GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

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May 16, 2024

NOTICE OF THE OPPORTUNITY FOR PUBLIC COMMENT
GEORGIA DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION
AIR PROTECTION BRANCH

STATE OF GEORGIA

NOTICE OF DRAFT 2024 AMBIENT AIR MONITORING PLAN – May 2024

To All Interested Parties:

The Georgia Environmental Protection Division (GA EPD) announces its intent to issue the *2024 Ambient Air Monitoring Plan* to the U.S. Environmental Protection Agency in July 2024. The GA EPD is required to produce this annual plan as part of EPA's amended ambient air monitoring regulations established October 17, 2006.

Georgia EPD's *2024 Ambient Air Monitoring Plan* will show how the state agency plans to meet EPA regulations for monitoring air quality in the state by assessing monitoring objectives, site appropriateness for air quality characterization, spatial scale represented by each monitor and appropriate new technologies.

GA EPD's air monitoring network consists of a number of stations located throughout the state. GA EPD uses the air monitoring data to track if air quality standards are being met, to assist in enforcement actions, to determine the improvement or decline of air quality, to trace the extent of allowable industrial expansion and to provide air pollution information to the public.

The draft *2024 Ambient Air Monitoring Plan* will be available for review on the GA EPD Air Protection Branch internet site: https://epd.georgia.gov/air-protection-branch-public-announcements and the Ambient Air Monitoring Program website: https://airgeorgia.org/.

Persons wishing to comment on the draft *Ambient Air Monitoring Plan* are required to submit their comments, in writing, to GA EPD 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 Jaime Gore, Program Manager of the Ambient Monitoring Program, at Jaime.Gore@dnr.ga.gov or to EPD.comments@dnr.ga.gov.

Comments must be received by GA EPD no later than June 16, 2024. Should the comment period end on a weekend or holiday, comments will be accepted up until the next working day. GA EPD, in soliciting comments for the final draft before submittal to EPA as required by 40CFR58, will consider all comments received on or prior to that date.

After the comment period has expired, GA EPD will consider all comments received. GA EPD's responses to comments and any other relevant information will be included in the final document published on https://airgeorgia.org/.

For additional information, contact the manager of the Ambient Air Monitoring Program, Jaime Gore at the Atlanta address, or by phone at 404-363-7000. Please refer to this notice when requesting information.

GEORGIA
DEPARTMENT OF NATURAL RESOURCES

ENVIRONMENTAL PROTECTION DIVISION

Draft 2024 Ambient Air Monitoring Plan

Air Protection Branch
Ambient Monitoring Program

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List of Figures and Tables

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
AA	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 U.S. 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:

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Regarding quality oversight of the monitoring program:

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1.0 Executive Summary

The Georgia Ambient Air Monitoring Program (GA AAMP) of the Georgia Environmental Protection Division (GA EPD) is submitting this *2024 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, 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 35 stations to:

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

Since the publication of the *2023 Ambient Air Monitoring Plan*, there have been some changes to the state's ambient air monitoring network that should be noted.

Changes to Monitoring:

The Columbus-Airport (13-215-0008), Augusta (13-245-0091), and Albany (13-095-0007) $PM_{2.5}$ T640 samplers were designated as non-FEM and not comparable to the $PM_{2.5}$ NAAQS as of August 1, 2023, as the method is evaluated for two years.

GA AAMP has implemented a data alignment feature on the $PM_{2.5}$ Teledyne T640 which was installed on June 5, 2023 at the Macon-Allied site (13-021-0007), on June 6, 2023 at the Columbus-Baker site (13-215-0012), and on October 6, 2023 at the Kennesaw site (13-067-0003). GA AAMP will take up to the next two years to evaluate the T640 samplers with the data alignment feature, and compare the data collected with the $PM_{2.5}$ FRMs. During this evaluation period, these Teledyne T640 monitors with the data alignment feature will not be compared to the $PM_{2.5}$ NAAQS.

All $PM_{2.5}$ Teledyne T640s had the data alignment feature implemented by August 1, 2023 (with the exception of earlier dates listed above).

On September 8, 2023, GA AAMP installed a continuous FEM $PM_{2.5}$ T640 sampler at the General Coffee site (13-069-0002). As of October 17, 2023, the FRM $PM_{2.5}$ sampler was changed from a 1 in 3 day sampling schedule to a daily sampling schedule.

On May 10, 2023, GA AAMP deployed a Met One Black Carbon instrument at the NR-GA Tech site (13-121-0056).

The Albany site (13-095-0007) monitoring equipment was relocated from the roof of the school to ground level in March 2024.

On April 18, 2023, GA AAMP restarted the Met One Black Carbon instrument at the NR-285 site (13-089-0003).

Due to traffic counts and new roads, GA AAMP is updating the spatial scales in Site Evaluations and Appendix A sections of this document.

GA AAMP shut down the FRM $PM_{2.5}$ Thermo Partisol-Plus 2025 at the Forest Park site (13-063-0091) on February 18, 2024. A continuous FEM $PM_{2.5}$ T640 monitor was installed on February 20, 2024.

On June 6, 2023 GA AAMP replaced the FRM $PM_{2.5}$ Thermo Partisol-Plus 2025 sampler with the newer model Thermo Partisol-Plus 2025i sampler at the Columbus-Baker site (13-215-0012).

At the NR-GA Tech site (13-121-0056), GA AAMP replaced the non-FEM continuous $PM_{2.5}$ nephelometer sampler with a non-FEM continuous $PM_{2.5}$ TEOM sampler on April 20, 2023.

The non-FEM continuous $PM_{2.5}$ TEOM sampler at the NR-285 site (13-089-0003) will be shut down as of June 30, 2024.

As of January 1, 2025, all the continuous FEM $PM_{2.5}$ T640 samplers that GA AAMP had designated as Special Purpose Monitors may be changed to NAAQS comparable, SLAMS monitors.

The FRM $PM_{2.5}$ samplers at the Columbus-Airport site (13-215-0008), the Macon-Allied site (13-021-0007) (collocated only), the Kennesaw site (13-067-0003), and the General Coffee site (13-069-0002) may be shut down as of December 31, 2024.

After evaluation of bias adjustment on the continuous FEM $PM_{2.5}$ T640 samplers, GA AAMP may plan to change the daily FRM samplers at all sites to 1 in 3 sampling schedule as of January 1, 2025.

GA AAMP is in the process of updating the continuous $PM_{2.5}$ Teledyne T640 data that was previously in AQS with 88502 parameter code to 88101 with a NAAQS exclusion for the dates of January 1, 2022 through July 31, 2023 for the Albany (13-095-0007), Columbus-Airport (13-215-0008), and Augusta (13-245-0091) sties.

The continuous FEM $PM_{2.5}$ T640 samplers at the General Coffee site (13-069-0002), Columbus-Airport site (13-215-0008), and Kennesaw site (13-067-0003) may become the primary samplers as of January 1, 2025.

On June 27, 2023 GA AAMP transferred the equipment from the old shelter to the new Brunswick shelter (13-127-0006).

The shelter was replaced at the Macon-Forestry site (13-021-0012) on February 28, 2024.

A new lead monitoring site is in the process of being established in Fulton County, called Empire Blvd with site code 13-0121-0057, and should be completed this summer.

At the Gwinnett Tech site (13-135-0002), the GA AAMP upgraded the ESC DAS 8832 data logger to an Agilaire 8872 data logger on June 27, 2023.

At the Athens site (13-059-0002), the GA AAMP upgraded the ESC DAS 8832 data logger to an Agilaire 8872 data logger on August 23, 2023.

On August 30, 2023, the GA AAMP upgraded the ESC DAS 8832 data logger to an Agilaire 8872 data logger at the Columbus -Airport site (13-215-0008).

GA AAMP upgraded the ESC DAS 8832 data logger to an Agilaire 8872 data logger at the Dawsonville site (13-085-0001) on September 6, 2023.

At the Columbus-Crime Lab site (13-215-1003), the GA AAMP upgraded the ESC DAS 8832 data logger to an Agilaire 8872 data logger on September 13, 2023.

GA AAMP upgraded the ESC DAS 8832 data logger to an Agilaire 8872 data logger at the Macon-Forestry site (13-021-0012) on September 20, 2023.

At the Leslie site (13-261-1001), the GA AAMP upgraded the ESC DAS 8832 data logger to an Agilaire 8872 data logger on October 4, 2023.

On October 11, 2023, GA AAMP upgraded the ESC DAS 8832 data logger to an Agilaire 8872 at the Rome site (13-115-0003).

At the Evans site (13-073-0001), the GA AAMP upgraded the ESC DAS 8832 data logger to an Agilaire 8872 data logger on October 18, 2023.

GA AAMP upgraded the ESC DAS 8832 data logger to an Agilaire 8872 data logger at the Augusta site (13-245-0091), on November 1, 2023.

At the Fort Mountain site (13-213-0003), the GA AAMP upgraded the ESC DAS 8832 data logger to an Agilaire 8872 data logger on November 14, 2023.

GA EPD is currently evaluating the siting location of the SO_2 monitor at the Augusta site (13-245-0091) and nearby area. Modeling is being conducted by the Planning and Support Program to determine the best location for the monitor.

GA AAMP is planning to replace the shelter at the Augusta site (13-245-0091).

Due to increased activity around the McDonough site (13-151-0002), GA AAMP is currently looking at potential areas to relocate the shelter.

Due to increased traffic counts, the ozone monitor at the Gwinnett Tech site (13-135-0002) will need to be moved. GA AAMP is planning to move the Gwinnett Tech site as soon as feasible.

GA AAMP is planning to install a ceilometer to measure mixing layer height at South DeKalb site (13-089-0002) within the upcoming year.

GA AAMP is renewing the waiver for the PAMS meteorology sensors at the Conyers site (13-247-0001) that was addressed in previous Ambient Air Monitoring Plans.

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. (EPA has retracted this requirement.)

(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 (On January 8, 2020 (85 FR 834, page 834) EPA delayed the start of the revised PAMS monitoring network to June 1, 2021.)

(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.

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

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

(6) 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.

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

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

(9)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.

(10)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.

(11)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.

(12)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 1), 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).

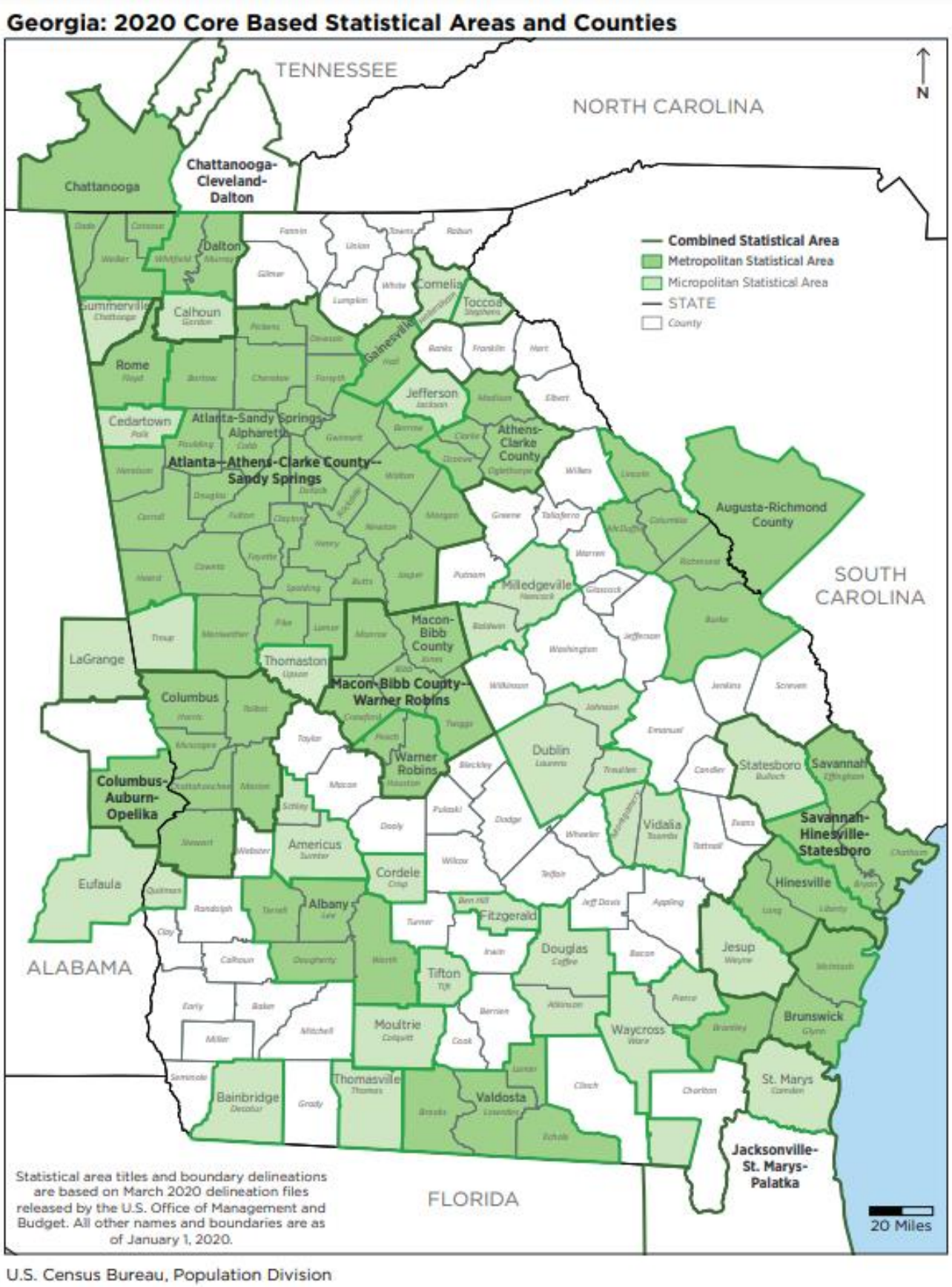


Figure 1: Map of Statistical Areas in Georgia

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 AAMP 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 ($PM_{2.5}$), 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 ($PM_{2.5}$), 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

Renewal of Solar and TUVR Radiation at Conyers Site:
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.

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 2 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-Alpharetta 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) µg/m^3	PM_{10} (24hr) µg/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**
0.0–9.0	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.
9.1–35.4	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.
55.5–125.4	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.
125.5–225.4	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.
225.5+	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.
	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 2: 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.

Table 1: List of Georgia AAMP's QAPPs

QAPP Title	Submittal	Approval
Quality Assurance Project Plan of the Georgia Ambient Air Quality Monitoring Project for $PM_{2.5}$	3/24/2023	4/7/2023
Quality Assurance Project Plan of the Georgia Ambient Air Quality Monitoring Project for the Criteria Air Pollutants and National Core Multi-Pollutant Station	4/13/2023	5/19/2023
Quality Assurance Project Plan of the Georgia Ambient Air Quality Monitoring Project for the Photochemical Assessment Monitoring Stations State of Georgia	5/1/2023	12/4/2023

Quality Assurance Project Plan of the Georgia Ambient Air Quality Monitoring Project for the Near Road Monitoring Network	9/7/2022	1/25/2023
Quality Assurance Project Plan for the Georgia National Air Toxics Trends Project	5/14/2024	
Quality Assurance Project Plan for the Georgia Ambient Air Monitoring Program for Lead	2/7/2024	
Quality Assurance Project Plan for the Georgia Ambient Air Monitoring Program for Special Projects	3/27/2024	
Quality Management Plan for the Air Protection Branch	6/27/2023	

1.7 Public Notice and Comment Procedures

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 proposed changes and documentation 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 Jaime Gore, Program Manager of the Ambient Monitoring Program, at Jaime.Gore@dnr.ga.gov or to EPD.comments@dnr.ga.gov. The deadline for submitting comments to the GA AAMP is no later than 30 days after the date on which the 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 included in the final document published on https://airgeorgia.org/.

1.8 Use of Data

The ambient air monitoring data is used to determine whether [the] National Ambient Air Quality Standards as defined by EPA are being met, and if the state of Georgia has areas of nonattainment according to these standards. GA AAMP collects ambient air monitoring data covering both criteria and non-criteria pollutants. This data is used by several different groups and has many uses from public health studies to making regulatory decisions. The data is used to provide air pollution information to the public, including the Air Quality Index (discussed above in Section 1.5), the GA Ambient Air Monitoring Program website (https://airgeorgia.org/) with hourly readings of continuous data, and finally producing a forecast of the air quality which is reported in AirNow and various news reports to the public. The data is used to assist in enforcement actions with permitting and compliance, and to determine the extent of allowable industrial expansion. State

modelers as well as private consultants use the air monitoring data to help make these determinations. The ambient air monitoring data has been used by non-governmental planning groups, such as the Georgia Commute Options, and intergovernmental groups, such as Atlanta Regional Commission, to make recommended improvements for cities across the state. The ambient air monitoring data is used to determine whether National Ambient Air Quality Standards as defined by EPA are being met, and if the state of Georgia has areas of nonattainment according to these standards.

GA AAMP routinely has requests of the ambient air monitoring data from other states, various universities, research institutes, and federal agencies such as Centers for Disease Control. The data is used to determine the improvement or declination of air quality, and how the air quality is related to human and environmental health. In addition, the data has been used in international studies to compare with major cities around the world.

Annually, the GA AAMP provides an Ambient Air Surveillance report that summarizes and analyzes the previous year's ambient air data, including a risk assessment, for the general public. In addition, GA AAMP produces an Ambient Air Monitoring Plan on an annual basis. The Ambient Air Monitoring Plan details the location and site specific data for each monitor in GA AAMP's ambient monitoring network, as well as GA AAMP's plans for changes to the network. This document is made available for public review and comment regarding placement of ambient air monitors and collection of ambient air data. Both the Ambient Air Surveillance Report and Ambient Air Monitoring Plan are also found on the website listed above.

1.9 New Technologies

At a few sites across the state, GA AAMP is planning to add new monitoring equipment in which new technologies will be put to use. The GA AAMP has begun installing using the Thermo 49iQ ozone analyzers, and plans to install Thermo 43iQ SO_2 analyzers, and Thermo 48iQTL CO analyzers. The GA AAMP has incorporated new Agilaire 8872 data loggers throughout the network at the continuous sites. GA AAMP is installing the new 2025i model for integrated $PM_{2.5}$ monitoring. In addition, the TEOM 1405-F will replace the TEOM 1400AB model at the Near-road-GA Tech site. GA AAMP will install an ATEC 2200-22P to replace the ATEC VOC sampler at the NATTS site. For more information about technology used in the GA AAMP network, refer to Appendix C.

1.10 Georgia AAMP Budget

GA AAMP's budget is made up of a combination of three sources: state funds, federal funds, and fee funds. In recent years, GA AAMP has had budget and personnel constraints, and since the last *Ambient Air Monitoring Plan* there has been some fluctuation in the number of ambient air monitoring samplers across the state. A complete list of the monitors that have been shut down since the last publication of the *Ambient Air Monitoring Plan* can be found in Appendix D of this document.

1.11 Inventory of Ambient Monitoring Equipment

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

1.12 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.

Table 2: 2024 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	Pb	NO/ NOx	NO_2	NOy	SO_2	PM_{10}	PM_{10} Cont.	PAMS VOC	VOC	SVOC	Carb-onyls	Meteo-rology	Black Carbon	Metals
Rome MSA																						
131150003	Rome	Floyd				S	X													*		
Brunswick MSA																						
131270006	Brunswick	Glynn	S		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	S																
Athens-Clarke County MSA																						
130590002	Athens	Clarke	S			S																
Macon-Bibb County, MSA																						
130210007	Macon-Allied	Bibb			S	S	X															
130210012	Macon-Forestry	Bibb	S		S	S							S							NR		
Columbus Georgia- Alabama MSA																						
132150008	Columbus-Airport	Muscogee	S		S^	S																
132150012	Columbus-Baker	Muscogee			S	S	X															
132151003	Columbus-Crime Lab	Muscogee																		NR		
Savannah MSA																						
130510021	Savannah-E. President	Chatham	S										S							NR		
130511002	Savannah- L&A	Chatham			S	S							S							NR		
Augusta-Richmond County, Georgia-South Carolina MSA																						
130730001	Evans	Columbia	S																	NR		
132450091	Augusta	Richmond	S		S	S	X						S		S					NR		

Table 2:2024 Georgia Ambient Air Monitoring Network (continued)

SITE ID	SITE NAME	COUNTY	O_3	CO	$PM_{2.5}$ FRM	$PM_{2.5}$ Cont.	$PM_{2.5}$ Spec.	PM Coarse	Pb	NO/ NOx	NO_2	NOy	SO_2	PM_{10}	PM_{10} Cont.	PAMS VOC	VOC	SVOC	Carb-onyls	Meteo-rology	Black Carbon	Metals
Atlanta-Sandy Springs-Alpharetta MSA																						
130630091	Forest Park	Clayton				S																
130670003	Kennesaw	Cobb	S		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				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	
131210057	Empire Blvd	Fulton							S													
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																						
132950004	Rossville-Williams St.	Walker			S	S	X															
Not in an MSA																						
130550001	Summerville	Chattooga	S																			
130690002	General Coffee	Coffee			S^	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

*=Forthcoming

^=May shut down within the next year

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 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[1]. 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).

[1] 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 3 below.

Table 3: Monitoring Objective and Spatial Scale

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

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 (75FR119, 06/22/10) and retained in 2019 (84FR9866, 3/18/19). 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. Based on these requirements, the GA AAMP is required to have one monitor in the Atlanta-Sandy Springs-Alpharetta MSA. Currently, GA AAMP monitors SO_2 at the United Avenue (13-121-0055) and South DeKalb (13-089-0002) sites in the Atlanta-Sandy Springs-Alpharetta MSA, the Augusta (13-245-0091) site in the Augusta-Richmond County, GA- SC MSA, the Savannah-L&A (13-051-1002) and Savannah-E. President Street (13-051-0021) sites in the Savannah MSA, and the Macon-Forestry (13-021-0012) site in the Macon-Bibb County, MSA.

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.

GA EPD is currently evaluating the siting location of the SO_2 monitor at the Augusta site (13-245-0091) and nearby area. Modeling is being conducted by the Planning and Support Program to determine the best location for the monitor.

4.3 Nitrogen Dioxide

On May 18, 2018, EPA retained the 2010 nitrogen dioxide (NO_2) National Ambient Air Quality Standard (NAAQS) (Federal Register, Vol. 83, No. 75, 04/18/18). EPA's last revision of the NAAQS 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-Alpharetta 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-Alpharetta 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-Alpharetta MSA on January 1, 2015 at the established monitoring site near interstate 285 (NR-285, 13-089-0003) . At the NR-285 site, NO_2/NO/NOx, volatile organic compounds, non-regulatory continuous $PM_{2.5}$, 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-Alpharetta 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-Alpharetta MSA. The South DeKalb site has historically collected the highest concentrations representing urban spatial scale, is located within an urban area, 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-Alpharetta 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 $PM_{2.5}$ 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 (13-115-0003) (started 3/1/02), Macon-Allied (13-021-0007) (started 3/1/02), Columbus-Baker (13-215-0012) (started 5/1/02), Augusta (13-245-0091) (started 3/2/02), Rossville-Williams St. (13-295-0004) (started 3/23/05), and General Coffee (13-069-0002) (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.

4.6 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 VOCs 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 VOCs 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. On January 8, 2020 (85 FR 834, page 834) EPA delayed the start of the revised PAMS monitoring network to June 1, 2021. GA AAMP fully implemented the program by June 1, 2021, and began sampling the hourly VOCs from June through August, the 8-hour carbonyls three times a day every third day from June through August, and hourly direct NO_2.

4.7 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 both urban sites to address the range of population exposure in urban areas, and 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. Also at the South DeKalb site, GA AAMP began sampling ethylene oxide as of January 2020.

4.8 Ozone

Ozone monitoring has been in place in the Atlanta area since the 1970's. Currently the Atlanta-Sandy Springs-Alpharetta MSA ozone network includes nine monitors located in nine counties. Across Georgia, there are 19 ozone monitors in the network, which exceeds the EPA requirement (40CR58, Appendix D, Section 4.1). The standard is an 8-hour averaging time, fourth maximum value, averaged over three years. On October 1, 2015, EPA lowered the ozone standard to 0.070 ppm. For this 2015 standard, with the 2019-2021 data, the Atlanta area is meeting the ozone standard. On September 15, 2022, the Atlanta area was designated as in attainment of the 2015 ozone NAAQS (Federal Register, Vol. 87, No. 194, page 60897, dated October 7, 2022).

As part of the Clean Air Status and Trends Network (CASTNET), EPA established a monitoring site in Pike County, 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 89 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 (https://www.epa.gov/castnet). With the exception of the South DeKalb and CASTNET sites, ozone in Georgia, unlike other pollutants previously discussed, is monitored March through October, complying with federal monitoring regulations (in 40CFR Part 58).

4.9 Particulate Matter

Particulate pollution may be categorized by size since there are different health impacts associated with the different sizes of particulate matter. GA AAMP currently monitors for three sizes of particles: PM_{10} (up to 10 microns in diameter), $PM_{2.5}$ (up to 2.5 microns in diameter) and

PM_{coarse} (PM_{10} minus $PM_{2.5}$). To give size relation, approximately ten PM_{10} particles can fit on a cross section of a human hair, and approximately thirty $PM_{2.5}$ particles would fit on a cross section of a hair. These particles and droplets are invisible to the naked eye, and composition and sources can vary greatly by region. There are three monitoring stations with PM_{10} monitors, one station with a PM_{coarse} monitor, and 25 stations with continuous and/or integrated $PM_{2.5}$ monitors, which exceeds the number of samplers required according to 40CFR58, Appendix D, Section 4.7.

For an area to be in attainment of the annual ambient air $PM_{2.5}$ standard, the three-year average of the annual average concentrations has to be less than or equal to 9.0 $\mu g/m^3$. In addition, the 24-hour primary and secondary standard requires that the three-year average of the 98th percentile of the 24-hour concentrations be less than or equal to 35 $\mu g/m^3$. Currently all areas of Georgia are designated unclassifiable/attainment for the 2012 annual $PM_{2.5}$ standard because the national standards are being met. For PM_{10}, the 24-hour data is compared to 150 $\mu g/m^3$. The standard allows one exceedance per year, averaged over a 3-year period, and all three samplers collected data well below the standard. Currently, there is no standard for PM_{coarse}.

4.10 Lead (Pb)

GA AAMP has monitored lead in different areas of Georgia and at different times throughout the years since the inception of GA EPD in the 1970's. EPA's last revision to the requirements for measuring lead in the ambient air was in 2010. The emission threshold for placing lead monitors near industrial facilities was lowered from 1.0 tons per year (tpy) to 0.5 tpy (Federal Register: Vol. 75, No. 247, Page 81126, 12/27/10). With the EPA Toxic Release Inventory in 2018, Georgia had no sources of lead that were emitting 0.5 tpy. In addition, as of December 2020, all areas of Georgia are meeting the lead NAAQS, which is a rolling three-month average for three years, not to exceed 0.15 $\mu g/m^3$ (Federal Register: Vol. 73, No. 219, Page 66964, 11/12/08). Therefore, GA AAMP shut down the lead samplers as of March 31, 2021.

In the past two years, EPA conducted preliminary monitoring near a potential lead source in Fulton County within the Atlanta-Sandy Springs-Alpharetta MSA. EPA then requested GA AAMP to monitor near this potential source. GA AAMP identified a location to monitor near the source and submitted the required site information and documentation to EPA for approval. The site will be called Empire Blvd with an AQS site code 13-0121-0057. The initial documentation for setting up the site can be found in the GA AAMP's *Second Addendum to 2023 Ambient Air Monitoring Plan*. GA AAMP plans to start lead monitoring near this potential source by June 1, 2024.

4.11 Environmental Justice Comparison Maps

To meet the requirements set forth by EPA, GA AAMP needs to consider its ability to support air quality characterization for areas with high populations of susceptible individuals. GA AAMP operates air quality monitoring stations across the state, including evaluating air quality in vulnerable areas, considering factors such as cancer risk, the presence of minority and low-income communities, and populations of children under 5 and adults over 65.

Detailed maps for Georgia, as well as the largest MSAs in Georgia, can be found in Appendix F. These maps are created using ArcGIS Pro and EPA's EJScreen tool, incorporating data from 2022 EPA Environmental Justice Screen (census tract group level, based on 2020 estimated demographics). Maps illustrate socioeconomic status weighted by a single environmental factor

and are presented as both an environmental justice (EJ) Index and a Supplemental Index. This report focuses on the following indicators associated with ambient air quality. The latest year of available data is shown beside each indicator:

- Air toxics cancer risk (2019)
- Air toxics respiratory hazards (HI) (2019)
- Ozone (2019)
- Particulate Matter ($PM_{2.5}$) (2019)
- Toxic releases to air (2021)
- Traffic Proximity (2020)

GA AAMP's maps utilize a percentile ranking system to classify EJ Screen data. This system categorizes areas into groups based on their relative standing compared to other locations. Percentiles range from 100 (highest) to 50 (lowest) and are divided into seven categories:

- 100th - 96th percentile
- 95th - 91st percentile
- 90th - 81st percentile
- 80th - 71st percentile
- 70th - 61st percentile
- 60th - 51st percentile
- Less than or equal to 50th percentile

Percentiles offer a valuable perspective for understanding EJ Screen data because they facilitate comparison as percentiles to compare an area's EJ Indicators to the rest of the state or nation. This provides context beyond raw numbers.

All maps utilize data from EPA's EJScreen tool (https://ejscreen.epa.gov/mapper/). EPA provides all explanations and guidance on using EJ Screen data on their website (https://www.epa.gov/ejscreen).

EPA’s EJ Screen serves as a valuable tool in identifying potential environmental justice (EJ) concerns across communities. It employs two primary index categories: EJ Indexes and Supplemental Indexes. EJ Indexes integrate environmental and demographic data to highlight areas where disproportionate environmental burdens may exist. These indexes are calculated as follows:

1. **Demographic Indicators:** Demographic factors (low-income, and people of color) are incorporated to identify populations with increased potential vulnerability.
2. **Environmental Indicators:** EJ Screen utilizes indicators representing potential environmental hazards. The maps included in Appendix F display indicators EPA designates as specific to ambient air conditions as detailed above.
3. **Index Calculation:** A weighted formula combines the demographic indicators with a single environmental indicator to generate an EJ Index score for each environmental factor.

Supplemental Indexes augment the perspective provided by EJ Indexes with a nuanced demographic analysis. Incorporating 5 socioeconomic indicators not included in EJ Indexes, these indexes employ a composite measure incorporating five crucial socioeconomic indicators:

- Low income
- Unemployment
- Limited English proficiency

- Less than high school education
- Low life expectancy

The Supplemental Index is also derived using a formula that combines these socioeconomic factors, providing additional insight into community vulnerabilities.

It is important to note that EJ Indexes function as screening tools. They rely on nationally available datasets and may not fully reflect the complexities of local environmental risks or community demographics.

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.

Table 4: Site Evaluations

SITE ID	COMMON NAME	COUNTY	SITE EVALUATION DATE	COMMENTS	ACTION TAKEN
Rome MSA					
131150003	Rome	Floyd	6/27/2023	Samplers meet siting criteria. PM monitor spatial scale changed to Urban.	No action required.
Brunswick MSA					
131270006	Brunswick	Glynn	10/26/2023	Samplers meet siting criteria. PM monitor spatial scale changed to Urban.	No action required.
Valdosta MS					
131850003	Valdosta	Lowndes	10/2/2023	Samplers meet siting criteria.	No action required.
Warner Robins MSA					
131530001	Warner Robins	Houston	2/7/2024	Samplers meet siting criteria.	No action required.
Dalton MSA					
132130003	Fort Mountain	Murray	11/8/2023	Samplers meet siting criteria.	No action required.
Albany MSA					
130950007	Albany	Dougherty	11/21/2023	Samplers meet siting criteria. Spatial scale for PM monitors was changed from Neighborhood to Urban.	No action required.
Gainesville MSA					
131390003	Gainesville	Hall	2/29/2024	Samplers meet siting criteria. PM spatial scale was changed from Neighborhood to Urban.	No action required.
Athens-Clark County MSA					
130590002	Athens	Clarke	6/12/2023	Samplers meet siting criteria. PM spatial scale was changed from Neighborhood to Urban.	No action required.
Macon-Bibb County, MSA					
130210007	Macon-Allied	Bibb	7/27/2023	Samplers meet siting criteria.	No action required.
130210012	Macon-Forestry	Bibb	11/30/2023	Samplers meet siting criteria. PM monitor spatial scale was changed from Neighborhood to Urban.	Shelter replaced February 2024.

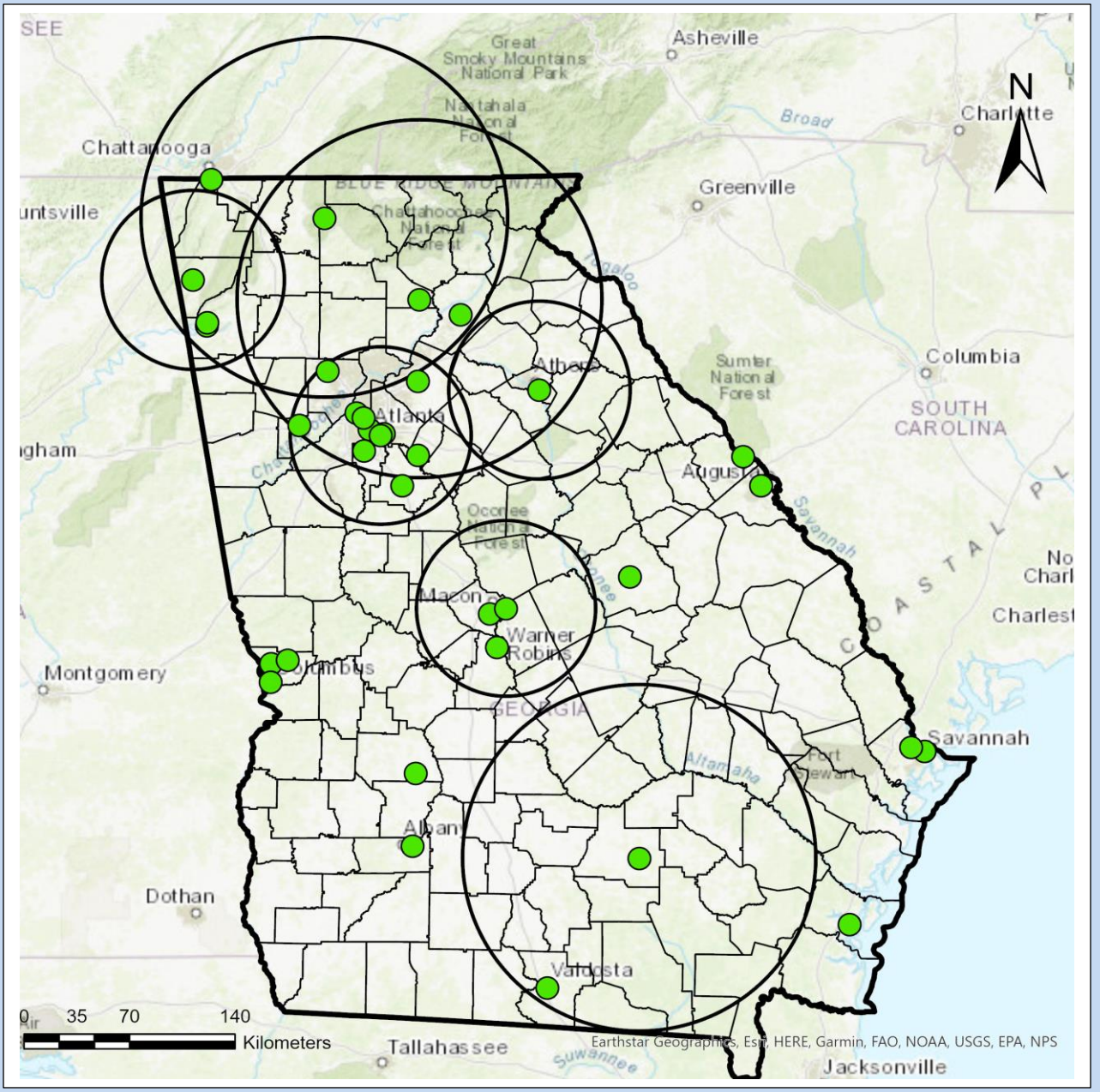
SITE ID	COMMON NAME	COUNTY	SITE EVALUATION DATE	COMMENTS	ACTION TAKEN
Columbus MSA					
132150008	Columbus-Airport	Muscogee	8/2/2023	Samplers meet siting criteria.	No action required.
132150012	Columbus-Baker	Muscogee	2/22/2024	Samplers meet siting criteria. Spatial scale for PM monitors was changed from Neighborhood to Urban.	No action required.
132151003	Columbus-Crime Lab	Muscogee	1/30/2024	Samplers meet siting criteria.	No action required.
Savannah MSA					
130510021	Savannah - E. President	Chatham	6/13/2023	Samplers meet siting criteria.	No action required.
130511002	Savannah – L&A	Chatham	5/25/2023	Samplers meet siting criteria.	No action required.
Augusta MSA					
130730001	Evans	Columbia	8/3/2023	Samplers meet siting criteria.	No action required.
132450091	Augusta	Richmond	8/9/2023	Samplers meet siting criteria. Spatial scale for PM monitors was changed from Neighborhood to Urban.	No action required.
Atlanta-Sandy Springs-Alpharetta MSA					
130630091	Forest Park	Clayton	3/14/2024	Samplers meet siting criteria. Spatial scale for PM monitors was changed from Neighborhood to Urban.	No action required.
130670003	Kennesaw	Cobb	11/6/2023	Samplers meet siting criteria.	No action required.
130850001	Dawsonville	Dawson	10/17/2023	Samplers meet siting criteria.	No action required.

SITE ID	COMMON NAME	COUNTY	SITE EVALUATION DATE	COMMENTS	ACTION TAKEN
130890002	South DeKalb	DeKalb	11/30/2023	Samplers meet siting criteria. Spatial scale was changed from Neighborhood to Urban.	No action required.
130890003	NR-285	DeKalb	5/18/2023	Samplers meet siting criteria.	No action required.
130970004	Douglasville	Douglas	2/26/2024	Samplers meet siting criteria.	No action required.
131210039	Fire Station #8	Fulton	7/31/2023	Samplers meet siting criteria.	No action required.
131210055	United Ave.	Fulton	3/2/2023	Samplers meet siting criteria. Spatial scale was changed from Neighborhood to Urban.	No action required.
131210056	NR-GA Tech	Fulton	5/4/2023	Samplers meet siting criteria. The magnolia tree limb to the NE may eventually have a slight effect on the monitoring path. The met tower is obstructed to the west by trees but the path toward I-75 east, south, and north is not. 270 degrees of unobstructed flow.	No action required at time of site evaluation.
131210057	Empire Blvd	Fulton	In process	Site in process of being established.	Not applicable.
131350002	Gwinnett Tech	Gwinnett	7/26/2023	Samplers meet siting criteria. Interpolated distance of the O_3 inlet from Table E-1 should be at least 180 meters from Hwy 316. The inlet is 162 meters from the highway. Based upon the required distance criteria from Table E-1 of CFR 40, Part 58, Appendix E. Working with EPA to move the O_3 monitor.	After discussions with EPA about the ozone monitor's spatial scale, GA AAMP is planning to move the site.
131510002	McDonough	Henry	3/15/2023	Samplers meet siting criteria.	No action required.
132470001	Conyers	Rockdale	8/16/2023	Samplers meet siting criteria.	No action required.
Chattanooga Tennessee-Georgia MSA					
132950004	Rossville-Williams St.	Walker	5/2/2023	Samplers meet siting criteria.	No action required.
Not in an MSA					
130550001	Summerville	Chattooga	5/17/2023	Samplers meet siting criteria.	No action required.
130690002	General Coffee	Coffee	12/12/2023	Samplers meet siting criteria.	No action required.
132611001	Leslie	Sumter	3/2/2023	Samplers meet siting criteria.	No action required.
133030001	Sandersville	Washington	5/31/2023	Samplers meet siting criteria.	No action required.

