Annual Ambient Air Monitoring Network Plan

2025



COMMONWEALTH OF VIRGINIA
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR AND RENEWABLE DIVISION
OFFICE OF AIR QUALITY MONITORING

DRAFT

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ACRONYM LISTING

Acronym	Acronym Description
AQCR	Air Quality Control Region (see 9 VAC 5-20-200)
BAM	Beta Attenuation Monitor
CAA	Clean Air Act
CBSA	Core Based Statistical Area
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CSN	Chemical Speciation Network
EMP	Enhanced Monitoring Plan
ES	Elementary School
FEM	Federal Equivalent Method
FRM	Federal Reference Method
IMPROVE	Interagency Monitoring of Protected Visual Environments
MSA	Metropolitan Statistical Area
NATTS	National Air Toxics Trend Site
NCore	National Core Monitoring Site
NO2	Nitrogen Dioxide
OTR	Ozone Transport Region
PAMS	Photochemical Assessment Monitoring
Pb	Chemical Symbol for metallic Lead
PM2.5	Particulate Matter less than 2.5 microns in diameter
PM10	Particulate Matter less than 10 microns in diameter
PQAO	Primary Quality Assurance Organization
SLAMS	State/Local Air Monitoring Site
SO2	Sulfur Dioxide
SO2 DRR	Sulfur Dioxide Data Requirements Rule
TEOM	Tapered Element Oscillating Microbalance PM2.5 monitoring technology

GLOSSARY

AADT means the annual average daily traffic.

Act means the Clean Air Act as amended (42 U.S.C. 7401, et seq.)

Air quality system (AQS) means the EPA's computerized system for storing and reporting information relating to ambient air quality data.

Core Based Statistical area (CBSA) - means a U.S. geographic area defined by the Office of Management and Budget(OMB), containing a large population nucleus, or urban area, and adjacent communities that have a high degree of integration with that nucleus

Chemical Speciation Network (CSN) includes Speciation Trends Network stations as specified in paragraph 4.7.4 of appendix D of this part (40 CFR Part 58) and supplemental speciation stations that provide chemical species data of fine particulate.

CO means carbon monoxide.

Design value means the calculated concentration according to the applicable appendix of part 50 of 40 CFR for the highest site in an attainment or nonattainment area.

Federal equivalent method (FEM) means a method for measuring the concentration of an air pollutant in the ambient air that has been designated as an equivalent method in accordance with part 53; it does not include a method for which an equivalent method designation has been canceled in accordance with 40 CFR §53.11 or §53.16.

Federal reference method (FRM) means a method of sampling and analyzing the ambient air for an air pollutant that is specified as a reference method in an appendix to part 50, or a method that has been designated as a reference method in accordance with this part; it does not include a method for which a reference method designation has been canceled in accordance with 40 CFR §53.11 or §53.16.

Meteorological measurements mean measurements of wind speed, wind direction, barometric pressure, temperature, relative humidity, solar radiation, ultraviolet radiation, and/or precipitation that occur at SLAMS stations including the NCore and PAMS networks.

Metropolitan Statistical Area (MSA) means a CBSA associated with at least one urbanized area of 50,000 population or greater. The central-county, plus adjacent counties with a high degree of integration, comprise the area.

Micropolitan Statistical Area (μSA) – means labor markets and statistical areas in the United States centered on an urban cluster (urban area) with a population of at least 10,000 but fewer than 50,000 people

Monitor means an instrument, sampler, analyzer, or other device that measures or assists in the measurement of atmospheric air pollutants, and which is acceptable for use in ambient air surveillance under the applicable provisions of appendix C to this part (40 CFR Part 53).

Monitoring agency means a state, local or tribal agency responsible for meeting the requirements of this part.

Monitoring organization means a monitoring agency responsible for operating a monitoring site for which the quality assurance regulations apply.

NATTS means the National Air Toxics Trends Stations. This network provides hazardous air pollution ambient data.

NCore means the National Core multipollutant monitoring stations. Monitors at these sites are required to measure particles ($PM_{2.5}$ speciated $PM_{2.5}$, $PM_{10-2.5}$), O_3, SO_2, CO, nitrogen oxides (NO/NO_y), and meteorology (wind speed, wind direction, temperature, relative humidity).

Near-Road Monitor means any approved monitor meeting the applicable specifications described in 40 CFR part 58, appendix D (sections 4.2.1, 4.3.2, 4.7.1(b) (2)) and appendix E (section 6.4(a), Table E-4) for near-road measurement of $PM_{2.5}$, CO, or NO_2.

Network means all stations of a given type or types.

Network Plan means the Annual Monitoring Network Plan described in §58.10.

PAMS means Photochemical Assessment Monitoring stations as prescribed in 40 CFR part 58 Appendix D paragraph 5.

Pb means the chemical element Lead.

PM means particulate matter, including but not limited to PM_{10}, $PM_{2.5}$, and $PM_{10-2.5}$.

$PM_{2.5}$ means particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers as measured by a reference method based on appendix L of part 50 and designated in accordance with part 53 of this chapter, by an equivalent method designated in accordance with part 53, or by an approved regional method designated in accordance with appendix C to this part.

PM_{10} means particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by a reference method based on appendix J of part 50 of this chapter and designated in accordance with part 53 of this chapter or by an equivalent method designated in accordance with part 53.

$PM_{10-2.5}$ means particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers and greater than a nominal 2.5 micrometers as measured by a reference method based on appendix O to part 50 of 40 CFR and designated in accordance with part 53 of this chapter or by an equivalent method designated in accordance with part 53.

POC - means the "Parameter Occurrence Code" used to distinguish different instruments that measure the same parameter at the same site. This attribute is used within the EPA Air Quality Subsystem (AQS) database.

PQAO means a monitoring organization, a group of monitoring organizations or other organization that is responsible for a set of stations that monitor the same pollutant and for which data quality assessments can be pooled. Each criteria pollutant sampler/monitor at a monitoring station must be associated with only one PQAO.

SLAMS means state or local air monitoring stations. The SLAMS include the ambient air quality monitoring sites and monitors that are required by appendix D of this part and are needed for the monitoring objectives of appendix D, including NAAQS comparisons, but may serve other data purposes. The SLAMS includes NCore, PAMS, CSN, and all other state or locally operated criteria pollutant monitors, operated in accordance with this part, which have not been designated and approved by the Regional Administrator as SPM stations in an annual monitoring network plan.

Special purpose monitor (SPM) station means a monitor included in an agency's monitoring network that the agency has designated as a special purpose monitor station in its annual monitoring network plan and in the AQS, and which the agency does not count when showing compliance with the minimum requirements of this subpart for the number and siting of monitors of various types. Any SPM operated by an air monitoring agency must be included in the periodic assessments and annual monitoring network plan required by §58.10 and approved by the Regional Administrator.

Total Suspended Particulates (TSP) means particulate matter as measured by the method described in appendix B of Part 50.

VOC means volatile organic compounds.

INTRODUCTION

40 CFR Part 58 Paragraph 10 states as follows:

§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 and FEM 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.

This document is intended to address the regulatory requirement for an annual air monitoring network plan for the Commonwealth of Virginia. The requirements for the components of the annual monitoring network plan are contained in §58.10 paragraphs (a) through (e).

NETWORK DESIGN
The monitoring program for the DEQ operates the ambient air monitoring network of both gaseous and particulate pollutant monitors required in 42 US Code §7410 (a) (2) (B) (i) which requires that the Commonwealth of Virginia:

> *(B) provide for establishment and operation of appropriate devices, methods, systems, and procedures necessary to—*
> *(i) monitor, compile, and analyze data on ambient air quality,*

The implementation and operating requirements of the ambient monitoring network are contained in 40 CFR Part 58 as defined below in §58.2 as follows:

> *(1) Quality assurance procedures for monitor operation and data handling.*
> *(2) Methodology used in monitoring stations.*
> *(3) Operating schedule.*
> *(4) Siting parameters for instruments or instrument probes.*
> *(5) Minimum ambient air quality monitoring network requirements used to provide support to the State implementation plans (SIP), national air quality assessments, and policy decisions. These minimums are described as part of the network design requirements, including minimum numbers and placement of monitors of each type.*
> *(6) Air quality data reporting, and requirements for the daily reporting of an index of ambient air quality.*

Table 1 below shows the number of monitors and types of pollutants monitored and how they are distributed throughout the Commonwealth by Air Quality Control Region and Metropolitan Statistical Area (MSA). This table demonstrates air monitor distribution and

pollutant measurement consistent with Part 58 Appendix D. In addition to the MSA and Core Based Statistical Area (CBSA) based pollutant monitoring, Virginia maintains additional monitoring sites to meet additional federal and state-based monitoring programs. These programs are listed below.

Table 1 Air Monitoring Samplers/Analyzers and Pollutants Monitored

MSA/CBSA(a)	Ozone	PM2.5 FRM	PM2.5 FEM	NO2	SO2	CO	PM10 FRM	PM10 FEM
Kingsport-Bristol-Bristol, TN-VA		1						
Winchester, VA-WV	1	1	1					1
Harrisonburg, VA	1		1	1	1			1
Roanoke, VA	1		1	1	1	1		
Salem, VA		1						
Blacksburg-Christiansburg-Radford VA					1			
Lynchburg, VA		1						
Charlottesville, VA	1		1					
Richmond, VA	4	3	4	4	2	2	1	2
Virginia Beach-Norfolk-Newport News, VA-NC	3		3	2	2	2		3
Washington-Arlington-Alexandria, DC-VA-MD-WV	6	1	3	4	1	2	1	2
Total – MSA/CBSA	17	8	14	12	8	7	2	9
Total- all sites(b)	21	10	14	12	8	7	3	9

(a) Metropolitan Statistical Areas/Core based statistical areas.
(b) Includes sites not incorporated into an MSA or CBSA i.e. Shenandoah National Park (ozone, IMPROVE); Rockbridge County (Ozone, IMPROVE); Carroll County (PM10); Wythe County (Ozone); Caroline County (Ozone).

Ozone Network of Monitors – Virginia maintains a highly robust system of ozone monitors throughout the Commonwealth. As seen in Table 1 above, Virginia maintains more than the minimum number of ozone monitors required by regulations for the MSAs where the population is greater than one million i.e. the Washington-Arlington-Alexandria, DC-VA-MD-WV MSA, Richmond, VA MSA and Virginia Beach-Chesapeake Norfolk, VA-NC MSA. The actual regulatory required number of monitors is shown in MONITORING SITE INFORMATION in this document. In Virginia, there is an ozone monitoring "season" that runs from March 1 through Oct. 31 as outlined in 40 CFR Part 58 Appendix D Table D-3. DEQ operates its monitors throughout the year to maintain operational consistency and to prevent the system-wide shut down and start-up that would be required if twelve-month operation were not followed. Virginia also maintains a number of ozone monitors that are part of the Enhanced Monitoring Program. These sites are shown in Table 2 below.

Table 2 Ozone sites included in the Enhanced Monitoring Plan

Jurisdiction	EPA ID (State ID)	Site Name	Site Location
Arlington County	51-013-0020 (47-T)	Aurora Hills	735 18th street South
Fairfax County	51-059-0030 (46-B9)	Lee Park	6601 Telegraph Road
Loudoun County	51-107-1005 (38-I)	Ashburn – Broad Run HS	21670 Ashburn Road
Prince William County	51-153-0009 (45-L	Long Park	4603 James Madison Highway
Stafford County	51-179-0001 (44-A)	Widewater ES	101 Den Rich Road

PM2.5 Network of Monitors – Virginia also maintains a highly robust system of PM2.5 monitors throughout the Commonwealth. As seen in Table 1 above, DEQ maintains more than the minimum number of PM2.5 monitors required by regulations for the MSAs where the population is greater than one million i.e. the Washington-Arlington-Alexandria, DC-VA-MD-WV MSA, Richmond, VA MSA and Virginia Beach-Chesapeake Norfolk, VA-NC MSA. The actual regulatorily required number of monitors is shown in MONITORING SITE INFORMATION in this document. DEQ is working towards replacing the PM2.5 FRM filter-based samplers with continuous FEM monitors. This is an ongoing effort. The rate of these replacements is dictated by funding and technical developments in the market availability of these continuous monitors.

NCore - The National Core Monitoring Network (NCore) site maintained by DEQ is located at 51-087-0014 Henrico County MathScience Innovation Center (MSIC). The Design Criteria for the NCore site in Virginia is defined in Appendix D of Part 58 of 40 CFR.

NATTS – DEQ maintains a National Air Toxics Trend Site (NATTS) site located at 51-087-0014 Henrico County MSIC site. In addition to the suite of pollutants measured in the Urban Air Toxics Program, NATTS also samples for Polycyclic Aromatic Hydrocarbons (PAHs). The National Air Toxics Trend Site operates on a one in six-day sample schedule basis.

Near Road Monitoring – DEQ will install three near road monitoring sites consistent with the design requirements contained in Appendix D. DEQ currently has two operating sites located at 51-760-0025 Richmond City Joseph Bryan Park and 51-059-0031 located in Springfield at the Backlick Road Park and Ride. The third site will be located

in the Virginia Beach-Chesapeake Norfolk, VA-NC is described in the Virginia Network Changes section.

Urban Air Toxics Programs – The DEQ maintains one urban air toxics sites at: 51-670-0010 Hopewell City Woodson Middle School. The Hopewell site samples for metals, Volatile Organic Compounds, (VOCs) and Carbonyls. The Urban Air Toxics program operates on a one in six-day sample schedule basis.

DATA REQUIREMENTS RULE

EPA published a rule entitled "Data Requirements Rule for the 2010 1-Hour Sulfur Dioxide (SO2) Primary National Ambient Air Quality Standard (NAAQS)," on Aug. 21, 2015 (80 FR 51052). This rule, referred to as the DRR, directed states to provide data characterizing air quality in areas with large sources of SO2 emissions and to identify maximum one-hour SO2 concentrations in ambient air. The DRR required that, at a minimum, air agencies characterize air quality around facilities that emitted 2,000 tons per year (tpy) or more of SO2 in 2014. For areas that were originally characterized using air quality modeling, the DRR includes an ongoing data requirement that applies only where the modeling was based on actual emissions and where the area has not subsequently received a nonattainment designation. In such cases, the air agency is required to submit an annual report to the EPA providing updated emissions information and recommending to the EPA whether further modeling is warranted to assess any expected changes in recent air quality.

Virginia has evaluated the original DRR modeling and most recent actual emissions data and determined that no additional modeling analyses are warranted for this annual review period. Specifically, this decision is based on three factors:
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1. A comparison of the original actual modeled emissions to the most recent annual emissions for each affected facility.
2. The fact that there have been no increases in short-term emissions at any facility.
3. The original modeling demonstrated NAAQS compliance.

The table below provides a comparison of the most recent emissions (2023) to the modeling period.

Table 3 SO_2 Emissions Summary

Federal ID	Facility	2012 SO_2 Emissions (TPY)	2013 SO_2 Emissions (TPY)	2014 SO_2 Emissions (TPY)	2015 SO_2 Emissions (TPY)	2023 SO_2 Emissions (TPY)	Jurisdiction
VA000000 5119900001	Dominion Yorktown Power Station	---	9,052.27	9,755.51	4,549.34	0.30	York County

Federal ID	Facility	2012 SO_2 Emissions (TPY)	2013 SO_2 Emissions (TPY)	2014 SO_2 Emissions (TPY)	2015 SO_2 Emissions (TPY)	2023 SO_2 Emissions (TPY)	Jurisdiction
VA000000 5104100002	Dominion - Chesterfield Power Station	1,229.90	1,966.42	2,180.92	---	188.21	Chesterfield County
VA000000 5108300046	Dominion/ODEC Clover Power Station	1,875.14	2,262.22	2,083.52	---	83.40	Halifax County

In all cases, the most recent emissions are substantially lower than the average modeled emission rates used in the original submittal to EPA. All 3 facilities have experienced substantial reductions due to retired units or reduced utilization. The original modeling demonstrated NAAQS compliance for all three facilities as shown in the table below.

