0003), and the Gwinnett Tech site (13-135-0002). The Teledyne T640 continuous FEM $PM_{2.5}$ samplers continue to operate at each site.

As of March 31, 2019, the GA AAMP is no longer running the filter-based FRM $PM_{2.5}$ sampler at the Athens site (13-059-0002). The Teledyne T640 continuous FEM $PM_{2.5}$ sampler continues to operate at this site.

Newnan:

Due to the property changing ownership, the Newnan site (13-077-0002) located within Coweta County in the Atlanta-Marietta-Roswell MSA was shut down as of November 15, 2017. The GA AAMP considered many factors regarding reestablishing the site, but decided against it. In accordance with 40CFR58.14 regarding discontinuation requests for State or Local Air Monitoring Stations (SLAMS), the GA AAMP provides the following documentation in support of terminating the Newnan ambient air monitoring site. Ozone has been monitored at this site since 1999, and $PM_{2.5}$ has been monitored since 2003.

Within the Atlanta-Marietta-Roswell MSA, the GA AAMP had operated nine ozone monitors through 2017, and the EPA operated the CASTNET site, making a total of ten ozone monitors in the Atlanta-Marietta-Roswell MSA. According to 40CFR58, Appendix D, Table D-2 (see below), the Atlanta-Marietta-Roswell MSA is required to have three ozone monitors in place. Therefore, there were seven more ozone monitors than required to meet the federal regulations operating in the Atlanta-Marietta-Roswell MSA in 2017. In addition, as of June 2018, EPA designated a seven county area within the Atlanta-Marietta-Roswell MSA as non-attainment, and Coweta County is not part of the 2015 ozone non-attainment area (83FR25776).

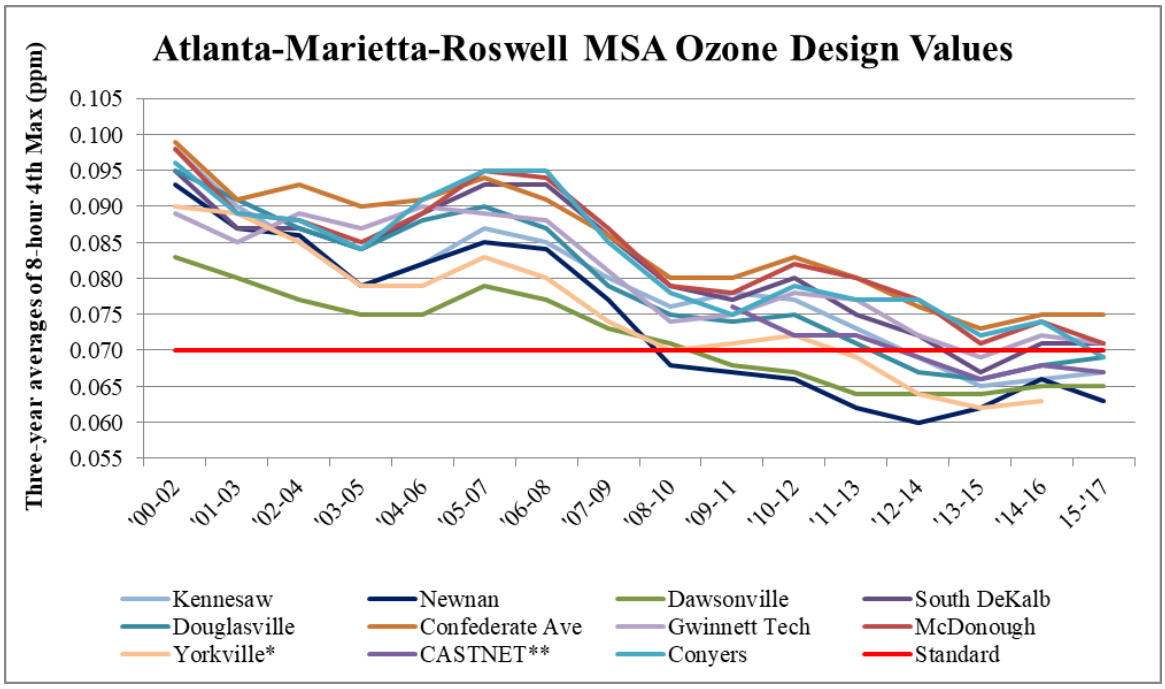
TABLE D-2 OF APPENDIX D TO PART 58— SLAMS MINIMUM O_3 MONITORING REQUIREMENTS

MSA population[1] [2]	Most recent 3-year design value concentrations ≥85% of any O_3 NAAQS[3]	Most recent 3-year design value concentrations <85% of any O_3 NAAQS[3] [4]
>10 million	4	2
4-10 million	3	1
350,000-<4 million	2	1
50,000-<350,000[5]	1	0

[1]Minimum monitoring requirements apply to the Metropolitan statistical area (MSA).
[2]Population based on latest available census figures.
[3]The ozone (O_3) National Ambient Air Quality Standards (NAAQS) levels and forms are defined in 40 CFR part 50.
[4]These minimum monitoring requirements apply in the absence of a design value.
[5]Metropolitan statistical areas (MSA) must contain an urbanized area of 50,000 or more population.

Figure 1: SLAMS Minimum O_3 Monitoring Requirements

In addition to operating several more ozone monitors than required by federal regulations, the 2015-2017 ozone design value for the Newnan site was 0.063 ppm, which was the lowest three-year average for the Atlanta-Marietta-Roswell MSA. The following graph shows the Newnan site ozone design values (dark blue line) well below the standards. Therefore, GA AAMP is discontinuing the site.



*Yorkville site shut down end of 2016
**CASTNET site run by EPA

Figure 2: Atlanta-Marietta-Roswell MSA Ozone Design Values, 2000-2017

Savannah-Mercer:

In accordance with 40CFR58.14 regarding SLAMS discontinuation requests, the GA AAMP provides the subsequent documentation in support of terminating the Savannah-Mercer ambient air monitoring site. The GA AAMP will close the Savannah-Mercer site (13-051-0091), which collects $PM_{2.5}$ data with a Partisol 2025, which is a federal reference method (FRM). This $PM_{2.5}$ Partisol 2025 monitor is the sole monitor at the Savannah-Mercer site. In order to have sufficient coverage of the Savannah MSA and meet the EPA regulations, the GA AAMP will run a federal equivalent method (FEM) Teledyne T640 continuous $PM_{2.5}$ monitor at the Savannah-L&A site (13-051-1002). This will be a better use of the GA AAMP's resources, and the Savannah MSA will continue to have a regulatory $PM_{2.5}$ monitor that can be used for attainment decisions. In addition, the Savannah-L&A site also monitors sulfur dioxide (SO_2), wind direction and wind speed.

The GA AAMP has been evaluating correlations between the data collected with the two $PM_{2.5}$ federal regulatory methods (Partisol 2025 and the Teledyne T640) at sites across the state, and has found very high correlations between these two types of monitors. The GA AAMP has determined that the Teledyne T640 will be a very efficient sampler to collect and represent $PM_{2.5}$ data. Due to the nature of the continuous sampler, there will be less personnel time needed to collect the data. In addition, since the sampler collects data on a continuous basis, this increases the percentage of data capture. The T640 potentially collects data every hour, compared to the integrated $PM_{2.5}$ 2025 sampler at the Savannah-Mercer site, which collects a 24-hour sample of data every three days. Table 1 is a summary of the correlations between the $PM_{2.5}$ Partisol 2025 and the Teledyne T640 data, with various start dates at sites in Georgia for the Teledyne T640.

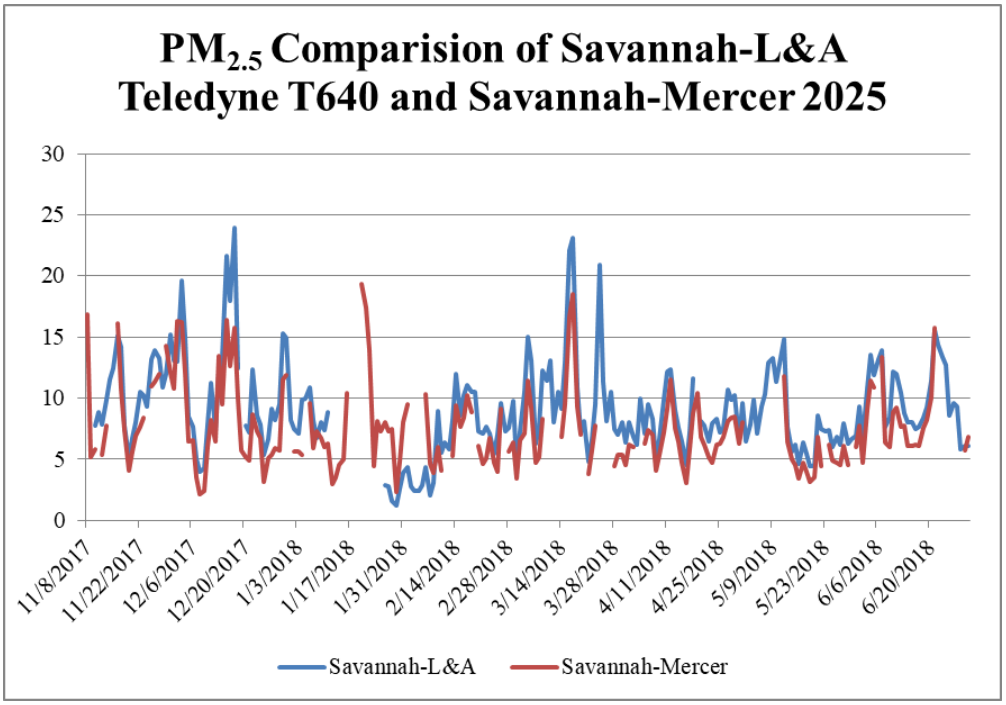


Figure 3: Comparison of $PM_{2.5}$ Data

Augusta	0.97
Macon	0.76
Rossville	0.98
Gainesville	0.95
Gwinnett Tech	0.92
Savannah	0.87
Warner Robins	0.82
South DeKalb	0.95

Table 1. Correlations between $PM_{2.5}$ 2025 and T640 samplers

Air Toxics Network:

As of December 31, 2018, the GA AAMP closed the Air Toxics Network monitors at the Macon-Forestry site (13-021-0012), the Savannah-E. President's Street site (13-051-0021), and the General Coffee site (13-069-0002). This includes the volatile organic compounds (VOCs), semi-VOCs, metals and carbonyls monitors at these sites. These monitors are non-regulatory, and the data collected is not compared to the National Ambient Air Quality Standards (NAAQS). GA AAMP will continue to monitor for air toxics at the South DeKalb site (13-089-0002) as part of the National Air Toxics Trends Station (NATTS) network. The following summary of the Air Toxics Network is provided to show the justification for shutting down these three sites.

Recommendation

The Air Protection Branch recommends ceasing operation of the remaining state (non-regulatory) air toxics network sites until such time as the Air Protection Branch drafts a new strategy for siting non-regulatory air toxics monitors. This strategy shall include an evaluation of potential exposure to air toxics emissions prior to siting a monitor, and risk assessment and risk communication protocols for communicating the monitoring data.

Background on the State Air Toxics Network

In 1994, EPD began monitoring for air toxics with an intensive study in Savannah. In 1996, EPD established a state air toxics network. At that time, there were no federal requirements for monitoring air toxics. The state air toxics network was designed to provide information concerning trends, seasonal variation, and rural versus urban ambient concentration of air toxics[1]. The results from this network were expected to provide a basis for making decisions on which areas in Georgia required more intensive study. By 2002, the state air toxics network

[1] Air toxics are pollutants that are known or suspected to cause cancer or other serious health effects. 187 air toxics are listed as hazardous air pollutants in Section 112 of the Clean Air Act. Many air toxics are also volatile organic compounds (VOCs) or semi-volatile (SVOC) organic compounds. Some metals are also considered air toxics.

consisted of 14 non-regulatory sites. The air toxics network equipment samples for metals,[2] semi-volatile organic compounds,[3] and volatile organic compounds.[4]

The state air toxics network was reduced to five sites in 2008. Two additional state air toxics network sites were shut down in 2015 and 2016. At that time, EPD's state air toxics network sites were: General Coffee, Macon-Forestry, and Savannah – E. President Street.

Federal Air Toxics Monitoring Requirements Established

In 2003, a National Air Toxics Trends Station (NATTS) was established at the South DeKalb monitoring site in response to new federal requirements. The NATTS monitors for the same compounds as the state air toxics network, plus carbonyls.[5] In 2015, EPD began monitoring for volatile organic compounds (VOCs), including some air toxics, at the NR-285 site as part of a negotiated siting agreement with EPA.

Federal Air Regulations Focusing on Air Toxics Emissions

The Clean Air Act Amendments of 1990 required EPA to regulate air toxics emissions from a list of source categories. Since 1990, EPA has issued regulations limiting emissions of air toxics from more than 174 categories of major industrial sources. EPA also addressed the disproportionate impacts of air toxics in urban areas through their Integrated Urban Air Toxics Strategy. As a result of these regulations and other initiatives, total air emissions of air toxics in Georgia have declined over 60% since 1991.[6]

Evaluation of the Monitoring Data from the State Air Toxics Network

The Ambient Monitoring Program prepares an annual report of air monitoring activities in the state, which includes the data collected from the state air toxics network. Recent annual reports have included screening-level risk analyses using the monitoring data, with the assistance of the Land Protection Branch's Risk Assessment Unit. No cancer risk exceeding 100 in a million[7] has been identified as a result of data from the state air toxics network. Only modest differences in the measurements observed at the various state air toxics monitoring sites have been noted. On the rare occasions when elevated levels of one or more pollutants were observed, we were unable to determine the reason for the outlying data. The Ambient Monitoring Program's ability to measure lower concentrations of air toxics is currently exceeding its ability to understand and explain the potential health consequences of the concentrations measured.

[2] Metals include antimony, arsenic, beryllium, cadmium, chromium, cobalt, lead, manganese, nickel, and selenium.
[3] Polycyclic aromatic hydrocarbons (PAHs), also called semi-volatile organic compounds (SVOCs) are predominantly formed by incomplete combustion of carbon-containing fuels such as wood, coal, and diesel fuel.
[4] VOCs include chemicals such as benzene, toluene, methylene chloride and methyl chloroform (which are also HAPs). Some VOCs are naturally occurring, such as pinenes and terpenes.
[5] Carbonyl compounds define a large group of organic compounds, which includes acetaldehyde and formaldehyde. These compounds can lead to ozone formation.
[6] Based on Toxics Release Inventory (TRI) data
[7] A risk level of 100 in 1 million refers to the likelihood that 100 in 1 million (1 in 10,000) people would develop cancer if they breathe air containing the same amount of the same air toxic for 70 years. This risk would be in addition to the cancer risk a person would have without being exposed to the air toxics.

Future Air Toxics Monitoring Activities in Georgia

The Air Protection Branch recommends shutting down the remaining non-regulatory state air toxics network sites because the current state air toxics network has not identified areas of the state requiring more intensive study, which was the stated goal for establishing the network in 1996. The Air Protection Branch will draft a new strategy for siting air toxics monitors prior to re-establishing a non-regulatory air toxics network that shall include an evaluation of potential exposure to air toxics emissions prior to siting a monitor, and risk assessment and risk communication protocols for communicating the monitoring data.

Site	County	Regulatory?	VOCs and Air Toxics	Carbonyls	SVOCs	Metals	Frequency
General Coffee	Coffee	No	X		X	X	1 in 12 days
Macon Forestry	Bibb	No	X		X	X	1 in 12 days
Savannah E. President St	Chatham	No		X	X	X	1 in 12 days
South DeKalb	DeKalb	Yes	X	X	X	X	1 in 6 days
NR – 285	DeKalb	No	X		X		1 in 12 days

Table 2. Air Toxics Monitoring in Georgia

1.1 Mandate

This document is produced in response to duties mandated to ambient air monitoring agencies in 40CFR58.10:

> ***40 CFR PART 58.10: Annual monitoring network plan and periodic network assessment.***
>
> *(a)(1) Beginning July 1, 2007, the state, or where applicable local, agency shall submit to the Regional Administrator an annual monitoring network plan which shall provide for the documentation of the establishment and maintenance of an air quality surveillance system that consists of a network of SLAMS monitoring stations that can include FRM, FEM, and ARM monitors that are part of SLAMS, NCore, CSN, PAMS, and SPM stations. The 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 annual monitoring network plan must be made available for public inspection and comment for at least 30 days prior to submission to the EPA and the submitted plan shall include and address, as appropriate, any received comments.*
> *(2) Any annual monitoring network plan that proposes network modifications (including new or discontinued monitoring sites, new determinations that data are not of sufficient quality to be compared to the NAAQS, and changes in identification of monitors as suitable or not suitable for comparison against the annual $PM_{2.5}$ NAAQS) to SLAMS networks is subject to the approval of the EPA Regional Administrator, who shall approve or disapprove the plan within 120 days of submission of a complete plan to the EPA.*

(3) The plan for establishing required NCore multipollutant stations shall be submitted to the Administrator not later than July 1, 2009. The plan shall provide for all required stations to be operational by January 1, 2011.

(4) A plan for establishing source-oriented Pb monitoring sites in accordance with the requirements of appendix D to this part for Pb sources emitting 1.0 tpy or greater shall be submitted to the EPA Regional Administrator no later than July 1, 2009, as part of the annual network plan required in paragraph (a)(1) of this section. The plan shall provide for the required source-oriented Pb monitoring sites for Pb sources emitting 1.0 tpy or greater to be operational by January 1, 2010. A plan for establishing source-oriented Pb monitoring sites in accordance with the requirements of appendix D to this part for Pb sources emitting equal to or greater than 0.50 tpy but less than 1.0 tpy shall be submitted to the EPA Regional Administrator no later than July 1, 2011. The plan shall provide for the required source-oriented Pb monitoring sites for Pb sources emitting equal to or greater than 0.50 tpy but less than 1.0 tpy to be operational by December 27, 2011.

(5)(i) A plan for establishing or identifying an area-wide NO_2 monitor, in accordance with the requirements of Appendix D, section 4.3.3 to this part, shall be submitted as part of the Annual Monitoring Network Plan to the EPA Regional Administrator by July 1, 2012. The plan shall provide for these required monitors to be operational by January 1, 2013.

(ii) A plan for establishing or identifying any NO_2 monitor intended to characterize vulnerable and susceptible populations, as required in Appendix D, section 4.3.4 to this part, shall be submitted as part of the Annual Monitoring Network Plan to the EPA Regional Administrator by July 1, 2012. The plan shall provide for these required monitors to be operational by January 1, 2013.

(iii) A plan for establishing a single near-road NO_2 monitor in CBSAs having 1,000,000 or more persons, in accordance with the requirements of Appendix D, section 4.3.2 to this part, shall be submitted as part of the Annual Monitoring Network Plan to the EPA Regional Administrator by July 1, 2013. The plan shall provide for these required monitors to be operational by January 1, 2014.

(iv) A plan for establishing a second near-road NO_2 monitor in any CBSA with a population of 2,500,000 persons or more, or a second monitor in any CBSA with a population of 1,000,000 or more persons that has one or more roadway segments with 250,000 or greater AADT counts, in accordance with the requirements of appendix D, section 4.3.2 to this part, shall be submitted as part of the Annual Monitoring Network Plan to the EPA Regional Administrator by July 1, 2014. The plan shall provide for these required monitors to be operational by January 1, 2015.

(6) A plan for establishing SO_2 monitoring sites in accordance with the requirements of appendix D to this part shall be submitted to the EPA Regional Administrator by July 1, 2011 as part of the annual network plan required in paragraph (a) (1). The plan shall provide for all required SO_2 monitoring sites to be operational by January 1, 2013.

(7) A plan for establishing CO monitoring sites in accordance with the requirements of appendix D to this part shall be submitted to the EPA Regional Administrator. Plans for required CO monitors shall be submitted at least six months prior to the date such monitors must be established as required by section 58.13.

(8)(i) A plan for establishing near-road $PM_{2.5}$ monitoring sites in CBSAs having 2.5 million or more persons, in accordance with the requirements of appendix D to this part, shall be submitted as part of the annual monitoring network plan to the EPA Regional

Administrator by July 1, 2014. The plan shall provide for these required monitoring stations to be operational by January 1, 2015.

(ii) A plan for establishing near-road $PM_{2.5}$ monitoring sites in CBSAs having 1 million or more persons, but less than 2.5 million persons, in accordance with the requirements of appendix D to this part, shall be submitted as part of the annual monitoring network plan to the EPA Regional Administrator by July 1, 2016. The plan shall provide for these required monitoring stations to be operational by January 1, 2017.

(9) The annual monitoring network plan shall provide for the required O_3 sites to be operating on the first day of the applicable required O_3 monitoring season in effect on January 1, 2017 as listed in Table D-3 of appendix D of this part.

(10) A plan for making Photochemical Assessment Monitoring Stations (PAMS) measurements, if applicable, in accordance with the requirements of appendix D paragraph 5(a) of this part shall be submitted to the EPA Regional Administrator no later than July 1, 2018. The plan shall provide for the required PAMS measurements to begin by June 1, 2019.

(11) An Enhanced Monitoring Plan for O_3, if applicable, in accordance with the requirements of appendix D paragraph 5(h) of this part shall be submitted to the EPA Regional Administrator no later than October 1, 2019 or two years following the effective date of a designation to a classification of Moderate or above O_3 nonattainment, whichever is later.

(12) A detailed description of the PAMS network being operated in accordance with the requirements of appendix D to this part shall be submitted as part of the annual monitoring network plan for review by the EPA Administrator. The PAMS Network Description described in section 5 of appendix D may be used to meet this requirement.

(b) The annual monitoring network plan must contain the following information for each existing and proposed site:

(1) The AQS site identification number.

(2) The location, including street address and geographical coordinates.

(3) The sampling and analysis method(s) for each measured parameter.

(4) The operating schedules for each monitor.

(5) Any proposals to remove or move a monitoring station within a period of 18 months following plan submittal.

(6) The monitoring objective and spatial scale of representativeness for each monitor as defined in appendix D to this part.

(7) The identification of any sites that are suitable and sites that are not suitable for comparison against the annual $PM_{2.5}$ NAAQS as described in §58.30.

(8) The MSA, CBSA, CSA or other area represented by the monitor.

(9) The designation of any Pb monitors as either source-oriented or non-source-oriented according to Appendix D to 40 CFR part 58.

(10) Any source-oriented monitors for which a waiver has been requested or granted by the EPA Regional Administrator as allowed for under paragraph 4.5(a)(ii) of Appendix D to 40 CFR part 58.

(11) Any source-oriented or non-source-oriented site for which a waiver has been requested or granted by the EPA Regional Administrator for the use of Pb-PM_{10} monitoring in lieu of Pb-TSP monitoring as allowed for under paragraph 2.10 of Appendix C to 40 CFR part 58.

(12) The identification of required NO_2 monitors as near-road, area-wide, or vulnerable and susceptible population monitors in accordance with Appendix D, section 4.3 of this part.

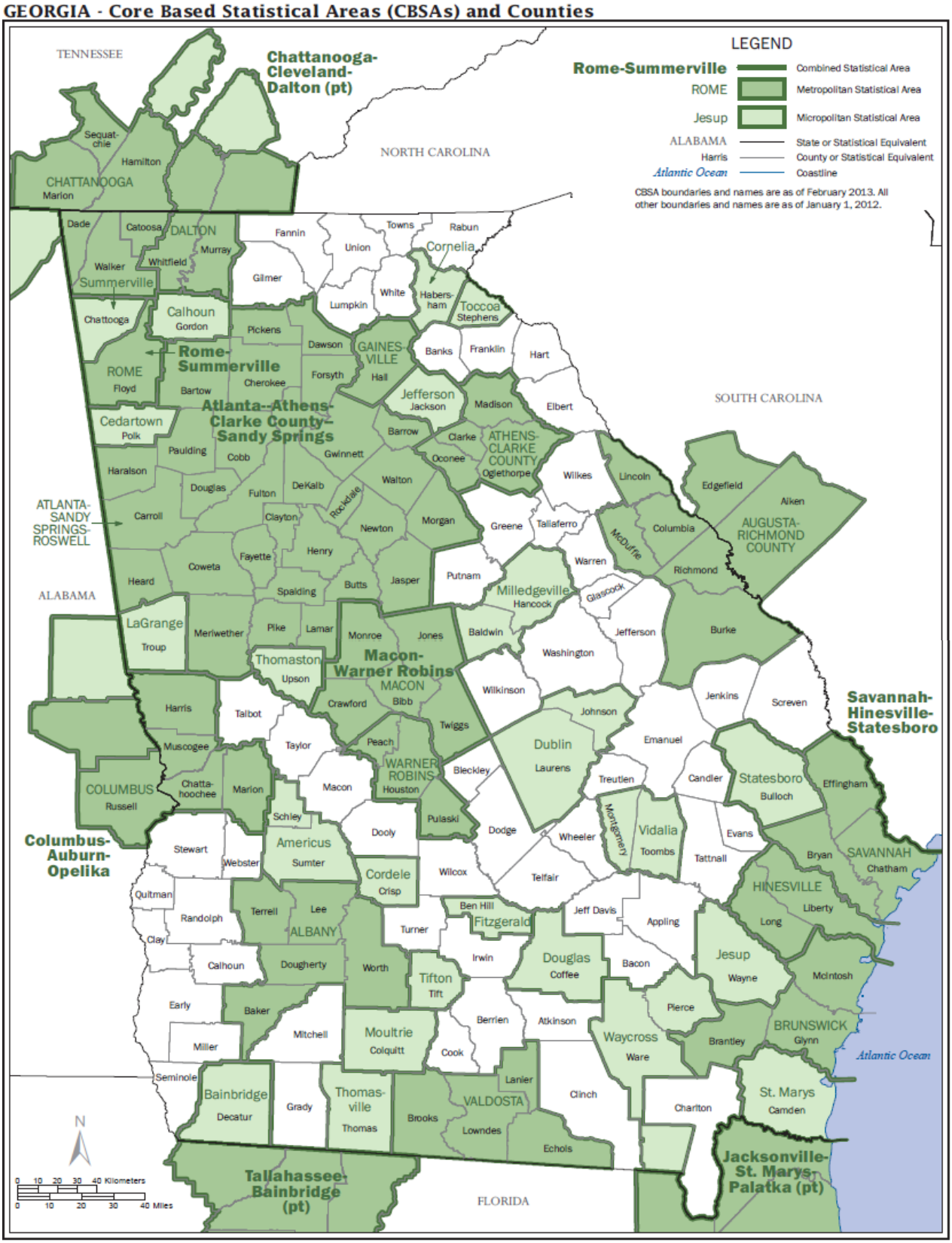
(13) The identification of any $PM_{2.5}$ FEMs and/or ARMs used in the monitoring agency's network where the data are not of sufficient quality such that data are not to be compared to the NAAQS. For required SLAMS where the agency identifies that the $PM_{2.5}$ Class III FEM or ARM does not produce data of sufficient quality for comparison to the NAAQS, the monitoring agency must ensure that an operating FRM or filter-based FEM meeting the sample frequency requirements described in §58.12 or other Class III $PM_{2.5}$ FEM or ARM with data of sufficient quality is operating and reporting data to meet the network design criteria described in appendix D to this part.

(c) The annual monitoring network plan must document how state and local agencies provide for the review of changes to a $PM_{2.5}$ monitoring network that impact the location of a violating $PM_{2.5}$ monitor. The affected state or local agency must document the process for obtaining public comment and include any comments received through the public notification process within their submitted plan.

(d) The state, or where applicable local, agency shall perform and submit to the EPA Regional Administrator an assessment of the air quality surveillance system every 5 years to determine, at a minimum, if the network meets the monitoring objectives defined in appendix D to this part, whether new sites are needed, whether existing sites are no longer needed and can be terminated, and whether new technologies are appropriate for incorporation into the ambient air monitoring network. The network assessment must consider the ability of existing and proposed sites to support air quality characterization for areas with relatively high populations of susceptible individuals (e.g., children with asthma), and, for any sites that are being proposed for discontinuance, the effect on data users other than the agency itself, such as nearby states and tribes or health effects studies. The state, or where applicable local, agency must submit a copy of this 5-year assessment, along with a revised annual network plan, to the Regional Administrator. The assessments are due every five years beginning July 1, 2010.

(e) All proposed additions and discontinuations of SLAMS monitors in annual monitoring network plans and periodic network assessments are subject to approval according to §58.14.

Within this document, the GA AAMP has included the metropolitan statistical area (MSA) represented by each site, which was derived from the following map (Figure 4), as requested above in paragraph 40CFR58.10(a)(3)(b)(8). The U.S. Census Bureau defines an MSA as a geographic entity containing a core urban area of 50,000 or more population and consists of one or more counties containing the core urban area, as well as adjacent counties that have a high degree of social and economic integration with the urban core (http://www.census.gov/population/metro/).



U.S. DEPARTMENT OF COMMERCE Economics and Statistics Administration U.S. Census Bureau

Figure 4: Map of Statistical Areas in Georgia

1.2 Procedures for Making Changes to the Monitoring Network

In some circumstances, monitors must be shut down or moved. While the Ambient Monitoring Program of GA EPD makes every effort to maintain continued operation of all required monitors, it operates as a guest or leaseholder at all monitoring sites. The GA AAMP does not hold ownership rights to the land at any of its ambient air monitoring sites. If the GA AAMP loses its lease or is otherwise forced to leave a given site, the monitors at that site may be moved to a nearby location [40CFR58.14(c)(6)].

1.3 Memorandum of Agreement

The GA AAMP has memorandum of agreements with the Chattanooga-Hamilton County Air Pollution Control Bureau and the South Carolina Department of Health and Environmental Control for air monitoring activities in MSAs that cross state lines.

As stated in the Memorandum of Agreement dated December 28, 2017, "The purpose of the Memorandum of Agreement (MOA) is to establish the Chattanooga-Hamilton County-Walker County Metropolitan Statistical Area (MSA) Criteria Pollutant Air Quality Monitoring Agreement between CHCAPCB [Chattanooga-Hamilton County Air Pollution Control Bureau] and GAEPDAPB [Georgia Environmental Protection Division Air Protection Branch] (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 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 Chattanooga–Hamilton County-Walker Co, GA MSA as required by 40CFR58 Appendix D, Section 2, (e) (March 28, 2016)." For full MOA documentation, see Appendix E of this document.

The Memorandum of Agreement dated January 2017 states, "The purpose of the Memorandum of Agreement (MOA) is to renew the Augusta-Richmond County Metropolitan Statistical Area (MSA) Criteria Pollutant Air Quality Monitoring Agreement between SCDHEC [South Carolina Department of Health and Environmental Control] 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 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 40CFR58 Appendix D, Section 2, (e)." For full MOA documentation, see Appendix E of this document.

For the Columbus, GA-AL MSA, both the Alabama Department of Environmental Management and the GA AAMP have agreed to fully cover EPA's regulations for monitoring their respective state.

1.4 Request for Waiver

The GA AAMP is requesting a waiver to continue monitoring the solar radiation and total ultraviolet radiation at the Conyers site (13-247-0001) for the South DeKalb (13-089-0002) PAMS site. The South DeKalb monitoring site does not fit the necessary guidelines for measurement of solar radiation, due to the topography of the site location. Solar radiation measurements from the total global solar radiation sensor must be made from a location that is free from any obstruction which may cause a shadowing effect. In addition, the pyranometer must be located away from highly reflective surfaces, which may cause enhanced optical scattering and overestimate the incoming total solar radiation. The required total ultraviolet radiation and solar radiation measurements are collected at the Conyers monitoring site, which meets necessary criteria.

GA AAMP understands that the EPA is working on a proposed rule that will provide state and local agencies an additional two years from the current implementation date of June 1, 2019 to implement the PAMS program requirements. This extension is needed to provide all agencies the funding and equipment necessary to implement the program. GA AAMP will continue preparing to implement the program as funding and personnel resources allow with the goal of full implementation on or before June 1, 2021.

1.5 Air Quality Index (AQI)

The Air Quality Index (AQI) is a method of reporting daily air quality that converts concentration levels of pollution to a simple color-coded number scale of 0-500. Colored categories on the AQI scale are related to potential health effects from exposure to measured concentrations of a major pollutant. Certain monitoring stations in the GA AAMP's SLAMS network provide data used in daily AQI reporting.

Figure 5 shows how the monitored concentrations correspond to the AQI values, descriptors and health advisories. AQI reporting is required for all urban areas with a population exceeding 350,000, which in Georgia include the Atlanta-Sandy Springs-Marietta MSA; the Augusta-Richmond County, GA-SC MSA; the Savannah MSA; and the Chattanooga TN-GA MSA. The GA AAMP provides daily AQI reporting to the general public in Georgia through the Ambient Monitoring Program website (https://airgeorgia.org/). The Chattanooga, Tennessee-Georgia MSA AQI reporting is covered by the GA AAMP and the Chattanooga-Hamilton County Air Pollution Control Bureau per the MOA, as discussed above. The Augusta-Richmond County, GA-SC MSA AQI is covered by the GA AAMP and the South Carolina Department of Health and Environmental Control per the MOA.

