



COMMONWEALTH of VIRGINIA

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Molly Joseph Ward
Secretary of Natural Resources

June Draft, 2015

Mr. Shawn Garvin
Regional Administrator
U.S. EPA Region III
1650 Arch Street
Philadelphia, PA 19103-2029

Subject: Virginia Annual Air Quality Monitoring 2015 Network Review

Dear Mr. Garvin:

In accordance with the Commonwealth of Virginia State Implementation Plan and requirements of the EPA 105 and PM2.5 103 Grants, the Virginia Department of Environmental Quality has conducted an annual review of the ambient air monitoring network.

This review was completed by the DEQ Office of Air Quality Monitoring. Attached is a listing of all sites in the Virginia Air Quality Monitoring Network as of this date. Also attached are maps of pollutant monitoring sites and instrumentation changes that have taken place since the last review and are expected to occur through June 30, 2016.

A draft of the Annual Network Review was posted for public inspection from May XX, 2015 to June XX, 2015 on the VA DEQ "Air Monitoring Public Notices" web page. XX comments were received from the public as a result of this public notice. Responses to each of these comments are included in Attachment 2 of this document. Please feel free to contact me if you have any questions regarding this transmittal.

Sincerely,

David K. Paylor

cc: Alice Chow, EPA III
Mike Dowd, VA DEQ

Attachments

Annual Ambient Air Monitoring Network Plan

2015



COMMONWEALTH OF VIRGINIA

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

AIR DIVISION – OFFICE OF AIR QUALITY MONITORING

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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 adopt and submit to the Regional Administrator an annual monitoring network plan which shall provide for the establishment and maintenance of an air quality surveillance system that consists of a network of SLAMS monitoring stations including FRM, FEM, and ARM monitors that are part of SLAMS, NCore stations, STN stations, State speciation stations, SPM stations, and/or, in serious, severe and extreme ozone nonattainment areas, PAMS stations, and SPM monitoring stations. The plan shall include a statement of purposes for each monitor and evidence that siting and operation of each monitor meets the requirements of appendices A, C, D, and E of this part, where applicable. The annual monitoring network plan must be made available for public inspection for at least 30 days prior to submission to EPA.

This document is intended to address this 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 (2) through (13).

NETWORK DESIGN

The monitoring program for the Virginia Department of Environmental Quality 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.*

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. This table demonstrates air monitor distribution and pollutant measurement consistent with Part 58 Appendix D.

Table 1 Air Monitoring Sites active in the Commonwealth of Virginia

MSA/CBSA(a)	Pollutant Monitored						
	Ozone	PM2.5	NO2	SO2	CO	PM10	Lead (Pb)
Kingsport-Bristol-Bristol, TN-VA		1					
Winchester, VA-WV	1	1				1	
Harrisonburg, VA	1	1	1	1			
Roanoke, VA	1	1	1	1	1		1
Lynchburg, VA		1					1
Charlottesville, VA	1	1					
Richmond, VA	5	4	3	2	2	3	1
Virginia Beach-Norfolk-Newport News, VA-NC	3	3	2	2	2	2	
Washington-Arlington-Alexandria, DC-VA-MD-WV	6	3	3	1	2	2	
Total – MSA/CBSA	18	16	10	7	7	8	
Total- all sites(b)	22	19	10	7	7	9	

(a) Metropolitan Statistical Areas/Core based statistical areas

(b) Includes sites not incorporated into an MSA or CBSA i.e. Shenandoah National Park, Page County, Rockbridge County, and Rural Retreat.

In addition to the MSA/CBSA based pollutant monitoring, Virginia maintains additional monitoring sites to meet additional federal and state based monitoring programs. These programs are listed below.

Urban Air Toxics Programs – The Department of Environmental Quality maintains three urban air toxics sites at: 51-059-0030 Fairfax County Lee District Park; 51-670-0010 Hopewell City Woodson Middle School, and 51-810-0008 Virginia Beach City Virginia Beach DEQ Tidewater Regional Office.

NCore, the National Core Monitoring Network – The National Core Monitoring Network was installed and began operating prior to the January 1, 2011 regulatory requirement. The Design Criteria for the NCore site in Virginia is defined in Appendix D of Part 58 of 40 CFR. The NCore site maintained by DEQ is located at 51-087-0014 Henrico County MathScience Center.

National Air Toxics Trend Site – DEQ maintains a NATTS site located at 51-087-0014 Henrico County MathScience Center. In addition to the suite of pollutants measured in the Urban Air Toxics Program, NATTS also monitors for Poly Aromatic Hydrocarbons and Chrome.

Near Road Monitoring – DEQ will install three near road monitoring sites consistent with the design requirements contained in Appendix D. DEQ currently has one operating site located at 51-760-0025 Richmond City Joseph Bryan Park. The second site located in the Washington-Arlington-Alexandria DC-VA-MD-WV MSA is described in the Virginia Network Changes section

of this document. The third site will be located in the Virginia Beach-Norfolk-Newport News VA-NC is described in the Virginia Network Changes section.

AIR QUALITY MONITORING NETWORK CHANGES

Monitoring Site Changes Since Last Review - JULY 1, 2014 to JUNE 30, 2015

51-027-0006, 4-G, Vansant Lead TSP Site, Buchanan County, AQCR1

The Lead-TSP sampler located in Buchanan County was removed from operation on December 19, 2013. This monitoring site contained the source specific lead monitor for the Jewell Coke Co. located in Vansant. The monitor was deconstructed and removed from this site due to pending demolition and construction at a vacated industrial plant located directly next to the site. The station operated for more than 3 years so a design value has been calculated for this site. DEQ proposed that this site does not need to be replaced because the design value is less than 10% of the standard. The maximum ambient lead concentration value through the 3 years of the design value calculation is less than 10% of the standard. A Lead Waiver was approved on June 17, 2014. A copy of this waiver approval is attached to this document.

51-770-0016, 109-N, Patterson Ave Lead site, City of Roanoke AQCR2

The Cherry Hill Monitoring Site was shutdown and removed on September 10, 2013. Virginia DEQ found a replacement site at 2502 Patterson Avenue at the front of property operated by Mario Industries Inc. The site was installed and began operating on November 1, 2014. This monitor is required by 40 CFR Part 58 Appendix D as a source oriented monitor. The monitoring site is pictured below.

Figure 1 Front and Side View of Roanoke Lead Monitoring Site



View of Site looking East



View looking North

51-510-0022, 126-J, Stevenson Park Site, City of Alexandria, AQCR7

This site is required by a line item in the Virginia Appropriations act of 2014 and is not installed to meet any federal regulatory or air quality requirement. This is a temporary installation which is being operated to monitor air quality near a Virginia Department of Transportation traffic reduction project. This site is not included in the list of network monitoring sites in the Virginia Site listing because it is temporary, and it is not installed for the purpose of meeting any federal regulatory requirement.



Figure 2 Stevenson Park Temporary Air Monitoring Site

Instrument Changes Since Last Review - JULY 1, 2014 through JUNE 30, 2015

51-760-0025, 158-X, Joseph Bryan Park Near Road Site, AQCR5

Beginning in November 2014 the continuous TEI 5104 PM2.5 monitor began full time operation. The monitor had been installed for several months and was fine tuned and beta tested to be sure that reliable data could be gathered from the monitor. This particulate monitor is a requirement of the new PM2.5 standard and similar equipment is being prepared for the other 2 near road sites as they come on-line.

51-087-0014, 72-M, MathScience Center Site, Henrico County, AQCR5

Due to electrical issues at the Woodson Middle School location (51-670-0010) the collocated PM10 sampler at that location was relocated to the MathScience Center site. The Woodson site was run through the last sampling run in December of 2014. The MathScience Center site began operating on 12/13/2014.

51-087-0014, 72-M, MathScience Innovation Center, Henrico County, AQCR5

The PAMS AutoGC and the episodic sampler were relocated to the MathScience Center Site in April of 2013. Since this time the AutoGC has not operated continually for longer than one week. The AutoGC did not operate during the 2013 PAMS season i.e. for purposes of this report from July 1 through August 31 of 2013. The problems with the AutoGC are not related to the relocation of the unit. The existing AutoGC has been in operation since approximately 1997 and is an older design. With the assistance of the Auto GC manufacturer’s representative the Office of Air Quality Monitoring has been able to get the Auto GC to operate. The unit is operating as of the beginning of the 2014 PAMS season i.e. June 1, 2014. The Auto GC operated throughout the 2014 PAMS season; July 1 – August 31 for purposes of this report.