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

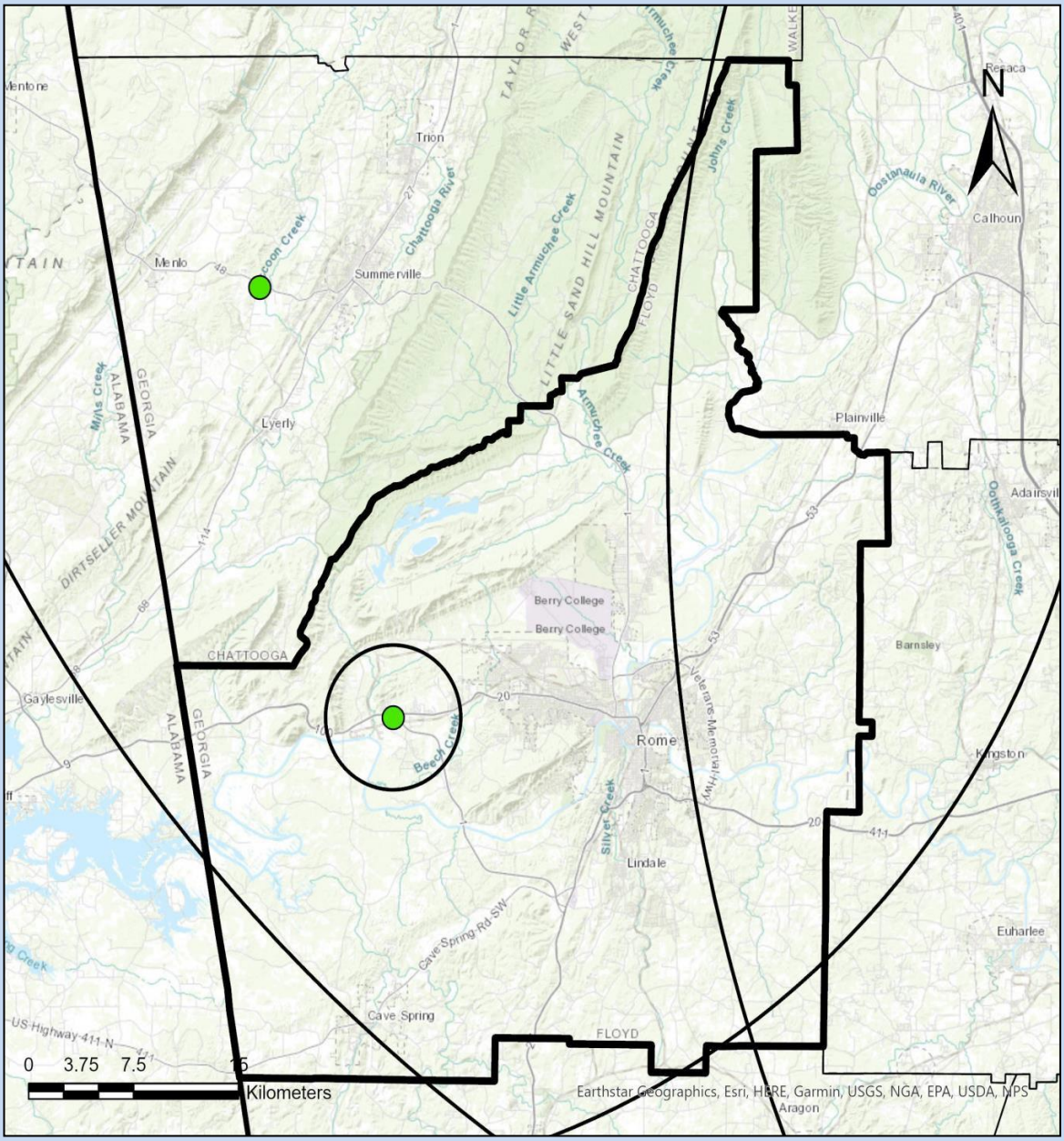
Georgia Department of Natural Resources Environmental Protection Division

Spatial Scales of GA AAMP's Ambient Air Monitors



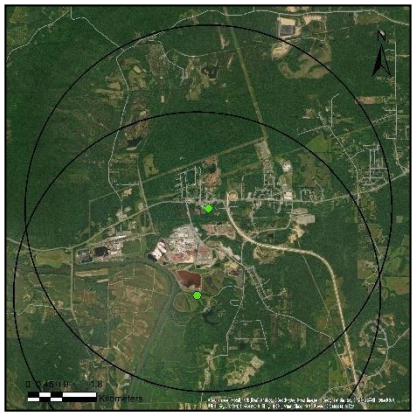
Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

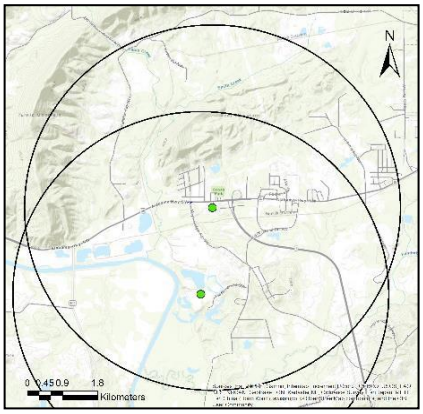
Rome MSA



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

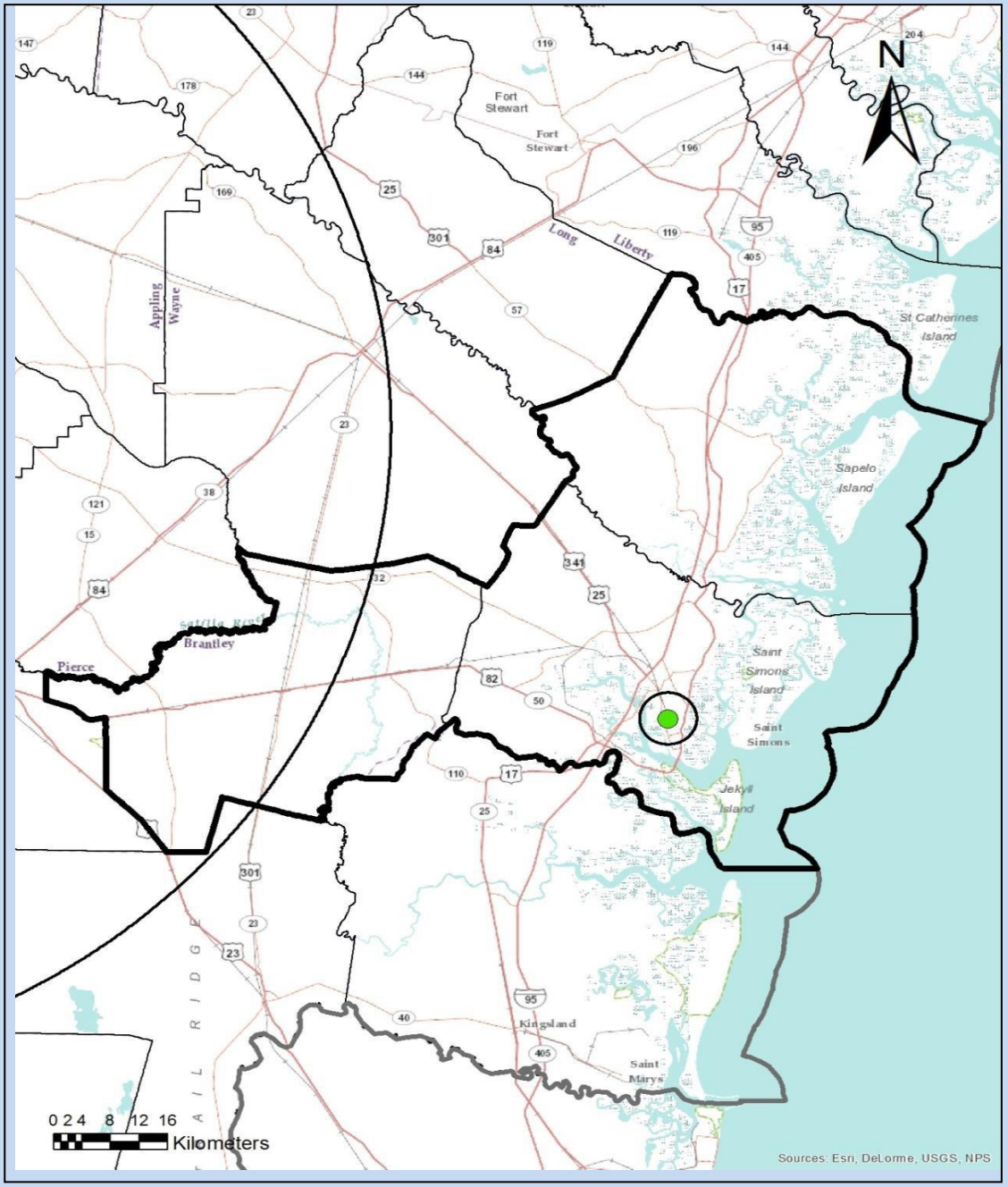
North South East West

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	Urban	3/24/09*

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

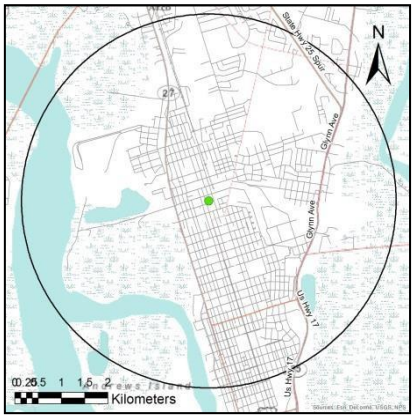
GA AAMP's plans for this site: Continue monitoring; wind direction and wind speed monitors should be added to this site within the next year; Spatial scale was changed from neighborhood to urban for the continuous $PM_{2.5}$ monitor

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: Glynn Learning Center, 2900 Albany Street, Brunswick, Glynn County, Georgia 31520

Established: 1/1/87

Latitude/Longitude: N31.169611/W-81.495194

Elevation: 19.4 meters

Area Represented: Brunswick MSA

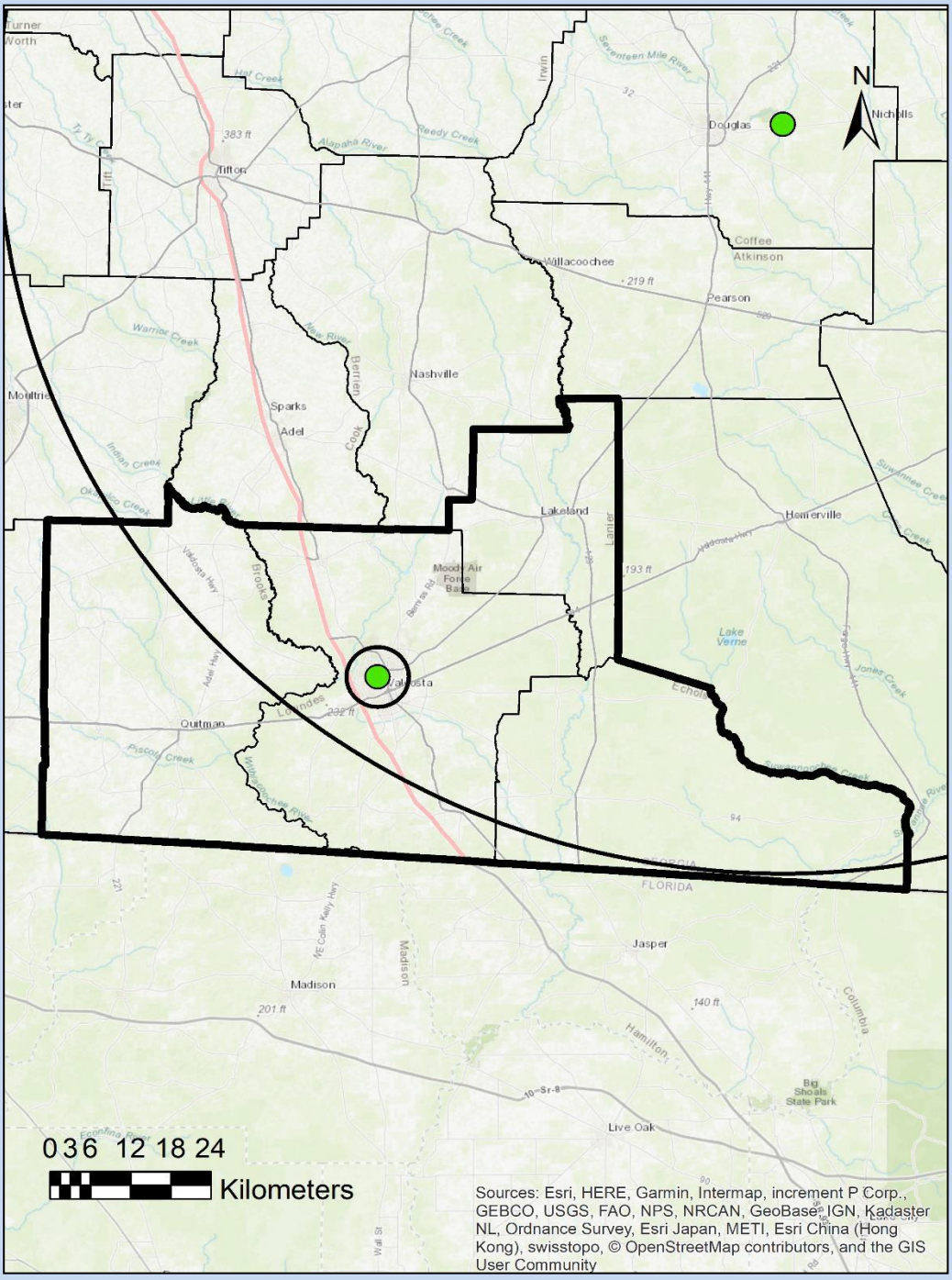
Site History: Established as SO_2 site

North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure	Every 3 days	4.9 m	Urban	8/31/95
$PM_{2.5}$	Population Exposure	Continuous	4.9 m	Urban	10/21/21
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

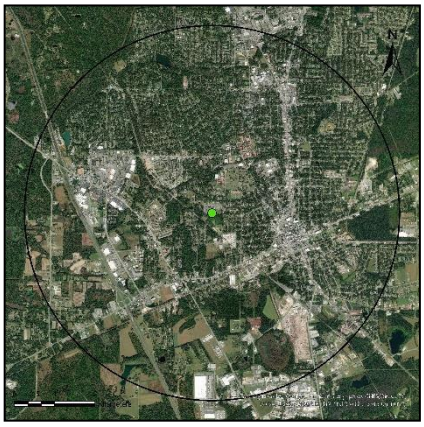
GA AAMP's plans for this site: Continue monitoring; running FEM continuous $PM_{2.5}$ T640 since 10/21/2021; GA AAMP moved to a new shelter in June 2023; Spatial scale was changed from neighborhood to urban for the $PM_{2.5}$ monitors

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: 821 W Gordon Street, Lowndes County, Georgia 31602

Site Established: 12/17/99

Latitude/Longitude: N30.836577/W-83.294719

Elevation: 55.0 meters

Area Represented: Valdosta MSA

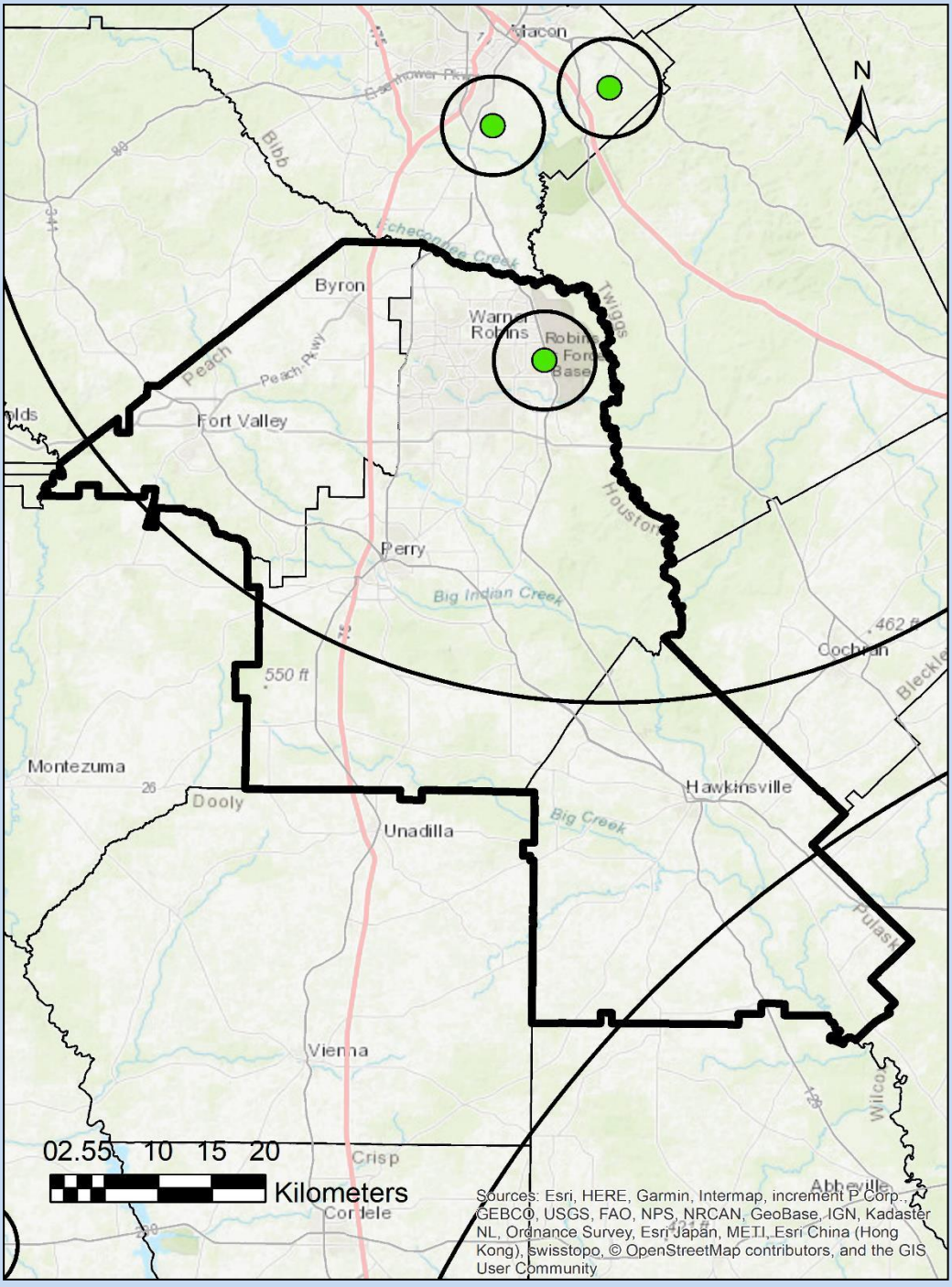
History: Established as $PM_{2.5}$ site

North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure	Every 3 days	2.8 m	Neighborhood	1/1/00
$PM_{2.5}$	Population Exposure	Continuous	3.1 m	Neighborhood	1/1/08

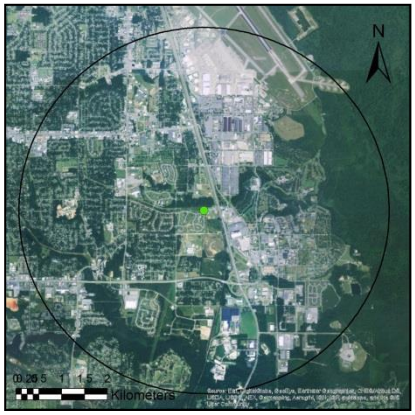
GA AAMP's plans for this site: Continue monitoring; running continuous $PM_{2.5}$ monitor as FEM as of 10/22/20

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

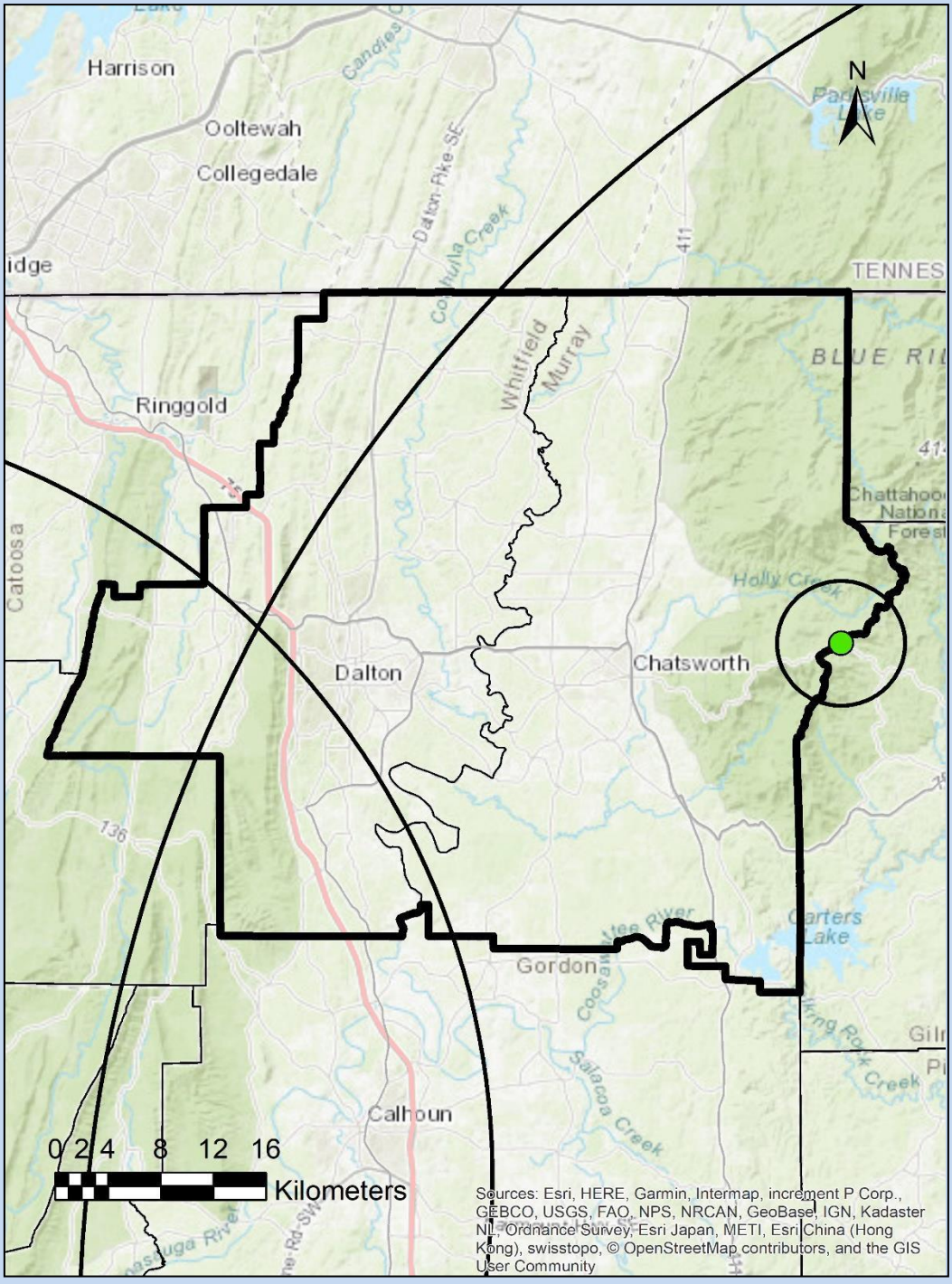
Site History: Established as $PM_{2.5}$ site

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

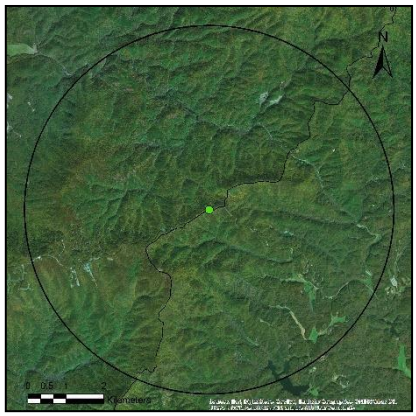
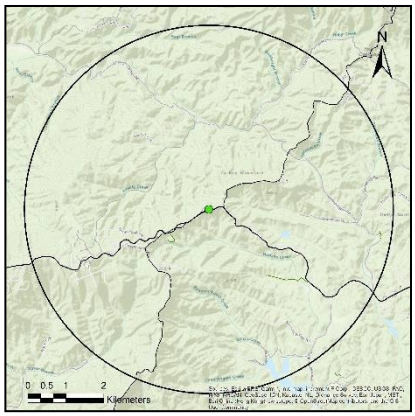
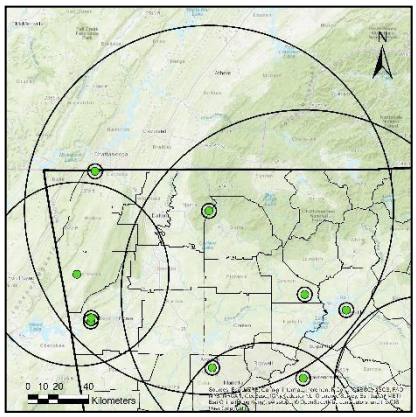
GA AAMP's plans for this site: Continue monitoring; running continuous $PM_{2.5}$ monitor as FEM as of 3/7/2018

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

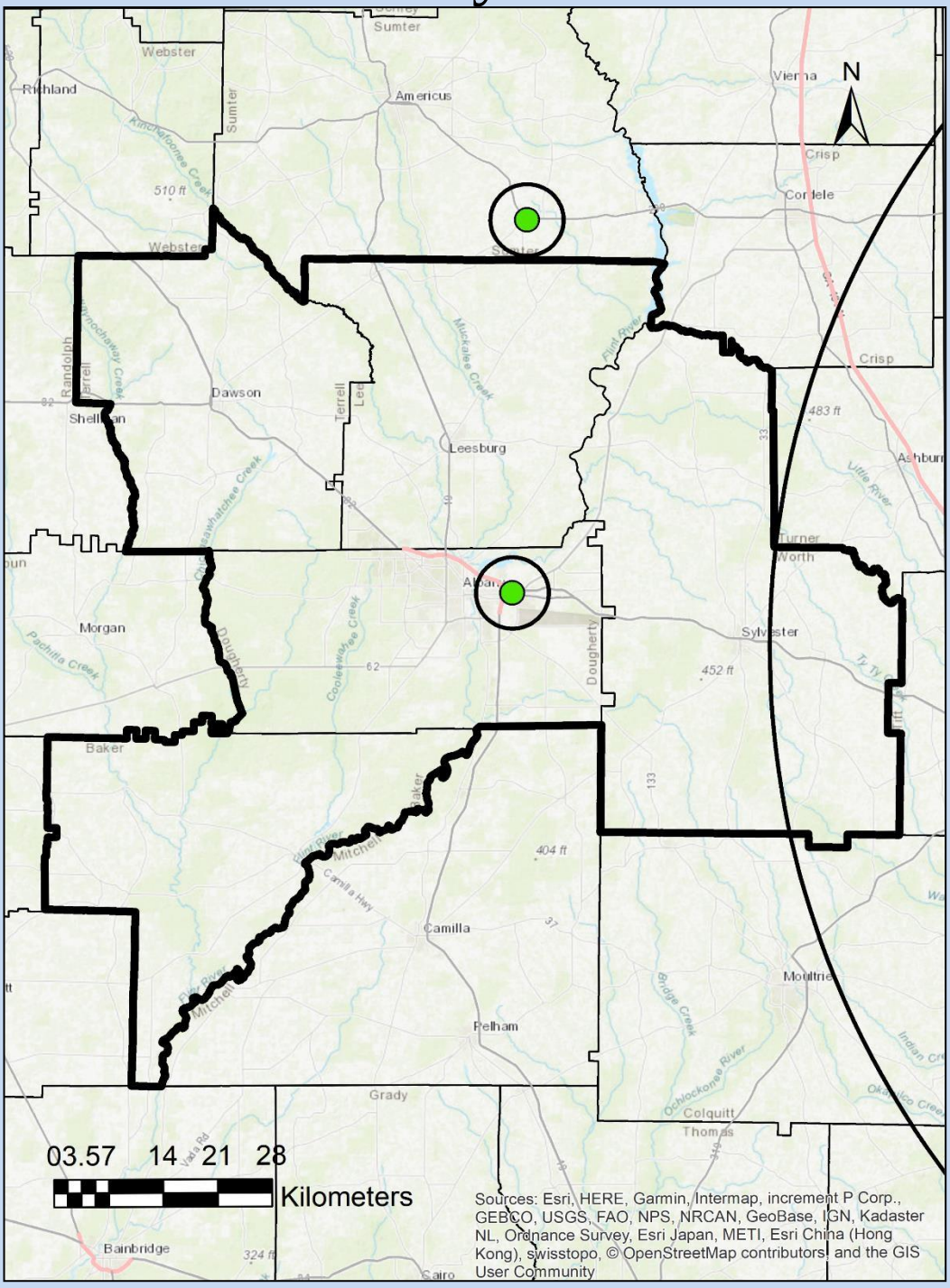
Site History: Established as O_3 site

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



03.57 14 21 28 Kilometers

Radius of Circles on Map

Micro Scale: up to 100m

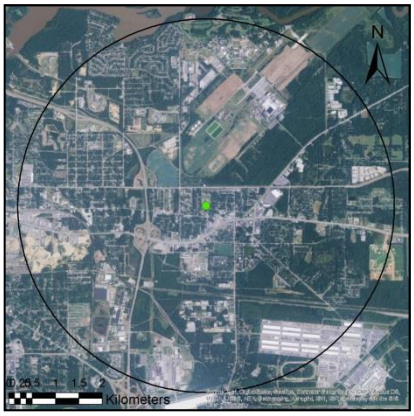
Middle Scale: up to 0.5km

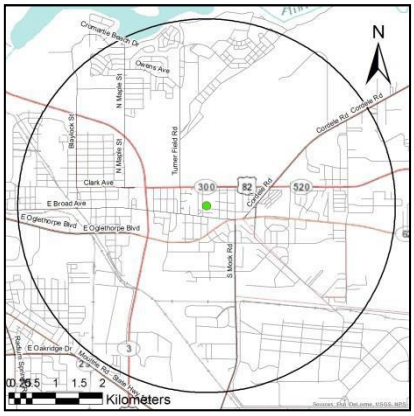
Neighborhood Scale: up to 4.0km

Urban Scale: up to 50km

Regional Scale: up to 100s of km (100km shown)

Albany





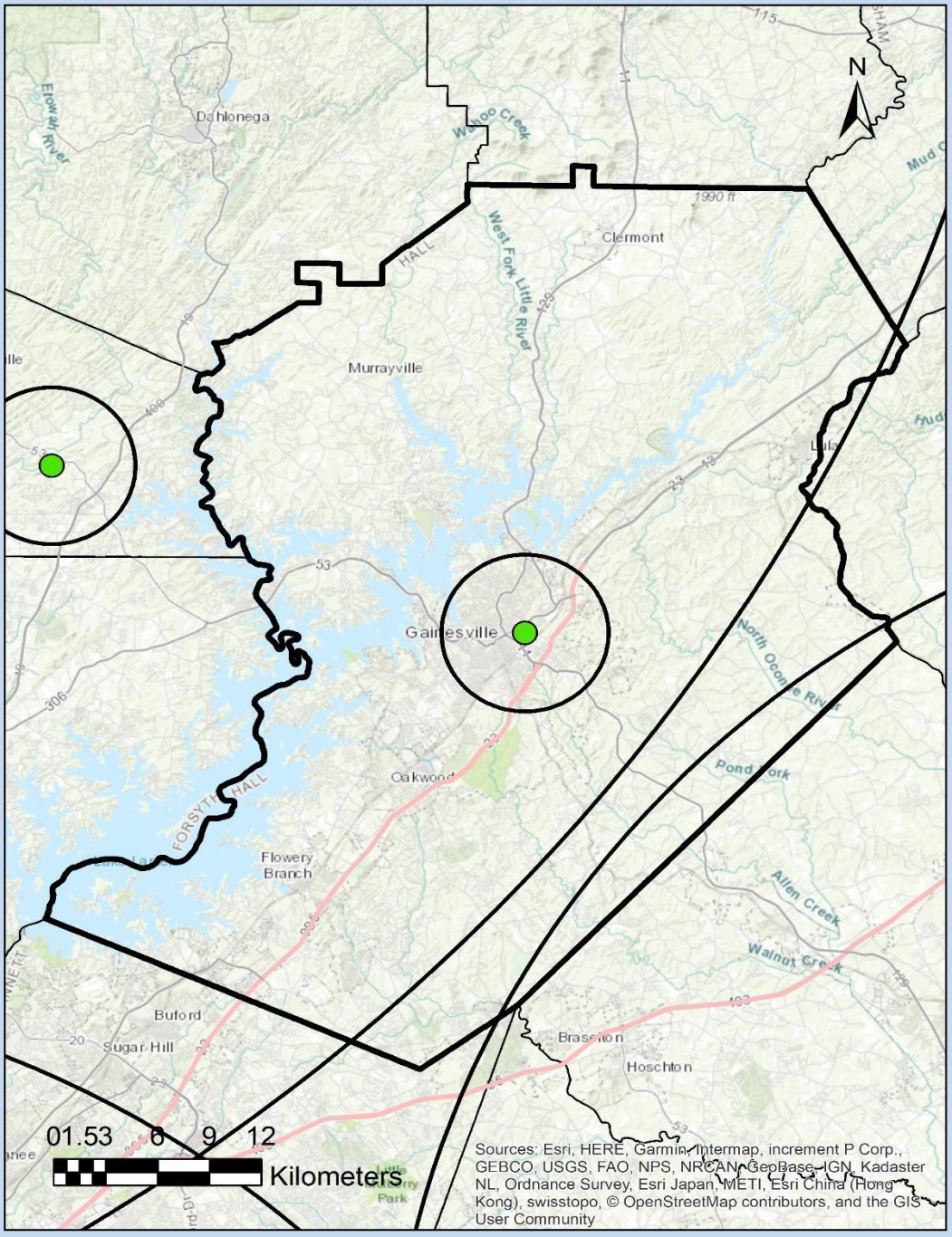
AQS ID: 130950007
Address: Turner Elementary School, 2001 Leonard Avenue, Albany, Dougherty County, Georgia 31705
Site Established: 7/31/91
Latitude/Longitude: N31.57757/W-84.10087
Elevation: 62 meters
Area Represented: Albany MSA Site
History: Established as TSP site

North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure	Daily	2.7 m	Urban	2/2/99
$PM_{2.5}$	Quality Assurance	Every 3 days	2.7 m	Urban	1/10/13
$PM_{2.5}$	Population Exposure	Continuous	2.9 m	Urban	5/11/08

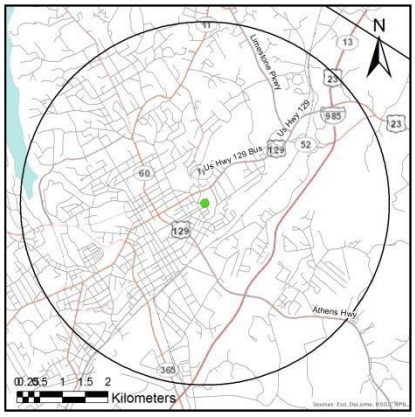
GA AAMP's plans for this site: Continue monitoring; running continuous monitor as FEM as of 1/10/13; beginning with August 1, 2023 data, continuous $PM_{2.5}$ monitor is non-NAAQS for two years; GA AAMP relocated the sampling station to ground level as of March 2024; as of January 1, 2025, the continuous FEM $PM_{2.5}$ T640 sampler may be changed to a NAAQS comparable, SLAMS monitor; after evaluation of bias adjustment on the continuous FEM $PM_{2.5}$ T640 samplers, GA AAMP may plan to change the daily FRM sampler to 1 in 3 sampling schedule as of January 1, 2025; the collocated FRM sampler may change to 1 in 12 sampling schedule as of January 1, 2025

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
Regional Scale: up to 100s of km (100km shown)

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

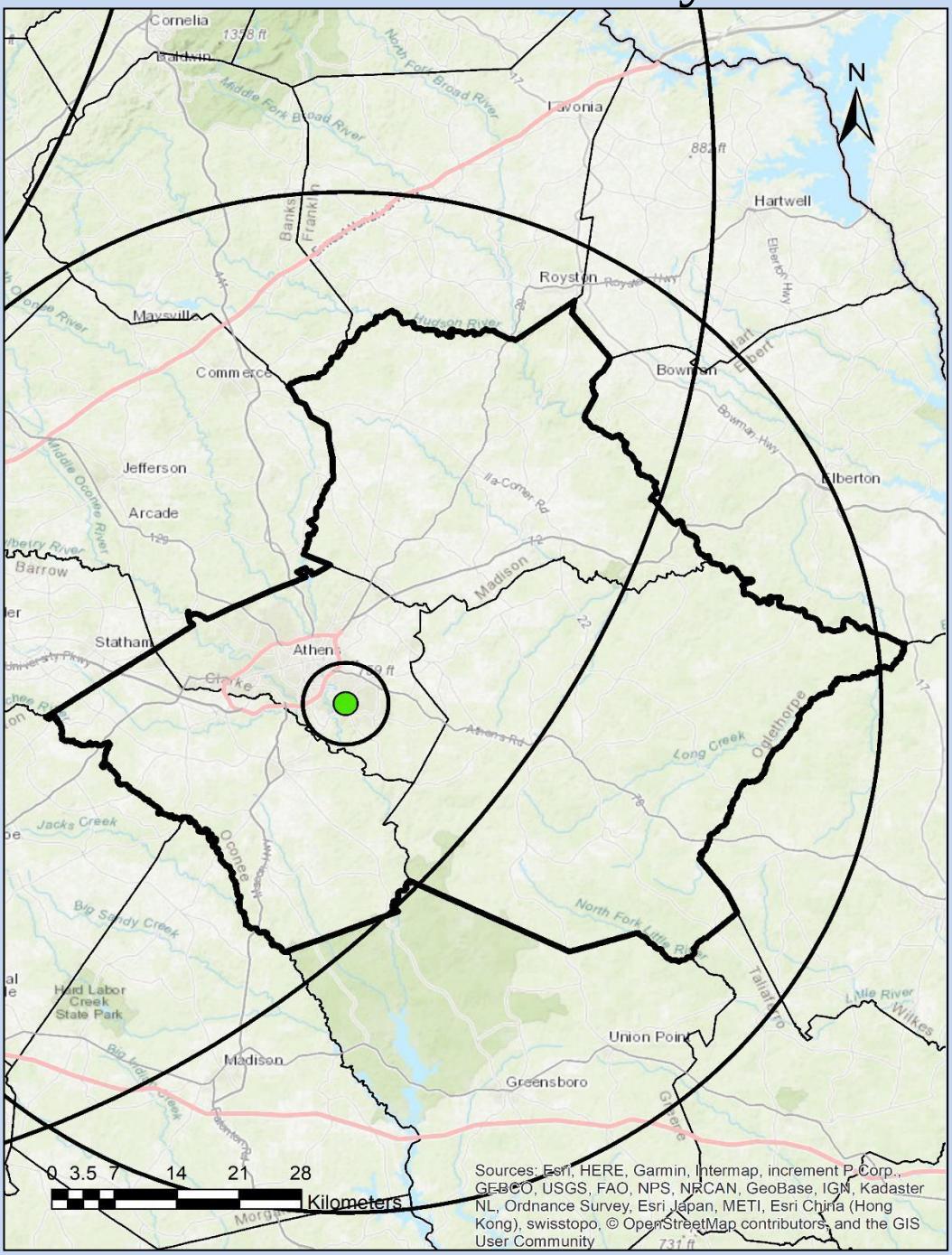
North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure	Daily	2.9 m	Urban	2/14/99*
$PM_{2.5}$	Population Exposure	Continuous	2.9 m	Urban	1/1/08

*Sampler inactive from 11/1/18 until reopened 3/24/23

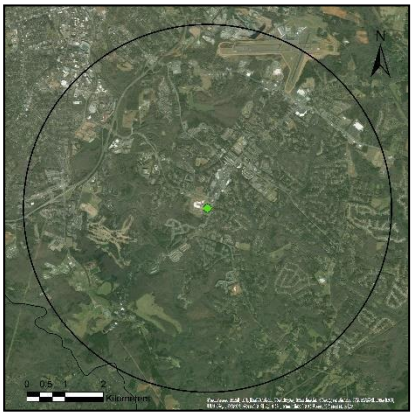
GA AAMP's plans for this site: Continue monitoring; running continuous monitor as FEM as of 10/3/2017; FRM monitor was inactive from 11/1/2018 to 3/24/2023 when daily sampling was reinstated to ensure redundancy in the Gainesville MSA and avoid completeness issues; Spatial scale was changed from neighborhood to urban for the $PM_{2.5}$ monitors: after evaluation of bias adjustment on the continuous FEM $PM_{2.5}$ T640 samplers, GA AAMP may plan to change the daily FRM sampler to 1 in 3 sampling schedule as of January 1, 2025