Maximum Pollutant Concentration									
$PM_{2.5}$ (24hr) $\mu g/m^3$	PM_{10} (24hr) $\mu g/m^3$	SO_2 (1hr)* ppb	O_3 (8hr)^ ppm	O_3 (1hr) ppm	CO (8hr) ppm	NO_2 (1hr) ppb	AQI Value	Descriptor	EPA Health Advisory
0.0–12.0	0– 54	0– 35	0.000–0.054	None	0.0–4.4	0– 53	0 to 50	**Good (green)**	Air quality is considered satisfactory, and air pollution poses little or no risk.
12.1–35.4	55–154	36–75	0.055–0.070	None	4.5–9.4	54-100	51 to 100	**Moderate (yellow)**	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people. For example, people who are unusually sensitive to the condition of the air may experience respiratory symptoms.
35.5–55.4	155 – 254	76 – 185	0.071 – 0.085	0.125 – 0.164	9.5–12.4	101-360	101 to 150	**Unhealthy for Sensitive Groups**	Members of sensitive groups (people with lung or heart disease) are at greater risk from exposure to particle pollution. Those with lung disease are at risk from exposure to ozone. The general public is not likely to be affected in this range.
55.5–150.4	255–354	186–304*	0.086–0.105	0.165–0.204	12.5–15.4	361-649	151 to 200	**Unhealthy (red)**	Everyone may begin to experience health effects in this range. Members of sensitive groups may experience more serious health effects.
150.5–250.4	355–424	305–604*	0.106–0.200	0.205–0.404	15.5–30.4	650-1249	201 to 300	**Very Unhealthy (purple)**	AQI values in this range trigger a health alert. Everyone may experience more serious health effects. When the AQI is in this range because of ozone, most people should restrict their outdoor exertion to morning or late evening hours to avoid high ozone exposures.
250.5–350.4	425–504	605–804*	0.201-(^)	0.405 – 0.504	30.5–40.4	1250-1649	301 to 400	**Hazardous (maroon)**	AQI values over 300 trigger health warnings of emergency conditions. The entire population is more likely to be affected.
350.5–500.4	505–604	805–1004*	None^	0.505–0.604	40.5–50.4	1650-2049	401 to 500		

*Values of 200 or greater are calculated with 24-hr SO_2 concentrations; ^Values of 301 or greater are calculated with 1-hr O_3 concentrations

Figure 5: Detailed AQI Values by Pollutant

1.6 QAPP and QMP

As part of the requirements for EPA (40CFR58 Appendix A), the GA AAMP has submitted the appropriate Quality Assurance Project Plans (QAPP) and Quality Monitoring Plans (QMP). The following table shows the current status of submittals and approvals of these documents.

QAPP Title	Submittal	Approval
Quality Assurance Project Plan of the Georgia Ambient Air Quality Monitoring Project for $PM_{2.5}$	9/24/2018	9/25/2018
Quality Assurance Project Plan of the Georgia Ambient Air Quality Monitoring Project for the Criteria Air Pollutants (Including Data Requirement Rule) and National Core Multi-Pollutant Station	10/1/2018	10/11/2018
Quality Assurance Project Plan of the Georgia Ambient Air Quality Monitoring Project for the Photochemical Assessment Monitoring Stations State of Georgia	10/26/2018	11/1/2018
Quality Assurance Project Plan of the Georgia Ambient Air Quality Monitoring Project for the Near Road Monitoring Network	9/26/2018	10/3/2018
Quality Assurance Project Plan for the Georgia National Air Toxics Trends Project	4/11/2018	5/17/2018

Table 3: List of Georgia AAMP's QAPPs

1.7 Public Notice and Comment Procedures

This document and any future changes to the monitoring network are subject to a required public notice and comment process before EPA approval is sought for the changes. Any public comments submitted in response to this document's notice and comment process will be submitted to EPA along with the final document. Persons wishing to comment on the draft *Ambient Air Monitoring Plan* are required to submit their comments, in writing, to the GA AAMP at the following address:

Air Protection Branch
Attn: Annual Air Monitoring Plan Comments
4244 International Parkway, Suite 120
Atlanta, Georgia 30354

In addition, public comments can be submitted in writing to DeAnna Oser, Program Manager of the Ambient Monitoring Program, at DeAnna.Oser@dnr.ga.gov.

The deadline for submitting comments to the GA AAMP is no later than 30 days after the date on which this document is published on https://airgeorgia.org/. Should the comment period end on a weekend or holiday, comments will be accepted up until the next working day. The GA AAMP, in soliciting comments for the final draft before submittal to EPA as required by 40CFR58.10(a)(1), will address, as appropriate, any comments received before the deadline.

The GA AAMP's responses to comments and any other relevant information will be made available for public review during normal business hours at the office of the Air Protection Branch, as well as in the final document published on https://airgeorgia.org/.

1.8 Inventory of Ambient Monitoring Equipment

As part of the requirements for the *Ambient Air Monitoring Plan*, the GA AAMP has included a list and evaluation of the current ambient monitoring equipment. See attached Appendix B of this document for the inventory listing.

1.9 List of Sites

The following table gives a complete list of the current air monitoring network and the parameters that are sampled at each site.

SITE ID	SITE NAME	COUNTY	O_3	CO	$PM_{2.5}$ FRM	$PM_{2.5}$ Cont.	$PM_{2.5}$ Spec.	PM Coarse	NO/ NOx	NO_2	NOy	SO_2	Pb	PM_{10}	PM_{10} Cont.	PAMS VOC	VOC	SVOC	Carb-onyls	Meteo-rology	Black Carbon	Metals
Rome MSA																						
131150003	Rome	Floyd				S	X															
131150006	Kraftsman	Floyd										S								NR		
Brunswick MSA																						
131270006	Brunswick	Glynn	S		S															NR		
Valdosta MSA																						
131850003	Valdosta	Lowndes			S	S																
Warner Robins MSA																						
131530001	Warner Robins	Houston			S	S																
Dalton MSA																						
132130003	Fort Mountain	Murray	S																	NR		
Albany MSA																						
130950007	Albany	Dougherty			S	S																
Gainesville MSA																						
131390003	Gainesville	Hall				S																
Athens-Clarke County MSA																						
130590002	Athens	Clarke	S			S																
Macon MSA																						
130210007	Macon-Allied	Bibb			S		X															
130210012	Macon-Forestry	Bibb	S		S	S						S								NR		
Columbus Georgia- Alabama MSA																						
132150001	Columbus-Health Dept.	Muscogee			S																	
132150008	Columbus-Airport	Muscogee	S		S	S																
132150009	Columbus-Allied	Muscogee											S									
132150011	Columbus-Cusseta	Muscogee			S		X						S									
132151003	Columbus-Crime Lab	Muscogee																		NR		
Savannah MSA																						
130510021	Savannah-E. President	Chatham	S									S								NR		
130510091	Savannah-Mercer	Chatham			S																	
130511002	Savannah- L&A	Chatham				S						S								NR		
Augusta-Richmond County, Georgia-South Carolina MSA																						
130730001	Evans	Columbia	S																	NR		
132450091	Augusta	Richmond	S			S	X					S			S					NR		

Table 4: 2019 Georgia Ambient Air Monitoring Network

SITE ID	SITE NAME	COUNTY	O_3	CO	$PM_{2.5}$ FRM	$PM_{2.5}$ Cont.	$PM_{2.5}$ Spec.	PM Coarse	NO/ NOx	NO_2	NOy	SO_2	Pb	PM_{10}	PM_{10} Cont.	PAMS VOC	VOC	SVOC	Carb-onyls	Meteo-rology	Black Carbon	Metals
Atlanta-Sandy Springs-Marietta MSA																						
130630091	Forest Park	Clayton			S																	
130670003	Kennesaw	Cobb	S		S																	
130850001	Dawsonville	Dawson	S																	NR		
130890002	South DeKalb	DeKalb	S/P/C	S/P/C	S/C	S/C	T/C	S	S/P	S/P	S/P/C	C			C	P	N	N	P/N	P/C		N
130890003	NR-285	DeKalb							R	R							R				R	
130970004	Douglasville	Douglas	S																	NR		
131210039	Fire Station #8	Fulton			S									S								
131210055	United Ave.	Fulton	S			S						S								NR		
131210056	NR-GA Tech	Fulton		R	R	R				R										R	R	
131350002	Gwinnett Tech	Gwinnett	S			S																
131510002	McDonough	Henry	S			S																
132319991	EPA CASTNET	Pike	A																			
132470001	Conyers	Rockdale	S																	NR/P		
Chattanooga Tennessee-Georgia MSA																						
132950002	Rossville	Walker			S	S	X															
Not in an MSA																						
130550001	Summerville	Chattooga	S																			
130690002	General Coffee	Coffee			S		X															
132611001	Leslie	Sumter	S																			
133030001	Sandersville	Washington			S																	

Monitoring Types: S=SLAMS; P=PAMS; C=NCore; X=Supplemental Speciation; T=STN; N=NATTS; R=Near-road; NR=Non-Regulatory; G=General Information; A=CASTNET

Table 4: 2019 Georgia Ambient Air Monitoring Network (continued)

2.0 Standards

Measuring pollutant concentrations in ambient air and comparing the measured concentrations to corresponding standards determine ambient air quality status for the six criteria pollutants. The six criteria pollutants are sulfur dioxide, particulate matter ($PM_{2.5}$ and PM_{10}), carbon monoxide, ozone, nitrogen dioxide, and lead. The EPA defines the ambient air as that portion of the atmosphere, external to buildings, to which the general public has access.

The National Ambient Air Quality Standards (NAAQS) are divided into primary and secondary standards[8]. Primary standards are those established to protect public health. Secondary standards are those established to protect the public welfare from adverse pollution effects on soils, water, crops, vegetation, manmade materials, animals, wildlife, weather, visibility, climate, property, transportation, economy, personal comfort and well-being. The scientific criteria upon which the standards are based are reviewed periodically by the EPA, which may reestablish or change the standards according to its findings. Note that there are hundreds of compounds that are generally considered pollutants when found in ambient air but whose health and welfare effects are not well enough understood for ambient standards to be defined.

A pollutant measurement that is greater than the ambient air quality standard for a specific averaging time is called an exceedance. An exceedance does not always imply that a violation of the standard took place. For each pollutant, there are specific rules for a given time period before a pattern of exceedances is considered a violation of the NAAQS. If a violation occurs, it may result in regulatory actions to further clean up the air in the area where the violation occurred. This distinction is made to allow for certain limited exceedances of the standard that may occur, for example, during an unusual weather pattern, reserving regulatory action for cases where the exceedances are too large or too frequent.

3.0 Monitoring Objectives and Spatial Scale

Federal regulations indicate that a minimum of four monitoring objectives should be met in establishing an ambient air monitoring network. The network is to have stations that monitor: (1) the highest pollutant concentrations; (2) the representative concentrations in areas of high population density; (3) the impact of major pollution emissions sources; and (4) the general background concentration levels. The physical siting of the air monitoring station must achieve a spatial scale of representativeness that is consistent with the monitoring objective. The spatial scale results from the physical location of the site with respect to the pollutant sources and categories. It estimates the size of the area surrounding the monitoring site that experiences uniform pollutant concentrations.
The categories of spatial scale are:
Micro Scale: An area of uniform pollutant concentrations ranging from several meters up to 100 meters.
Middle Scale: Uniform pollutant concentrations in an area of about 100 meters to 0.5 kilometer.
Neighborhood Scale: An area with dimensions in the 0.5 to 4.0 kilometer range.
Urban Scale: Citywide pollutant conditions with dimensions ranging from 4 to 50 kilometers.
Regional Scale: An entire rural area of the same general geography (this area ranges from tens to hundreds of kilometers).

[8] For a list of the most current standards, please refer to EPA's website https://www.epa.gov/criteria-air-pollutants/naaqs-table.

Monitoring objectives and associated spatial scales are taken from Appendix D of 40CFR58, Table D-1, and summarized in Table 5 below.

Monitoring Objective	Appropriate Spatial Scale
Highest concentration or source impact	Micro, Middle, Neighborhood, or (less frequently) Urban
Population oriented	Neighborhood or Urban
General/background, regional transport, welfare related impacts	Urban or Regional

Table 5: Monitoring Objective and Spatial Scale

4.0 Description of Networks

4.1 NCore

The State of Georgia is required to have one National Core (NCore) Multipollutant Monitoring station, and the GA AAMP complies with this requirement at the South DeKalb site (13-089-0002) in DeKalb County. The NCore site monitoring equipment includes: $PM_{2.5}$ FRM, $PM_{2.5}$ continuous, $PM_{2.5}$ speciation, ozone (collecting data year-round), trace level carbon monoxide (CO), trace level sulfur dioxide (SO_2), trace level nitrogen oxide (NO), total reactive nitrogen (NOy), wind direction, wind speed, temperature, and relative humidity. The site has operated since January 1, 2011, and site establishment and details were included in the GA AAMP's *2011 Ambient Air Monitoring Plan, Appendix C, Ambient Air Monitoring Plan for National Core (NCore) Multipollutant Monitoring Station*. NCore monitoring network sites have the following monitoring objectives:

- timely reporting of data to the public through AIRNow, air quality forecasting, and other public reporting mechanisms
- support development of emission strategies through air quality model evaluation and other observational methods
- accountability of emission strategy progress through tracking long-term trends of criteria and non-criteria pollutants and their precursors
- support long-term health assessments that contribute to ongoing reviews of the National Ambient Air Quality Standards (NAAQS)
- compliance through establishing nonattainment/attainment areas by comparison with the NAAQS
- support multiple disciplines of scientific research, including; public health, atmospheric and ecological

4.2 Sulfur Dioxide

EPA lowered the sulfur dioxide (SO_2) NAAQS standard to a 1-hour primary standard of 75 ppb, and added new SO_2 ambient monitoring requirements in 2010 (Federal Register: Vol. 75, No. 119, 06/22/10). The rule combines air quality modeling and monitoring. The rule requires refined dispersion modeling to determine if areas with sources that have the potential to cause or contribute to a violation of the new SO_2 standard can comply with the standard. The monitoring

regulations require monitors to be placed in Core Based Statistical Areas (CBSAs), based on a population weighted emissions index (PWEI) for the area. The rule requires three monitors in CBSAs with index values of 1,000,000 or more; two monitors in CBSAs with index values less than 1,000,000 but greater than 100,000; and one monitor in CBSAs with index values greater than 5,000. The GA AAMP complies with these requirements by monitoring for SO_2 at the United Avenue (13-121-0055), South DeKalb (13-089-0002), Augusta (13-245-0091), Savannah-L&A (13-051-1002), and Macon-Forestry (13-021-0012) sites. In addition, the GA AAMP chose to continue monitoring for SO_2 with another monitor in the Savannah MSA (Savannah-E. President Street, 13-051-0021).

In accordance with the EPA Data Requirements Rule for sulfur dioxide (Federal Register: Vol. 80, No. 162, 08/21/15), the GA AAMP modeled SO_2 concentrations in 2016 in order to select the most appropriate location for the Rome SO_2 monitor that would capture the maximum SO_2 emissions from the nearby facilities. As of January 1, 2017, the Rome SO_2 monitor was moved from the Coosa location (13-115-0003) to the Kraftsman Road location (13-115-0006) to meet this requirement. For site details, see Appendix A. For more information regarding location selection and modeling, see the GA AAMP's *2016 Ambient Air Monitoring Plan, Appendix D-International Paper-Rome Modeling Report* at https://airgeorgia.org/networkplans.html.

As an NCore site, the South DeKalb site (13-089-0002) also began monitoring trace level sulfur dioxide as of October 1, 2010. The GA AAMP collects and reports 5-minute maximum data with all the SO_2 monitors in the state.

4.3 Nitrogen Dioxide

EPA's last revision of the nitrogen dioxide (NO_2) National Ambient Air Quality Standard and monitoring requirements was January 22, 2010. Near-road NO_2 monitors were to be set up in CBSAs with 500,000 or more population (additional monitor with CBSA population above 2,500,000), average traffic counts of 250,000 vehicles or greater, and represent a microscale (no more than 50 meters from the edge of the nearest traffic lane) (Federal Register, Vol. 75, No. 26, 02/09/10). The GA AAMP meets this requirement with two monitors in the Atlanta-Sandy Springs-Marietta MSA. The first near-road NO_2 monitor was set up at the near-road site on the Georgia Institute of Technology campus (NR-GA Tech, 13-121-0056) on June 15, 2014. NO_2/NO/NOx, CO, $PM_{2.5}$, black carbon, wind speed and wind direction are monitored at this site. For details regarding the establishment of the first near-road site in the Atlanta-Sandy Springs-Marietta MSA, refer to Appendix E of the *2014 Ambient Air Monitoring Plan* at https://airgeorgia.org/networkplans.html. The second near-road monitoring site was set up in the Atlanta-Sandy Springs-Marietta MSA on January 1, 2015 at the established monitoring site near interstate 285 (NR-285, 13-089-0003) (formerly DMRC). At the NR-285 site, NO_2/NO/NOx, volatile organic compounds, and black carbon are monitored for the near-road network. For details regarding the establishment of the second near-road site, refer to the GA AAMP's Addendum to the *2015 Ambient Air Monitoring Plan* at https://airgeorgia.org/networkplans.html.

In addition to the near-road NO_2 requirements, the GA AAMP is required to operate at least one area-wide NO_2 monitor in the Atlanta-Sandy Springs-Marietta MSA. These monitors should be placed in CBSAs with a population of 1,000,000 or more, and are expected to have the highest concentrations representing a neighborhood or larger spatial scale (40CFR58, Appendix D, Section 4.3.3). The South DeKalb site (13-089-0002) is the GA AAMP's PAMS site (discussed

below), and collects area-wide NO_2 data for the Atlanta-Sandy Springs-Marietta MSA. The South DeKalb site has historically collected the highest concentrations, is located within an urban area, represents the urban spatial scale, and operates year round. Therefore, the South DeKalb NO_2 monitor satisfies the area-wide requirement.

4.4 Carbon Monoxide

EPA's last revision to the monitoring requirements for the carbon monoxide (CO) monitoring network was in 2011. EPA requires that a CO monitor be collocated with an NO_2 near-road monitor in urban areas with populations of one million or more. EPA specified that in areas with 2.5 million or more, the CO monitors should be operational by January 1, 2015 (Federal Register: Vol. 76, No. 169, Page 54293, 08/31/11). For this monitoring requirement, the State of Georgia is required to have one CO monitor located in the Atlanta-Sandy Springs-Marietta MSA, collocated with an NO_2 near-road monitor. The GA AAMP meets this monitoring requirement with a CO monitor that began monitoring at the NR-GA Tech site (13-121-0056) on June 15, 2014. In addition, the South DeKalb site (13-089-0002) is the GA AAMP's NCore site and collects CO data as part of that network (discussed above).

4.5 Lead

EPA's last review on the requirements for measuring lead in the ambient air was in 2016. The emission threshold for placing lead monitors near industrial facilities remains at 0.5 tpy (Federal Register: Vol. 81, No. 201, Page 71932, 10/18/16). The GA AAMP meets this requirement with lead monitors located in the Columbus Georgia-Alabama MSA in Muscogee County near a source of lead emissions. One lead monitoring site is required, and at its discretion, the GA AAMP has chosen to have one additional lead monitoring site in the area. There is one lead monitor located at the Cusseta Elementary School (13-215-0011) site, and the Columbus-Allied (13-215-0009) site has two collocated lead monitors.

4.6 $PM_{2.5}$ Speciation Trends Network (STN)

The Speciation Trends Network (STN) (40CFR58, Appendix D, Section 4.7.4) characterizes the make-up of the $PM_{2.5}$ samples collected. With this speciation information, air quality modeling can be improved to help implement the NAAQS standards; health studies can be interpreted by knowing the constituents of the $PM_{2.5}$ sample, and the understanding of the constituents in regional haze is also improved. There are 52 Speciation Trends sites across the United States. The GA AAMP meets this requirement with the South DeKalb site (13-089-0002). The South DeKalb Speciation Trends site began monitoring on October 1, 2000, and samples are collected every three days. Additionally, there are six more $PM_{2.5}$ speciation monitors that the GA AAMP has chosen to operate. These sites are located in Rome (started 3/1/02), Macon (started 3/1/02), Columbus (started 5/1/02), Augusta (started 3/2/02), Rossville (started 3/23/05), and Douglas (started 3/1/02). These are in place to provide supplemental speciation data in the overall chemical speciation network, and take samples every 6 days.

4.7 Photochemical Assessment Monitoring Stations (PAMS)

On October 26, 2015, EPA made revisions to the ozone standard, and with those changes, also revised the regulations for the supporting PAMS stations (Federal Register, Vol.80, No. 206,

page 65467). EPA is requiring that PAMS measurements be collected at NCore sites only. The GA AAMP meets this requirement with the South DeKalb (13-089-0002) site, which is the GA AAMP's NCore site. Therefore, for the PAMS requirements, the GA AAMP will continue hourly collection of speciated volatile organic compounds in June, July, and August; three 8-hour samples of carbonyls collected every third day during June, July and August; hourly ozone, NO, NO_2, NO_Y, temperature, wind direction, wind speed, barometric pressure, relative humidity, precipitation, and sigma theta at the South DeKalb site. As discussed in Section 1.4, solar radiation and ultraviolet radiation are monitored at the Conyers (13-247-0001) site due to siting conditions.

The South DeKalb site is located in DeKalb County to provide neighborhood scale measurements in the area that the chemicals that form ozone have the greatest impact. The data measurements generated at the South DeKalb site are used principally for development and evaluation of imminent and future control strategies, corroboration of NOx and VOC emission inventories, verification of photochemical grid model performance, characterization of ozone and toxics air pollutant exposures, development of pollutant trends (particularly toxic air pollutants and annual ambient speciated VOC trends to compare with trends in annual VOC emission estimates), and determination of attainment with NAAQS for O_3, $PM_{2.5}$, PM_{10}, CO, SO_2, and NO_2.

GA AAMP understands that the EPA is working on a proposed rule that will provide state and local agencies an additional two years from the current implementation date of June 1, 2019 to implement the PAMS program requirements. This extension is needed to provide all agencies the funding and equipment necessary to implement the program. GA AAMP will continue preparing to implement the program as funding and personnel resources allow with the goal of full implementation on or before June 1, 2021.

4.8 National Air Toxics Trends Station (NATTS)

The National Air Toxics Trends Stations (NATTS) program is a nationwide monitoring project for the assessment of national trends and variations of several selected air toxics pollutants. The NATTS network was established to produce data that is consistent and of standardized quality to be able to perform comparisons of air toxics data nationwide. There are 27 NATTS locations nationwide, with 20 urban sites to address the range of population exposure in urban areas and seven rural sites to characterize population exposure in non-urban areas, establish background concentrations, and better assess environmental impacts of emissions of air toxic pollutants. The GA AAMP meets the requirement with the location of the NATTS station at the South DeKalb site (13-089-0002). As part of the NATTS network, the GA AAMP samples metals with a PM_{10} sampler, semi-volatile organic compounds, volatile organic compounds, and carbonyls. Samples are collected from midnight to midnight for a 24-hour sample, every 6 days. In addition, an 8-hour carbonyls sample is collected three times a day, every third day through June, July, and August.

5.0 Site Evaluations

The GA AAMP performs site evaluations throughout the year on an annual basis for each site. The following table details when the most recent site evaluations were performed and a summary of the comments that the evaluator made about each site.

SITE ID	COMMON NAME	COUNTY	SITE EVALUATION DATE	COMMENTS	ACTION TAKEN
Rome MSA					
131150003	Rome	Floyd	4/12/2018	The two tall oaks form an obstruction to the northwest of the samplers. However, over 90% of the monitoring path is not affected by the trees.	No action required
131150006	Kraftsman	Floyd	4/17/2018	Samplers meet siting criteria.	No action required
Brunswick MSA					
131270006	Brunswick	Glynn	11/6/2018	Samplers meet siting criteria. 2025 needs new upper housing seal and hinge lock buttons. 2025 inlet 5m above ground, O_3 inlet 4.1m above ground, 2025 to O_3 inlet 3m.	No action required; will monitor for future response
Valdosta MSA					
131850003	Valdosta	Lowndes	11/27/2018	Samplers meet siting criteria. The BAM door appears to have been previously broken and taped into place. The overall condition appears much the same as recorded on the last survey.	No action taken; will monitor for future response
Warner Robins MSA					
131530001	Warner Robins	Houston	1/17/2019	Samplers meet siting criteria. T640 to dripline 14.4m, T640 inlet to ground 2m, 2025 inlet to ground 2.1m, 2025 to dripline 13.5m, T640 inlet to 2025 inlet 3.6m. 2025 leaning slightly.	No action required.
Dalton MSA					
132130003	Fort Mountain	Murray	12/18/2018	Samplers meet siting criteria. Few trees to the south are inside 10x height differential with the MET tower. Ground slopes off severely to the north and east.	No action required; Forest Service property
Albany MSA					
130950007	Albany	Dougherty	2/6/2019	Samplers meet siting criteria. Inlet heights: BAM 2.4m, Primary 2025 2.2m, co-located 2025 2.1m, Inlet separation: BAM to Primary 2025 3.1m, BAM to co-located 2025 2.5m, 2025 to 2025 2.5m. Samplers on rooftop 4.4m above ground. Air handler exhaust 2.9m from BAM. Nearest dripline 62.6m from BAM inlet.	No action required.
Gainesville MSA					
131390003	Gainesville	Hall	1/17/2019	Samplers meet siting criteria.	No action required.
Athens-Clark County MSA					
130590002	Athens	Clarke	5/16/2018	Samplers meet siting criteria. New shelter, bottom of stairs needs level support, so the brackets do not crack from flexing. O_3 inlet 4.7m, T640 4.6m inlet heights. 5.6m O_3 to dripline, 5.9m 2025, T640 7m.	No action required.
Macon MSA					
130210007	Macon-Allied	Bibb	7/9/2018	Samplers meet siting criteria. Bird nest on URG, bugs from nest on sample cartridge. Nearest dripline 25.5m to SASS.	No action required
130210012	Macon-Forestry	Bibb	10/12/2018	Samplers do not meet siting criteria. Ants present. The metals and PUF samplers' inlets are too low. The inlets, where the lid closes onto the sampler, are ~0.2m lower. The floor around the door is rotting out. The floor covering is cracked and has holes. Drip lines are too close.	The samplers were raised such that the tops of the sampler lids match minimum siting criteria of 2m for inlets.

Table 6: Site Evaluations

SITE ID	COMMON NAME	COUNTY	SITE EVALUATION DATE	COMMENTS	ACTION TAKEN
Columbus MSA					
132150001	Columbus-Health Dept.	Muscogee	8/13/2018	Samplers meet siting criteria. Nearest objects taller than inlet: 13m to large air handler, 35.4m to building.	No action required.
132150008	Columbus-Airport	Muscogee	9/6/2018	Samplers meet siting criteria. Water damage to ceiling and wall around door and a/c. Soft floor. Interior temperature five degrees higher than shown on DAS,	No action taken.
132150009	Columbus-Allied	Muscogee	3/6/2019	Samplers meet siting criteria. Nearest drip line taller than inlet is 6 m away. Both inlets 2m above ground, 4.9m to nearest dripline, 2.1m between samplers, 7.7m to roadway, bus stop nearby.	No action taken.
132150011	Columbus-Cusseta	Muscogee	3/7/2018	Samplers meet siting criteria. 1.4m between URG and SASS inlets.	Not applicable.
132151003	Columbus-Crime Lab	Muscogee	1/16/2019	Samplers meet siting criteria. Heights above ground: Anemometer 10m, Hygrometer & Thermometer 3m, Barometer1.1m, Precipitation gauge 3m.	Not applicable.
Savannah MSA					
130510021	Savannah-E. President	Chatham	6/8/2018	Samplers meet siting criteria. Building construction ongoing directly West across Woodcock Street. Laser measures shows HiVol and PUF at 1.8m above ground to inlet, 2m to peak of housing. Inlet heights: 3.9m SO_2, 4.1m ATN, 2.5m RH. To dripline: 13.2m SO_2, 13m ATN. Ozone sample line lying on ground, knockout bottle disconnected, sampling shelter air.	Not applicable.
130510091	Savannah-Mercer	Chatham	5/25/2018	Samplers meet siting criteria. A/C exhaust blowing onto sampler.	Not applicable.
130511002	Savannah – L&A	Chatham	5/25/2018	Floor soft around doorway. Puddle at door. Water damage to wall near a/c. Driplines too close.SO_2 dripline 5.3m, height 4.2m. T640 6.2m, to ground 4.4m, to rooftop 1.8m	Andersen samplers removed.
Augusta MSA					
130730001	Evans	Columbia	9/10/2018	Samplers meet siting criteria. Site access with equipment without four-wheel drive vehicle remains difficult. Shelter exterior and floor rotting, needs paint and replacement siding, door jamb, flooring. Small hole in floor plugged with caulking. Integrity and sample lines are routed on floor of shelter, along ground outside, and then up tower to inlet. Recommend lines are replaced and routed up and out at top of wall of shelter to avoid contamination, improve response and standardize with other sites.	Not applicable.
132450091	Augusta	Richmond	9/25/2018	Samplers meet siting criteria. PM10 samplers DNR numbered 137627 & 137574 on site but not sampling. 2.1m SASS to URG, 1.4m URG to 2025.	Not applicable.
Atlanta-Sandy Springs-Marietta MSA					
130630091	Forest Park	Clayton	8/2/2018	Samplers meet siting criteria. The site was moved April 2016, from the DOT building roof to a nearby location on the ground, 115 meters to the NE. There are not any site deficiencies that need to be addressed.	Not applicable.
130670003	Kennesaw	Cobb	1/08/2019	Samplers meet siting criteria. There were not any deficiencies observed at the site. A parking lot is 18 meters north of inlets. A small parking lot is also adjacent to the sampler trailer, south. The site is designated as Neighborhood spatial scale. 7 classroom trailers shown in the aerial photograph are no longer present at the site. 14 storage bins are located there now.	Not applicable.
130850001	Dawsonville	Dawson	10/16/2018	Samplers meet siting criteria. A large swath of trees has been cut down to the south and west of the trailer. Met tower is inside 10x height differential with a few trees to the north and east. The site is a neighborhood spatial scale. Note: Obstructions are measured from the trunks of trees.	No action taken; Forest Service property
130890002	South DeKalb	DeKalb	12/18/2018	Samplers meet siting criteria. A large swath of trees to the north, east and west was cut down in Oct.2018 to extend obstacle distances to sampling inlets. All drip lines to sampler inlets exceed 20 meters. Although a few trees are inside height-distance differential, at least 270 degrees of the monitoring path for all of the samplers is now unobstructed.	Not applicable.