Anticipated Site Changes - JULY 1, 2015 through JUNE 30, 2016

51-059-XXXX, Near Road Site, Fairfax County, AQCR7

In addition to the Richmond Area Near Road Monitoring site, the Northern Virginia area was also scheduled to have a Near Road site installed prior to January 1, 2014 i.e. a phase I monitoring site. Below is a satellite view of the proposed area of the monitoring site. The location of this monitoring

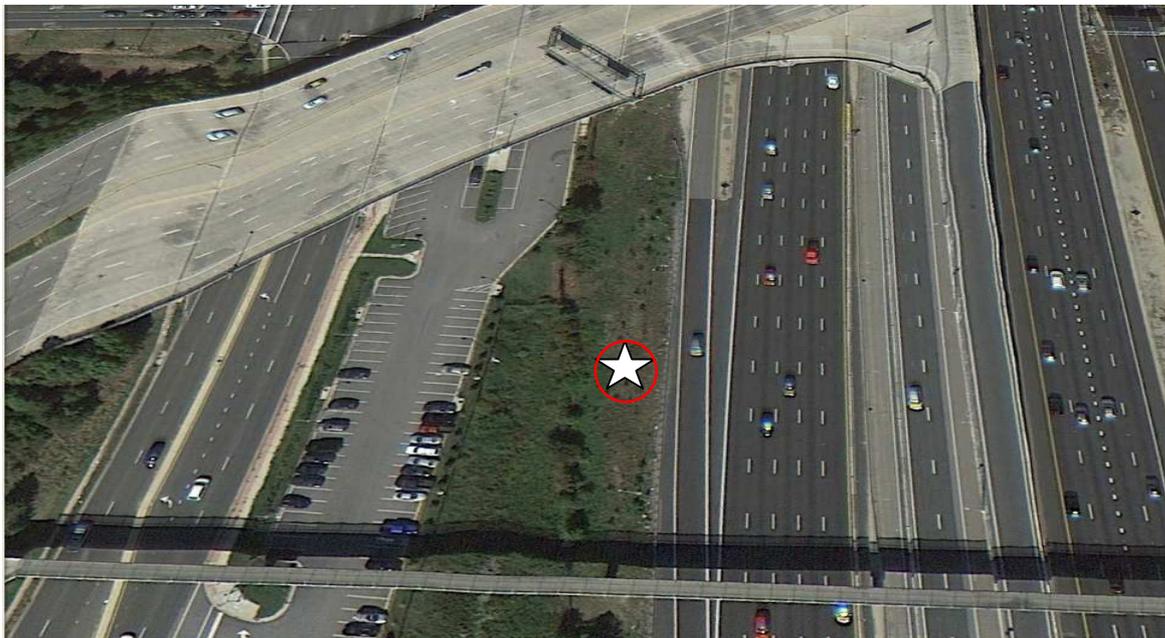


Figure 3 Overhead view of proposed site for Northern Virginia Near Road Monitoring Site

site will be in the proximity of the area known as the Springfield interchange because it is the area of maximum Annual Average Daily Traffic (AADT) in the Washington Metropolitan Core Based Statistical Area (CBSA). The Office of Air Quality Monitoring (AQM) has evaluated the I-95/I-395 interchange road segment and has determined that the best possible location for the monitoring shelter is immediately outside the Park and Ride lot in the gated access way along interstate I-95 at GPS coordinates 38° 46.083' N latitude and 77° 11.004' W longitude. This will put the site approximately 20 meters from the edge of I-95. The area is currently covered with a combination of concrete and gravel fill and is near several possible sources of power for the site. This site also has good accessibility in that there is a nearby parking area for the site operator that will allow access to this site with few safety concerns that can often accompany sites placed in near-road proximity. This site is on a VDOT easement which requires land use permitting. This process is well underway and the site should be in place and operating by December 31, 2014. Effective November of 2014 DEQ has received all necessary permits to begin construction at this site. The electrical contractor has met with Dominion and site preparation began in April of 2014. This site is projected to be complete by September 1, 2015. This site will be started up with a PM2.5 continuous monitor as part of the instrumentation suite along with the NO-NO2-NOx and the Carbon Monoxide instrumentation.

51-810-XXXX Hampton Roads Near Road Site, Along I-264, Virginia Beach, AQCR6

In addition to Richmond and Northern Virginia, the Hampton Roads area will also require installation of a near road monitoring site. In Tidewater, I-264 from the I-264/I-64 interchange to the Independence Boulevard exit in Virginia Beach have been determined to be the target road segments for this program.

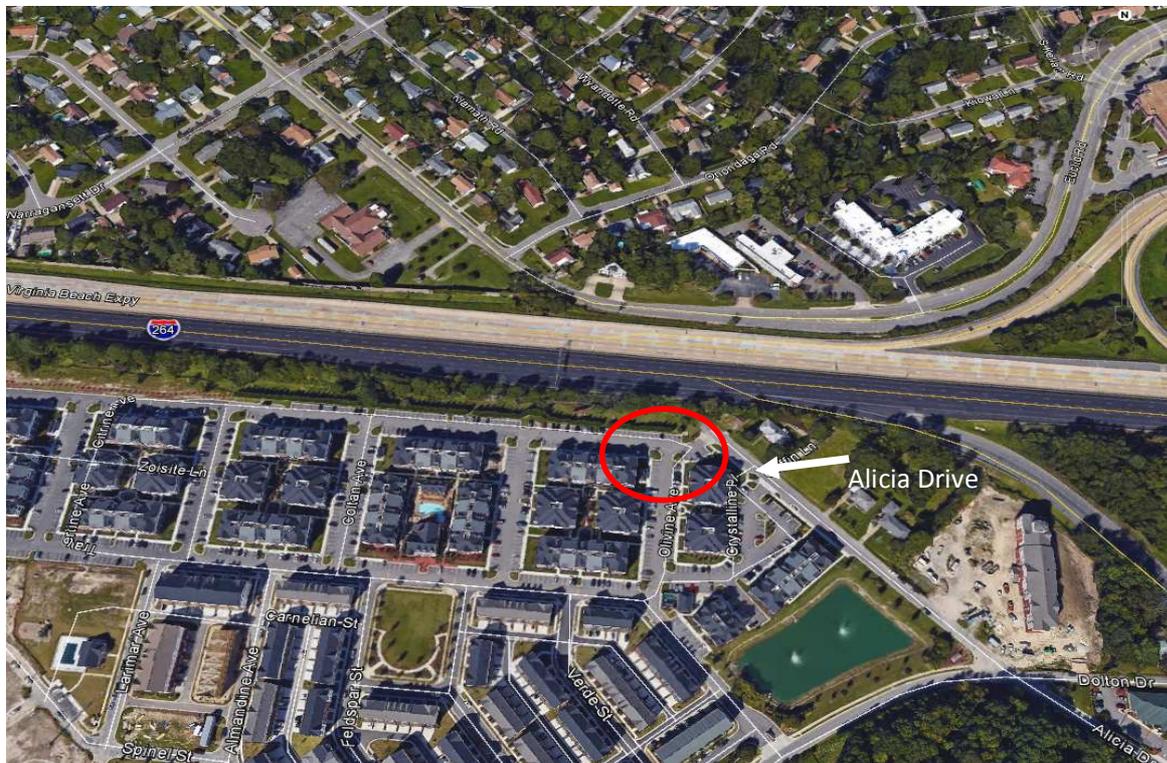


Figure 4 Proposed Near Road Site Virginia Beach, Interstate I-264

The Office of Air Quality Monitoring (AQM) has evaluated these road segments and has determined that the best possible location for the monitoring shelter is at the north side of the Cambria Apartments at the end of Alicia Drive at the utility easement adjacent to I-264 as shown in the figure below. The GPS coordinates of this location are 36° 50.05833' N latitude and 76° 8.5633' W longitude. This will put the site approximately 10 meters from the edge of I-264. The area is currently covered with grass and is in close proximity to a potential source of power for the site. This site also has good accessibility in that there is a nearby parking area for the site operator that will allow access to this site with few safety concerns that can often accompany sites placed in near road proximity. The Hampton Roads site is scheduled to be in place and operational by December 31, 2014. This site will be started up with a PM2.5 continuous monitor as part of the instrumentation suite along with the NO-NO2-NOx and the Carbon Monoxide instrumentation.

51-139-0004, 29-D, Page Co. Airport, Luray, Page County; AQCR2

The Monitoring Site in Page County is located at Luray Airport. The site currently monitors for Ozone and PM2.5 (FRM filter based method). The Ozone data can be found on-line at: <http://vadeq.tx.sutron.com>. Airport officials have indicated to AQM that DEQ will have to move this monitoring site due to FAA regulations. Process of identifying a new site has begun and has been narrowed down to a few potential locations. AQM has met with the Page County School Board about possible sites on School property. This ozone site is classified as an upwind rural ozone site. This existing site is targeted to be moved by August 31, 2015. The new site will be installed and operational by April 1, 2016.

Anticipated Instrumentation Changes - JULY 1, 2015 through JUNE 30, 2016

51-510-0020, L-126-H, Tucker ES, Alexandria City, AQCR7

Currently Alexandria T&ES maintains a PM10 monitor. This is the Virginia SLAMS PM10 monitor for the Washington D.C. MSA. Long term maintenance of this monitor is uncertain at this point due to resource issues within the City staff that maintain this monitor. AQM will continue to work closely with the Alexandria personnel to be sure that this monitor continues to meet all data capture and QA requirements consistent with federal regulations and the QA Handbook. At such time as AQM determines that this monitor cannot meet appropriate regulatory requirements, the monitor will be supplemented with another PM10 monitor that will be located in the Washington D.C. MSA.

51-059-0030, 46-B9, Lee District Park, Fairfax County, AQCR7

The PM10 monitor at Tucker ES in Alexandria City continues to be problematic relative to required QC procedures and expected documentation transmittals. To address the long term data quality concerns DEQ installed a PM10 monitor at the Fairfax County Lee District Park site effective May 1, 2015 with the first sampling run to be May 6, 2015. The PM10 monitor at Tucker ES will be re-designated a special purpose monitor beginning July 1, 2015 and will be re-evaluated in July of 2016 to determine if the QC procedures and methods are consistent with EPA and DEQ regulatory expectations.

Anticipated Special Studies - JULY 1, 2015 to JUNE 30, 2016

The product ban for wood logs fumigated by the facilities targeted in the Community Air Toxics grant monitoring study was partially lifted in September of 2013. The facilities have begun to increase their operating throughputs as their ability to market their fumigation services recovers. AQM anticipates restarting monitoring activities at these facilities in June of 2014. The original QAPP and Monitoring plan will be adhered to. No changes to either of these operating documents are required due to the monitoring timing delay. AQM anticipates that the monitoring and the data report will be completed by October 1, 2015. Once the data report is complete AQM will meet with the Virginia Health Department to begin the Risk Assessment process. The grant requires a quarterly report outlining monitoring activities and costs which outlines all the specifics of the monitoring studies performed.