Table 4 SO_2 Modeled Concentrations

Modeling Analysis Results Summary	Original Modeled SO_2 Concentration ($\mu g/m^3$)	2024 Monitored SO_2 Background Concentration ($\mu g/m^3$)	Total Concentration ($\mu g/m^3$)	Percent of NAAQS
Clover Power Station	38.09	8	46.09	23
Chesterfield Power Station	62.53	8	70.53	36
All modeled sources - Chesterfield	120.09	8	128.09	65
Yorktown Power Station	180.61	8	188.61	95

The results for Dominion/ODEC Clover Power Station fall below 50% of the NAAQS. Analogous to the monitor shutdown provisions, the requirement for the annual emissions assessments for this facility may be terminated. The results for the Chesterfield Power Station are expected to remain well below the NAAQS. In fact, the impact from the facility itself, including background is less than 50% of the NAAQS. The cumulative modeled design value from all sources was 128.09 $\mu g/m^3$; however, the contribution from the Chesterfield Power Station to the maximum design value was minimal (0.0072 µg/m3). Finally, the results for the Yorktown Power Station have decreased substantially due to recently retired coal units and the facility will remain in compliance with the NAAQS.

MULTI-STATE/MULTI-AGENCY MONITORING

Virginia shares monitoring responsibilities in MSA's where multiple states or localities are included in the definition of the MSA. For the most part Virginia meets the minimum monitoring requirements individually without requiring the inclusion of another state or localities in meeting the minimum monitoring requirements.

Washington Metropolitan area – This area is defined as the Washington-Arlington-Alexandria, DC-VA-MD-WV metropolitan statistical area. In this area Virginia generally meets the minimum monitoring requirements individually with the exception of the SO_2 Population Weighted Emissions Inventory (PWEI) requirements located in 40 CFR 58

Appendix D paragraphs 4.4.2 and 4.4.2(1). DEQ currently has one SO_2 monitor located at the Lee Park Site (51-059-0030).

Hampton Roads – Hampton Roads is made up of the VA Beach-Norfolk-Newport News VA-NC Metropolitan Statistical Area. This MSA includes Currituck County and Gates County in N.C. By Memorandum of Agreement signed April 5, 2016 by both DEQ and NC Department of Environmental Quality, the respective agencies agree that the monitoring requirements for this MSA to include the North Carolina Counties are currently met by the monitors maintained in Virginia.

Kingsport-Bristol-Bristol, TN-VA – The Kingsport-Bristol-Bristol MSA includes both Scott and Washington Counties in addition to the City of Bristol all of which are located in the Commonwealth of Virginia. Due to the shutdown of the Highland View Elementary School, the PM2.5 monitor currently located in the City of Bristol will be relocated to John Battle High School (Lat 36.642500, Long-82.107373) in Washington County. A copy of the notification letter to the Tennessee Division of Air Pollution Control is located in Attachment 1 below.

AIR QUALITY MONITORING NETWORK CHANGES

MONITORING SITE CHANGES SINCE LAST REVIEW
JULY 1, 2024 to JUNE 30, 2025

Photochemical Assessment Monitoring Station
51-087-0014, 72-M, MathScience Innovation Center/Henrico County Police Athletic League PAMS Site, Henrico County, AQCR5

Based on 40 CFR part 58, Appendix D, State air monitoring agencies are required to begin making PAMS measurements at their NCore location(s) by June 1, 2021. DEQ has received all needed instrumentation and the instrumentation is operating. For the PAMS season beginning June 1, 2022, and ending August 31, 2022, the Office of Air Quality Monitoring operated all required components of the PAMS suite of pollutants. The Automated GC operated during the season, and Virginia did collect valid data for the 2023 PAMS season with a data capture rate of approximately 73%.



Figure 1 MSIC/HPAL monitoring site with PAMS component locations identified

40 CFR Part 58 Appendix D paragraph 5 (b) contains the listing of the required PAMS measurements to be performed at the MSIC NCore site. Table 4 below provides a listing of the measured parameters and the status of each instrument at the implementation date of June 1, 2021. Please note that the meteorological sensors are replaced each year so the measurement methods used are the same but each individual sensor is not.

Table 5 PAMS Parameter Measurement Method and Status

No.	Measured Parameter	Instrument	Status July 1, 2021
1	Hourly averaged speciated volatile organic compounds (VOCs)	Markes/Agilent Automated Gas Chromatograph with Kori Drying system	In place and operating
2	Three 8-hour averaged carbonyl samples per day on a 1 in 3-day schedule	ATEC Model 8000 Cartridge Sampler	In place and operating
3	Hourly averaged O_3	Thermo 49i ozone monitor, EQOA-0880-047	In place and operating
4	Hourly averaged NO	Teledyne T200P NO2 monitor, EQNA-1016-241	In place and operating
5	Hourly averaged True NO_2	TAPI T500U True NO2 monitor, EQNA-0512-200	In place and operating
6	Hourly averaged total reactive NO_y	Teledyne T200U NOy monitor, RFNA-1194-099	In place and operating
7	Hourly averaged ambient temperature	MetOne 061A-2	In place and operating
8	Hourly vector-averaged wind direction	Young 053005 V	In place and operating
9	Hourly vector-averaged wind speed	Young 053005V	In place and operating
10	Hourly average atmospheric pressure	COMET T760	In place and operating
11	Hourly averaged relative humidity	MetOne 083E-0-35 RH Sensor	In place and operating
12	Hourly precipitation	Young 52202 Tipping Rain Bucket Gauge	In place and operating
13	Hourly averaged mixing-height	Vaisala CL51 High Range Ceilometer	In place and operating
14	Hourly averaged solar radiation	MetOne 094-2 Solar Radiation Sensor	In place and operating
15	Hourly averaged ultraviolet radiation	Eppley TUVR Ultraviolet Radiation	In place and operating

INSTRUMENT CHANGES SINCE LAST REVIEW
JULY 1, 2024 through JUNE 30, 2025

Replacement of PM2.5 FRM sites with PM2.5 Continuous FEM monitors

Virginia DEQ OAQM applied for and received funding through the American Rescue Plan Act to upgrade the PM2.5 monitoring network withing the Commonwealth. Currently, the Virginia Department of Environmental Quality's Air Quality Monitoring (AQM) program maintains 11 FRM PM2.5 and 15 FEM Continuous PM2.5 samplers. 10 of the 11 FRM samplers consist of a mix between Partisol 2025 and 2025i sequential samplers (method code 145), and the 11th FRM sampler is a Met One E-SEQ sampler (method code 545). The 15 FEM samplers consist of 5 Teledyne T640's (method code 636) and 10 Teledyne T640x's (method code 638). In an ongoing effort, the DEQ is working towards replacing the PM2.5 FRM filter-based samplers with continuous FEM monitors. In September of 2024 the TEOM PM2.5 monitor at the Shenandoah National Park site at Big Meadows was replaced with a Teledyne T640x. The detailed listing of the PM2.5 FRM to FEM changes are contained in the MONITORING SITE INFORMATION Listing.

ANTICIPATED SITE CHANGES
JULY 1, 2025, through JUNE 30, 2026

51-520-0006 City of Bristol PM2.5 monitoring site, AQCR1

The City of Bristol, Virginia, has housed a PM2.5 FRM monitor since 1999. This monitor is located at the Highland View Elementary School (36.608 Lat, -82.1641 Long). This school has recently been decommissioned and the building is being replaced. These changes make it unlikely that the existing monitor will meet EPA siting criteria as detailed in 40 CFR Part 58 Appendix E. VA DEQ proposes to relocate the site and upgrade the PM2.5 FRM to a continuous PM2.5 FEM monitor. The new site will be located at John Battle High School (Lat 36.642500, Long-82.107373). Discussions with the school regarding the Memorandum of Understanding outlining the division of responsibilities for this site are currently ongoing. This site is projected to be in place by Late Summer 2025.

51-810-XXXX Hampton Roads Near Road Site, AQCR6

Multiple efforts have been made to locate the Hampton Roads Near road site in the highest possible Fleet Adjusted AADT road segment. These efforts up to the initial date covered by this write-up have been unsuccessful. Table 6 below documents the evaluated road segments, the potential siting location(s), and the results of the monitoring site approval process. In addition to the nine listed sites in table 6, AQM rejected the road segment identified as US-13 from I-64 to WCL Virginia Beach because no suitable location with a safe ingress could be identified.

Table 6 Near Road site location attempts

Road Segment	Fleet Adj.-AADT	Location of Site	Results of Approval Process
I-264 EB – I-64 to WCL VA Beach	132939	36° 51.185' N; -76° 11.706' W	City would not approve site due to proximity to underground water line
1-264 EB – SR 190 to SR225	125120	36° 50.05833' N; 76° 8.5633' W	Easement owned by contiguous Apartment developer; would not allow construction
1-264 EB – SR 190 to SR225	125120	36.836963° N; -76.157183° W	Site located on newly sold Easement intended for VDOT road widening
1-264 EB – SR 190 to SR225	125120	36.843942° N; -76.169970° W	Exit from I-264 to be extended site is part of VDOT I-264 upgrade
I-64 WB – SR 134 to US 258	114323	37.043505° N -76.397359° W	Could not secure Locality approval and added construction eliminated access
I-64 EB – SR 134 to US 258	115266	Various Locations	No locations that meet the siting requirements could be identified
I-64 WB – HR Center parkway to ECL Newport News	107598	37.06249° N - 76.42181° W	Property owner, Thomas Nelson CC, indicated installation conflicted with planned construction for site
I-64 EB – SR 134 Mercury Blvd to I-664 HR Beltway	104266	37.036745° N -76.391074° W	City of Hampton rejected proposal due to conflict with proposed 5-year development plan for site
WB I-264 SR 403 Newtown Road to SR 190 Witchduck Road		36.8444 N; -76.16583 W	Completion of construction caused one possible site to become inaccessible and rerouted rainwater easement made the other possible location unsuitable

The OAQM has done additional monitor siting evaluations in the Tidewater area and has identified one additional possible site along I-264 in Virginia Beach. This site is described below:

EB I-264 SR 403 Newtown Road to SR 190 Witchduck Road (36.8431 N; -76.1833 W)

This road segment has the highest FAADT in the Tidewater area based on 2018 Virginia Department of Transportation (VDOT) Data. Figure 3 below provides an overhead view of the proposed road segment with the range of possible sites highlighted.



Figure 3 Overhead of EB I-264 between Newtown Road and Witchduck Road

The site is adjacent to the recently completed widening of I-264 and has a lengthy accessible area along the interstate approximately 50 meters north of the edge of Business Park Drive. The area has easements established by Virginia DOT and by the City of Virginia Beach. There is enough room along this part of the interstate that the potential location could be located in either easement. There is electrical power located at the south edge of the vacant lot at the end of the cul-de-sac. The projected location would be approximately 20 meters from the edge of the widened interstate. On March 31 of this year VDOT issued a Land Use Permit to VA DEQ to start the process of near road site installation.

ANTICIPATED INSTRUMENTATION CHANGES
JULY 1, 2025 through JUNE 30, 2026

IRA Direct Award Funding

DEQ received $398,104 grant through the Inflation Reduction Act effective August 1, 2023 to fund the following projects:

1. A generalized upgrade to the ozone monitoring network across Virginia
2. A generalized upgrade to the PM2.5 monitoring network across Virginia
3. Expand the Virginia air quality monitoring network to include a multipollutant site in southside Virginia preliminarily targeted for the Danville City, Pittsylvania County, Halifax County, or Henry County area

The grant is expected to last 3 years.

IRA Need Assessment Award Funding

In addition to the earlier IRA Direct Award Grant, on October 1, 2024 DEQ was awarded funding in the amount of $1,011,435 to support network upgrades and special studies as needed to support the expansion of the existing network. The projects and proposed direct network improvements are as follows:

1. Air Quality Study of Data Center impacts
2. Fenceline Study in Hopewell
3. Expanded Meteorological Monitoring
4. Upgrade of the Lynchburg air quality Monitoring Site
5. Improve Analytical support for the NATTS Program
6. Improvements at the PAMS monitoring site.
7. Funding for a VA DEQ Sensor Loan Program

The closing date for this grant is September 30, 2029.

Tidewater Air Monitoring Evaluation (TAME) study

In October of 2020 Virginia DEQ received $526, 603 through EPA's Community Scale Air Toxics Monitoring Grant program. The title given to the project on the grant application is "Characterization and Risk Assessment of Air Toxics Metals in Southeast Virginia." This project has identified two communities in the Tidewater Region of Virginia that have historically had air quality complaints primarily focused on the handling of coal and the resulting coal dust issues at coal loading facilities in these communities. The two affected communities are the Lambert's Point area of Norfolk and the East End Community in Newport News. The Office of Air Quality monitoring is currently in the process of putting together the electrical contract for installation of the PM10 monitors and is working with both communities to install Particulate sensors. The current approved work plan is contained in Attachment 1 to this document.

DEQ is currently working on an Invitation for Bid to complete the construction of the project monitoring sites. The siting is described below:

Current Air Monitor Placement

Newport News

Address	TAME Site Designation	Representative Area
16th Street and Ivy Street	TAME NN-001	4 km diameter (~2.5 miles)
48th Street and Roanoke Avenue	TAME NN-003	4 km diameter (~2.5 miles)

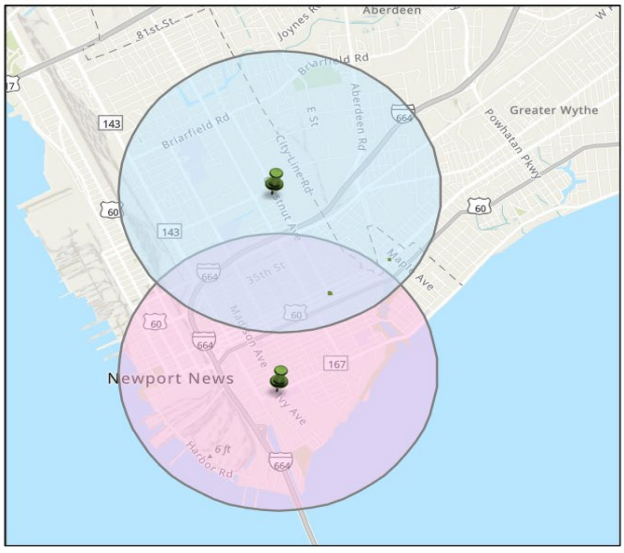


Figure 4 Current known sites for the Southeast Community in Newport News.

There are two additional sites being studied for the Southeast Community. They are still pending approval so they have not been described here.

Current Air Monitor Placement

Norfolk Sites

Address	TAME Site Designation	Representative Area
25th Street & Elkhorn Avenue	TAME NF-001	4 km diameter (~2.5 miles)
43rd Street & Hampton Boulevard	TAME NF-002	4 km diameter (~2.5 miles)
W 26th Street & Bowden's Ferry Road	TAME NF-003	4 km diameter (~2.5 miles)

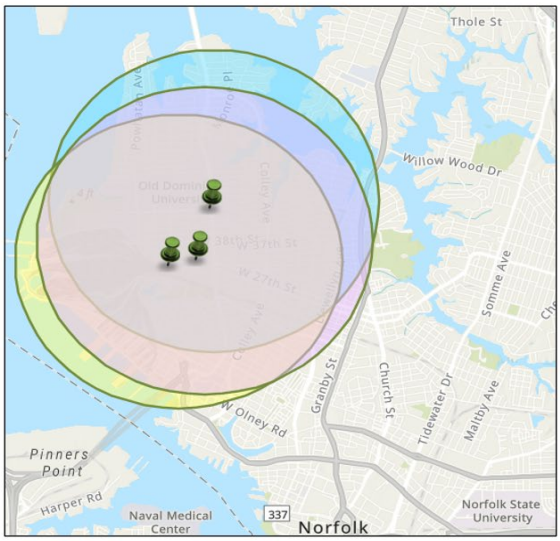


Figure 5 Current known sites for the Lamberts Point Community in Norfolk

One additional site is being evaluated for the Lamberts Point Community. It is located due west of the Hampton Roads Sanitation District facility. It has not yet received approval so it is not shown in Figure 5.