Table 6: Site Evaluations (continued)

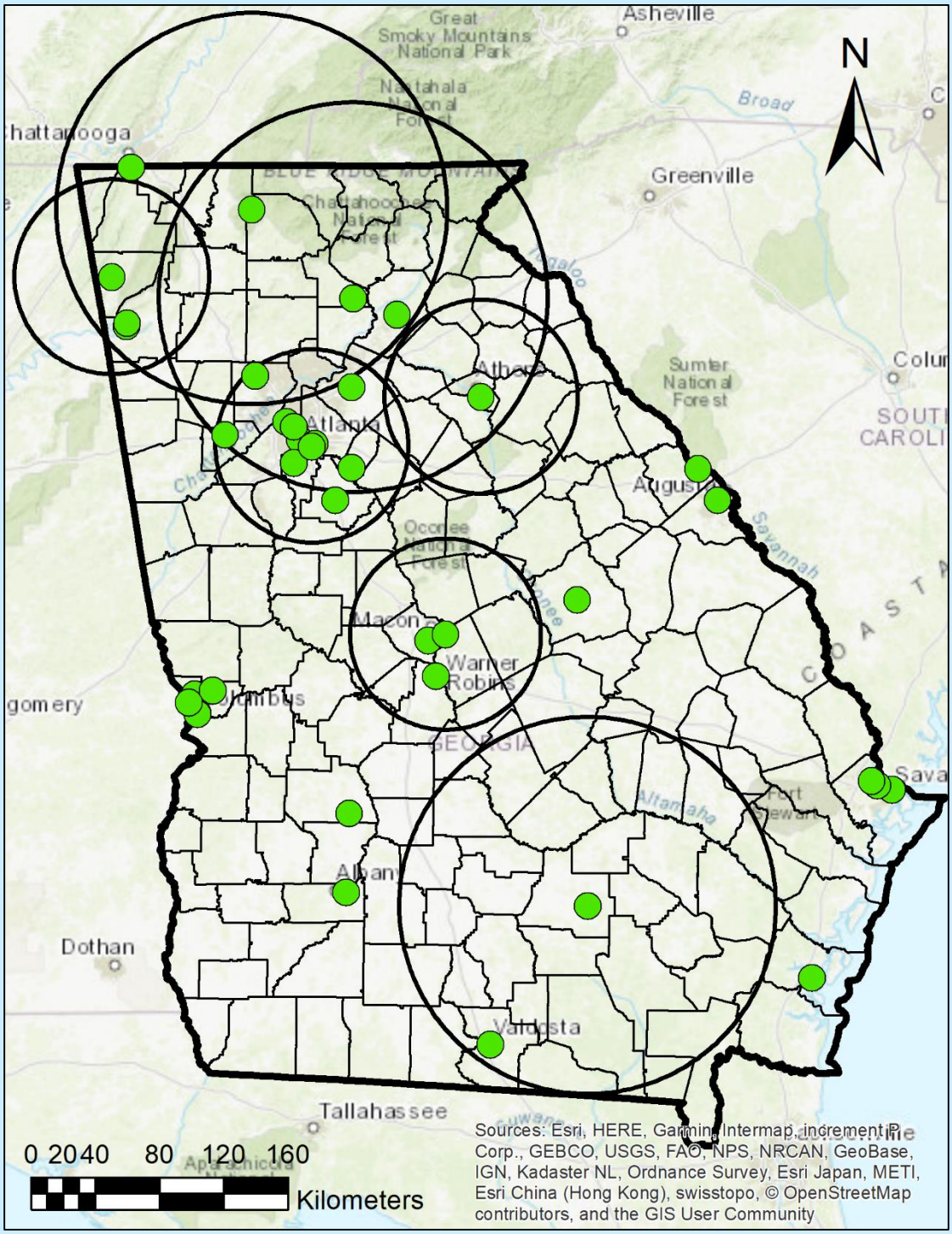
SITE ID	COMMON NAME	COUNTY	SITE EVALUATION DATE	COMMENTS	ACTION TAKEN
130890003	NR-285	DeKalb	4/4/2018	Samplers meet siting criteria. The Near Road site began sampling Jan. 2015. The DOT is presently working on the shoulder adjacent to DMRC in order to add an exit lane to Flat Shoals Rd. No deficiencies were noted at the site at this time.	Not applicable.
130970004	Douglasville	Douglas	1/10/2019	Samplers meet siting criteria. The trailer is located at the Douglasville Water and Sewer Authority maintenance site. The area is a parking lot for WSA service vehicles and storage for water works equipment and pipes. The parking lot for WSA vehicles is to the north, east, and south of the trailer. The WSA building is 32 meters to the southeast. The inside trailer siding near the floor and the countertop has become slightly warped due to past water infiltration. The water appears to have gained access through the vent hole on the side of the shelter during heavy rains. There is no outside damage to the shelter that would allow water in. There is a small rip in the trailer floor.	No action taken.
131210039	Fire Station #8	Fulton	7/9/2018	Samplers meet siting criteria. There are not any deficiencies compromising sampling quality.	Not applicable.
131210055	United Ave.	Fulton	1/24/2019	Samplers meet siting criteria. The site is located at the Georgia Highway Patrol and the Georgia Army National Guard complex.	Not applicable.
131210056	NR-GA Tech	Fulton	2/8/2018	Samplers meet siting criteria. There were no deficiencies observed at the site.	Not applicable.
131350002	Gwinnett Tech	Gwinnett	4/3/2018	Samplers meet siting criteria. The sampling trailer is surrounded on west (25 meters away) and northeast (22 meters away) by the college parking lot. The trailer floor has a few rips in it near the door. The trailer floor is buckling up slightly because of water infiltration on plywood support. The TEOM has been replaced with a Teledyne T640 monitor since the last survey. No deficiencies noted that would affect sampling performance.	Partisol platform repaired. Shelter replaced.
131510002	McDonough	Henry	7/25/2018	Samplers meet siting criteria. Cars idle near shelter while dropping off goods to thrift store. Worker break area is in shed one container over from shelter. 8m from TEOM inlet to rooftop taller than inlet, 2.1m from TEOM inlet to ozone inlet, TEOM inlet 3.9m high, ozone inlet 4.4m high, ozone inlet 22.5m from dripline.	No action taken.
132470001	Conyers	Rockdale	7/12/2018	Samplers meet siting criteria. The closest tall tree (Sweet gum tree) to the southeast is inside of twice the height differential to the inlet, but only intrudes on 10% of the monitoring path. More than 90% of the monitoring path at the site is obstruction free (all trees are an adequate distance away from the inlets based upon distance requirements and height differential).	Data quality not affected. No action taken.
Chattanooga Tennessee-Georgia MSA					
132950002	Rossville	Walker	11/20/2018	Two privet shrubs and one small tree at the west fence line need to be cut back as they are beginning to encroach on the samplers. Although small in height and width, the driplines are within 10 meters and the tops are slightly higher than the inlets of the samplers. The unobstructed monitoring path still exceeds 270 degrees (330 degrees).	Not affecting data collection.
Not in an MSA					
130550001	Summerville	Chattooga	7/31/2018	Samplers meet siting criteria. The trailer from Roswell Rd. replaced the original trailer at Summerville in March 2015. The site is Urban spatial scale.	Not applicable.
130690002	General Coffee	Coffee	12/5/2018	Samplers meet siting criteria. Drip line 13.3m from 2025. Drip line 10m from SASS, Drip line 13.7m from URG. 2025 inlet 2m from PUF, Deck 0.85m to ground. 2025 inlet 2.1m to deck, PUF inlet 1.1m to deck, Metals inlet 1.1m to deck, SASS 1.8m to deck, URG 2m to deck. URG to SAS inlet 2.8m, VOC to 2025 inlet 1.6m, VOCs inlet to ground 2.3m, 2025 to SASS inlet 4.7m. New VOCs sampler Xonteck.	Not applicable.
132611001	Leslie	Sumter	3/1/2018	Samplers do not meet siting criteria. Water damage to walls, dripline is 9m West of inlet.	Ops 2 notified.
133030001	Sandersville	Washington	4/19/2018	Samplers meet siting criteria. Dripline 11.3m from $PM_{2.5}$ inlet. 2025 is only equipment at site currently in use.	Not applicable.

Table 6: Site Evaluations (continued)

Appendix A:
Individual Site Information
Grouped by Metropolitan Statistical Area
(Smallest to Largest)

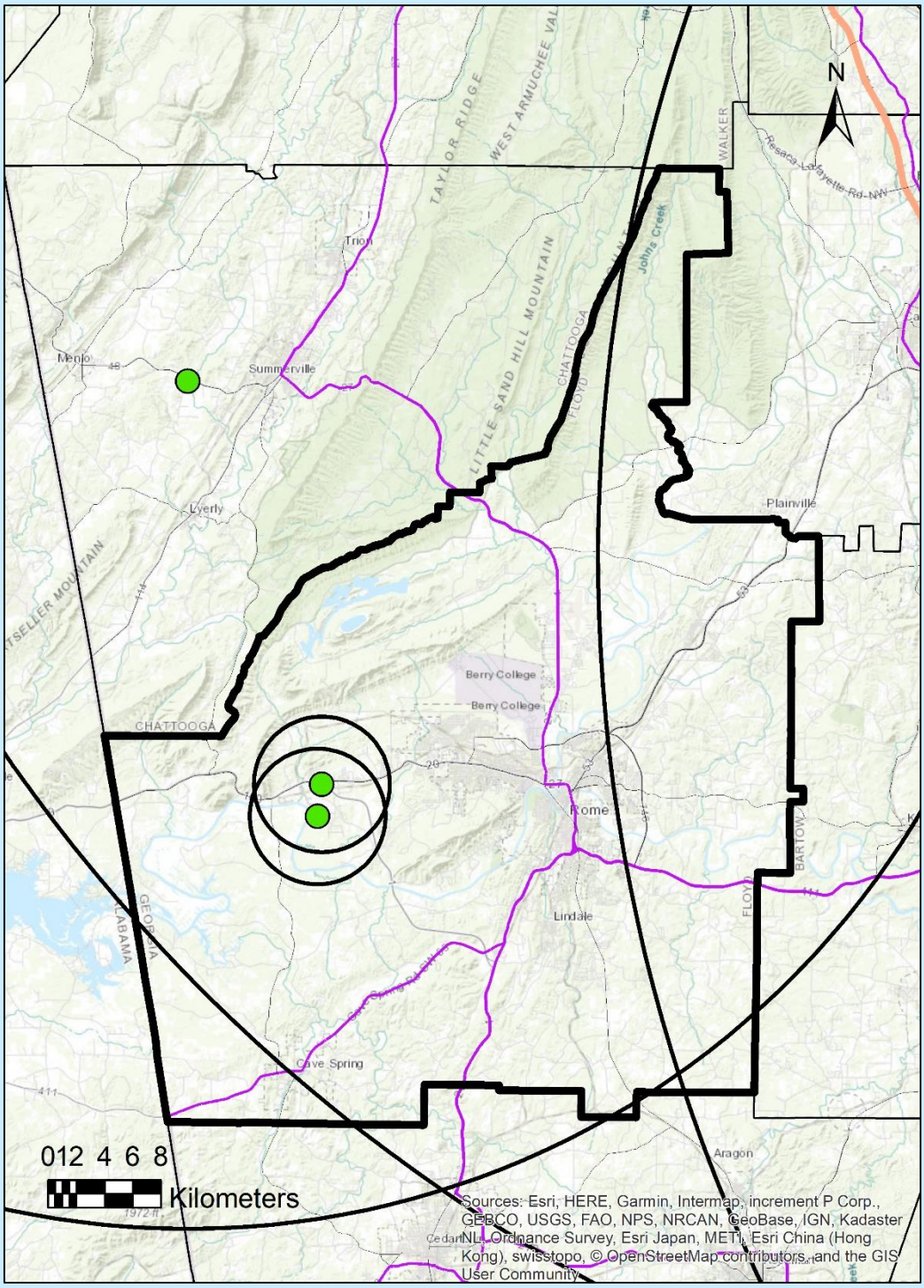
Georgia Department of Natural Resources
Environmental Protection Division

Spatial Scales of GA AAMP's Ambient Air Monitors



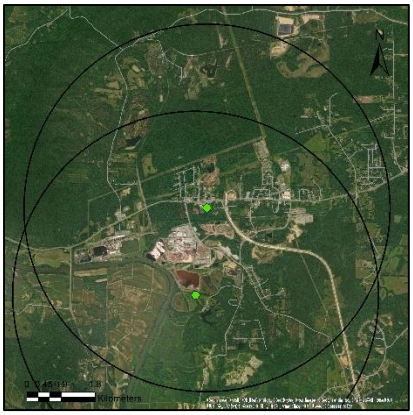
Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

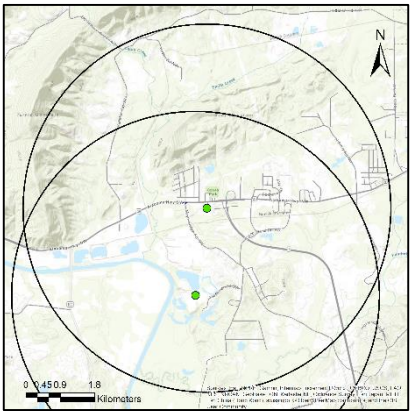
Rome MSA



Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

Rome





AQS ID: 131150003
Address: 5041 Alabama Hwy, Rome, Floyd County, Georgia 30165
Site Established: 1/1/74
Latitude/Longitude: N34.2605/W-85.3232
Elevation: 186 meters
Area Represented: Rome MSA
Site History: Established as SO_2 site

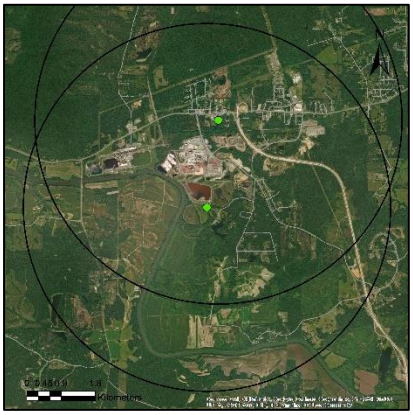
North South East West

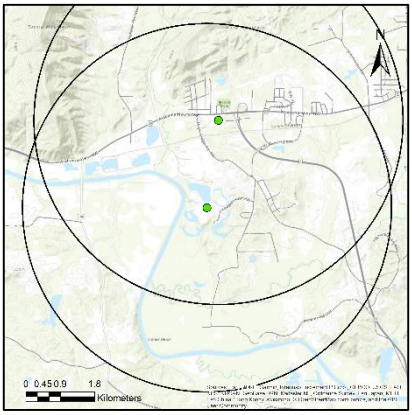
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$ Speciation	Population Exposure	Every 6 days	2.5 m	Neighborhood	3/1/02
$PM_{2.5}$ Continuous	Population Exposure	Continuous	3.5 m	Neighborhood	1/1/08*

*Sampler inactive from 1/1/15 until reopened 2/15/17

GA AAMP's plans for this site: Continue monitoring

Kraftsman





AQS ID: 131150006

Address: 238 Mays Bridge Rd. SW, Rome, Floyd County, Georgia 30165

Site Established: 1/1/17

Latitude/Longitude: N34.2434/W-85.3259

Elevation: 191 meters

Area Represented: Rome MSA

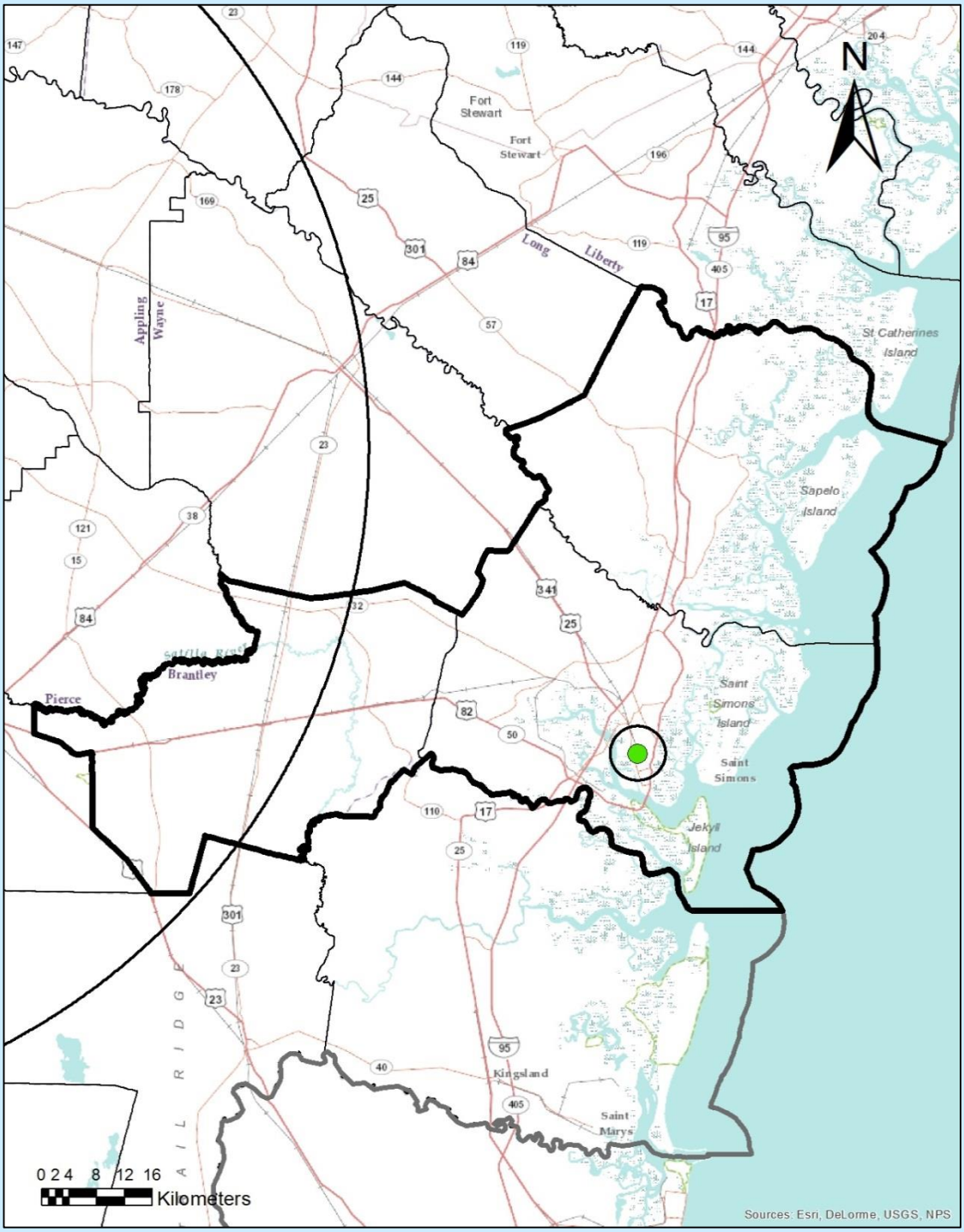
Site History: Established as SO_2 site

North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
SO_2	Population Exposure	Continuous	3.8 m	Neighborhood	1/1/2017
SO_2 5-Minute Maximum	Population Exposure	Continuous	3.8 m	Neighborhood	1/1/2017
Wind Speed	Population Exposure	Continuous	10 m	Neighborhood	1/1/2017
Wind Direction	Population Exposure	Continuous	10 m	Neighborhood	1/1/2017

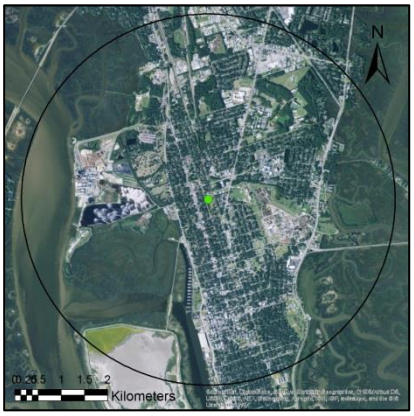
GA AAMP's plans for this site: Continue monitoring

Brunswick MSA



Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

Brunswick



AQS ID: 131270006

Address: Risley Early College Academy, 2900 Albany Street, Brunswick, Glynn County, Georgia 31520

Site Established: 1/1/87

Latitude/Longitude: N31.1696/W-81.4952

Elevation: 19.4 meters

Area Represented: Brunswick MSA

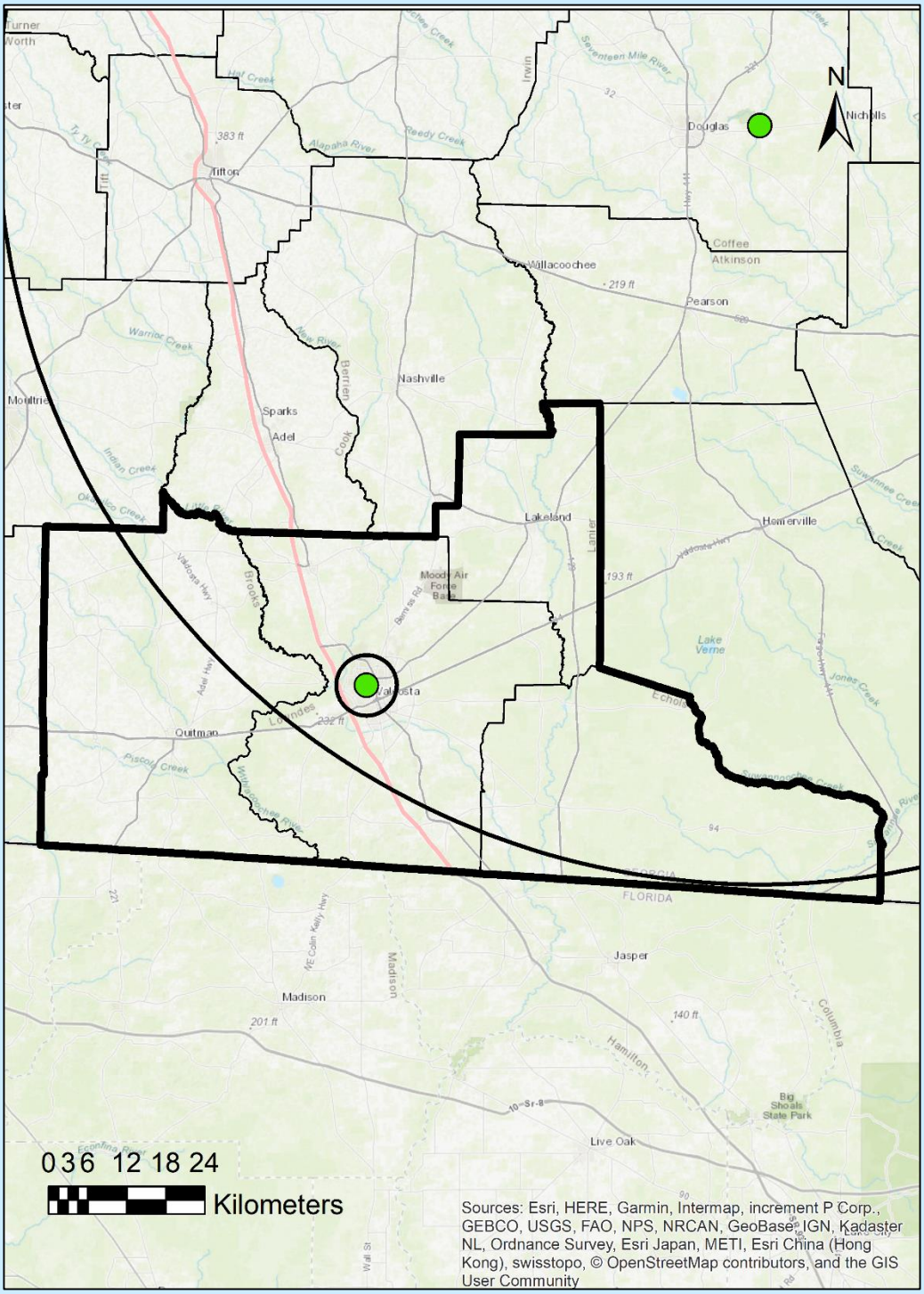
Site History: Established as SO_2 site

North South West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure	Every 3 days	2.6 m	Neighborhood	8/31/95
O_3	Population Exposure	Continuous (Mar-Oct)	4.3 m	Neighborhood	3/1/95
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	1/1/04
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	1/1/04

GA AAMP's plans for this site: Continue monitoring

Valdosta MSA



Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

Valdosta

AQS ID: 131850003

Address: 1605 Azalea Drive, Valdosta, Lowndes County, Georgia 31602

Site Established: 12/17/99

Latitude/Longitude: N30.8486/W-83.2933

Elevation: 62.7 meters

Area Represented: Valdosta MSA

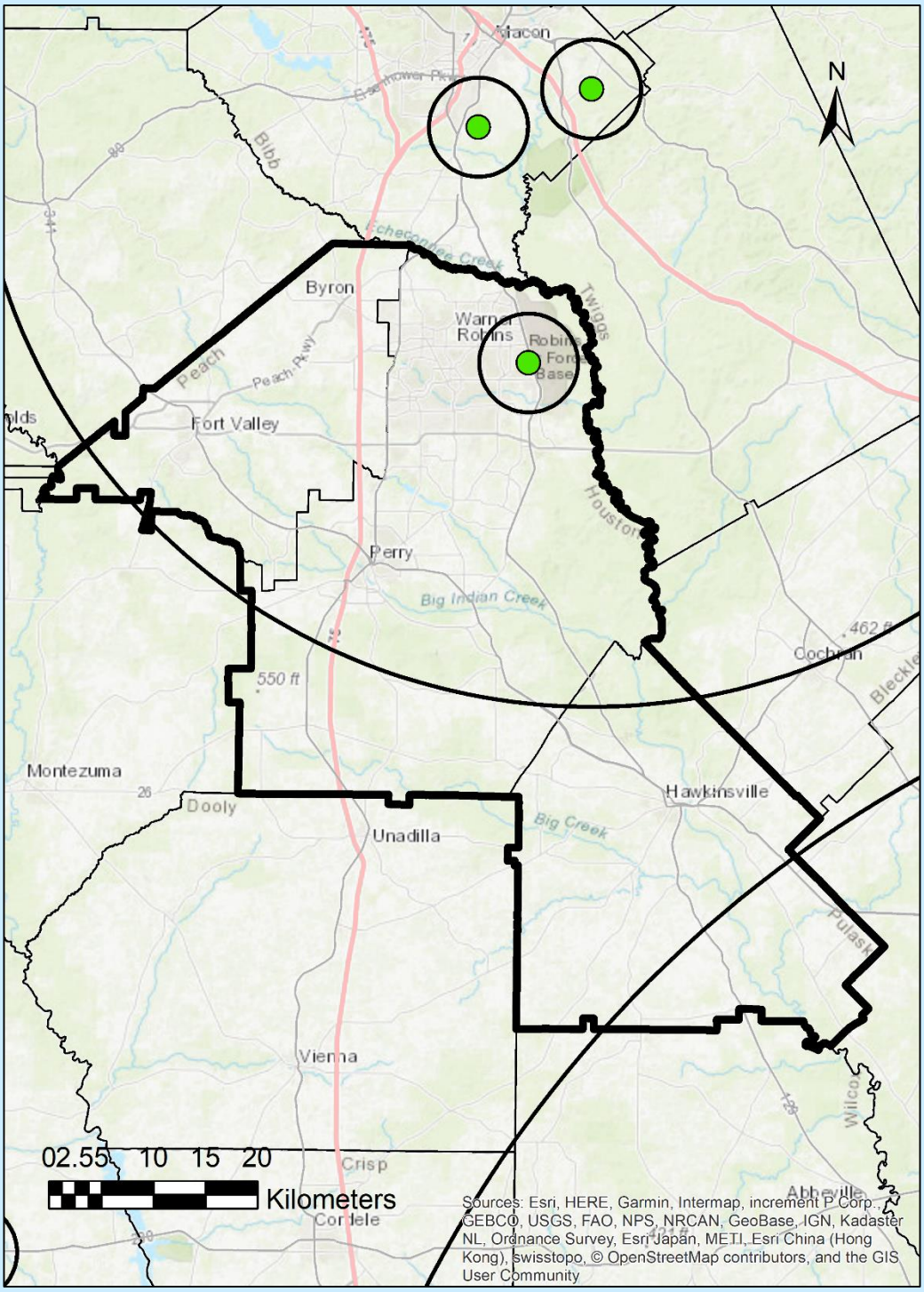
Site History: Established as $PM_{2.5}$ site

North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure	Every 3 days	3 m	Neighborhood	1/1/00
$PM_{2.5}$	Population Exposure	Continuous	3 m	Neighborhood	1/1/08

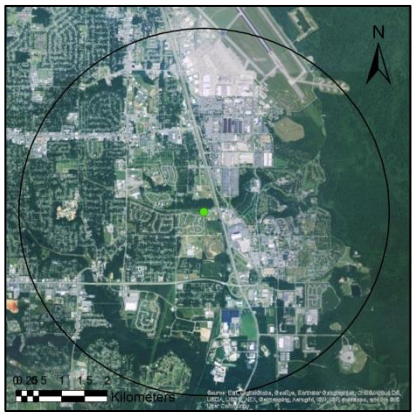
GA AAMP's plans for this site: Continue monitoring; GA AAMP plans to replace the BAM Continuous $PM_{2.5}$ sampler with an FEM Teledyne T640 Continuous $PM_{2.5}$ sampler as it begins to phase out FRM monitors throughout the state; GA AAMP plans to move the sampler to ground level.

Warner Robins MSA



Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

Warner Robins



AQS ID: 131530001

Address: Warner Robins Air Force Base, Memorial Park, 800 South 1st Street, Warner Robins, Houston County, Georgia 31088

Site Established: 6/15/00

Latitude/Longitude: N32.6056/W-83.5978

Elevation: 86.25 meters

Area Represented: Warner Robins MSA

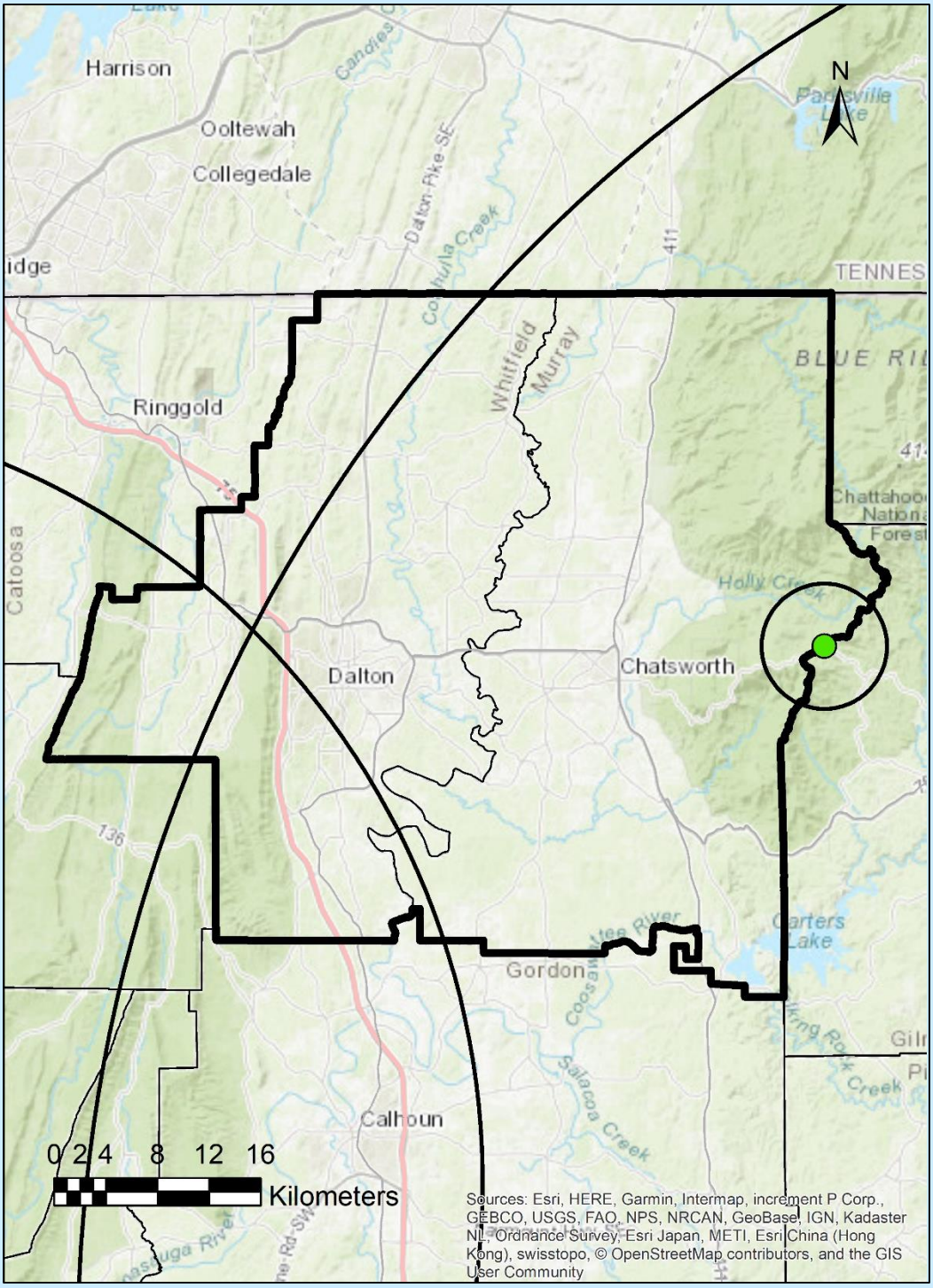
Site History: Established as $PM_{2.5}$ site

North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure	Every 3 days	3 m	Neighborhood	7/5/00
$PM_{2.5}$	Population Exposure	Continuous	3 m	Neighborhood	1/1/08

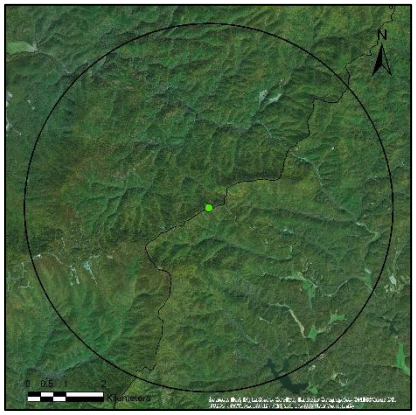
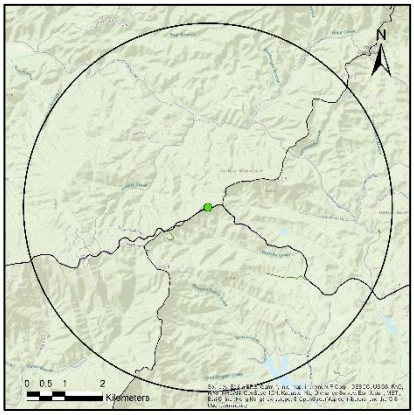
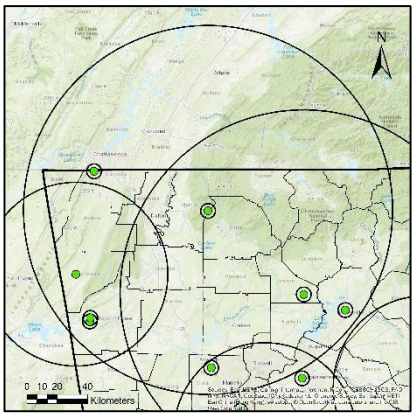
GA AAMP's plans for this site: Continue monitoring; On March 7, 2018 GA AAMP installed an FEM Teledyne T640 Continuous $PM_{2.5}$ sampler to replace the BAM $PM_{2.5}$ sampler.