Virginia Site Listing

VA DEQ, AQCR I SOUTHWEST VIRGINIA, 2014

SITE I.D.	POLLUTANT MEASURED	METHOD OR INSTRUMENT	SAMPLING INTERVAL	MONITORING OBJECTIVE	SCALE	BEGINNING DATE	MONITOR TYPE	LOCATION	LONGITUDE	LATITUDE	CBSAs/ MSAs
51-035-0001 (23-A)	PM-10	SSI HI VOL	1/6	Population	Neighborhood	5/28/89	SLAMS	Carroll Co. - Gladeville Elem. School	-80.8798	36.7007	None
51-197-0002 (16-B)	O3	UV Absorption	Continuous	Population	Regional	4/1/90	SLAMS	Rural Retreat - Wythe County Sewage Treatment Plant	-81.2542	36.8912	None
51-520-0006 (101-E)	PM2.5 FRM	Sequential	1/3	Population	Neighborhood	1/1/99	SLAMS	Bristol - Highland View Elem. Sch.	-82.1641	36.6080	28700/ Kingsport-Bristol-Bristol, TN-VA

There are no collocated monitors in AQCR I

VA DEQ, AQCR II VALLEY OF VIRGINIA, 2014

SITE I.D.	POLLUTANT MEASURED	METHOD OR INSTRUMENT	SAMPLING INTERVAL	MONITORING OBJECTIVE	SCALE	BEGINNING DATE	MONITOR TYPE	LOCATION	LONGITUDE	LATITUDE	CBSAs/ MSAs
51-069-0010 (28-J)	O3	UV Absorption	Continuous	Population	Urban	4/1/91	SLAMS	Rest, Frederick County - Lester Buildings	-78.0816	39.2810	49020/ Winchester, VA-WV
	PM2.5 FRM	Sequential	1/3	Population	Urban	1/1/08	SLAMS				
	PM2.5	TEOM	Continuous	Background	Urban	1/1/08	SPM				
51-840-0002 (134-C)	PM-10	SSI HI VOL	1/6	Population	Neighborhood	9/13/89	SLAMS	Winchester - Courts Bldg.	-78.1631	39.1840	49020/ Winchester, VA-WV
51-113-0003 (N-35-A)	O3	UV Absorption	Continuous	Background	Regional	5/04	Nat'l Park	Madison County - Shenandoah Nat'l Park Big Meadows	-78.4347	38.5231	None
	PM2.5	IMPROVE	1/3	Background	Regional		IMPROVE				
	PM2.5	TEOM	Continuous	Background	Regional		Nat'l Park				
51-139-0004 (29-D)	O3 PM2.5 FRM	UV Absorption Sequential	Continuous 1/3	Population Background	Urban Regional	7/21/99 10/00	SLAMS SLAMS	Page County - Luray Caverns Airport	-78.5044	38.6637	None
51-161-1004 (19-A6)	NO2	Chemiluminescence	Continuous	Population	Neighborhood	1/1/81	SLAMS	Vinton - Roanoke Co. Herman Horn ES	-79.8845	37.2834	40220/ Roanoke, VA
	O3	UV Absorption	Continuous	Population	Neighborhood	8/81	SLAMS				
	SO2	Fluorescence	Continuous	Population	Neighborhood	1/29/87	SLAMS				
	CO	Gas Filter Corr.	Continuous	Population	Neighborhood	4/04	SLAMS				
	PM2.5 FRM PM2.5	Sequential TEOM	Daily Continuous	Population Background	Neighborhood Neighborhood	4/1/08 4/1/08	SLAMS SPM				
51-163-0003 (21-C)	O3 PM2.5	UV Absorption IMPROVE	Continuous Continuous	Background Background	Regional Regional	4/8/99	SLAMS IMPROVE	Rockbridge Co. - Natural Bridge Station	-79.5126	37.6267	None
51-165-0003 (26-F)	SO2	Fluorescence	Continuous	Population	Neighborhood	9/22/97	SLAMS	Rockingham Co. - VDOT	-78.8195	38.4775	25500/ Harrisonburg, VA
	NO2	Chemiluminescence	Continuous	Population	Neighborhood	4/04	SLAMS				
	PM2.5 FRM O3	Sequential UV Absorption	1/3 Continuous	Population Population	Neighborhood Neighborhood	1/1/07 4/1/07	SLAMS SLAMS				
51-775-0011 (110-C)	PM2.5	Sequential	1/3	Population	Neighborhood	9/8/09	SLAMS	Salem - Salem High School	-80.0810	37.2979	40220/ Roanoke, VA
51-770-0011 (109-N)	TSP-Lead	Tisch Hi-Vol TSP Sampler	1/6	Source Oriented	Neighborhood	11/1/14	SLAMS	Roanoke City Mario Industries 2502 Patterson Ave. SW	-79.9857	37.2749	40220/ Roanoke, VA

There are no collocated monitors in AQCR II

VA DEQ, AQCR III CENTRAL VIRGINIA, 2014

SITE I.D.	POLLUTANT MEASURED	METHOD OR INSTRUMENT	SAMPLING INTERVAL	MONITORING OBJECTIVE	SCALE	BEGINNING DATE	MONITOR TYPE	LOCATION	LONGITUDE	LATITUDE	CBSAs/ MSAs	
51-680-0015 (155-Q)	PM2.5 FRM	Sequential	1/3	Population	Neighborhood	4/1/03	SLAMS	Lynchburg - Water Tank	-79.2150	37.3327	31340/	Lynchburg, VA
51-009-007 (53-G)	TSP-Lead	Tisch Hi-Vol TSP Sampler	1/6	Source Oriented	Neighborhood	11/1/10	SLAMS	CVTC, Madison Heights Amherst Co.	-79.1162	37.4122	31340/	Lynchburg, VA

There is one collocated monitor in AQCR3. A collocated Hi-Vol TSP-lead monitor is located at 53-G Madison Heights and is designated H-53-G.

VA DEQ, AQCR IV NORTHEAST VIRGINIA, 2014

SITE I.D.	POLLUTANT MEASURED	METHOD OR INSTRUMENT	SAMPLING INTERVAL	MONITORING OBJECTIVE	SCALE	BEGINNING DATE	MONITOR TYPE	LOCATION	LONGITUDE	LATITUDE	CBSAs/ MSAs	
51-033-0001 (48-A)	O3 Meteorological Instrumentation	UV Absorption Wind Speed, Humidity Temp., Wind direction Barometric Pressure	Continuous Continuous	Background Population	Regional Neighborhood	4/1/93 6/1/02	SLAMS SPM	Caroline Co. - USGS Geomagnetic Center	-77.3774	38.2009	40060/	Richmond, VA
51-061-0002 (37-B)	O3	UV Absorption	Continuous	Background	Regional	9/1/81	SLAMS	Fauquier Co. - Phelps Wildlife Area	-77.7677	38.4737	47900/	Washington-Arlington-Alexandria, DC-VA-MD-W
51-179-0001 (44-A)	O3	UV Absorption	Continuous	Population	Neighborhood	9/1/92	SLAMS	Stafford Co. - Widewater Elem. School	-77.3704	38.4812	47900/	Washington-Arlington-Alexandria, DC-VA-MD-W
51-003-0001 33-A	O3 PM2.5 FRM PM2.5	UV Absorption Sequential TEOM	Continuous 1/3 Continuous	Population Population Background	Regional Neighborhood Neighborhood	4/1/08 4/1/08 4/1/08	SLAMS SLAMS SPM	Albemarle Co. - Albemarle High School	- 78.5040	38.0766	16820/	Charlottesville, VA
51-630-0004 (130-E)	PM-10	SSI HI VOL	1/6	Population	Neighborhood	11/12/89	SLAMS	Fredericksburg - Mercer Elem. School	-77.4871	38.3023	47900/	Washington-Arlington-Alexandria, DC-VA-MD-W