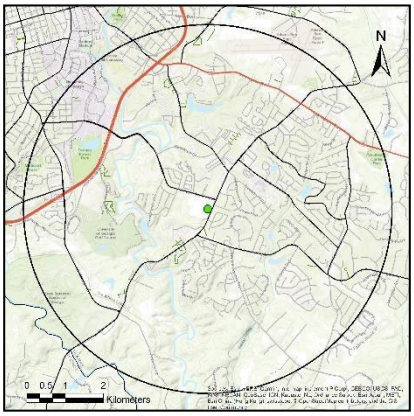
Athens-Clarke County MSA

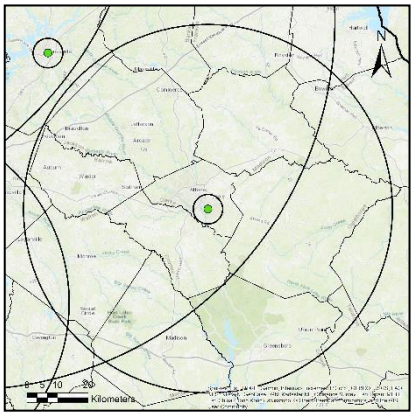


Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

Athens







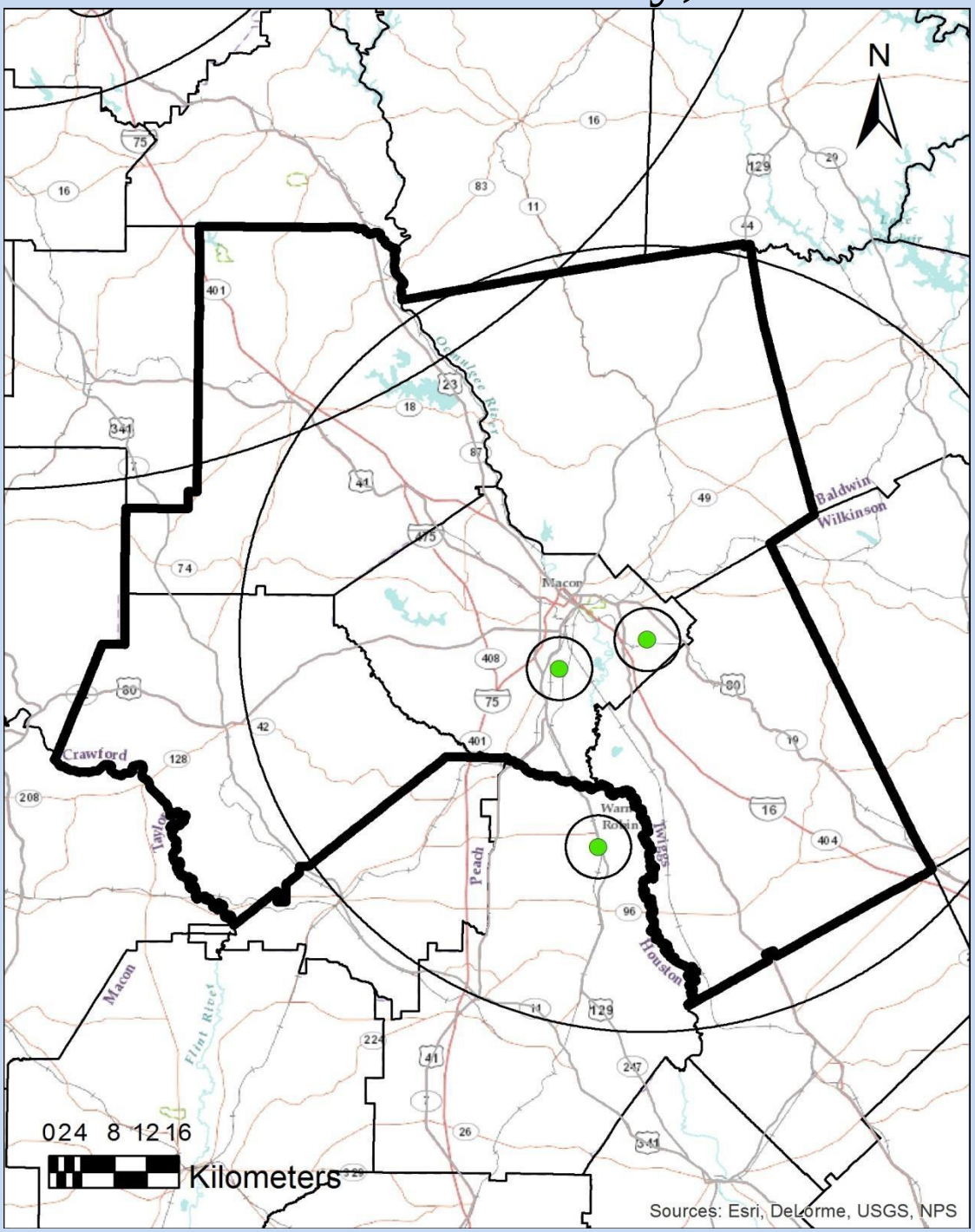
AQS ID: 130590002
Address: 2350 Barnett Shoals Road, Athens, Clarke County, Georgia 30605
Site Established: 3/1/02
Latitude/Longitude: N33.9180/W-83.3445
Elevation: 220 meters
Area Represented: Athens-Clarke County MSA
Site History: Established as O_3 and PM site

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	Urban	8/1/04
$PM_{2.5}$	Quality Assurance	Continuous	4.4 m	Urban	2/15/19

GA AAMP's plans for this site: Continue monitoring; running continuous $PM_{2.5}$ monitor as FEM as of 4/1/2018; on February 15, 2019, GA AAMP added a second FEM Teledyne T640 Continuous $PM_{2.5}$ sampler to satisfy collocation requirements

Macon-Bibb 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)

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-Bibb County MSA

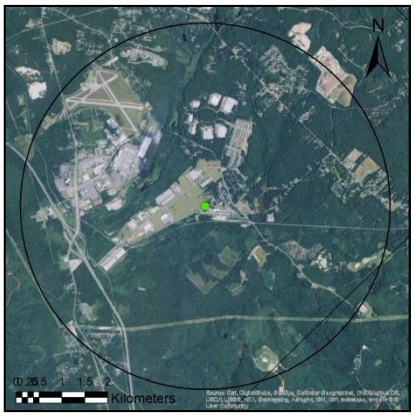
Site History: Established as TSP site

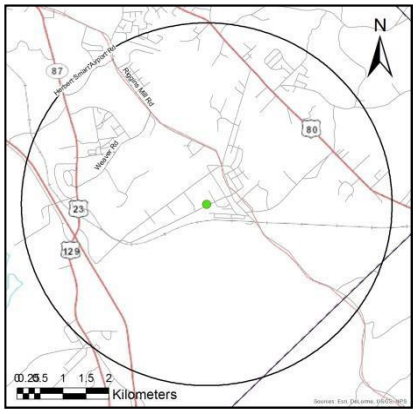
North South East West

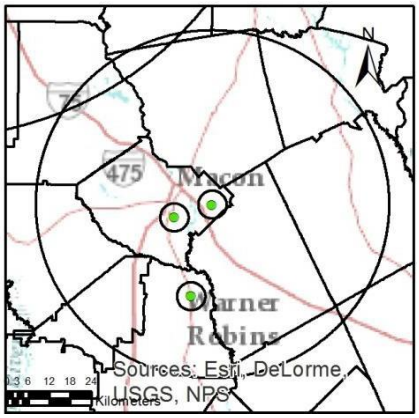
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$ Speciation	Population Exposure	Every 6 days	2.5 m	Neighborhood	3/1/02
$PM_{2.5}$	Population Exposure	Every 3 days	2.5 m	Neighborhood	2/2/99
$PM_{2.5}$	Quality Assurance	Every 12 days	2.5 m	Neighborhood	2/2/99
$PM_{2.5}$	Population Exposure	Continuous	2.4 m	Neighborhood	6/5/23

GA AAMP's plans for this site: Continue monitoring; GA AAMP installed a continuous $PM_{2.5}$ non-NAAQS sampler with the EPA American Rescue Plan funds on June 5, 2023 and the monitor will be non-NAAQS for two years; as of January 1, 2025, the continuous FEM $PM_{2.5}$ T640 sampler may be changed to a NAAQS comparable, SLAMS monitor; the collocated $PM_{2.5}$ sampler may be shut down as of December 31, 2024

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-Bibb County MSA

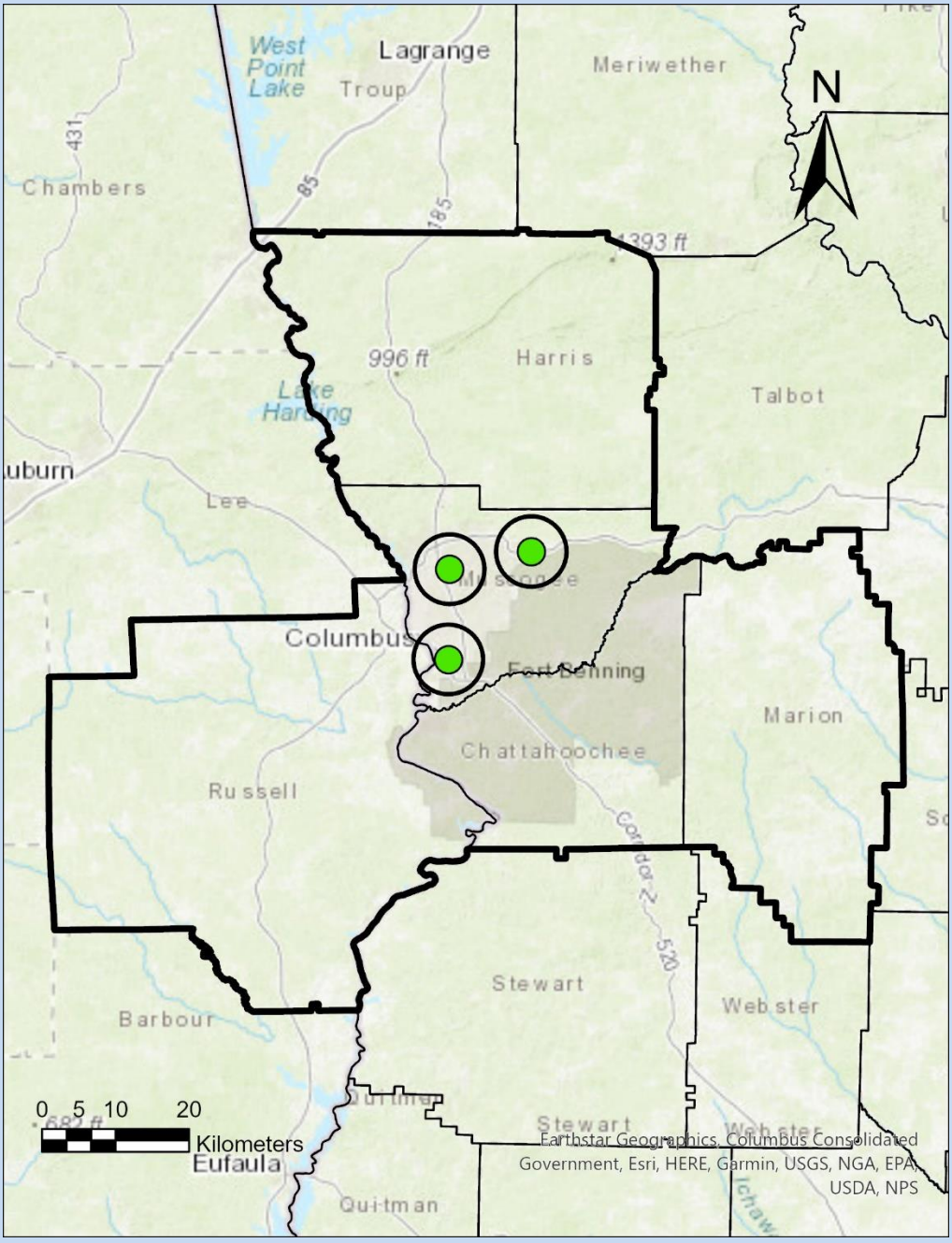
Site History: Established as O_3 and SO_2 site

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	Urban	2/1/99
$PM_{2.5}$	Population Exposure	Continuous	3.5 m	Urban	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

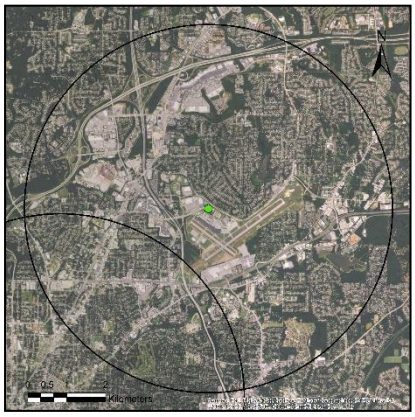
GA AAMP's plans for this site: Continue monitoring; running continuous $PM_{2.5}$ monitor as FEM as of 10/1/2017; a new shelter was installed February 2024; Spatial scale for $PM_{2.5}$ monitors was changed from neighborhood to urban

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-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

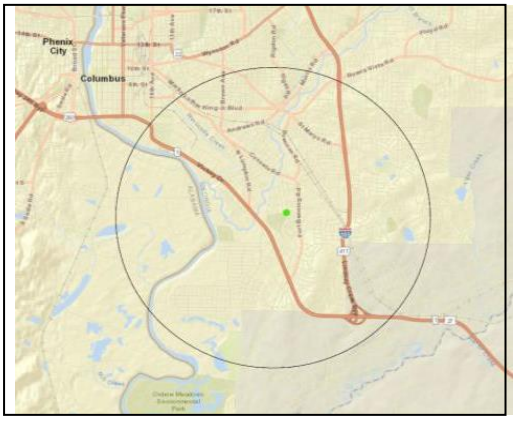
Site History: Established as O_3 site

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	Daily	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; GA AAMP installed a continuous FEM $PM_{2.5}$ T640 sampler to replace the continuous non-FEM $PM_{2.5}$ TEOM on November 23, 2021; beginning with August 1, 2023 data, continuous $PM_{2.5}$ monitor is non-NAAQS for two years; the continuous FEM $PM_{2.5}$ monitor may be NAAQS comparable as of January 1, 2025; the FRM $PM_{2.5}$ sampler may be shut down as of December 31, 2024

Columbus-Baker



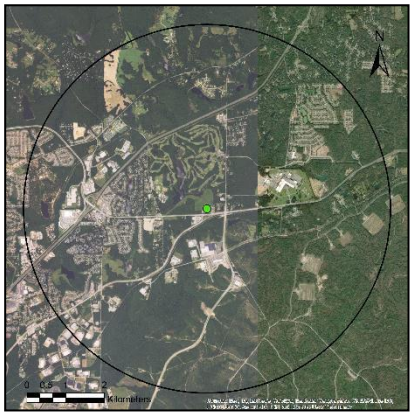
AQS ID: 132150012
Address: Baker Middle School, 1215 Benning Dr, Columbus, Muscogee County, Georgia 31903
Site Established: 3/1/21
Latitude/Longitude: N32.4274/W-84.9457
Elevation: 85 meters
Area Represented: Columbus Georgia-Alabama MSA
Site History: Established as $PM_{2.5}$ site

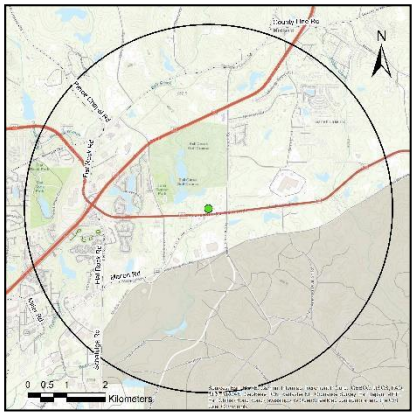
North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure	Every 3 days	2.7 m	Urban	3/1/21
$PM_{2.5}$ Speciation	Population Exposure	Every 6 days	2.5 m	Neighborhood	3/1/21
$PM_{2.5}$	Population Exposure	Continuous	2.4 m	Urban	6/6/23

GA AAMP's plans for this site: Continue monitoring; site moved from Columbus-Cusseta location and historical data can be found with AQS ID 13-215-0011; GA AAMP installed a continuous $PM_{2.5}$ non-NAAQS sampler with the EPA American Rescue Plan funds on June 6, 2023 and the monitor will be non-NAAQS for two years; as of January 1, 2025, the continuous FEM $PM_{2.5}$ T640 sampler may be changed to a NAAQS comparable, SLAMS monitor; spatial scale was changed from neighborhood to urban for the $PM_{2.5}$ monitors

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

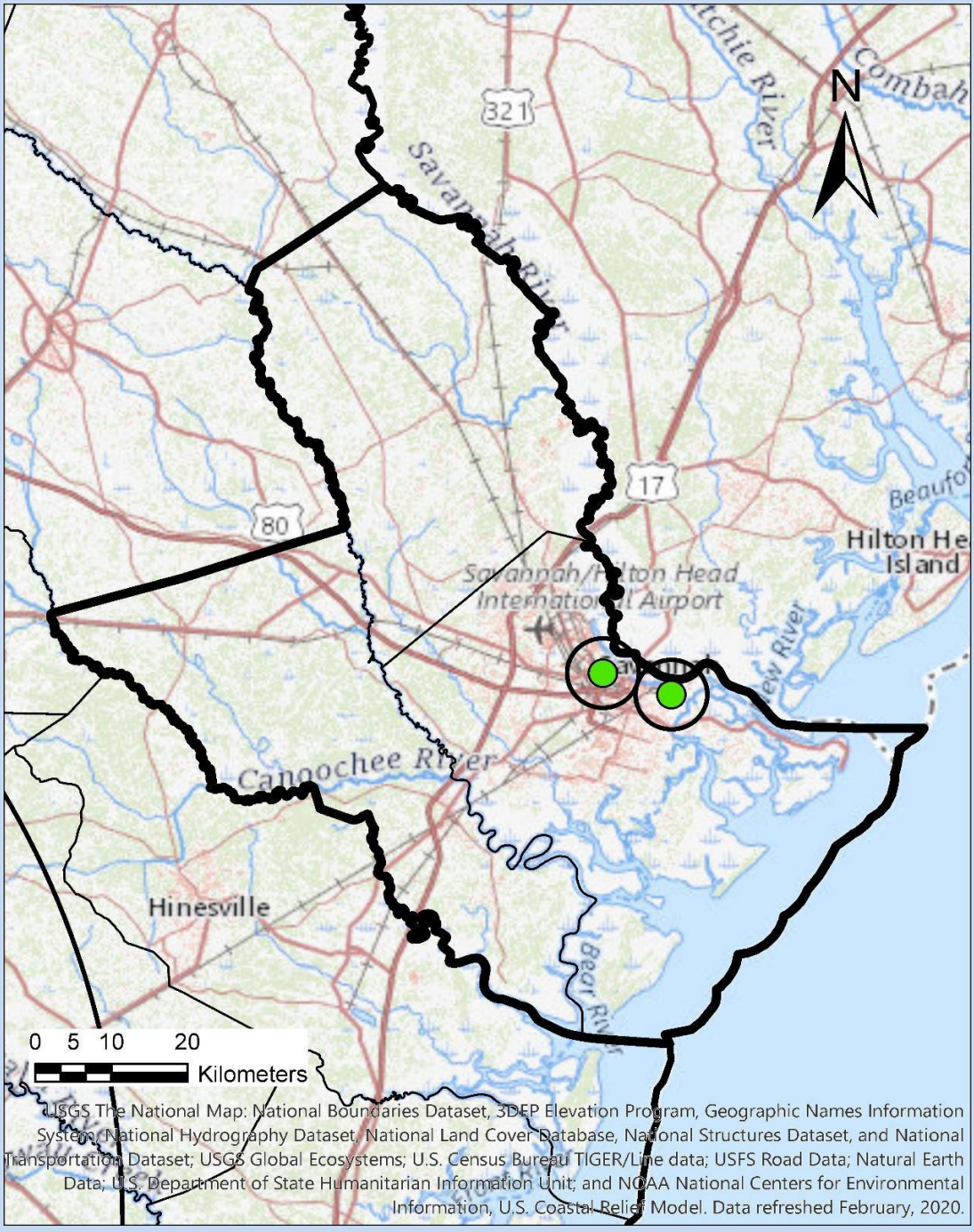
Site History: Established as O_3 site

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

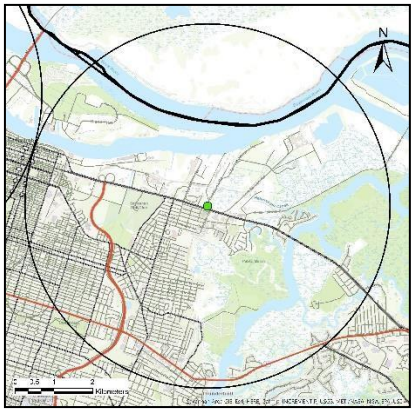
GA AAMP's plans for this site: Continue monitoring

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

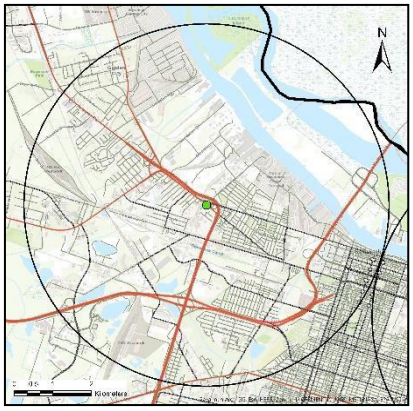
Site History: Established as SO_2 and H_2S site

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- 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

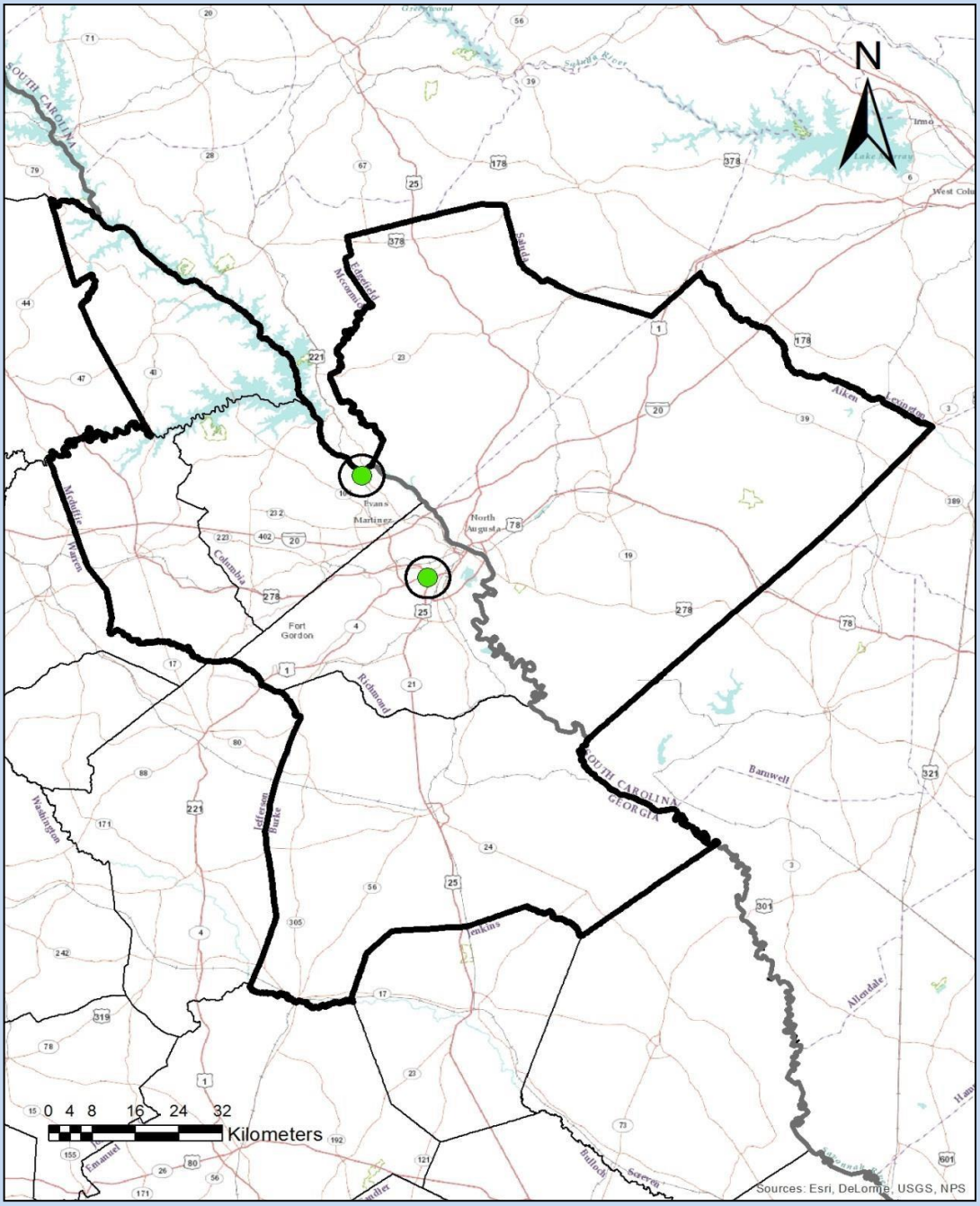
Site History: Established as TSP site

North South Southeast 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	Daily	4.75 m	Neighborhood	3/13/23
$PM_{2.5}$	Population Exposure	Continuous	4.5 m	Neighborhood	10/1/03

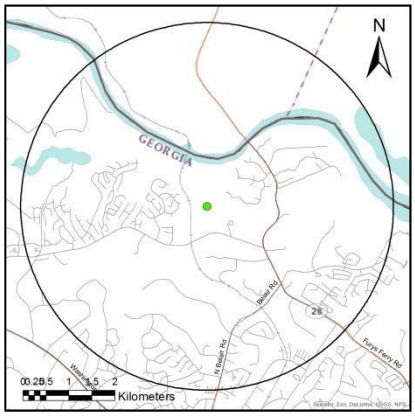
GA AAMP's plans for this site: Continue monitoring; running continuous $PM_{2.5}$ sampler as FEM as of 11/7/2017 to ensure redundancy in the Savannah MSA and avoid data completeness issues; after evaluation of bias adjustment on the continuous FEM $PM_{2.5}$ T640 samplers, GA AAMP may plan to change the daily FRM sampler to 1 in 3 sampling schedule as of January 1, 2025.

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

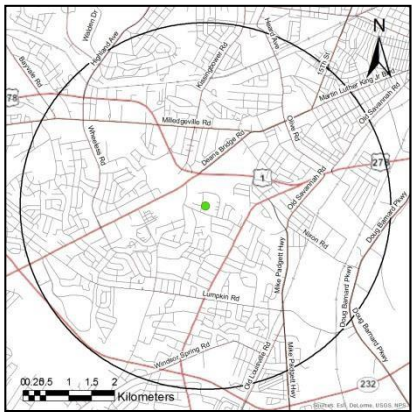
East

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

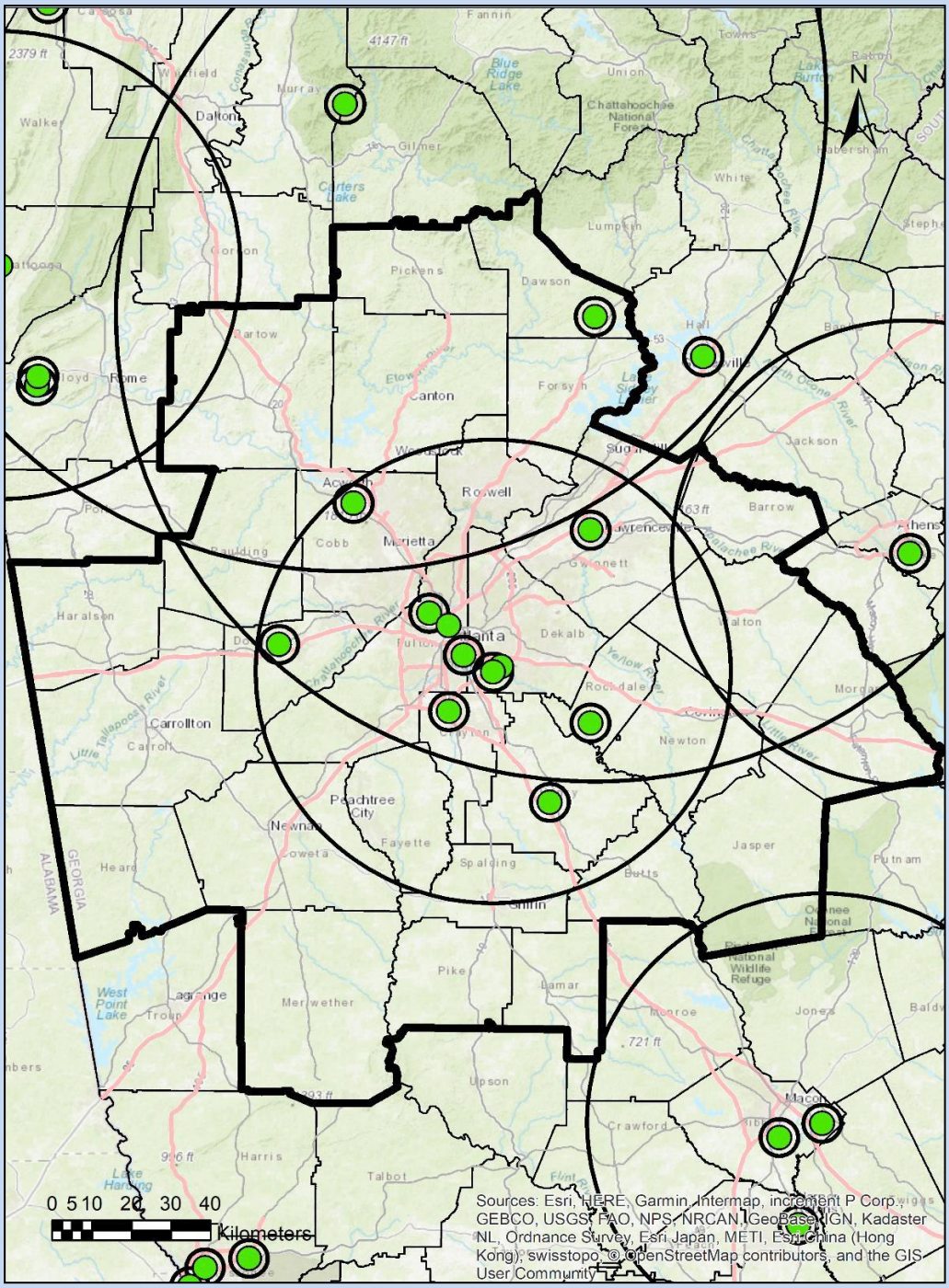
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O_3	Population Exposure	Continuous (Mar-Oct)	4.5 m	Neighborhood	4/27/89
PM_{10}	Population Exposure	Continuous	3.5 m	Urban	7/13/21
$PM_{2.5}$ Speciation	Population Exposure	Every 6 days	2.5 m	Neighborhood	3/2/02
$PM_{2.5}$	Population Exposure	Continuous	4.5 m	Urban	10/1/03
$PM_{2.5}$	Population Exposure	Daily	2.5 m	Urban	1/1/22
$PM_{2.5}$	Quality Assurance	Every 3 days	2.5 m	Urban	9/20/22
SO_2	Population Exposure	Continuous	4.5 m	Neighborhood	1/14/13

Augusta (continued)

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
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
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

GA AAMP's plans for this site: GA AAMP's plans for this site: Continue monitoring; running continuous $PM_{2.5}$ monitor as FEM as of 10/1/2017; beginning with August 1, 2023 data, continuous $PM_{2.5}$ monitor is non-NAAQS for two years; GA AAMP replaced the continuous PM_{10} TEOM and continuous $PM_{2.5}$ T640 with continuous T640X, which reads $PM_{2.5}$, PM_{10}, and PMcoarse on July 13, 2021; the $PM_{2.5}$ speciation sampling was temporarily suspended from March 23, 2021 until June 9, 2021; the integrated $PM_{2.5}$ FRM monitor was shut down from 2018-2021, and reopened January 1, 2022 to meet collocation requirements; spatial scale was changed from neighborhood to urban for the $PM_{2.5}$ and PM_{10} monitors, excluding the $PM_{2.5}$ speciation monitor; GA EPD is currently evaluating the siting location of the SO_2 monitor at the Augusta site (13-245-0091) and nearby area; modeling is being conducted by the Planning and Support Program to determine the best location for the monitor; after evaluation of bias adjustment on the continuous FEM $PM_{2.5}$ T640 samplers, GA AAMP may plan to change the continuous FEM $PM_{2.5}$ T640 sampler to a NAAQS comparable, SLAMS monitor as of January 1, 2025; GA AAMP may plan to change the daily FRM sampler to 1 in 3 sampling schedule as of January 1, 2025; the collocated FRM sampler may change to 1 in 12 sampling schedule as of January 1, 2025

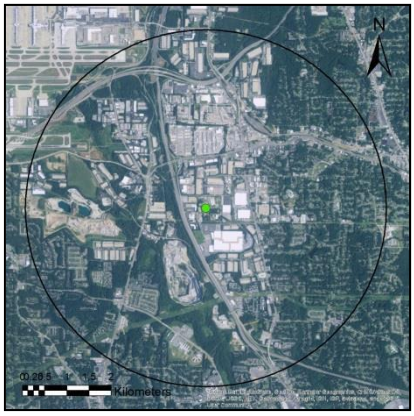
Atlanta-Sandy Springs-Alpharetta MSA

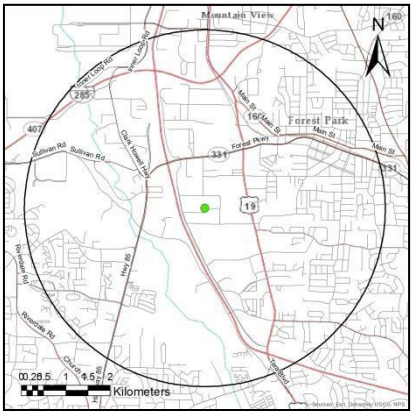


Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km

Regional Scale: up to 100s of km (100km shown)

Forest Park





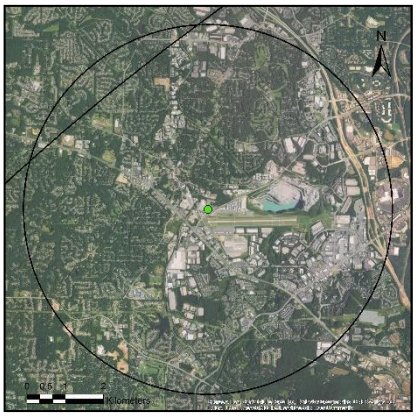
AQS ID: 130630091
Address: 25 Kennedy Drive, Forest Park, Clayton County, Georgia 30297 Site Established: 1/1/78
Latitude/Longitude: N33.6107/W-84.3908
Elevation: 288 meters
Area Represented: Atlanta-Sandy Springs-Alpharetta MSA
Site History: Established as TSP site

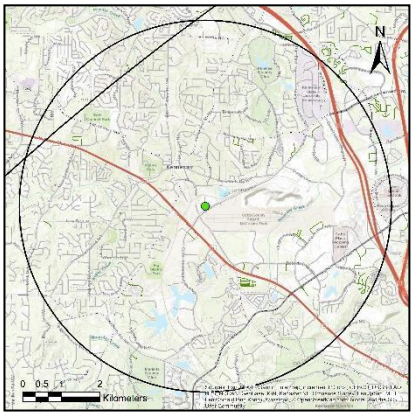
North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure	Continuous	3.1 m	Urban	1/9/99

GA AAMP's plans for this site: Continue monitoring; GA AAMP replaced the FRM $PM_{2.5}$ with a continuous FEM $PM_{2.5}$ T640 sampler on February 20, 2024, and used EPA American Rescue Plan funds for this new sampler; Spatial scale was changed from neighborhood to urban for the $PM_{2.5}$ monitor

Kennesaw





AQS ID: 130670003

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

Site Established: 2/7/99

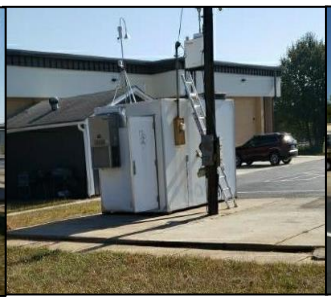
Latitude/Longitude: N34.0153/W-84.6075

Elevation: 317 meters

Area Represented: Atlanta-Sandy Springs-Alpharetta MSA

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

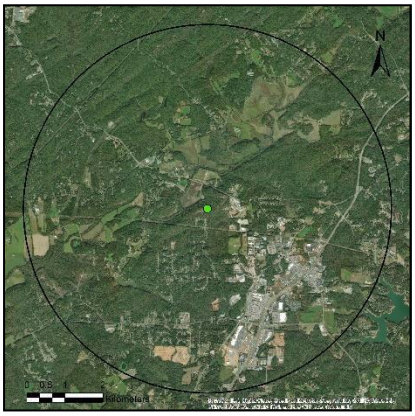
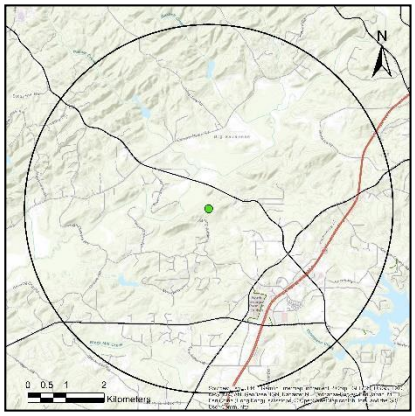
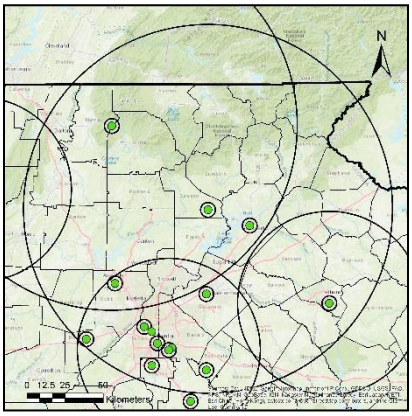
North South East West



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
$PM_{2.5}$	Population Exposure	Continuous	4.1 m	Neighborhood	10/25/2023

GA AAMP's plans for this site: Continue monitoring; GA AAMP installed a continuous $PM_{2.5}$ non-NAAQS T640 sampler with the EPA American Rescue Plan funds on October 25, 2023, and the monitor will be non-NAAQS for two years; the continuous $PM_{2.5}$ T640 sampler may be comparable to the NAAQS as of January 1, 2025; the FRM $PM_{2.5}$ sampler at the may be shut down as of December 31, 2024

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-Alpharetta MSA

Site History: Established as O_3 site

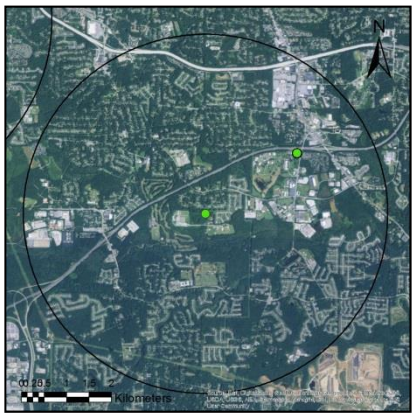
North South East West

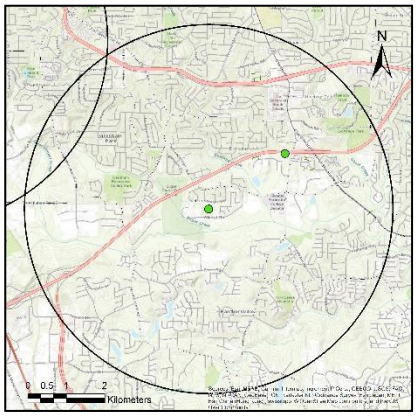


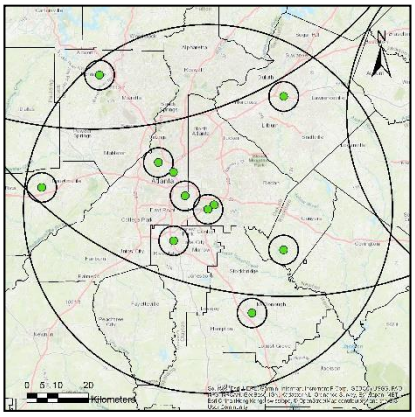

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O_3	Population Exposure	Continuous (Mar-Oct)	4 m	Neighborhood	1/1/85
Wind Speed	General/ Background	Continuous	10 m	Regional	1/1/05
Wind Direction	General/ Background	Continuous	10 m	Regional	1/1/05

GA AAMP's plans for this site: Continue monitoring

South DeKalb







AQS ID: 130890002

Address: 2300-C 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-Alpharetta 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	Daily	2.4 m	Urban	1/22/99
$PM_{2.5}$	Quality Assurance	Every 3 days	2.4 m	Urban	12/20/08
$PM_{2.5}$	Population Exposure	Continuous	4 m	Urban	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	Population Exposure	Continuous	4 m	Neighborhood/ Urban	1/1/74
CO	Population Exposure	Continuous	4 m	Neighborhood	5/19/03

South DeKalb (continued)

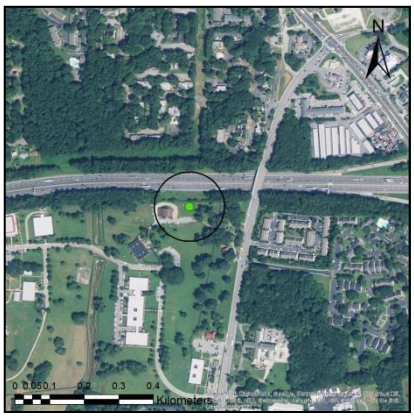
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
NOy	Population Exposure	Continuous	10 m	Neighborhood/ Urban	1/1/98
NO	Population Exposure	Continuous	4 m	Neighborhood/ Urban	4/1/94
NOx	Population Exposure	Continuous	4 m	Neighborhood/ Urban	4/1/94
NO_2	Population 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	Urban	1/1/11
PM_{coarse} Continuous	Population Exposure	Continuous	4 m	Urban	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

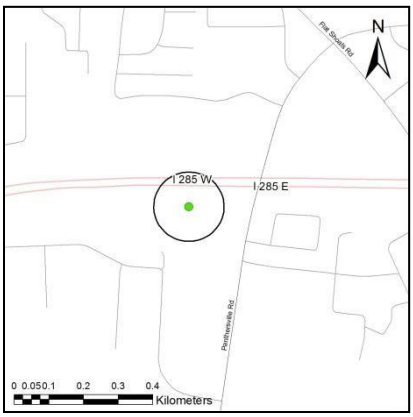
South DeKalb (continued)

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
Barometric Pressure	General/ Background	Continuous	2 m	Neighborhood	6/1/93
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	6/1/93
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
Mixing Layer Height	General/ Background	Continuous	TBD	Neighborhood	TBD

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). 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). GA AAMP replaced both the primary and collocated NATTS high-volume PM_{10} metals samplers with low-volume PM_{10} metals samplers as of April 1, 2022. GA AAMP installed a Markes-Agilent 7890B Gas Chromatograph to fulfill the PAMS requirement for measuring hourly VOCs by June 1, 2021. GA AAMP also installed a direct NO_2 monitor in June 2021 to fulfill PAMS requirements. Spatial scale was changed from neighborhood to urban for all $PM_{2.5}$ and PM_{10} monitors, except the $PM_{2.5}$ speciation monitors; after evaluation of bias adjustment on the continuous FEM $PM_{2.5}$ T640 samplers, GA AAMP may plan to change the daily FRM sampler to 1 in 3 sampling schedule as of January 1, 2025; GA AAMP plans to install a ceilometer within the upcoming year