Dalton MSA



Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

Fort Mountain

AQS ID: 132130003

Address: Fort Mountain, State Highway 52, Cohutta Overlook, Chatsworth, Murray County, Georgia 30705

Site Established: 3/23/99

Latitude/Longitude: N34.7851/W-84.6265

Elevation: 794 meters

Area Represented: Dalton MSA

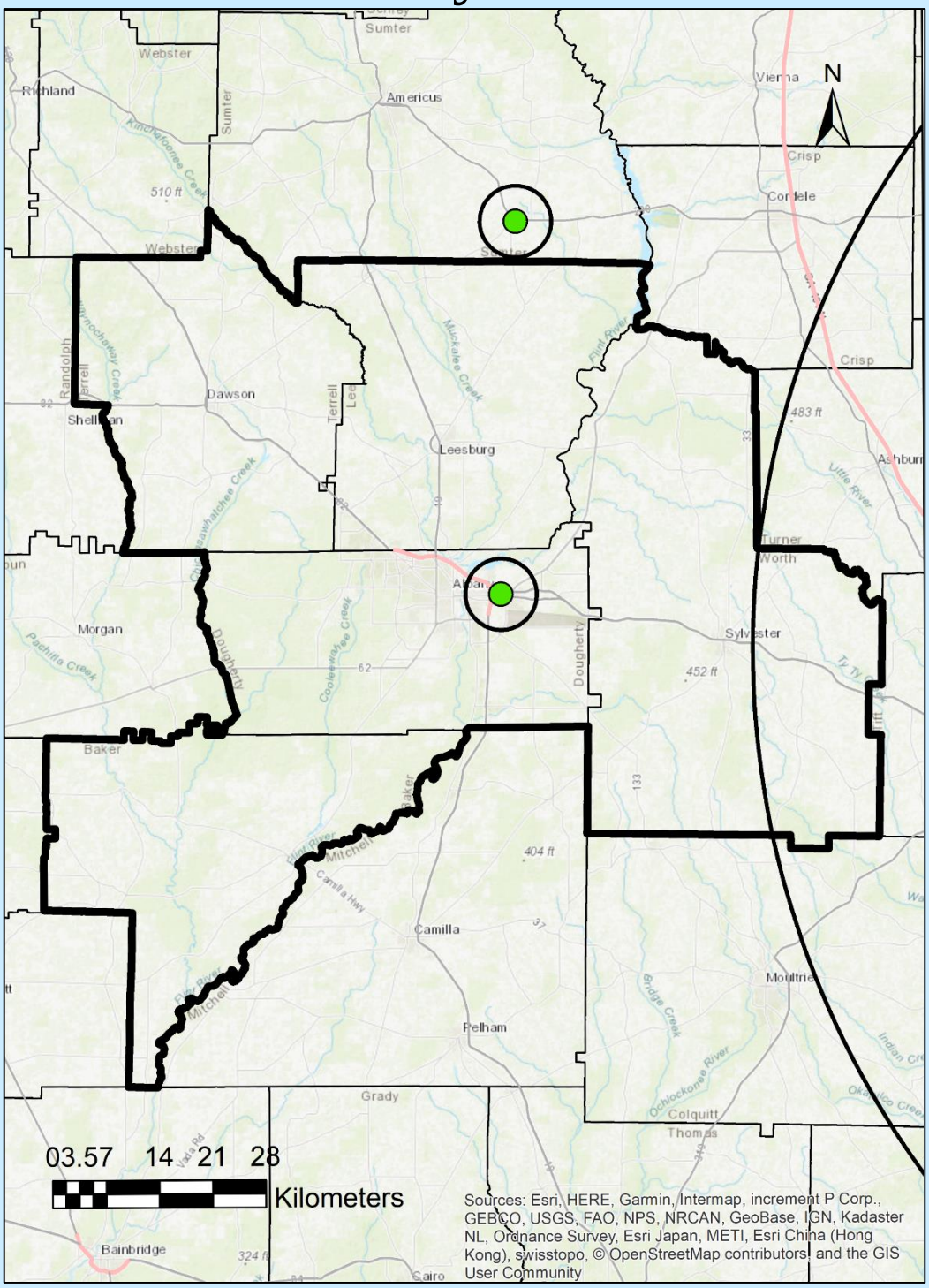
Site History: Established as O_3 site

North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O_3	Population Exposure	Continuous (Mar-Oct)	5 m	Regional	3/1/00
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	2/7/02
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	2/7/02
Outdoor Temperature	General/ Background	Continuous	3 m	Neighborhood	2/7/02
Relative Humidity	General/ Background	Continuous	3 m	Neighborhood	2/7/02

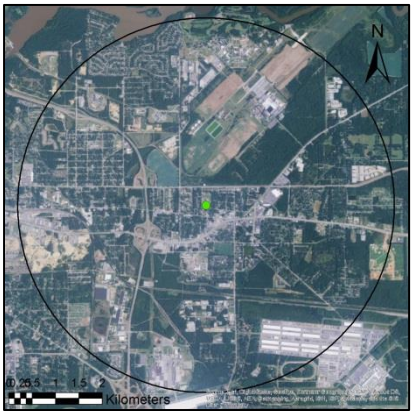
GA AAMP's plans for this site: Continue monitoring

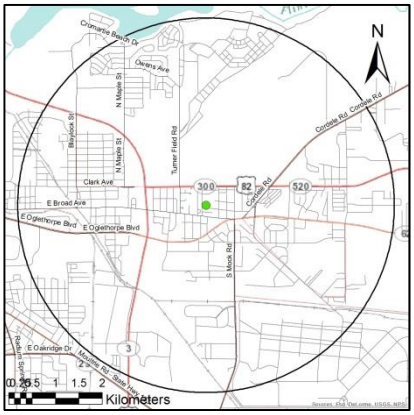
Albany MSA



Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

Albany





AQS ID: 130950007

Address: Turner Elementary School, 2001 Leonard Avenue, Albany, Dougherty County, Georgia 31705

Site Established: 7/31/91

Latitude/Longitude: N31.5776/W-84.0998

Elevation: 67 meters

Area Represented: Albany MSA

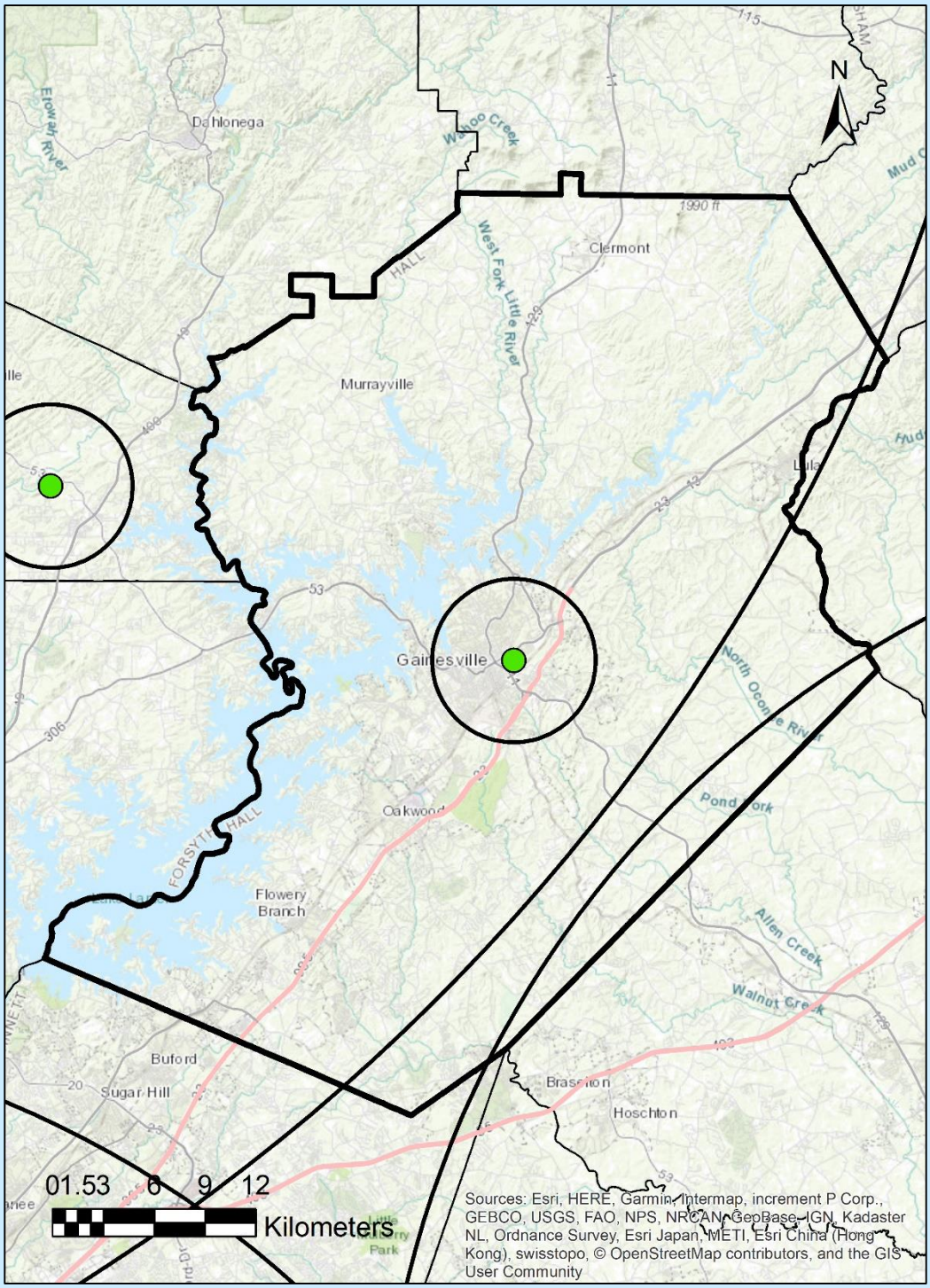
Site History: Established as TSP site

North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure	Every 3 days	2.1 m	Neighborhood	2/2/99
$PM_{2.5}$	Quality Assurance	Every 12 days	2.1 m	Neighborhood	1/10/13
$PM_{2.5}$	Population Exposure	Continuous	2.1 m	Neighborhood	5/11/08

GA AAMP's plans for this site: Continue monitoring; Running continuous monitor as FEM as of 1/10/13; Schedule of $PM_{2.5}$ FRM sampler based on EPA requirements, however actual operation is daily; GA AAMP replaced the FEM BAM Continuous $PM_{2.5}$ sampler with an FEM Teledyne T640 Continuous $PM_{2.5}$ sampler on 3/1/19.

Gainesville MSA



Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
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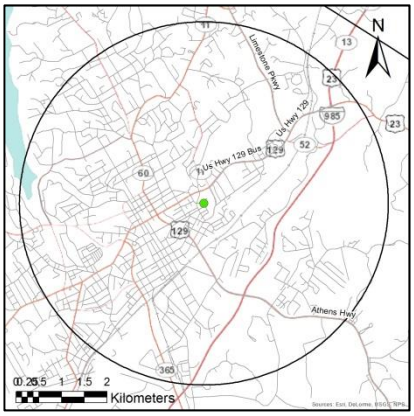
Gainesville



AQS ID: 131390003

Address: Fair Street School, 695 Fair Street, Gainesville, GA 30501

Site Established: 1/1/97

Latitude/Longitude: N34.2993/W-83.8134

Elevation: 353 meters

Area Represented: Gainesville MSA

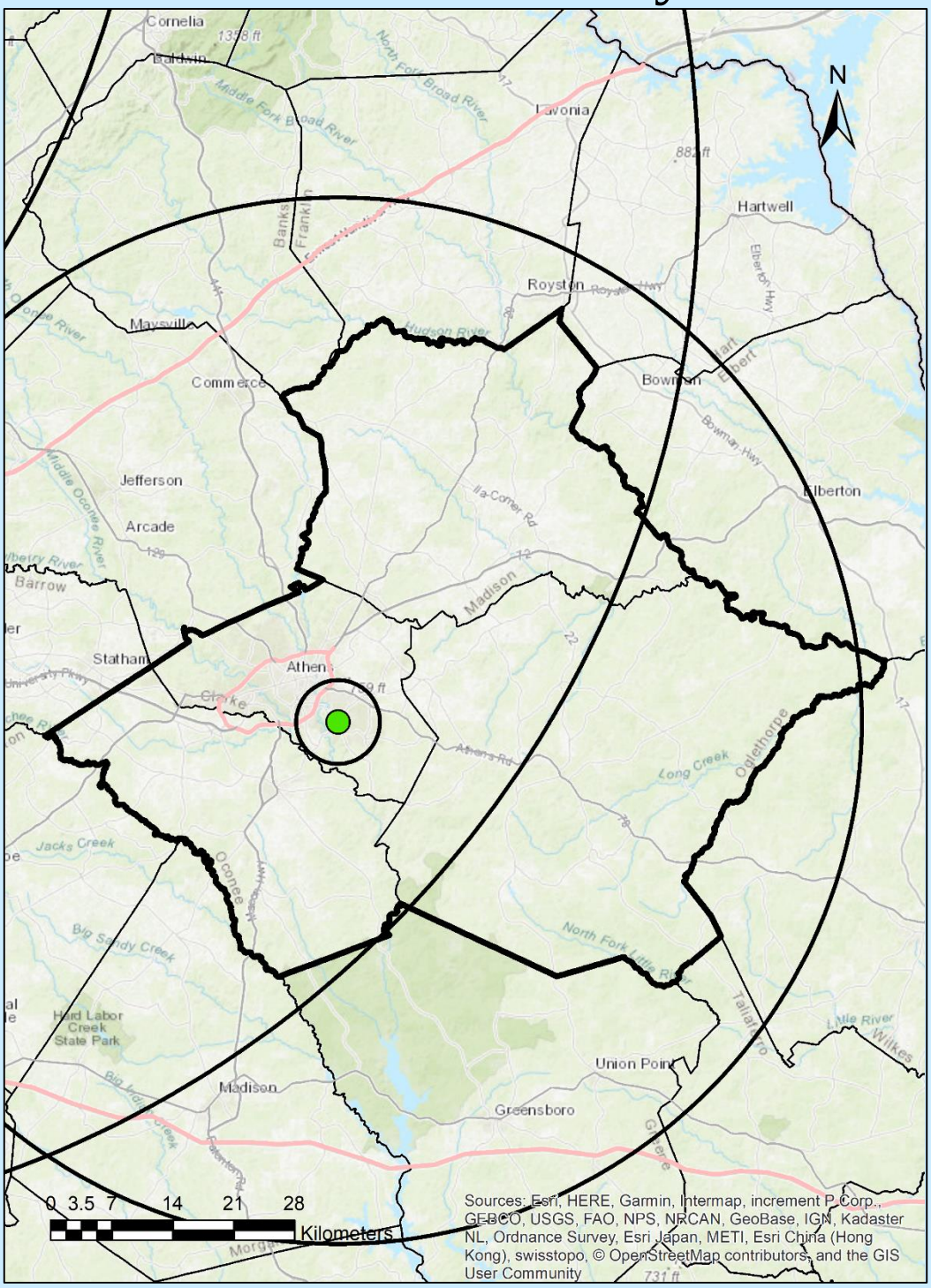
Site History: Established as $PM_{2.5}$ site

North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure	Continuous	2.9 m	Neighborhood	1/1/08

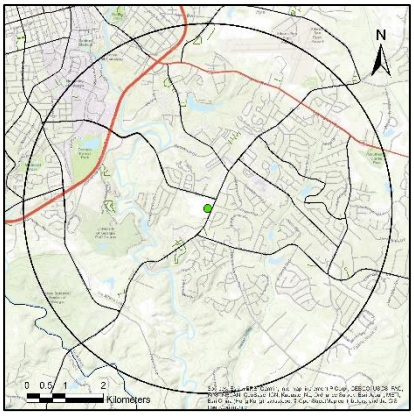
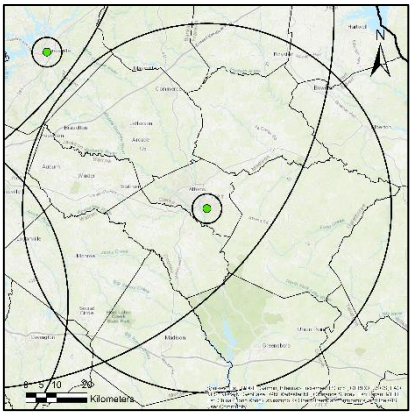
GA AAMP's plans for this site: Continue monitoring; On October 3, 2017 GA AAMP installed an FEM Teledyne T640 Continuous $PM_{2.5}$ sampler to replace the BAM $PM_{2.5}$ sampler. The $PM_{2.5}$ FRM sampler was shut down as of October 31, 2018.

Athens-Clarke County MSA



Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

Athens

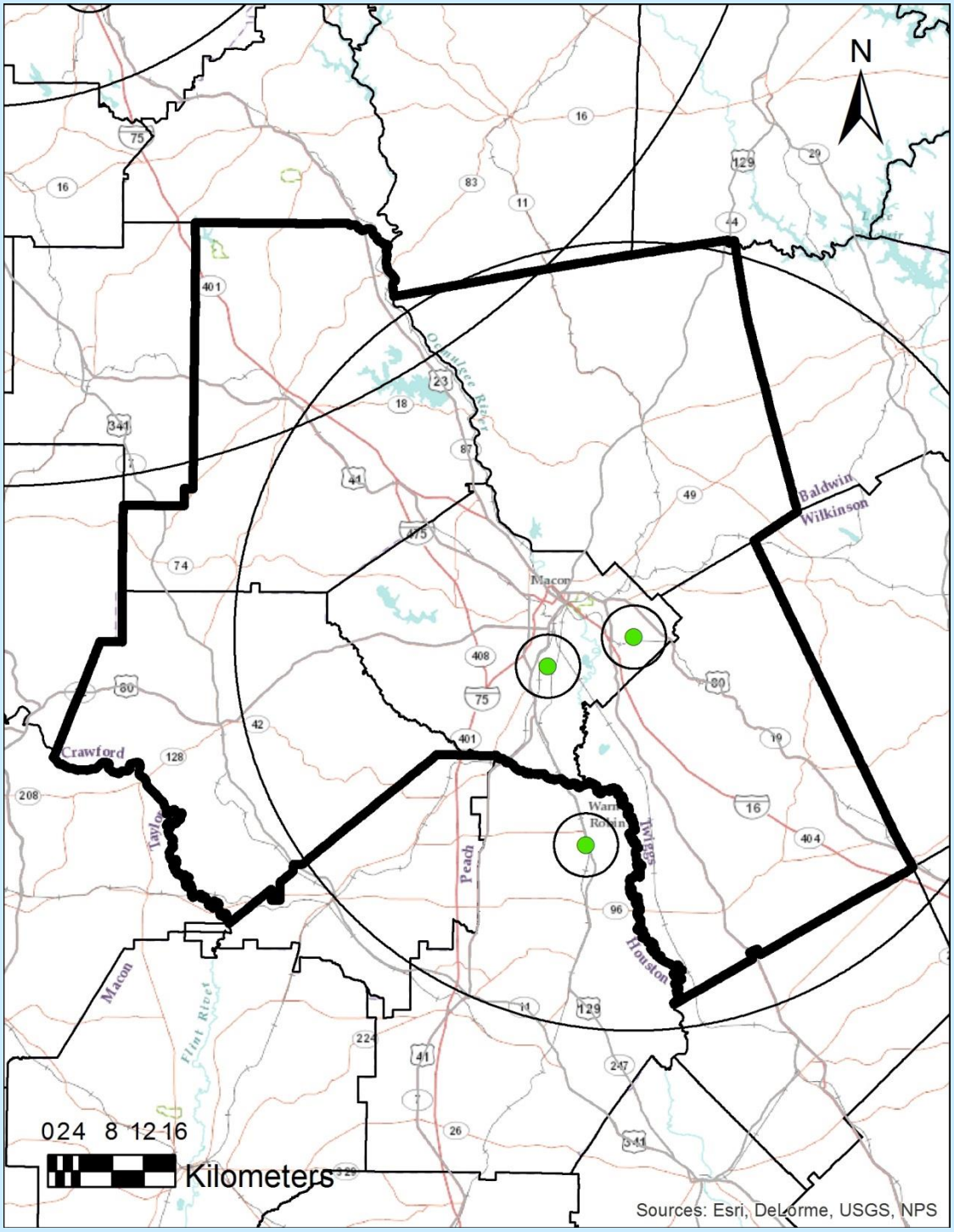
AQS ID: 130590002
Address: 2350 Barnett Shoals Road, Athens, Clarke County, Georgia 30605
Site Established: 3/1/02
Latitude/Longitude: N33.9180/W-83.3445
Elevation: 220 meters
Area Represented: Athens-Clarke County MSA
Site History: Established as O_3 and PM site

North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O_3	Population Exposure	Continuous (Mar-Oct)	3.4 m	Urban	5/1/02
$PM_{2.5}$	Population Exposure	Continuous	4.4 m	Neighborhood	8/1/04
$PM_{2.5}$	Quality Assurance	Continuous	4.4 m	Neighborhood	2/15/19

GA AAMP's plans for this site: Continue monitoring; On April 1, 2018 GA AAMP installed an FEM Teledyne T640 Continuous $PM_{2.5}$ sampler to replace the BAM $PM_{2.5}$ sampler. The $PM_{2.5}$ FRM sampler was shut down as of March 31, 2018. On February 15, 2019, GA AAMP added a second FEM Teledyne T640 Continuous $PM_{2.5}$ sampler to satisfy collocation requirements.

Macon MSA



Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

Macon-Allied

AQS ID: 130210007

Address: 300 Allied Industrial Blvd., Macon, Bibb County, Georgia 31206

Site Established: 1/1/74

Latitude/Longitude: N32.7773/W-83.6411

Elevation: 106 meters

Area Represented: Macon MSA

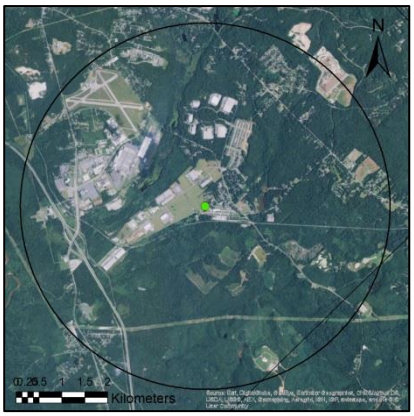
Site History: Established as TSP site

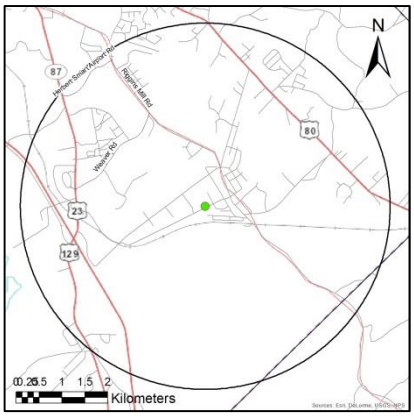
North South East West

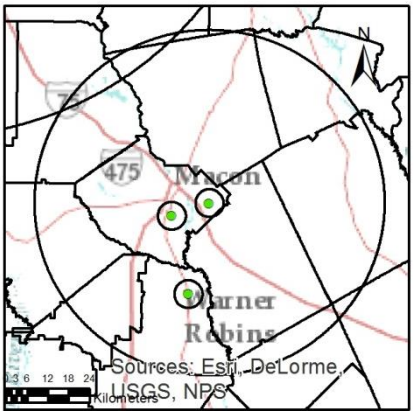
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$ Speciation	Population Exposure	Every 6 days	2.5 m	Neighborhood	3/1/02
$PM_{2.5}$	Population Exposure	Every 3 days	2.5 m	Neighborhood	2/2/99
$PM_{2.5}$	Quality Assurance	Every 12 days	2.5 m	Neighborhood	2/2/99

GA AAMP's plans for this site: Continue monitoring

Macon-Forestry







AQS ID: 130210012

Address: Georgia Forestry Commission, 5645 Riggins Mill Road, Dry Branch, Bibb County, Georgia 31020

Site Established: 5/7/97

Latitude/Longitude: N32.8051/W-83.5436

Elevation: 120 meters

Area Represented: Macon MSA

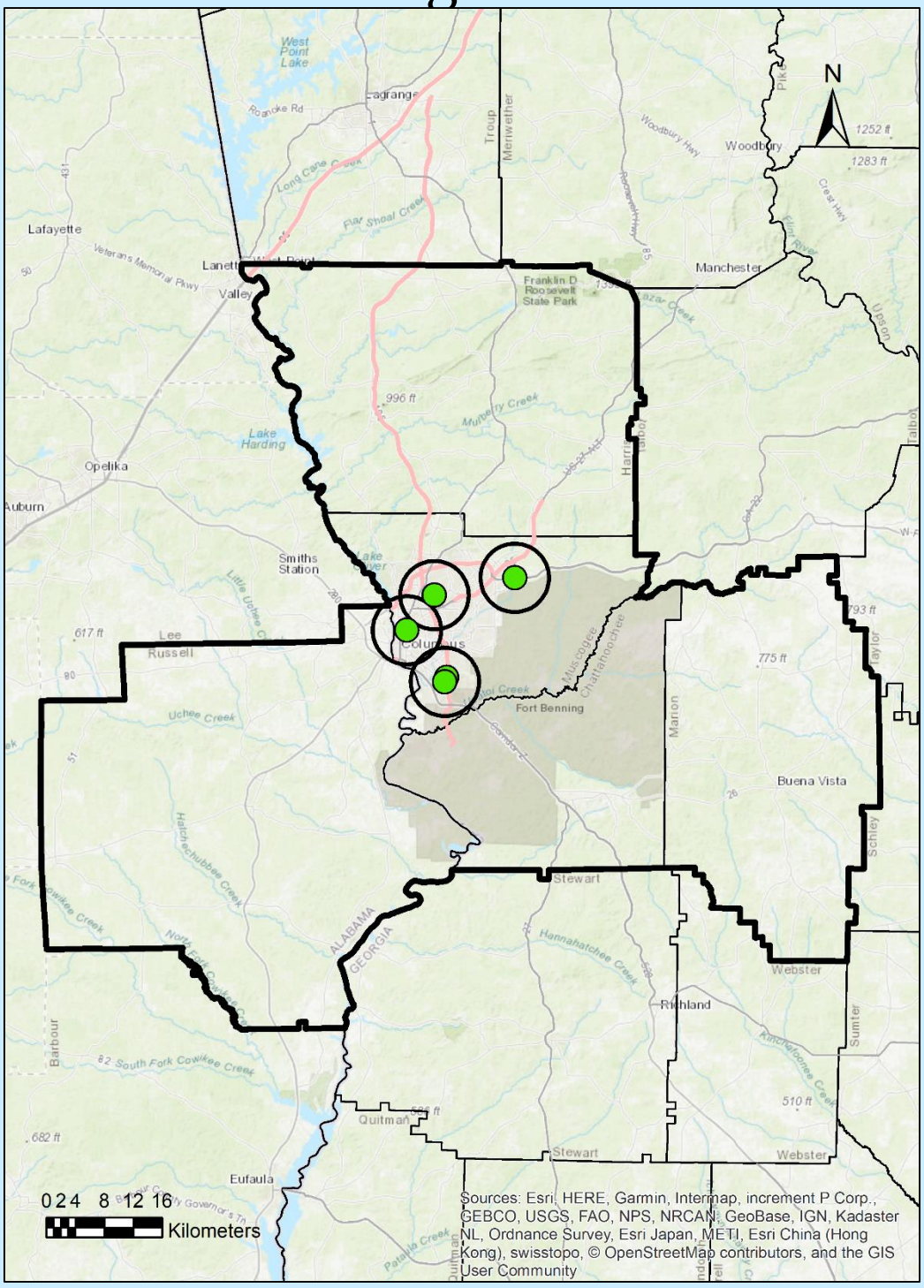
Site History: Established as O_3 and SO_2 site

North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure	Every 3 days	3 m	Neighborhood	2/1/99
$PM_{2.5}$	Population Exposure	Continuous	3.5 m	Neighborhood	5/5/03
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	1/1/04
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	1/1/04
O_3	Population Exposure	Continuous (Mar-Oct)	3.5 m	Neighborhood	5/7/97
SO_2	Population Exposure	Continuous	3.5 m	Urban	5/7/97
SO_2 5-Minute Maximum	Population Exposure	Continuous	3.5 m	Neighborhood	8/1/10

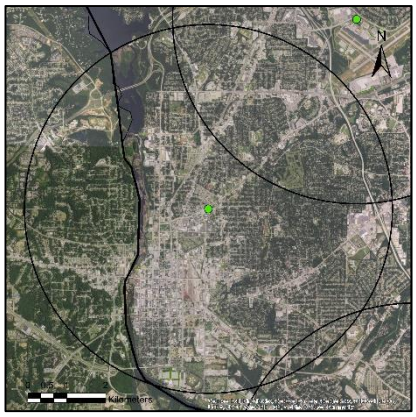
GA AAMP's plans for this site: Continue monitoring; On October 1, 2017 GA AAMP installed an FEM Teledyne T640 Continuous $PM_{2.5}$ sampler to replace the TEOM $PM_{2.5}$ sampler.

Columbus Georgia-Alabama MSA



Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

Columbus-Health Department



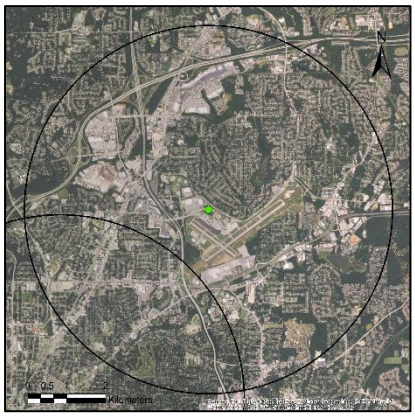
AQS ID: 132150001
Address: Muscogee City Health Department, 2100 Comer Ave., Columbus, Muscogee County, Georgia 31901
Site Established: 1/1/57
Latitude/Longitude: N32.4842/W-84.9789
Elevation: 111 meters
Area Represented: Columbus Georgia-Alabama MSA
Site History: Established as TSP site

North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure	Every 3 days	1.8 m	Neighborhood	3/4/99

GA AAMP's plans for this site: Continue monitoring

Columbus-Airport



AQS ID: 132150008

Address: Columbus Airport, 3100 Airport Thruway Drive, Columbus, Muscogee County, Georgia 31909

Site Established: 7/1/82

Latitude/Longitude: N32.5211/W-84.9447

Elevation: 445 meters

Area Represented: Columbus Georgia-Alabama MSA

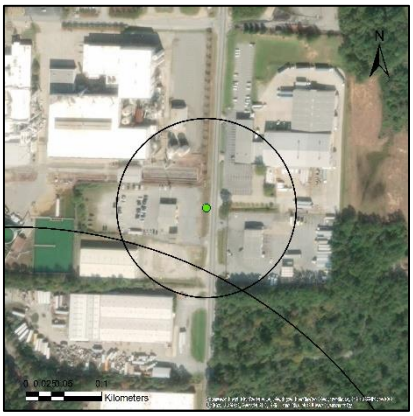
Site History: Established as O_3 site

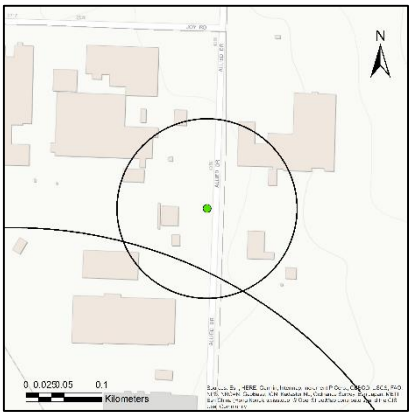
North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O_3	Population Exposure	Continuous (Mar-Oct)	3 m	Neighborhood	7/1/82
$PM_{2.5}$	Population Exposure	Every 3 days	4.8 m	Neighborhood	6/2/03
$PM_{2.5}$	Population Exposure	Continuous	3 m	Neighborhood	6/1/03

GA AAMP's plans for this site: Continue monitoring

Columbus-Allied





AQS ID: 132150009
Address: 4365 Allied Drive, Columbus, Muscogee County, Georgia 31906
Site Established: 9/1/90
Latitude/Longitude: N32.4344/W-84.9293
Elevation: 85 meters
Area Represented: Columbus Georgia-Alabama MSA
Site History: Established as lead site

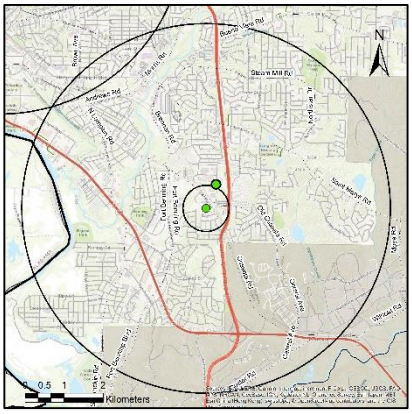
North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
Lead	Source Oriented	Every 6 days	2.3 m	Micro	9/1/90*
Lead	Quality Assurance /Source Oriented	Every 12 days	2.3 m	Micro	2/1/18

* Sampler inactive from 3/31/04 until reopened on 2/3/12

GA AAMP's plans for this site: Continue monitoring; the collocated lead monitor at the discontinued Columbus-Joy Rd location was moved to the Columbus-Allied location as of 2/1/18.