There are no collocated monitors in AQCR IV

VA DEQ, AQCR V STATE CAPITOL, 2014

SITE I.D. SITE I.D.	POLLUTANT MEASURED	METHOD OR INSTRUMENT	SAMPLING INTERVAL	MONITORING OBJECTIVE	SCALE	BEGINNING DATE	MONITOR TYPE	LOCATION	LONGITUDE	LATITUDE	CBSAs/ MSAs	
51-036-0002 (75-B)	O3 SO2	UV Absorption Pulsed Fluorescence	Continuous Continuous	Population Highest Concentration	Neighborhood Neighborhood	3/29/88	SLAMS SLAMS	Charles City Co. - Route #608 Shirley Plantation	-77.2593	37.3444	40060/	Richmond, VA
						1/1/92						
	NO2 PM2.5 FRM	Chemiluminescence Sequential	Continuous 1/3	Population Population	Neighborhood Neighborhood	3/9/93 1/1/99	SLAMS SLAMS					
51-041-0003 (71-D)	PM2.5 FRM	Sequential	1/3	Population	Neighborhood	1/1/99	SLAMS	Chesterfield Co. - Bensley Armory	-77.4512	37.4347	40060/	Richmond, VA
51-041-0004 (71-H)	O3	UV Absorption	Continuous	Population	Neighborhood	4/80	SLAMS	Chesterfield Co. - Beach Rd. VDOT	-77.5936	37.3575	40060/	Richmond, VA
51-085-0003 (73-E)	O3	UV Absorption	Continuous	Highest Concentration	Urban	4/1/01	SLAMS	Hanover Co. - McClellan Road	-77.2188	37.6061	40060/	Richmond, VA
51-087-0014 (72-M)	O3	UV Absorption	Continuous	Population	Neighborhood	6/12/81	SLAMS	Henrico Co. - MathScience Center	-77.4003	37.5565	40060/	Richmond, VA
	Trace CO	Gas Filter Correlation	Continuous	Population	Neighborhood	4/1/81	SLAMS					
	Trace SO2	Pulsed Fluorescence	Continuous	Population	Neighborhood	8/29/13	SLAMS					
	PM2.5 FRM	Sequential	Daily	Population	Neighborhood	1/1/99	SLAMS					
	PM2.5	TEOM	Continuous	Population	Neighborhood	7/18/00	SPM					
	PM2.5	Speciation	1/3 Mini-Trends	Population	Neighborhood	1/1/04	SPM					
	PM2.5	Carbon	1/3 Mini-Trends	Population	Neighborhood	1/1/10	SPM					
	PM-10	SSI HI VOL	1/6	Population	Neighborhood	11/1/08	SLAMS					
	PM-10	Sequential	1/3	Population	Neighborhood	10/8/09	NCORE					
	Metals	PM-10 LO VOL	1/6	Background	Neighborhood	11/1/08	NCORE					
	Lead	TSP/ICPMS	1/6	Background	Neighborhood	11/1/08	NCORE					
	Metals	TSP/ICPMS	1/6	Background	Neighborhood	11/1/08	NATTS					
	Carbonyl	TO-11A	1/6	Background	Neighborhood	11/1/08	NATTS					
	VOCs	TO-15	1/6	Background	Neighborhood	11/1/08	NATTS					
	PAH	TSP	1/6	Background	Neighborhood	11/1/08	NATTS					
	Hexavalent Chromium	TSP LO VOL	1/6	Background	Neighborhood	11/1/08	NATTS					
	NOy	Chemiluminescence	Continuous	Population	Neighborhood	5/1/05	NCORE					
				Vulnerable and Susceptible								
NO2 Trace	Chemiluminescence	Continuous	Population	Neighborhood	5/1/05	Ncore						
Meteorological Instrumentation	Wind Speed, Humidity Temp., Wind direction Barometric Pressure	Continuous	Population	Neighborhood	7/1/10	NCORE						
VOC - PAMS VOC - PAMS episodic	Automated GC	Continuous eight 3 hr. canisters	Background	Regional	5/1/13	PAMS						
	TO-12		Background	Regional	5/1/13	PAMS						
51-087-0015 (72-N)	PM2.5 FRM	Sequential	1/3	Population	Neighborhood	1/1/99	SLAMS	Henrico Co. - Piedmont DEQ	-77.5666	37.6712	40060/	Richmond, VA
51-101-0003 (82-C)	PM-10	SSI HI VOL	1/6	Population	Neighborhood	1/11/90	SLAMS	West Point - Elementary School	-76.7953	37.5580	40060/	Richmond, VA
51-670-0010 (154-M)	PM10	PM10 SSI HI VOL	1/6	Population	Neighborhood	11/1/08	SLAMS	Hopewell - Carter G. Woodson Middle School	-77.2918	37.2896	40060/	Richmond, VA
	Metals	TSP/ICPMS	1/6	Population	Neighborhood	11/1/08	Urban Toxics					
	VOCs	TO-15	1/6	Population	Neighborhood	11/1/08	Urban Toxics					
	Carbonyl	TO-11	1/6	Population	Neighborhood	11/1/08	Urban Toxics					
51-760-0025 (158-X)	NO2	Chemiluminescence	Continuous	Near Road	Microscale	10/1/13	SLAMS	City of Richmond - Joseph Bryan Park	77.4692	37.5911	40060/	Richmond, VA
	CO	Gas Filter Correlation	Continuous	Near Road	Microscale	10/1/13	SLAMS					
	PM2.5 FEM	Beta Attenuation	Continuous	Near Road	Microscale	10/1/14	SLAMS					

There are 4 collocated monitor in AQCR V. At Station 72-M, 510870014 - collocated PM2.5 FRM, collocated VOC and Collocated Hi Vol PM10 Station and Station 154-M VOC sample

VA DEQ, AQCR VI HAMPTON ROADS, 2014

SITE I.D.	POLLUTANT MEASURED	METHOD OR INSTRUMENT	SAMPLING INTERVAL	MONITORING OBJECTIVE	SCALE	BEGINNING DATE	MONITOR TYPE	LOCATION	LONGITUDE	LATITUDE	CBSAs/ MSAs
51-650-0008 (179-K)	O3	UV Absorption	Continuous	Population	Neighborhood	7/1/10	SLAMS	Hampton City -	-76.3870	37.1037	47260/ Virginia Beach-Norfolk-Newport News, VA-NC
	SO2	Fluorescence	Continuous	Population	Neighborhood	7/1/10	SLAMS	NASA Langley			
	NO2	Chemiluminescence	Continuous	Population	Neighborhood	7/1/10	SLAMS	CAPABLE Site			
	CO	Gas Filter Corr.	Continuous	Population	Neighborhood	7/1/10	SLAMS				
	PM2.5 FRM	Sequential	1/3	Population	Neighborhood	7/1/10	SLAMS				
	PM2.5	TEOM	Continuous	Population	Neighborhood	7/1/10	SPM				
	PM10	SSI HI VOL	1/6	Population	Neighborhood	7/1/10	SLAMS				
51-710-0024 (181-A1)	SO2	Pulsed Fluorescence	Continuous	Population	Neighborhood	1/7/10	SLAMS	Norfolk City -	-76.3014	36.8556	47260/ Virginia Beach-Norfolk-Newport News, VA-NC
	NO2	Chemiluminescence	Continuous	Population	Neighborhood	1/7/10	SLAMS	NOAA Storage			
	CO	Gas Filter Corr.	Continuous	Population	Neighborhood	12/22/09	SLAMS	Facility			
	PM10	SSI HI VOL	1/6	Population	Neighborhood	6/21/97	SLAMS				
	PM2.5 FRM	Sequential	1/3	Population	Neighborhood	1/1/99	SLAMS				
51-800-0004 (183-E)	O3	UV Absorption	Continuous	Population	Neighborhood	4/1/87	SLAMS	Suffolk City - Tidewater Community College	-76.4381	36.9012	47260/ Virginia Beach-Norfolk-Newport News, VA-NC
51-800-0005 (183-F)	O3	UV Absorption	Continuous	Population	Neighborhood	4/1/91	SLAMS	Suffolk City - Tidewater Research Station, Holland	-76.7304	36.6653	47260/ Virginia Beach-Norfolk-Newport News, VA-NC
51-810-0008 (184-J)	PM2.5 FRM	Sequential	Daily	Population	Neighborhood	1/1/99	SLAMS	VA Beach City -	-76.1812	36.8419	47260/ Virginia Beach-Norfolk-Newport News, VA-NC
	VOC	TO-15	1/6	Background	Neighborhood	7/1/05	Urban Toxics	VA Beach DEQ Office			
	Carbonyl	TO-11A	1/6	Background	Neighborhood	7/1/05	Urban Toxics				
	Metals	TSP	1/6	Background	Neighborhood	8/2/05	Urban Toxics				

There are two collocated monitors in AQCR VI. Collocated PM10 and PM2.5 FRM are both at 181-A1, 517100024, the NOAA Storage Facility in Norfolk.

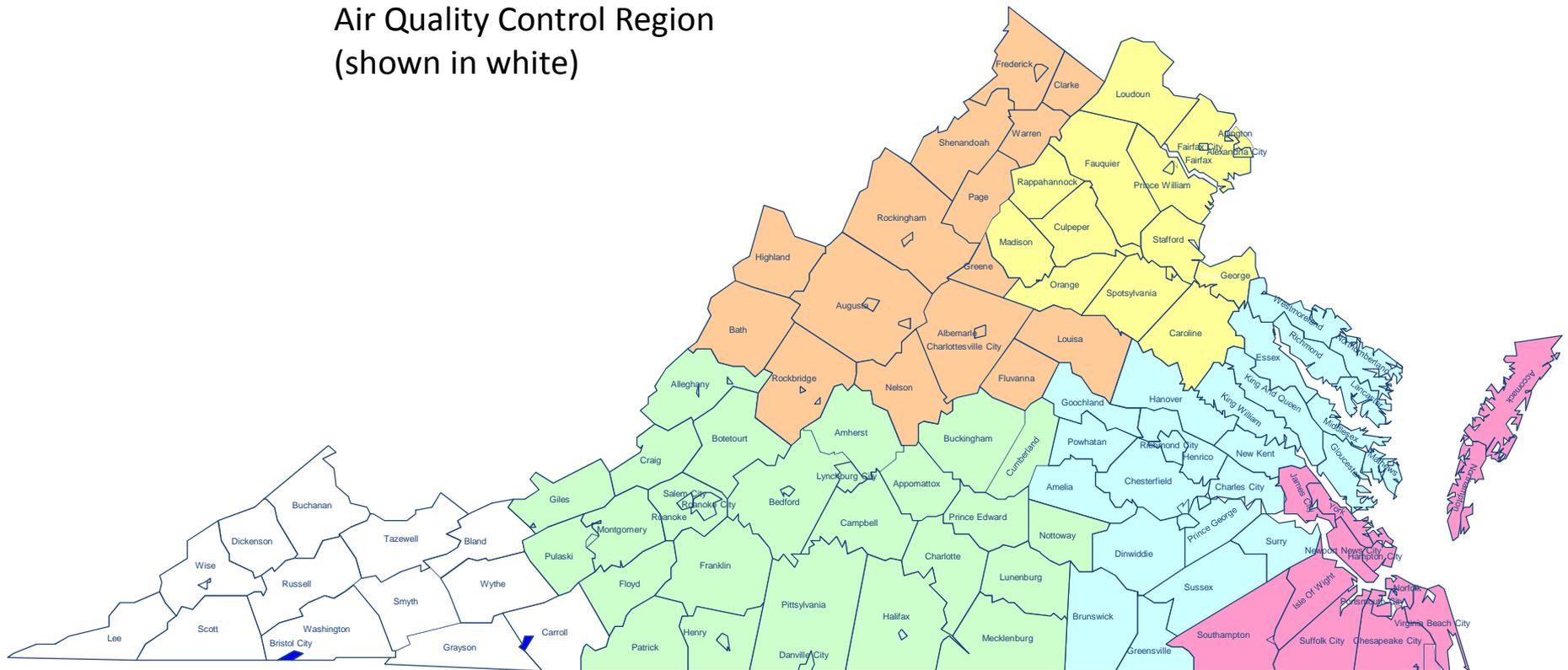
VA DEQ, AQCR VII NORTHERN VIRGINIA, 2014