MONTORING SITES

OVERHEAD VIEWS OF MONITORING SITES
WITH IDENTIFYING ADDRESS INFORMATION

Each overhead view contains a brief discussion of the original purpose for the site being located where it is. In some cases the current reason for the siting has changed.

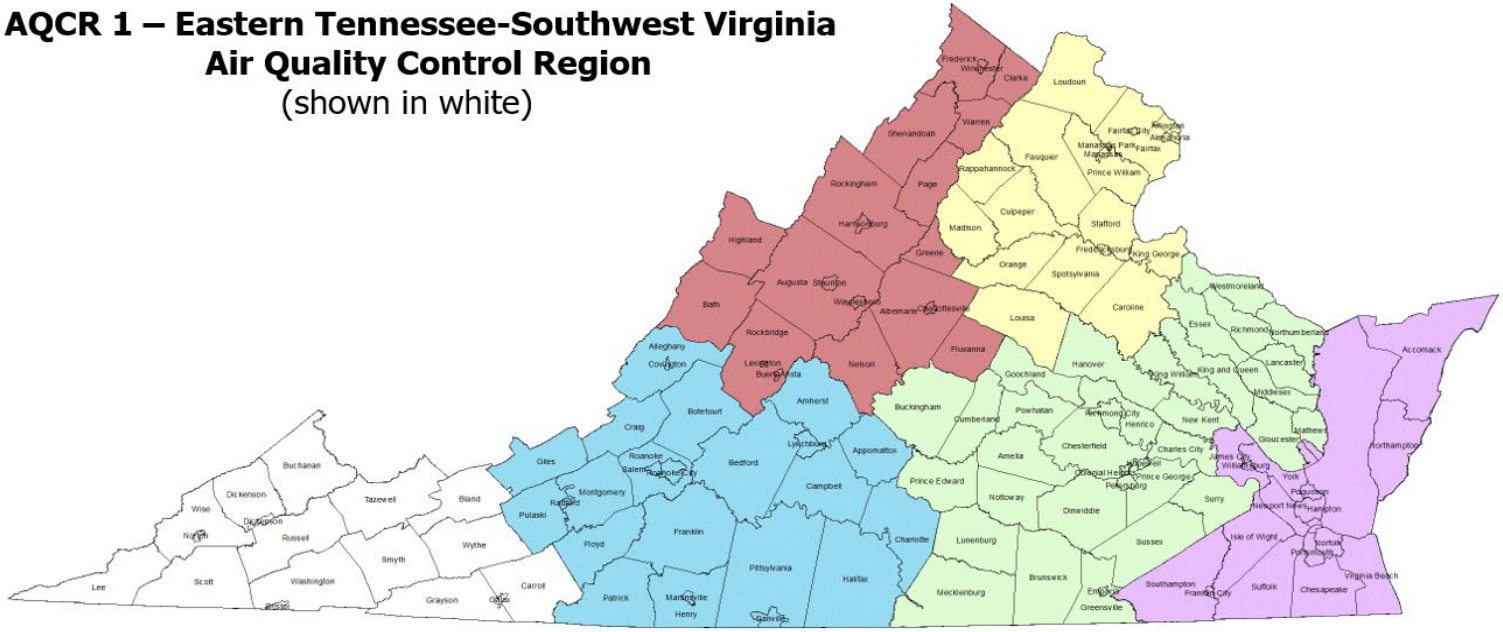
Table 9 Complete AQS Number listing with Alternate Site Names

Federal Site ID	Site Name	Location	Alternate Names
51-035-0001	Gladeville ES	Carroll County	
51-197-0002	Rural Retreat	Wythe County	
51-520-0006	Bristol	City of Bristol	
51-069-0010	Lester Buildings	Frederick County	Winchester, Rest
51-161-1004	Herman Horn ES	Roanoke County	Vinton, Roanoke
51-163-0003	Natural Bridge	Rockbridge County	James River Face, Pedlar Ranger Station
51-165-0003	Harrisonburg VDOT	Rockingham County	Harrisonburg, Rockingham
51-775-0011	Salem HS	City of Salem	Salem
51-071-0007	Lhoist NA	Giles County	Lhoist industrial Monitor
51-680-0015	Leesville Road	City of Lynchburg	Lynchburg, Water Tank site
51-033-0001	Corbin	Caroline County	USGS Geomagnetic Center
51-061-0002	Phelps WMA	Fauquier County	Sumerduck
51-179-0001	Widewater ES	Stafford County	
51-113-0003	Shenandoah NP	Madison County	Big Meadows
51-003-0001	Albemarle HS	Albemarle County	Charlottesville
51-036-0002	Shirley Plantation	Charles City County	Shirley
51-041-0004	Beach Road VDOT	Chesterfield County	Chesterfield VDOT
51-085-0003	McClelland Road	Hanover County	Hanover, Quietude
51-087-0014	MathScience Innovation Center	Henrico County	MSIC, HPAL, MSIC/HPAL

51-087-0015	Piedmont RO	Henrico County	Piedmont, PRO
51-670-0010	Woodson MS	City of Hopewell	Woodson, Hopewell. UATM
51-760-0025	Joseph Bryan Park	City of Richmond	Bryan Park, Richmond Near Road Site
51-650-0008	NASA Langley Research Center	City of Hampton	NASA, CAPABLE, Hampton
51-710-0024	NOAA storage facility	City of Norfolk	NOAA, Norfolk, Downtown Norfolk site
51-800-0004	Tidewater Community College	City of Suffolk	TCC Portsmouth Campus
51-800-0005	Tidewater Research Station	City of Suffolk	Holland
51-810-0008	Tidewater RO	City of Virginia Beach	TRO
51-013-0020	Aurora Hills Visitor Center	Arlington County	Aurora Hills, Arlington
51-059-0030	Lee District Park	Fairfax County	Lee Park, LDP, Franconia
51-107-1005	Broad Run HS	Loudon County	Broad Run, Ashburn
51-153-0009	James Long Park	Prince William County	Long Park, Prince William
51-059-0031	Springfield Near Road Site	Fairfax County	Backlick Road, Springfield, NoVA Near Road Site

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

AQCR 1 – Eastern Tennessee-Southwest Virginia Air Quality Control Region
(shown in white)



Counties: Bland, Buchanan, Carroll, Dickenson, Grayson, Lee, Russell, Scott, Smyth, Tazewell, Washington, Wise, Wythe

Cities: Bristol, Galax, Norton

CBSA/MSA: 28700 – Kingsport-Bristol-Bristol, TN-VA



AQS 51-035-0001 (23-A); Gladeville Elementary School; Galax, 36.7007 N, -80.8798 W
PM-10 sampler – The sampler was installed in January 1989. A collocated sampler was located at this site on 9/1/2023.



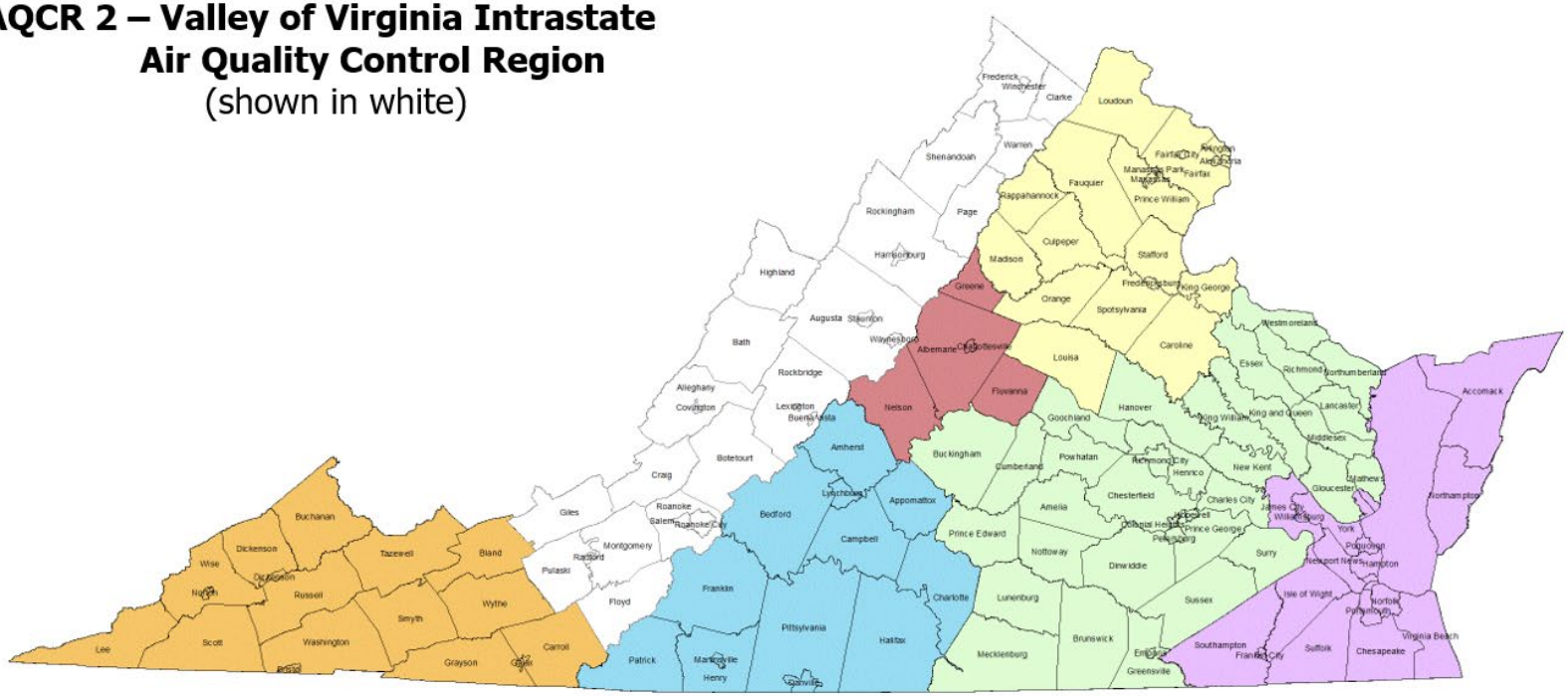
AQS 51-197-0002 (16-B); Rural Retreat Sewage Treatment Facility; Wythe Co.; 36.8912 N, -81.2542 W; Ozone Only Site – This site replaced the Marion Ozone Only site in April 1990.



AQS 51-520-0006 (101-E); Highland View Elementary School; Bristol City; 36.6080 N, -82.1641 N PM2.5 Sampler Site – This site has been in place since 1999 to meet EPA requirements for Population Oriented PM2.5 sites.

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

AQCR 2 – Valley of Virginia Intrastate Air Quality Control Region
(shown in white)



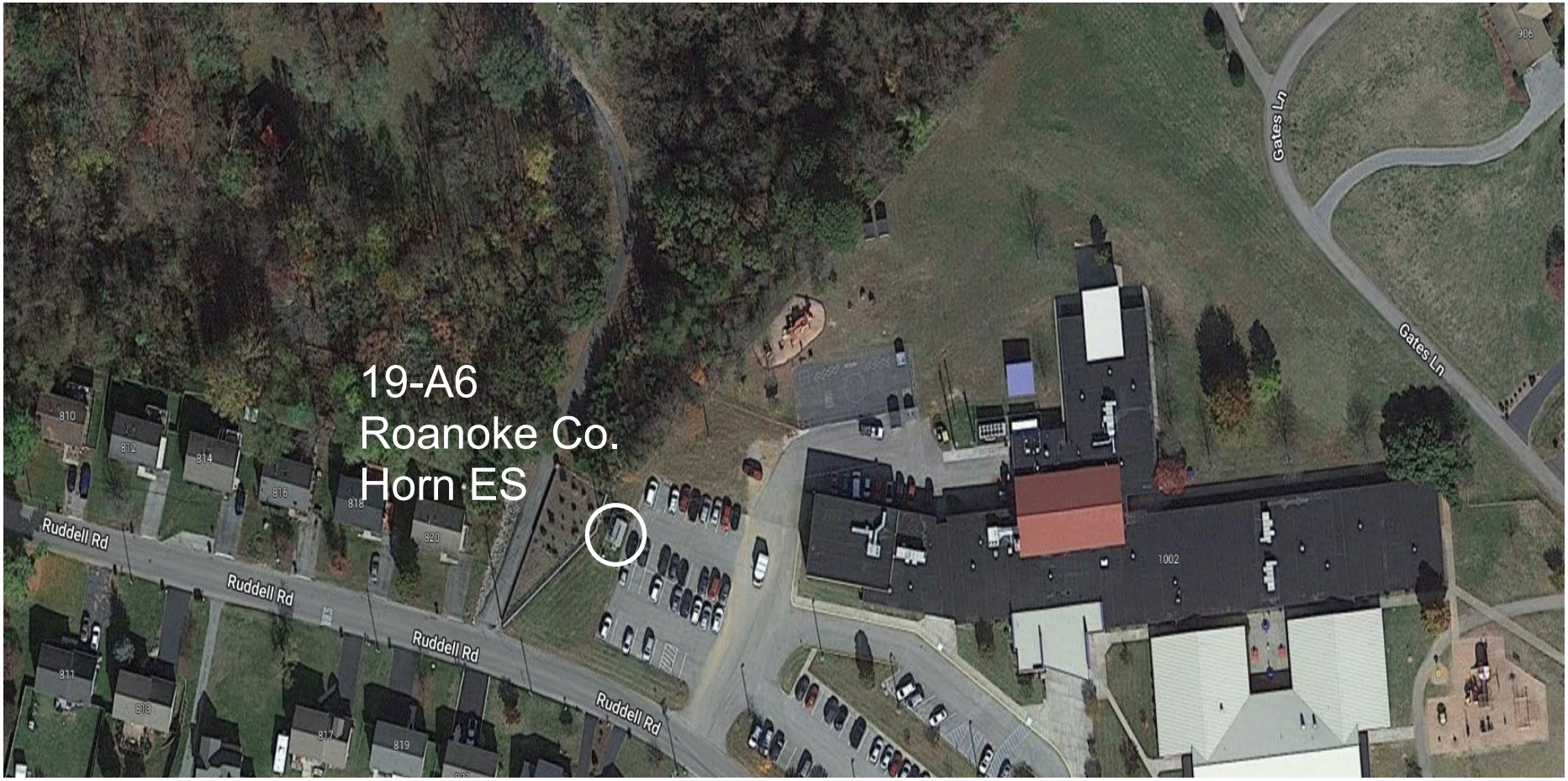
Counties: Alleghany, Augusta, Bath, Botetourt, Clarke, Craig, Floyd, Frederick, Giles, Highland, Montgomery, Page, Pulaski, Roanoke, Rockbridge, Rockingham, Shenandoah, Warren

Cities: Buena Vista, Clifton Forge, Covington, Harrisonburg, Lexington, Radford, Roanoke, Salem, Staunton, Waynesboro, Winchester

CBSA/MSA: 49020 – Winchester VA-WV; 40220 – Roanoke, VA; 25500 – Harrisonburg, VA



AQS 51-069-0010 (28-J); Lester Buildings- Woodbine Road; Frederick County; 39.2810 N, -78.0816 W; Ozone, PM10, PM2.5 – Ozone monitoring began in 1991, PM2.5 began in 2007.



AQS 51-161-1004 (19-A6); Herman Horn ES; Roanoke County; 37.2834 N, -79.8845 W
Multipollutant Site – NO2 started December 1980, Ozone monitoring in 1981, CO and SO2 began in 1987, PM2.5 manual and continuous analyzers added in 2013.



AQS 51-163-0003 (21-C); Natural Bridge Ranger Station; Rockbridge County; 37.6267 N, -79.5126 W; Ozone Only site - This site began as a cooperative effort between VA DEQ and the National Forest Service. Sampling began in April 1999. NFS maintains an IMPROVE site as well.



AQS 51-165-0003 (26-F); VDOT Property; Rockingham County; 38.4775 N, -78.8195 W
Multipollutant Site - This site began in April 2004 monitoring for SO2 and NO2. Ozone and PM2.5 were added in 2007.