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-Alpharetta MSA

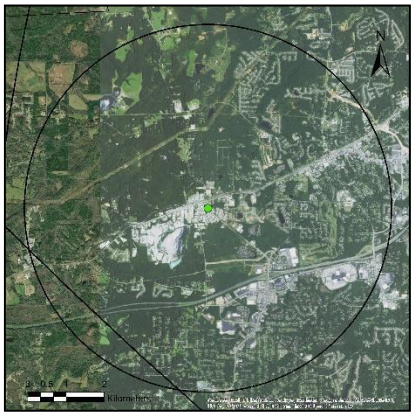
Site History: Established as lead site

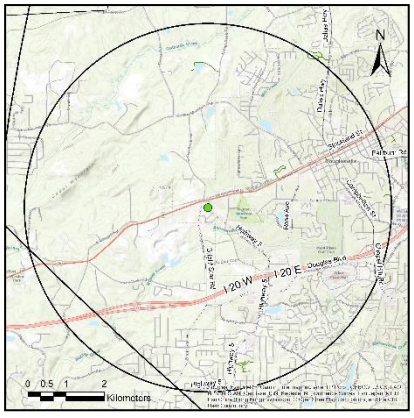
North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
NO_2	Source Oriented	Continuous	3.3 m	Micro	1/1/15
NO	Source Oriented	Continuous	3.3 m	Micro	1/1/15
NOx	Source Oriented	Continuous	3.3 m	Micro	1/1/15
VOCs	Source Oriented	Every 12 days	3.3 m	Micro	3/31/15
$PM_{2.5}$	Source Oriented	Continuous	4.5 m	Micro	3/17/23
Black Carbon	Source Oriented	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); black carbon instrument was replaced with a Met One sampler on 1/1/2022 and was shut down from 1/31/2022 until 3/17/23 and restarted collecting data as of 4/18/2023; the continuous $PM_{2.5}$ monitor is a non-FEM, non-NAAQS TEOM 1405-F; the non-FEM continuous $PM_{2.5}$ TEOM sampler will be shut down as of 6/30/24

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-Alpharetta MSA

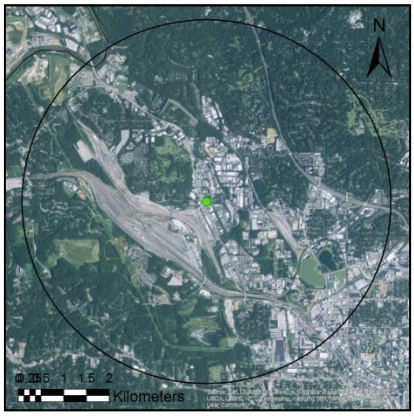
Site History: Established as O_3 site

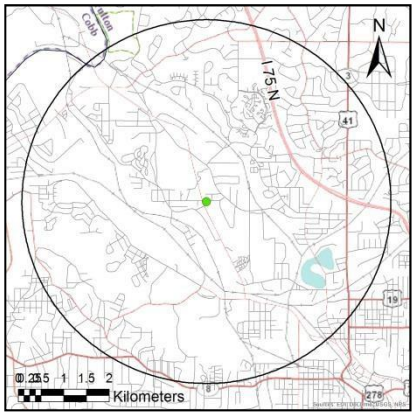
North South East West

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-Alpharetta MSA

Site History: Established as TSP site

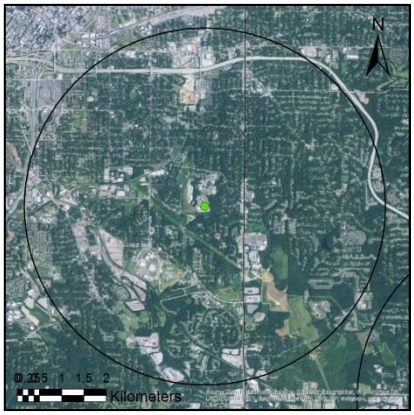
North South East West

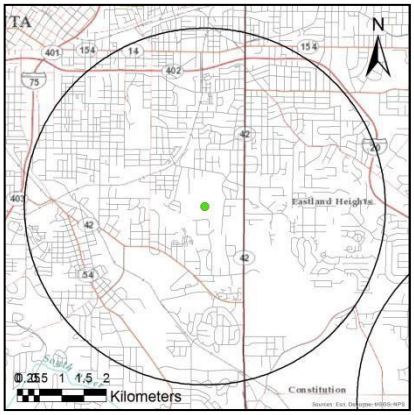
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure	Every 3 days	10 m	Neighborhood	1/21/99*
PM_{10}	Population Exposure	Every 6 days	10 m	Neighborhood	1/1/86**
PM_{10}	Population Exposure/Quality Assurance	Every 12 days	10 m	Neighborhood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





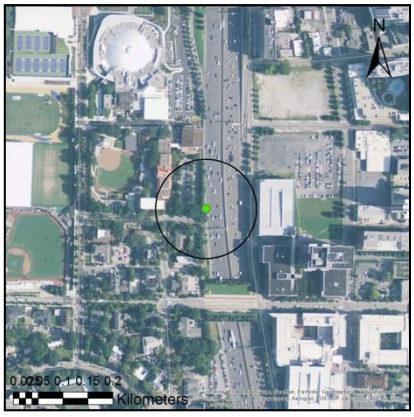
AQS ID: 131210055
Address: 945 United Avenue, Atlanta, Fulton County, Georgia 30316 Site Established: 10/1/91
Latitude/Longitude: N33.7206/W-84.3574 Elevation: 288 meters
Area Represented: Atlanta-Sandy Springs-Alpharetta MSA
Site History: Established as O_3 and SO_2 site

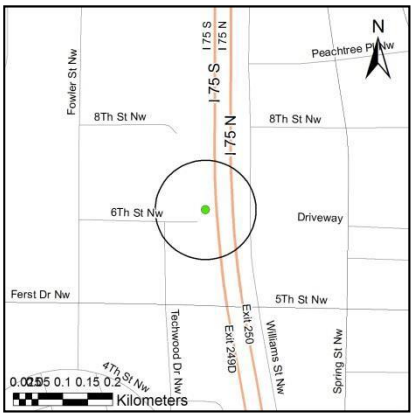
North South East West

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	Maximum Concentration	Continuous (Mar-Oct)	4 m	Neighborhood	10/1/91
$PM_{2.5}$	Population Exposure	Continuous	4.8 m	Urban	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; Spatial scale was changed from neighborhood to urban for continuous $PM_{2.5}$ monitor

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-Alpharetta MSA

Site History: Established as near-road site

North South East West

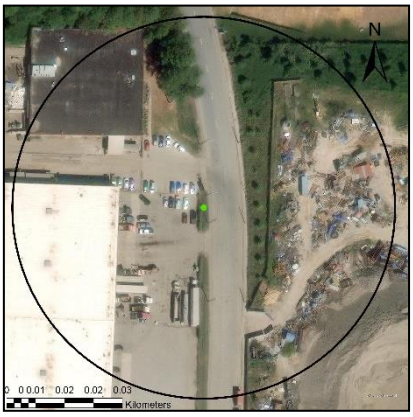
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
NO_2	Source Oriented	Continuous	3.5 m	Micro	6/15/14
NO	Source Oriented	Continuous	3.5 m	Micro	6/15/14
NOx	Source Oriented	Continuous	3.5 m	Micro	6/15/14
CO	Source Oriented	Continuous	3.5 m	Micro	6/15/14
$PM_{2.5}$	Source Oriented	Every 3 days	4.8 m	Micro	1/1/15
$PM_{2.5}$	Source Oriented	Continuous	3.5 m	Micro	3/1/18
Black Carbon	Source Oriented	Continuous	4.4 m	Micro	7/9/15

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
Wind Speed	Source Oriented	Continuous	5.5 m	Micro	8/20/14

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; GA AAMP replaced the $PM_{2.5}$ continuous nephelometer with a $PM_{2.5}$ non-FEM continuous TEOM sampler on 4/20/2023; replaced the black carbon with a Met One sampler on May 10, 2023

Empire Blvd



AQS ID: 131210057
Address: 3325 Empire Blvd SW, Atlanta, GA 30354
Established: To be determined
Latitude/Longitude: N33.664476, W-84.391869
Elevation: 280 meters
Area Represented: Atlanta-Sandy Springs-Alpharetta
Site History: Established as Lead site

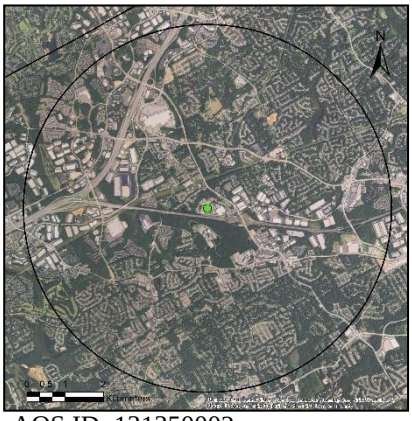
North South East West

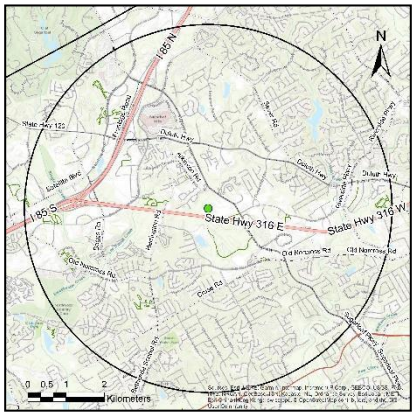
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
Lead	Source Oriented	Every 6 days	TBD	Micro	TBD
Lead	Quality Assurance	Every 12 days	TBD	Micro	TBD

TBD: To be determined

GA AAMP's plans for this site: Establish monitoring this summer

Gwinnett Tech





AQS ID: 131350002

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

Established: 3/17/95

Latitude/Longitude: N33.9632/W-84.0691

Elevation: 294 meters

Area Represented: Atlanta-Sandy Springs-Alpharetta MSA

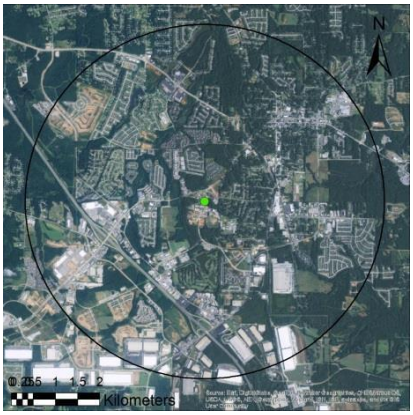
Site History: Established as O_3 site

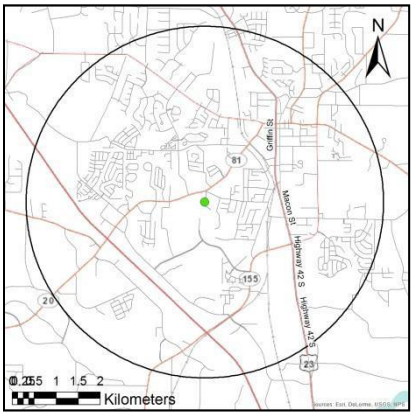
North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O_3	Population Exposure	Continuous (Mar-Oct)	3.4 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; running continuous $PM_{2.5}$ sampler as FEM as of 10/26/17; due to increased traffic counts, the ozone monitor will need to be moved and the spatial scale will change; GA AAMP is planning to move the site as soon as feasible.

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-Alpharetta MSA

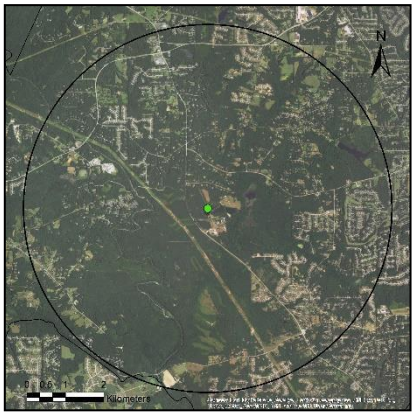
Site History: Established as O_3 site

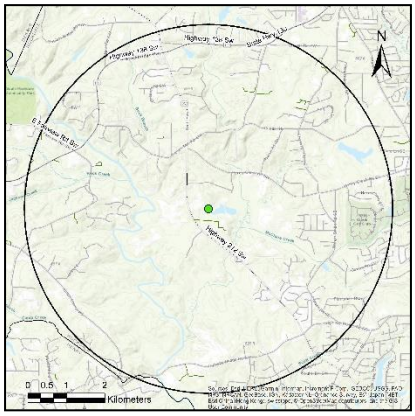
North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O_3	Maximum Concentration	Continuous (Mar-Oct)	4 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; GA AAMP is currently looking at potential areas the shelter can be relocated to due to increased activity around the site

Conyers





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

North South East West

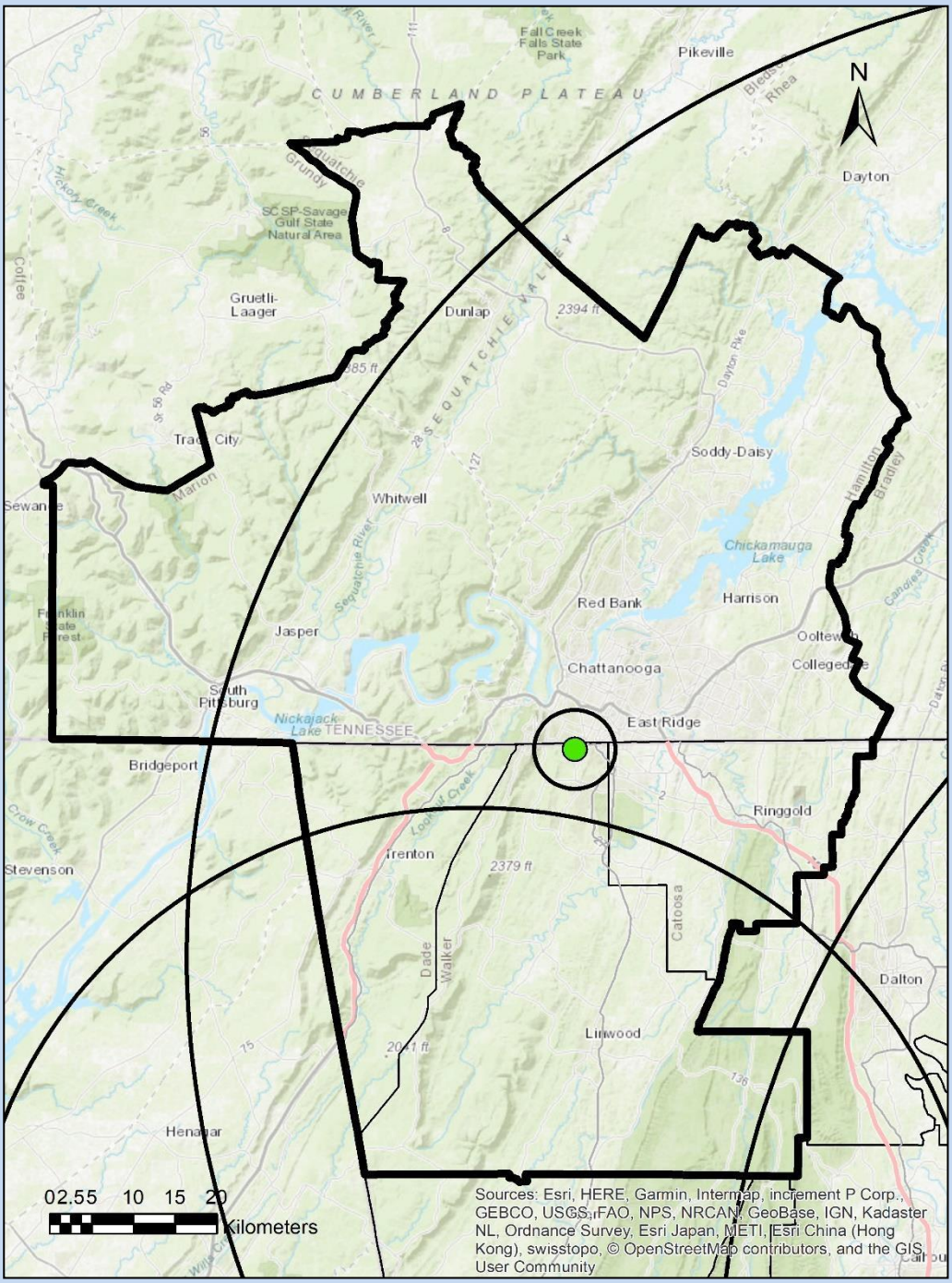
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O_3	Maximum Concentration	Continuous (Mar-Oct)	4.4 m	Neighborhood	7/26/78
Relative Humidity	General/ Background	Continuous	2.9 m	Neighborhood	6/1/94
Barometric Pressure	General/ Background	Continuous	2.9 m	Neighborhood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

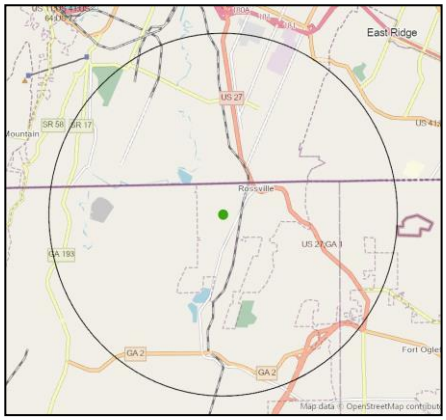
GA AAMP's plans for this site: Continue monitoring; ultraviolet radiation and solar radiation monitored at Conyers are also used to fulfill meteorological requirements for South DeKalb PAMS (see Section 1.4 for waiver request)

Chattanooga Tennessee-Georgia MSA



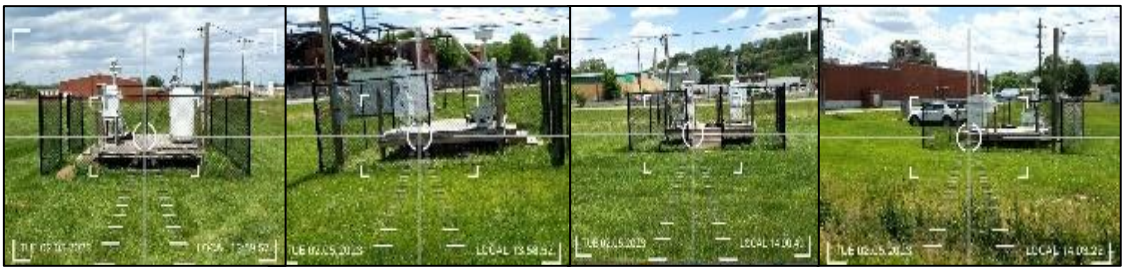
Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

Rossville-Williams St.



AQS ID: 132950004
Address: 301 Williams St., Rossville, Walker County, Georgia, 30741
Site Established: 3/1/21
Latitude/Longitude: N34.9784/W-85.2943
Elevation: 200 meters
Area Represented: Chattanooga Tennessee-Georgia MSA
Site History: Established as $PM_{2.5}$ site

North South East West



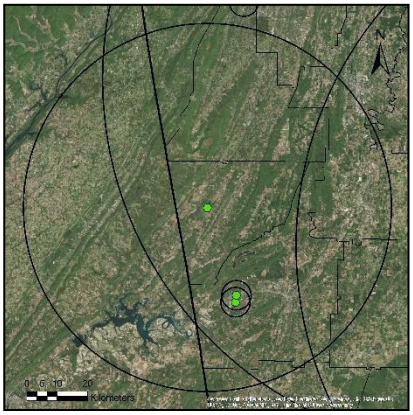
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure	Continuous	2.5 m	Neighborhood	3/1/21
$PM_{2.5}$	Population Exposure/ Regional Transport	Every 3 days	2.7 m	Neighborhood	3/1/21
$PM_{2.5}$ Speciation	Population Exposure	Every 6 days	2.5 m	Neighborhood	4/28/21

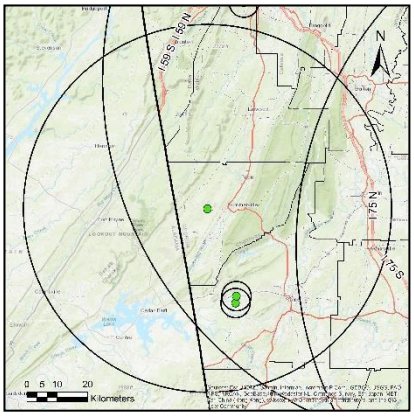
GA AAMP's plans for this site: Continue monitoring; site moved from Maple St. location and historical data can be found with AQS ID 13-295-0002; the speciation sampling was temporarily suspended from July 1, 2020 until April 28, 2021

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

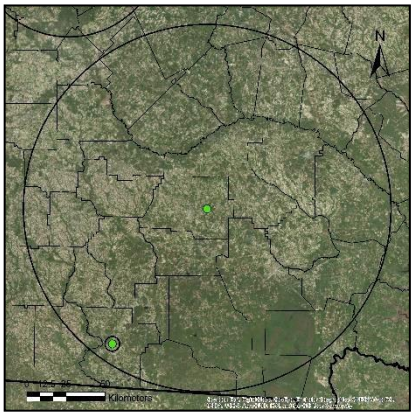
Site History: Established as Acid Rain site

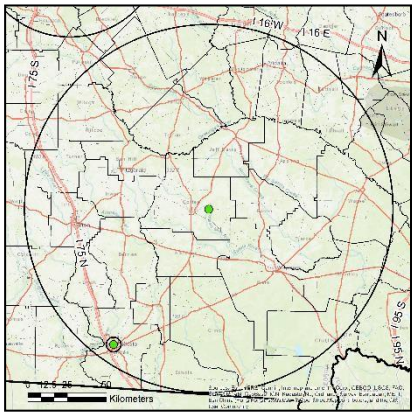
North South East West

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

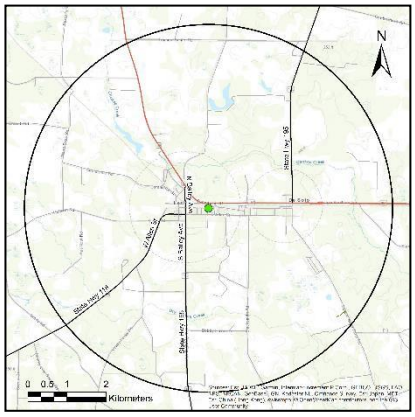
Site History: Established as Air Toxics site

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	Daily	3 m	Regional	2/1/17
$PM_{2.5}$	Population Exposure	Continuous	2 m	Regional	9/8/23

GA AAMP's plans for this site: Continue monitoring; GA AAMP installed a continuous $PM_{2.5}$ FEM T640 sampler with the EPA American Rescue Plan funds on September 8, 2023; as of October 17, 2023, the FRM $PM_{2.5}$ sampler was changed from a 1 in 3 day sampling schedule to a daily sampling schedule; the deck at General Coffee was rebuilt in April 2023; the continuous $PM_{2.5}$ T640 sampler may be comparable to the NAAQS as of January 1, 2025; the FRM $PM_{2.5}$ sampler may be shut down as of December 31, 2024

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

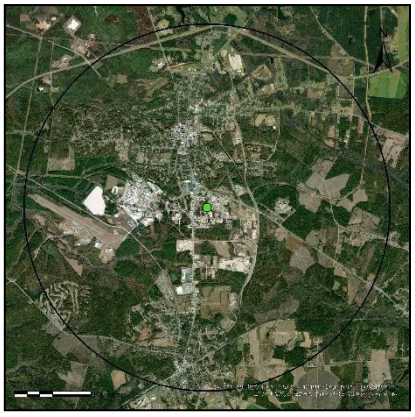
East

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: 420 Riddleville Road, Sandersville, Washington County, Georgia 31082
Site Established: 1/1/74
Latitude/Longitude: N32.968060/W-82.805903
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	Continuous	3.1 m	Neighborhood	1/30/19
$PM_{2.5}$	Quality Assurance	Continuous	3.0 m	Neighborhood	3/24/23

GA AAMP's plans for this site: Continue monitoring; on 8/14/19, GA AAMP replaced the FRM with an FEM Teledyne T640 Continuous $PM_{2.5}$ sampler; GA AAMP added another FEM sampler to ensure redundancy in the area and avoid data completeness issues

Appendix B: Inventory of Ambient Monitoring Equipment

Georgia Department of Natural Resources
Environmental Protection Division

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	AGE
Rome MSA			
Rome	Agilaire 8872	Datalogger	new
	Met One SASS	$PM_{2.5}$ Speciation Sampler	>8
	URG 3000N	$PM_{2.5}$ Speciation Sampler	>12
	TEOM 1400AB	Continuous $PM_{2.5}$ Sampler	>8
Brunswick MSA			
Brunswick	Agilaire 8872	Datalogger	new
	Thermo 49 series	O_3 Analyzer	>11
	Thermo 49 series	O_3 Calibrator	>11
	Thermo Partisol-Plus 2025	Integrated $PM_{2.5}$ Sampler	>11
	Teledyne T640	Continuous $PM_{2.5}$ Sampler	>2
	RM Young Ultrasonic Anemometer 81000	Wind Speed and Wind Direction	>2
	Aluma T-135	Meteorological Crank Tower	>13
	Environics 7000	Zero Air Supply	>8
Valdosta MSA			
Valdosta	Thermo Partisol-Plus 2025	Integrated $PM_{2.5}$ Sampler	>8
	Teledyne T640	Continuous $PM_{2.5}$ Sampler	>2
	ESC DAS 8832	Datalogger	<7
Warner Robins MSA			
Warner Robins	Thermo Partisol-Plus 2025	Integrated $PM_{2.5}$ Sampler	>7
	Teledyne T640	Continuous $PM_{2.5}$ Sampler	>5
	ESC DAS 8832	Datalogger	>9
Dalton MSA			
Fort Mountain	Agilaire 8872	Datalogger	new
	Thermo 49 series	O_3 Analyzer	>11
	Thermo 49 series	O_3 Calibrator	>11
	RM Young Ultrasonic Anemometer 81000	Wind Speed and Wind Direction	>5
	RM Young Temp/RH Probe 41382VC	Ambient Temperature & Relative Humidity	>2
	Aluma FOT-10	Meteorological Fold Over Tower	>13
Gainesville MSA			
Gainesville	Thermo Partisol-Plus 2025	Integrated $PM_{2.5}$ Sampler	>1
	Teledyne T640	Continuous $PM_{2.5}$ Sampler	>5
	ESC DAS 8832	Datalogger	>9
Albany MSA			
Albany	Thermo Partisol-Plus 2025	Integrated $PM_{2.5}$ Sampler	>7
	Thermo Partisol-Plus 2025	Collocated Integrated $PM_{2.5}$ Sampler	>7
	ESC DAS 8832	Datalogger	>9
	Teledyne T640	Continuous PM Sampler	>3
Athens-Clarke County MSA			
Athens	Thermo 49 series	O_3 Analyzer	>11
	Thermo 49 series	O_3 Calibrator	>11
	Teledyne T640	Continuous PM Sampler	>4
	Teledyne T640	Collocated Continuous PM Sampler	>3
	Agilaire 8872	Datalogger	new
	Environics 7000	Zero Air Supply	>7
Macon-Bibb County, MSA			
Macon-Allied	Thermo Partisol-Plus 2025	Integrated $PM_{2.5}$ Sampler	>7
	Thermo Partisol-Plus 2025	Collocated Integrated $PM_{2.5}$ Sampler	>7
	Met One SASS	$PM_{2.5}$ Speciation Sampler	>12

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	AGE
Macon-Allied cont'd	URG 3000N	$PM_{2.5}$ Speciation Sampler	>12
	Teledyne T640	Continuous $PM_{2.5}$ Sampler	new
	ESC DAS 8832	Datalogger	>9
Macon-Forestry	Thermo Partisol-Plus 2025	Integrated $PM_{2.5}$ Sampler	>7
	Teledyne T640	Continuous PM Sampler	>4
	Sulfur Dioxide Cylinder	Gas Cylinder	>9
	Graseby PUF Sampler GPS1-11*	Semi-VOCs (PAH) Sampler	>12
	Graseby High Volume 2000H*	Metals Sampler	>12
	RM Young Ultrasonic Anemometer 81000	Wind Speed and Wind Direction	new
	Aluma T-135	Meteorological Crank Tower	>13
	Agilaire 8872	Datalogger	new
	Thermo 49 series	O_3 Analyzer	>12
	Thermo 49 series	O_3 Calibrator	>11
	Thermo 43i	SO_2 Analyzer	>11
	Thermo 146i	Multi-Gas Calibrator	>12
Columbus Georgia-Alabama MSA			
Columbus - Airport	Thermo 49 series	O_3 Calibrator	>11
	Thermo 43i	SO_2 Analyzer	>11
	Thermo 146i	Multi-Gas Calibrator	>12
	Thermo Partisol-Plus 2025	Integrated $PM_{2.5}$ Sampler	>7
	Teledyne T640	Continuous $PM_{2.5}$ Sampler	>4
	Environics 7000	Zero Air Supply	>7
	Agilaire 8872	Datalogger	new
Columbus - Baker	Thermo Partisol-Plus 2025i	Integrated $PM_{2.5}$ Sampler	new
	Met One SASS	$PM_{2.5}$ Speciation Sampler	>9
	URG 3000N	$PM_{2.5}$ Speciation Sampler	>7
	Teledyne T640	Continuous $PM_{2.5}$ Sampler	new
	ESC DAS 8832	Datalogger	>9
Columbus - Crime Lab	RM Young Ultrasonic Anemometer 81000	Wind Speed and Wind Direction	>7
	Aluma T-135	Meteorological Crank Tower	>13
	RM Young Barometric Pressure Sensor 61302V	Barometric Pressure Sensor	>3
	Novalynx 260-2501 Tipping Bucket	Precipitation Sensor	>7
	RM Young Temp/RH Probe 41382VC	Ambient Temperature & Relative Humidity	new
	Agilaire 8872	Datalogger	new
Savannah MSA			
Savannah - E President	Agilaire 8872	Datalogger	new
	Thermo 49 series	O_3 Analyzer	>11
	Thermo 49 series	O_3 Calibrator	>11
	Thermo 43i	SO_2 Analyzer	>11
	Thermo 146i	Multi-Gas Calibrator	>11
	Environics 7000	Zero Air Supply	>7
	Graseby PUF Sampler GSP1*	Semi-VOCs (PAH) Sampler	>11
	Andersen Hi-VL 2000 HBL*	Metals Sampler	>11
	Sulfur Dioxide Cylinder	Gas Cylinder	>11
	RM Young Ultrasonic Anemometer 81000	Wind Speed and Wind Direction	>2
	Aluma T-135	Meteorological Crank Tower	>13
	RM Young Temp/RH Probe 41382VC	Ambient Temperature & Relative Humidity	>2
	RM Young Barometric Pressure Sensor 61302	Barometric Pressure Sensor	>2

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	AGE
Savannah - L&A	Agilaire 8872	Datalogger	new
	Thermo 43i	SO_2 Analyzer	>11
	Thermo 146i	Multi-Gas Calibrator	>11
	Thermo Partisol-Plus 2025	Integrated $PM_{2.5}$ Sampler	>1
	Teledyne T640	Continuous $PM_{2.5}$ Sampler	>4
	Sulfur Dioxide Cylinder	Gas Cylinder	>11
	RM Young Ultrasonic Anemometer 81000	Wind Speed and Wind Direction	>3
	Aluma T-135	Meteorological Crank Tower	>13
	Environics 7000	Zero Air Supply	>7
Augusta-Richmond County, Georgia-South Carolina MSA			
Evans	Thermo 49 series	O_3 Analyzer	>10
	Thermo 49 series	O_3 Calibrator	>10
	RM Young Ultrasonic Anemometer 81000	Wind Speed and Wind Direction	>4
	Aluma FOT-10	Meteorological Fold Over Tower	>10
	Agilaire 8872	Datalogger	new
	Sabio 1001	Zero Air Supply	>7
	RM Young Temp/RH Probe 41382VC	Ambient Temperature & Relative Humidity	>3
Augusta	Sabio 1001	Zero Air Supply	>7
	Thermo 49 series	O_3 Analyzer	>11
	Thermo 49 series	O_3 Calibrator	>11
	Thermo 43i-TLE	SO_2 Analyzer	>11
	Thermo 146i	Multi-Gas Calibrator	>11
	Teledyne T640X	Continuous PM Sampler	>3
	Thermo Partisol-Plus 2025	Integrated $PM_{2.5}$ Sampler	>2
	Thermo Partisol-Plus 2025	Collocated Integrated $PM_{2.5}$ Sampler	>2
	Met One SASS	$PM_{2.5}$ Speciation Sampler	>8
	URG 3000N	$PM_{2.5}$ Speciation Sampler	>8
	Sulfur Dioxide Cylinder	Gas Cylinder	>11
	RM Young Ultrasonic Anemometer 81000	Wind Speed and Wind Direction	>7
	Aluma T-135	Meteorological Crank Tower	>13
	Agilaire 8872	Datalogger	new
	Novalynx 260-2501 Tipping Bucket	Precipitation Sensor	new
	RM Young Temp/RH Probe 41382VC	Ambient Temperature & Relative Humidity	>1
	PM Young Barometric Pressure Sensor 61302	Barometric Pressure Sensor	>2
Atlanta-Sandy Springs-Alpharetta MSA			
Forest Park	Teledyne T640	Continuous $PM_{2.5}$ Sampler	new
Kennesaw	Agilaire 8872	Datalogger	new
	Thermo 49 series	O_3 Analyzer	>10
	Thermo 49 iQPS	O_3 Calibrator	>4
	Thermo Partisol-Plus 2025	Integrated $PM_{2.5}$ Sampler	>6
	Teledyne T640	Continuous $PM_{2.5}$ Sampler	new
Dawsonville	Thermo 49 series	O_3 Analyzer	>9
	Thermo 49 series	O_3 Calibrator	>9
	Agiliare 8872	Datalogger	new
	Environics 7000	Zero Air Supply	>9
	RM Young Ultrasonic Anemometer 81000	Wind Speed and Wind Direction	>4
	Aluma FOT-10	Meteorological Fold Over Tower	>13

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	AGE
South DeKalb	Agilaire 8872	Datalogger	>2
	Thermo 49 series	O_3 Analyzer	>6
	Thermo 49iQPS	O_3 Calibrator	>4
	Environics 6103	Multi-Gas Calibrator	>7
	Environics 6103	Multi-Gas Calibrator	>6
	Thermo 42iY	NOy Analyzer	>12
	Teledyne N500 CAPS	NO, NO2, NOx	>2
	Thermo 42i	NOx Analyzer	>11
	Thermo 48i-TLE	CO Analyzer	>7
	Thermo 43i-TLE	SO_2 Analyzer	>7
	Thermo Partisol-Plus 2025	Integrated $PM_{2.5}$ Sampler	>7
	Thermo Partisol-Plus 2025	Collocated Integrated $PM_{2.5}$ Sampler	>7
	Teledyne T640X	Continuous PM Sampler	>5
	Met One SASS	$PM_{2.5}$ Speciation Sampler	>7
	URG 3000N	$PM_{2.5}$ Speciation Sampler	>11
	Sabio 100 (2)	Zero Air Supply	>6
	ATEC 8000	Carbonyls Sampler	>7
	ATEC 8000/ATEC 2200-1C	Collocated Carbonyls Sampler	>7
	Tisch Environmental PUF	Semi-VOCs (PAH) Sampler	>10
	Tisch Environmental PUF	Collocated Semi-VOCs (PAH) Sampler	>10
	Grasby Environmental PUF	Semi-VOCs (PAH) Sampler	>12
	Grasby Environmental PUF	Collocated Semi-VOCs (PAH) Sampler	>12
	ATEC 2200	VOCs Sampler	>11
	ATEC 2200	Collocated VOCs Sampler	>11
	Sierra-Andersen/Graseby High-Vol	PM_{10} Metals	>11
	Sierra/Andersen/Graseby High-Vol	Collocated PM_{10} Metals	>11
	Met-One Low-Vol	PM_{10} Metals	>3
	Met-One Low-Vol	Collocated PM_{10} Metals	>3
	Picarro G2920^	Continuous Ethylene Oxide Sampler	>3
	Markes Unity XR Thermal Desorber	Gas Chromatograph	>3
	Agilent 7890B	Gas Chromatograph	>3
	Markes CIA Advantage	VOC Analyzer	>3
	Markes Kori XR	VOC Desorber	>3
	Merlin Microscience System	Gas Dilution System	>3
	Parker Zero Air Generator 75-83NA	Zero Air Generator	>3
	Werther PC1-24-3	Oil-free Air Compressor	>3
	AirGas Hydrogen Cylinder (7)	Gas Cylinder	>3
	AirGas Helium Cylinder (6)	Gas Cylinder	>3
	NexAir Helium Cylinder	Gas Cylinder	>3
	AirGas Compressed Air (4)	Gas Cylinder	>3
	Parker TOC Generator	Zero Air Generator	>3
	Peak Scientific Hydrogen Generator	Hydrogen Generator	>3
	AirGas Nitrogen Cylinder (1)	Gas Cylinder	>3
	Carbon Monoxide Cylinder	Gas Cylinder	<11
	Nitrogen Oxide Cylinder	Gas Cylinder	<11
	Sulfur Dioxide Cylinder	Gas Cylinder	<11
	RM Young Ultrasonic Anemometer 81000	Wind Speed and Wind Direction	>7
	Aluma T-135	Meteorological Crank Tower	>13
	RM Young Temp/RH Probe 41382VC	Ambient Temperature & Relative Humidity	>1
	Novalynx 260-2501 Tipping Bucket	Precipitation Sensor	>7
	RM Young Barometric Pressure Sensor 61302	Barometric Pressure Sensor	>7

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	AGE
NR-285	Agilaire 8872	Datalogger	>2
	TEOM 1405-F	Continuous $PM_{2.5}$ Sampler	>1
	Thermo 42i	NOx Analyzer	>7
	Xonteck 910	VOC Sampler	>7
	Environics 6103	Multi-gas Calibrator	>7
	Nitrogen Oxide Cylinder	Gas Cylinder	>11
	Met One Instrument BC-1060	Black Carbon Sampler	>2
Douglasville	Thermo 49 series	O_3 Analyzer	>11
	Thermo 49 series	O_3 Calibrator	>11
	RM Young Ultrasonic Anemometer 81000	Wind Speed and Wind Direction	>4
	Aluma T-135	Meteorological Crank Tower	>13
	Sabio 1001	Zero Air Supply	>7
	Agilaire 8872	Datalogger	new
Fire Station #8	Thermo Partisol-Plus 2025	Integrated $PM_{2.5}$ Sampler	>7
	Tisch TE-Wilbur Filter Based	Integrated PM_{10} Sampler	>5
	Tisch TE-Wilbur Filter Based	Collocated Integrated PM_{10} Sampler	>5
United Avenue	Thermo 146i	Multi-gas Calibrator	>6
	Agilaire 8872	Datalogger	>2
	Thermo 49 series	O_3 Analyzer	>9
	Thermo 49 series	O_3 Calibrator	>9
	Thermo 43i	SO_2 Analyzer	>8
	TEOM 1400AB	Continuous $PM_{2.5}$ Sampler	>11
	Sulfur Dioxide Cylinder	Gas Cylinder	>11
	Sabio 1001	Zero Air Supply	>7
	RM Young Ultrasonic Anemometer 81000	Wind Speed and Wind Direction	>7
	Aluma T-135	Meteorological Crank Tower	>13
NR-GA Tech	Agilaire 8872	Datalogger	new
	Thermo 42i	NO_2 Analyzer	>7
	Thermo 48i-TLE	CO Analyzer	>11
	Thermo Partisol-Plus 2025	Integrated $PM_{2.5}$ Sampler	>7
	TEOM 1405-F	Continuous $PM_{2.5}$ Sampler	>1
	Carbon Monoxide Cylinder	Gas Cylinder	>11
	Nitrogen Oxide Cylinder	Gas Cylinder	>11
	RM Young Ultrasonic Anemometer 81000	Wind Speed and Wind Direction	>4
	Aluma T-135	Meteorological Crank Tower	>9
	Environics 7000	Zero Air Supply	>7
	Environics 6103	Multi-gas Calibrator	>7
	Met One Instruments BC-1060	Black Carbon Sampler	>2
Gwinnett Tech	Agilaire 8872	Datalogger	new
	Thermo 49 series	O_3 Analyzer	>11
	Thermo 49 series	O_3 Calibrator	>11
	Environics 7000	Zero Air Supply	>6
	Teledyne T640	Continuous PM Sampler	>5
McDonough	Agilaire 8872	Datalogger	new
	Thermo 49 series	O_3 Analyzer	>11
	Thermo 49 series	O_3 Calibrator	>11
	Environics 7000	Zero Air Supply	>7
	TEOM 1400AB	Continuous $PM_{2.5}$ Sampler	>11
Conyers	Agilaire 8872	Datalogger	>2
	Thermo 49 series	O_3 Analyzer	>11
	Thermo 49iQPS	O_3 Calibrator	>4
	Teledyne 701	Zero Air Supply	>7
	RM Young Ultrasonic Anemometer 81000	Wind Speed and Wind Direction	>4
	Aluma T-135	Meteorological Crank Tower	>13