SITE I.D.	POLLUTANT MEASURED	METHOD OR INSTRUMENT	SAMPLING INTERVAL	MONITORING OBJECTIVE	SCALE	BEGINNING DATE	MONITOR TYPE	LOCATION	LONGITUDE	LATITUDE	CBSAs/ MSAs	
51-013-0020 (47-T)	O3	UV Absorption	Continuous	Population	Neighborhood	8/1/79	SLAMS	Arlington - Aurora Hills Visitors Center	-77.0592	38.8577	47900/	Washington-Arlington-Alexandria, DC-VA-MD-
	NO2	Chemiluminescence	Continuous	Population	Neighborhood	8/1/79	SLAMS					
	CO	Gas Filter Correlation	Continuous	Population	Neighborhood	4/1/81	SLAMS					
	PM2.5 FRM	Sequential	1/3	Population	Neighborhood	1/1/99	SLAMS					
51-059-0030 (46-B9)	O3	UV Absorption	Continuous	Population	Neighborhood	7/1/98	SLAMS	Fairfax - Lee District park	-77.1047	38.7734	47900/	Washington-Arlington-Alexandria, DC-VA-MD-
	SO2	Pulsed Fluorescence	Continuous	Population	Neighborhood	8/29/13	SLAMS					
	PM2.5 FRM	Sequential	Daily	Population	Neighborhood	1/1/99	SLAMS					
	PM2.5	TEOM	Continuous	Population	Neighborhood	7/1/10	SPM					
	VOC	TO-15	1/6	Population	Neighborhood	6/1/02	Urban Toxics					
	Carbonyl	TO-11A	1/6	Population	Neighborhood	6/1/02	Urban Toxics					
	Metals	TSP	1/6	Population	Neighborhood	6/1/02	Urban Toxics					
PM10	SSI HI VOL	1/3	Population	Neighborhood	5/1/15	SLAMS						
51-107-1005 (38-I)	O3	UV Absorption	Continuous	Population	Neighborhood	4/4/98	SLAMS	Loudoun Co. - Broad Run H.S.	-77.4925	39.0247	47900/	Washington-Arlington-Alexandria, DC-VA-MD-
	NO2	Chemiluminescence	Continuous	Population	Neighborhood	4/4/98	SLAMS					
	PM2.5 FRM	Sequential	1/3	Population	Neighborhood	1/1/99	SLAMS					
51-153-0009 (45-L)	O3	UV Absorption	Continuous	Population	Urban	4/1/91	SLAMS	Prince Wm. Co. - Long Park	-77.6346	38.8529	47900/	Washington-Arlington-Alexandria, DC-VA-MD-
	NO2	Chemiluminescence	Continuous	Population	Urban	4/1/94	SLAMS					
51-510-0021 (L-126-I)	NO2	Chemiluminescence	Continuous	Population	Neighborhood	8/29/13	SPM	Alexandria, 3200 Colvin St.	-77.0864	38.8065	47900/	Washington-Arlington-Alexandria, DC-VA-MD-
	CO	Gas Filter Correlation	Continuous	Population	Neighborhood	8/29/13	SPM					
51-510-0020 (L-126-H)	PM10	SSI HI VOL	1/3	Population	Neighborhood	6/4/06	SLAMS	Alexandria - Tucker Elem. Sch.	-77.1268	38.8050	47900/	Washington-Arlington-Alexandria, DC-VA-MD-

There are 2 collocated monitors in AQCR VII. A collocated PM2.5 FRM is located at Station 47-T, 510130020, Aurora Hills Visitor Center, Arlington and TSP Metals located at station 46-B9, 510590030, Lee District Park, Fairfax.

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

Gladeville Elementary School, Galax, 23-A

TSP was installed in June 1983 as a replacement site for a close by monitoring location that was unduly influenced by a nearby source. The TSP was removed January 1989 and a PM10 was installed in its place.

36.70067, -80.8798

23-A, Carroll Co.
Gladeville
Elementary School

Sparkle Ln

© 2015 Google

Google earth

2002

Imagery Date: 2/23/2013 36°42'01.92" N 80°52'43.86" W elev 769 m eye alt 1.06 km

Rural Retreat, Wythe County, 16-B

This site began in April 1990 as a replacement site for the Marion, VA ozone site. This site is downwind of the VOC sources and more representative of the area than was The Marion site was too close to the local VOC sources to determine their impact. The Rural Retreat site is farther downwind.

16-B, Wythe Co.
Sewage Disposal
Plant

A-Seasons Rd

36.89117, -81.2542

© 2015 Google

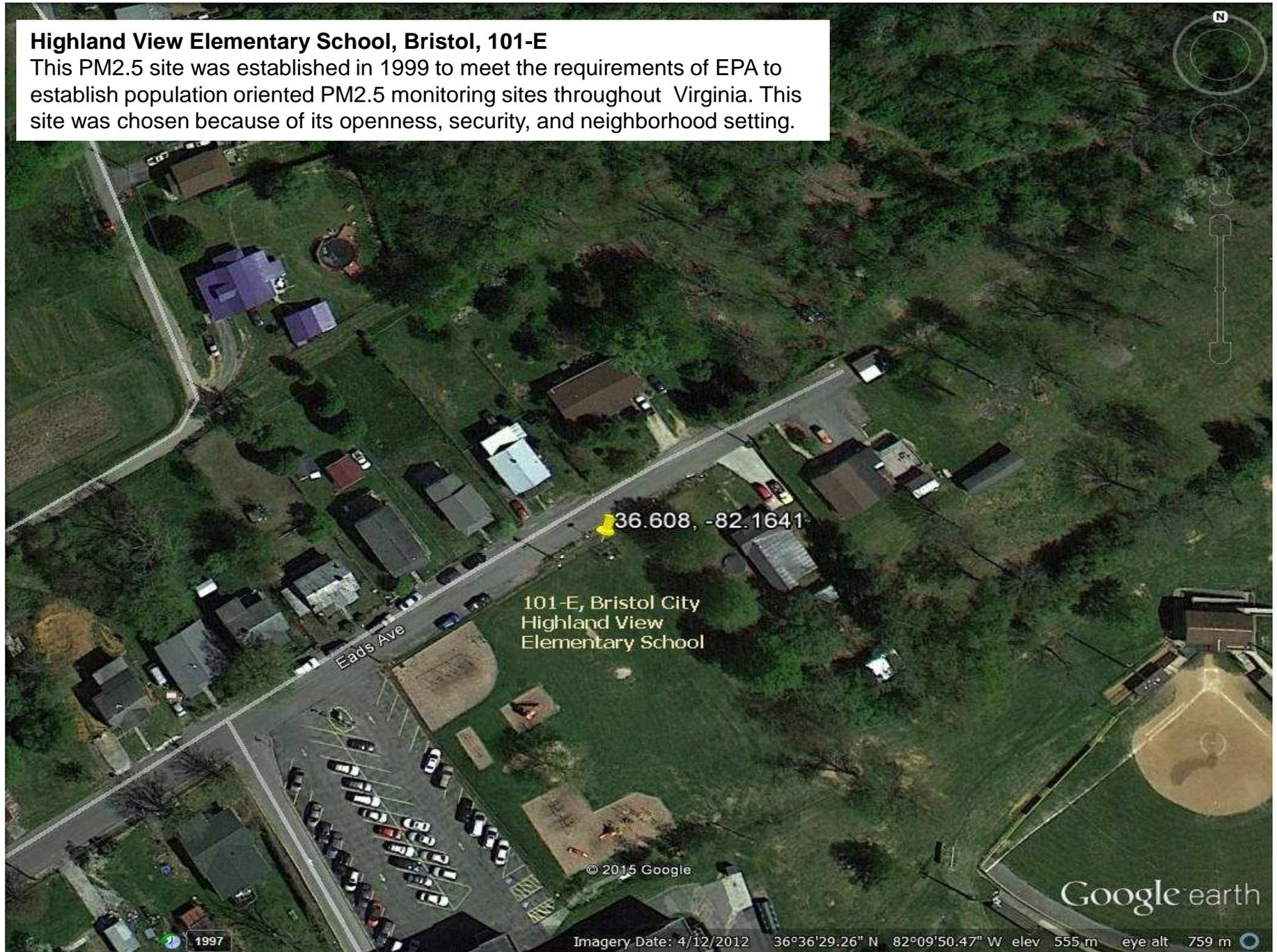
Google earth

1998

Imagery Date: 11/8/2013 36°53'29.34" N 81°15'14.22" W elev 752 m eye alt 1.07 km

Highland View Elementary School, Bristol, 101-E

This PM2.5 site was established in 1999 to meet the requirements of EPA to establish population oriented PM2.5 monitoring sites throughout Virginia. This site was chosen because of its openness, security, and neighborhood setting.