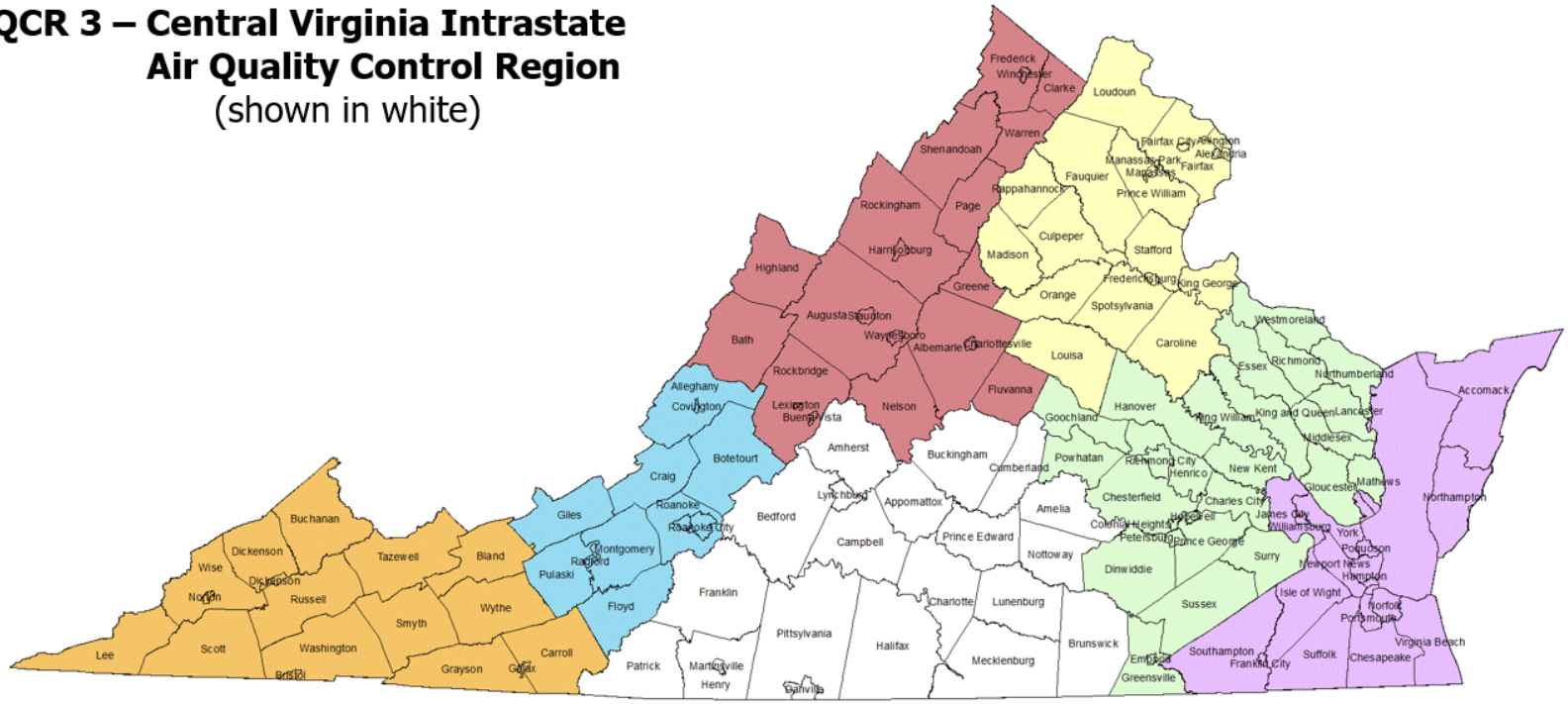
AQS 51-775-0011 (110-C); Salem High School; Salem City; 37.2979 N, -80.0810 W
PM2.5 Only Site - This site was relocated from the Salem Fire Department and began operation in 2008.



AQS 51-071-0007 (9-I); Lhoist Industrial Monitor; Giles Co.; 37.3863 N, -80.6539 W
SO2 Only Site - This site is a result of the 2016 Data Requirements Rule. The monitor began operation in January 2017.

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

AQCR 3 – Central Virginia Intrastate Air Quality Control Region
(shown in white)



Counties: Amelia, Amherst, Appomattox, Bedford, Brunswick, Buckingham, Campbell, Charlotte, Cumberland, Franklin, Halifax, Henry, Lunenburg, Mecklenburg, Nottoway, Patrick, Pittsylvania, Prince Edward

Cities: Bedford, Danville, Lynchburg, Martinsville, South Boston

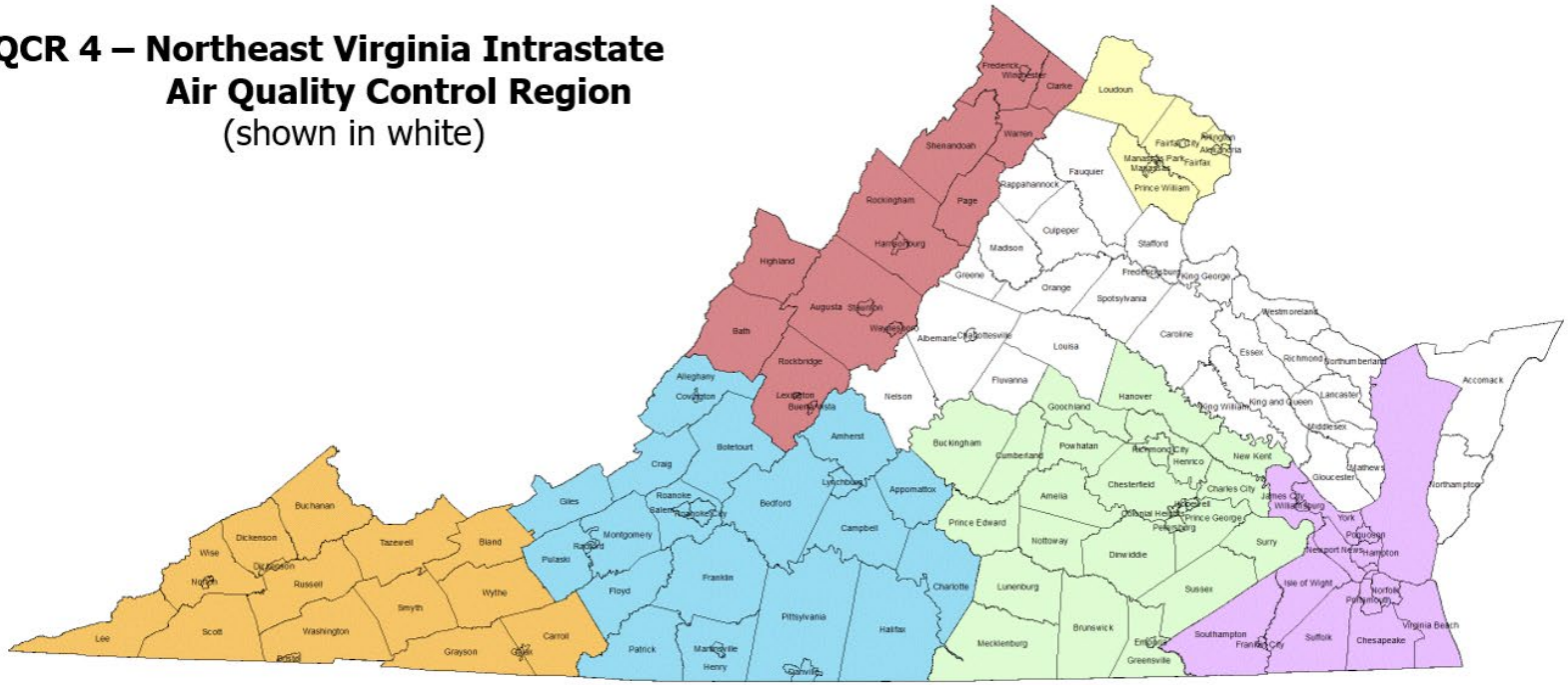
CBSA/MSA: 31340 – Lynchburg, VA



AQS 51-680-0015 (155-Q); Leesville Road Water Tower Site; Lynchburg City; 37.3327 N, -79.2150 W; PM2.5 Only Site - This site began operation in April 2003.

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

AQCR 4 – Northeast Virginia Intrastate Air Quality Control Region
(shown in white)



Counties: Accomack, Albemarle, Caroline, Culpeper, Essex, Fauquier, Fluvanna, Gloucester, Greene, King and Queen, King George, King William, Lancaster, Louisa, Madison, Mathews, Middlesex, Nelson, Northampton, Northumberland, Orange, Rappahannock, Richmond, Spotsylvania, Stafford, Westmoreland

Cities: Charlottesville, Fredericksburg

CBSA/MSA: 40060 – Richmond, VA; 16820 – Charlottesville, VA; 47900 – Washington-Arlington-Alexandria, DC-VA-MD-WV



AQS 51-033-0001 (48-A); Corbin Geomagnetic Center; Caroline Co.; 38.2009 N, -77.3774 W
Ozone Only Site - This site began operation in June 1993 and was originally a PAMS site.



AQS 51-061-0002 (37-B); Phelps Wildlife Management Area; Fauquier Co.; 38.4737 N, -77.7677 W; Ozone Only Site - This site began operation in 1981 as an upwind site for the DC MSA



AQS 51-179-0001 (44-A); Widewater ES; Stafford Co.; 38.4812 N, -77.3704 W
Ozone and PM10 site – Ozone began in September 1992 and PM10 in 2017.



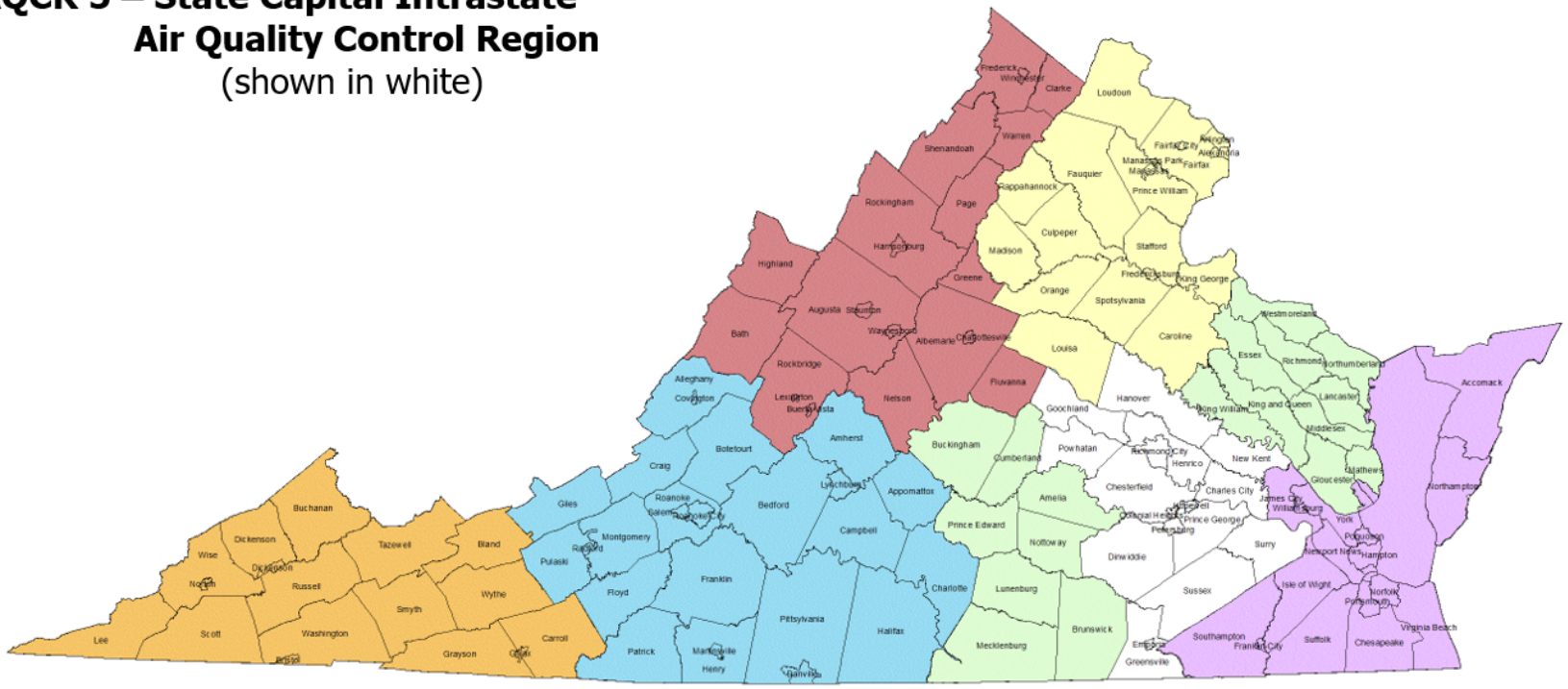
AQS 51-113-0003 (35-A); Big Meadows Maintenance Road; Shenandoah NP; 38.5231 N, -78.4347 W; Ozone and PM2.5 – This is a National Park Service (NPS) site. The data was incorporated into the VA Network in May 1983. The continuous PM2.5 began in late 2004.



AQS 51-003-0001 (33-A); Albemarle High School; Albemarle Co.; 38.0766 N, - 78.5040 W
Ozone and PM2.5 – This site began operation in 2008. The site was originally to be within the Charlottesville, but siting limitations required that it be relocated to this site.

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

AQCR 5 – State Capital Intrastate Air Quality Control Region
(shown in white)



Counties: Charles City, Chesterfield, Dinwiddie, Goochland, Greensville, Hanover, Henrico, New Kent, Powhatan, Prince George, Surry, Sussex

Cities: Colonial Heights, Emporia, Hopewell, Petersburg, Richmond

CBSA/MSA: 40060 – Richmond, VA



AQS 51-036-0002 (75-B); Shirley Plantation; Charles City Co.; 37.3444 N, -77.2593 W
This site was established in 1987 as a downwind site for the City of Hopewell. This site has Ozone, SO2, and NO2 analyzers. A PM2.5 sampler was added in January 1999.



AQS 51-041-0004 (71-H); Beach Road VDOT shop; Chesterfield Co.; 37.3575 N, -77.5936 W
This site was established in 1980 as an upwind site for the Richmond MSA. This site has both an Ozone analyzer and PM2.5 sampler.



AQS 51-085-0003 (73-E); McClelland Road; Hanover Co.; 37.6061 N, -77.2188 W
This site was established in 2001 as a downwind site for the Richmond MSA. This site has an Ozone analyzer.



AQS 51-087-0014 (72-M); MathScience Innovation Center/HPAL; Henrico Co.; 37.5565 N, -77.4003 W; This site was established in 1981 as a central site for the Richmond MSA. In 2008 this site also became the National Air Toxics Trend Site. In June of 2021 this site was established as the PAMS site.



AQS 51-087-0015 (72-N); Piedmont Regional Office; Henrico Co.; 37.6713 N, -77.5664 W
This site was established in 1999 as part of the statewide PM2.5 network. The site has a PM2.5 sampler.