Columbus-Cusseta



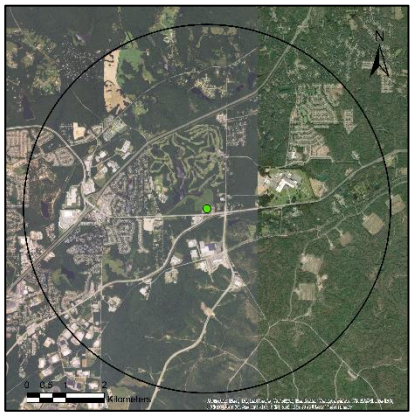
AQS ID: 132150011
Address: Cusseta Road Elementary School, 4150 Cusseta Road, Columbus, Muscogee County, Georgia 31903
Site Established: 9/4/91
Latitude/Longitude: N32.4297/W-84.9316
Elevation: 87.1 meters
Area Represented: Columbus Georgia-Alabama MSA
Site History: Established as lead site

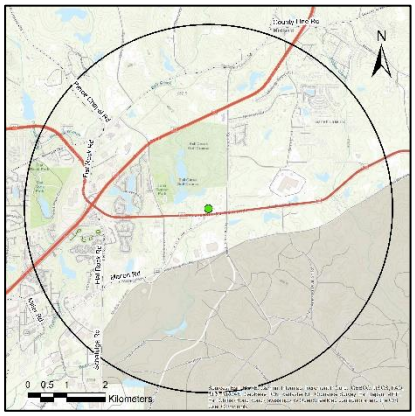
North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
Lead	Population Exposure/Source Oriented	Every 6 days	1.8 m	Middle	9/4/91
$PM_{2.5}$	Population Exposure	Every 3 days	1.8 m	Neighborhood	1/21/99
$PM_{2.5}$ Speciation	Population Exposure	Every 6 days	1.8 m	Neighborhood	5/1/02

GA AAMP's plans for this site: Continue monitoring

Columbus-Crime Lab





AQS ID: 132151003

Address: Columbus Crime Lab, 8395 Beaver Run Road, Midland, Muscogee County, Georgia 31820

Site Established: 6/30/80

Latitude/Longitude: N32.5394/W-84.8448

Elevation: 122 meters

Area Represented: Columbus Georgia-Alabama MSA

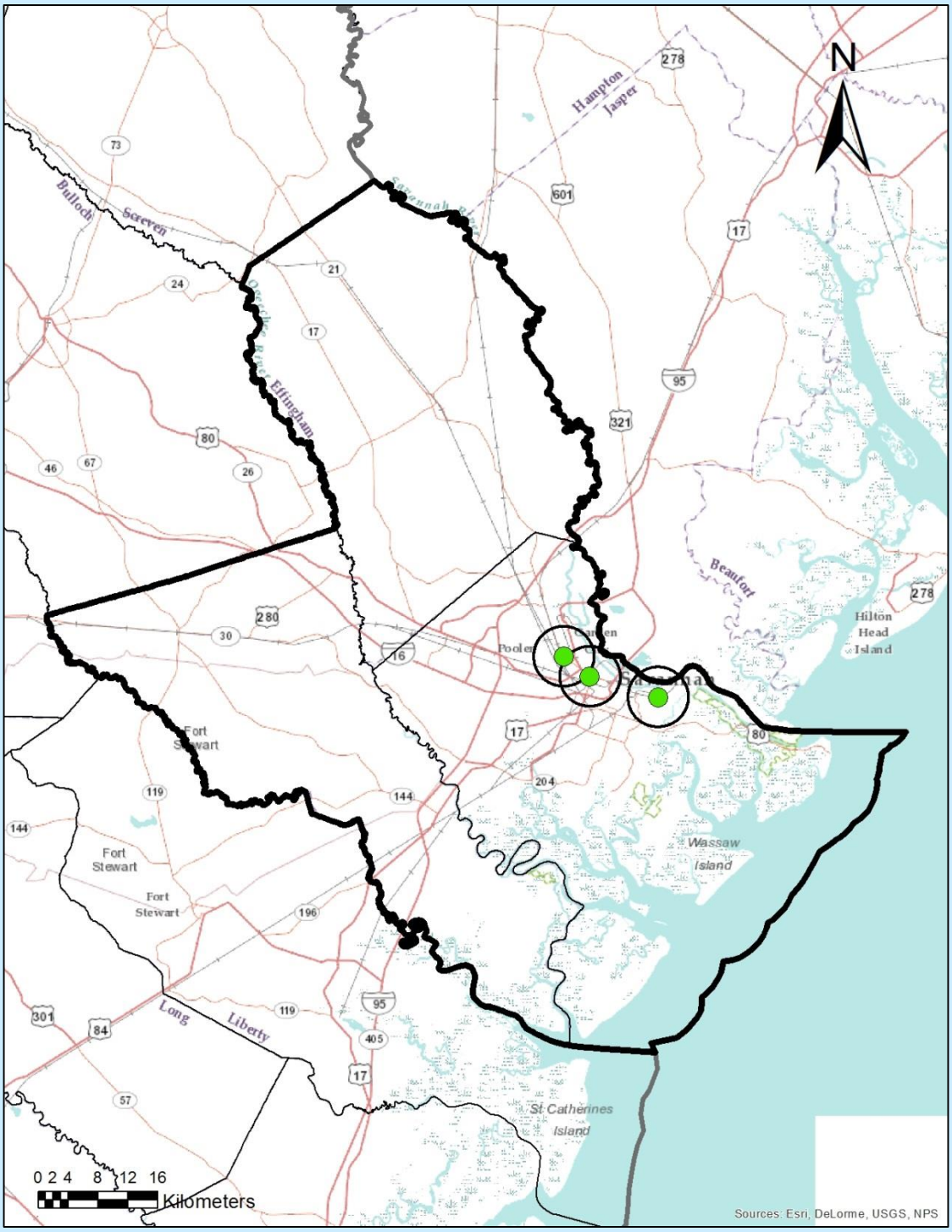
Site History: Established as O_3 site

North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	1/5/06
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	1/5/06
Outdoor Temperature	General/ Background	Continuous	2.2 m	Neighborhood	1/5/06
Relative Humidity	General/ Background	Continuous	2.2 m	Neighborhood	1/5/06
Rain/Melt Precipitation	General/ Background	Continuous	2.6 m	Neighborhood	1/5/06
Barometric Pressure	General/ Background	Continuous	1.8 m	Neighborhood	1/5/06

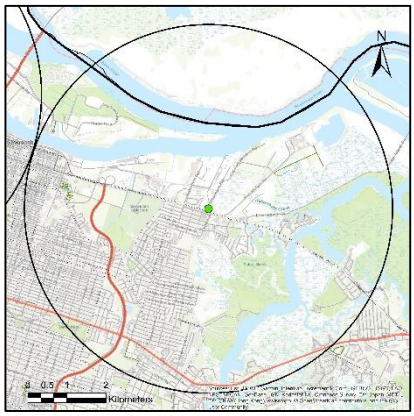
GA AAMP's plans for this site: Continue monitoring

Savannah MSA



Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

Savannah- E. President



AQS ID: 130510021

Address: American Red Cross, 2500 E. President Street, Bd-A, Savannah, Chatham County, Georgia 31404

Site Established: 2/1/95

Latitude/Longitude: N32.0683/W-81.0496

Elevation: 10.4 meters

Area Represented: Savannah MSA

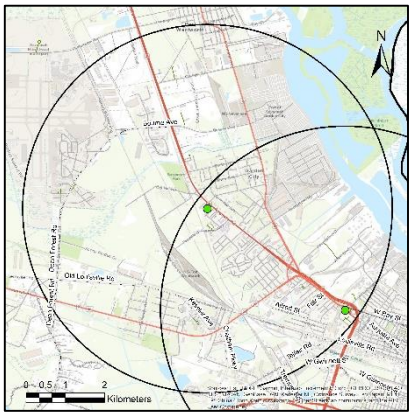
Site History: Established as SO_2 and H_2S site

North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O_3	Population Exposure	Continuous (Mar-Oct)	3.8 m	Neighborhood	4/19/95
SO_2	Source Oriented	Continuous	3.8 m	Neighborhood	3/29/95
SO_2 5-Minute Maximum	Population Exposure	Continuous	3.8 m	Neighborhood	8/1/10
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	1/1/04
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	1/1//04

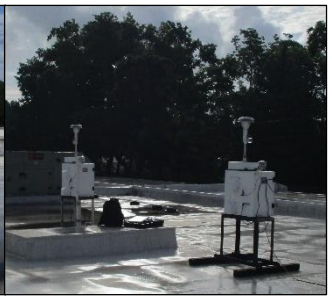
GA AAMP's plans for this site: Continue monitoring

Savannah-Mercer



AQS ID: 130510091
Address: Mercer Middle School, 201 Rommel Avenue, Savannah, Chatham County, Georgia 31408
Site Established: 7/7/76
Latitude/Longitude: N32.1105/W-81.1620
Elevation: 9.8 meters
Area Represented: Savannah MSA
Site History: Established as TSP site

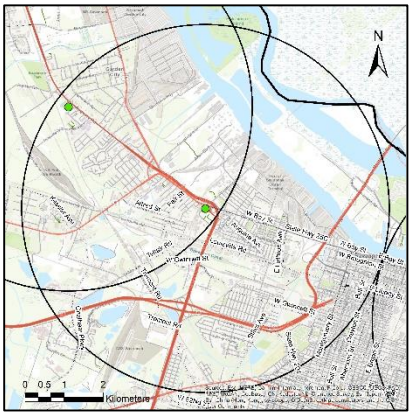
North South East West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure	Every 3 days	2.2 m	Neighborhood	1/1/99

GA AAMP's plans for this site: GA AAMP has requested to discontinue this integrated $PM_{2.5}$ monitor since the FEM Teledyne T640 Continuous $PM_{2.5}$ sampler has been established at the nearby Savannah-L&A site (see GA AAMP's *Addendum to 2018 Ambient Air Monitoring Plan* and Section 1.0 of this document for more details).

Savannah- L&A



AQS ID: 130511002

Address: Pumping Station at Intersection of West Lathrop and Augusta Avenue, Savannah, Chatham County, Georgia 31415

Site Established: 1/1/72

Latitude/Longitude: N32.0906/W-81.1304

Elevation: 6.11 meters

Area Represented: Savannah MSA

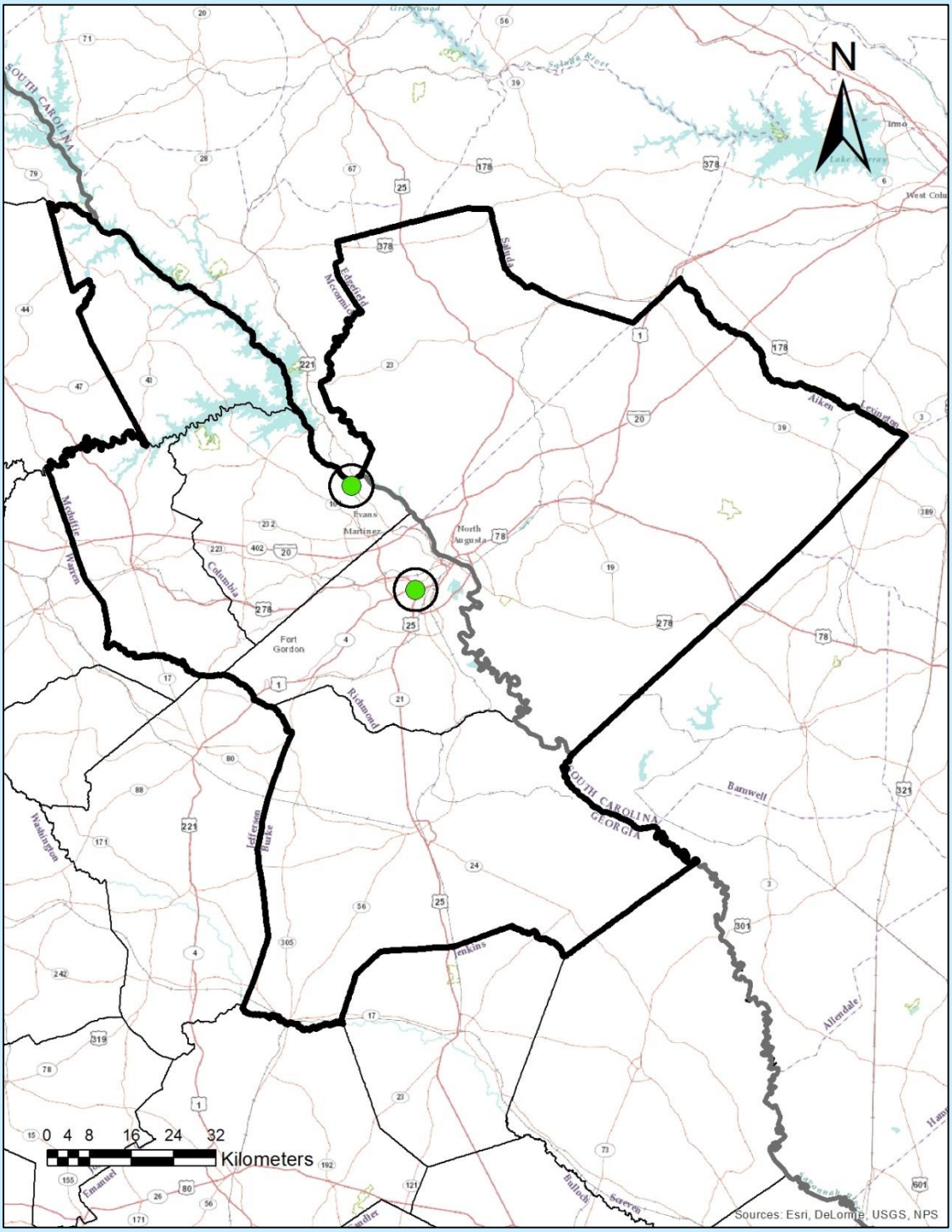
Site History: Established as TSP site

North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
SO_2	Population Exposure	Continuous	4.1 m	Neighborhood	1/1/98
SO_2 5-Minute Maximum	Population Exposure	Continuous	4.1 m	Neighborhood	8/1/10
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	1/1/79
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	1/1/79
$PM_{2.5}$	Population Exposure	Continuous	4.5 m	Neighborhood	10/1/03

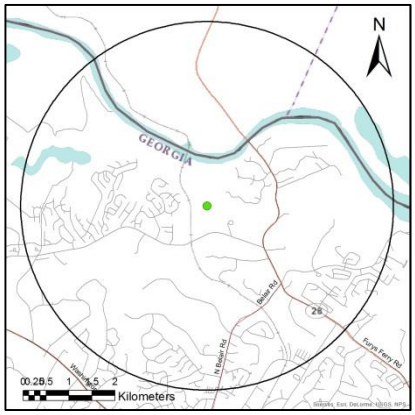
GA AAMP's plans for this site: Continue monitoring; propose to add an ozone monitor when initiated by EPA; On November 7, 2017 GA AAMP installed an FEM Teledyne T640 Continuous $PM_{2.5}$ sampler to replace the TEOM $PM_{2.5}$ sampler.

Augusta-Richmond County, Georgia-South Carolina MSA



Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

Evans



AQS ID: 130730001

Address: Riverside Park, 4431 Hardy McManus Road, Evans, Columbia County, Georgia 30809

Site Established: 2/17/05

Latitude/Longitude: N33.5819/W-82.1314

Elevation: 74 meters

Area Represented: Augusta-Richmond County, Georgia-South Carolina MSA

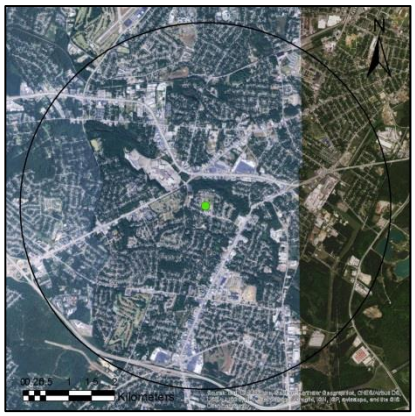
Site History: Established as O_3 and NO_Y site

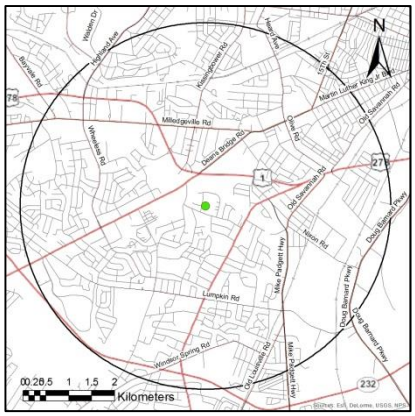
North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O_3	Population Exposure	Continuous (Mar-Oct)	5 m	Neighborhood	3/1/05
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	2/17/05
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	2/17/05
Outside Temperature	General/ Background	Continuous	2 m	Neighborhood	2/17/05
Relative Humidity	General/ Background	Continuous	2 m	Neighborhood	2/17/05

GA AAMP's plans for this site: Continue monitoring

Augusta





AQS ID: 132450091

Address: Bungalow Road Elementary School, 2216 Bungalow Rd, Augusta, Richmond County, Georgia 30906

Site Established: 1/1/76

Latitude/Longitude: N33.4339/W-82.0224

Elevation: 48.77 meters

Area Represented: Augusta-Richmond County, Georgia-South Carolina MSA

Site History: Established as TSP site

North South East West

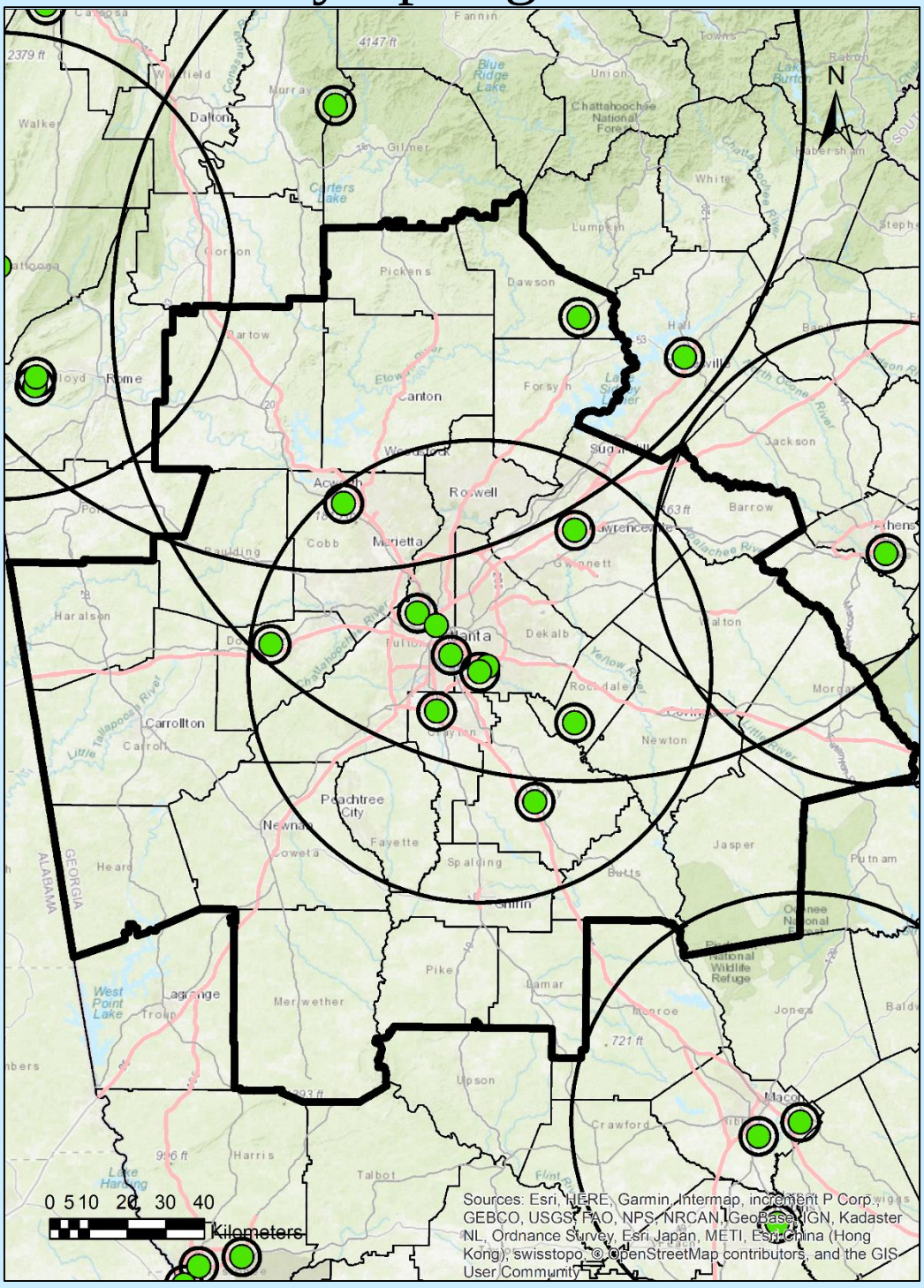
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O_3	Population Exposure	Continuous (Mar-Oct)	4.5 m	Neighborhood	4/27/89
PM_{10}	Population Exposure	Continuous	3.5 m	Neighborhood	4/9/96
$PM_{2.5}$ Speciation	Population Exposure	Every 6 days	2.5 m	Neighborhood	3/2/02
$PM_{2.5}$	Population Exposure	Continuous	4.5 m	Neighborhood	10/1/03
SO_2	Population Exposure	Continuous	4.5 m	Neighborhood	1/14/13
SO_2 5-Minute Maximum	Population Exposure	Continuous	4.5 m	Neighborhood	1/14/13
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	10/2/03

Augusta (continued)

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	10/2/03
Outside Temperature	General/ Background	Continuous	2 m	Neighborhood	10/2/03
Relative Humidity	General/ Background	Continuous	2 m	Neighborhood	10/2/03
Rain/Melt Precipitation	General/ Background	Continuous	4 m	Neighborhood	10/2/03
Barometric Pressure	General/ Background	Continuous	2 m	Neighborhood	10/2/03

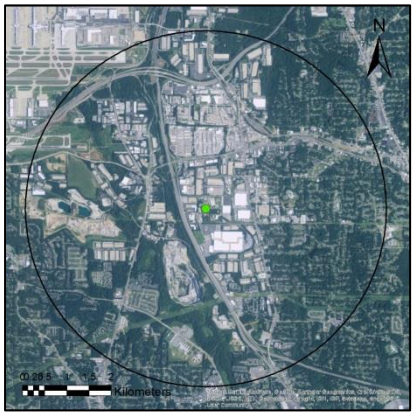
Continue monitoring; On October 1, 2017 GA AAMP installed an FEM Teledyne T640 Continuous $PM_{2.5}$ sampler to replace the TEOM $PM_{2.5}$ sampler. The $PM_{2.5}$ FRM sampler was shut down as of October 31, 2018. The continuous TEOM $PM_{2.5}$ sampler was changed to a continuous FEM to monitor PM_{10} at the site on October 1, 2017; therefore, regulatory PM_{10} data is now available on a daily basis.

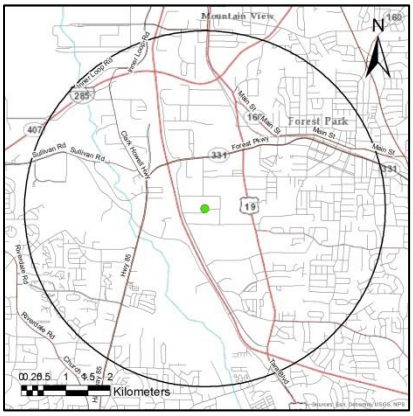
Atlanta-Sandy Springs-Marietta MSA



Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

Forest Park





AQS ID: 130630091

Address: 25 Kennedy Drive, Forest Park, Clayton County, Georgia 30297

Site Established: 1/1/78

Latitude/Longitude: N33.6107/W-84.3908

Elevation: 288 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

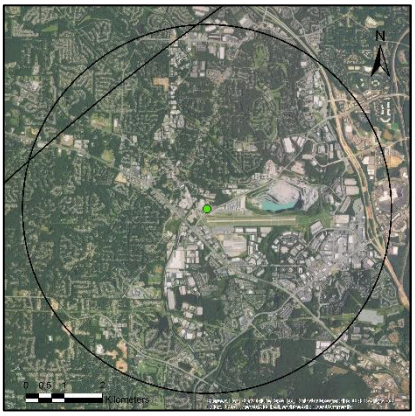
Site History: Established as TSP site

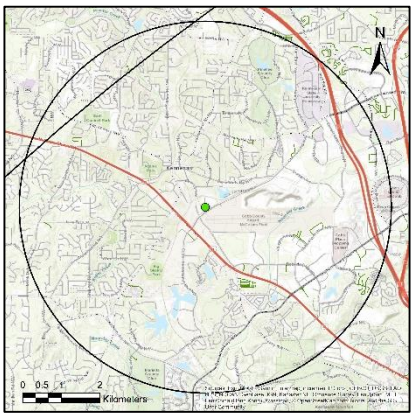
North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure	Every 3 days	2.2 m	Neighborhood	1/9/99

GA AAMP's plans for this site: Continue monitoring

Kennesaw





AQS ID: 130670003

Address: Georgia National Guard, 1901 McCollum Parkway, Kennesaw, Cobb County, Georgia, 30144

Site Established: 2/7/99

Latitude/Longitude: N34.0153/W-84.6075

Elevation: 317 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

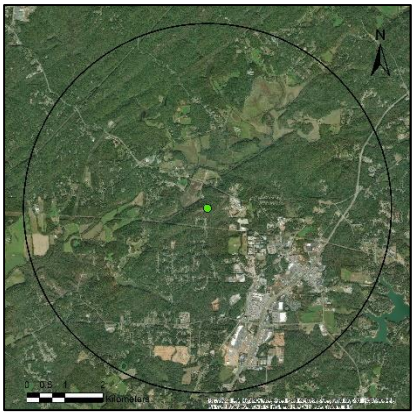
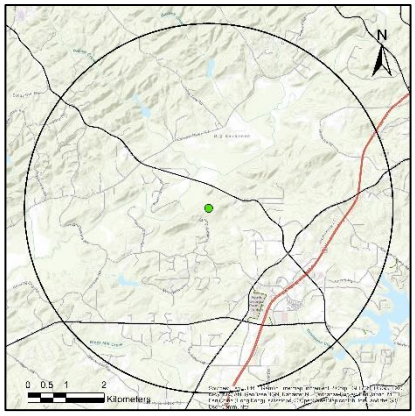
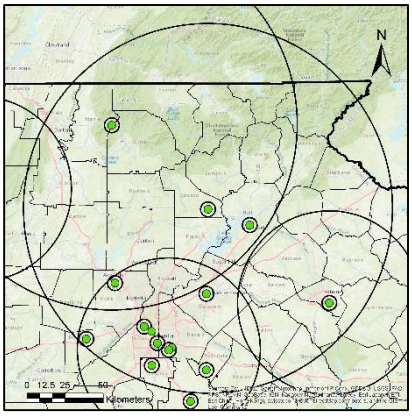
Site History: Established as $PM_{2.5}$ site

North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O_3	Population Exposure	Continuous (Mar-Oct)	4.2 m	Neighborhood	9/1/99
$PM_{2.5}$	Population Exposure	Every 3 Days	4.8 m	Neighborhood	2/7/99

GA AAMP's plans for this site: Continue monitoring

Dawsonville

AQS ID: 130850001

Address: Georgia Forestry Commission, 4500 Georgia Highway 53 East, Dawsonville, Dawson County, Georgia 30534

Site Established: 1/1/85

Latitude/Longitude: N34.3761/W-84.0596

Elevation: 372 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

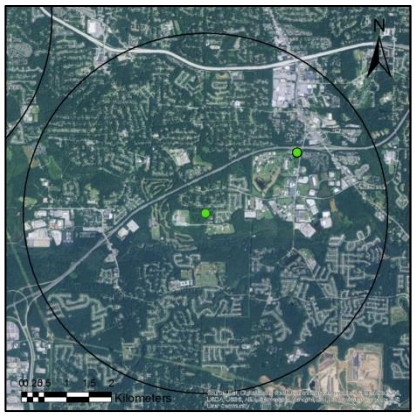
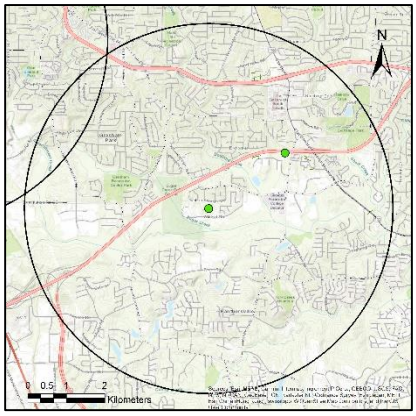
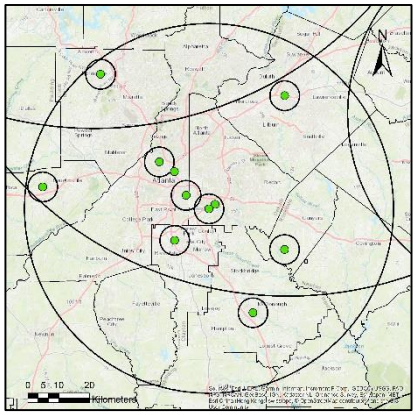
Site History: Established as O_3 site

North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O_3	Population Exposure	Continuous (Mar-Oct)	4 m	Neighborhood	1/1/85
Wind Speed	General/ Background	Continuous	10 m	Regional	1/1/05
Wind Direction	General/ Background	Continuous	10 m	Regional	1/1/05

GA AAMP's plans for this site: Continue monitoring

South DeKalb

AQS ID: 130890002

Address: 2390-B Wildcat Road, Decatur, DeKalb County, Georgia 30034

Site Established: 1/1/74

Latitude/Longitude: N33.6877/W-84.2905

Elevation: 308 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

Site History: Established as O_3 site

North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure	Every 3 days	2.4 m	Neighborhood	1/22/99
$PM_{2.5}$	Quality Assurance	Every 3 days	2.4 m	Neighborhood	12/20/08
$PM_{2.5}$	Population Exposure	Continuous	4 m	Neighborhood	5/1/03
$PM_{2.5}$ Speciation	Population Exposure	Every 3 days	2.2 m	Neighborhood	10/1/00
SO_2	Population Exposure	Continuous	3.8 m	Neighborhood	10/1/10
SO_2 5-Minute Maximum	Population Exposure	Continuous	3.8 m	Neighborhood	10/1/10
O_3	Highest Concentration	Continuous	4 m	Neighborhood/ Urban	1/1/74
CO	Population Exposure	Continuous	4 m	Neighborhood	5/19/03

South DeKalb (continued)

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
NOy	Population Exposure	Continuous	10 m	Neighborhood/ Urban	1/1/98
NO	Population Exposure	Continuous	4 m	Neighborhood/ Urban	4/1/94
NOx	Population Exposure	Continuous	4 m	Neighborhood/ Urban	4/1/94
NO_2	Population Exposure	Continuous	4 m	Neighborhood/ Urban	7/21/78
Carbonyls (PAMS)	Max Precursor Emissions	Three 8-hour samples every third day in summer	3.8 m	Neighborhood	6/1/93
Carbonyls (NATTS)	Population Exposure	Every 6 days	3.8 m	Neighborhood	6/1/93
Carbonyls (NATTS)	Quality Assurance	1/month	3.8 m	Neighborhood	1/1/06
PM_{10} Select Metals (NATTS)	Population Exposure	Every 6 days	2 m	Neighborhood	1/1/00
PM_{10} Select Metals (NATTS)	Quality Assurance	1/month	2 m	Neighborhood	1/1/05
PM_{10} Continuous	Population Exposure	Continuous	4 m	Neighborhood	1/1/11
PM_{coarse} Continuous	Population Exposure	Continuous	4 m	Neighborhood	1/1/11
VOCs (PAMS)	Max Precursor Emissions	Continuous in Summer (June-August)*	3.8 m	Neighborhood	6/1/93
VOCs (NATTS)	Population Exposure	Every 6 days	3.8 m	Neighborhood	6/1/93
VOCs (NATTS)	Quality Assurance	1/month	3.8 m	Neighborhood	1/1/05
Semi-VOCs (NATTS)	Population Exposure	Every 6 days	2.5 m	Neighborhood	4/30/07
Semi-VOCs (NATTS)	Quality Assurance	1/month	2.5 m	Neighborhood	4/30/07
Outdoor Temperature	General/ Background	Continuous	2 m	Neighborhood	6/1/93
Rain/Melt Precipitation	General/ Background	Continuous	3.2 m	Neighborhood	1/1/97
Barometric Pressure	General/ Background	Continuous	2 m	Neighborhood	6/1/93
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	6/1/93

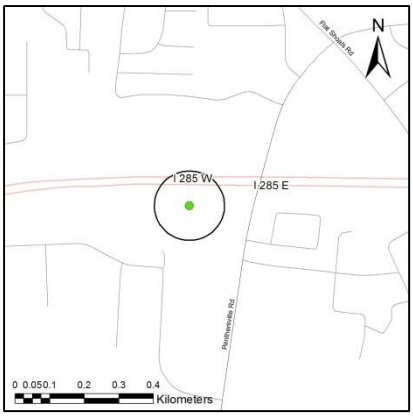
South DeKalb (continued)

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	6/1/93
Sigma Theta	General/ Background	Continuous	10 m	Neighborhood	1/1/02
Relative Humidity	General/ Background	Continuous	2 m	Neighborhood	6/1/93

GA AAMP's plans for this site: Continue monitoring. NCore site (refer to GA AAMP's *2011 Ambient Air Monitoring Plan, Appendix C, Ambient Air Monitoring Plan for National Core (NCore) Multipollutant Monitoring Station* for full description and approval). Schedule of $PM_{2.5}$ FRM sampler based on EPA requirements, however actual operation is daily. Solar radiation and ultraviolet radiation for South DeKalb PAMS are currently monitored at the Conyers site due to equipment specifications (see Section 1.4 for waiver request). On June 14, 2017 GA AAMP replaced the FEM BAM with an FEM Teledyne T640X Continuous $PM_{2.5}$, PM_{10}, and PM_{coarse} sampler. GA AAMP is planning to replace both the primary and collocated NATTS high-volume PM_{10} metals samplers with low-volume PM_{10} metals samplers when the collection and analysis method are fully operational. GA AAMP installed an Agilent 7890B Gas Chromatograph to fulfill the PAMS requirement for measuring hourly VOCs that will become operational when functioning properly.

*GA AAMP applied for an alternate sampling schedule waiver for the PAMS VOCs for 2018 PAMS season. See GA AAMP's *Public Notice Site Waiver Requests, March 2018* for more details.

NR-285



AQS ID: 130890003

Address: 3073 Panthersville Road, Decatur, DeKalb County, Georgia 30034

Site Established: 7/1/86

Latitude/Longitude: N33.6985/W-84.2727

Elevation: 238 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

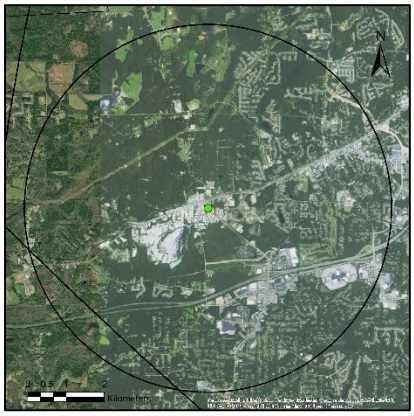
Site History: Established as lead site

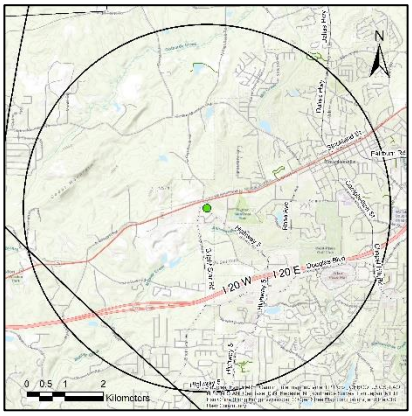
North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
NO_2	Population Exposure	Continuous	3.3 m	Micro	1/1/15
NO	Population Exposure	Continuous	3.3 m	Micro	1/1/15
NOx	Population Exposure	Continuous	3.3 m	Micro	1/1/15
VOCs	Population Exposure	Every 6 days	3.3 m	Micro	3/31/15
Black Carbon	Population Exposure	Continuous	3.3 m	Micro	9/1/15

GA AAMP's plans for this site: Continue monitoring; Near-road site as of 1/1/15 (see *Addendum to 2015 Ambient Monitoring Plan* for full description).