101-E, Bristol City
Highland View
Elementary School

© 2015 Google

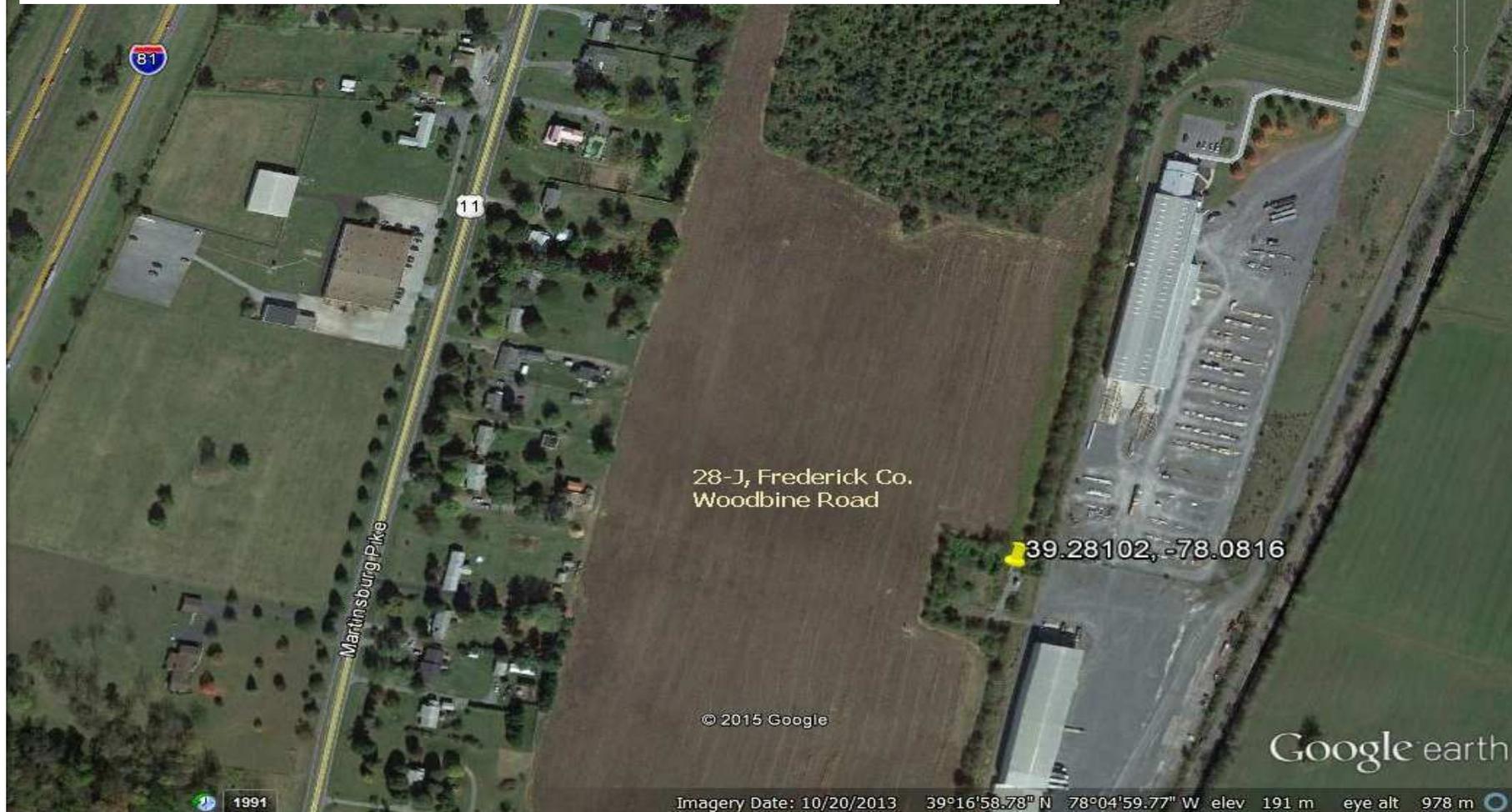
Google earth

Imagery Date: 4/12/2012 36°36'29.26" N 82°09'50.47" W elev 555 m eye alt 759 m

1997

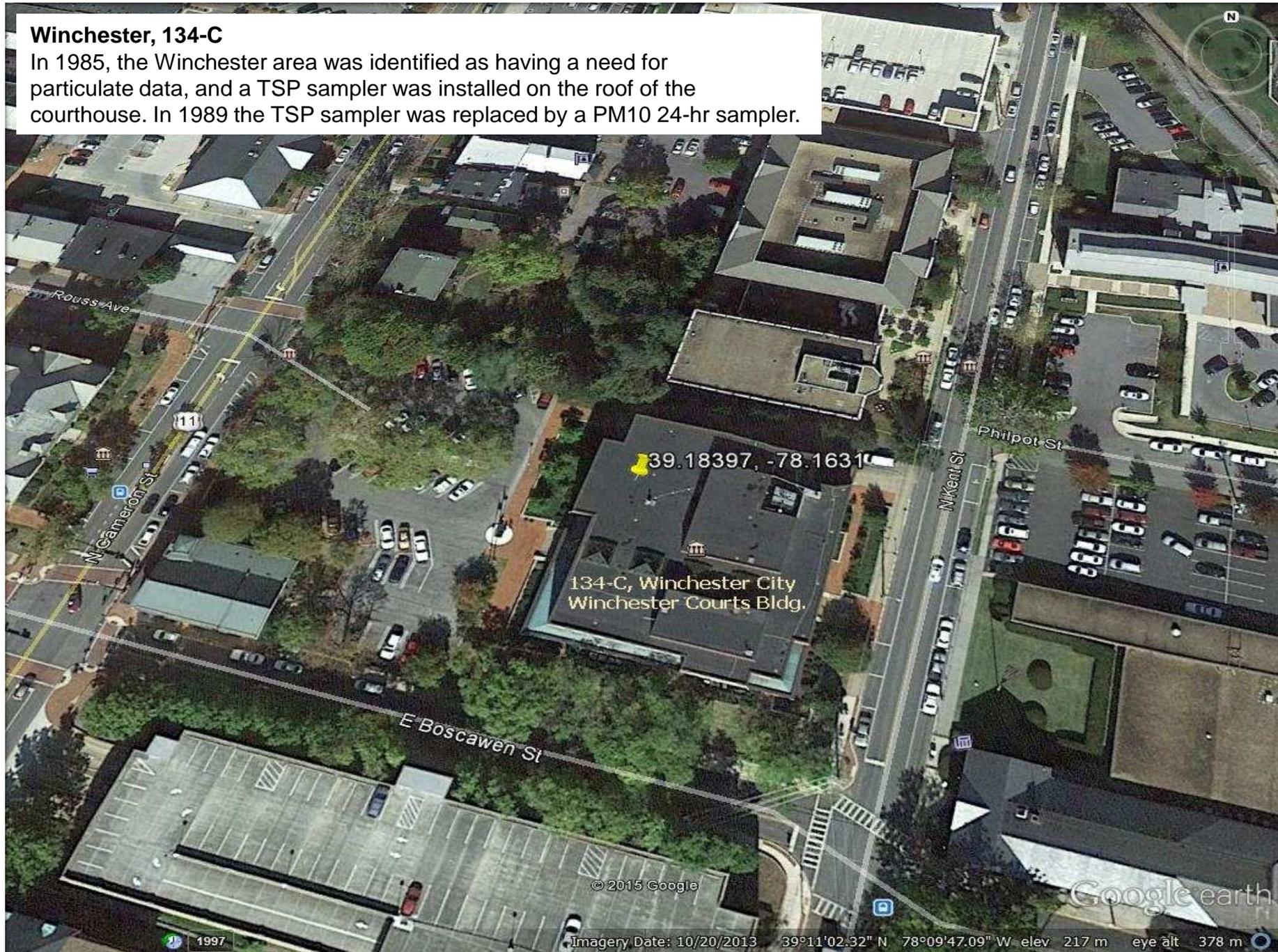
Rest, Frederick County, 28-J

Of the counties in Virginia with high VOC emissions and no ozone monitoring, Frederick County was deemed a candidate for a monitoring site. This site was the first choice due to its downwind direction from Winchester and its good security. Ozone sampling began in 1991. In 2006-2007, the environmental group SHENAIR purchased an environmental shelter and TEOM PM2.5 sampler for VA DEQ. In the fall of 2007, the shelter was installed and a 24-hr PM2.5 sampler was also added.



Winchester, 134-C

In 1985, the Winchester area was identified as having a need for particulate data, and a TSP sampler was installed on the roof of the courthouse. In 1989 the TSP sampler was replaced by a PM10 24-hr sampler.



Big Meadows, Shenandoah National Park, 35-A

This is a National Park Service air monitoring site. Their data was incorporated into the Virginia reported data in May 1983. The ozone analyzer and data collection equipment belongs to NPS. A TEOM PM2.5 purchased by VISTAS was installed by VA DEQ at the site in the second half of 2004. In 2007, TEOM ownership was turned over to VA DEQ.

N-35-A, Madison Co.
Big Meadows,
National Park Service

38.5231, -78.4347

Skyland/Big Meadows Horse Trail
Big Meadows

Story of the Forest Trail

© 2015 Europa Technologies
© 2015 Google

Google earth

1997

Imagery Date: 10/17/2013 38°31'21.73" N 78°26'07.65" W elev 1078 m eye alt 1.55 km

Luray Airport, Luray, 29-D

Installed in 1999 for ozone and PM2.5 monitoring, this site was situated as a 'valley floor' monitoring site situated between Big Meadows, VA and Dolly Sods, WVA. Located at the Luray Airport, the site had good security and was open to free air flow.

29-D, Page Co.
Luray Caverns Airport

38.66373, -78.5044

© 2015 Google

© 2015 Europa Technologies

Google earth

1997

Imagery Date: 10/17/2013 38°39'48.63" N 78°30'14.35" W elev 276 m eye alt 684 m

Herman Horn Elem. School, Vinton, 19-A6

This site was installed at the request of locality (Roanoke County Health Department). NO₂ sampling began in December 1980 and TSP added in January 1981 and Ozone in August 1981. In January 1987, SO₂ and CO analyzers added in effort to consolidate monitoring efforts in the Roanoke area. There was verbal approval from the EPA III and EPA RTP Offices. In 2013, PM_{2.5} 24-hr and continuous samplers were added.