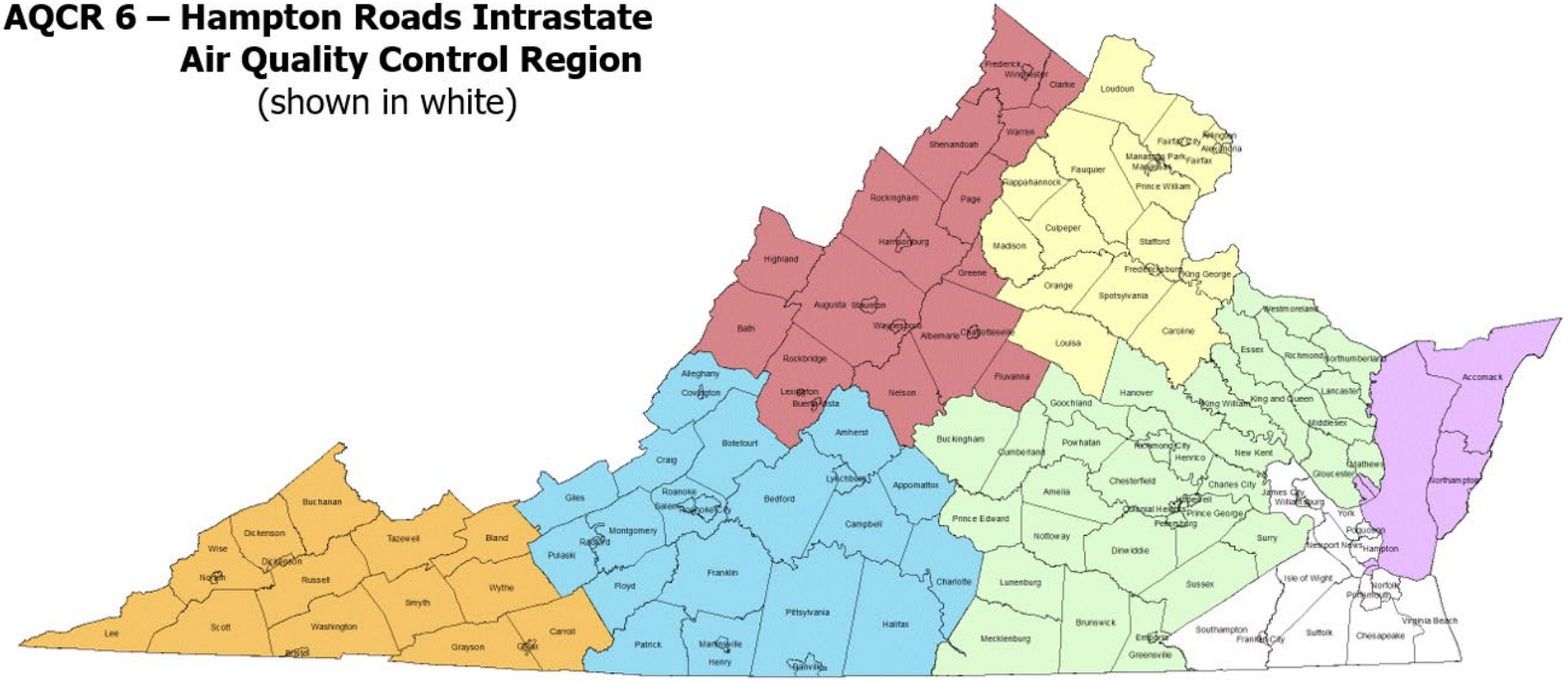
AQS 51-670-0010 (154-M); Woodson Middle School; Hopewell City; 37.3444 N, -77.2953 W
This site was established as part of the Hopewell Toxics Study in 2007. This site is and Urban Air Toxics Monitoring Site.



AQS 51-760-0025 (158-X); Bryan Park; Richmond City; 37.5909 N, 77.4693 W
This site was established as the Near Road monitoring site for the Richmond MSA. The site is adjacent to the highest annual average daily traffic road segment in Richmond. This site has NO2 and CO analyzers and a PM2.5 sampler.

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

AQCR 6 – Hampton Roads Intrastate Air Quality Control Region
(shown in white)



Counties: Isle of Wight, James City, Southampton, York

Cities: Chesapeake, Franklin, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach, Williamsburg

CBSA/MSA: 47260 – Virginia Beach-Norfolk-Newport News, VA-NC



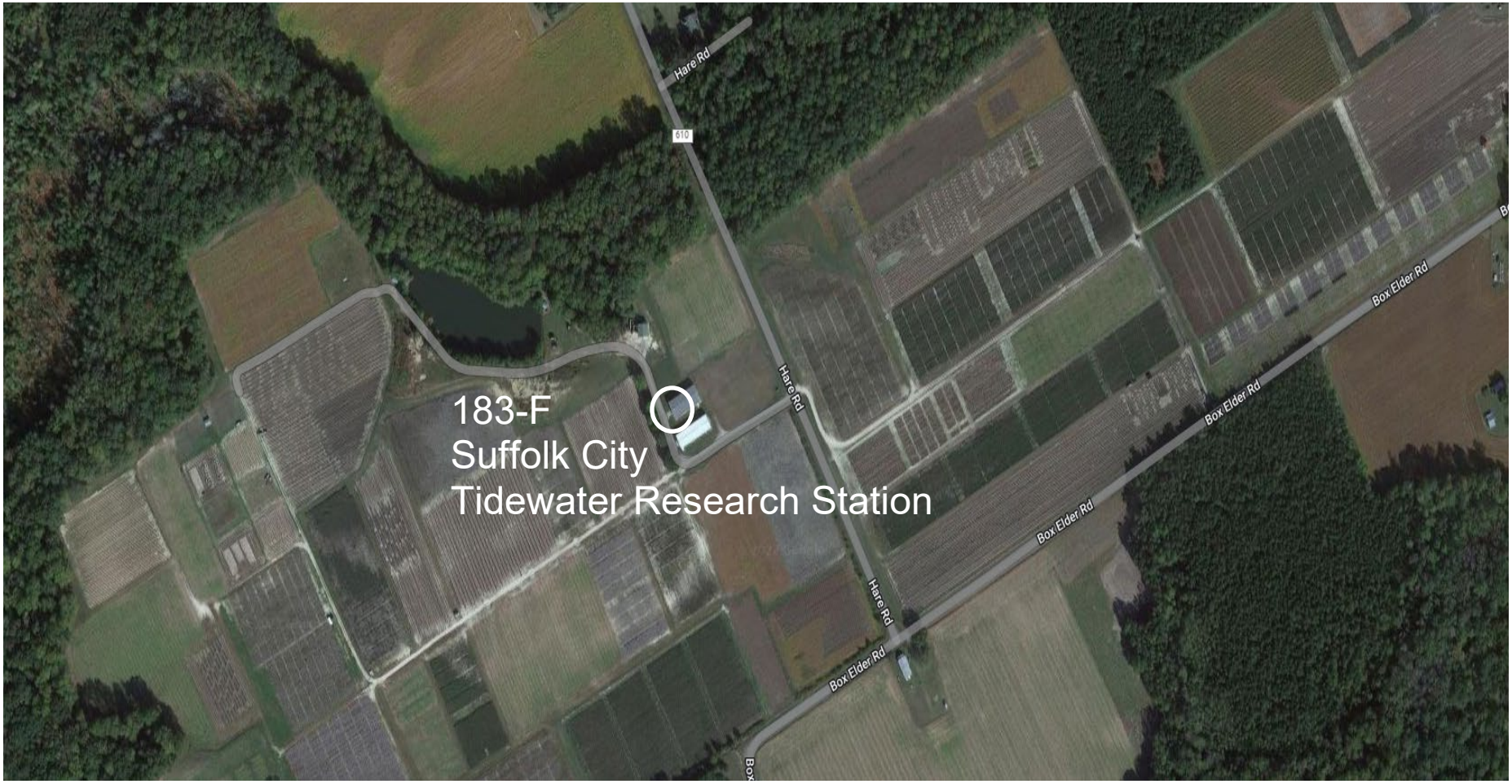
AQS 51-650-0008 (179-K); NASA Langley Research Center; Hampton City; 37.1037 N, -76.3870; Multipollutant Site -Ozone, CO, NO2, SO2, and PM2.5 analyzers and samplers. This site was established in 2010 as a replacement for the site at the Virginia School which was established in 1972.



AQS 51-710-0024 (181-A1); NOAA Storage Lot; Norfolk City; 36.8556 N, -76.3014 W Multipollutant Site -CO, NO2, SO2, and PM10 analyzers and samplers. This site was established in 2006.



AQS 51-800-0004 (183-E); TCC Portsmouth Campus; Suffolk City; 36.9012 N, -76.4381 W
Ozone Only - This site was established in 1987. The site is considered an upwind site for the Hampton-Newport News area of Tidewater.



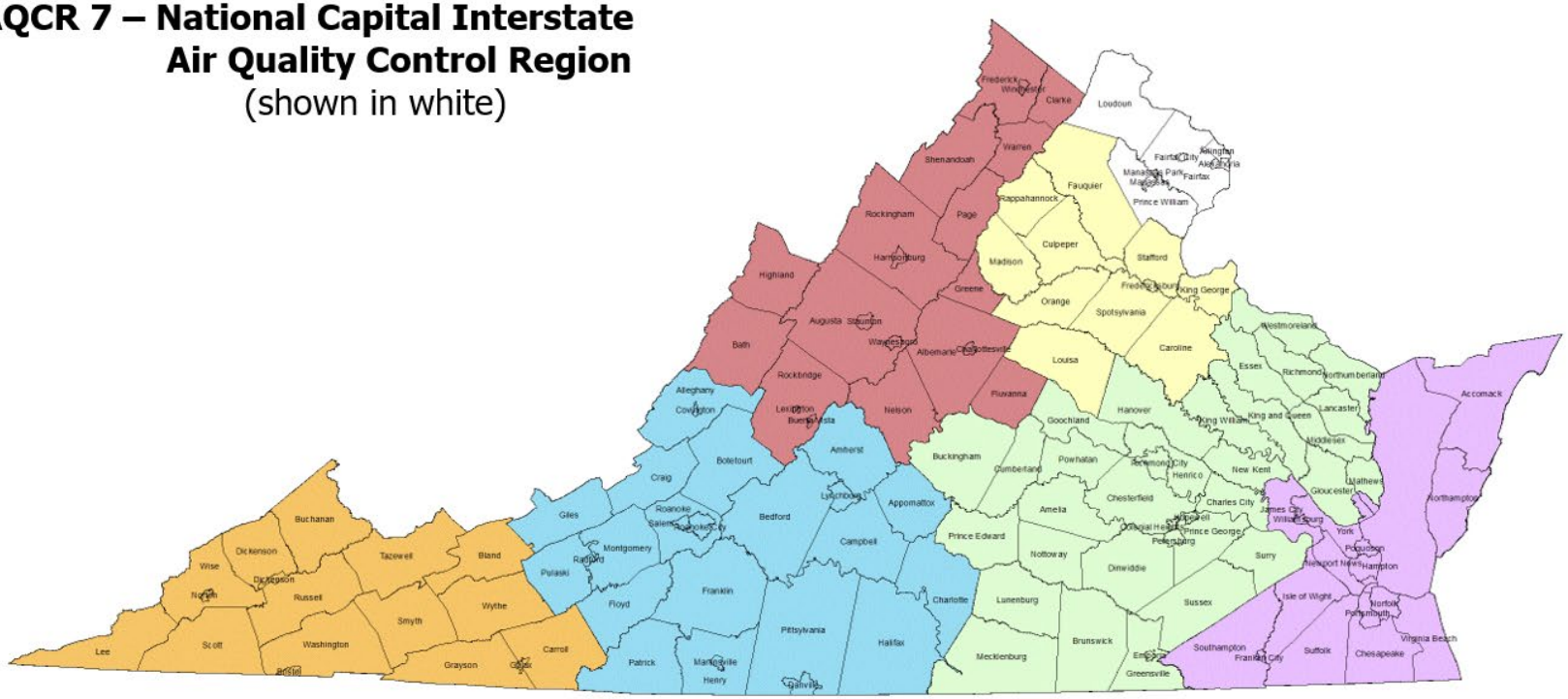
AQS 51-800-0005 (183-F); Tidewater Research Station; Suffolk City; 36.6653 N, -76.7308 W
Ozone Only - This site was established in 1991. This site is an EPA mandated replacement for the terminated site at the Cheriton Post Office.



AQS 51-810-0008 (184-J); Tidewater Regional Office; Virginia Beach City; 36.8419 N, -76.1812 W; PM2.5 Only Site - This site was established in 1999 as part of the original PM2.5 statewide network. This site formerly housed the Urban Air Toxics site in the Tidewater Area.

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

AQCR 7 – National Capital Interstate Air Quality Control Region
(shown in white)



Counties: Arlington, Fairfax, Loudoun, Prince William

Cities: Alexandria, Fairfax, Falls Church, Manassas, Manassas Park

CBSA/MSA: 47900 – Washington-Arlington-Alexandria, DC-VA-MD-WV



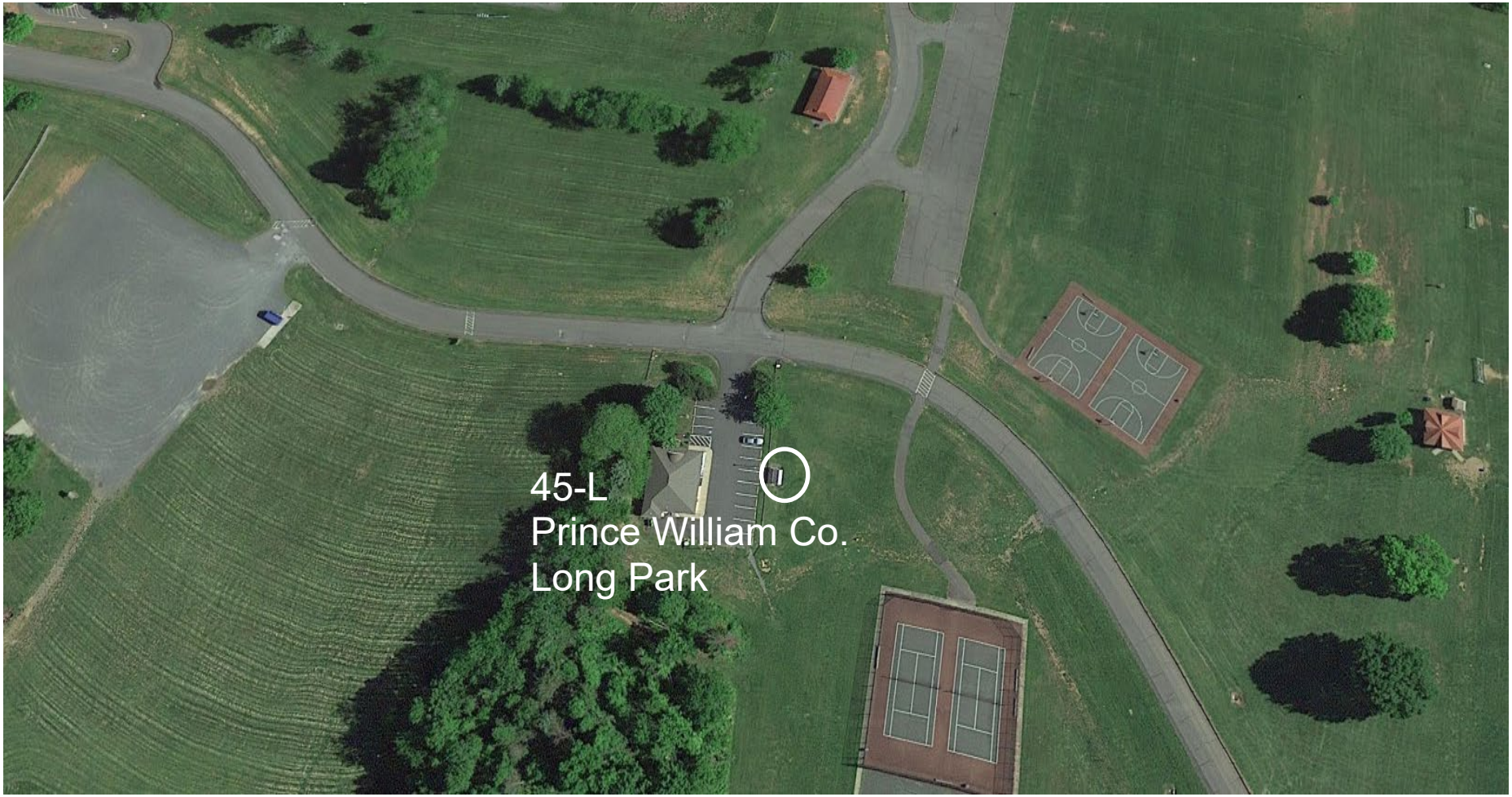
AQS 51-013-0020 (47-T); Aurora Hills Visitor Center; Arlington Co.; 38.8577 N, -77.0592 W
Multipollutant Site - This site was established in 1978 in cooperation with Arlington County. The suite of pollutants currently includes Ozone, PM2.5, CO NO2, and PM2.5.