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	AGE
Conyers cont'd	Aluma T-135	Meteorological Crank Tower	>13
	Eppley Lab Standard Precision Pyronometer 38380F3	Solar Radiation Instrument	>2
	Eppley Lab TUVR 38020	Ultraviolet Radiometer	>2
	Novalynx 260-2501 Tipping Bucket	Precipitation Sensor	>7
	RM Young Temp/RH Probe 41382VC	Ambient Temperature & Relative Humidity	>6
	RM Young Barometric Pressure Sensor 61302	Barometric Pressure Sensor	>7
Chattanooga Tennessee-Georgia MSA			
Rossville-Williams St.	Thermo Partisol-Plus 2025	Integrated $PM_{2.5}$ Sampler	>8
	Met One SASS	$PM_{2.5}$ Speciation Sampler	>8
	URG 3000N	$PM_{2.5}$ Speciation Sampler	>8
	ESC DAS 8832	Datalogger	>9
	Teledyne T640	Continuous $PM_{2.5}$ Sampler	>4
Sites Not in an MSA			
Summerville	Agilaire DAS 8872	Datalogger	new
	Thermo 49 series	O_3 Analyzer	>11
	Thermo 49 series	O_3 Calibrator	>11
	Gast Air Compressor	Charcoal and Purafil Air Compressor	new
General Coffee	Met One SASS	$PM_{2.5}$ Speciation Sampler	>7
	URG 3000N	$PM_{2.5}$ Speciation Sampler	>11
	Thermo Partisol-Plus 2025	Integrated $PM_{2.5}$ Sampler	>12
	Teledyne T640	Continuous $PM_{2.5}$ Sampler	new
	ESC DAS 8832	Datalogger	>7
Leslie	Agilaire 8872	Datalogger	new
	Thermo 49 series	O_3 Analyzer	>12
	Thermo 49 series	O_3 Calibrator	>11
	Environics 7000	Zero Air Supply	>7
Sandersville	Teledyne T640	Continuous PM Sampler	>5
	Teledyne T640	Collocated Continuous PM Sampler	>1
	ESC DAS 8832 (2)	Datalogger	>7
Georgia AAMP			
	BGI/MesaLabs DeltaCal (4)	Flow, Temperature & Pressure Standard	>8
	BGI/MesaLabs TetraCal (3)	Flow, Temperature & Pressure Standard	>8
	BIOS DC-Lite DCL-H	Flow Standard	>8
	BIOS Definer 220 High Flow	High flow volumetric standardized gas	>8
	BIOS Definer 220 Low Flow	Low flow volumetric standardized gas	>8
	Chinook Engineering Streamline Pro (3)	Flow Transfer Standard	>8
	Graseby GMW	PUF Orifice	>8
	Linde UltraPure Gas Standard	PAMS - EPA UltraPure Gas Standard	>8
	Sensidyne Gilibrator Flow Cell (6)	Flow Standard	>8
	Sensidyne Gilibrator Flow Cell Base (2)	Flow Standard	>8
	Tisch Environmental TE-5040A	PUF Orifice	>8
	Vaisala HM40/HM46 (3)	Temperature & Relative Humidity Probe	>8
	Vaisala HMI41/HMP46 (3)	Temperature & Relative Humidity Probe	>8
	Thermo 49i-PS (2)	O_3 Standard	>11
	Thermo 49-PS (2)	O_3 Standard	>12
	Thermo 146i (2)	Multi-Gas Calibrator	>12
	Airgas EPA Protocol Gas Standard (5)	EPA Protocol NO/NOx/CO/SO_2 Gas Standard	>8
	Bosch GLM 80 (2)	Laser Distance/Angle Measurer	>8
	NexAir EPA Protocol Gas Standard (5)	EPA Protocol NO/CO/SO_2 Gas Standard	>8

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	AGE
Meteorology Unit Workshop	RM Young Ultrasonic Anemometer 810000 (13)	Wind Speed and Wind Direction	Various
	RM Young Meteorological Translator 26800	Datalogger	>3
	Eppley Lab Standard Precision Pyronometer 38380F3 (5)	Solar Radiation Instrument	Various
	Eppley Lab TUVR (6)	Ultraviolet Radiometer	Various
	RM Young Wind Monitor 05305VM (2)	Wind Speed and Wind Direction	>11
	Novalynx 260-2501 Tipping Bucket (8)	Precipitation Sensor	Various
	RM Young Temp/RH Probe 41382VC/ 41382VC (13)	Ambient Temperature & Relative Humidity	Various
	RM Young Barometric Pressure Sensor 61302 (14)	Barometric Pressure	Various
	Aluma T-135 (5)	Meteorological Crank Tower	Various
Workshop	Met One SASS (7)	$PM_{2.5}$ Speciation Sampler	>10
	URG 3000N (4)	$PM_{2.5}$ Speciation Sampler	>7
	Thermo 43i-TLE (3)	SO_2 Analyzer	Various
	Thermo 146i (10)	Multi-Gas Calibrator	Various
	Thermo 42i (5)	NO, NO_2, NOx Analyzer	Various
	Environics 6103 (3)	Multi-Gas Calibrator	>7
	Thermo 48i-TLE (6)	CO Analyzer	Various
	Thermo 42iY	NOy Analyzer	>10
	Thermo 42iY	NOy Analyzer	new
	Thermo 43i (4)	SO_2 Analyzer	Various
	Sabio 1001 (2)	Zero Air Supply	>7
	Teledyne T701H (2)	Zero Air Supply	Various
	Environics 7000 (6)	Zero Air Supply	>6
	Teledyne T640 (3)	Continuous PM Sampler	>5
	Teledyne T640X	Continuous PM Sampler	>5
	Met One E-SEQ-FRM (5)	Integrated PM Sampler	Various
	Thermo 42C (2)	NO/NO_2/NOx Analyzer	Various
	Thermo 49i-PS (5)	O_3 Calibrator	Various
	Thermo 49i (2)	O_3 Analyzer	Various
	Thermo 49C-PS (5)	O_3 Calibrator	Various
	Thermo 49C (2)	O_3 Analyzer	Various
	Thermo Partisol-Plus 2025 (13)	Integrated $PM_{2.5}$ Sampler	Various
	TEOM 1400AB (3)	Continuous $PM_{2.5}$ Sampler	>10
	Agilaire 8872 (2)	Datalogger	Various
	ATEC 2200-1P (9)	VOCs Sampler	>10
	ATEC 2200-1C (2)	VOCs Sampler	>10
	ATEC 8000 (5)	Carbonyls Sampler	Various
	ESC DAS (22)	Datalogger	Various
	Thermo 49i QPS (7)	Primary O_3 Standard	>5
	Thermo 49i-PS, Thermo 49i	O_3 Bench Calibrator and Sampler	>10
	Thermo 146iQ	Multi-Gas Calibrator	>4
	Xonteck 911 (2)	Canister Sampler	>7
	Tisch Wilbur	PM_{10} Sampler	>5
	Alicat Scientific FP-25 (17)	Flow, Temperature & Pressure Standard	Various
	Alicat Whisper	Flow, Temperature & Pressure Standard	Various
	BGI/MesaLabs TetraCal (17)	Flow, Temperature & Pressure Standard	Various
	BGI/MesaLabs DeltaCal (22)	Flow, Temperature & Pressure Standard	Various
	Tisch Environmental TE-5028A VRC (10)	Variable High Volume Orifice	Various
	Tisch Environmental TE-5040A (11)	PUF Orifice	Various
	Sensidyne Gilibrator Flow Cell Base (17)	Flow Standard	Various

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	AGE
Workshop cont'd	Sensidyne Gilibrator Flow Cell (51)	Flow Standard	Various
	AirGas Hydrogen Cylinder (2)	Gas Cylinder	>3
	Carbon Monoxide Cylinder(2)	Gas Cylinder	>11
	Nitrogen Oxide Cylinder	Gas Cylinder	>11
	Sulfur Dioxide Cylinder (3)	Gas Cylinder	>11
	ESC DAS 8832 (multiple)	Datalogger	>8
	Thermo 43i	SO_2 Analyzer	>8
	Thermo 146i	Multi-Gas Calibrator	>8
	Sulfur Dioxide Cylinder	Gas Cylinder	<11
	RM Young Ultrasonic Anemometer 810000	Wind Speed and Wind Direction	>5
	Aluma T-135	Meteorological Crank Tower	>5
	Environics 7000	Zero Air Supply	>7
	AVOCS*	VOC Sampler	>12
	Chinook Engineering Streamline Pro (3)	Flow Transfer Standard	>8
	Thermo Partisol-Plus 2025i (6)	Integrated $PM_{2.5}$ Sampler	new
	TSP High Volume 2000H (2)	Metals-Pb (lead) Sampler	>12
	ATEC 1000*	Carbonyls Sampler	>11
	TSP High Volume 2000H	Collocated Metals-Pb (lead) Sampler	>12
	Thermo Partisol-Plus 2025	Integrated $PM_{2.5}$ Sampler	>7
	TSP High Volume 2000H	TSP-Pb (lead) Sampler	>12
	Entech CS1200E Passive Sampler	Ethylene oxide	>3
	Anderson General Metal Works	High Volume PM_{10} orifice	>8
	Dwyer 475-1-FM	Digital Manometer	>8
	Dwyer 475-2-FM	Digital Manometer	>8
	Dwyer 477-1-FM (2)	Digital Manometer	>8
	Dwyer 475-0-FM (3)	Digital Manometer	>8
	Fisher Scientific 14-648-4 (5)	Stopwatch	>8
	Tisch Environmental TE-5028A	High Vol PM_{10} Orifice	>8
	Compressed Air Mix	Gas Cylinder	>11
	BGI VRC	Variable High Volume Orifice	>8
	Mesa Labs Flexcal High Flow (2)	High Flow	>8
	Mesa Labs Flexcal Low Flow (2)	Low Flow	>8
	Met-One Low-Vol (2)	PM_{10} Metals	Various
	Tisch/Grasby Environmental PUF (3)	Semi-VOCs (PAH) Sampler	Various
	Paker Zero Air Generator 75-83NA	Zero Air Gas Generator	Various
	Parker TOC Generator	Zero Air Generator	Various
	PAMS Air Compressor	Air Compressor	Various

NOTE:
Age = age in years
*** = Not currently in use**

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 ≤ 10 µm (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 Pace Analytical Services, LLC 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 an EPA-approved equivalent method, 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 Thermo Scientific Partisol 2025i (RFPS-0498-118). 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 two different methods. One method is the Teledyne T640/640x, 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 T640/640x 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 T640/640x is officially designated as an U.S. 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. GA AAMP continues to evaluate the continuous $PM_{2.5}$ Teledyne T640/640x monitors at locations where they are collocated with the $PM_{2.5}$ FRMs (filter based) monitors. As of January 1, 2025, GA AAMP plans to have all the continuous $PM_{2.5}$ Teledyne T640/640x monitors comparable to the NAAQS.

Another $PM_{2.5}$ continuous collection method utilized by GA AAMP is the Thermo Scientific tapered element oscillating microbalance (TEOM) Series 1400/1400a/1405-F monitors. 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.

Both 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 of the Introduction), the South DeKalb site (13-089-0002) began $PM_{10-2.5}$ sampling as of January 1, 2011. The Teledyne T640x $PM_{10-2.5}$ is the current system used to measure coarse particulate matter. 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.

The sampling frequency of the integrated (FRM), continuous (Teledyne, TEOM), and speciated $PM_{2.5}$ samplers is detailed in Table 5, and 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.

Table 5. $PM_{2.5}$ Sampling Frequency

Site ID	Site Name	County	Integrated	Continuous	Speciation
Rome MSA					
131150003	Rome	Floyd		$PM_{2.5}$	6 Day
Brunswick MSA					
131270006	Brunswick	Glynn	$PM_{2.5}$ (3 Day)	FEM $PM_{2.5}$	
Valdosta MSA					
131850003	Valdosta	Lowndes	$PM_{2.5}$ (3 Day)	FEM $PM_{2.5}$	
Warner Robins MSA					
131530001	Warner Robins	Houston	$PM_{2.5}$ (3 Day)	FEM $PM_{2.5}$	
Albany MSA					
130950007	Albany	Dougherty	2 $PM_{2.5}$ (Daily, 3 Day)	Non-FEM $PM_{2.5}$	
Gainesville MSA					
131390003	Gainesville	Hall	$PM_{2.5}$ (Daily)	FEM $PM_{2.5}$	
Athens-Clarke County MSA					
130590002	Athens	Clarke		2 FEM $PM_{2.5}$	
Macon-Bibb County, MSA					
130210007	Macon-Allied	Bibb	$PM_{2.5}$ (3 Day, 12 Day)	Non-FEM $PM_{2.5}$	6 Day
130210012	Macon-Forestry	Bibb	2 $PM_{2.5}$ (3 Day)	FEM $PM_{2.5}$	
Columbus, Georgia- Alabama MSA					
132150008	Columbus-Airport	Muscogee	$PM_{2.5}$ (Daily)	Non-FEM $PM_{2.5}$	
132150012	Columbus-Baker	Muscogee	$PM_{2.5}$ (Daily)	Non-FEM $PM_{2.5}$	6 Day
Savannah MSA					
130511002	Savannah-L&A	Chatham	$PM_{2.5}$ (Daily)	FEM $PM_{2.5}$	
Augusta, Georgia-South Carolina MSA					
132450091	Augusta	Richmond	2 $PM_{2.5}$ (Daily, 3 Day)	Non-FEM $PM_{2.5}$	6 Day
Atlanta-Sandy Springs-Alpharetta MSA					
130630091	Forest Park	Clayton		FEM $PM_{2.5}$	
130670003	Kennesaw	Cobb	$PM_{2.5}$ (3 Day)	Non-FEM $PM_{2.5}$	
130890002	South DeKalb	DeKalb	2 $PM_{2.5}$ (Daily, 3 Day)	FEM $PM_{2.5}$	3 Day
130890003	NR-285	DeKalb		$PM_{2.5}$	
131210039	Fire Station #8	Fulton	$PM_{2.5}$ (3 Day)		
131210055	United Ave.	Fulton		$PM_{2.5}$	
131210056	NR-Georgia Tech	Fulton	$PM_{2.5}$ (3 Day)	$PM_{2.5}$	
131350002	Gwinnett Tech	Gwinnett		FEM $PM_{2.5}$	
131510002	McDonough	Henry		$PM_{2.5}$	
Chattanooga, Tennessee-Georgia MSA					
132950004	Rossville-Williams St.	Walker	$PM_{2.5}$ (3 Day)	FEM $PM_{2.5}$	6 Day
Not in an MSA					
130690002	General Coffee	Coffee	$PM_{2.5}$ (Daily)	FEM $PM_{2.5}$	6 Day
133030001	Sandersville	Washington		2 FEM $PM_{2.5}$	

Highlighted samplers used for comparison to NAAQS. See Appendix A for updates to this network over the next 18 months.

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 biweekly 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 biweekly 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 (13-231-9991) 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 89 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 (Å) 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 biweekly 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 biweekly ZPS checks, quarterly multipoint calibrations, and are audited by GA AAMP's Quality Assurance Unit on an annual basis.

At the South DeKalb PAMS site (13-089-0002), the GA AAMP utilizes the Teledyne Advanced Pollution Instrumentation Model N500 Nitrogen Dioxide Analyzer for collection of direct NO/NO_2/NO_x measurements (Federal Equivalent Method EQNA-0320-256). The Model N500 collects direct measurements of NO/NO_2/NO_x with cavity attenuated phase shift spectroscopy (CAPS). The N500 CAPS monitor operates as an optical absorption spectrometer. The CAPS method uses light from a blue Ultraviolet (UV) light emitting diode (LED) centered at 405 nm, a measurement cell with high reflectivity mirrors located at either end to provide an extensive optical path length, and a vacuum photodiode detector. The sampler outputs NO, NO_2, and NO_X

concentrations on the front panel display and the analog or digital outputs directly to the AirVision database. These analyzers are subjected to biweekly 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. These sampling techniques collect 24-hour samples on pre-weighed filters, have samples sent to a laboratory for analysis, and are analyzed using inductively coupled plasma mass spectroscopy (commonly known as ICP-MS). On a semi-annual basis, GA AAMP's Quality Assurance Unit audits these samplers.

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 Met One low-volume single channel timed sampler. GA AAMP is in the process of replacing the Met One PM_{10} samplers with Tisch-Wilbur PM_{10} samplers. Collecting 16.7 liters per minute, with a total collection of 24.05 m^3, the sampler uses a 47 mm diameter Teflon™ 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. 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 three different types of samplers. Two types of collection method use a passivated inert stainless steel canister: ATEC 2200 and Xonteck 910. The 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 5 psig. These samplers collect a sample for a representative 24-

hour period, and the samples are analyzed using a gas chromatograph with mass spectroscopy detection (GC/MS), using EPA compendium method TO15, by the GA EPD laboratory. The South DeKalb site uses the ATEC 2200 to collect VOCs as part of the National Air Toxics Trends Station. These VOCs samplers are subjected to quarterly checks and are audited by GA AAMP's Quality Assurance Unit twice per year.

The third type of sampler used for VOCs collection and analysis is with the Photochemical Assessment Monitoring Station (PAMS) network in which VOCs are collected and analyzed on-site with a gas chromatograph/flame ionization detector (GC/FID). The South DeKalb site is the GA AAMP's PAMS site. During June, July, and August, the PAMS VOCs samples are collected continuously on an hourly basis. The VOCs sampler in the PAMS network is subjected to checks and audited during the PAMS season (June, July and August).

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 is using the Met One Instruments BC-1060 at the NR-285 (13-089-0003) and NR-Georgia Tech (13-121-0056) sites. Operating continuously at 2 LPM, these instruments have dual-wavelength illumination (370 nm and 880 nm) and use quartz tape to perform an optical analysis to determine the concentration of carbon particles passing through an air stream. Concentrations are determined by measuring the change in optical transmission as black carbon containing particulate matter accumulates onto a filter and then converting this transmission data into black carbon concentration. 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 fourteen 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	$PM_{2.5}$ FRM, 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.	$PM_{2.5}$ FRM	12/31/12	2012
132450005	Augusta-Medical College	$PM_{2.5}$ FRM	12/31/12	2012
131210032	Atlanta-E. Rivers School	$PM_{2.5}$ FRM, PM_{10}	12/31/12	2012
130892001	Doraville Health Center	$PM_{2.5}$ FRM	12/31/12	2012
130670004	Powder Springs-Macland Aquatic Ctr.	$PM_{2.5}$ FRM	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 Station	PM_{10}	12/31/12	2012

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	$PM_{2.5}$ FRM	12/31/16	2016
132230003	Yorkville	O_3	12/31/16	2016
132230003	Yorkville	$PM_{2.5}$ FRM, 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	$PM_{2.5}$ FRM	10/31/18 (reopened 1/1/2022)	2018 (reinstated in 2022)
131390003	Gainesville	$PM_{2.5}$ FRM	10/31/18	2018 (reinstated in 2023)
131350002	Gwinnett Tech	$PM_{2.5}$ FRM	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	$PM_{2.5}$ FRM	3/31/19	2018
130510091	Savannah-Mercer	$PM_{2.5}$ FRM	6/30/19	2019
133030001	Sandersville	$PM_{2.5}$ FRM	8/15/19	2019
131150006	Rome-Kraftsman	SO_2, Wind Speed, Wind Direction	12/31/2020	2020
132150009	Columbus-Allied	Lead	3/31/2021	2020
132150011	Columbus-Cusseta	$PM_{2.5}$ FRM, Lead	7/30/2020	2020
132150001	Columbus-Health Department	$PM_{2.5}$ FRM	12/31/2020	2020
132950002	Rossville-Maple St.	$PM_{2.5}$ FRM, $PM_{2.5}$ Continuous, $PM_{2.5}$ Speciation	7/30/2020	2020
132450091	Augusta	PM_{10} TEOM	7/13/2021	2021

130630091	Forest Park	$PM_{2.5}$ FRM	2/18/2024	2023

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 McCoy

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: _____

TITLE: Director

DATE: 2/21/17

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

BY: _____

TITLE: Bureau Chief

DATE: 03/01/17

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

_____

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

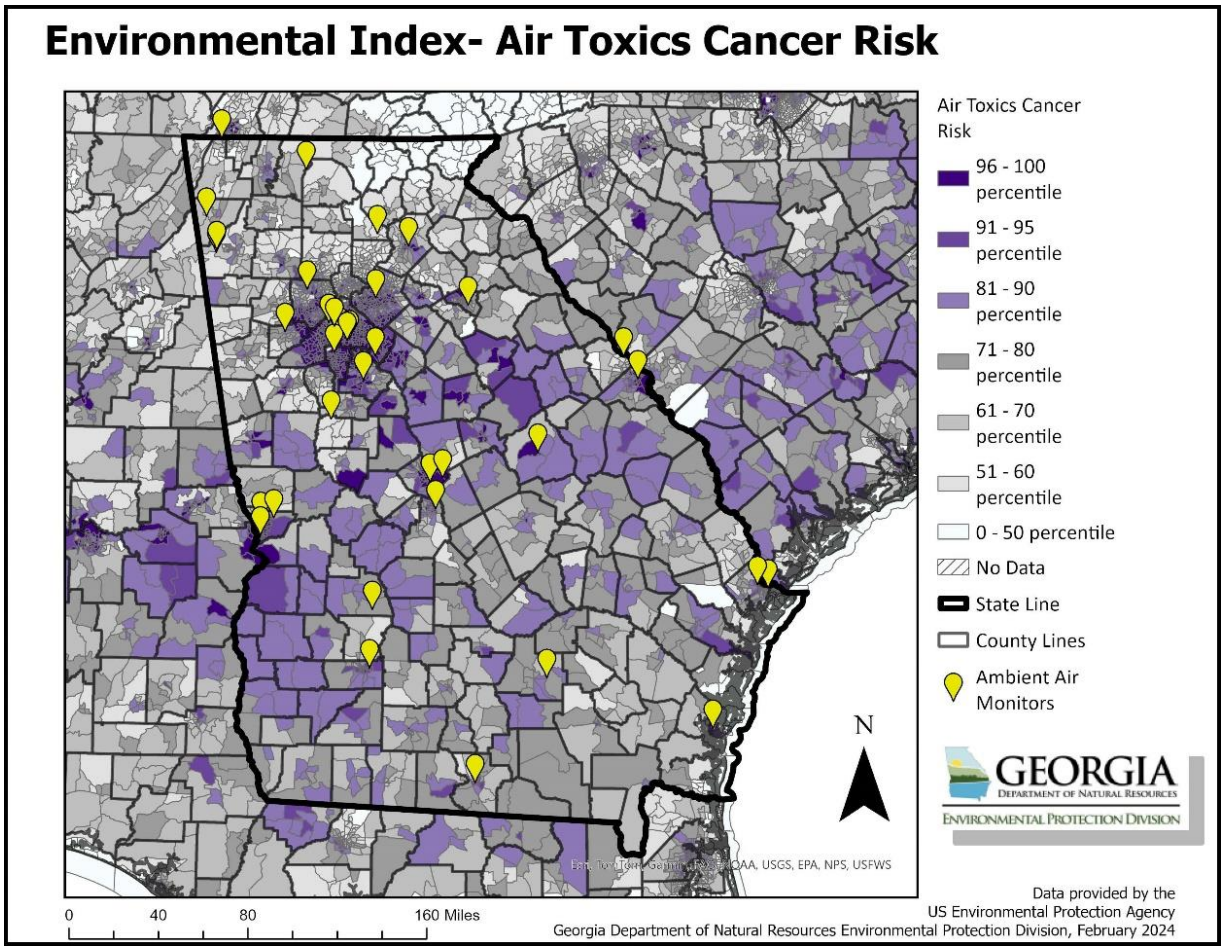
5

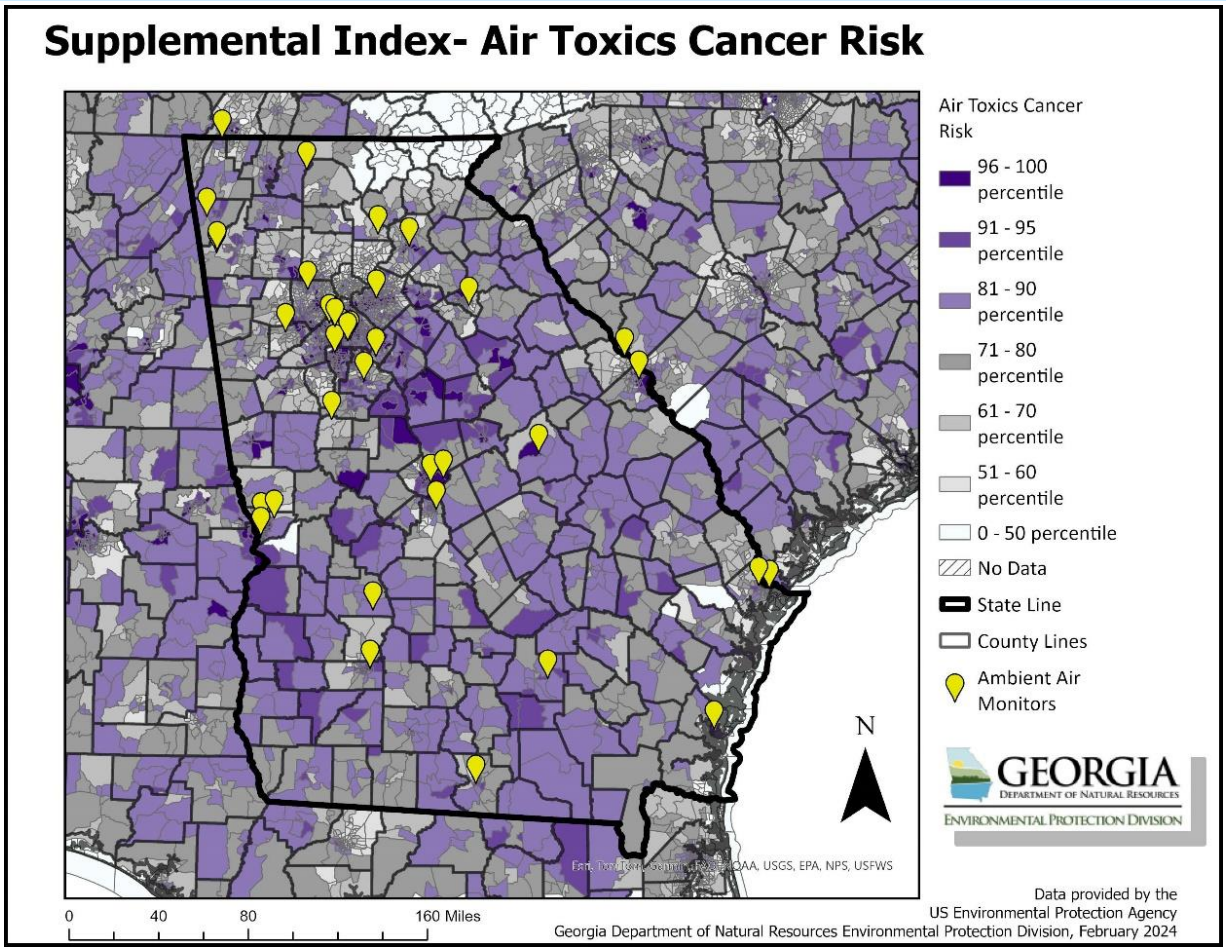
Appendix F: Environmental Justice Maps

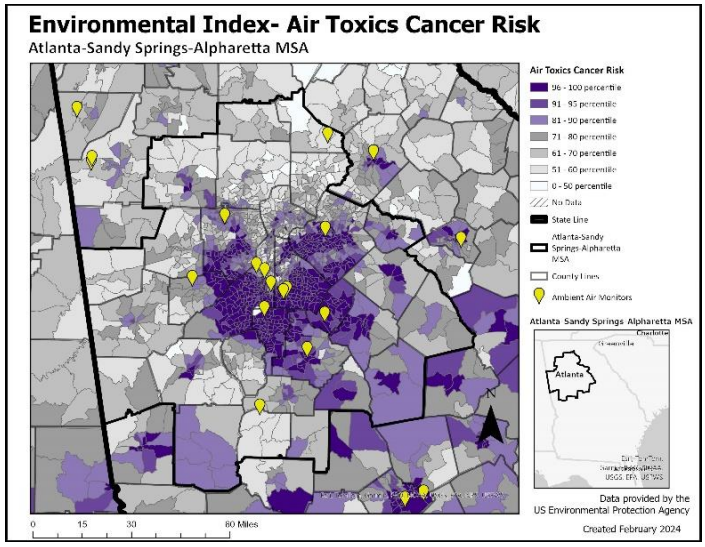
Georgia Department of Natural Resources
Environmental Protection Division

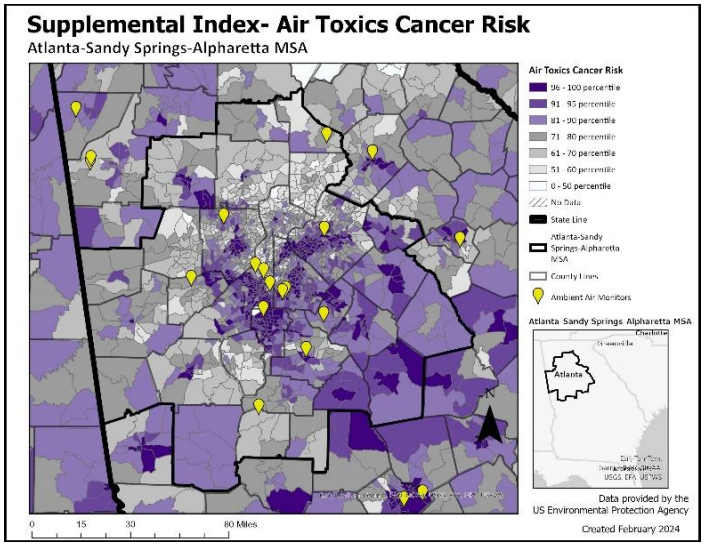
Air Toxics Cancer Risk Distribution Across Georgia

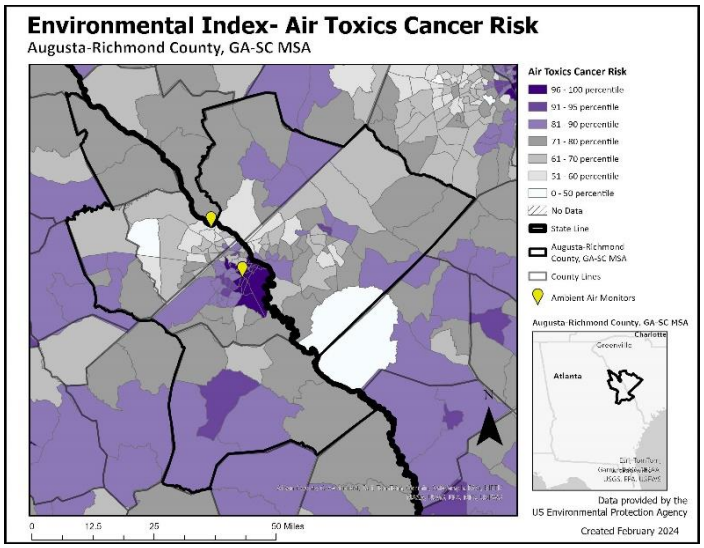
The provided maps using both the Environmental Justice Index and Supplemental Index visually indicate the distribution of potential estimated cancer risk from air toxics across the State of Georgia. The Atlanta-Sandy Springs-Alpharetta Metropolitan Statistical Area (MSA), along with a southeastern extension into the northern Macon-Bibb County MSA, demonstrates EJ tracts encompassing the 51-60th percentile range to the 96-100th percentile range. The Columbus, GA-AL and Augusta-Richmond County GA-SC MSAs also exhibit potential risk areas, extending into the western coastal plain. GA AAMP has 35 ambient air monitoring stations across the State of Georgia, monitoring multiple pollutants. There are no ambient air quality standards for air toxics. Sources for these compounds are regulated through the permitting process for the applicable industries.

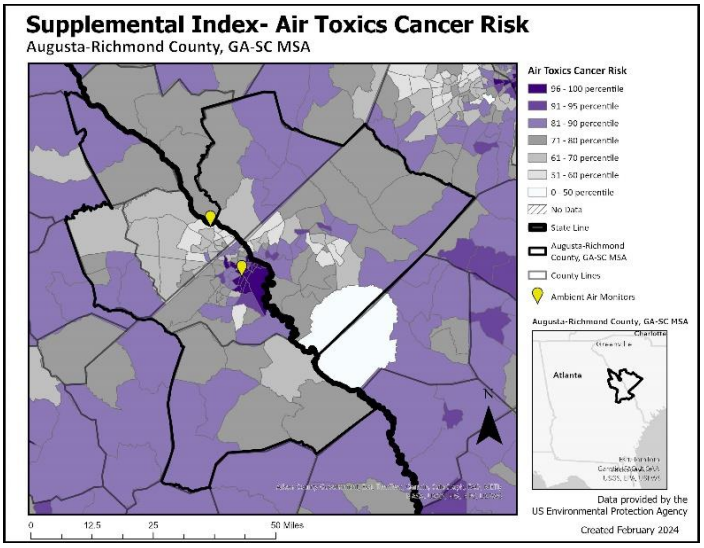


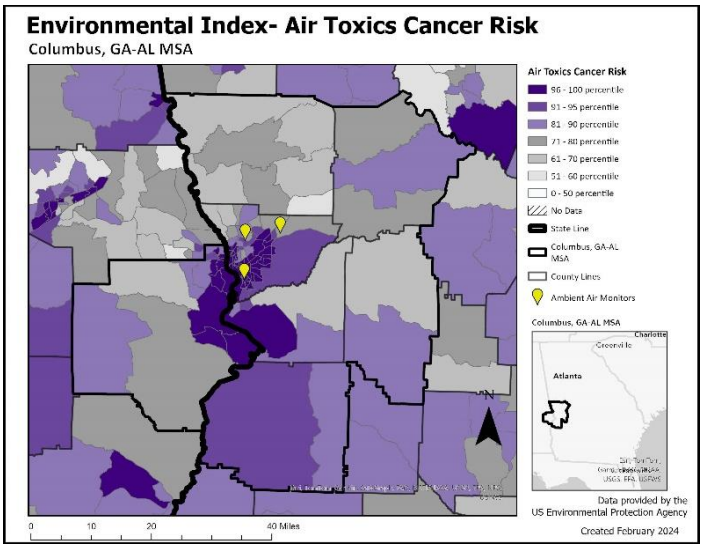

Supplemental Index- Air Toxics Cancer Risk
Air Toxics Cancer Risk
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
County Lines
Ambient Air Monitors
N
GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION
0 40 80 160 Miles
Data provided by the US Environmental Protection Agency
Georgia Department of Natural Resources Environmental Protection Division, February 2024

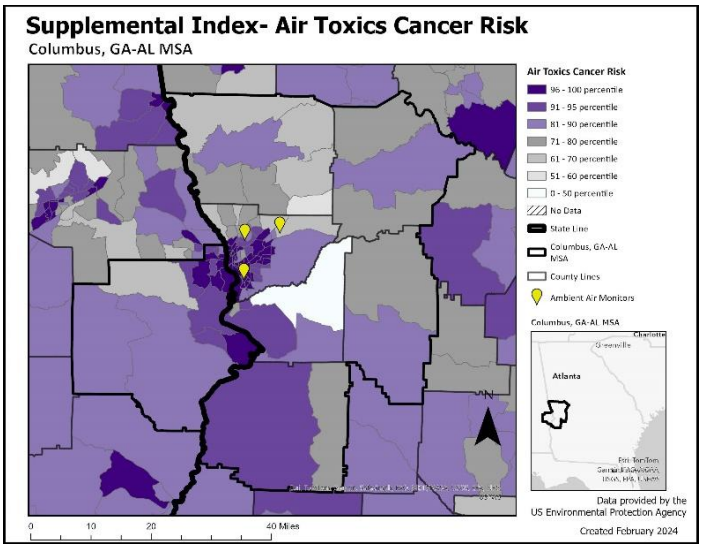

Environmental Index- Air Toxics Cancer Risk
Atlanta-Sandy Springs-Alpharetta MSA
Air Toxics Cancer Risk
Atlanta Sandy Springs Alpharetta MSA
Atlanta
0 15 30 60 Miles
Data provided by the US Environmental Protection Agency
Created February 2024

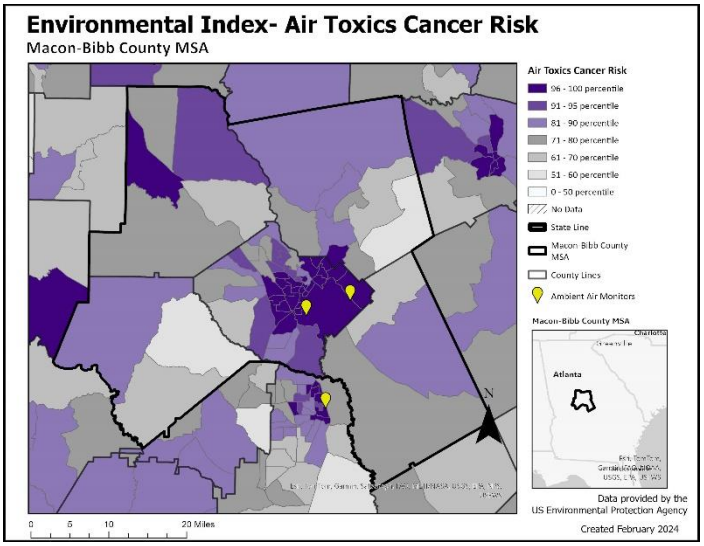

Supplemental Index- Air Toxics Cancer Risk
Atlanta-Sandy Springs-Alpharetta MSA
Air Toxics Cancer Risk
Atlanta Sandy Springs Alpharetta MSA
Atlanta
0 15 30 60 Miles
Data provided by the US Environmental Protection Agency
Created February 2024

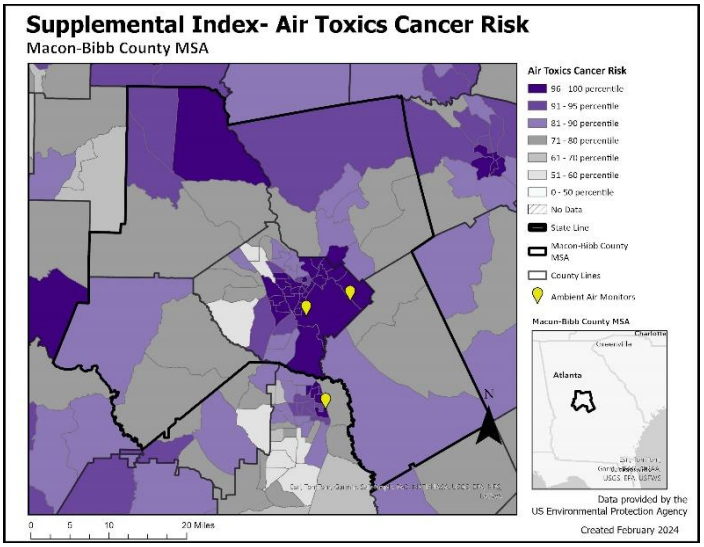

Environmental Index- Air Toxics Cancer Risk
Augusta-Richmond County, GA-SC MSA
Air Toxics Cancer Risk
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Augusta-Richmond County, GA-SC MSA
County Lines
Ambient Air Monitors
Augusta-Richmond County, GA-SC MSA
Atlanta
Charlotte
Greenville
0 12.5 25 50 Miles
N
Data provided by the US Environmental Protection Agency
Created February 2024

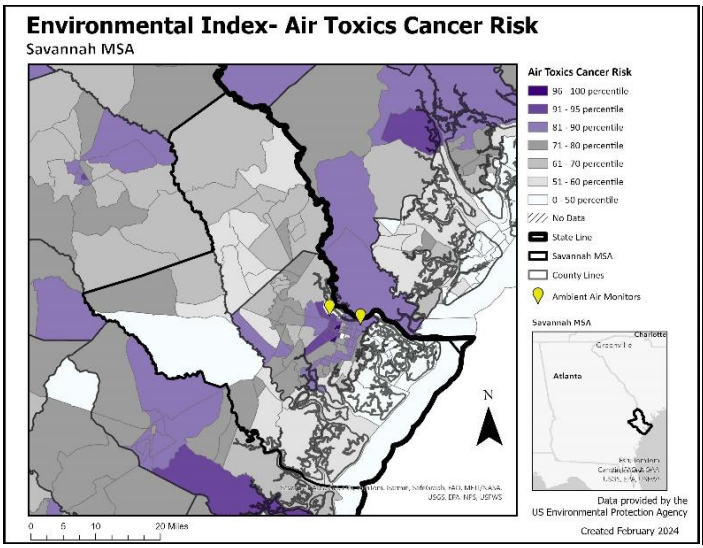

Supplemental Index- Air Toxics Cancer Risk
Augusta-Richmond County, GA-SC MSA
Air Toxics Cancer Risk
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Augusta-Richmond County, GA-SC MSA
County Lines
Ambient Air Monitors
Augusta-Richmond County, GA-SC MSA
Atlanta
Charlotte
Greenville
0 12.5 25 50 Miles
N
Data provided by the US Environmental Protection Agency
Created February 2024