19-A6, Roanoke Co.
E. Vinton Elementary
School

37.28342, -79.8845

Ruddell Rd

Morrison Ave

© 2015 Google

© 2015 Europa Technologies

Google earth

1995

Imagery Date: 6/19/2012 37°16'59.20" N 79°53'03.21" W elev 341 m eye alt 573 m

Salem High School, Salem, 110-C

PM2.5 sampling on the roof of the Salem Fire Department stopped in 2006 when roof repairs and construction reconfigured the roof making sampling at this location untenable. After a long search, an exceptional spot at Salem High School was found that offered free air flow, good accessibility and very good security. The site was installed and began operation in late 2008.

37.29788, -80.081

110-C, Salem City
Salem High School

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Google earth

1996

Imagery Date: 6/19/2012 37°17'53.85" N 80°04'50.36" W elev 349 m eye alt 523 m

Natural Bridge Station, 21-C

This site is a cooperative effort between VA DEQ and the National Forest Service. Sampling began in April 1999. The current shelter was supplied by the Forest Service, and the sampling equipment was supplied by VA DEQ. The area is rural, open and has good security.



VDOT, Rockingham County, 26-F

This site was established as a replacement for a monitoring site to the south of the city of Harrisonburg. This site is ten miles north of the city and began in April 2004. On the property of the VDOT it is situated between Route 11 and I-81, with open air flow and good security.

26-F, Rockingham Co.
Rockingham VDOT

38.47753, -78.8195

© 2015 Google

Google earth

1989

Imagery Date: 10/20/2013 38°28'40.52" N 78°49'09.01" W elev 391 m eye alt 800 m

Mario Industries, Roanoke, 109-N

Lead sampler was installed in late 2014 as a replacement to the Lead monitoring site at Cherry Hill Circle, Roanoke. Site is situated in Roanoke River valley to pick up emissions from multiple sources.

109-N, Roanoke City
Mario Industries

37.27494, -79.9857

American Way

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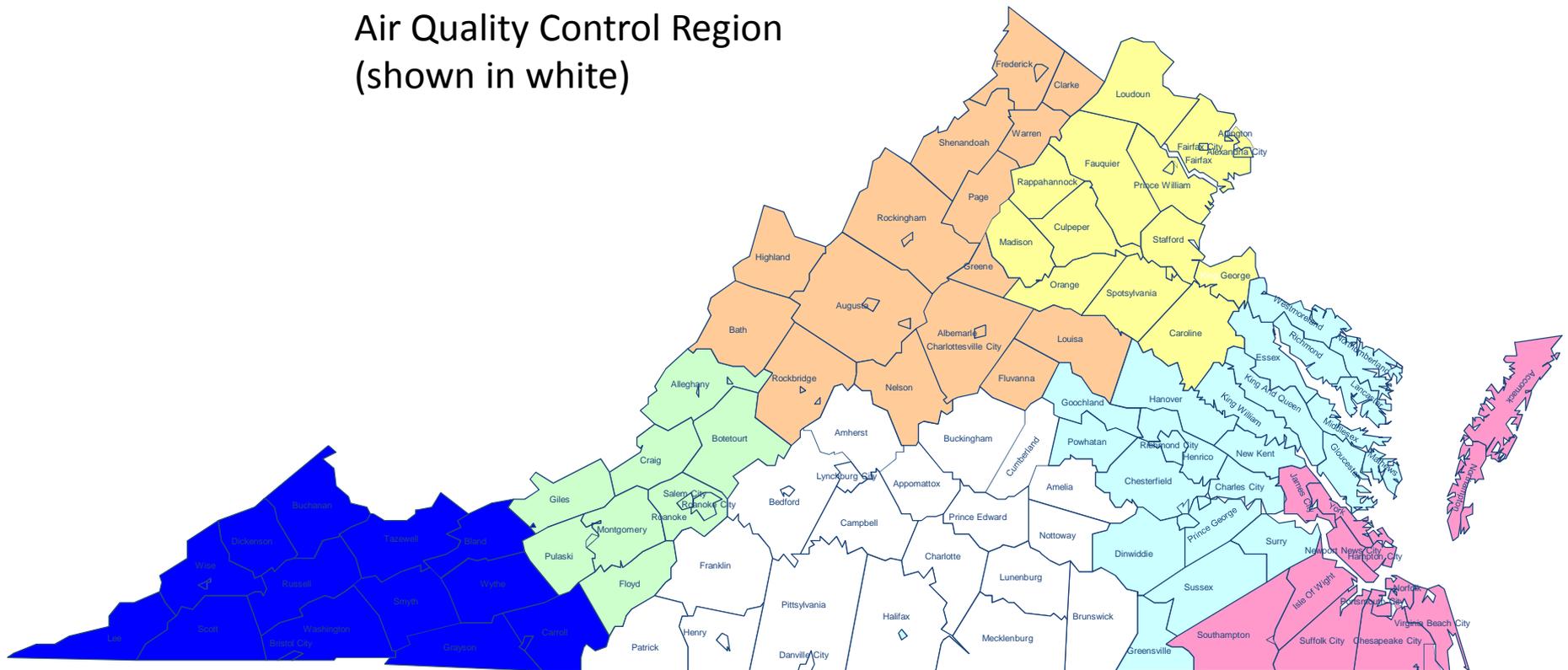
Google earth

1995

Imagery Date: 6/19/2012 37°16'30.14" N 79°59'08.88" W elev 296 m eye alt 560 m

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

Leesville Road Water Tower, Lynchburg, 155-Q

When the PM2.5 network was put together, it was determined a sampler was needed in Lynchburg. A sampler was installed but it was found that the site had electrical problems that could not be resolved. A secure location was found on city property and the PM2.5 sampler began operation at this site in April 2003.

155-Q, Lynchburg City
Leesville Hwy. &
Greystone Dr.

37.331707, -79.214643

© 2015 Google

© 2015 Europa Technologies

Google earth

Imagery Date: 4/5/2011 37°19'55.93" N 79°12'52.04" W elev 307 m eye alt 590 m

Central Virginia Training Center, Amherst County, 53-G

The EPA Lead monitoring network required a monitoring site downwind from a Lynchburg source. It also required at least one collocated site. Begun in late 2010, this site is the proper distance downwind of the source and offers good security. With two samplers, it fulfills the requirement of a collocated Lead site.

53-G, Amherst Co.
Central Virginia
Training Center

37.41222, -79.1162

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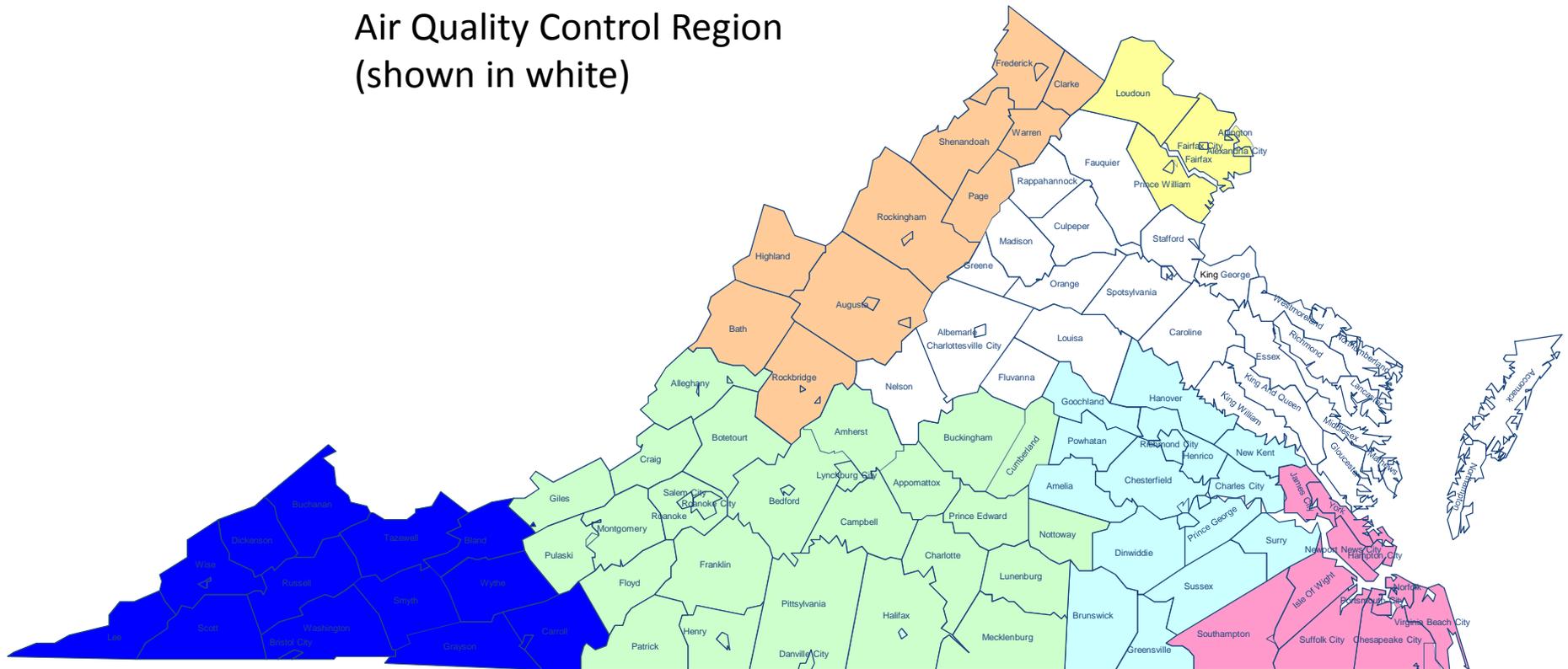
Google earth

1994

Imagery Date: 4/5/2011 37°24'45.54" N 79°06'59.21" W elev 236 m eye alt 453 m

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

Corbin, Caroline County, 48-A

This site was established in June 1993 as the required "PAMS Type 1 upwind monitoring site to measure background pollutant concentrations of the air mass entering the Washington area on days conducive to ozone formation".