AQS 51-059-0030 (46-B9); Lee District Park; Fairfax Co.; 38.7734 N, -77.1047 W
Multipollutant Site - This site was initially established as a PAMS Type II site. The site began operating in 1978. The site currently monitors for Ozone, SO2, and PM2.5



AQS 51-107-1005 (38-I); Broad Run High School; Loudon Co.; 39.0247 N, -77.4893 W
Multipollutant Site - The site began operating in April 1998. The site currently monitors for Ozone, NO2 and PM2.5.



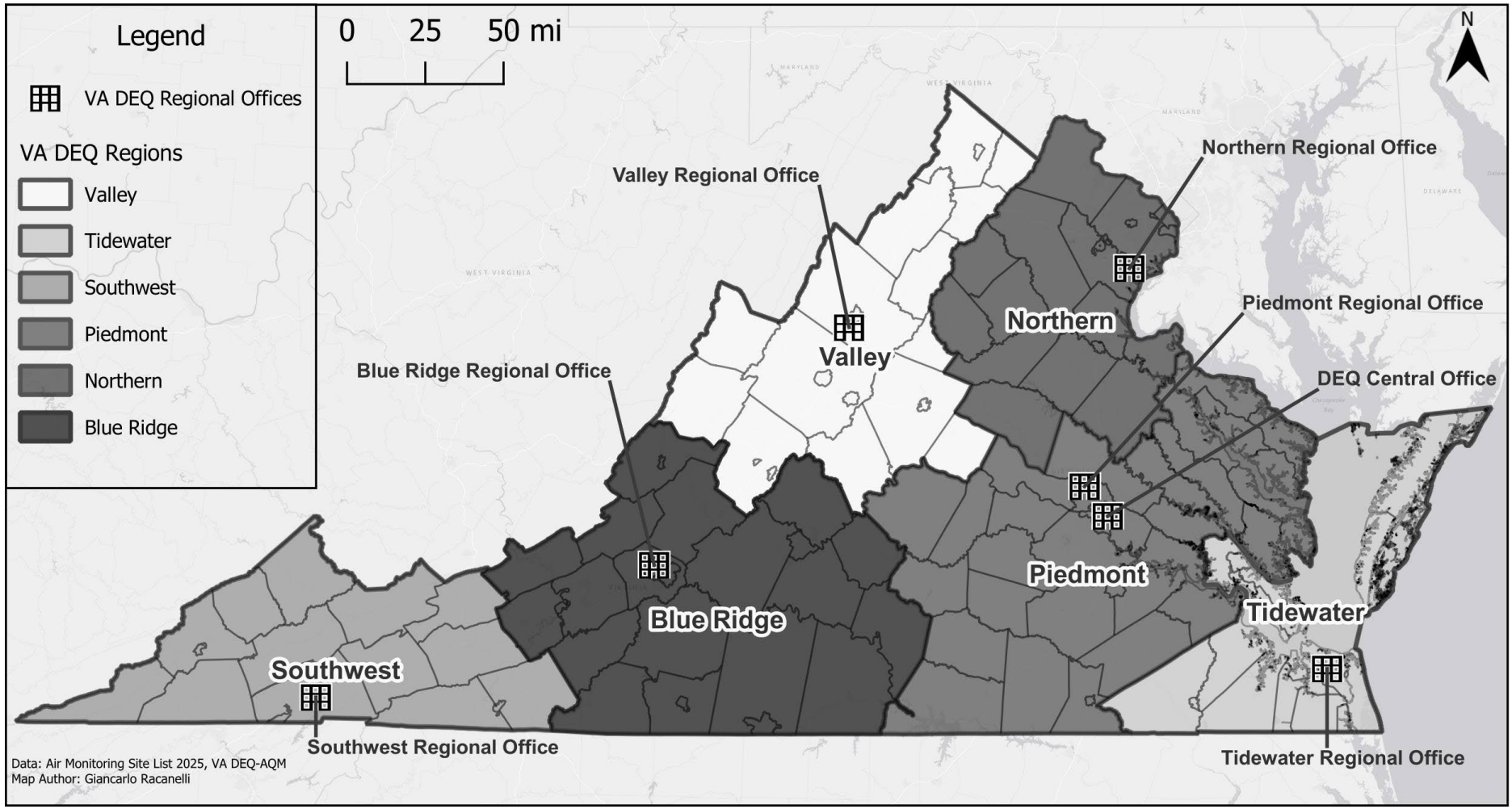
AQS 51-153-0009 (45-L); Long Park; Prince William Co.; 38.8529 N, -77.6346 W
Multipollutant Site - The site began operating in April 1991. The site currently monitors for Ozone and NO2.



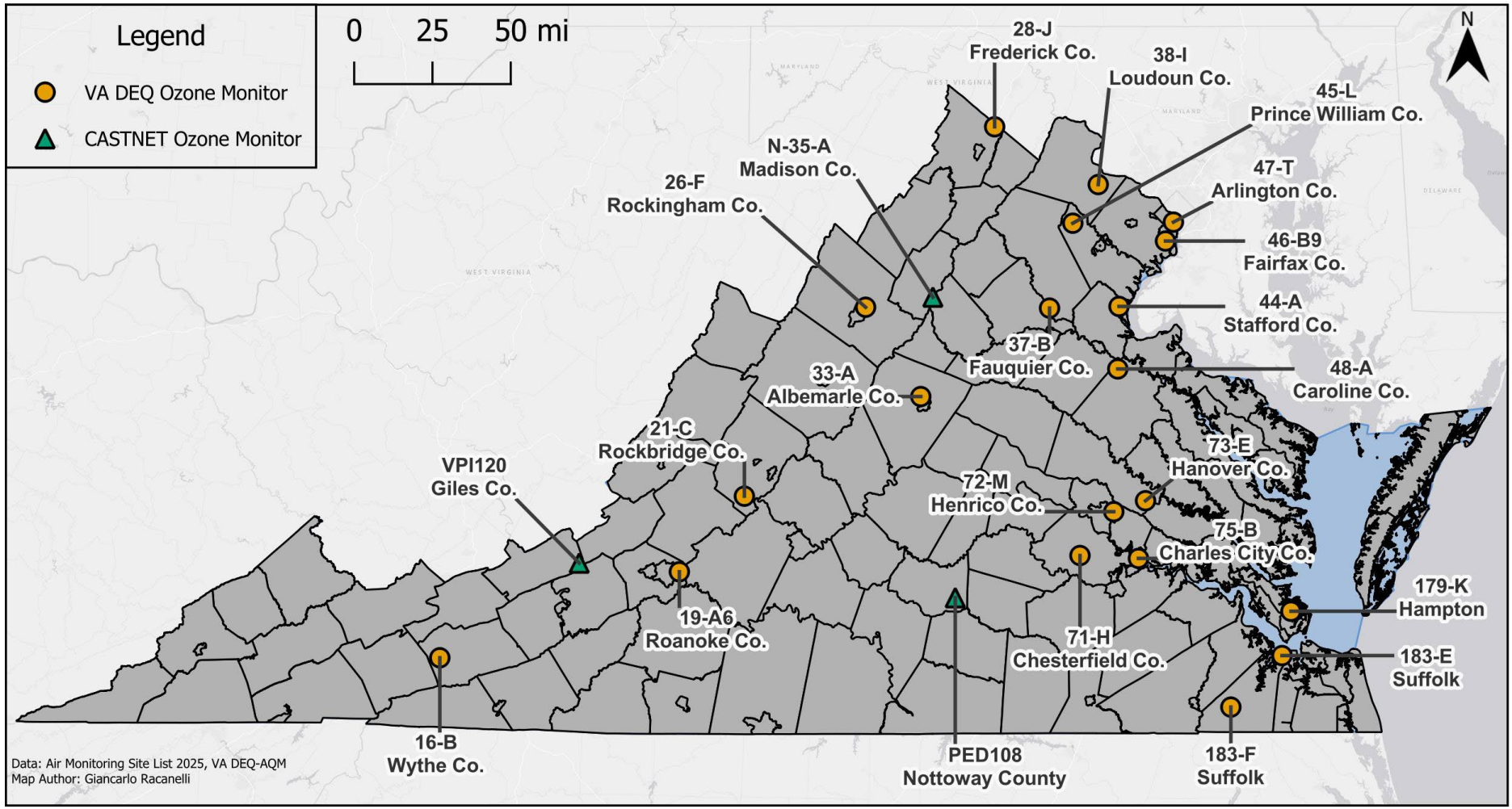
AQS 51-059-0031 (46-C2); Backlick Rd. Park and Ride; Fairfax Co.; 38.7684 N, -77.1835 W
The site began operating in April 2015. This site is the EPA mandated Near Road monitoring site for the Washington D.C. MSA. This site has NO2, CO, and PM2.5 analyzers.

SITE MAPS – MONITOR LOCATIONS

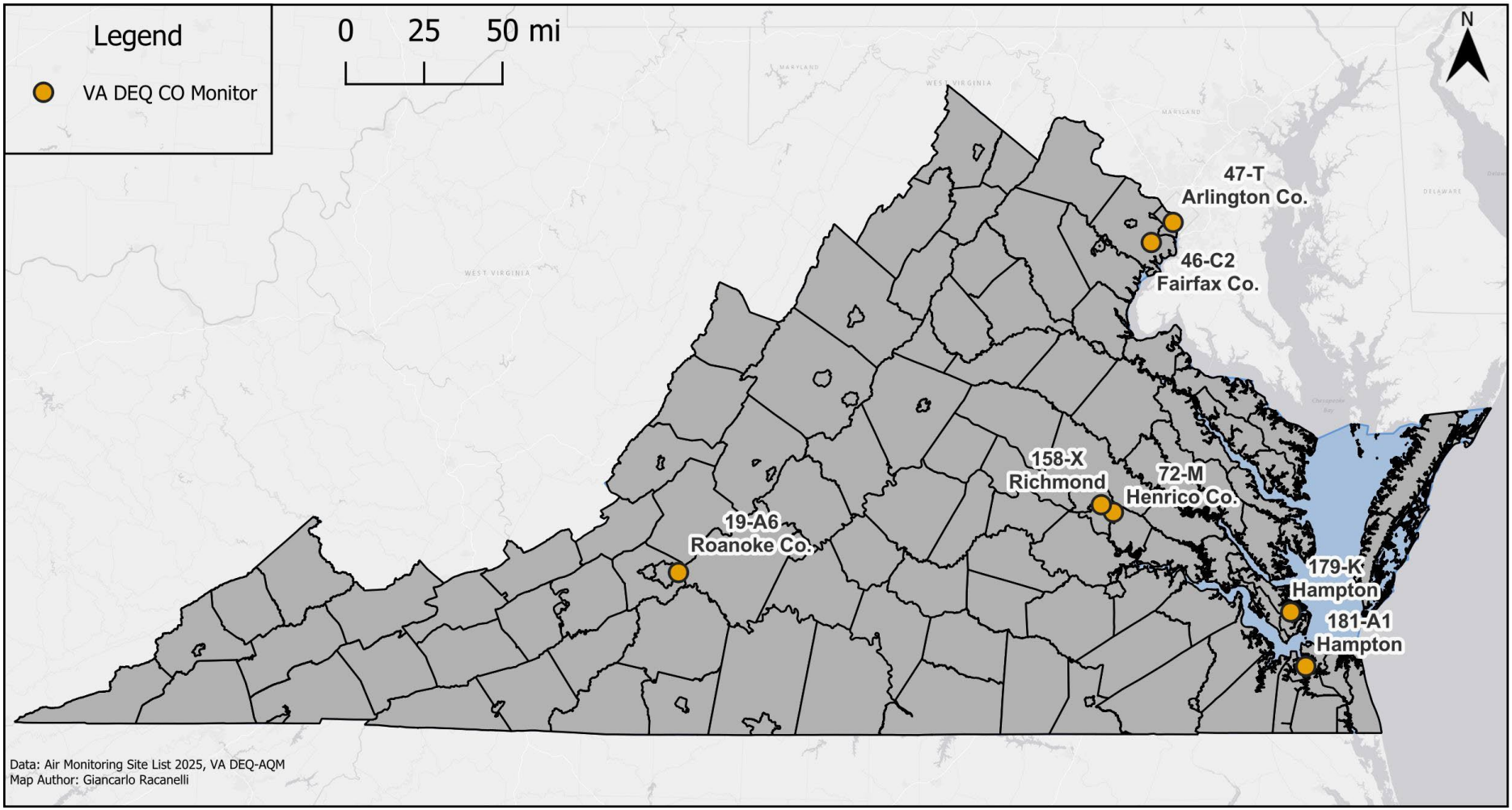
2025 VA DEQ Regions and Regional Offices