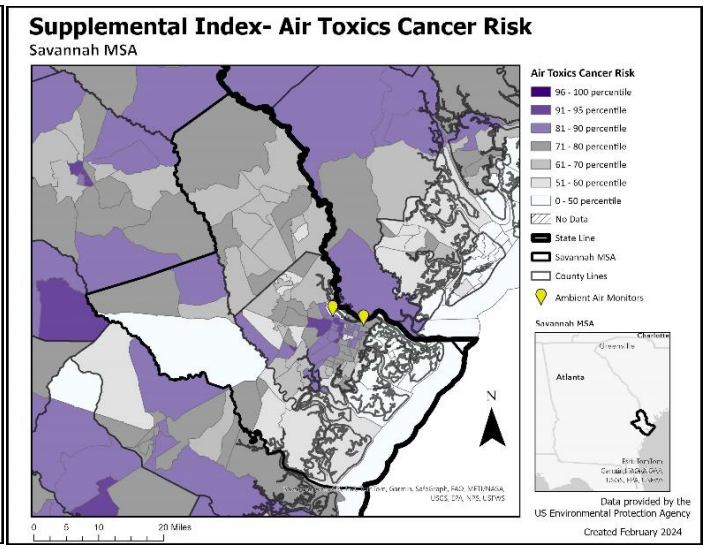

Environmental Index- Air Toxics Cancer Risk
Columbus, GA-AL MSA
Air Toxics Cancer Risk
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Columbus, GA-AL MSA
County Lines
Ambient Air Monitors
Columbus, GA-AL MSA
Atlanta
Charlotte
Greenville
0 10 20 40 Miles
N
Data provided by the US Environmental Protection Agency
Created February 2024


Supplemental Index- Air Toxics Cancer Risk
Columbus, GA-AL MSA
Air Toxics Cancer Risk
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Columbus, GA-AL MSA
County Lines
Ambient Air Monitors
Columbus, GA-AL MSA
Atlanta
Charlotte
Greenville
0 10 20 40 Miles
N
Data provided by the US Environmental Protection Agency
Created February 2024


Environmental Index- Air Toxics Cancer Risk
Macon-Bibb County MSA
Air Toxics Cancer Risk
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Macon-Bibb County MSA
County Lines
Ambient Air Monitors
Macon-Bibb County MSA
Atlanta
Charlotte
Greenville
0 5 10 20 Miles
N
Data provided by the US Environmental Protection Agency
Created February 2024

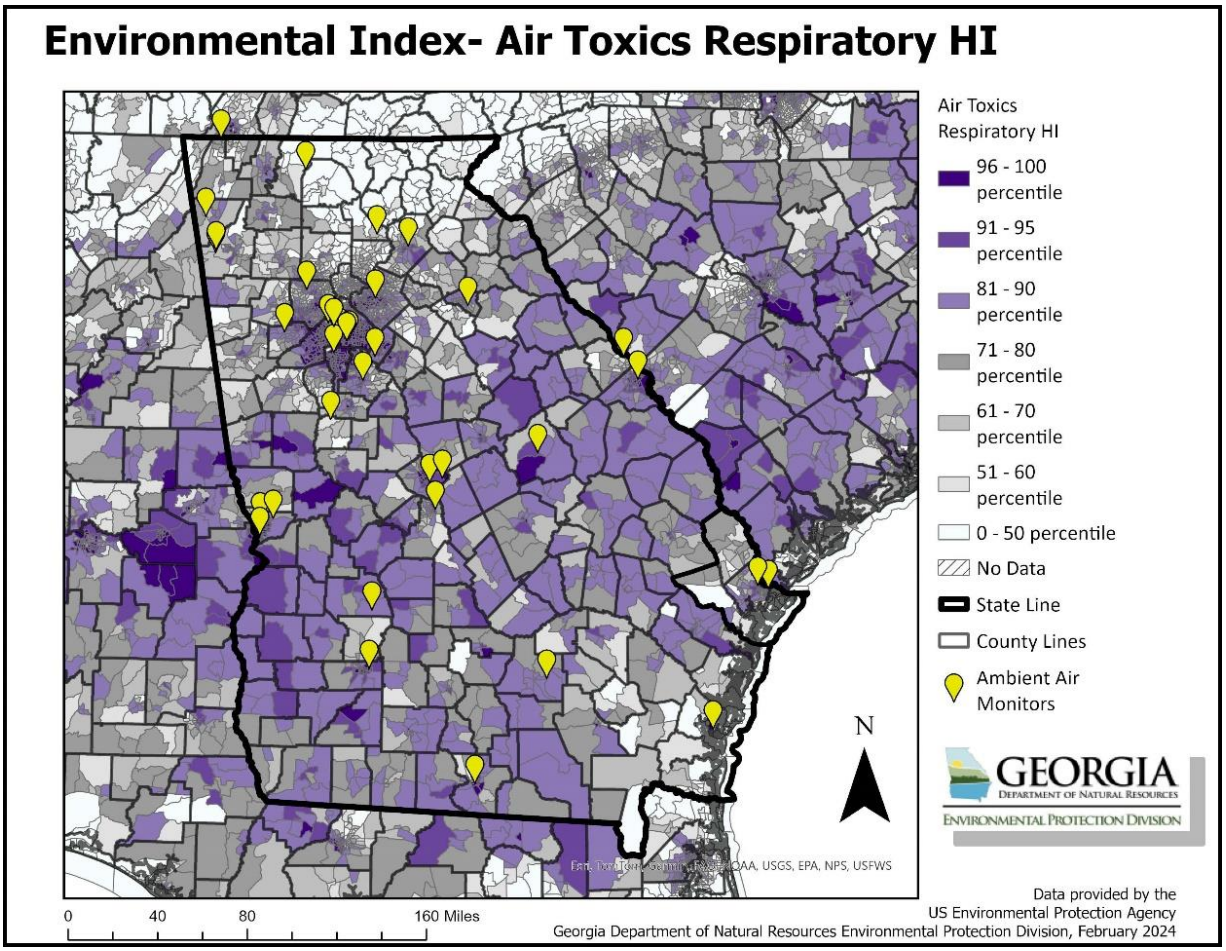

Supplemental Index- Air Toxics Cancer Risk
Macon-Bibb County MSA
Air Toxics Cancer Risk
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Macon-Bibb County MSA
County Lines
Ambient Air Monitors
Macon-Bibb County MSA
Atlanta
Charlotte
Greenville
0 5 10 20 Miles
N
Data provided by the US Environmental Protection Agency
Created February 2024

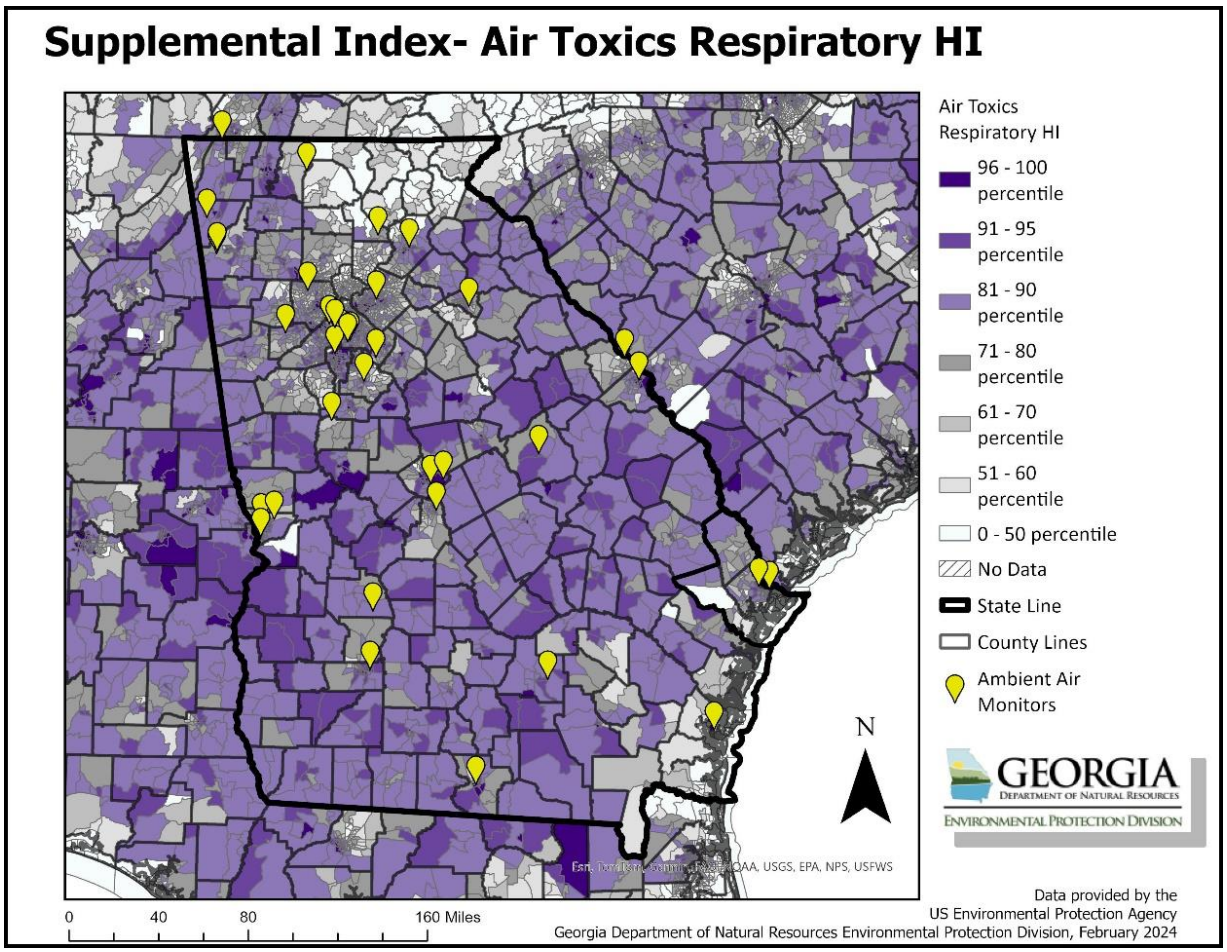

Environmental Index- Air Toxics Cancer Risk
Savannah MSA
Air Toxics Cancer Risk
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Savannah MSA
County Lines
Ambient Air Monitors
Savannah MSA
Charlotte
Greenville
Atlanta
N
0 5 10 20 Miles
Data provided by the
US Environmental Protection Agency
Created February 2024

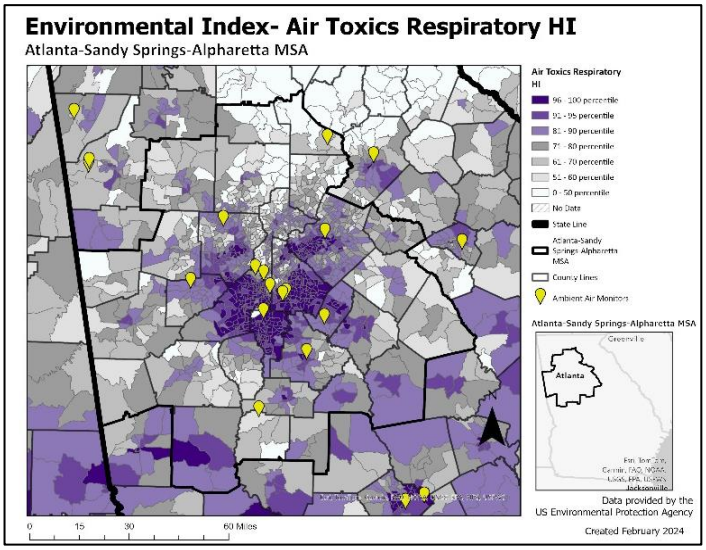

Supplemental Index- Air Toxics Cancer Risk
Savannah MSA
Air Toxics Cancer Risk
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Savannah MSA
County Lines
Ambient Air Monitors
Savannah MSA
Charlotte
Greenville
Atlanta
N
0 5 10 20 Miles
Data provided by the
US Environmental Protection Agency
Created February 2024

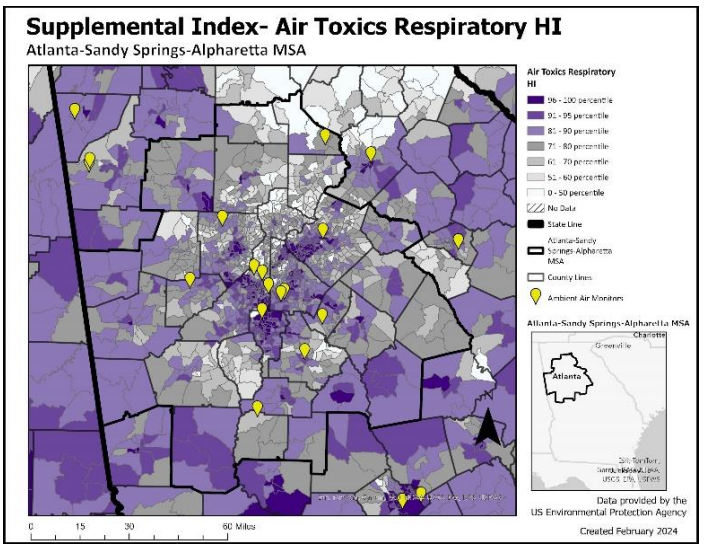
Air Toxics Respiratory Hazard HI Distribution Across Georgia

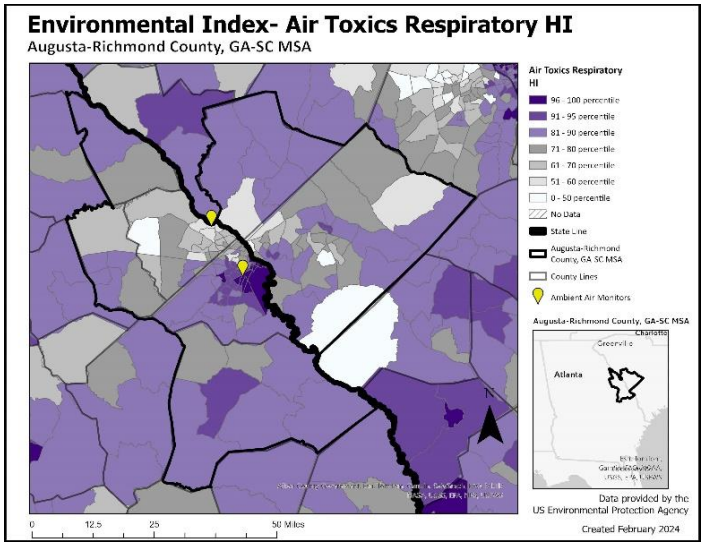
The maps below show Georgia's census tracts in relation to potential non-cancerous Respiratory Hazard Index (HI) distribution from air toxics. There is a difference in the Supplemental and Environmental Justice (EJ) Index maps due to the Supplemental Index maps including additional factors than what is included in the EJ Indexes maps. There are no ambient air quality standards for air toxics. Sources for these compounds are regulated through the permitting process for the applicable industries.




Supplemental Index- Air Toxics Respiratory HI
Air Toxics Respiratory HI
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
County Lines
Ambient Air Monitors
N
GEORGIA
Department of Natural Resources
Environmental Protection Division
Esri, DeLorme, Garmin, FAO, NOAA, USGS, EPA, NPS, USFWS
0 40 80 160 Miles
Data provided by the US Environmental Protection Agency
Georgia Department of Natural Resources Environmental Protection Division, February 2024


Environmental Index- Air Toxics Respiratory HI
Atlanta-Sandy Springs-Alpharetta MSA
Air Toxics Respiratory HI
Atlanta-Sandy Springs-Alpharetta MSA
Atlanta
0 15 30 60 Miles
Data provided by the US Environmental Protection Agency
Created February 2024


Supplemental Index- Air Toxics Respiratory HI
Atlanta-Sandy Springs-Alpharetta MSA
Air Toxics Respiratory HI
Atlanta-Sandy Springs-Alpharetta MSA
Atlanta
0 15 30 60 Miles
Data provided by the US Environmental Protection Agency
Created February 2024


Environmental Index- Air Toxics Respiratory HI
Augusta-Richmond County, GA-SC MSA
Air Toxics Respiratory HI
96 - 100 percentile
91 - 95 percentile
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51 - 60 percentile
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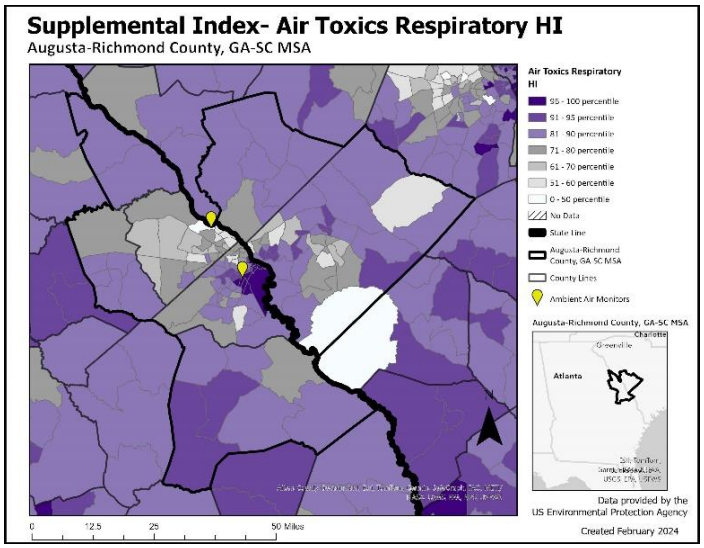
State Line
Augusta-Richmond County, GA-SC MSA
County Lines
Ambient Air Monitors
Augusta-Richmond County, GA-SC MSA
Charlotte
Greenville
Atlanta
0 12.5 25 50 Miles
Data provided by the US Environmental Protection Agency
Created February 2024


Supplemental Index- Air Toxics Respiratory HI
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81 - 90 percentile
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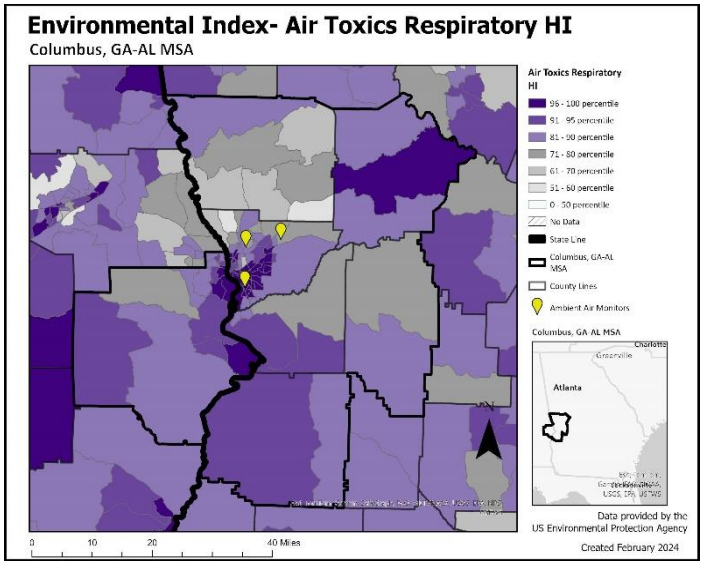
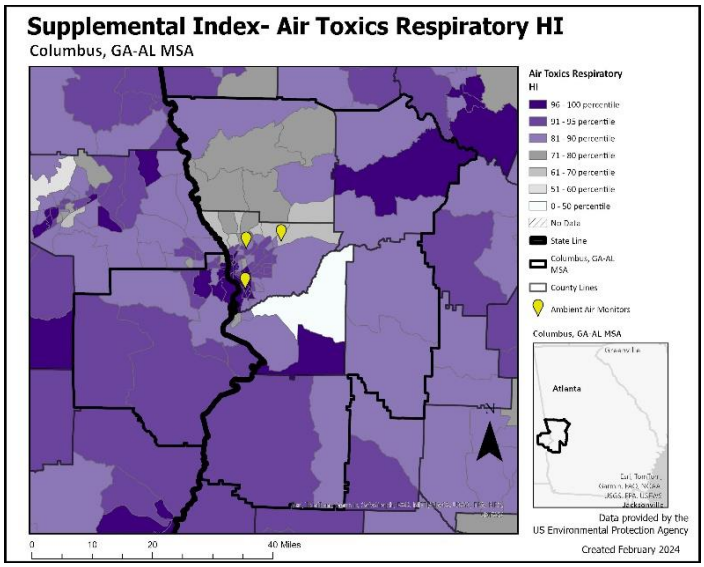
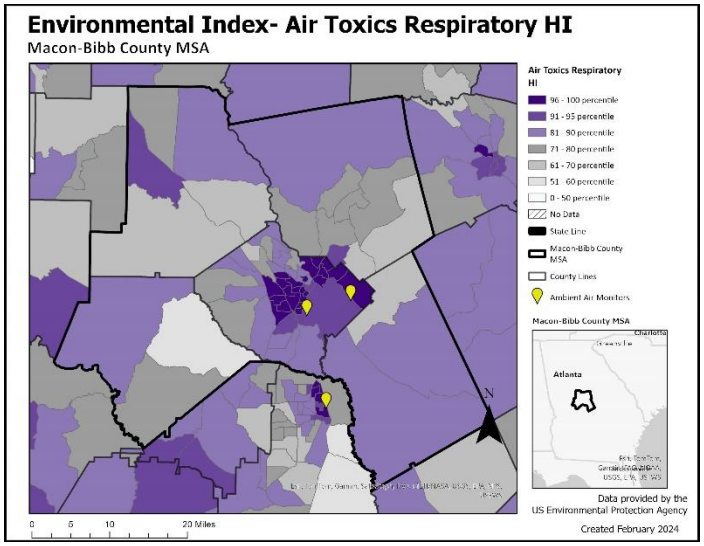
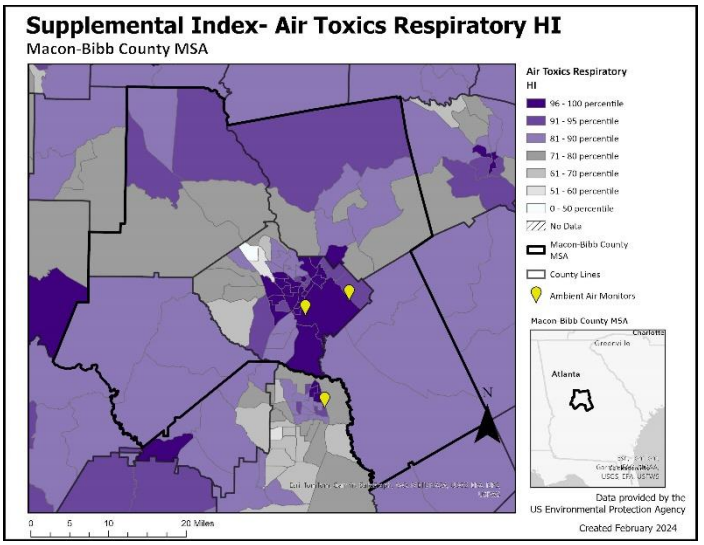
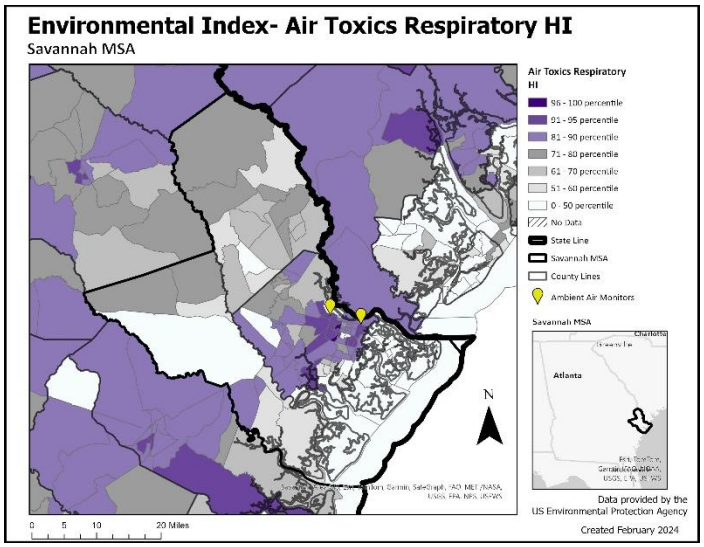
0 - 50 percentile
No Data
State Line
Augusta-Richmond County, GA-SC MSA
County Lines
Ambient Air Monitors
Augusta-Richmond County, GA-SC MSA
Charlotte
Greenville
Atlanta
0 12.5 25 50 Miles
Data provided by the US Environmental Protection Agency
Created February 2024

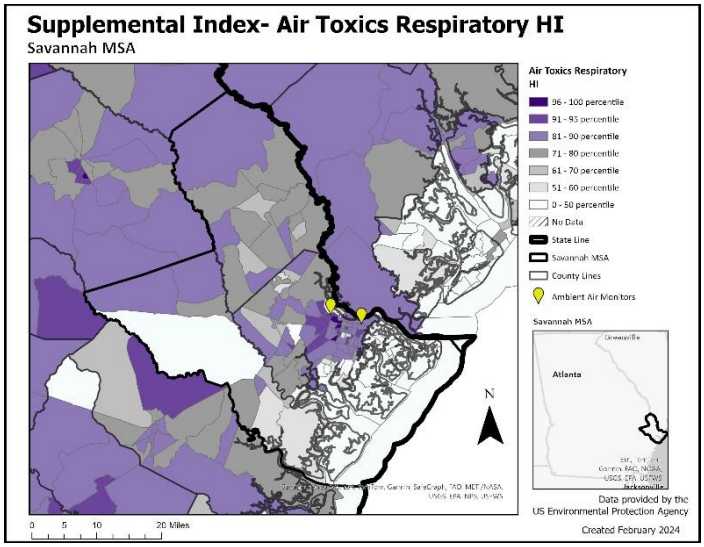

Environmental Index- Air Toxics Respiratory HI
Columbus, GA-AL MSA
Air Toxics Respiratory HI
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Columbus, GA-AL MSA
County Lines
Ambient Air Monitors
Columbus, GA-AL MSA
Charlotte
Greenville
Atlanta
0 10 20 40 Miles
Data provided by the US Environmental Protection Agency
Created February 2024


Supplemental Index- Air Toxics Respiratory HI
Columbus, GA-AL MSA
Air Toxics Respiratory HI
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Columbus, GA-AL MSA
County Lines
Ambient Air Monitors
Columbus, GA-AL MSA
Atlanta
0 10 20 40 Miles
Data provided by the US Environmental Protection Agency
Created February 2024


Environmental Index- Air Toxics Respiratory HI
Macon-Bibb County MSA
Air Toxics Respiratory HI
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Macon-Bibb County MSA
County Lines
Ambient Air Monitors
Macon-Bibb County MSA
Charlotte
Atlanta
0 5 10 20 Miles
Data provided by the US Environmental Protection Agency
Created February 2024

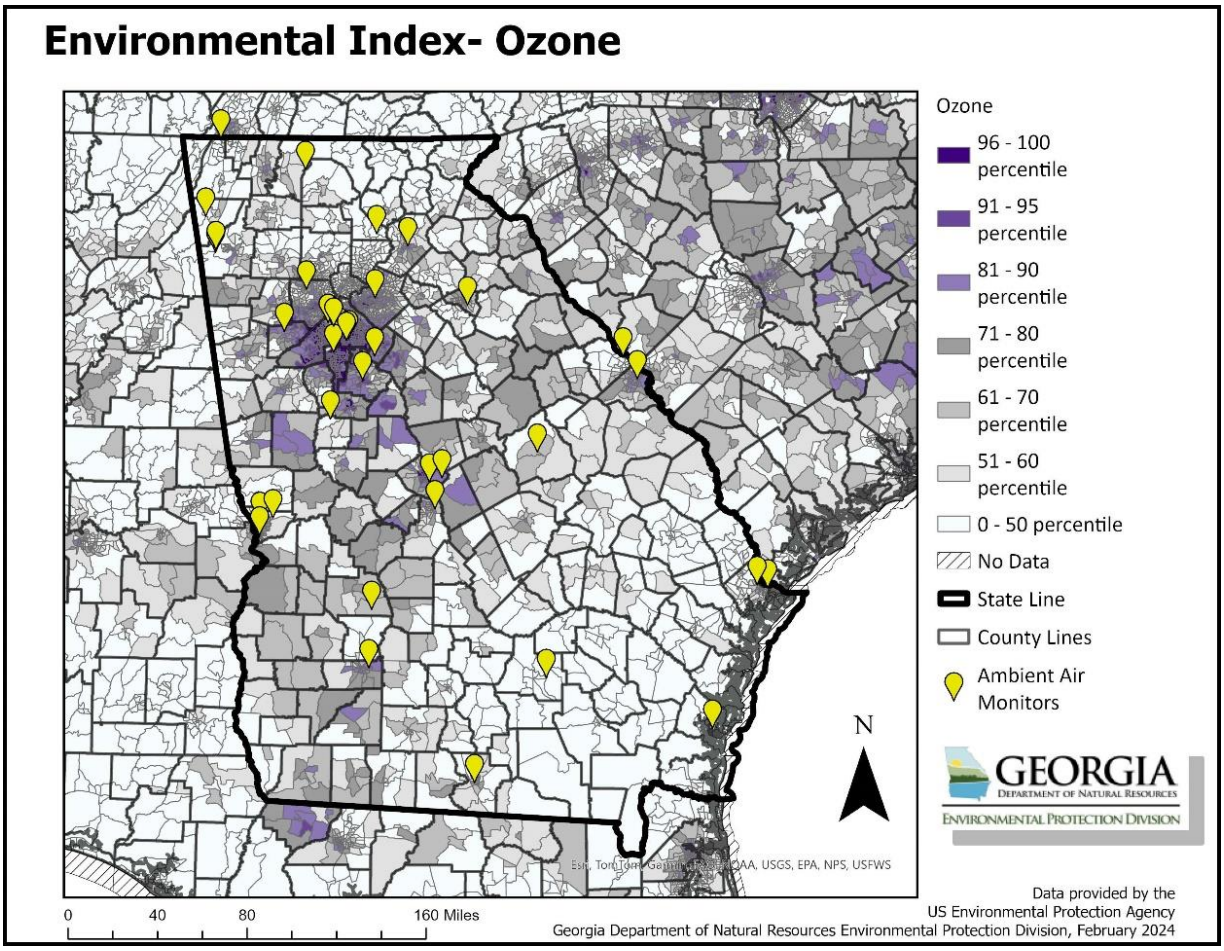

Supplemental Index- Air Toxics Respiratory HI
Macon-Bibb County MSA
Air Toxics Respiratory HI
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
Macon-Bibb County MSA
County Lines
Ambient Air Monitors
Macon-Bibb County MSA
Charlotte
Atlanta
0 5 10 20 Miles
Data provided by the US Environmental Protection Agency
Created February 2024

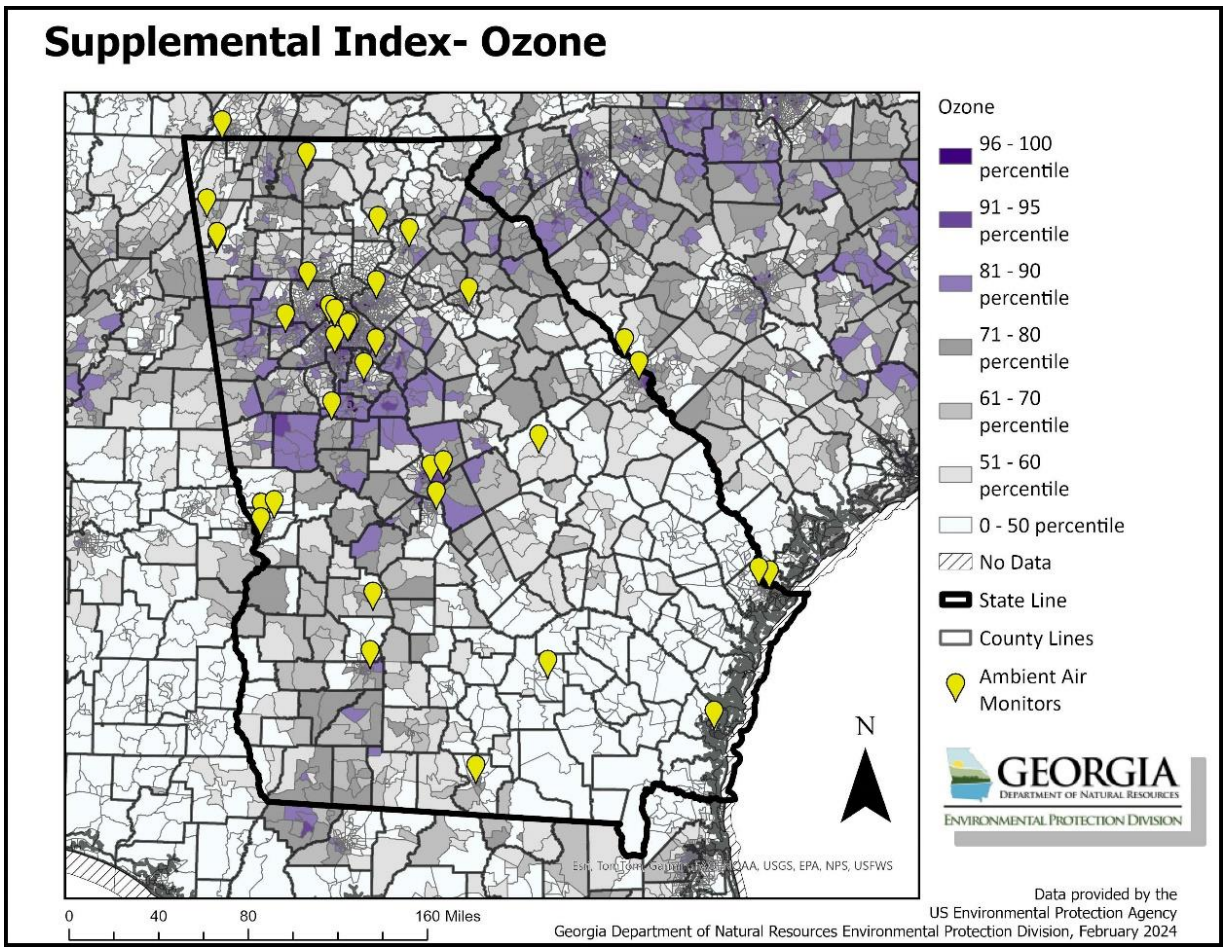

Environmental Index- Air Toxics Respiratory HI
Savannah MSA
Air Toxics Respiratory HI
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Savannah MSA
County Lines
Ambient Air Monitors
Savannah MSA
Atlanta
N
0 5 10 20 Miles
Data provided by the US Environmental Protection Agency
Created February 2024


Supplemental Index- Air Toxics Respiratory HI
Savannah MSA
Air Toxics Respiratory HI
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Savannah MSA
County Lines
Ambient Air Monitors
Savannah MSA
Atlanta
N
0 5 10 20 Miles
Data provided by the US Environmental Protection Agency
Created February 2024

Ozone Distribution Across Georgia

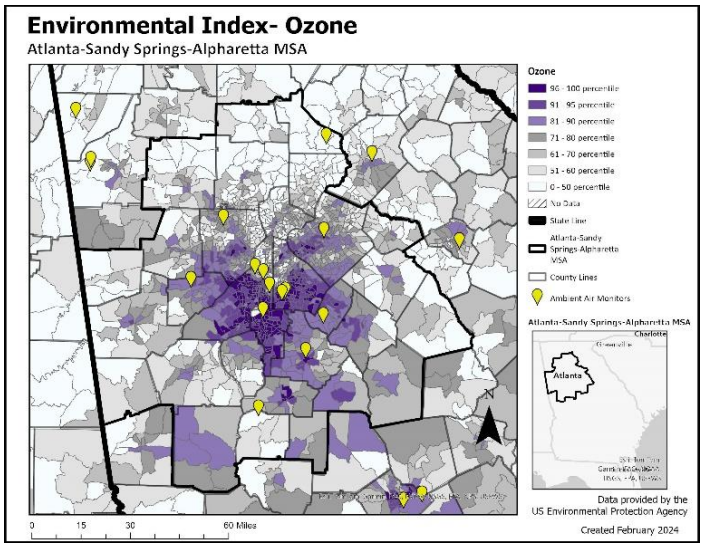
Ozone levels around the 50th percentile are observed in Georgia's Piedmont region, forming a belt stretching from the state's southwest corner, through the Atlanta-Sandy Springs-Alpharetta MSA, and into South Carolina. A majority of the EJ Index values for ozone across Georgia are below the 50th percentile, especially in the north Georgia mountains and across the eastern coastal plain. Supplemental Indexes reveal slightly higher levels along the state's northern border due to population dynamics. Overall, ozone distribution is consistent across both EJ and Supplemental Indexes.

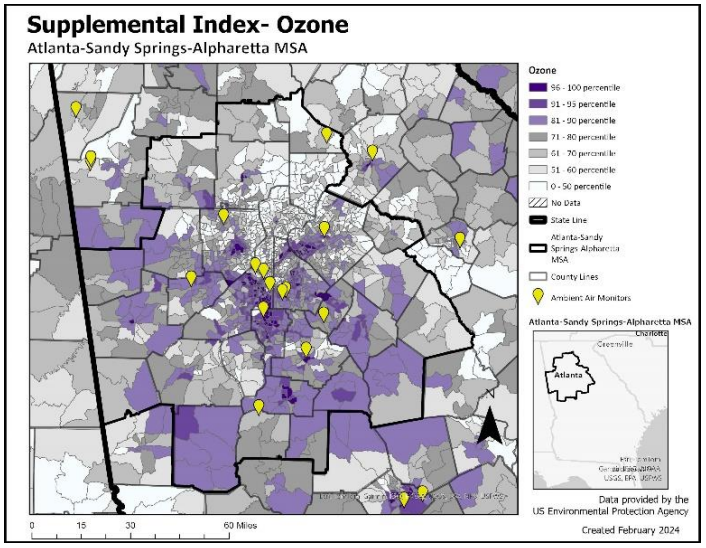


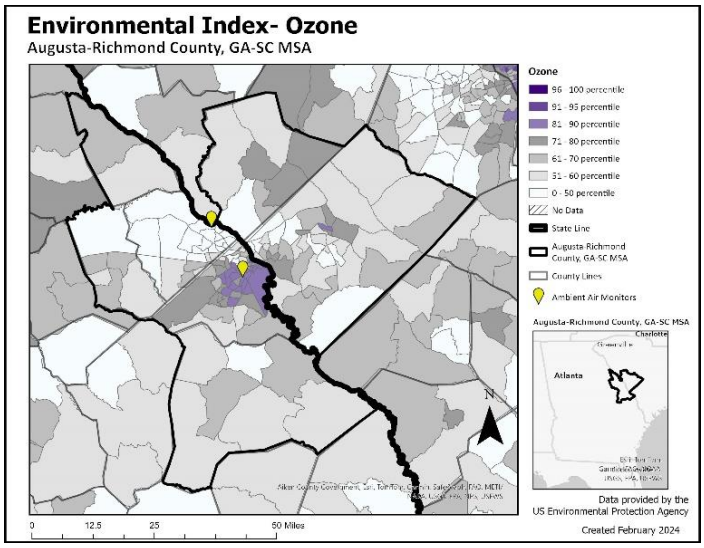


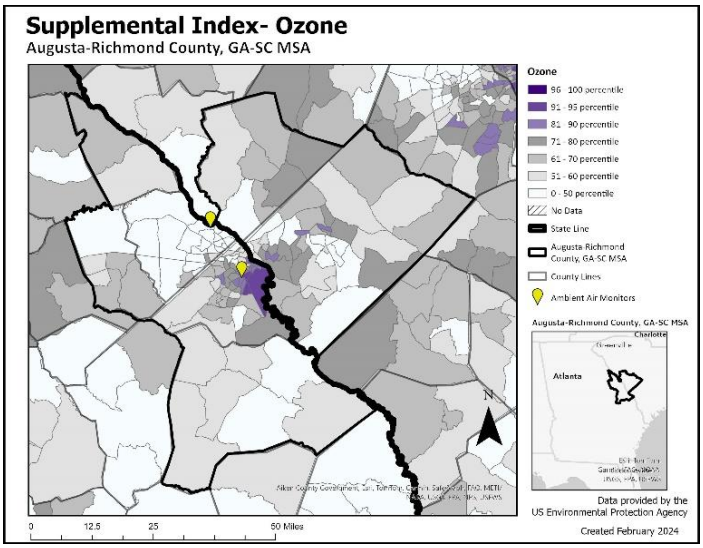
Ozone Distribution Across Metropolitan Areas and GA AAMP Coverage:

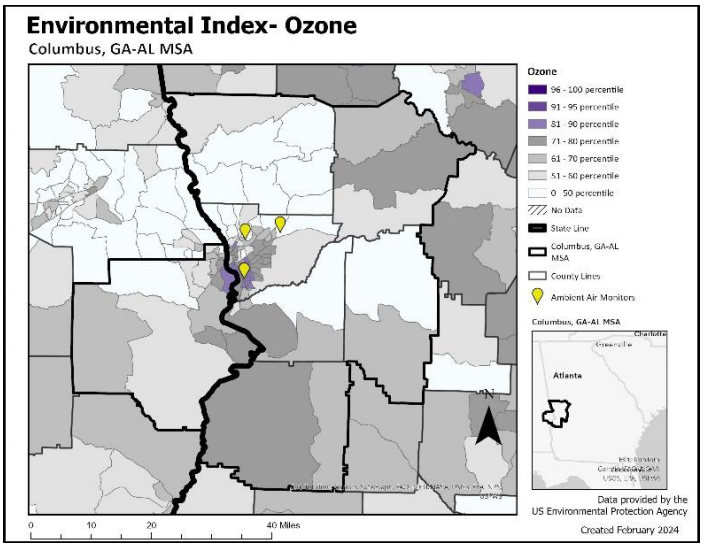
- The Atlanta-Sandy Springs-Alpharetta MSA exhibits an ozone distribution ranging from the 0-50th percentile to 96-100th percentile, reflecting its location within the Piedmont region and the concentration of urban and industrial activities. Multiple GA AAMP ambient air monitoring stations, including eight specifically to monitor ozone, are located within this MSA to provide widespread coverage.
- The Augusta-Richmond County GA-SC, Macon-Bibb County, Columbus GA-AL, and Savannah MSAs demonstrate the full range of ozone distribution from the 0-50th percentile to 95-100th percentile. GA AAMP has one to two ozone monitors in each of these MSAs providing ample coverage.