Douglasville





AQS ID: 130970004

Address: Douglas County Water Authority, 7725 W. Strickland St., Douglasville, Douglas County, Georgia 30134

Site Established: 8/15/97

Latitude/Longitude: N33.7411/W-84.7765

Elevation: 373 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

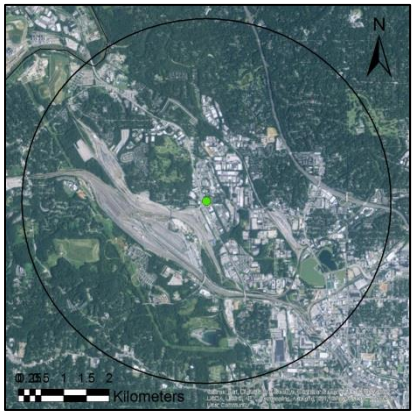
Site History: Established as O_3 site

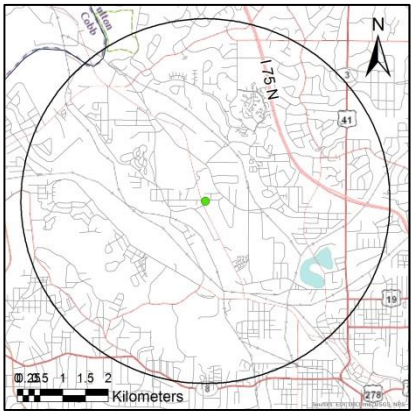
North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O_3	Population Exposure	Continuous (Mar-Oct)	4 m	Neighborhood	8/15/97
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	8/15/97
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	8/15/97

GA AAMP's plans for this site: Continue monitoring

Fire Station #8





AQS ID: 131210039

Address: Fire Station #8, 1711 Marietta Blvd., Atlanta, Fulton County, Georgia 30318

Site Established: 1/1/73

Latitude/Longitude: N33.8021/W-84.4357

Elevation: 265 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

Site History: Established as TSP site

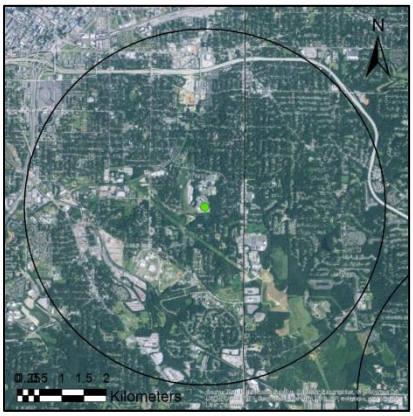
North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure	Every 3 days	10 m	Neighborhood	1/21/99*
PM_{10}	Population Exposure	Every 6 days	10 m	Neighborhood	1/1/86**
PM_{10}	Population Exposure/Quality Assurance	Every 12 days	10 m	Neighborhood	2/1/86***

* Sampler inactive from 9/30/06 to 12/1/08, **Sampler inactive from 9/26/06 to 1/3/13, ***Sampler inactive from 10/12/87 to 1/1/06 and from 9/26/06 to 6/1/17

GA AAMP's plans for this site: Continue monitoring

United Avenue



AQS ID: 131210055

Address: 945 United Avenue, Atlanta, Fulton County, Georgia 30316

Site Established: 10/1/91

Latitude/Longitude: N33.7206/W-84.3574

Elevation: 288 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

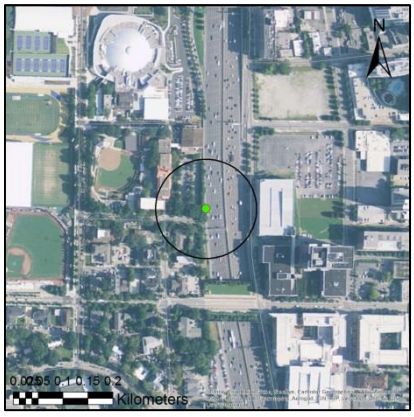
Site History: Established as O_3 and SO_2 site

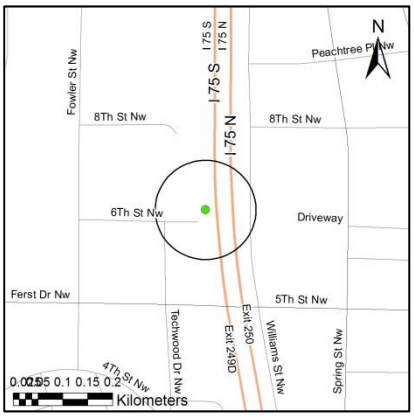
North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
SO_2	Population Exposure	Continuous	4 m	Neighborhood	10/1/91
SO_2 5-Minute Maximum	Population Exposure	Continuous	4 m	Neighborhood	8/1/10
O_3	Population Exposure	Continuous (Mar-Oct)	4 m	Neighborhood	10/1/91
$PM_{2.5}$	Population Exposure	Continuous	4.8 m	Neighborhood	7/1/05
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	1/1/04
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	1/1/04

GA AAMP's plans for this site: Continue monitoring

NR-GA Tech





AQS ID: 131210056

Address: Georgia Institute of Technology, 6th Street and I-75, Atlanta, Fulton County, Georgia, 30313

Site Established: 6/15/14

Latitude/Longitude: N33.7784/W-84.3914

Elevation: 286 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

Site History: Established as near-road site

North South East West

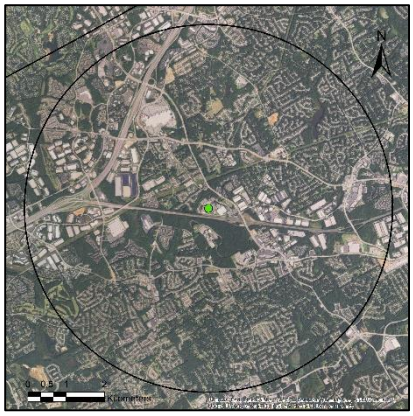
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
NO_2	Source Oriented	Continuous	3.5 m	Micro	6/15/14
NO	Source Oriented	Continuous	3.5 m	Micro	6/15/14
NOx	Source Oriented	Continuous	3.5 m	Micro	6/15/14
CO	Source Oriented	Continuous	3.5 m	Micro	6/15/14
$PM_{2.5}$	Source Oriented	Every 3 days	4.8 m	Micro	1/1/15
Black Carbon	Source Oriented	Continuous	4.4 m	Micro	7/9/15
Wind Speed	Source Oriented	Continuous	5.5 m	Micro	8/20/14

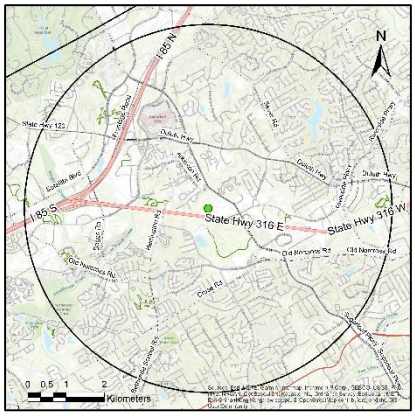
NR-GA Tech (continued)

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
Wind Direction	Source Oriented	Continuous	5.5 m	Micro	8/20/14
$PM_{2.5}$	Source Oriented	Continuous	3.5 m	Micro	3/1/18

GA AAMP's plans for this site: Continue monitoring; See Appendix E of *2014 Ambient Air Monitoring Plan* for near-road site establishment and details. On March 1, 2018 GA AAMP installed a nephelometer at this site (see Section 1g of Appendix C for more details).

Gwinnett Tech





AQS ID: 131350002

Address: Gwinnett Tech, 5150 Sugarloaf Parkway, Lawrenceville, Gwinnett County, Georgia 30043

Site Established: 3/17/95

Latitude/Longitude: N33.9632/W-84.0691

Elevation: 294 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

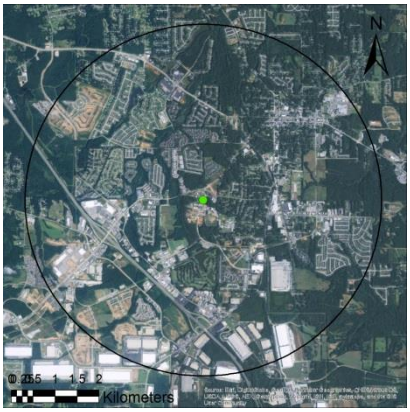
Site History: Established as O_3 site

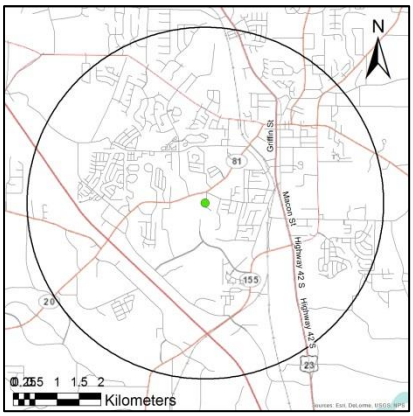
North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O_3	Highest Concentration	Continuous (Mar-Oct)	3.4 m	Neighborhood	5/17/95
$PM_{2.5}$	Population Exposure	Continuous	4.4 m	Neighborhood	9/1/03

GA AAMP's plans for this site: Continue monitoring; On October 26, 2017 GA AAMP installed an FEM Teledyne T640 Continuous $PM_{2.5}$ sampler to replace the BAM $PM_{2.5}$ sampler. The $PM_{2.5}$ FRM sampler was shut down as of October 31, 2018.

McDonough





AQS ID: 131510002

Address: Blessings Thrift Store, 86 Work Camp Rd, McDonough, Henry County, Georgia 30253

Site Established: 6/7/99

Latitude/Longitude: N33.4338/W-84.1619

Elevation: 261.35 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

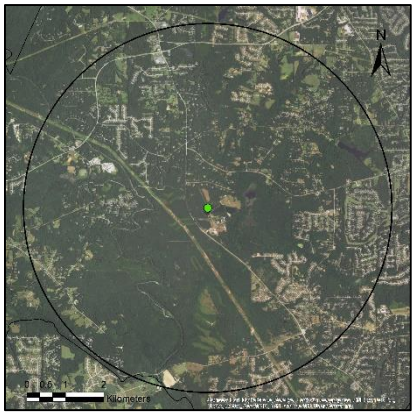
Site History: Established as O_3 site

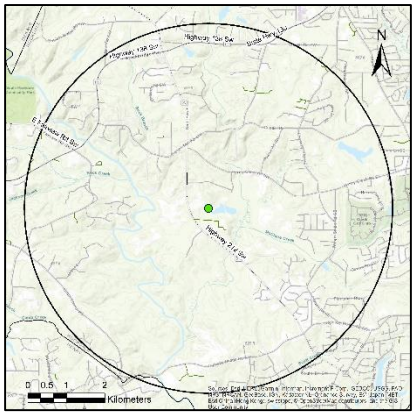
North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O_3	Population Exposure	Continuous (Mar-Oct)	4 m	Neighborhood	6/7/99
$PM_{2.5}$	Population Exposure	Continuous	4.2 m	Neighborhood	9/1/03

GA AAMP's plans for this site: Continue monitoring

Conyers





AQS ID: 132470001
Address: 2625 Georgia Highway 212, Conyers, Rockdale County, Georgia 30094
Site Established: 7/26/78
Latitude/Longitude: N33.5884/W-84.0697
Elevation: 219 meters
Area Represented: Atlanta-Sandy Springs-Marietta MSA
Site History: Established as O_3 site

North South East West

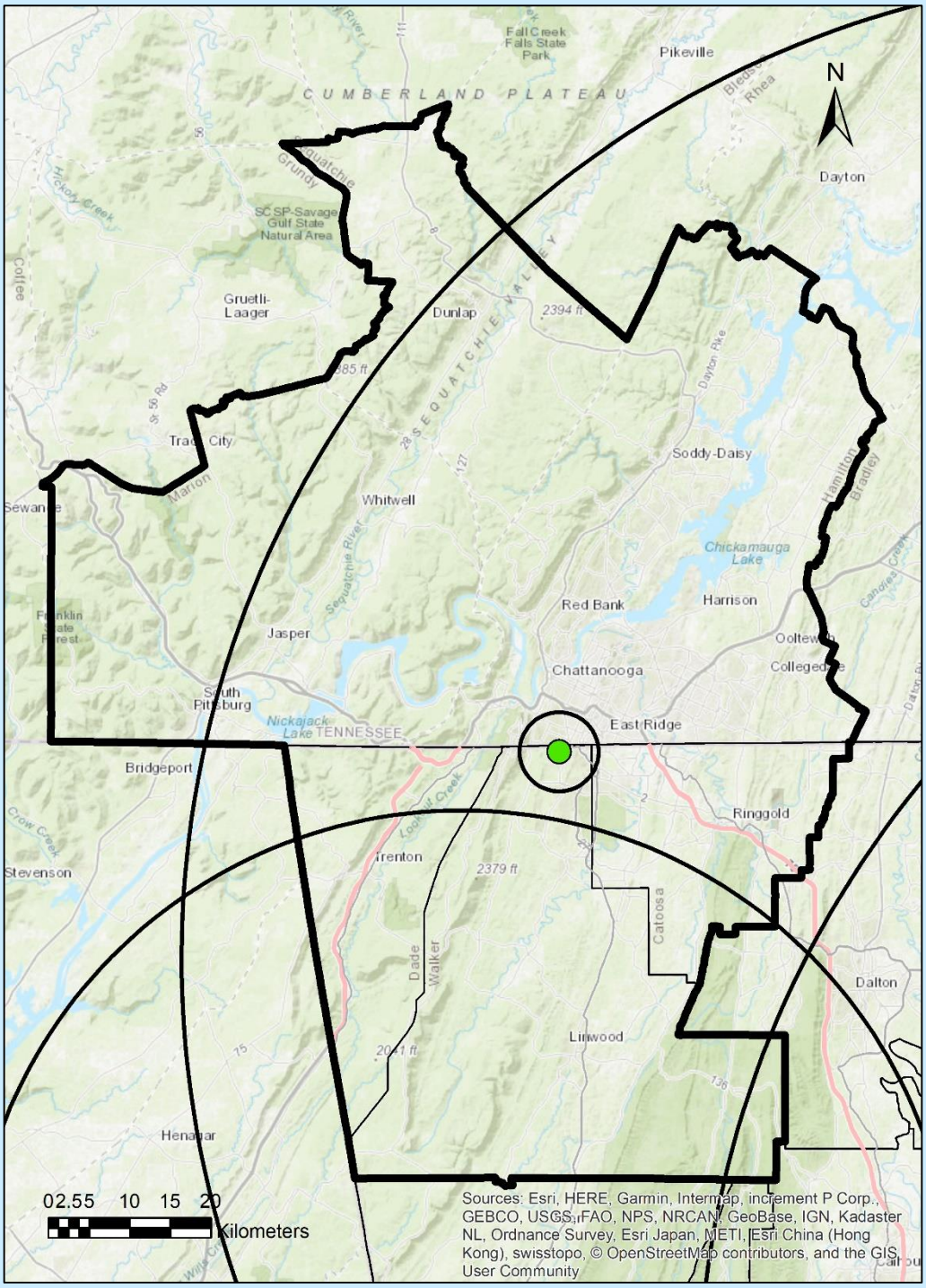
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O_3	Maximum Concentration	Continuous (Mar-Oct)	4.4 m	Neighborhood	7/26/78
Relative Humidity	General/ Background	Continuous	2.9 m	Neighborhood	6/1/94
Barometric Pressure	General/ Background	Continuous	2.9 m	Neighborhood	6/1/94
Ultraviolet Radiation	General/ Background	Continuous	2.2 m	Neighborhood	1/1/97
Outdoor Temperature	General/ Background	Continuous	2.9 m	Neighborhood	6/1/94
Solar Radiation	General/ Background	Continuous	2.2 m	Neighborhood	6/1/94

Conyers (continued)

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	6/1/94
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	6/1/94
Rain/Melt Precipitation	General/ Background	Continuous	3.8 m	Neighborhood	7/1/03

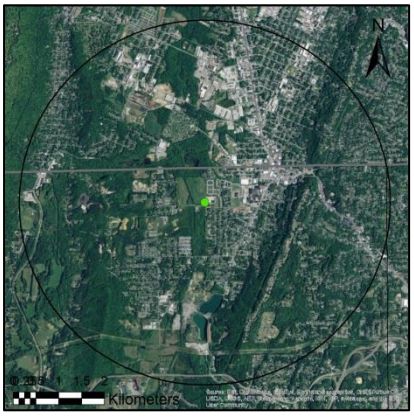
GA AAMP's plans for this site: Continue monitoring; Ultraviolet radiation and solar radiation monitored at Conyers are also used to fulfill meteorological requirements for South DeKalb PAMS (see Section 1.4 for waiver request).

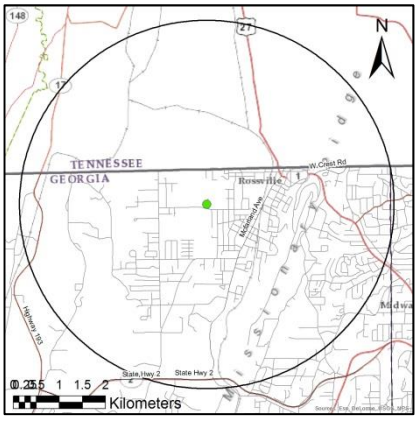
Chattanooga Tennessee-Georgia MSA



Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

Rossville





AQS ID: 132950002

Address: 601 Maple Street, Lot #6, Rossville, Walker County, Georgia, 30741

Site Established: 1/1/67

Latitude/Longitude: N34.9788/W-85.3009

Elevation: 200 meters

Area Represented: Chattanooga Tennessee-Georgia MSA

Site History: Established as TSP and SO_2/NO_2 site

North

South

East

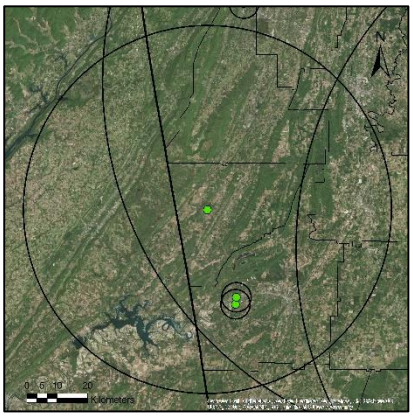
West

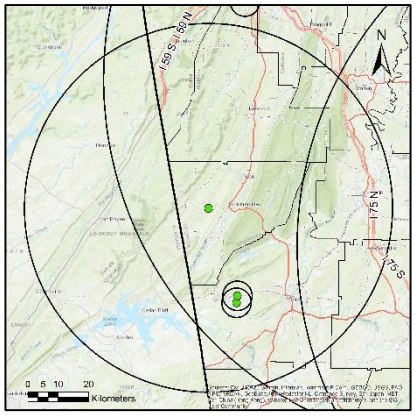
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure	Continuous	2.9 m	Neighborhood	1/24/07
$PM_{2.5}$	Population Exposure/ Regional Transport	Every 3 days	2.2 m	Neighborhood	1/1/00
$PM_{2.5}$ Speciation	Population Exposure	Every 6 days	2.2 m	Neighborhood	3/23/05

GA AAMP's plans for this site: Continue monitoring; On October 1, 2017 GA AAMP installed an FEM Teledyne T640 Continuous $PM_{2.5}$ sampler to replace the BAM $PM_{2.5}$ sampler.

Sites Not in an MSA
(Listed in AQS ID Order)

Summerville





AQS ID: 130550001

Address: DNR Fish Hatchery, 231 Fish Hatchery Road, Summerville, Chattooga County, Georgia 30747

Site Established: 1985

Latitude/Longitude: N34.4744/W-85.4089

Elevation: 276 meters

Area Represented: Not in an MSA, Summerville Micropolitan Statistical Area

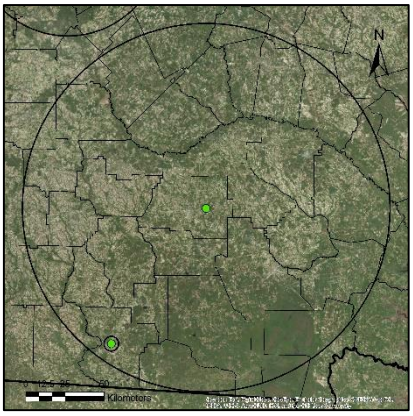
Site History: Established as Acid Rain site

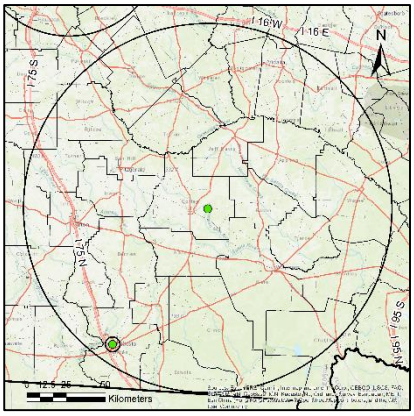
North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O_3	Regional Transport	Continuous (Mar-Oct)	4 m	Urban	3/1/04

GA AAMP's plans for this site: Continue monitoring

General Coffee





AQS ID: 130690002

Address: 46 John Coffee Road, Nicholls, Coffee County, Georgia 31554

Site Established: 1/1/99

Latitude/Longitude: N31.5129/W-82.7501

Elevation: 49 meters

Area Represented: Not in an MSA, Douglas Micropolitan Statistical Area

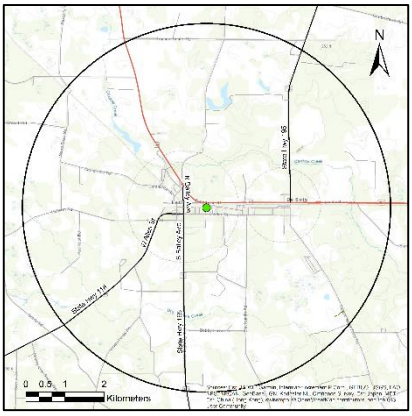
Site History: Established as Air Toxics site

North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$ Speciation	General Background	Every 6 days	3.5 m	Regional	3/1/02
$PM_{2.5}$	General Background	Every 3 days	3 m	Regional	2/1/17

GA AAMP's plans for this site: Continue monitoring

Leslie



AQS ID: 132611001

Address: Leslie Community Center, N Bass St/E Allen St, Leslie, Sumter County, Georgia 31764

Site Established: 1/1/81

Latitude/Longitude: N31.9541/W-84.0811

Elevation: 108 meters

Area Represented: Not in an MSA, Americus Micropolitan Statistical Area

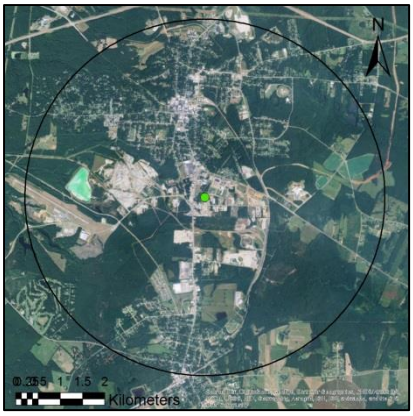
Site History: Established as O_3 site

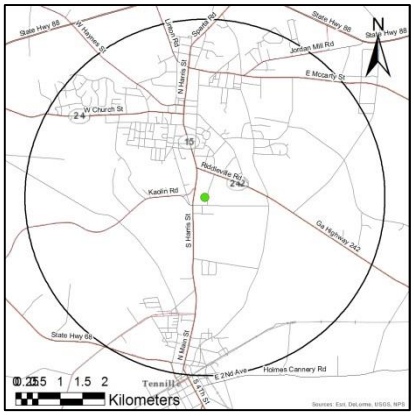
North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O_3	General/ Background	Continuous (Mar-Oct)	3 m	Neighborhood	1/1/81

GA AAMP's plans for this site: Continue monitoring

Sandersville





AQS ID: 133030001

Address: Oconee Center, 824 School Street, Sandersville, Washington County, Georgia 31082

Site Established: 1/1/74

Latitude/Longitude: N32.9672/W-82.8070

Elevation: 140 meters

Area Represented: Not in an MSA, Washington County

Site History: Established as TSP site

North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure	Every 3 days	3 m	Neighborhood	1/30/99

GA AAMP's plans for this site: Continue monitoring

Appendix B:

Inventory of Ambient Monitoring Equipment

Georgia Department of Natural Resources
Environmental Protection Division

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	COND./ AGE
Rome MSA			
Rome	ESC DAS 8832	Datalogger 8832	good/ >6
	Met One SASS	PM2.5 Speciation Sampler	good/ >5
	URG 3000N	PM2.5 Speciation Sampler	good/ >10
	TEOM 1400AB	Continuous PM2.5/PM10 Sampler	good/ >5
Kraftsman	ESC DAS 8832	Datalogger	good/ >5
	Thermo 43i	SO2 Analyzer	good/ >5
	Thermo 146i	Multi-Gas Calibrator	good/ >5
	Sulfur Dioxide Cylinder	Gas Cylinder	good/ <8
	RM Young Ultrasonic Anemometer 8100	Wind Speed and Wind Direction	good/ >2
	Aluma T-135	Meteorological Crank Tower	good/ >2
	Environics 7000	Zero Air Supply	good/ >4
Brunswick MSA			
Brunswick	ESC DAS 8832	Datalogger	good/ >6
	Thermo 49 series	O3 Analyzer	good/ >8
	Thermo 49 series	O3 Analyzer	good/ >8
	Thermo Partisol-Plus 2025	Integrated PM2.5 Sampler	good/ >8
	RM Young Ultrasonic Anemometer 8100	Wind Speed and Wind Direction	good/ >5
	Aluma T-135	Meteorological Crank Tower	good/ >10
	Environics 7000	Zero Air Supply	good/ >5
Valdosta MSA			
Valdosta	Thermo Partisol-Plus 2025	Integrated PM2.5 Sampler	good/ >5
	Met One BAM 1020	Continuous PM2.5 Sampler	good/ >6
	ESC DAS 8832	Datalogger	good/ >5
Warner Robins MSA			
Warner Robins	Thermo Partisol-Plus 2025	Integrated PM2.5 Sampler	good/ >4
	Teledyne T640	Continuous PM Sampler	good/>2
Dalton MSA			
Fort Mountain	ESC DAS 8832	Datalogger	good/ >6
	Thermo 49 series	O3 Analyzer	good/ >8
	Thermo 49 series	O3 Calibrator	good/ >8
	RM Young Ultrasonic Anemometer 8100	Wind Speed and Wind Direction	good/ >10
	RM Young Temp/RH Probe 41382VC	Ambient Temperature & Relative Humidity	good/ >5
	Aluma FOT-10	Meteorological Fold Over Tower	good/ >10
Gainesville MSA			
Gainesville	Teledyne T640	Continuous PM Sampler	good/ <2
	ESC DAS 8832	Datalogger	good/ >6
Albany MSA			
Albany	Thermo Partisol-Plus 2025	Integrated PM2.5 Sampler	good/ >4
	Thermo Partisol-Plus 2025	Co-located Integrated PM2.5 Sampler	good/ >4
	Teledyne T640	Continuous PM Sampler	good/ <1
Athens-Clarke County MSA			
Athens	Thermo 49 series	O3 Analyzer	good/ >8
	Thermo 49 series	O3 Calibrator	good/ >8
	Thermo Partisol-Plus 2025	Integrated PM2.5 Sampler	good/ >4
	Teledyne T640	Continuous PM Sampler	good/ >1
	Teledyne T640	Co-located Continuous PM Sampler	good/ <1
	ESC DAS 8832	Datalogger	good/ >6
	Environics 7000	Zero Air Supply	good/ >4
Macon MSA			
Macon-Allied	Thermo Partisol-Plus 2025	Integrated PM2.5 Sampler	good/ >4
	Thermo Partisol-Plus 2025	Co-located Integrated PM2.5 Sampler	good/ >4

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	COND./ AGE
Macon-Allied	Met One SASS	PM2.5 Speciation Sampler	good/ >10
cont'd	URG 3000N	PM2.5 Speciation Sampler	good/ >10
Macon Forestry	ESC DAS 8832	Datalogger	good/ >6
	Thermo 49 series	O3 Analyzer	good/ >10
	Thermo 49 series	O3 Calibrator	good/ >10
	Thermo 43i	SO2 Analyzer	good/ >8
	Thermo 146i	Multi-Gas Calibrator	good/ >10
	Thermo Partisol-Plus 2025	Integrated PM2.5 Sampler	good/ >4
	Teledyne T640	Continuous PM Sampler	good/ >1
	Sulfur Dioxide Cylinder	Gas Cylinder	good/ <8
	Graseby PUF Sampler GPS1-11	Semi-VOCs (PAH) Sampler	good/ >10
	Graseby High Volume 2000H	Metals Sampler	good/ >10
	AVOCS	VOC Sampler	good/ >10
	RM Young Ultrasonic Anemometer 8100	Wind Speed and Wind Direction	good/ >10
	Aluma T-135	Meteorological Crank Tower	good/ >10
Columbus Georgia-Alabama MSA			
Columbus - Health Department	Thermo Partisol-Plus 2025	Integrated PM2.5 Sampler	good/ >4
Columbus - Airport	ESC DAS 8832	Datalogger	good/ >6
	Thermo 49 series	O3 Analyzer	good/ >10
	Thermo 49 series	O3 Calibrator	good/ >6
	Thermo Partisol-Plus 2025	Integrated PM2.5 Sampler	good/ >4
	TEOM 1400AB	Continuous PM2.5 Sampler	good/ >8
	Environics 7000	Zero Air Supply	good/ >4
Columbus - Allied	TSP High Volume 2000H	Metals-Pb (lead) Sampler	good/ >10
	TSP High Volume 2000H	Metals-Pb (lead) Sampler	good/ >10
Columbus - Cusseta	Thermo Partisol-Plus 2025	Integrated PM2.5 Sampler	good/ >4
	Met One SASS	PM2.5 Speciation Sampler	good/ >6
	URG 3000N	PM2.5 Speciation Sampler	good/ >4
	TSP High Volume 2000H	TSP-Pb (lead) Sampler	good/ >10
Columbus - Crime Lab	RM Young Ultrasonic Anemometer 8100	Wind Speed and Wind Direction	good/ >6
	Aluma T-135	Meteorological Crank Tower	good/ >10
	RM Young Barometric Pressure Sensor 61302V	Barometric Pressure Sensor	good/ >5
	Novalynx 260-2501 Tipping Bucket	Precipitation Sensor	good/ >5
	RM Young Temp/RH Probe 41382VC	Ambient Temperature & Relative Humidity	good/ >5
	ESC DAS 8832	Datalogger	good/ >6
Savannah MSA			
Savannah - East President	ESC DAS 8832	Datalogger	good/ >6
	Thermo 49 series	O3 Analyzer	good/ >8
	Thermo 49 series	O3 Calibrator	good/ >8
	Thermo 43i	SO2 Analyzer	good/ >8
	Thermo 146i	Multi-Gas Calibrator	good/ >8
	Environics 7000	Zero Air Supply	good/ >4
	Graseby PUF Sampler GSP1	Semi-VOCs (PAH) Sampler	good/ >8
	Andersen Hi-VL 2000 HBL	Metals Sampler	good/ >8
	ATEC 1000	Carbonyl Sampler	good/ >8
	Sulfur Dioxide Cylinder	Gas Cylinder	good/ <8
	RM Young Ultrasonic Anemometer 8100	Wind Speed and Wind Direction	good/ >6
	Aluma T-135	Meteorological Crank Tower	good/ >10
	RM Young Temp/RH Probe 41382VC	Ambient Temperature & Relative Humidity	good/ >5
	RM Young Barometric Pressure Sensor 61302	Barometric Pressure Sensor	good/ >5

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	COND./ AGE
Savannah - Mercer School	Thermo Partisol-Plus 2025	Integrated PM2.5 Sampler	good/ >4
Savannah - L&A	ESC DAS 8832	Datalogger	good/ >6
	Thermo 43i	SO2 Analyzer	good/ >8
	Thermo 146i	Multi-Gas Calibrator	good/ >8
	Teledyne T640	Continuous PM Sampler	good/ >1
	Sulfur Dioxide Cylinder	Gas Cylinder	good/ <8
	RM Young Ultrasonic Anemometer 8100	Wind Speed and Wind Direction	good/ >4
	Aluma T-135	Meteorological Crank Tower	good/ >10
	Environics 7000	Zero Air Supply	good/ >4
Augusta-Richmond County, Georgia-South Carolina MSA			
Evans	Thermo 49 series	O3 Analyzer	good/ >7
	Thermo 49 series	O3 Calibrator	good/ >6
	RM Young Ultrasonic Anemometer 8100	Wind Speed and Wind Direction	good/ >10
	Aluma FOT-10	Meteorological Fold Over Tower	good/ >6
	ESC DAS 8832	Datalogger	good/ >6
	RM Young Temp/RH Probe 41382VC	Ambient Temperature & Relative Humidity	good/ >4
Augusta	Sabio 1001	Zero Air Supply	good/ >4
	Thermo 49 series	O3 Analyzer	good/ >8
	Thermo 49 series	O3 Calibrator	good/ >8
	Thermo 43i-TLE	SO2 Analyzer	good/ >8
	Thermo 146i	Multi-Gas Calibrator	good/ >8
	TEOM 1400AB	Continuous PM10 Sampler	good/ >8
	Teledyne T640	Continuous PM2.5 Sampler	good/>2
	Met One SASS	PM2.5 Speciation Sampler	good/ >5
	URG 3000N	PM2.5 Speciation Sampler	good/ >5
	Thermo Partisol 2000	Integrated PM10 Sampler	good/ >10
	Thermo Partisol 2000	Integrated PM10 Sampler	good/ >10
	Sulfur Dioxide Cylinder	Gas Cylinder	good/ <8
	RM Young Ultrasonic Anemometer 8100	Wind Speed and Wind Direction	good/ >5
	Aluma T-135	Meteorological Crank Tower	good/ >10
	ESC DAS 8832	Datalogger	good/ >6
	Novalynx 260-2501 Tipping Bucket	Precipitation Sensor	good/ >5
	RM Young Temp/RH Probe 41382VC	Ambient Temperature & Relative Humidity	good/ >5
	PM Young Barometric Pressure Sensor 61302	Barometric Pressure Sensor	good/ >5
Atlanta-Sandy Springs-Marietta MSA			
Forest Park	Thermo Partisol-Plus 2025	Integrated PM2.5 Sampler	good/ >4
Kennesaw	ESC DAS 8832	Datalogger	good/ >5
	Thermo 49 series	O3 Analyzer	good/ >7
	Thermo 49 series	O3 Calibrator	good/ >7
	Thermo Partisol-Plus 2025	Integrated PM2.5 Sampler	good/ >3
Dawsonville	Thermo 49 series	O3 Analyzer	good/ >6
	Thermo 49 series	O3 Calibrator	good/ >6
	ESC DAS 8832	Datalogger	good/ >6
	Environics 7000	Zero Air Supply	good/ >6
	RM Young Ultrasonic Anemometer 8100	Wind Speed and Wind Direction	good/ >6
	Aluma FOT-10	Meteorological Fold Over Tower	good/ >10
South DeKalb	ESC DAS 8832	Datalogger	good/ >6
	Thermo 49 series	O3 Analyzer	good/ >3
	Thermo 49 series	O3 Calibrator	good/ >4
	Environics 6103	Multi-Gas Calibrator	good/ >4
	Environics 6103	Multi-Gas Calibrator	good/ >3