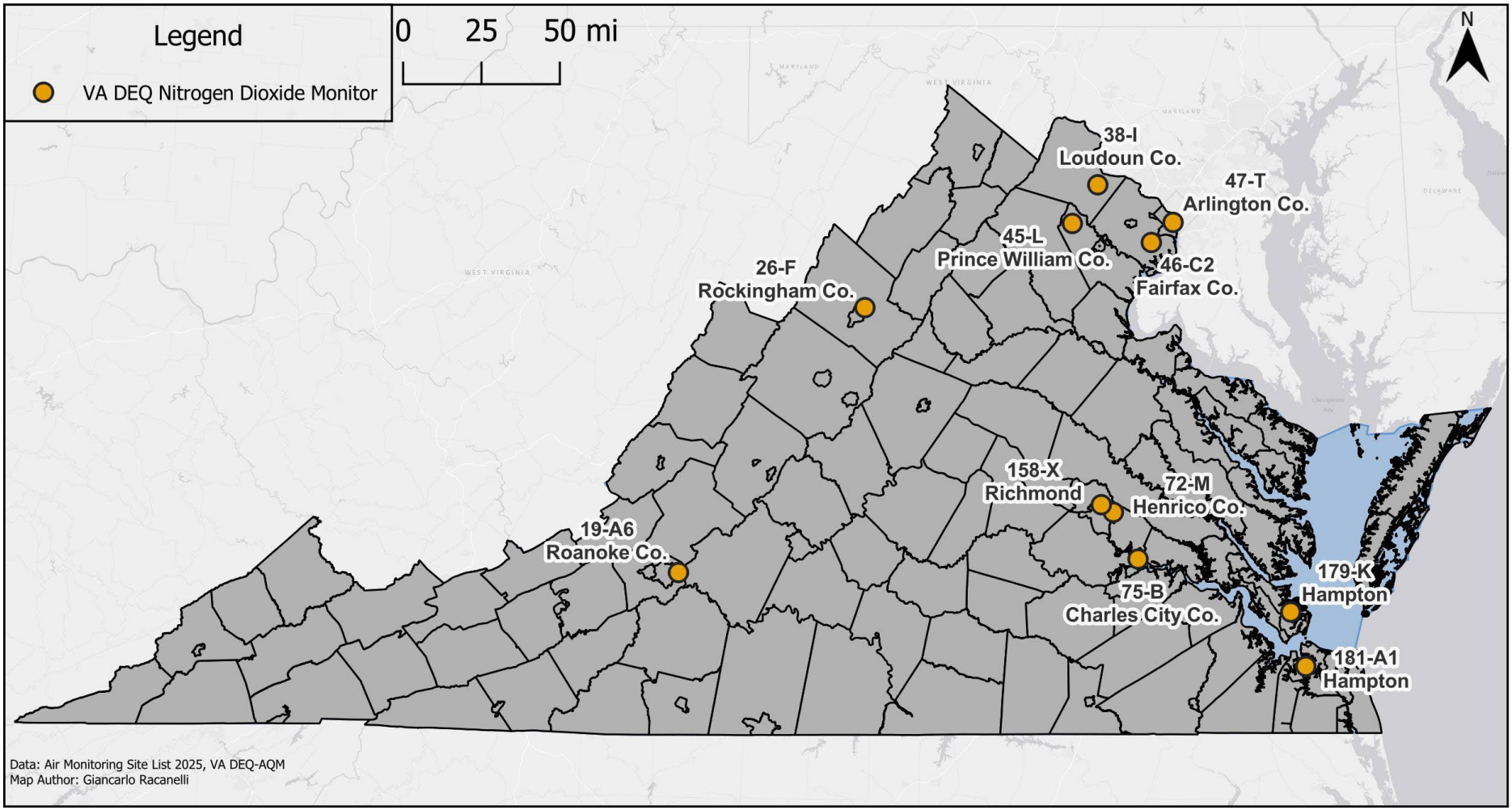
2025 VA DEQ Ozone Monitoring Sites



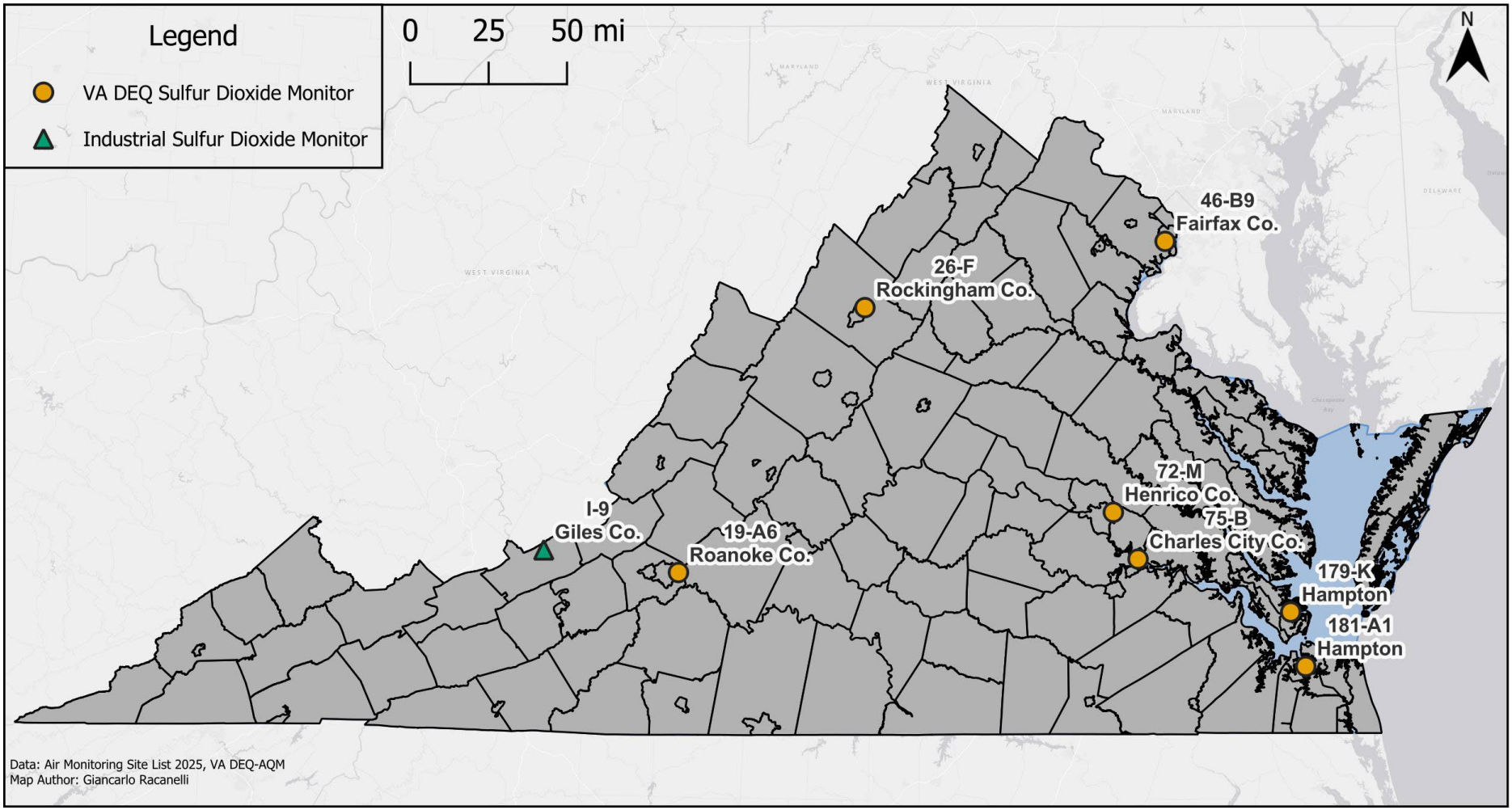
2025 VA DEQ CO Monitoring Sites



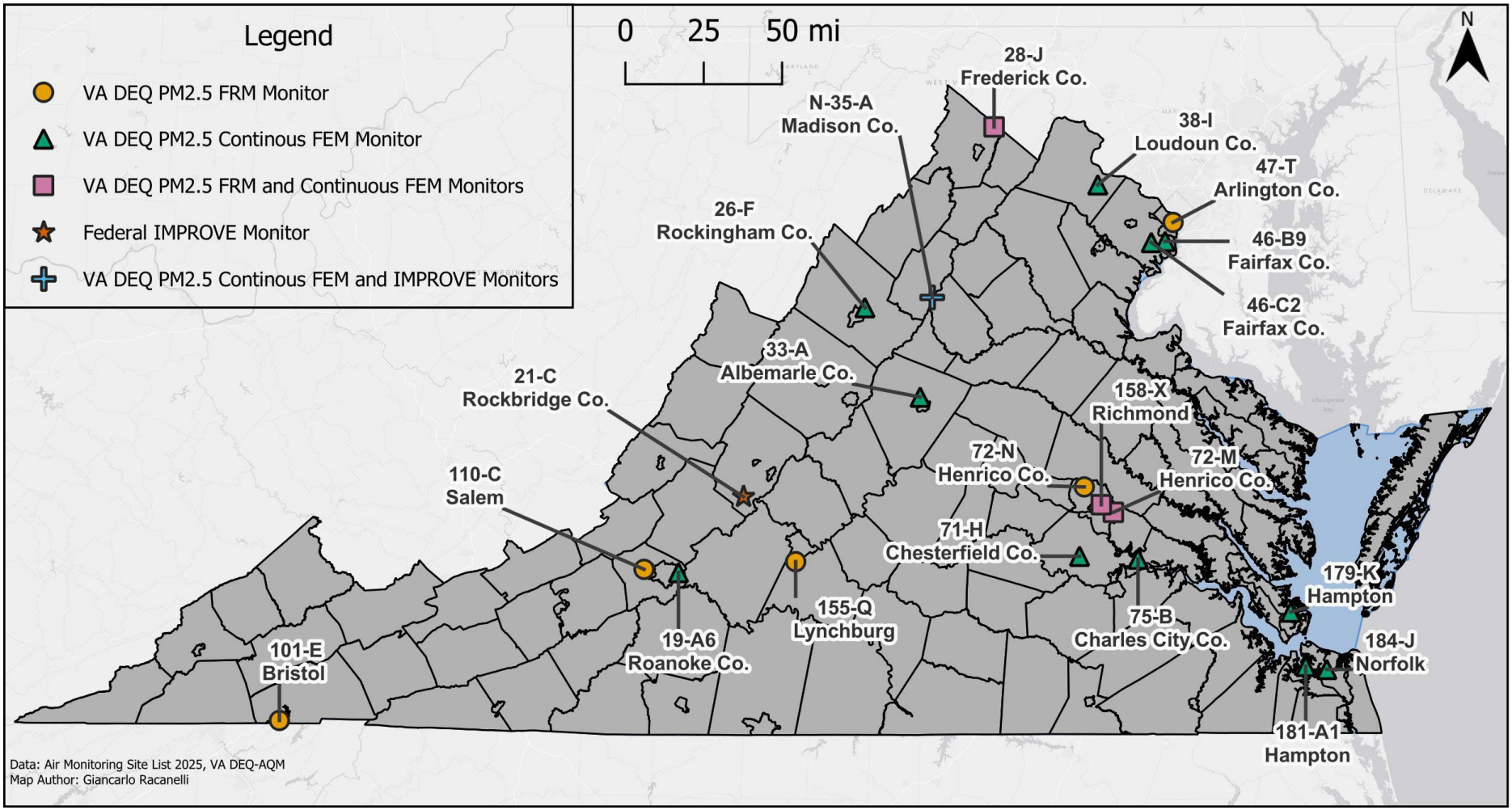
2025 VA DEQ Nitrogen Dioxide Monitoring Sites



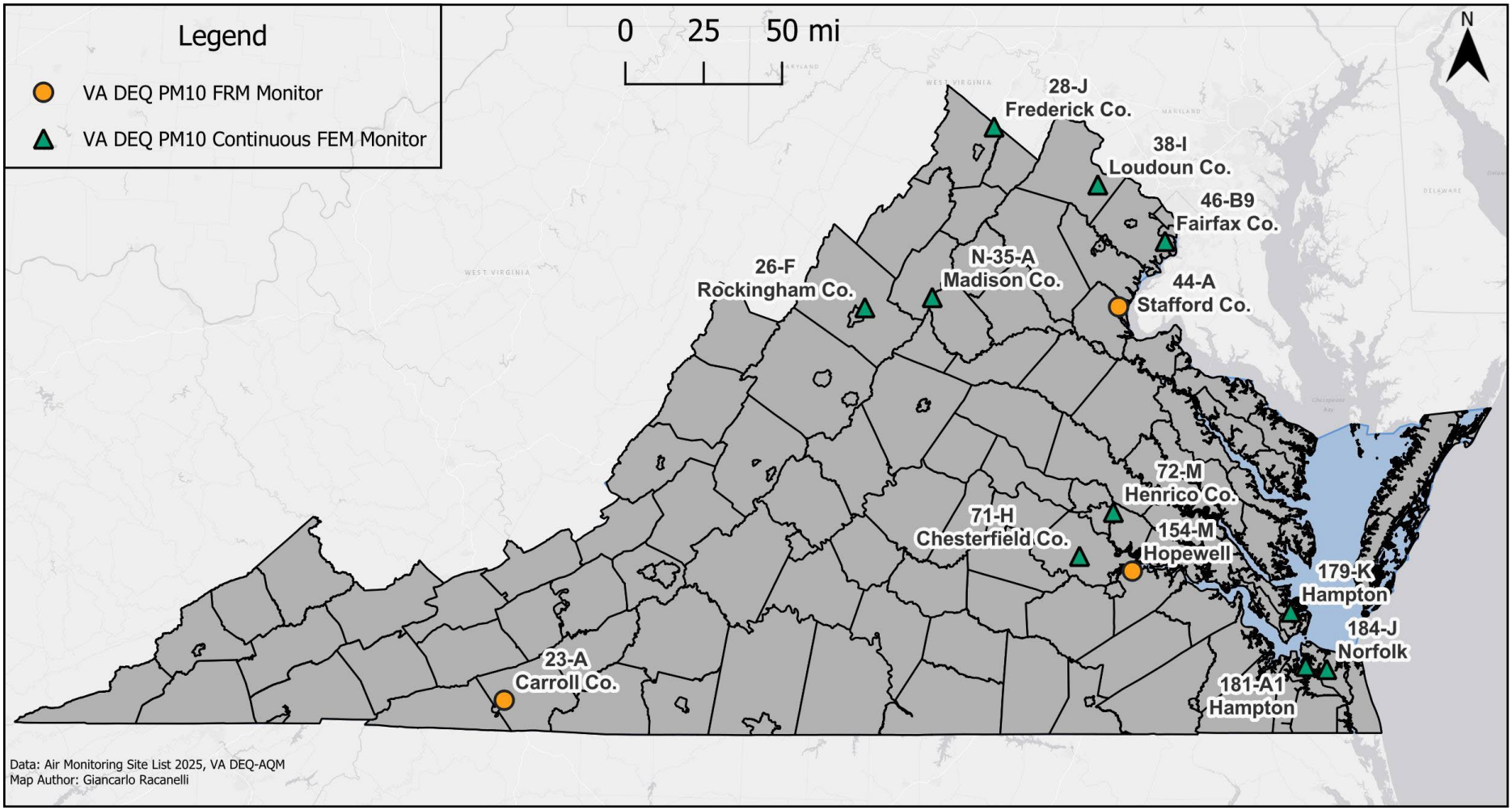
2025 VA DEQ Sulfur Dioxide Monitoring Sites



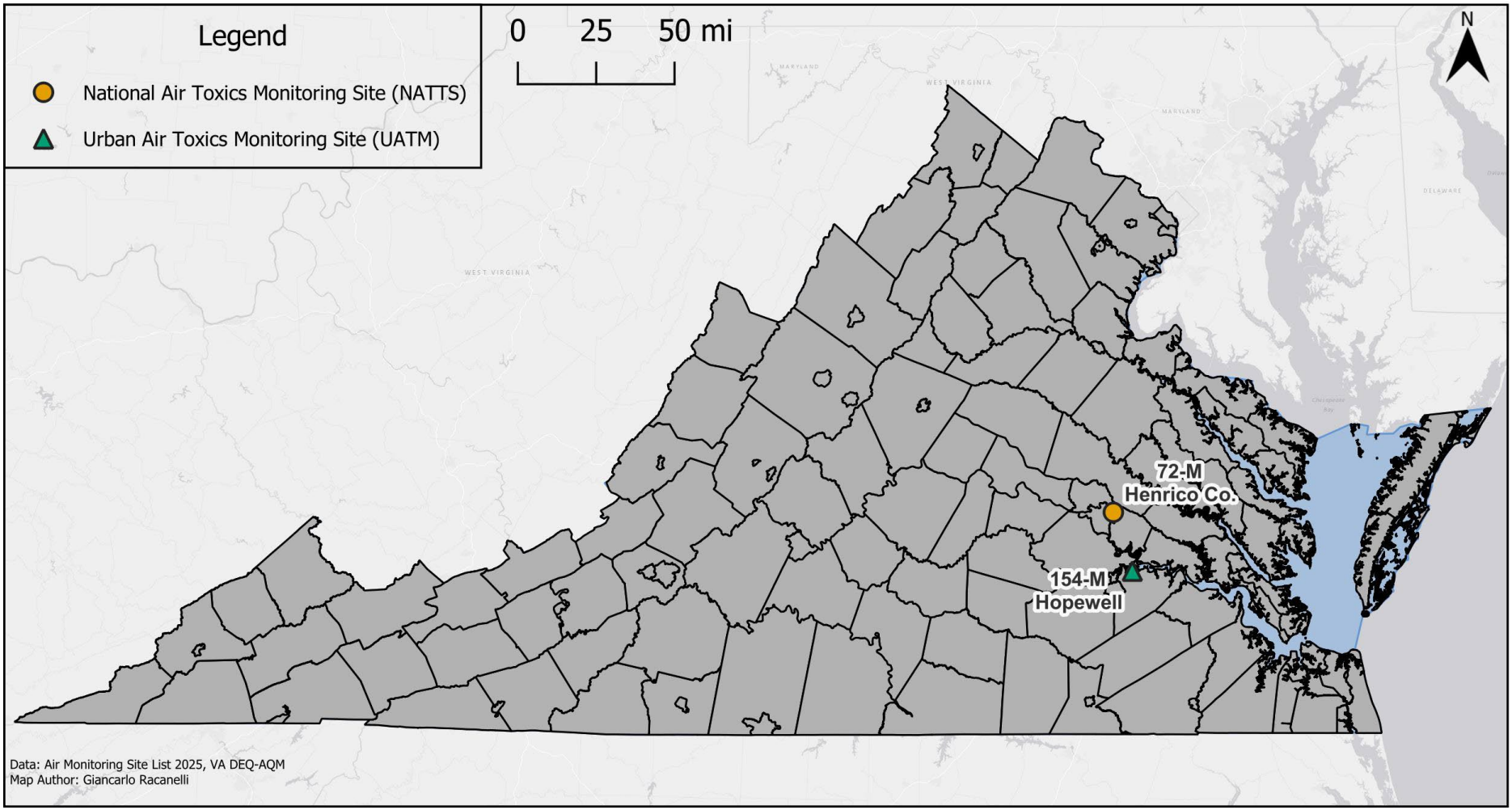
2025 VA DEQ PM2.5 Monitoring Sites



2025 VA DEQ PM10 Monitoring Sites



2025 VA DEQ Air Toxics Monitoring Sites



MONITORING SITE INFORMATION

Monitoring Site Listing by AQCR

Virginia Monitoring Network Minimum Requirements

Ozone MSA Monitor requirements – Table D-2 of Appendix D to Part 58

Washington, DC-VA-MD-WV - 3 monitors,
Virginia Beach-Norfolk-Newport News, VA-NC - 2 monitors
Richmond, VA – 2 monitors
Roanoke, VA - 1 monitor
Blacksburg – Christiansburg, VA – 1 monitor

Ozone Monitors - Per 40 CFR 58.10(a) (9) all ozone monitors were in operation by March 1, 2021.