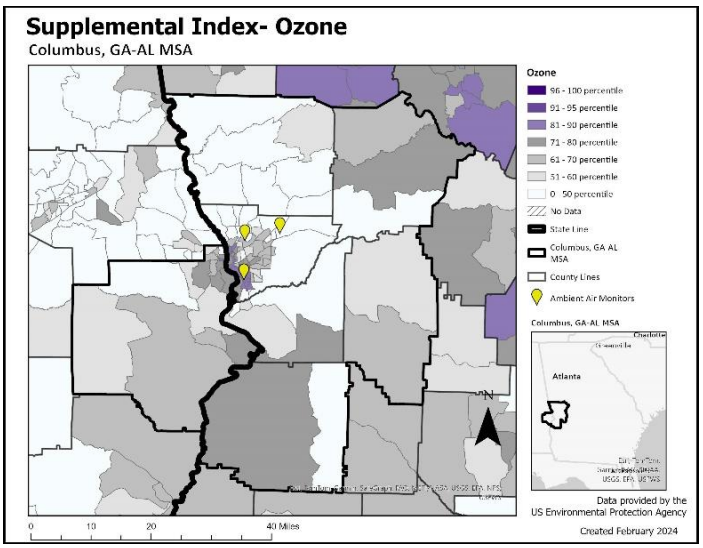

Environmental Index- Ozone
Atlanta-Sandy Springs-Alpharetta MSA
Ozone
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Atlanta-Sandy Springs-Alpharetta MSA
County Lines
Ambient Air Monitors
Atlanta-Sandy Springs-Alpharetta MSA
Charlotte
Atlanta
0 15 30 60 Miles
Data provided by the US Environmental Protection Agency
Created February 2024

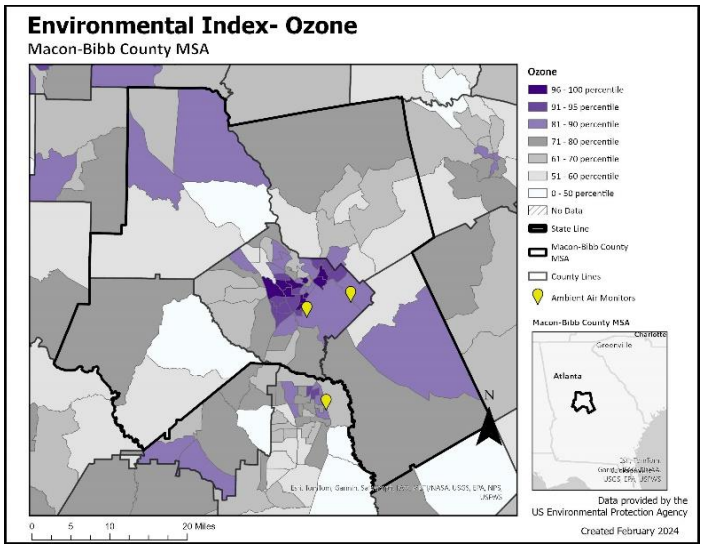

Supplemental Index- Ozone
Atlanta-Sandy Springs-Alpharetta MSA
Ozone
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Atlanta-Sandy Springs-Alpharetta MSA
County Lines
Ambient Air Monitors
Atlanta-Sandy Springs-Alpharetta MSA
Charlotte
Atlanta
0 15 30 60 Miles
Data provided by the US Environmental Protection Agency
Created February 2024

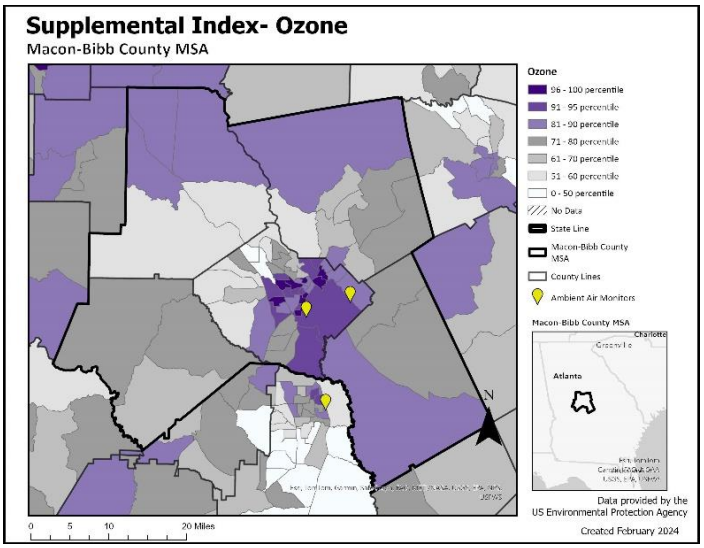

Environmental Index- Ozone
Augusta-Richmond County, GA-SC MSA
Ozone
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Augusta-Richmond County, GA-SC MSA
County Lines
Ambient Air Monitors
Augusta-Richmond County, GA-SC MSA
Charlotte
Atlanta
0 12.5 25 50 Miles
Data provided by the US Environmental Protection Agency
Created February 2024

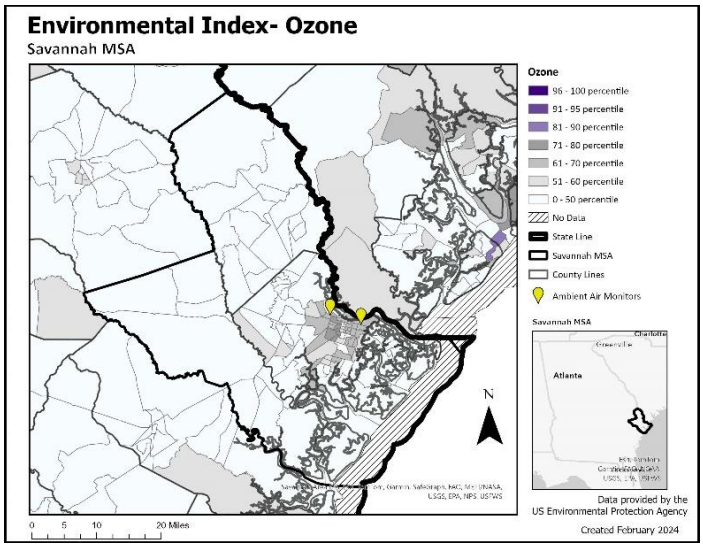

Supplemental Index- Ozone
Augusta-Richmond County, GA-SC MSA
Ozone
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Augusta-Richmond County, GA-SC MSA
County Lines
Ambient Air Monitors
Augusta-Richmond County, GA-SC MSA
Charlotte
Atlanta
0 12.5 25 50 Miles
Data provided by the US Environmental Protection Agency
Created February 2024

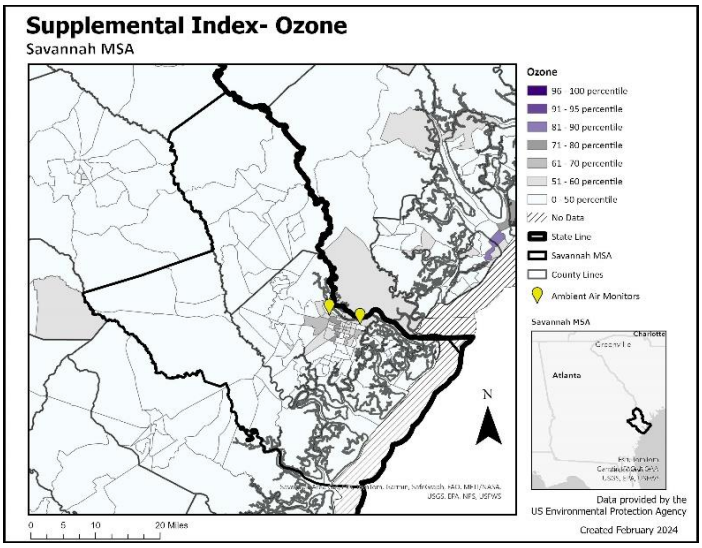

Environmental Index- Ozone
Columbus, GA-AL MSA
Ozone
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Columbus, GA-AL MSA
County Lines
Ambient Air Monitors
Columbus, GA-AL MSA
Charlotte
Atlanta
0 10 20 40 Miles
Data provided by the US Environmental Protection Agency
Created February 2024


Supplemental Index- Ozone
Columbus, GA-AL MSA
Ozone
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Columbus, GA-AL MSA
County Lines
Ambient Air Monitors
Columbus, GA-AL MSA
Charlotte
Atlanta
0 10 20 40 Miles
Data provided by the US Environmental Protection Agency
Created February 2024


Environmental Index- Ozone
Macon-Bibb County MSA
Ozone
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Macon-Bibb County MSA
County Lines
Ambient Air Monitors
Macon-Bibb County MSA
Charlotte
Greenville
Atlanta
N
0 5 10 20 Miles
Data provided by the US Environmental Protection Agency
Created February 2024

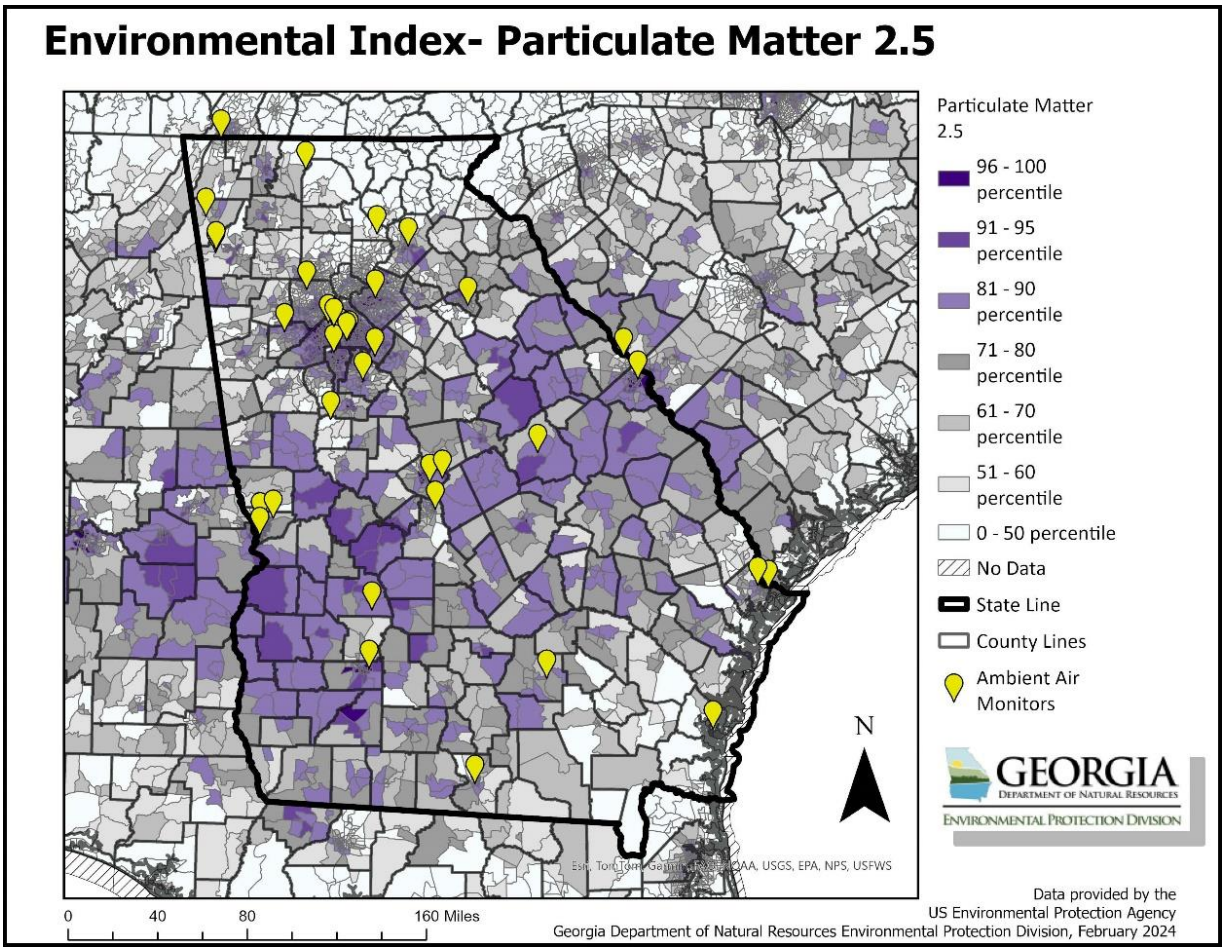

Supplemental Index- Ozone
Macon-Bibb County MSA
Ozone
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Macon-Bibb County MSA
County Lines
Ambient Air Monitors
Macon-Bibb County MSA
Charlotte
Greenville
Atlanta
N
0 5 10 20 Miles
Data provided by the US Environmental Protection Agency
Created February 2024

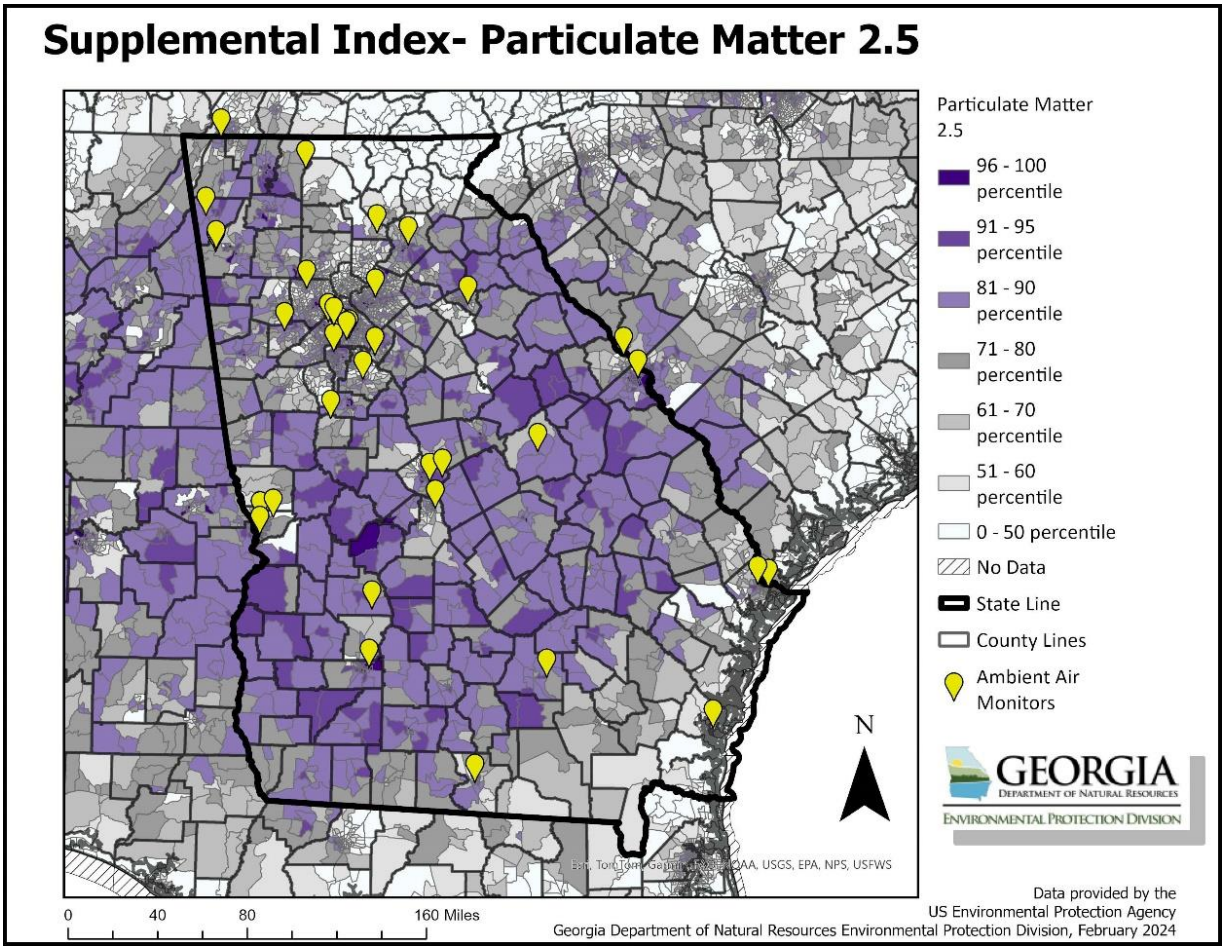

Environmental Index- Ozone
Savannah MSA
Ozone
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Savannah MSA
County Lines
Ambient Air Monitors
Savannah MSA
Charlotte
Greenville
Atlanta
N
0 5 10 20 Miles
Data provided by the US Environmental Protection Agency
Created February 2024


Supplemental Index- Ozone
Savannah MSA
Ozone
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Savannah MSA
County Lines
Ambient Air Monitors
Savannah MSA
Charlotte
Greenville
Atlanta
N
0 5 10 20 Miles
Data provided by the US Environmental Protection Agency
Created February 2024

$PM_{2.5}$ Distribution Across Georgia

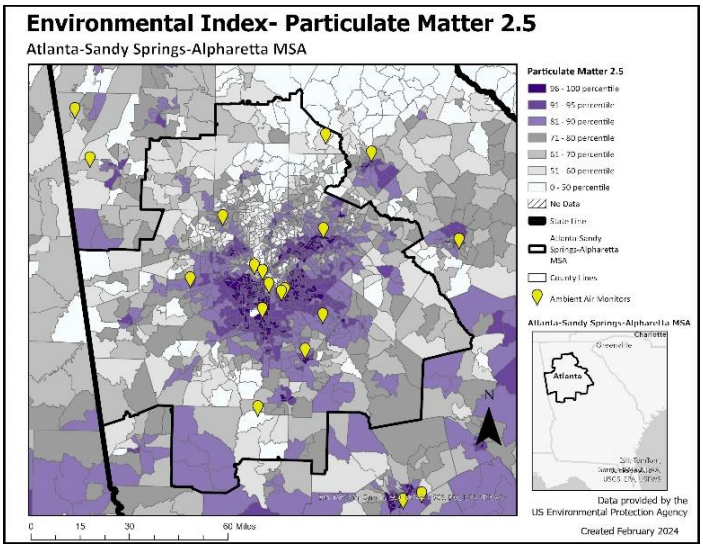
The EJ and Supplemental Indexes for the distribution of particulate matter less than 2.5 microns ($PM_{2.5}$) across the State of Georgia ranges from the 0-50th percentile to 91-95th percentile. There are tracts located within the MSAs that reach the 96-100th percentile range. GA AAMP has 35 ambient air monitoring stations, as indicated by the yellow markers on the maps, measuring multiple pollutants and providing widespread coverage across the state of Georgia. Refer to Appendix A for site-specific monitoring details.

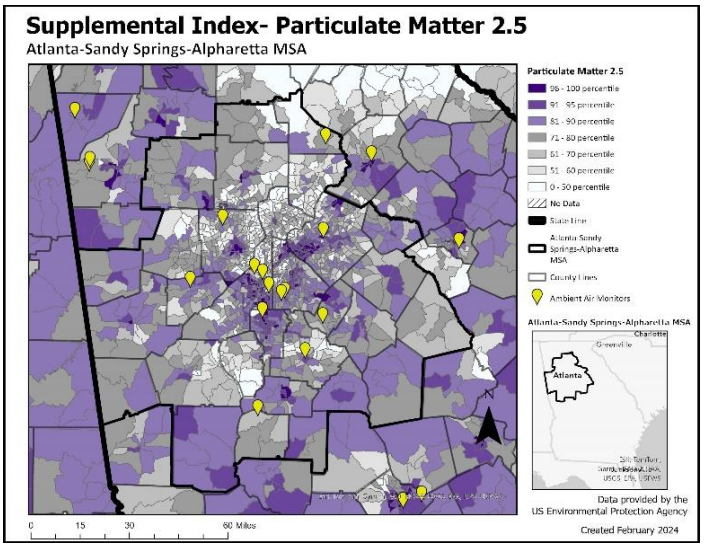


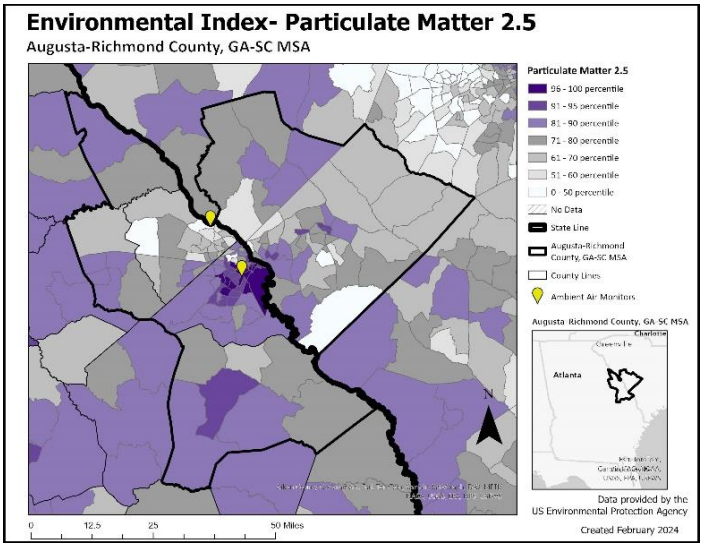


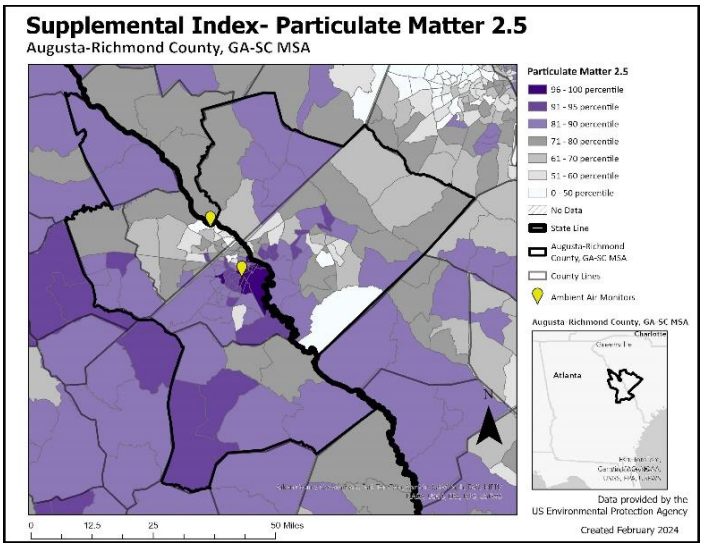
$PM_{2.5}$ Distribution Across Metropolitan Areas and GA AAMP Coverage:

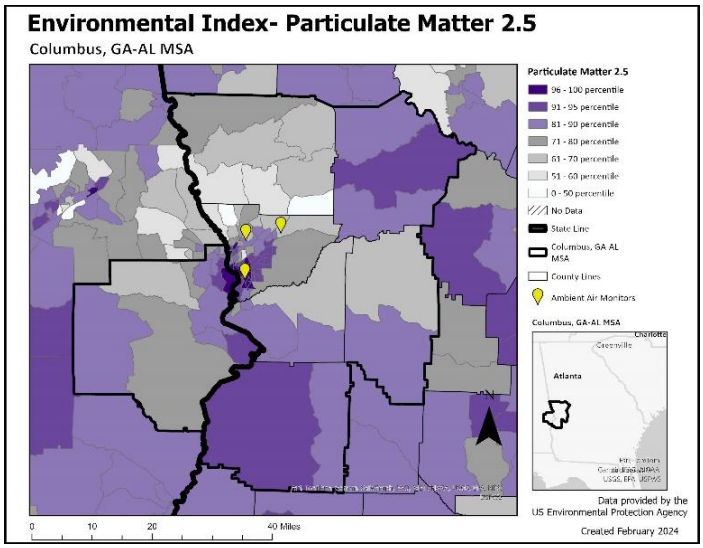
- The Atlanta-Sandy Springs-Alpharetta MSA contains tracts ranging from the 0-50th percentile to the 96-100th percentile for the $PM_{2.5}$ distribution. GA AAMP's ambient air monitoring network is particularly extensive across the MSA, with 13 ambient air monitoring stations within the MSA.
- The Augusta-Richmond County GA-SC, Macon-Bibb County, Columbus GA-AL, and Savannah MSAs have tracts ranging from the 0-50th percentile and the 96-100th percentile for $PM_{2.5}$ distribution within each MSA. These MSAs each have at least one $PM_{2.5}$ ambient air monitoring station to cover the areas.

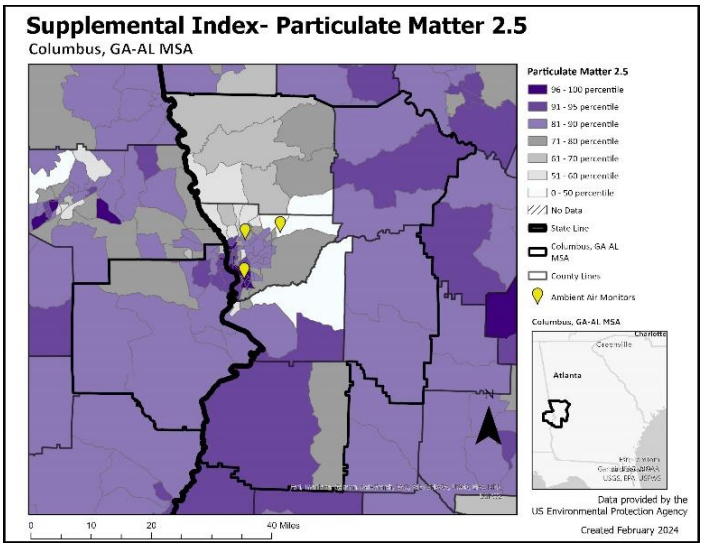

Environmental Index- Particulate Matter 2.5
Atlanta-Sandy Springs-Alpharetta MSA
Particulate Matter 2.5
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Atlanta-Sandy Springs-Alpharetta MSA
County Lines
Ambient Air Monitors
Atlanta-Sandy Springs-Alpharetta MSA
Charlotte
Greenville
Atlanta
0 15 30 60 Miles
Data provided by the US Environmental Protection Agency
Created February 2024

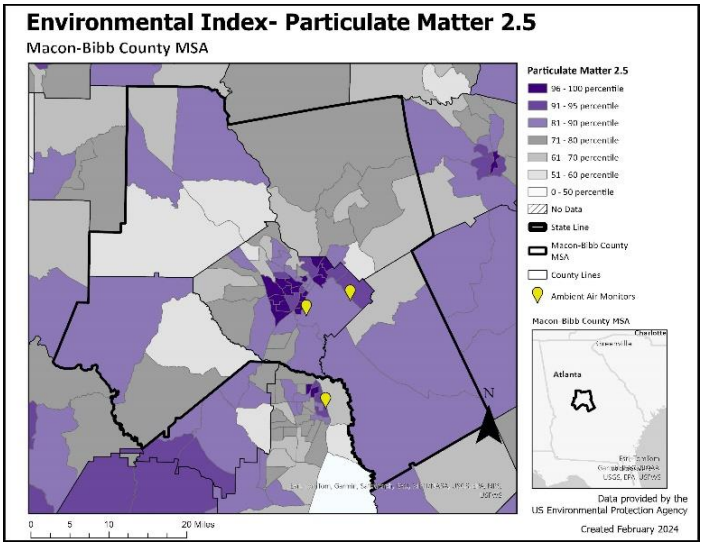

Supplemental Index- Particulate Matter 2.5
Atlanta-Sandy Springs-Alpharetta MSA
Particulate Matter 2.5
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Atlanta-Sandy Springs-Alpharetta MSA
County Lines
Ambient Air Monitors
Atlanta-Sandy Springs-Alpharetta MSA
Charlotte
Greenville
Atlanta
0 15 30 60 Miles
Data provided by the US Environmental Protection Agency
Created February 2024

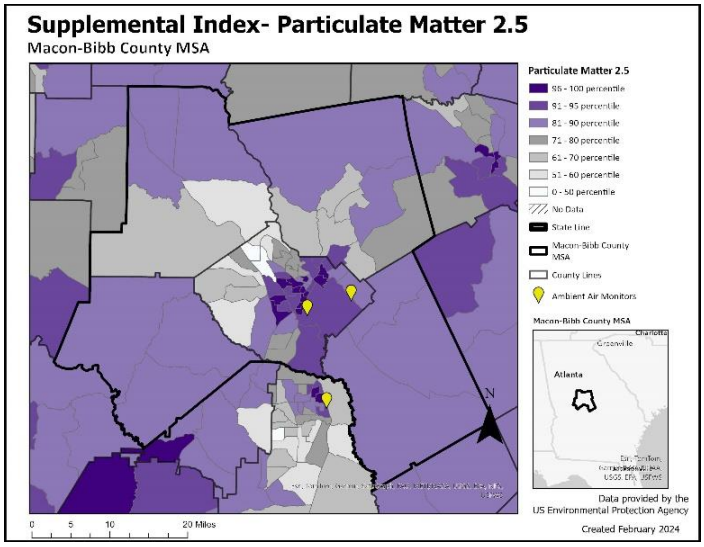

Environmental Index- Particulate Matter 2.5
Augusta-Richmond County, GA-SC MSA
Particulate Matter 2.5
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Augusta-Richmond County, GA-SC MSA
County Lines
Ambient Air Monitors
Augusta-Richmond County, GA-SC MSA
Charlotte
Atlanta
0 12.5 25 50 Miles
Data provided by the US Environmental Protection Agency
Created February 2024

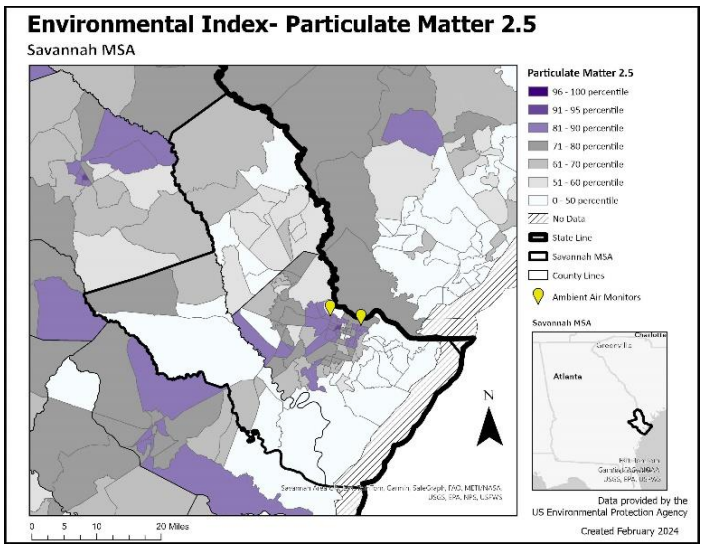

Supplemental Index- Particulate Matter 2.5
Augusta-Richmond County, GA-SC MSA
Particulate Matter 2.5
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Augusta-Richmond County, GA-SC MSA
County Lines
Ambient Air Monitors
Augusta-Richmond County, GA-SC MSA
Charlotte
Atlanta
0 12.5 25 50 Miles
Data provided by the US Environmental Protection Agency
Created February 2024

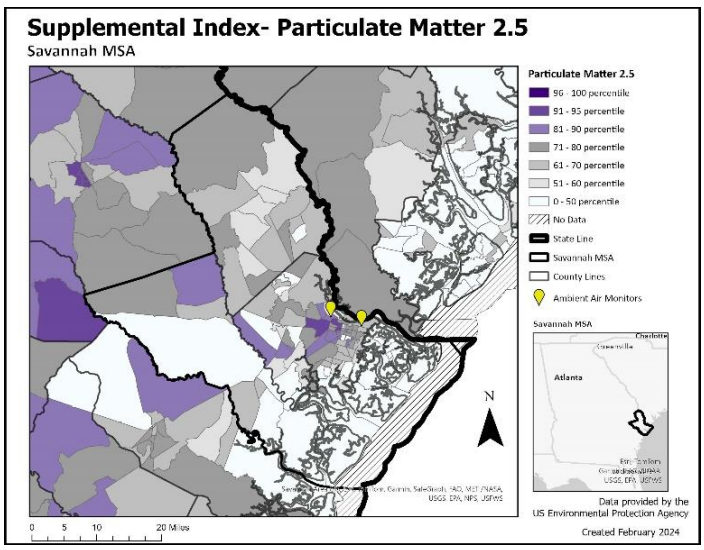

Environmental Index- Particulate Matter 2.5
Columbus, GA-AL MSA
Particulate Matter 2.5
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Columbus, GA AL MSA
County Lines
Ambient Air Monitors
Columbus, GA-AL MSA
Charlotte
Greenville
Atlanta
0 10 20 40 Miles
Data provided by the US Environmental Protection Agency
Created February 2024


Supplemental Index- Particulate Matter 2.5
Columbus, GA-AL MSA
Particulate Matter 2.5
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Columbus, GA AL MSA
County Lines
Ambient Air Monitors
Columbus, GA-AL MSA
Charlotte
Greenville
Atlanta
0 10 20 40 Miles
Data provided by the US Environmental Protection Agency
Created February 2024


Environmental Index- Particulate Matter 2.5
Macon-Bibb County MSA
Particulate Matter 2.5
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Macon-Bibb County MSA
County Lines
Ambient Air Monitors
Atlanta
0 5 10 20 Miles
Data provided by the US Environmental Protection Agency
Created February 2024

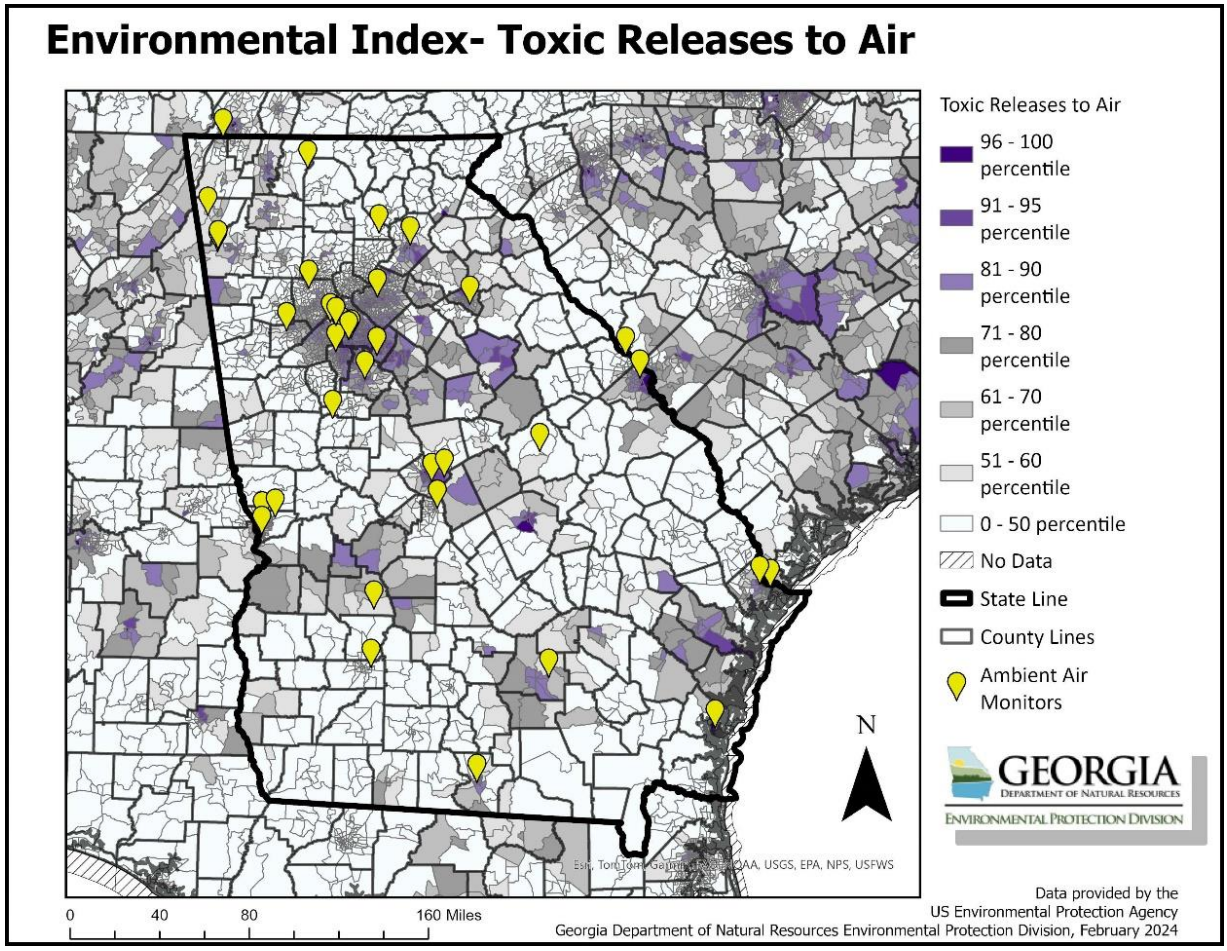

Supplemental Index- Particulate Matter 2.5
Macon-Bibb County MSA
Particulate Matter 2.5
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Macon-Bibb County MSA
County Lines
Ambient Air Monitors
Atlanta
0 5 10 20 Miles
Data provided by the US Environmental Protection Agency
Created February 2024

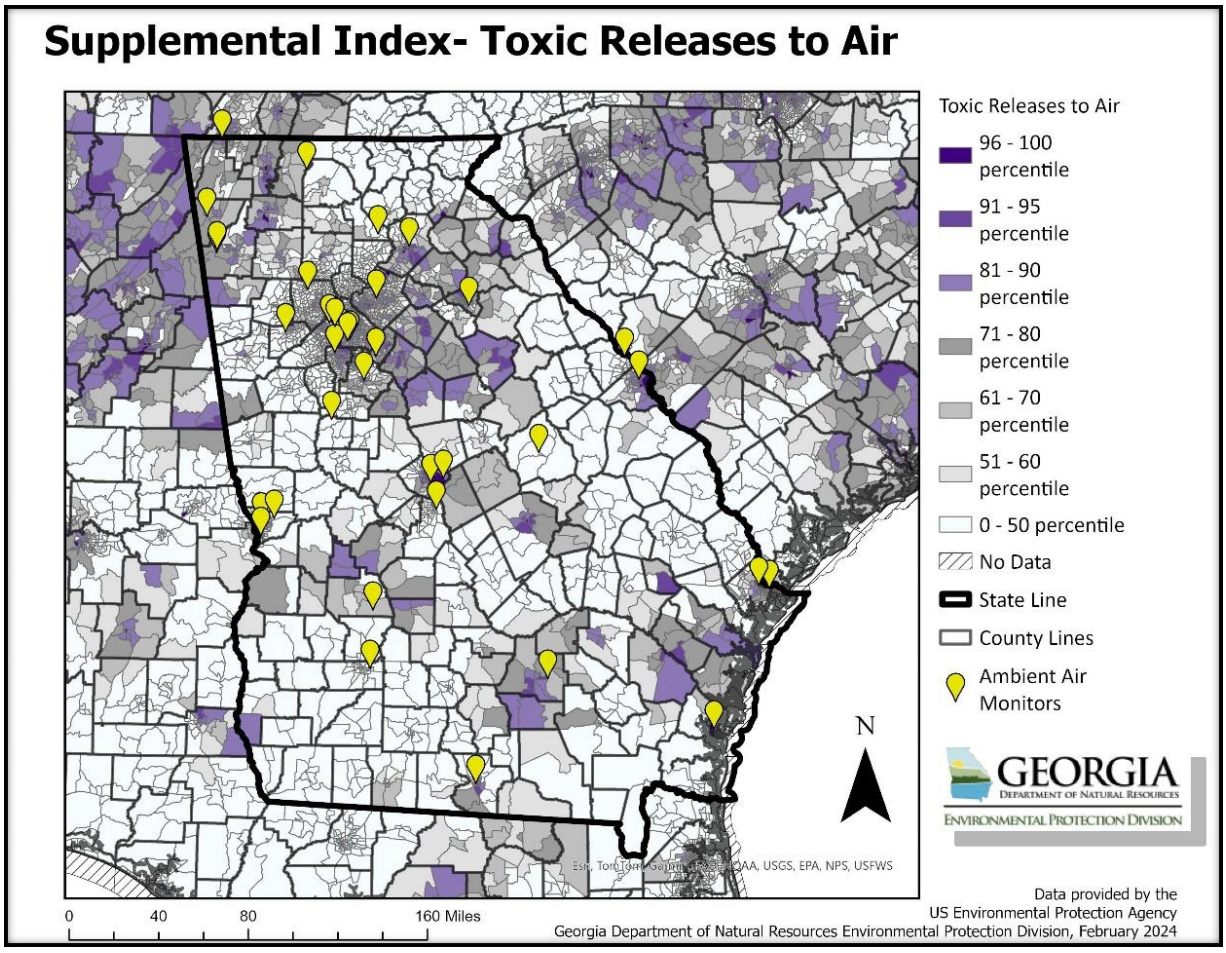

Environmental Index- Particulate Matter 2.5
Savannah MSA
Particulate Matter 2.5
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Savannah MSA
County Lines
Ambient Air Monitors
Atlanta
0 5 10 20 Miles
Data provided by the US Environmental Protection Agency
Created February 2024

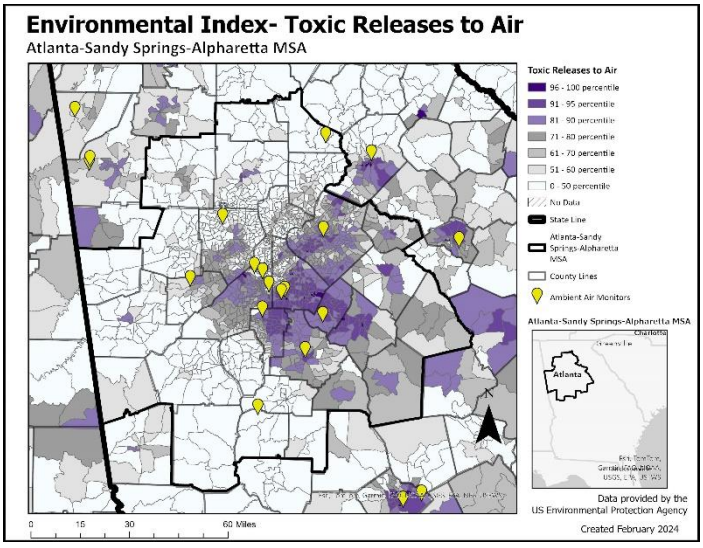

Supplemental Index- Particulate Matter 2.5
Savannah MSA
Particulate Matter 2.5
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Savannah MSA
County Lines
Ambient Air Monitors
Atlanta
0 5 10 20 Miles
Data provided by the US Environmental Protection Agency
Created February 2024

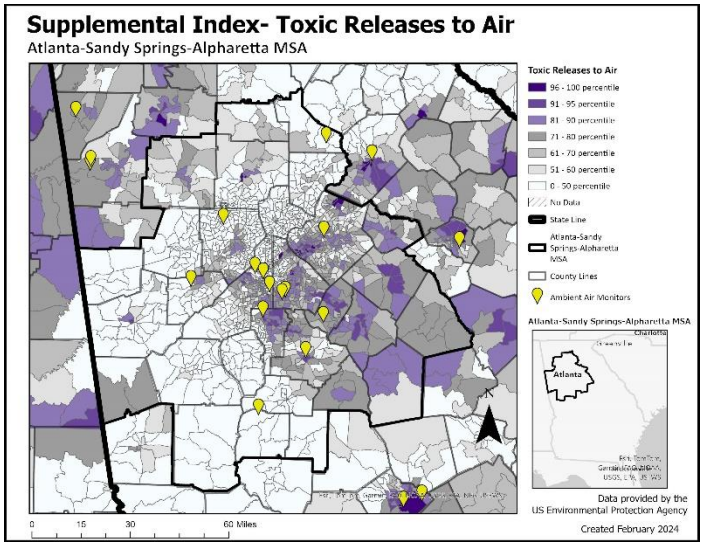
Toxic Releases to Air Distribution Across Georgia

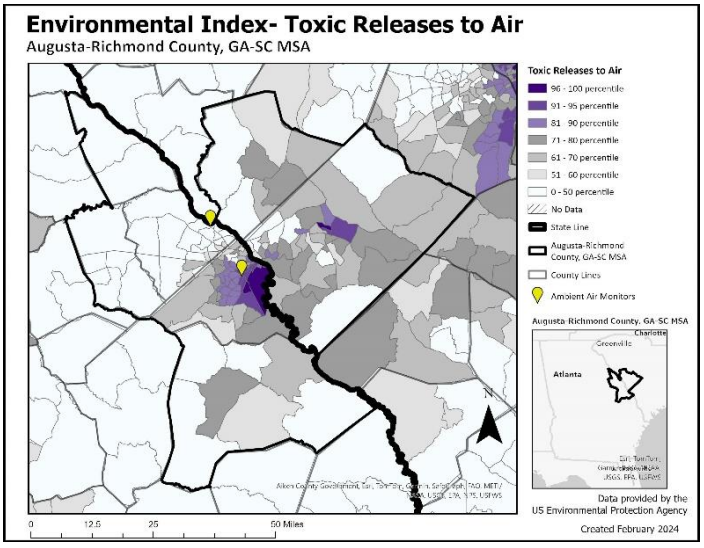
The majority of EJ Index values for toxic releases to air across Georgia are below the 50th percentile, as represented by the white tracts on the map below. EJ populations with 80th percentile and above are concentrated within Georgia's MSAs. Both the EJ and Supplemental Index maps exhibit similar patterns of distribution. There are no ambient air quality standards for air toxics. Sources for these compounds are regulated through the permitting process for the applicable industries.