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	COND./ AGE
South DeKalb cont'd	Themo 42iY	NOy Analyer	good/ >8
	Thermo 42i	NOx Analyzer	good/ >8
	Thermo 48i-TLE	CO Analyzer	good/ >4
	Thermo 43i-TLE	SO2 Analyzer	good/ >4
	Thermo Partisol-Plus 2025	Integrated PM2.5 Sampler	good/ >4
	Thermo Partisol-Plus 2025	Co-located Integrated PM2.5 Sampler	good/ >4
	Teledyne T640X	Continuous PM Sampler	good/>2
	Teledyne T640X	Continuous PM Sampler (spare)	good/>2
	Met One SASS	PM2.5 Speciation Sampler	good/ >4
	URG 3000N	PM2.5 Speciation Sampler	good/ >8
	Sabio 1001	Zero Air Supply	good/ >3
	Sabio 1001	Zero Air Supply	good/ >3
	ATEC 8000	Carbonyl Sampler	good/ >4
	ATEC 8000	Co-located Carbonyl Sampler	good/ >4
	Tisch Environmental PUF	Semi-VOCs (PAH) Sampler	good/ >7
	Tisch Environmental PUF	Co-located Semi-VOCs (PAH) Sampler	good/ >7
	ATEC 2200	VOCs Sampler	good/ >8
	ATEC 2200	Co-located VOCs Sampler	good/ >8
	Agilent 7890-B GC	Gas Chromatograph	good/ <1
	AirGas Hydrogen Cylinder (4)	Gas Cylinder	good/ <1
	AirGas Helium Cylinder (3)	Gas Cylinder	good/ <1
	NexAir Helium Cylinder	Gas Cylinder	good/ <1
	AirGas Compressed Air (9)	Gas Cylinder	good/ <1
	AirGas Nitrogen Cylinder (2)	Gas Cylinder	good/ <1
	Carbon Monoxide Cylinder	Gas Cylinder	good/ <8
	Nitrogen Oxide Cylinder	Gas Cylinder	good/ <8
	Sulfur Dioxide Cylinder	Gas Cylinder	good/ <8
	RM Young Ultrasonic Anemometer 8100	Wind Speed and Wind Direction	good/ >5
	Aluma T-135	Meteorological Crank Tower	good/ >10
	RM Young Temp/RH Probe 41382VC	Ambient Temperature & Relative Humidity	good/ >5
	Novalynx 260-2501 Tipping Bucket	Precipitation Sensor	good/ >5
	RM Young Barometric Pressure Sensor 61302	Barometric Pressure Sensor	good/ >5
NR-285	Thermo 42i	NOx Analyzer	good/ >4
	Xontech 910	VOC Sampler	good/ >4
	Environics 6103	Multi-gas Calibrator	good/ >4
	Nitrogen Oxide Cylinder	Gas Cylinder	good/ <8
	MAAP 5012	Black Carbon Sampler	good/ >3
Douglasville	Thermo 49 series	O3 Analyzer	good/ >8
	Thermo 49 series	O3 Calibrator	good/ >8
	RM Young Ultrasonic Anemometer 8100	Wind Speed and Wind Direction	good/ >4
	Aluma T-135	Meteorological Crank Tower	good/ >10
	Environics 7000	Zero Air Supply	good/ >4
	ESC DAS 8832	Datalogger	good/ >5
Fire Station #8	Thermo Partisol-Plus 2025	Integrated PM2.5 Sampler	good/ >4
	Tisch TE-Wilbur Filter Based	Integrated PM10 Sampler	good/>2
	Tisch TE-Wilbur Filter Based	Co-located Integrated PM10 Sampler	good/>2
United Avenue	ESC DAS 8832	Datalogger	good/ >3
	Thermo 49 series	O3 Analyzer	good/ >6
	Thermo 49 series	O3 Calibrator	good/ >5
	Thermo 43i	SO2 Analyzer	good/ >5
	Thermo 146i	Multi-gas Calibrator	good/ >3

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	COND./ AGE
United Avenue cont'd	TEOM 1400AB	Continuous PM2.5 Sampler	good/ >8
	Sulfur Dioxide Cylinder	Gas Cylinder	good/ <8
	Environics 7000	Zero Air Supply	good/ >4
	RM Young Ultrasonic Anemometer 8100	Wind Speed and Wind Direction	good/ >10
	Aluma T-135	Meteorological Crank Tower	good/ >10
NR-GA Tech	ESC DAS 8832	Datalogger	good/ >5
	Thermo 42i	NO2 Analyzer	good/ >4
	Thermo 48i-TLE	CO Analyer	good/ >8
	Thermo Partisol-Plus 2025	Integrated PM2.5 Sampler	good/ >4
	Ambilabs Dual Wavelength Nephelometer	Integrated PM2.5 Sampler	good/>2
	Carbon Monoxide Cylinder	Gas Cylinder	good/ <8
	Nitrogen Oxide Cylinder	Gas Cylinder	good/ <8
	RM Young Ultrasonic Anemometer 8100	Wind Speed and Wind Direction	good/ >5
	Aluma T-135	Meteorological Crank Tower	good/ >5
	Environics 7000	Zero Air Supply	good/ >4
	Environics 6103	Multi-gas Calibrator	good/ >4
	Multi Angle Absorption Photometer (MAAP) 5012	Black Carbon Sampler	good/ >3
Gwinnett Tech	ESC DAS 8832	Datalogger	good/ >5
	Thermo 49 series	O3 Analyzer	good/ >8
	Thermo 49 series	O3 Calibrator	good/ >8
	Environics 7000	Zero Air Supply	good/ >3
	Teledyne T640	Continuous PM Sampler	good/>2
McDonough	ESC DAS 8832	Datalogger	good/ >6
	Thermo 49 series	O3 Analyzer	good/ >8
	Thermo 49 series	O3 Calibrator	good/ >8
	Environics 7000	Zero Air Supply	good/ >4
	TEOM 1400AB	Continuous PM2.5 Sampler	good/ >8
Conyers	ESC DAS 8832	Datalogger	good/ >6
	Thermo 49 series	O3 Analyzer	good/ >8
	Thermo 49 series	O3 Calibrator	good/ >8
	Environics 7000	Zero Air Supply	good/ >4
	RM Young Ultrasonic Anemometer 8100	Wind Speed and Wind Direction	good/ >5
	Aluma T-135	Meteorological Crank Tower	good/ >10
	Eppley Lab Standard Precision Pyronometer 38380F3	Solar Radiation Instrument	good/ >8
Conyers	Eppley Lab TUVR 38020	Ultraviolet Radiometer	good/ >8
	Novalynx 260-2501 Tipping Bucket	Precipitation Sensor	good/ >5
	RM Young Temp/RH Probe 41382VC	Ambient Temperature & Relative Humidity	good/ >5
	RM Young Barometric Pressure Sensor 61302	Barometric Pressure Sensor	good/ >5
Chattanooga Tennessee-Georgia MSA			
Rossville	Thermo Partisol-Plus 2025	Integrated PM2.5 Sampler	good/ >5
	Met One SASS	PM2.5 Speciation Sampler	good/ >5
	URG 3000N	PM2.5 Speciation Sampler	good/ >5
	Teledyne T640	Continuous PM2.5 Sampler	good/ >1
Sites Not in an MSA			
Summerville	ESC DAS 8832	Datalogger	good/ >6
	Thermo 49 series	O3 Analyzer	good/ >8
	Thermo 49 series	O3 Calibrator	good/ >8
General Coffee	Met One SASS	PM2.5 Speciation Sampler	good/ >4
	URG 3000N	PM2.5 Speciation Sampler	good/ >8
	Graseby High Volume 2000H	Metals Sampler	good/ >10

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	COND./ AGE
General Coffee	AVOCS	VOC Sampler	good/ >7
cont'd	Thermo Partisol-Plus 2025	Integrated PM2.5 Sampler	good/ >10
Leslie	ESC DAS 8832	Datalogger	good/ >6
	Thermo 49 series	O3 Analyzer	good/ >10
	Thermo 49 series	O3 Calibrator	good/ >10
	Environics 7000	Zero Air Supply	good/ >4
Sandersville	Thermo Partisol-Plus 2025	Integrated PM2.5 Sampler	good/ >8
Georgia AAMP			
Quality Assurance Unit	Alicat Scientific FP-25 (2)	Flow, Temperature & Pressure Standard	good/ >5
	Andersen General Metals Works	High Volume PM10 Orifice	good/ >5
	BGI/MesaLabs DeltaCal (4)	Flow, Temperature & Pressure Standard	good/ >5
	BGI/MesaLabs TetraCal (3)	Flow, Temperature & Pressure Standard	good/ >5
	BGI VRC	Variable High Volume Orifice	good/ >5
	BIOS DC-2	DryCal flow standard base	good/ >5
	BIOS DC-HC-1	DryCal high flow cell	good/ >5
	BIOS DC-LC-1	DryCal low flow cell	good/ >5
	BIOS DC-Lite DCL-H	Flow Standard	good/ >5
	BIOS DC-Lite DCL-L	Flow Standard	good/ >5
	BIOS DC-MC-1	DryCal medium flow cell	good/ >5
	BIOS Definer 220 High Flow	High flow volumetric standardized gas	good/ >5
	BIOS Definer 220 Low Flow	Low flow volumetric standardized gas	good/ >5
	Chinook Engineering Streamline Pro (3)	Flow Transfer Standard	good/ >5
	Dwyer 475-1 FM	Digital Manometer	good/ >5
	Dwyer 475-2-FM	Digital Manometer	good/ >5
	Fisher Scientific 14-648-4 (4)	Stop Watch	good/ >5
	Graseby Graseby GMW	PUF Orifice	good/ >5
	Linde Spectra PAMS Gas Standard	PAMS - Gas Standard	good/ >5
	Mesa Labs Flexcal High Flow	High Flow	good/ >5
	Mesa Labs Flexcal Low Flow	Low Flow	good/ >5
	Scott-Marrin EPA UltraPure Gas Standard	PAMS - EPA UltraPure Gas Standard	good/ >5
	Sensidyne Gilibrator Flow Cell (6)	Flow Standard	good/ >5
	Sensidyne Gilibrator Flow Cell Base (2)	Flow Standard	good/ >5
	Tisch Environmental TE-5028A	High Volume PM10 Orifice	good/ >5
	Tisch Environmental TE-5040A	PUF Orifice	good/ >5
	Vaisala HM40/HM46	Temperature & Relative Humidity Probe	good/ >5
	Vaisala HMI41/HMP46	Temperature & Relative Humidity Probe	good/ >5
	Dwyer 477-1-FM (2)	Digital Manometer	good/ >5
	Dwyer 475-0-FM (2)	Digital Manometer	good/ >5
	Thermo 49 series (2)	O3 Calibrator	good/ >5
	STI PG-2000	Pressure Reference	good/ >5
	Praxair/Nexair EPA Protocol Gas Standard (2)	EPA Protocol NO/CO/SO2 Gas Standard	good/ >5
	Airgas EPA Protocol Gas Standard (2)	EPA Protocol NO/NOx/CO/SO2 Gas Standard	good/ >5
	Bosch GLM 80 (2)	Laser Distance/Angle Measurer	good/ >5

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	COND./ AGE
Quality Assurance Unit	Scott-Marrin EPA Protocol Gas Standard (3)	EPA Protocol NO/CO/SO2 Gas Standard	good/ >5
cont'd	Scott-Marrin EPA Protocol Gas Standard	EPA Protocol NO/NOx/CO/SO2 Gas Standard	good/ >5
	Scott-Marrin EPA Protocol Gas Standard	NIST Traceable nPn Audit Gas	good/ >5
Meteorology Unit Workshop	RM Young Ultrasonic Anemometer 81000 (13)	Wind Speed and Wind Direction	Varies
	RM Young Meteorological Translator 26800	Datalogger	good/ <1
	Eppley Lab Standard Precision Pyronometer 38380F3 (5)	Solar Radiation Instrument	Varies
	Eppley Lab TUVR (6)	Ultraviolet Radiometer	Varies
	RM Young Wind Monitor 05305VM (2)	Wind Speed and Wind Direction	good/ >8
	Novalynx 260-2501 Tipping Bucket (8)	Precipitation Sensor	good/ >8
	RM Young Temp/RH Probe 41382VC/ 41382VC (13)	Ambient Temperature & Relative Humidity	good/ >4
	RM Young Barometric Pressure Sensor 61302 (14)	Barometric Pressure	good/ >8
	Aluma T-135 (5)	Meteorological Crank Tower	Varies
Workshop	Met One SASS (8)	PM2.5 Speciation Sampler	good/ >7
	Met One SASS Tripods (11)	PM2.5 Speciation Sampler	good/ >6
	URG 3000N (4)	PM2.5 Speciation Sampler	good/ >4
	Thermo 43i-TLE (3)	SO2 Analyzer	Various
	Thermo 146i (10)	Multi-Gas Calibrator	Various
	Thermo 42i (5)	NO, NO2, NOx Analyzer	Various
	Environics 6103 (4)	Multi-Gas Calibrator	good/ >3
	Thermo 48i-TLE (6)	CO Analyzer	Various
	Thermo 42iY	NOy Analyzer	good/ >7
	Thermo 43i (3)	SO2 Analyzer	Various
	Environics 9100 (2)	Multi-Gas Calibrator	good/ >3
	Sabio 1001 (4)	Zero Air Supply	good/ >4
	Teledyne 701 (2)	Zero Air Supply	Various
	Teledyne T701H (2)	Zero Air Supply	Various
	Environics 7000 (9)	Zero Air Supply	good/ >3
	Teledyne T640	Continuous PM Sampler	good/ >2
	Met One E-SEQ-FRM (5)	Integrated PM Sampler	Various
	Thermo 42C (2)	NO/NO2/NOx Analyzer	Various
	Thermo 49i-PS (5)	O3 Calibrator	Various
	Thermo 49i (13)	O3 Analyzer	Various
	Thermo 49C (14)	O3 Calibrator	Various
	Thermo 49C (9)	O3 Analyzer	Various
	Thermo Partisol-Plus 2025 (15)	Integrated PM2.5 Sampler	Various
	Met One BAM 1020 (9)	Continuous PM2.5 Sampler	Various
	TEOM 1400AB	Continuous PM2.5 Sampler	good/ >7
	Thermo Partisol 2000 (7)	Integrated PM10 Sampler	Various
	Agilaire 8872 (2)	Datalogger	Various
	ESC 8816	Datalogger	good/ >10
	Sabio 2020 (2)	Zero Air Supply	Various
	ATEC 2200 (7)	VOCs Sampler	good/ >7
	ATEC 8000 (2)	Carbonyl Sampler	Various
	Agilaire 8832 (17)	Datalogger	Various
	Metals/PUF Housing (11)	Sampler Housing	Various
	Graseby High Volume 2000H	Metals Sampler	good/ >10

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	COND./ AGE
Workshop	Alicat Scientific FP-25 (6)	Flow, Temperature & Pressure Standard	Various
cont'd	BGI/MesaLabs TetraCal (18)	Flow, Temperature & Pressure Standard	Various
	BGI/MesaLabs DeltaCal (23)	Flow, Temperature & Pressure Standard	Various
	Tisch Environmental TE-5028A VRC (11)	Variable High Volume Orifice	Various
	Tisch Environmental TE-5040A (12)	PUF Orifice	Various
	Sensidyne Gilibrator Flow Cell Base (13)	Flow Standard	Various
	Sensidyne Gilibrator Flow Cell (39)	Flow Standard	Various
	AirGas Hydrogen Cylinder (2)	Gas Cylinder	good/ <1
	AirGas Helium Cylinder (2)	Gas Cylinder	good/ <1
	Trace Carbon Monoxide Cylinder	Gas Cylinder	good/ <8
	Carbon Monoxide Cylinder	Gas Cylinder	good/ <8
	Nitrogen Oxide Cylinder (3)	Gas Cylinder	good/ <8
	Sulfur Dioxide Cylinder (3)	Gas Cylinder	good/ <8
	Compressed Air Mix	Gas Cylinder	good/ <8

NOTE:
COND = Condition **Age = age in years**

Appendix C:
Pollutant Description, Analysis Method, and Quality Assurance Schedule

Georgia Department of Natural Resources
Environmental Protection Division

Pollutant Description, Analysis Method, and Quality Assurance Schedule

All monitors have known precision, accuracy, interferences, and operational parameters. The monitors as well as all measurement devices are carefully calibrated at predetermined frequencies, varying from daily to quarterly. Calibration standards are traceable to National Institute of Standards and Technology (NIST) master standards.

Monitoring and analysis are performed according to a set of standard operating procedures (SOP). Field personnel visit sampling sites, replace sample media, and check the operation and calibration of monitors per the SOP.

Specialized data-collection and storage equipment is used at most sites to collect the data. A computerized telemetry system aids in assembly of the data for submission to the U.S. EPA. This enhances data validity, minimizes travel costs, and allows data to be available by computer at GA AAMP's main office immediately. Numerous manual and automated checks are performed to ensure that only valid data are reported to EPA.

Quality assurance activities are carried out to determine the quality of the collected ambient data, improve the quality of the data, and evaluate how well the entire monitoring system operates. The goal of quality assurance activities is to produce high quality monitoring data.

1.0 Particulate Matter

Particulate matter is defined as any airborne material, except uncombined water (liquid, mist, steam, etc.) that exists in a finely divided form as liquid or solid at standard temperature (25°C) and pressure (760mmHg) and has an aerodynamic diameter of less than 100 micrometers. Three sizes of particulate matter are monitored: PM_{10}, $PM_{2.5}$, and PMcoarse (10-2.5). PM_{10} is particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (µm). $PM_{2.5}$ are solid particles and liquid droplets found in the air that are less than 2.5 micrometers (µm) or microns in diameter. Individually, these particles and droplets are invisible to the naked eye. Collectively, however, they can appear as clouds or a fog-like haze. $PM_{2.5}$ is also referred to as "fine" particles. $PM_{10\text{-}2.5}$ is called PMcoarse. The PMcoarse fraction has a diameter between 2.5 and 10 micrometers (µm) or microns. In comparison, a human hair is 70-100 µm in diameter.

Particulates are emitted by many human activities, such as fuel combustion, motor vehicle operation, industrial processes, grass mowing, agricultural tilling, and open burning. Natural sources include windblown dust, forest fires, volcanic eruptions, and pollen. Particulates emitted directly from a source may be either fine (less than 2.5 µm) or larger (2.5-60 µm), but particles formed in the atmosphere will usually be fine. Typically, fine particles are formed by condensation of materials produced during combustion or atmospheric reactions in which gaseous pollutants are chemically converted to particles.

Particulate matter can cause health problems affecting the breathing system, including aggravation of existing lung and heart disease, limitation of lung clearance, changes in form and structure of organs, and development of cancer. Individuals most sensitive to the effects of

particulate matter include those with chronic obstructive lung or heart disease, those suffering from the flu, asthmatics, the elderly, children, and mouth breathers.

Health effects from inhaled particles are influenced by the depth of penetration of the particles into the respiratory system, the amount of particles deposited in the respiratory system, and the chemical composition of the deposited particles. The risks of adverse health effects are greater when particles enter the tracheobronchial and alveolar portions of the respiratory system. Healthy respiratory systems can trap particles larger than 10 µm more efficiently before they move deeply into the system, and can more effectively remove the particles that are not trapped before they can lodge deeply in lung tissue.

Particulate matter also can interfere with plant photosynthesis by forming a film on leaves that reduces exposure to sunlight. Particles also can cause soiling and degradation of property, which can be costly to clean and maintain. Suspended particles can absorb and scatter light, causing reduction of visibility. This is a national concern, especially in areas such as national parks, historic sites, and scenic attractions.

a. Particulate Matter (PM_{10}) Integrated

GA AAMP conducts PM_{10} monitoring on an integrated basis at one site in Georgia. GA AAMP uses an EPA-approved method. The Tisch – TE Wilbur Filter Based PM_{10} Air Sampler functions to collect airborne particulate matter ≤ 10mm (PM_{10}) on a pre-weighted 47mm diameter filter over a 24 hour period, midnight to midnight. The sampler normally samples every 6 days and exposed filter are subsequently collected and sent to the InterMountain Laboratory for gravimetric analysis and measurement of PM_{10} concentration. The system monitors and records all system sensors such as flow, temperatures and barometric pressure, as well as the system pressure, filter temperature variation, and flow total which provides the operator or laboratory technician additional information on the sample if warnings or alarms occurred during the sample run. These monitors are used to determine attainment of the PM_{10} standard. These analyzers are subjected to quarterly checks and are audited by GA AAMP's Quality Assurance Unit on a semi-annual basis, within a five to seven month window.

b. Particulate Matter (PM_{10}) Continuous

GA AAMP conducts PM_{10} monitoring on a continuous basis at two sites in Georgia. GA AAMP uses EPA-approved equivalent methods. The Thermo Scientific tapered element oscillating microbalance (TEOM) is one of these methods (EQPM-1090-079), and the data is used to determine attainment of the PM_{10} NAAQS. The monitor consists of three basic components: the central unit, the sampling pump, and the sampling inlet hardware. The sampling inlet is designed to cut out particles larger than 10 microns in size. The TEOM sampler draws air through a filter at a constant mass flow controller flow rate. During sampling, ambient air passes through the PM_{10} inlet first, then, if sampling for $PM_{2.5}$ through a sharp cut cyclone. Only particles equal to or less than 10 microns, or 2.5 microns in diameter, respectively are allowed to pass on into two separate flows: the 3 LPM sample stream, which is sent to the mass transducer and the 13.7 LPM exhaust stream. The 3 LPM sample stream is collected onto the Teflon™ coated filter which is weighed every 2 seconds. The difference between the filter's current weight and the initial weight gives the total mass of the collected particles in $\mu g/m^3$.

The other method used for sampling PM_{10} is the Teledyne T640/640x, which is a real-time, continuous PM mass monitor that uses scattered light spectrometry for measurement. The T640 measures $PM_{2.5}$, and the T640x Option measures $PM_{2.5}$, PM_{10}, and $PM_{10\text{-}2.5}$. The sampling head draws in the ambient air with different size particles, which are dried with the Aerosol Sample Conditioner (ASC) and moved into the optical particle sensor where scattered light intensity is measured to determine particle size diameter. The inlet used for the T640x option samples at 16.67 liters per minute (LPM) to mechanically size-cut the aerosol intake for sampling particles at 10 microns and under. The particles move separately into the T-aperture through an optically differentiated measurement volume that is homogeneously illuminated with polychromatic light. This Model T640 with 640x option PM_{10} monitor is configurable as a PM_{10} FEM (EQPM-0516-239), and the data is used to determine attainment of the PM_{10} NAAQS. This analyzer is subjected to monthly flow checks and is audited by GA AAMP's Quality Assurance Unit on a semi-annual basis.

c. Fine Particulate Matter ($PM_{2.5}$) Integrated

At sites where GA AAMP collects $PM_{2.5}$ samples on an integrated basis, the samples are measured using very similar techniques utilized for measuring PM_{10}. The official federal reference method (FRM) requires that samples are collected on Teflon™ filters with a $PM_{2.5}$ sampler for 24 hours. A specialized particle size sorting device is used to filter the air, collecting only particles 2.5 microns in size and smaller. The filters are weighed in a laboratory before and after the sampling period. The change in the filter weight corresponds to the mass weight of $PM_{2.5}$ particles collected. That mass weight, divided by the total volume of air sampled, corresponds to the mass concentration of the particles in the air for that 24-hour period. This data is collected using the FRM, and the data is appropriate to use for making attainment determinations relative to the $PM_{2.5}$ NAAQS. Currently, GA AAMP uses the Thermo Scientific Partisol 2025 (RFPS-0498-118 or EQPM-0202-145), and as GA AAMP replaces these Thermo 2025 filter-based $PM_{2.5}$ FRM monitors, the Met One sequential filter-based $PM_{2.5}$ FRM monitors (RFPS-0717-245) will be used as the replacement. The sampling frequency for integrated $PM_{2.5}$ sampling varies by site, based on EPA rules, and is listed with each individual site's information in Appendix A of this document and in Table 1 below. On a semi-annual basis, GA AAMP's Quality Assurance Unit audits these $PM_{2.5}$ samplers.

d. Fine Particulate Matter ($PM_{2.5}$) Continuous

GA AAMP monitors for $PM_{2.5}$ on a continuous basis with three different methods. One method is the beta attenuation method (BAM-1020). The MetOne BAM-1020 is adapted from PM_{10} service to $PM_{2.5}$ service by use of an inline BGI "Sharp Cut Cyclone". The inlet is designed to cut out particles that are larger than 2.5 microns in size. The beta rays are attenuated as they collide with particles collected on filter tape. The decrease in signal detected by the scintillation counter is inversely proportional to the mass loading on the filter tape. The pump turns on at the beginning of the hour and runs for 50 minutes. During the last 10 minutes of the hour, the pump is turned off while the tape transport operates, and the final mass reading is collected and self-tests are performed. The sampling method for the BAM type of continuous $PM_{2.5}$ monitor was approved as Federal Equivalent Method (FEM) in Notices of the Federal Register/Vol.73; No.49 dated March 12, 2008 when used with a "Very Sharp Cut Cyclone" (VSCC). For the current

network, GA AAMP has not configured the monitors as FEMs, and the samplers are used for the Air Quality Index (AQI) and informational purposes.

Another $PM_{2.5}$ continuous collection method utilized by GA AAMP is the Teledyne T640, which is an optical aerosol spectrometer that converts optical measurements to mass measurements by determining sampled particle size via scattered light using 90° white-light scattering with polychromatic LED. The inlet used for the T640 samples at 5.0 liters per minute (LPM). The Aerosol Sample Conditioner (ASC) removes the volatile components (mainly water) of the aerosol to avoid false particle size. The internal vacuum pump is controlled by a pulse-width modulation (PWM) feedback control for consistently accurate flow to the sensor. The external vacuum pump is controlled by an ambient and pressure compensated mass flow controller in combination with a pneumatic valve for consistently accurate flow. The Teledyne T640 is officially designated as an US EPA Federal Equivalent Method (FEM) (EQPM-0516-236 and EQPM-0516-238) (81 FR 45285), and used for making attainment decisions relative to the $PM_{2.5}$ NAAQS. As of November 2018, GA AAMP began to shut down $PM_{2.5}$ FRMs (filter based) monitors where collocated with the continuous $PM_{2.5}$ FEM Teledyne T640 monitors, depending federal siting requirements.

The other locations where GA AAMP samples $PM_{2.5}$ on a continuous basis, the Thermo Scientific tapered element oscillating microbalance (TEOM) Series 1400/1400a monitors is used. These monitors use an inline $PM_{2.5}$ cyclone for particle size selection and an inline Sample Equilibration System (SES), which uses a diffusion drying technique to minimize water vapor interference with the particle mass measurement. The instrument oscillates the sample filter on a microbalance continuously while particles are collected from ambient air. By measuring the change in the oscillation frequency, the change in filter mass can be determined. The sampling method for the TEOM type of continuous $PM_{2.5}$ monitor was approved as Federal Equivalent Method (FEM) in Notices of the Federal Register/Vol.74; page 28696 dated June 17, 2009 when used with a "Filter Dynamics Measurement System (FDMS)". The FDMS component estimates and adjusts for the volatile component of the mass. Currently, the TEOMs in the ambient air monitoring network are not configured to sample as FEMs. Therefore, data collected from the TEOM samplers cannot be used for making attainment decisions relative to the NAAQS.

All three types of continuous $PM_{2.5}$ samplers are used to support development of air quality models and forecasts, including the AQI, and to provide the public with information about pollutant concentrations in real time. All three types of analyzers are subject to monthly flow checks and are audited by GA AAMP's Quality Assurance Unit on a semi-annual basis.

e. Fine Particulate Matter ($PM_{2.5}$) Speciation

Particle speciation measurements require the use of a wide variety of analytical techniques, but all generally use filter media to collect the particles to be analyzed. Laboratory techniques currently in use are gravimetric (micro weighing); X-ray fluorescence and particle-induced X-ray emission for trace elements; ion chromatography for anions and selected cations; controlled combustion for carbon; and gas chromatography/mass spectroscopy (GC/MS) for semi-volatile organic particles. Samples are collected for 24 hours and shipped to an EPA-appointed laboratory for analysis. The sampling frequency varies by site and is detailed in Table 1. GA AAMP's Quality Assurance Unit subjects these samplers to audits on a semi-annual basis.

f. Coarse Particulate Matter ($PM_{10-2.5}$)

As part of the NCore requirements (discussed in Section 4.1), the South DeKalb site (13-089-0002) began $PM_{10-2.5}$ sampling as of January 1, 2011. The Teledyne T640x replaced the BAM $PM_{10-2.5}$ system on June 14, 2017. The Teledyne T640/640x is a real-time, continuous PM mass monitor that uses scattered light spectrometry for measurement. The T640x Option measures $PM_{2.5}$, PM_{10}, and $PM_{10-2.5}$. The sampling head draws in the ambient air with different size particles, which are dried with the Aerosol Sample Conditioner (ASC) and moved into the optical particle sensor where scattered light intensity is measured to determine particle size diameter. The particles move separately into the T-aperture through an optically differentiated measurement volume that is homogeneously illuminated with polychromatic light. GA AAMP uses the 16.7 LPM Model T640 with 640x option $PM_{10-2.5}$ monitor: EQPM-0516-240. This analyzer is subjected to monthly flow checks and is audited by GA AAMP's Quality Assurance Unit on a semi-annual basis.

g. Nephelometer

The Ambilabs Nephelometer measures ambient air for the presence of particulate matter on a continuous, real-time basis. The nephelometer determines PM concentrations by measuring the shutter count which allows the light source to stabilize, and wavelengths which shows the average diameter of the measured particle size. Measurements are updated every second. The unit includes an LCD display to provide information about the parameters and flow rate. An active heating system, which is controlled based on relative humidity (RH) levels, warms the sample air and sample cell to keep the RH below a set point to avoid particle growth with humidity. The nephelometer is equipped with an internal data logger that enables data to be stored and downloaded through the R232 port. The nephelometer is subjected to weekly zero, precision, and span (ZPS) checks, quarterly multipoint calibrations, and is audited by GA AAMP's Quality Assurance Unit on a semi-annual basis.

The sampling frequency of the integrated (FRM), continuous (BAM, TEOM, Teledyne, Nephelometer), and speciated $PM_{2.5}$ samplers is detailed in Table 1, and the attached Appendix A. The $PM_{2.5}$ samplers highlighted in yellow are the $PM_{2.5}$ samplers that are used for comparison to the NAAQS for attainment purposes.