Table 9 Virginia Site Listing – Ozone Monitoring Requirements

MSA	Population	Operating Monitors	Sites
Washington, DC-VA-MD-WV	6,280,487	51-061-0002	Fauquier County
Washington, DC-VA-MD-WV	6,280,487	51-179-0001	Stafford County
Washington, DC-VA-MD-WV	6,280,487	51-013-0020	Arlington County
Washington, DC-VA-MD-WV	6,280,487	51-059-0030	Fairfax County
Washington, DC-VA-MD-WV	6,280,487	51-107-1005	Loudon County
Washington, DC-VA-MD-WV	6,280,487	51-153-0009	Prince William Co.
Virginia Beach-Norfolk-Newport News, VA-NC	1,726,907	51-650-0008	Hampton City
Virginia Beach-Norfolk-Newport News, VA-NC	1,726,907	51-800-0004	Suffolk City
Virginia Beach-Norfolk-Newport News, VA-NC	1,726,907	51-800-0005	Suffolk City
Richmond, VA	1,281,708	51-033-0001	Caroline County
Richmond, VA	1,281,708	51-036-0002	Charles City County
Richmond, VA	1,281,708	51-041-0004	Chesterfield County
Richmond, VA	1,281,708	51-085-0003	Hanover County
Richmond, VA	1,281,708	51-087-0014	Henrico County
Roanoke, VA	324,882	51-161-1004	Roanoke County
Blacksburg-Christiansburg, VA	181,863	51-071-9991	Giles County

Virginia Monitoring Network Minimum Requirements

$PM_{2.5}$ MSA Monitor Requirements – Table D-5 of Appendix D to Part 58
Washington, DC-VA-MD-WV - 2 monitors,
Virginia Beach-Norfolk-Newport News, VA-NC - 2 monitors
Richmond, VA – 2 monitors

Table 10 Virginia Site Listing – $PM_{2.5}$ Monitoring Requirements

MSA	Population	Operating Monitors	Sites	Design Value – 24 hr.	Design Value - Annual
Washington-Arlington-Alexandria, DC-VA-MD-WV	6,280,487	51-107-1005	Loudon County	19	7.3
Washington-Arlington-Alexandria, DC-VA-MD-WV	6,280,487	51-013-0020	Arlington County	21	7.4
Washington-Arlington-Alexandria, DC-VA-MD-WV	6,280,487	51-059-0030	Fairfax County	21	7.5
Washington-Arlington-Alexandria, DC-VA-MD-WV	6,280,487	51-059-0031	Fairfax County	20	7.7
Virginia Beach-Norfolk-Newport News, VA-NC	1,726,907	51-650-0008	Hampton City	19	6.9
Virginia Beach-Norfolk-Newport News, VA-NC	1,726,907	51-710-0024	Norfolk City	17	6.9
Virginia Beach-Norfolk-Newport News, VA-NC	1,726,907	51-810-0008	Virginia Beach City	18	7.1
Richmond, VA	1,281,708	51-760-0025	Richmond City	19	7.5
Richmond, VA	1,281,708	51-036-0002	Charles City County	17	6.3
Richmond, VA	1,281,708	51-041-0004	Chesterfield County	17	6.9
Richmond, VA	1,281,708	51-087-0015	Henrico County	15	6.7
Richmond, VA	1,281,708	51-087-0014	Henrico County	19	7.3

Virginia Monitoring Network Site Monitoring Listing

The detailed listing of all monitors at all sites in Virginia is contained in a spreadsheet that is included with this notice. Due to the size and complexity of the spreadsheet it is being posted separately from document. The document is entitled “VA SITE LISTING 2025 AQCR I-VI. This listing also includes a summary of the PM2.5 FRM to FEM conversions as described on page 15 above.

ATTACHMENT 1

Work Plan Tidewater Air Monitoring Evaluation study

Characterization and Risk Assessment of Air Toxics Metals in Southeast Virginia

REVISED WORK PLAN

OFFICE OF AIR QUALITY MONITORING
October 12, 2023

I. PROJECT TITLE:

Characterization and Risk Assessment of Air Toxics Metals in Southeast Virginia

II. CATEGORY:

Community Scale Air Toxics Monitoring Project

III. APPLICANT INFORMATION

Organization: Virginia Department of Environmental Quality
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IV. PROJECT SUMMARY/FUNDING

Virginia Department of Environmental Quality (DEQ) Office of Air Quality Monitoring (OAQM) proposed a Community Scale Air Toxics Monitoring project for the Southeastern (Tidewater) Area of the Commonwealth of Virginia. This project is intended to characterize the ambient concentrations of air toxics metals and perform corresponding air quality and health risk assessments for two Tidewater communities: the Lambert's Point Community (LP) and East End community (EE) located in Norfolk and Newport News, respectively. Residents of these communities have long expressed concern about ambient coal dust and air quality [1]. Coal dust is known to contain metals, some of which may be present in toxic amounts. This project is designed to develop a local air quality characterization in these communities and perform an air quality and a health assessment for air toxics metals. The results of this characterization and the air quality and health assessments will inform future DEQ Strategic Plan objectives to improve air quality and community engagement in underserved communities.

This study will comprise five distinct phases:

(1) Planning and siting of the samplers,
(2) Collection and chemical analysis of ambient air metals samples,
(3) Data validation and results summaries,
(4) Health risk assessments, and
(5) A final report incorporating recommendations for further actions and study.

To properly implement and execute this project VA DEQ will need the following support from EPA:

- Provide necessary funding to establish and operate the network consistent with the grant application
- Advise on technical and quality assurance issues.
- Monitor the project's progress and performance to verify the results
- Review and comment on project reports prepared during the execution of this project.

EPA approved a funding level of $526,603 to implement this project. The funding is broken down as follows:

1.	Construction and Set-up costs	$68,900.00
2.	Equipment	$160,448.00
3.	Supplies and Materials	$70,585.00
4.	Contractual	$117,535.00
5.	Other Expenditures	$41,300.00
6.	Travel	$15,600.00
7.	Personnel	$52,235.00
	Total	$526,603.00

DEQ has committed to using the intern program in the Tidewater region to supply the routine filter changing labor for this project.

V. PROJECT PERIOD

The project is projected to take 6.0 years to complete. The activities are outlined in the table below.

	Year 1				Year 2				Year 3				Year 4				Year 5				Year 6			
Task	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Modification to instrument trailers																								
Establish DEQ EJ infrastructure																								
Retrofit Samplers																								
Research and Select Sensors																								
Purchase Sensors																								
Site Sensors																								
Establish Monitoring sites																								
Purchase T640X Samplers																								
Site Samplers Contract period																								

Task	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4
Sample Collection																								
Analysis of Samples																								
PM2.5 T640 monitoring																								
Data Validation and summary																								
Health Assessments																								
Final report preparation																								
Final Report Presentation																								

The starting date of the project will be based on the award date of the grant. DEQ was awarded the initial funding in October of 2020.

VI. WORKPLAN

a. Statement of Work/Objectives

The primary objectives of this study are as follows:

(i) Collect data on PM10, and ambient air toxics metals in the LP and EE communities with a network of FRM/FEM PM10 and TSP samplers along with air quality sensors;
(ii) Characterize the spatial distribution of PM10 and air toxics metals in the LP and EE communities;
(iii) Evaluate the health risks posed by the toxic metals in ambient air;
(iv) Build the communities' capability to use the sensor network data and FEM-based data for ongoing community issues.

The sampling network at each location in this study will consist of up to five sampling sites. The existing air monitoring site at the NOAA facility on Front Street could serve as the upwind site for the Lambert's Point monitors. The other sampling sites will be placed within the communities at locations that will "encircle" the source locations: Dominion Terminal Associates/Kinder Morgan loading piers for EE community and Norfolk Southern Coal loading operation for LP community.

DEQ will evaluate each monitoring site to determine if the site will remain within the network after the study is complete. By establishing a community sensor network, DEQ expects to continue engagement opportunities with these communities, and to provide them with opportunities to shape how DEQ might be able to use information from low-cost sensors and further engage with other communities.

b. TARGET POLLUTANTS

The target pollutants for this study are Arsenic, Beryllium, Cadmium, Chromium, Lead, Manganese, and Nickel. The Division of Consolidated Laboratory Services, the Virginia State Lab, will use method IO-3.5 and employ Inductively Coupled Plasma Mass Spectrometry (ICP-MS). The Laboratory maintains a

complete set of SOPs for the performance on the metals analysis, the QA procedures, and the data handling. The SOPs will be maintained at the laboratory and DEQ will have access to them.

c. WORK PRODUCTS

Outputs	Outcomes	Performance Measures
Database of air toxics metals data useful for both the communities and future EPA modeling efforts	Toxic metals results provided to the AQS database	QA results from the sampler operations and data capture
Semi-Annual progress reports for the stakeholders	Possible FRM sampler siting, and continuous PM10 monitor siting (T640X)	Routine QA from laboratory operations
Health risk assessment evaluations	Increased and improved community awareness	Measure for increased community awareness: Google Analytics—retention, average session length, percent of user generated content, number of posts reported as inappropriate, DEQ response rate
Final data report, to include spatial concentration variation of metals in the two study areas	Increased community understanding of the health risks	100% of progress reports completed on time
Final project report, to include an analysis of possible relationships between the FEM/FRM metals data and sensor data	The continuous PM10 results will be posted on the DEQ website for public viewing	Minimally Semi-annual meetings with the LP and EE communities throughout the project.

The Table above details the work products to be delivered as part of this project. They are shown as Outputs on the table.

d. Personnel

The VADEQ Personnel involved in the execution of this project are:

Position	Primary	Backup
Regional Operator	Jason Hodges	John Brandt
OAQM Microscopist	P0711	Rachel Kline
Regional Outreach Coordinator	Grace Holmes	
OAQM monitoring specialists	Jeffrey McKnight	Brian King
OAQM Weighing Lab support/data personnel	Rachel Kline	Daniel Boehling
OAQM Management Support	Charles Turner	
OAQM Procurement Support	Erin Jett	

VII. DETAILED PROJECT BUDGET

a. Budget **$526,603**

The followings are details of the funding request for the proposed projects:

Construction and Set-up Costs

2 Trailer Repair and Preparation ($2,500 ea. to support the T640's)		$5,000.00
9 Power installations (Where necessary @ $4,600 ea.)		$41,400.00
Miscellaneous (fencing, ground preparation, etc.)		$22,500.00
	Total	**$68,900**

Equipment

4 TSP samplers ($6,500 ea.)		$26,000.00
2 T640X PM10/PM2.5 continuous samplers		$88,648.00
2 8872 data loggers ($8400 each)		$16,800.00
Sensor budget (PurpleAir sensors)		$15,000.00
Microscopic Upgrade		$14,000.00
	Total	$**160,448**

Supply

14 back up digital timers ($800 ea.)		$11,200.00
6 Router/Modems ($950)		$5,700.00
Calibration/Audit supplies (T640)		$2,772.70
4 Flow Check Verification Hardware ($1,635 ea.)		$7,040.00
Field Temperature and measurement Hardware		$950.00
Filters ($1,880 per box)		$31,728.62
PM10/TSP motors ($140 ea.)		$6,300.00
Cabling, brushes, electrical supplies		$2,300.06
Assorted supplies - Gloves, tools lawn products, etc.		$2,594.00
	Total	**$70,585**

Contractual

Electrical Operating Costs Total		$4,200.00
Sample Analysis Costs		$73,181.00
DCLS Lab Support help		21,465.00
VDH Health Assessment Support		18,245.00
	Total	**$117,091**

Other Expenditures

Public Meetings (1 meeting/6 month)		$8,000.00
Printed materials for meetings		$8,000.00
Publication and distribution of quarterly information		$600.00
Property rental for monitor siting		$4,800.00
Local approvals and zoning compliance reviews		$500.00
Site improvements		$7,750.00
Utility Connections		$6,000.00
Monthly Cell Charges		$4,600.00
Postage/courier		$1,050.00
	Total	**$41,300**

Travel – All travel in-state

Siting and Installation (6 visits – AQM to LP, SE)	$1,200.00
Travel to public meetings (Location to be determined)	$1,800.00
Maintenance and repair travel (estimated 3 visits)	$1045.00

Travel to pick up and install filters (TRO to LP and SE)		$12,000.00
	Total	**$16,045**

Personnel	Salary	Fringe*	Indirect	Total
Regional Operator	3,018.49	1,416.27	860.27	5,295.03
OAQM Monitoring Specialists	5,716.94	2,658.98	1,773.58	10,149.50
OAQM Microscopist	761.12	434.48	263.46	1,459.06
OAQM Regional Outreach Coordinator	4,216.67	1,981.84	1,201.75	7,400.26
OAQM Weighing Lab Support/Data personnel	3,697.73	579.31	351.28	4,628.33
OAQM Management Support	10565.56	3,644.47	3,011.18	17,221.22
OAQM Procurement Support	3,469.82	1,622.54	988.90	6,081.25
			Total	**$52,235**

b. Expenditure Schedule of Awarded Grant Funds

Funds supporting this Project as delineated in the above budget will be expended throughout the life of the project. OAQM will submit project reports on a semi-annual basis documenting the project expenditures on an ongoing basis. The proposed expenditure schedule, consistent with Table 2 below, will proceed as follows:

Milestones	Project Activities	Expenditures
Year 1 Q2	Trailer Preparation, Power installation and upgrade	5,000
Year 1 Q3	Regional Visit – initial scouting of locations, Sampler motor receipt and installations.	8,421
Year 2 Q1	Digital timers purchased, Installed in samplers, multiple site visits	11,200
Year 2 Q2	Supplies ordered for samplers and for audit capability OAQM personnel costs, Public Meeting, travel	3,047
Year 2 Q3	TSP samplers, First batch of Purple air samplers purchase, public meeting facility costs,	19,333
Year 2 Q4	Samplers, Ongoing consumables costs, public meetings, personnel costs	20,243
Year 3 Q1	Public Meetings, meeting materials monitor siting costs, personnel	3,788
Year 3 Q2	Ongoing consumables, public meeting materials, sensor installation, personnel	3,702
Year 3 Q3	Electrical and installation costs, T640 purchase, consumable purchases, travel costs .	138,739
Year 3 Q4	Electrical and installation costs, additional sensor purchase, analytical costs, consumable purchases, travel costs, personnel costs.	80,306
Year 4 Q1	Microscope upgrade, communication set-up, consumables purchase, Electrical and analytical costs, site improvements, travel, ongoing personnel costs	50,101
Year 4 Q2	Electrical and analytical costs, ongoing site operation costs, ongoing personnel costs	41,525

Year 4 Q3	Public Meeting, Electrical and analytical costs, ongoing site operation costs, ongoing personnel costs	28,867
Year 4 Q4	Electrical and analytical costs, ongoing site operation costs, VDH health assessment, ongoing personnel costs	29,644
Year 5 Q1	Public Meeting, Electrical and analytical costs, ongoing site operation costs, VDH health assessment, ongoing personnel costs	22,136
Year 5 Q2	Electrical and analytical costs, ongoing site operation costs, VDH health assessment, ongoing personnel costs	23,492
Year 5 Q3	Public Meeting, Electrical and analytical costs, ongoing site operation/removal costs, VDH health assessment, ongoing personnel costs	9,948
Year 5 Q4	Electrical costs, ongoing site operation/removal costs, VDH health assessment, ongoing personnel costs	7,911
Year 6 Q1	Public Meeting, VDH health assessment, DEQ Data Quality report and report presentation, final close out on monitoring sites (as needed)	5,150
Year 6 Q2	VDH Health Assessment, development of presentation material for final health report	7,113
Year 6 Q3	Final public meeting- presentation of Health Assessment results	5,321
Year 6 Q4	Close out; final report to EPA; presentation to City Environmental personnel	1,616
	TOTAL	**526,603**