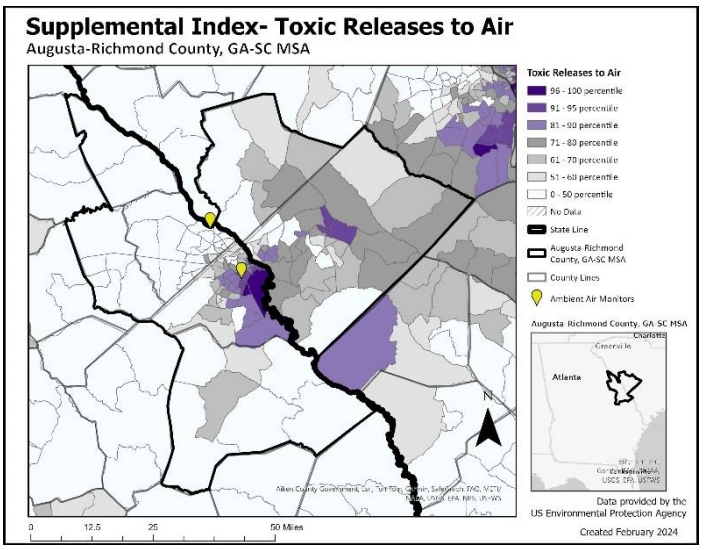


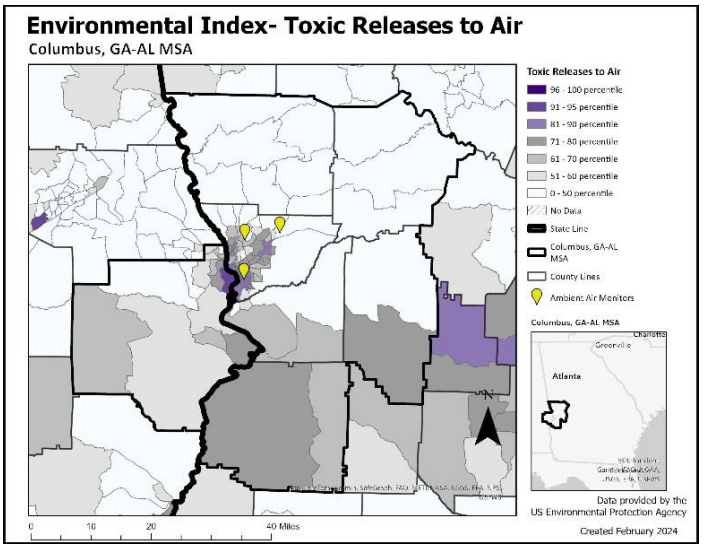

Supplemental Index- Toxic Releases to Air
Toxic Releases to Air
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
County Lines
Ambient Air Monitors
N
GEORGIA
Department of Natural Resources
Environmental Protection Division
0 40 80 160 Miles
Data provided by the US Environmental Protection Agency
Georgia Department of Natural Resources Environmental Protection Division, February 2024

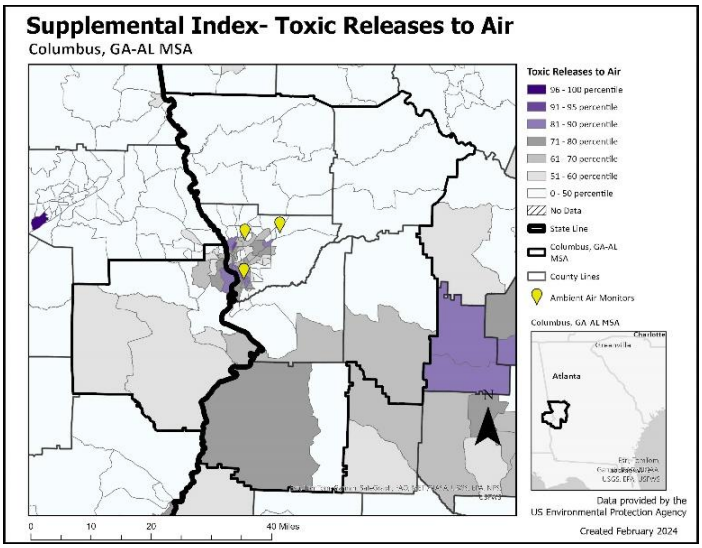

Environmental Index- Toxic Releases to Air
Atlanta-Sandy Springs-Alpharetta MSA
Toxic Releases to Air
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Atlanta-Sandy Springs-Alpharetta MSA
County Lines
Ambient Air Monitors
Atlanta-Sandy Springs-Alpharetta MSA
Atlanta
0 15 30 60 Miles
Data provided by the US Environmental Protection Agency
Created February 2024

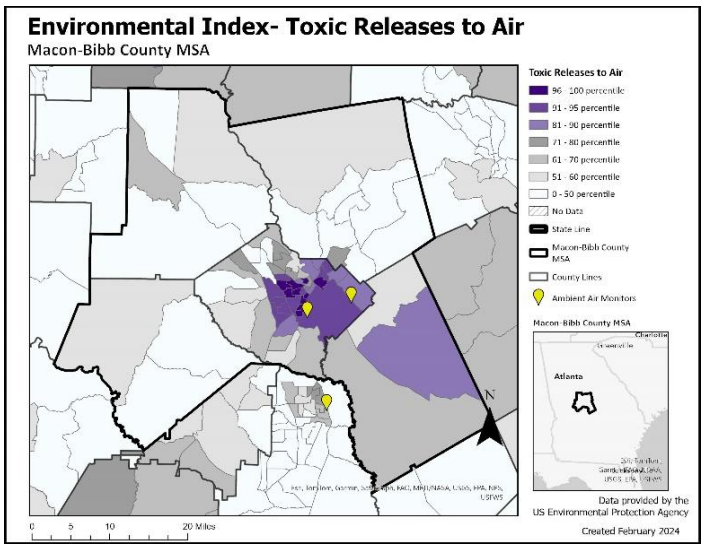

Supplemental Index- Toxic Releases to Air
Atlanta-Sandy Springs-Alpharetta MSA
Toxic Releases to Air
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Atlanta-Sandy Springs-Alpharetta MSA
County Lines
Ambient Air Monitors
Atlanta-Sandy Springs-Alpharetta MSA
Atlanta
0 15 30 60 Miles
Data provided by the US Environmental Protection Agency
Created February 2024

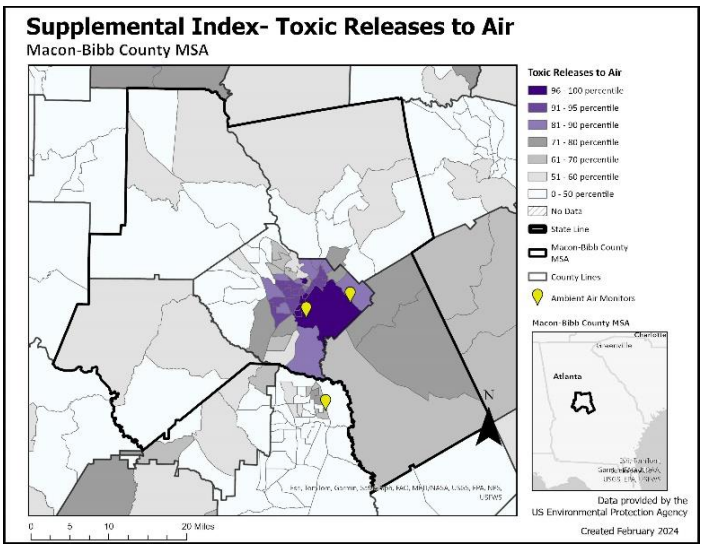

Environmental Index- Toxic Releases to Air
Augusta-Richmond County, GA-SC MSA
Toxic Releases to Air
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Augusta-Richmond County, GA-SC MSA
County Lines
Ambient Air Monitors
Augusta-Richmond County, GA-SC MSA
Charlotte
Greenville
Atlanta
N
0 12.5 25 50 Miles
Data provided by the US Environmental Protection Agency
Created February 2024

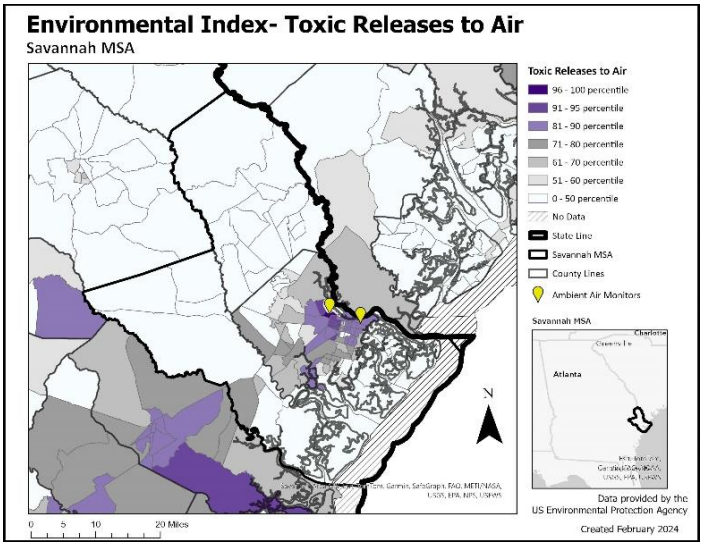

Supplemental Index- Toxic Releases to Air
Augusta-Richmond County, GA-SC MSA
Toxic Releases to Air
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Augusta-Richmond County, GA-SC MSA
County Lines
Ambient Air Monitors
Augusta-Richmond County, GA-SC MSA
Charlotte
Greenville
Atlanta
N
0 12.5 25 50 Miles
Data provided by the US Environmental Protection Agency
Created February 2024

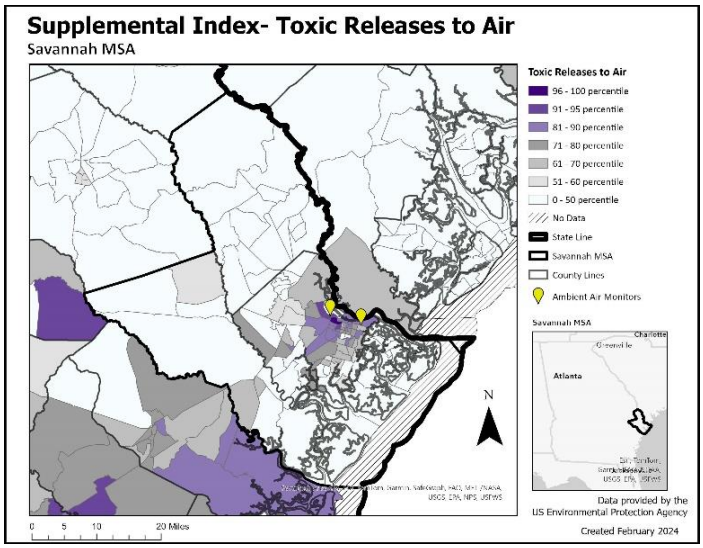

Environmental Index- Toxic Releases to Air
Columbus, GA-AL MSA
Toxic Releases to Air
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Columbus, GA-AL MSA
County Lines
Ambient Air Monitors
Columbus, GA-AL MSA
Charlotte
Greenville
Atlanta
N
0 10 20 40 Miles
Data provided by the US Environmental Protection Agency
Created February 2024


Supplemental Index- Toxic Releases to Air
Columbus, GA-AL MSA
Toxic Releases to Air
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Columbus, GA-AL MSA
County Lines
Ambient Air Monitors
Columbus, GA-AL MSA
Charlotte
Greenville
Atlanta
N
0 10 20 40 Miles
Data provided by the US Environmental Protection Agency
Created February 2024


Environmental Index- Toxic Releases to Air
Macon-Bibb County MSA
Toxic Releases to Air
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Macon-Bibb County MSA
County Lines
Ambient Air Monitors
Macon-Bibb County MSA
Atlanta
Charlotte
N
0 5 10 20 Miles
Data provided by the US Environmental Protection Agency
Created February 2024

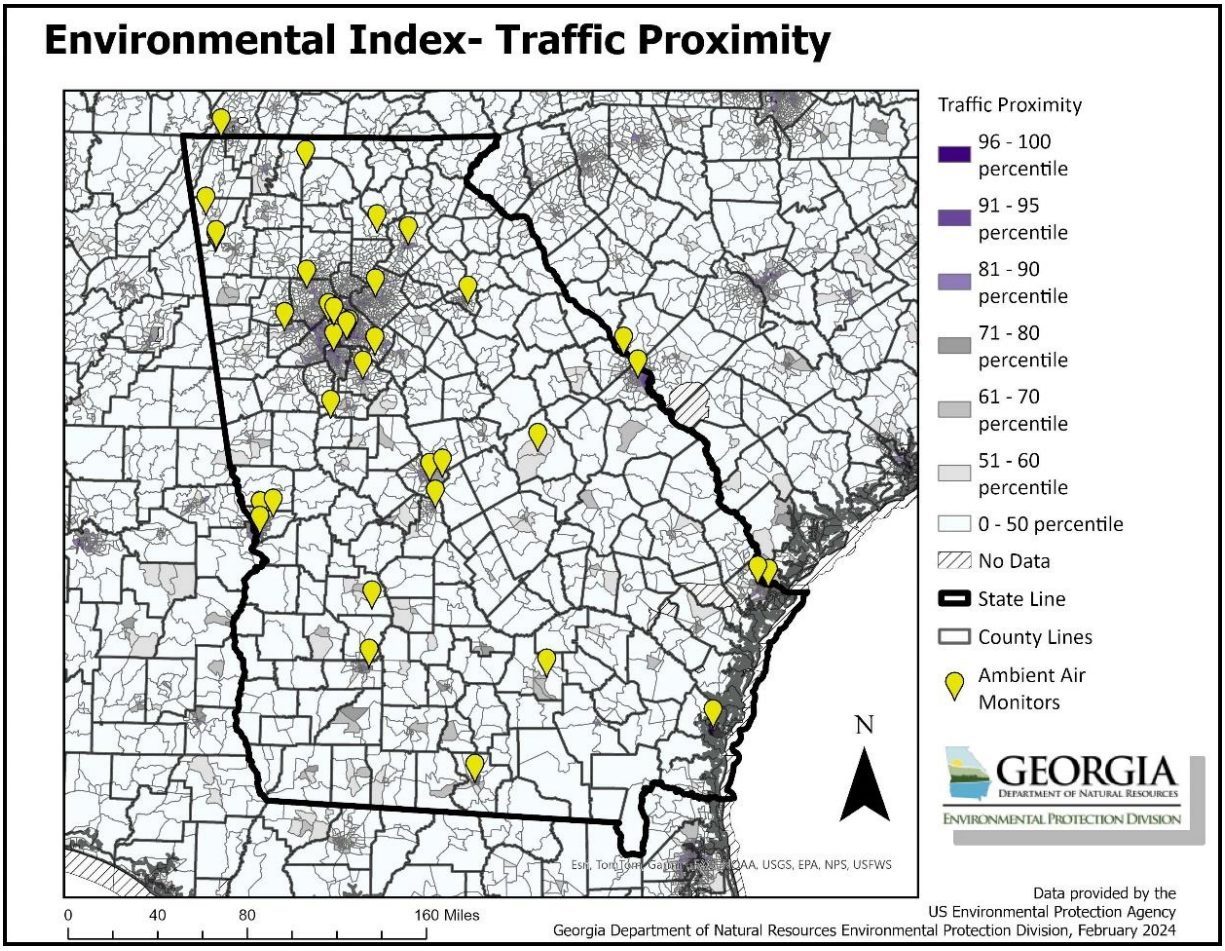

Supplemental Index- Toxic Releases to Air
Macon-Bibb County MSA
Toxic Releases to Air
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Macon-Bibb County MSA
County Lines
Ambient Air Monitors
Macon-Bibb County MSA
Atlanta
Charlotte
N
0 5 10 20 Miles
Data provided by the US Environmental Protection Agency
Created February 2024

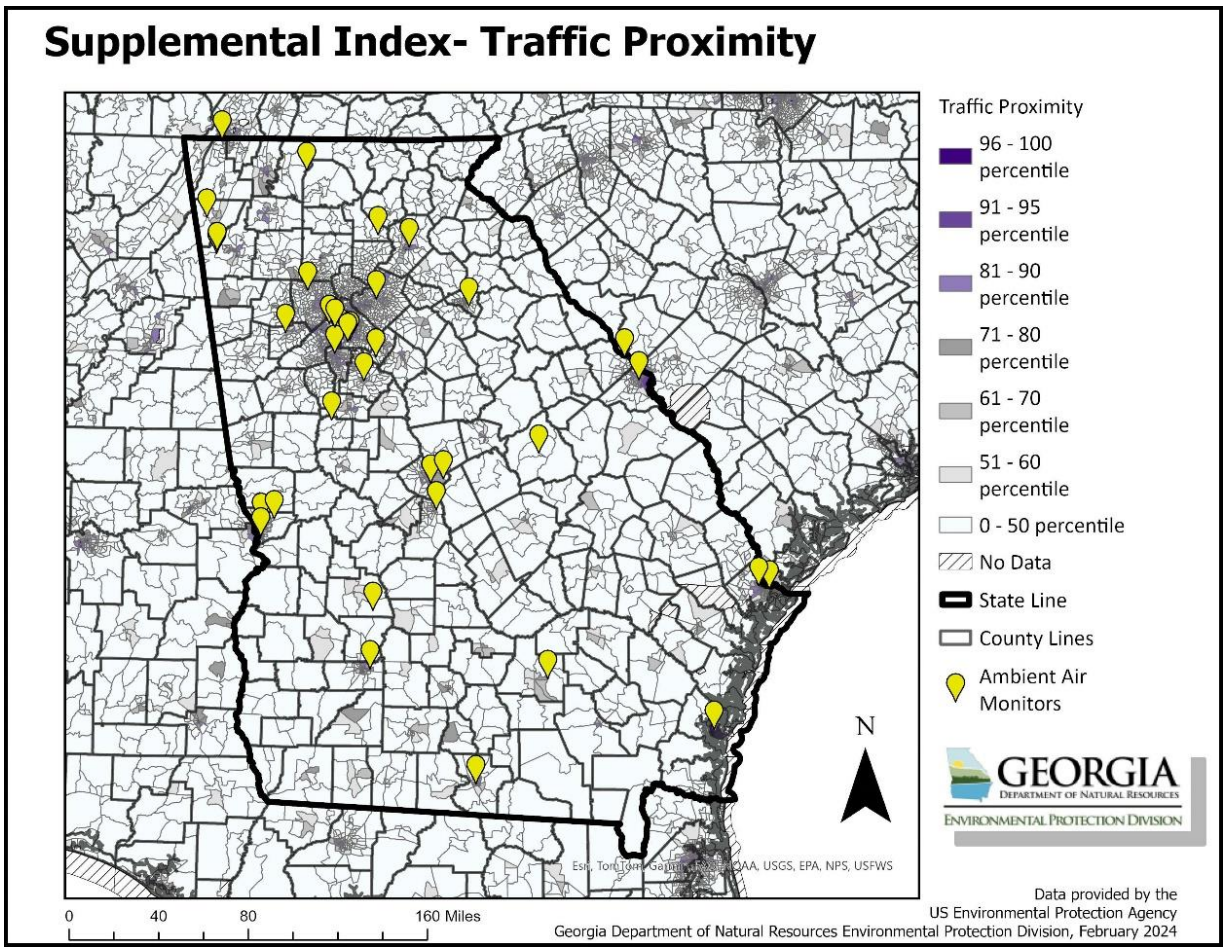

Environmental Index- Toxic Releases to Air
Savannah MSA
Toxic Releases to Air
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Savannah MSA
County Lines
Ambient Air Monitors
Savannah MSA
Atlanta
Charlotte
N
0 5 10 20 Miles
Data provided by the US Environmental Protection Agency
Created February 2024


Supplemental Index- Toxic Releases to Air
Savannah MSA
Toxic Releases to Air
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Savannah MSA
County Lines
Ambient Air Monitors
Savannah MSA
Atlanta
Charlotte
N
0 5 10 20 Miles
Data provided by the US Environmental Protection Agency
Created February 2024

Traffic Proximity Distribution Across State

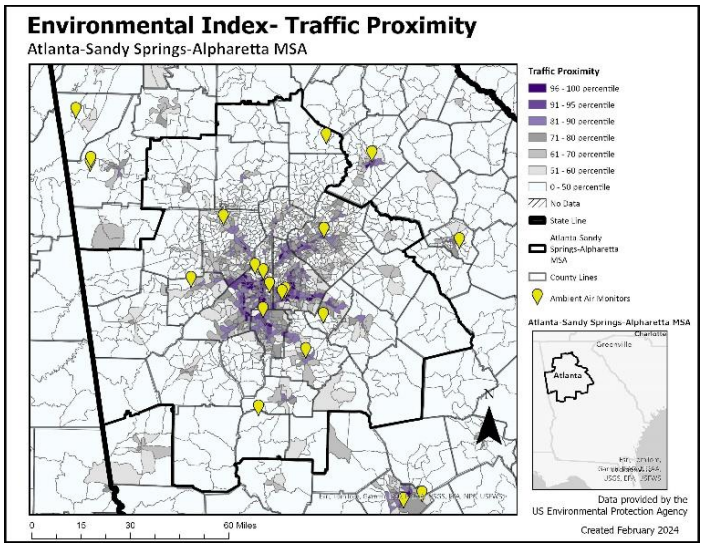
EJ traffic proximity generally falls within the lowest range of 0-50th percentile statewide, in both EJ and Supplemental Indexes. The highest percentiles are found in Fulton and DeKalb Counties within the Atlanta-Sandy Springs-Alpharetta MSA. While a few small tracts reach the 96-100th percentile range, the Atlanta-Sandy Springs-Alpharetta MSA is well-monitored for potential impacts, with 13 ambient air monitoring stations, two of which are situated along the interstate system.

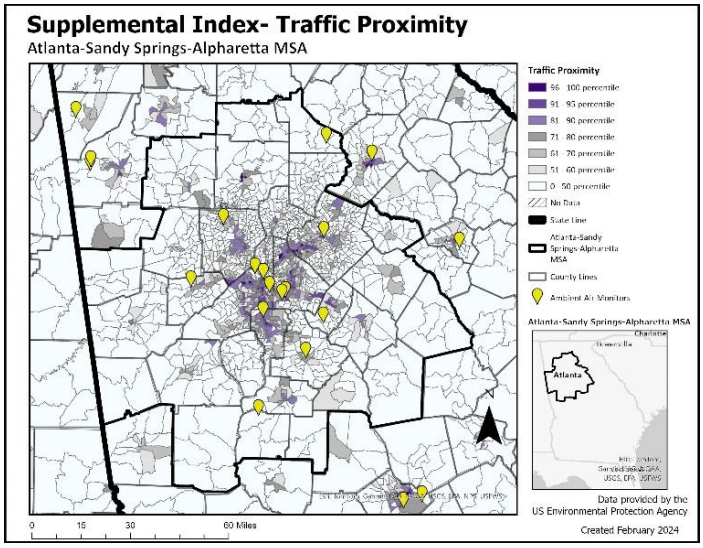


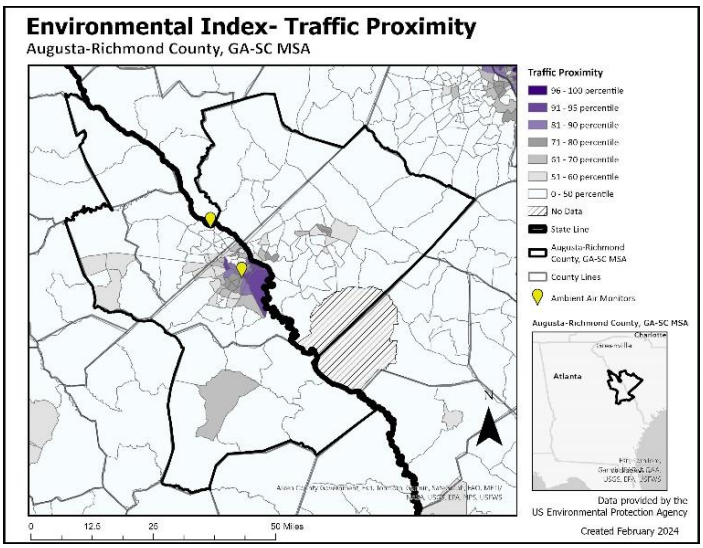


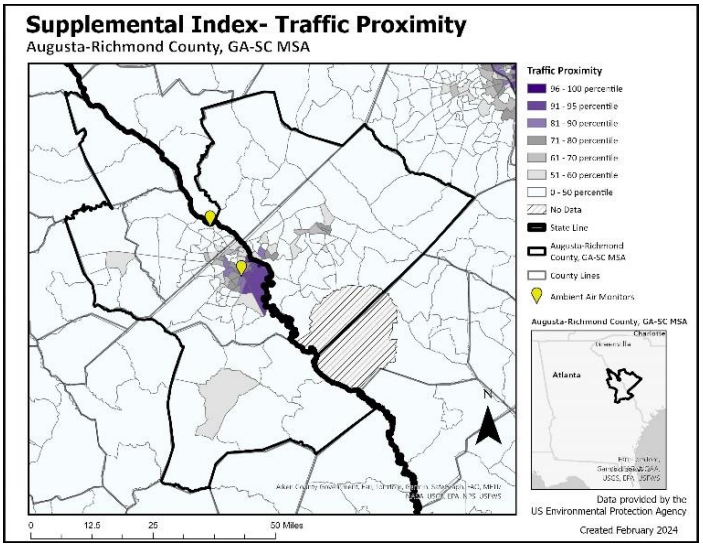
Traffic Proximity Distribution Across Metropolitan Areas and GA AAMP Coverage:

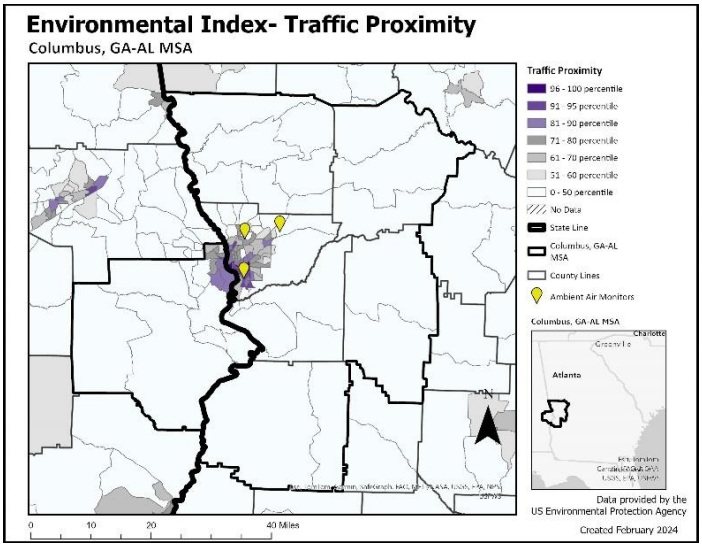
- The Atlanta-Sandy Springs-Alpharetta MSA contains tracts at or above the 90th percentile for traffic proximity, primarily within Fulton and DeKalb Counties, and has a wide area of coverage, with 13 ambient air monitoring stations within the MSA, two of which are located along the major interstates.
- The Augusta-Richmond County GA-SC, Macon-Bibb County, Columbus GA-AL, and Savannah MSAs have isolated clusters of traffic proximity within the urban cores of the MSAs. These MSAs each have two or three ambient air monitoring stations to cover the areas.

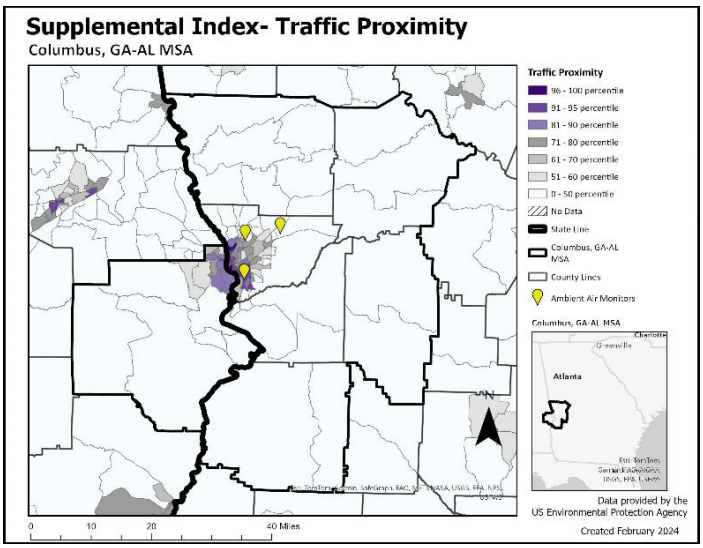

Environmental Index- Traffic Proximity
Atlanta-Sandy Springs-Alpharetta MSA
Traffic Proximity
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Atlanta-Sandy Springs-Alpharetta MSA
County Lines
Ambient Air Monitors
Atlanta-Sandy Springs-Alpharetta MSA
Atlanta
0 15 30 60 Miles
Data provided by the US Environmental Protection Agency
Created February 2024


Supplemental Index- Traffic Proximity
Atlanta-Sandy Springs-Alpharetta MSA
Traffic Proximity
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Atlanta-Sandy Springs-Alpharetta MSA
County Lines
Ambient Air Monitors
Atlanta-Sandy Springs-Alpharetta MSA
Atlanta
0 15 30 60 Miles
Data provided by the US Environmental Protection Agency
Created February 2024


Environmental Index- Traffic Proximity
Augusta-Richmond County, GA-SC MSA
Traffic Proximity
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Augusta-Richmond County, GA-SC MSA
County Lines
Ambient Air Monitors
Augusta-Richmond County, GA-SC MSA
Atlanta
0 12.5 25 50 Miles
Data provided by the US Environmental Protection Agency
Created February 2024


Supplemental Index- Traffic Proximity
Augusta-Richmond County, GA-SC MSA
Traffic Proximity
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Augusta-Richmond County, GA-SC MSA
County Lines
Ambient Air Monitors
Augusta-Richmond County, GA-SC MSA
Atlanta
0 12.5 25 50 Miles
Data provided by the US Environmental Protection Agency
Created February 2024


Environmental Index- Traffic Proximity
Columbus, GA-AL MSA
Traffic Proximity
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Columbus, GA-AL MSA
County Lines
Ambient Air Monitors
Columbus, GA-AL MSA
Atlanta
0 10 20 40 Miles
Data provided by the US Environmental Protection Agency
Created February 2024


Supplemental Index- Traffic Proximity
Columbus, GA-AL MSA
Traffic Proximity
96 - 100 percentile
91 - 95 percentile
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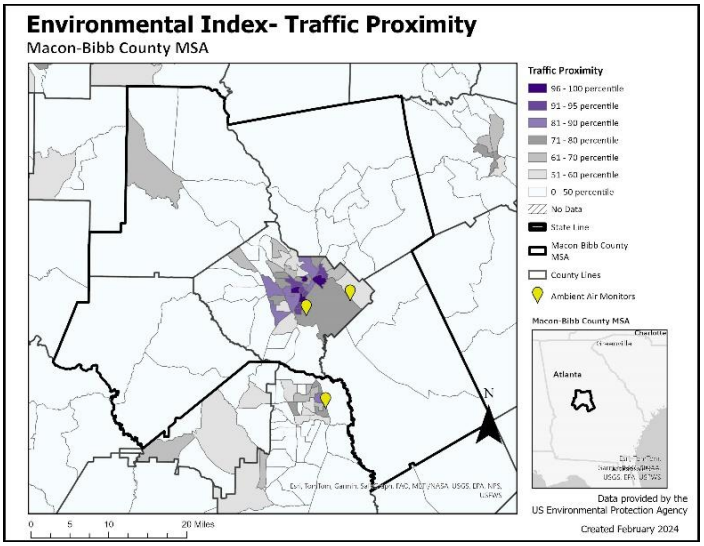
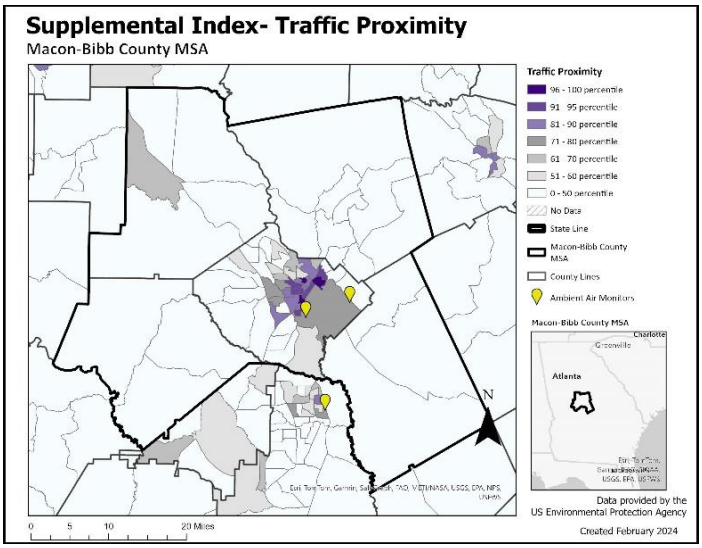
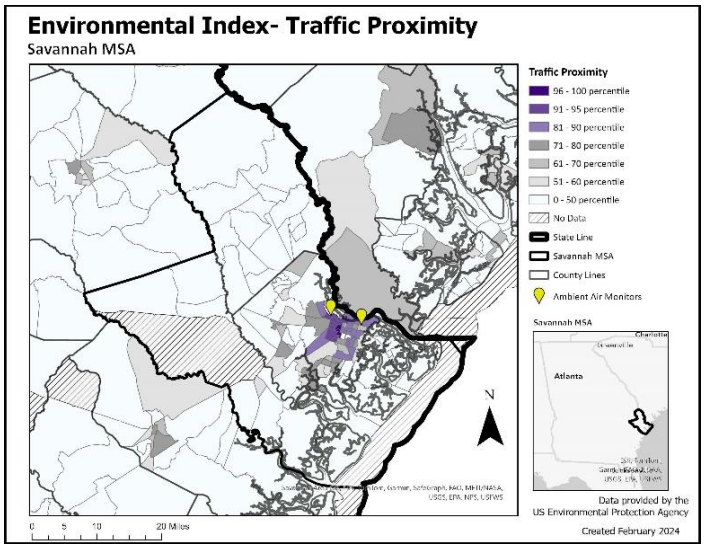
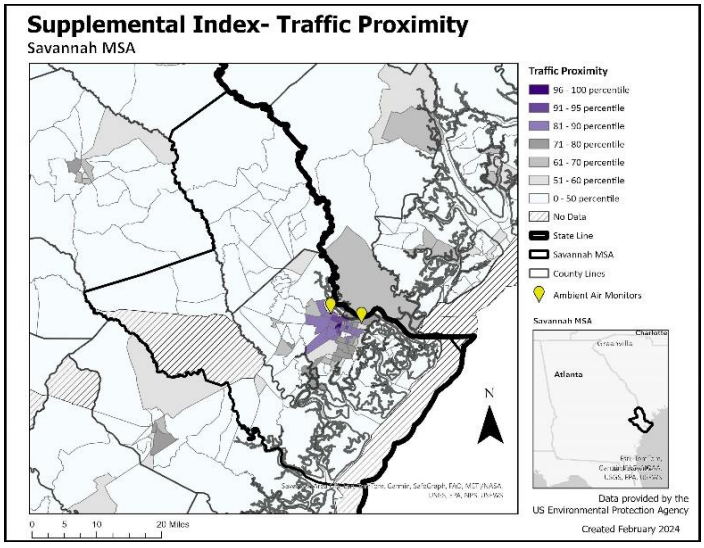
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Columbus, GA-AL MSA
County Lines
Ambient Air Monitors
Columbus, GA-AL MSA
Atlanta
0 10 20 40 Miles
Data provided by the US Environmental Protection Agency
Created February 2024


Environmental Index- Traffic Proximity
Macon-Bibb County MSA
Traffic Proximity
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Macon-Bibb County MSA
County Lines
Ambient Air Monitors
Atlanta
N
0 5 10 20 Miles
Data provided by the US Environmental Protection Agency
Created February 2024


Supplemental Index- Traffic Proximity
Macon-Bibb County MSA
Traffic Proximity
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Macon-Bibb County MSA
County Lines
Ambient Air Monitors
Atlanta
N
0 5 10 20 Miles
Data provided by the US Environmental Protection Agency
Created February 2024


Environmental Index- Traffic Proximity
Savannah MSA
Traffic Proximity
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
71 - 80 percentile
61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Savannah MSA
County Lines
Ambient Air Monitors
Atlanta
N
0 5 10 20 Miles
Data provided by the US Environmental Protection Agency
Created February 2024


Supplemental Index- Traffic Proximity
Savannah MSA
Traffic Proximity
96 - 100 percentile
91 - 95 percentile
81 - 90 percentile
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61 - 70 percentile
51 - 60 percentile
0 - 50 percentile
No Data
State Line
Savannah MSA
County Lines
Ambient Air Monitors
Atlanta
N
0 5 10 20 Miles
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