Site ID	Common Name	City	County	Integrated	Continuous	Speciation
Rome MSA						
131150003	Rome	Rome	Floyd		$PM_{2.5}$	6 Day
Brunswick MSA						
131270006	Brunswick	Brunswick	Glynn	$PM_{2.5}$ (3 Day)		
Valdosta MSA						
131850003	Valdosta	Valdosta	Lowndes	$PM_{2.5}$ (3 Day)	$PM_{2.5}$	
Warner Robins MSA						
131530001	Warner Robins	Warner Robins	Houston	$PM_{2.5}$ (3 Day)	FEM $PM_{2.5}$	
Albany MSA						
130950007	Albany	Albany	Dougherty	2 $PM_{2.5}$ (3 Day, 12 Day)	FEM $PM_{2.5}$	

Gainesville MSA						
131390003	Gainesville	Gainesville	Hall		FEM $PM_{2.5}$	
Athens-Clarke County MSA						
130590002	Athens	Athens	Clarke		2 FEM $PM_{2.5}$	
Macon MSA						
130210007	Macon-Allied	Macon	Bibb	2 $PM_{2.5}$ (3 Day, 12 Day)		6 Day
130210012	Macon-Forestry	Macon	Bibb	$PM_{2.5}$ (3 Day)	FEM $PM_{2.5}$	
Columbus, Georgia- Alabama MSA						
132150001	Columbus-Health Dept.	Columbus	Muscogee	$PM_{2.5}$ (3 Day)		
132150008	Columbus-Airport	Columbus	Muscogee	$PM_{2.5}$ (3 Day)	$PM_{2.5}$	
132150011	Columbus-Cusseta	Columbus	Muscogee	$PM_{2.5}$ (3 Day)		6 Day
Savannah MSA						
130510091	Savannah-Mercer	Savannah	Chatham	$PM_{2.5}$ (3 Day)		
130511002	Savannah-L&A	Savannah	Chatham		FEM $PM_{2.5}$	
Augusta, Georgia-South Carolina MSA						
132450091	Bungalow Road	Augusta	Richmond		FEM $PM_{2.5}$	6 Day
Atlanta-Sandy Springs-Marietta MSA						
130630091	Forest Park	Forest Park	Clayton	$PM_{2.5}$ (3 Day)		
130670003	Kennesaw	Kennesaw	Cobb	$PM_{2.5}$ (3 Day)		
130890002	South DeKalb	Decatur	DeKalb	2 $PM_{2.5}$ (3 Day, 3 Day)	FEM $PM_{2.5}$	3 Day
131210039	Fire Station #8	Atlanta	Fulton	$PM_{2.5}$ (3 Day)		
131210055	United Ave.	Atlanta	Fulton		$PM_{2.5}$	
131210056	NR-Georgia Tech	Atlanta	Fulton	$PM_{2.5}$ (3 Day)	$PM_{2.5}$	
131350002	Gwinnett Tech	Lawrenceville	Gwinnett		FEM $PM_{2.5}$	
131510002	McDonough	McDonough	Henry		$PM_{2.5}$	
Chattanooga, Tennessee-Georgia MSA						
132950002	Rossville	Rossville	Walker	$PM_{2.5}$ (3 Day)	FEM $PM_{2.5}$	6 Day
Not in an MSA						
130690002	General Coffee	Douglas	Coffee	$PM_{2.5}$ (3 Day)		6 Day
133030001	Sandersville	Sandersville	Washington	$PM_{2.5}$ (3 Day)		

Highlighted samplers used for comparison to NAAQS

Table 1: $PM_{2.5}$ Sampling Frequency

2.0 Carbon Monoxide (CO)

Carbon monoxide (CO) is a colorless and poisonous gas produced by incomplete burning of fossil fuels used in vehicles, space heating, and industrial processes. Boilers and other fuel burning heating systems are also significant sources.

Breathing elevated levels of carbon monoxide affects the oxygen-carrying capacity of the blood. Hemoglobin in the blood binds with CO more readily than with oxygen, starving the body of vital oxygen. Individuals with lung and heart diseases or anemia are particularly sensitive to CO health effects. Low concentrations affect mental function, vision, and alertness. High concentrations can cause fatigue, reduced work capacity and may adversely affect fetal development. Chronic exposure to CO at concentrations as low as 70 parts per million (ppm) (80 mg/m^3) can cause cardiac damage. Other health effects associated with exposure to CO include

central nervous system effects and pulmonary function difficulties. Ambient CO apparently does not adversely affect vegetation or materials.

Carbon monoxide (CO) is monitored using EPA-approved reference or equivalent methods. These analyzers are self-contained and capable of measuring ambient CO on a continuous, real-time basis using the non-dispersive infrared analysis and gas filter correlation techniques. CO is monitored using specialized analyzers based on the principle that CO absorbs infrared radiation. The sample is drawn through the sample bulkhead and the optical bench. Radiation from an infrared source is chopped and then passed through a gas filter alternating between CO and nitrogen (N_2). The radiation then passes through a narrow bandpass interference filter and enters the optical bench where absorption by the sample gas occurs. The infrared radiation then exits the optical bench and falls on an infrared detector. The N_2 side of the filter wheel produces a measure beam which can be absorbed by the CO in the cell. The chopped detector signal is modulated by the alternation between the two gas filters with amplitude related to the concentration of CO in the sample cell. Thus, the gas filter correlation system responds specifically to CO. The sampler is equipped with a microprocessor that enables digital measurement of CO, automatic compensation for changes in temperature and pressure, and internal diagnostics. These analyzers are subjected to weekly zero, precision, and span (ZPS) checks, quarterly multipoint calibrations, and are audited by GA AAMP's Quality Assurance Unit on a semi-annual basis.

3.0 Ozone (O_3)

Ozone (O_3) is a clear gas that forms in the troposphere (lower atmosphere) by chemical reactions involving hydrocarbons (also called volatile organic compounds) and oxides of nitrogen in the presence of sunlight. Even low concentrations of tropospheric ozone, also called ground level ozone are harmful to people, animals, vegetation and materials.

Ozone is the major component of a complex mixture of compounds known as photochemical oxidants. Ozone is not usually emitted directly into the atmosphere, but is formed by a series of complex reactions involving hydrocarbons, nitrogen oxides, and strong sunlight. Ozone concentrations are generally higher during the daytime, when temperatures are moderate or hot, and during seasons when conditions are dry and the sunlight is more intense.

Ozone is a pulmonary irritant, affecting the respiratory mucous membranes, as well as other lung tissues and respiratory functions. Ozone has been shown to impair normal function of the lung causing shallow, rapid breathing and a decrease in pulmonary function. Other symptoms of exposure include chest tightness, coughing and wheezing. People with asthma, bronchitis, or emphysema may experience breathing difficulty when exposed to short-term concentrations at higher levels of ozone. Continued or repeated long-term exposure may result in permanent lung structure damage.

Ozone damages vegetation by injuring leaves. Ozone also accelerates material aging, cracking rubber, fading dyes and eroding paint.

Georgia's ozone analyzers continuously measure the concentration of ozone in ambient air using the ultraviolet (UV) photometric method and are EPA-approved for regulatory air monitoring

programs. The degree to which the UV light is absorbed is directly related to the ozone concentration. The ambient air is drawn into the sample bulkhead and is split into two gas streams. One gas stream flows through an ozone scrubber to become the reference gas. The reference gas then flows to the reference solenoid valve. The sample gas flows directly to the sample solenoid valve. The solenoid valves alternate the reference and sample gas streams between the two cells every 10 seconds. When cell A contains reference gas, cell B contains sample gas and vice versa. The UV light intensities of each cell are measured by detectors A and B. When the solenoid valves switch the reference and sample gas streams to opposite cells, the light intensities are ignored for several seconds to allow the cells to be flushed. The sampler calculates the ozone concentration for each cell and outputs the average concentration to both the front panel display and the analog or digital output. Data gained from the monitors is used to determine compliance with the NAAQS for ozone.

As required by Table D-3 of 40 CFR Part 58, Appendix D (4.1)(c)(3)(i), GA AAMP operates ozone monitors each year from March 1st through October 31st, with the exception of the NCore (National Core Monitoring Network) ozone monitor. The NCore ozone monitor, located at the South DeKalb site (13-089-0002), samples year round, as required by 40 CFR Part 58. During the monitoring season, analyzers are subjected to weekly ZPS checks and quarterly multipoint calibrations. GA AAMP's Quality Assurance Unit audits these samplers on an annual basis.

EPA established a Clean Air Status and Trends Network (CASTNET) monitoring site in Georgia in 1988. The CASTNET site is part of a national air quality monitoring network put in place to assess long-term trends in atmospheric deposition and ecological effects of air pollutants. The CASTNET site is one of 85 regional sites across rural areas of the United States and Canada measuring nitrogen, sulfur, and ozone concentrations, and deposition of sulfur and nitrogen. Like the South DeKalb ozone monitor, the CASTNET ozone monitor also collects data year-round. Since 2011, the CASTNET ozone monitor has met requirements for quality assurance and completeness criteria and can be used for comparison to the NAAQS [40 CFR 58, (1.1)(b)].

4.0 Sulfur Dioxide (SO_2)

Sulfur dioxide (SO_2) is a colorless, corrosive, harmful gas with a pungent odor. Sulfur oxides contribute to the formation of acid rain and the formation of particles that reduce visibility. The main sources of SO_2 are combustion of fossil fuels containing sulfur compounds and the manufacture of sulfuric acid. Other sources include refining of petroleum and smelting of ores that contain sulfur.

The most obvious health effect of sulfur dioxide is irritation and inflammation of body tissues brought in contact with the gas. Sulfur dioxide can increase the severity of existing respiratory diseases such as asthma, bronchitis, and emphysema. Sulfuric acid and fine particulate sulfates, which are formed from sulfur dioxide, also may cause significant health problems. Sulfur dioxide causes injury to many plants. A bleached appearance between the veins and margins on leaves indicates damage from SO_2 exposure. Commercially important plants sensitive to SO_2 include cotton, cucumber, alfalfa, sweet potatoes, tulips, apple trees, and several species of pine trees.

Sulfur dioxide is measured in the ambient air using EPA-approved reference method instruments as defined in 40 CFR Part 53. Georgia's sulfur dioxide network consists of continuous instruments using a pulsed ultraviolet (UV) fluorescence technique. This monitoring technique is based on measuring the emitted fluorescence of SO_2 produced by its absorption of UV radiation. Pulsating UV light is focused through a narrow bandpass filter allowing only light wavelengths of 1,900 to 2,300 angstrom units (A) to pass into the fluorescence chamber. SO_2 absorbs light in this region without any quenching by air or most other molecules found in polluted air. The SO_2 molecules are excited by UV light and emit a characteristic decay radiation. A second filter allows only this decay radiation to reach a photomultiplier tube. Electronic signal processing transforms the light energy impinging on the photomultiplier tube into a voltage which is directly proportional to the concentration of SO_2 in the sample stream being analyzed. The sampler outputs the SO_2 concentration to the front panel display and analog or digital output. These analyzers are subjected to weekly ZPS checks, quarterly multipoint calibrations, and are audited by GA AAMP's Quality Assurance Unit on an annual basis.

5.0 Nitrogen Oxides (NOx)

Several gaseous oxides of nitrogen (NO_x) are normally found in the atmosphere, including nitrous oxide (N_2O), nitric oxide (NO) and nitrogen dioxide (NO_2). Nitrous oxide is a stable gas with anesthetic characteristics and typical ambient concentrations well below the threshold concentration for a biological effect. Nitric oxide is a colorless gas with ambient concentrations generally low enough to have no significant biological effect. Nitrogen dioxide is reddish-brown but is not usually visible at typical ambient concentrations.

The most significant nitrogen oxide emissions result from the burning of fossil fuels such as coal, oil, and gasoline, due to the oxidation of atmospheric nitrogen and nitrogen compounds in the fuel. The primary combustion product is NO, which immediately reacts with oxygen in the atmosphere to form NO_2.

At high concentrations, nitrogen dioxide has significant health effects as a pulmonary irritant, especially upon asthmatics and children. At concentrations more typical in Georgia, though, NO_2 is primarily of concern because of its role in the formation of ground-level ozone. In warm, sunny conditions, it reacts with hydrocarbons in the atmosphere to form ozone. Ironically, the same reaction can run in reverse in the absence of sunlight, though, meaning that urban areas with higher NO_2 emissions and daytime ozone problems will often have virtually zero ozone present at night. Yet the next morning, the store of unreacted NO_2 that builds up in these areas overnight can cause rapid ozone formation once the sun rises. Therefore, urban areas often have summertime ozone concentrations with dramatic afternoon peaks contrasting against periods overnight where no ozone is present. Areas without significant local NO_2 sources, like rural areas and national parks, tend to have ozone present around the clock, but in moderate concentrations that are steadier throughout a twenty-four hour period.

Some types of vegetation are very sensitive to NO_2, including oats, alfalfa, tobacco, peas, and carrots. Chronic exposure causes chlorosis (yellowing) and acute exposure usually causes irregularly shaped lesions on the leaves.

Nitric oxide and nitrogen dioxide do not directly damage materials. However, NO_2 can react with moisture in the air to produce nitric acid, which corrodes metal surfaces and contributes to acid rain. High concentrations of NO_2 may reduce visibility.

Oxides of nitrogen, particularly NO_2, are monitored using specialized analyzers that continuously measure the concentration of oxides of nitrogen in ambient air using the ozone-phase chemiluminescent method. GA AAMP operates a Thermo Environmental Model 42i Chemiluminescence NO-NO_2-NO_x Analyzer (EPA Automated Equivalent Method RFNA-1289-074). Nitric oxide (NO) and ozone (O_3) react to produce a characteristic luminescence with intensity linearly proportional to the NO concentration. Infrared light emission results when electronically excited NO_2 molecules decay to lower energy states. NO_2 must first be converted to NO before it can be measured using the chemiluminescent reaction. NO_2 is converted to NO by a molybdenum NO_2-to-NO converter heated to about 325^{o}C. The ambient air sample is drawn into the sample bulkhead. The sample flows through a particulate filter, a capillary, then to the mode solenoid valve. The solenoid valve routes the sample either straight to the reaction chamber (NO mode) or through the NO_2-to-NO converter and then to the reaction chamber (NO_x mode). Dry air enters the dry air bulkhead through a flow sensor, and then through a silent discharge ozonator. The ozonator generates the necessary ozone concentration needed for the chemiluminescent reaction. The ozone reacts with the NO in the ambient air to produce electronically excited NO_2 molecules. A photomultiplier tube housed in a thermoelectric cooler detects the NO_2 luminescence. The NO and NO_2 concentrations calculated in the NO and NO_x modes are stored in memory, and the difference between the concentrations are used to calculate the NO_2 concentration. The sampler outputs NO, NO_2, and NO_x concentrations on the front panel display and the analog or digital outputs. There are two major instrument designs. While they are closely related, they do not monitor the same species. NO_x analyzers measure NO, NO_2, and NO_x. NO_y analyzers measure NO and NO_y, but cannot measure NO_2. The NO_y analyzers are also specialized for measuring trace-level concentrations; as such, they cannot measure higher concentrations. Because of these tradeoffs, it is necessary to operate a network of both instrument types to get a complete picture of local conditions. Of the oxides of nitrogen, only NO_2 is regulated under the NAAQS. Therefore, only the NO_x type analyzers produce data directly relevant to the standard. These analyzers are subjected to weekly ZPS checks, quarterly multipoint calibrations, and are audited by GA AAMP's Quality Assurance Unit on an annual basis.

6.0 Lead (Pb)

Lead (Pb) is a toxic heavy metal element occurring in the atmosphere as a constituent of small particles. The major source of atmospheric lead used to be the combustion of gasoline containing the additive tetraethyl lead as an antiknock agent. The use as a gasoline additive has been banned in all applications except aviation gasoline. This ban has dramatically decreased concentrations of lead in the ambient air. Significant remaining sources include coal combustion and sandblasting of highway structures and water tanks. Lead is also used in some batteries, paints, insecticides, and newspaper inks.

Lead persists and accumulates in the environment and the human body. It may be inhaled, ingested, and eventually absorbed into the bloodstream and distributed to all body tissues. Exposure to low concentrations interferes with blood production and specific enzyme systems. It

is believed to cause kidney and nerve cell damage, and severe lead poisoning is known to cause brain damage in children.

Since lead is a particulate, the measurement for ambient air lead concentrations is performed using a manual method, unlike measurements for the gaseous pollutants discussed earlier (ozone, SO_2, NO_2 and CO). Samples are collected on 8" x 10" pre-weighed fiberglass filters with a high-volume total suspended (TSP) sampler for 24 hours, collecting particles with diameters of 100 microns or less. High volumes of ambient air in the flow range of 40-60 cubic feet per minute are sampled at a constant rate during the sampling period. This produces a uniform distribution of particles deposited on the sample filter downstream of the sampler inlet. Samples collected with the TSP high-volume sampler can be used to determine the average ambient TSP concentration over a sampling period followed by subsequent analysis to determine the identity and quantity of inorganic metals present in the TSP. The filter sample is shipped to a laboratory for analysis using inductively coupled plasma mass spectroscopy (commonly known as ICP-MS). Data gained from the criteria lead samplers is used to determine compliance with the National Ambient Air Quality Standards for lead. On a semi-annual basis, GA AAMP's Quality Assurance Unit audits these samplers.

In addition to the criteria lead network sites, lead is monitored as a trace metal in the National Air Toxics Trends Station (NATTS), and with the $PM_{2.5}$ speciation samplers. The NATTS lead is sampled using a PM_{10} sampler, and particles are sampled up to 10 microns in size. With the $PM_{2.5}$ speciation sampler, samples are collected that include particles up to 2.5 microns in size. All three of these additional sampling techniques also collect 24-hour samples on pre-weighed filters, have samples sent to a laboratory for analysis, and are analyzed with ICP-MS. GA AAMP's Quality Assurance Unit audits these lead samplers on an annual basis.

7.0 Metals

A sub-group of the National Air Toxics Trends data includes the metals group, which encompass compounds such as cadmium, mercury, chromium and lead. These pollutants, also known as Hazardous Air Pollutants (HAPs), are those pollutants that are known or suspected to cause cancer or other serious health effects, such as damage to the immune system, reproductive effects or birth defects, developmental or neurological problems, or adverse environmental effects. These effects can vary depending on how often one is exposed, how long one is exposed, the person's health that is exposed, and the toxicity of the compound. Some of the substances tend to have only one critical effect, while others may have several. The lifetime, transportation, and make-up of these pollutants are affected by weather (rain and wind) and landscape (mountains and valleys). They can be transported far away from the original source, or be caught in rain and brought down to waterways or land.

In addition to exposure from breathing air toxics, some toxic air pollutants such as mercury can deposit onto soils or surface waters, where plants take them up, are ingested by animals, and are eventually magnified up through the food chain. Through this process, known as bioaccumulation, larger animals build up concentrations of these pollutants in their tissues that may be thousands of times higher than that found in the most polluted water or soil. Like humans, animals may experience health problems if exposed to sufficient quantities of air toxics over time. Humans who eat animals that have accumulated large concentrations of these

pollutants are at the very top of this bioaccumulative food chain and as such are at particular risk for experiencing health effects.

The PM_{10} sampler used for sampling toxic metal particles less than or equal to 10 microns in diameter as part of the NATTS network is a timed sampler. Collecting 1020 to 1240 liters (L) of air per minute, the sampler uses an 8.5" x 11" quartz glass fiber filter to trap particulate matter. The samplers run once every six days following a pre-established schedule that corresponds to a nationwide sampling schedule. On the sixth day the sampler runs midnight to midnight and takes a 24-hour composite sample. The sample is analyzed using inductively coupled plasma mass spectrometry (ICP/MS). With ICP/MS, an argon gas is used to atomize and ionize the elements in a sample. The resulting ions are used to identify the isotopes of the elements and a mass spectrum is used to identify the element proportional to a specific peak formed from an isotope. In the summer of 2019, GA AAMP plans to replace both the primary and collocated NATTS high-volume PM_{10} metals samplers with low-volume PM_{10} metals samplers. GA AAMP will use the Met One single channel sampler set up for PM_{10}, collecting samples on 47 mm diameter Teflon™ filters, with a volumetric flow rate of 16.7 liters per minute. The NATTS PM_{10} metals samplers are subjected to quarterly checks and audited by GA AAMP's Quality Assurance Unit on a semi-annual basis.

8.0 Volatile Organic Compounds (VOCs)

All volatile organic compounds (VOCs) contain carbon, the basic chemical element found in living beings. Carbon-containing chemicals are called organic. Volatile chemicals escape into the air easily and react with NO_2 in sunlight to form ground level ozone. Some VOCs are also hazardous air pollutants, which can cause serious health effects. VOCs are released from burning fuel (gasoline, oil, coal, natural gas, etc.), solvents, paints, glues, and other products used at work or at home. Cars are a significant source of VOCs. VOCs include chemicals such as benzene, toluene, methylene chloride and methyl chloroform. Some VOCs are naturally occurring. VOCs such as pinenes and terpenes emitted from pine trees are a significant source of VOCs in the southeastern United States.

VOCs are collected and analyzed with two different methods. One collection method is with a canister, which is the method used at the National Air Toxics Trends Station and at the NR-285 site. A SUMMA® polished canister is evacuated to a near-perfect vacuum and attached to a sampler with a pump controlled by a timer. The canister is filled to greater than 10 psig. The samples are collected for a 24-hour period, every 6 days. The NATTS VOCs canister is analyzed using a gas chromatograph with mass spectroscopy detection (GC/MS), using method TO14/15, at the GA EPD laboratory. The second method of VOCs collection and analysis is with the PAMS network in which VOCs are collected and analyzed on-site with a gas chromatograph/flame ionization detector (GC/FID). During June, July, and August, the PAMS VOCs samples are collected continuously on an hourly basis. The VOC samplers in the PAMS network are subjected to quarterly checks and audited every six months. The NATTS VOCs samplers are subjected to quarterly checks and are audited by GA AAMP's Quality Assurance Unit on an annual basis.

9.0 Carbonyls

Carbonyl compounds are a subset of VOCs, and define a large group of substances, which include acetaldehyde and formaldehyde. These compounds can act as precursors to ozone formation. They can be formed from the breakdown of certain organic pollutants in outdoor air, from forest fires and wildfires, as well as from vehicle exhaust.

The carbonyls are sampled with two types of methods. One type is an absorbent cartridge filled with dinitrophenylhydrazine (DNPH)-coated silica that is attached to a pump to allow approximately 180 liters of air to be sampled. The cartridge is then analyzed using high performance liquid chromatography (HPLC). For the PAMS site, during June, July, and August, three 8-hour samples are taken every third day. A 24-hour integrated carbonyls sample is also taken every 6 days throughout the year at the South DeKalb NATTS site. The other method used for collecting carbonyls is the canister sampler that is used for sampling volatile organic compounds. Acrolein is a carbonyl compound that is collected using this canister method, described above, and analyzed with the GC/MS method. The PAMS and NATTS carbonyls samplers are subjected to quarterly checks and audited by GA AAMP's Quality Assurance Unit every six months.

10.0 Semi-Volatile Organic Compounds

Polycyclic aromatic hydrocarbons (PAHs), also called semi-volatile organic compounds are chemical compounds that consist of fused, six-carbon aromatic rings. They are formed by incomplete combustion of carbon-containing fuels such as wood, coal, diesel fuels, fat or tobacco. PAHs can occur in air attached to dust particles, and some can evaporate into the air from soil or surface waters. PAHs can stick tightly to particles and seep through soil to contaminate groundwater. They do not dissolve easily in water and can stick to solid particles and settle to the bottoms of lakes and rivers. Many PAHs are known or suspected carcinogens. The PUF (polyurethane foam) sampler used for sampling semi-volatile organic compounds, as part of the NATTS network, is a timed sampler. The sampler is calibrated to collect 198 to 242 liters (L) of air per minute. A multi-layer cartridge is prepared which collects both the particulate fraction and the volatile fraction of this group of compounds. The plug, filter and absorbent are extracted at the GA EPD laboratory and analyzed using gas chromatography with an electron capture detector (ECD). The semi-VOCs samplers are subjected to quarterly checks and audited by GA AAMP's Quality Assurance Unit annually.

11.0 Black Carbon

Black carbon is a particulate aerosol formed from the incomplete combustion of fossil fuels, biomass, and biofuels. Diesel engines are a large contributor of black carbon. Sampling for black carbon provides an estimate of the anthropogenic portion of carbon sources in ambient air pollution. For continuous sampling of black carbon, GA AAMP currently uses a Multiangle Absorption Photometer (MAAP) at the NR-285 (13-089-0003) and NR-Georgia Tech (13-121-0056) sites. Operating at 60 Watts/110V AC, these instruments use quartz tape to perform an optical analysis to determine the concentration of carbon particles passing through an air stream. The analysis is conducted using spectrophotometry, measuring the wavelength of the light

energy absorbed and plotting the results on the site computer. These parameters are subjected to quarterly checks and audited by GA AAMP's Quality Assurance Unit every six months.

12.0 Meteorological Parameters

GA AAMP has fifteen meteorological stations across the state. Surface meteorological measurements, including wind speed and wind direction, are measured at each location. In addition, as part of the Photochemical Assessment Monitoring Site (PAMS) in the metropolitan Atlanta area, a complete suite of meteorological instrumentation is used to characterize meteorological conditions. The PAMS station measures hourly-averaged vector wind speed and vector-averaged wind direction at the 10-meter level, and hourly-averaged surface temperature, relative humidity and barometric pressure at the 2-meter level. Several sites include instruments to record total hourly precipitation, global solar radiation, and total ultraviolet radiation. In addition, the standard deviation of the wind direction is computed at the NCore site (South DeKalb). These parameters are audited by the GA AAMP's Quality Assurance Unit on an annual basis. For upper air measurement, GA AAMP uses a Vaisala BL-VIEW Ceilometer in conjunction with balloon rawinsonde data collected from NWS at Peachtree City. This upper air system is useful for monitoring the mixing height and low-level winds during smoke transport events.

Appendix D:
List of Closed Ambient Monitors
(in order of shut down date)

Georgia Department of Natural Resources
Environmental Protection Division

Site ID	Site Name	Sampler	Date Shut Down	Last Published in Annual Plan
131210039	Fire Station#8	PM_{10}	9/26/06	N/A
130893001	Tucker	Ozone	10/31/06	N/A
130090001	Milledgeville-Airport	SO_2	12/31/06	2009
130893001	Tucker	PAMS VOCs, NO/NOx/NOy/NO_2	1/7/07	N/A
131110091	McCaysville	SO_2	10/2/07	2007
131210001	Fulton Co Health Dept	PM_{10}	9/1/08	2008
130970003	Douglasville-Beulah Pump Station	PM_{10}	9/1/08	2008
132550002	Griffin-Spalding County	PM_{10}	9/1/08	2008
132151003	Columbus-Crime Lab	Ozone	10/31/08	2008
130090001	Milledgeville-Airport	Air Toxics	10/31/08	2011
131150004	Rome-Co. Health Dept	Air Toxics	10/31/08	2011
131210020	Utoy Creek	Air Toxics	10/31/08	2011
131273001	Brunswick-Brunswick Coll	Air Toxics/Carbonyls	10/31/08	2011
131390003	Gainesville	Air Toxics	10/31/08	2011
131530001	Warner Robins	Air Toxics	10/31/08	2011
131850003	Valdosta	Air Toxics	10/31/08	2011
132155000	Columbus-Columbus State	Air Toxics	10/31/08	2011
132450092	Augusta-Clara Jenkins	Air Toxics	10/31/08	2011
130550001	Summerville-Fish Hatchery	Acid Rain	10/31/08	2011
130850001	Dawsonville	Acid Rain	10/31/08	2011
131890001	McDuffie-Fish Hatchery	Acid Rain	10/31/08	2011
132410002	Hiawassee-Lake Burton	Acid Rain	10/31/08	2011
132970001	Social Circle-Fish Hatchery	Continuous $PM_{2.5}$	10/31/08	2011
131130001	Fayetteville-GA DOT	Ozone, Wind Speed, Wind Direction	10/31/08	2013
131270006	Brunswick	Total Reduced Sulfur	10/31/08	2013
131210048	Georgia Tech	$PM_{2.5}$	12/1/08	2008
131150005	Rome	$PM_{2.5}$, PM_{10}, $PM_{2.5}$ speciation	Consolidated with 131150003 3/09	2008
131210048	Georgia Tech	SO_2, NO, NO_2, NOx	4/30/09	2011
130150003	Cartersville	Wind Speed, Wind Dir	12/31/11	2011
130730001	Evans	NO_y	7/28/2008	2012
130210013	Macon-Lake Tobesofkee	NO_y, O_3	10/31/2008	2012
131270006	Brunswick	SO_2	12/31/12	2012
132150008	Columbus -Airport	SO_2	12/31/12	2012
130510017	Savannah-Market St.	$PM_{2.5}$	12/31/12	2012
132450005	Augusta-Medical College	$PM_{2.5}$	12/31/12	2012
131210032	Atlanta-E. Rivers School	$PM_{2.5}$, PM_{10}	12/31/12	2012
130892001	Doraville Health Center	$PM_{2.5}$	12/31/12	2012
130670004	Powder Springs-Macland Aquatic Ctr.	$PM_{2.5}$	12/31/12	2012
130210007	Allied	PM_{10}	12/31/12	2012
130510014	Savannah-Shuman Middle	PM_{10}	12/31/12	2012
130550001	Summerville-Fish Hatchery	PM_{10}	12/31/12	2012
130892001	Doraville Health Center	PM_{10}	12/31/12	2012
130950007	Albany	PM_{10}	12/31/12	2012
131150003	Rome	PM_{10}	12/31/12	2012
131210048	Georgia Tech	PM_{10}	12/31/12	2012
131270004	Brunswick-Arco Pump	PM_{10}	12/31/12	2012

	Station			
132150011	Columbus-Cusseta Road	PM_{10}	12/31/12	2012
133030001	Sandersville	PM_{10}	12/31/12	2012
130893001	Tucker-Idlewood Road	Wind Speed, Wind Direction, Temp, RH, Solar Radiation, UV Radiation, BP, Precip	5/31/13	2013
130890002	South DeKalb	Hexavalent chromium	7/15/13	2013
132470001	Conyers	Continuous Gas Chromatograph	8/31/13	2013
130150003	Cartersville	Lead	2/22/14	2013
131210099	Roswell Road	CO	3/5/14	2013
130590002	Athens	$PM_{2.5}$ Speciation	1/24/15	2014
132230003	Yorkville	Continuous Gas Chromatograph	8/31/15	2015
132230003	Yorkville	6-Day PAMs, $NO/NO_2/NOx$, CO	12/31/15	2015
130850001	Dawsonville	Air Toxics/Carbonyls	12/31/15	2015
132470001	Conyers	6-Day PAMs, $NO/NO_2/NOx$	12/31/15	2015
130890003	NR-285	Lead	6/30/16	2016
130890002	South DeKalb	Black carbon	12/31/16	2016
133190001	Gordon	$PM_{2.5}$	12/31/16	2016
132230003	Yorkville	O_3	12/31/16	2016
132230003	Yorkville	$PM_{2.5}$, Continuous $PM_{2.5}$, VOCs, Semi-VOCs, Carbonyls, Metals, Wind Speed, Wind Direction, Temp, RH, Solar Radiation, UV Radiation, BP, Precip	1/31/17	2016
131150003	Rome-Coosa	SO_2	12/31/16	2017
132450091	Augusta	Integrated PM_{10}	3/31/18	2017
130770002	Newnan	O_3, $PM_{2.5}$, Wind Direction. Wind Speed	11/15/17	2018
132150010	Columbus-Joy Rd	Lead	6/30/18	2018
132450091	Augusta	$PM_{2.5}$	10/31/18	2018
131390003	Gainesville	$PM_{2.5}$	10/31/18	2018
131350002	Gwinnett Tech	$PM_{2.5}$	10/31/18	2018
130210012	Macon-Forestry	Air Toxics	12/31/18	2018
130510021	Savannah-E. President's Street	Air Toxics	12/31/18	2018
130690002	General Coffee	Air Toxics	12/31/18	2018
130590002	Athens	$PM_{2.5}$	3/31/19	2018

Appendix E:
Memorandum of Agreement

Georgia Department of Natural Resources
Environmental Protection Division

MEMORANDUM OF AGREEMENT

ON AIR QUALITY MONITORING FOR CRITERIA POLLUTANTS FOR

THE CHATTANOOGA-WALKER COUNTY

METROPOLITAN STATISTICAL AREA MSA
December 28, 2017

Participating Agencies:

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

Tennessee
Chattanooga-Hamilton County Air Pollution Control Bureau (CHCAPCB)

I. PURPOSE/OBJECTIVES/GOALS

The purpose of the Memorandum of Agreement (MOA) is to establish the Chattanooga-Hamilton County-Walker County Metropolitan Statistical Area (MSA) Criteria Pollutant Air Quality Monitoring Agreement between CHCAPCB and GAEPDAPB (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 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 Chattanooga –Hamilton County-Walker Co, GA MSA as required by 40 CFR 58 Appendix D, Section 2, (e) (March 28, 2016)[1].

II. BACKGROUND

The Chattanooga-Hamilton Co-Walker Co, GA MSA consists of the following counties: Dade, Walker, Catoosa, Hamilton, Marion, and Sequatchie. GA EPD APB has jurisdiction over Dade, Walker, and Catoosa Counties in Georgia and CHCAPCB has jurisdiction over Hamilton County, Tennessee. The State of Tennessee has jurisdiction over Marion and Sequatchie Counties in Tennessee, but does not have any permanent air monitoring sites in those counties. The CHCAPCB and GA EPD APB are required by the Clean Air Act to measure for certain criteria pollutants in the ambient air in the Chattanooga-Hamilton County-Walker Co, GA Metropolitan Statistical Area (MSA). The United States Environmental Protection Agency (EPA) has established minimum monitoring requirements based on the size of the MSA and the quality of the air in the

MSA 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.

40 CFR 58 Appendix D, Section 2, (e)[1] 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."[1]

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

I. ROLES AND RESPONSIBILITIES

The parties agree to the following terms and conditions:

- CHCAPCB and GA EPD APB (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 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 requirement (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…"[1] 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 of this MOA. 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 agencies 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 a loss of more than 25% data in a quarter or a permanent change in the monitoring network. At least once a year in the second quarter of the year or before June 15th, each agency shall make available to the other agencies who are a party to this agreement, a copy of its proposed monitoring plan for the MSA for the next

year. The CHCAPCB will submit the network review that is submitted to the State of Tennessee for inclusion in the State's monitoring plan.

- 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.

III. 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 CHCAPCB or GA EPD APB 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 reimburse 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 CHCAPCB or GA EPD APB, their officers or employees, or any other person. This MOA does not direct or apply to any person outside CHAPCD or GAEPD APB.

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 APB DeAnna G. Oser
GAEPD APB Ambient Monitoring Program
4244 International Parkway, Suite 120
Atlanta, GA 30354

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

CHCAPCB Robert Colby
CHCAPCB
6125 Preservation Dr
Chattanooga, Tn 37416

bcolby@chattanooga.gov
Voice: (423) 643-5999
FAX: (423) 643-5972

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

1 – 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
Air Protection Branch (GA EPD APB)

BY: Richard E. Dunn

TITLE: DIRECTOR

DATE: 1/24/18

Chattanooga-Hamilton County Air Pollution Bureau (CHCAPCB)

BY: Robert Hardy

TITLE: Director

DATE: January 3, 2018

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: Richard J

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

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

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