48-A, Caroline Co.
U.S.G.S.
Geomagnetic Center

38.20087, -77.3774

Magnetown

Cliffside

Burma Rd

Hood Dr

© 2015 Europa Technologies
© 2016 Google

Google earth

1994

Imagery Date: 10/25/2013 38°12'03.40" N 77°22'37.07" W elev 68 m eye alt 317 m

Sumerduck, Fauquier County, 37-B

This ozone monitoring site was established in 1981 as an upwind site for the Washington DC metropolitan area. It is situated in the correct upwind quadrant, the proper distance away, and on state property.

37-B, Fauquier Co.
Phelps Wildlife Area

38.47367, -77.7677

651

© 2015 Google

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Google earth

1994

Imagery Date: 4/5/2013 38°28'26.69" N 77°46'05.87" W elev 103 m eye alt 474 m

Widewater Elementary School, Stafford County, 44-A

The Ozone monitoring site at Widewater Elementary School was established to characterize ambient ozone concentrations in Stafford County. Ozone sampling began in September 1992,

44-A, Stafford Co.
Widewater
Elementary School

38.48123, -77.3704

Egret Ct

Den Rich Rd

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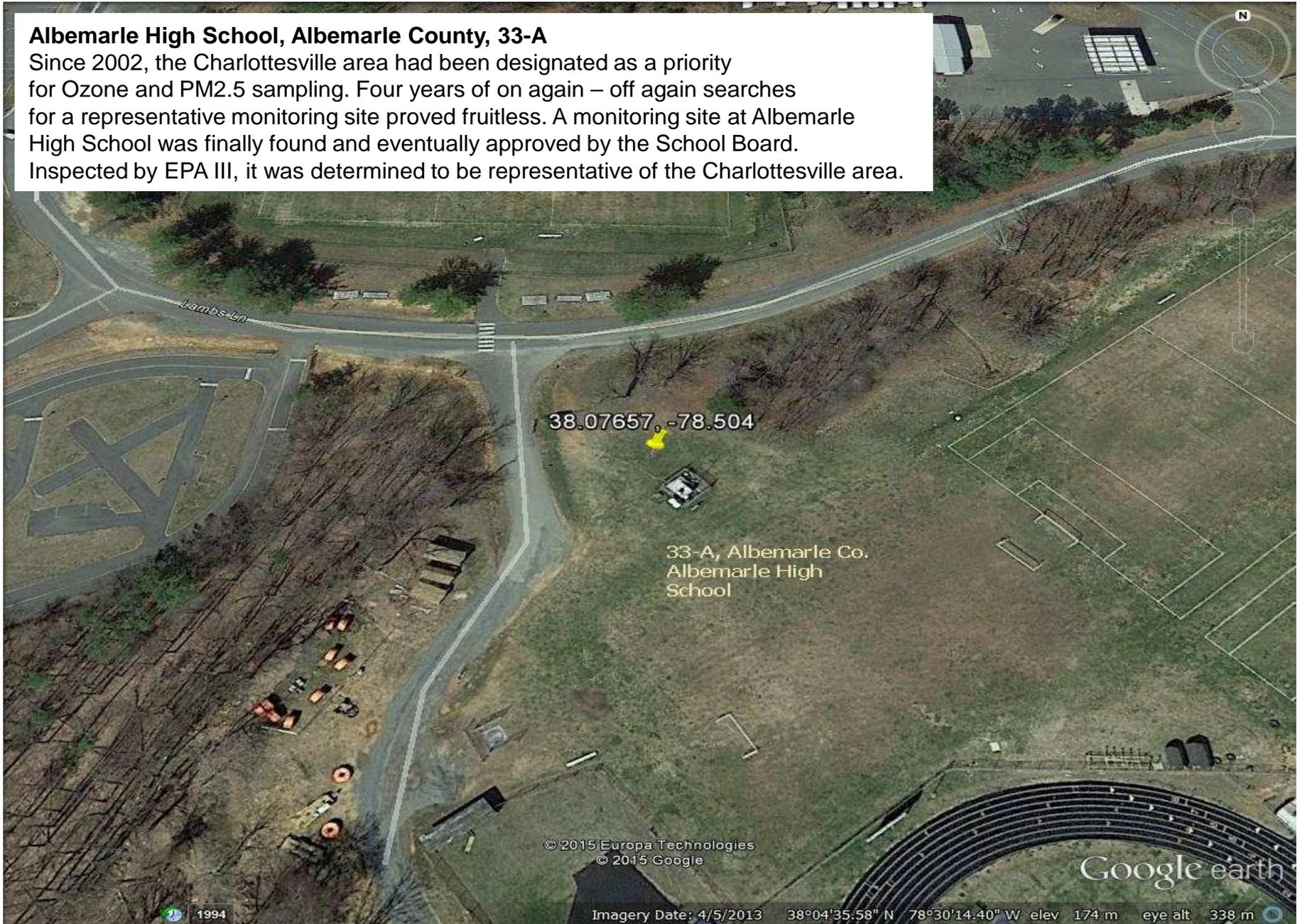
Google earth

2002

Imagery Date: 10/25/2013 38°28'53.79" N 77°22'10.45" W elev 49 m eye alt 612 m

Albemarle High School, Albemarle County, 33-A

Since 2002, the Charlottesville area had been designated as a priority for Ozone and PM2.5 sampling. Four years of on again – off again searches for a representative monitoring site proved fruitless. A monitoring site at Albemarle High School was finally found and eventually approved by the School Board. Inspected by EPA III, it was determined to be representative of the Charlottesville area.



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Google earth

1994

Imagery Date: 4/5/2013 38°04'35.58" N 78°30'14.40" W elev 174 m eye alt 338 m

Hugh Mercer Elementary School, Fredericksburg, 130-E

This location was established as a TSP replacement site in 1980. The desire was to keep the TSP sampler within the city limits of Fredericksburg. The location on the roof of the elementary school offered good security, free air flow and a sampling site representative of a large area. A PM10 sampler later replaced the TSP sampler.

38.30225, -77.4871

130-E, Fredericksburg City
Hugh Mercer Elementary
School

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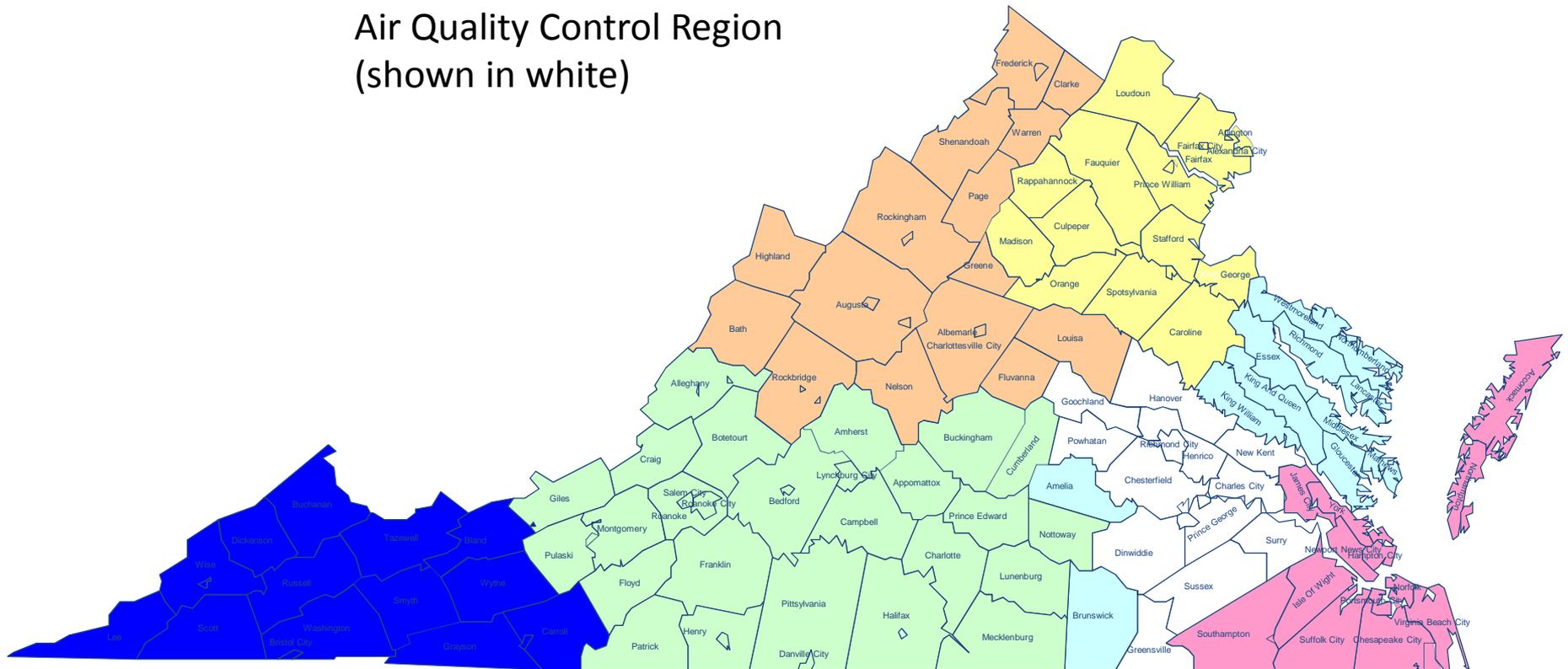
Google earth

1994

Imagery Date: 10/25/2013 38°18'08.94" N 77°29'09.87" W elev 62 m eye alt 369 m

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

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



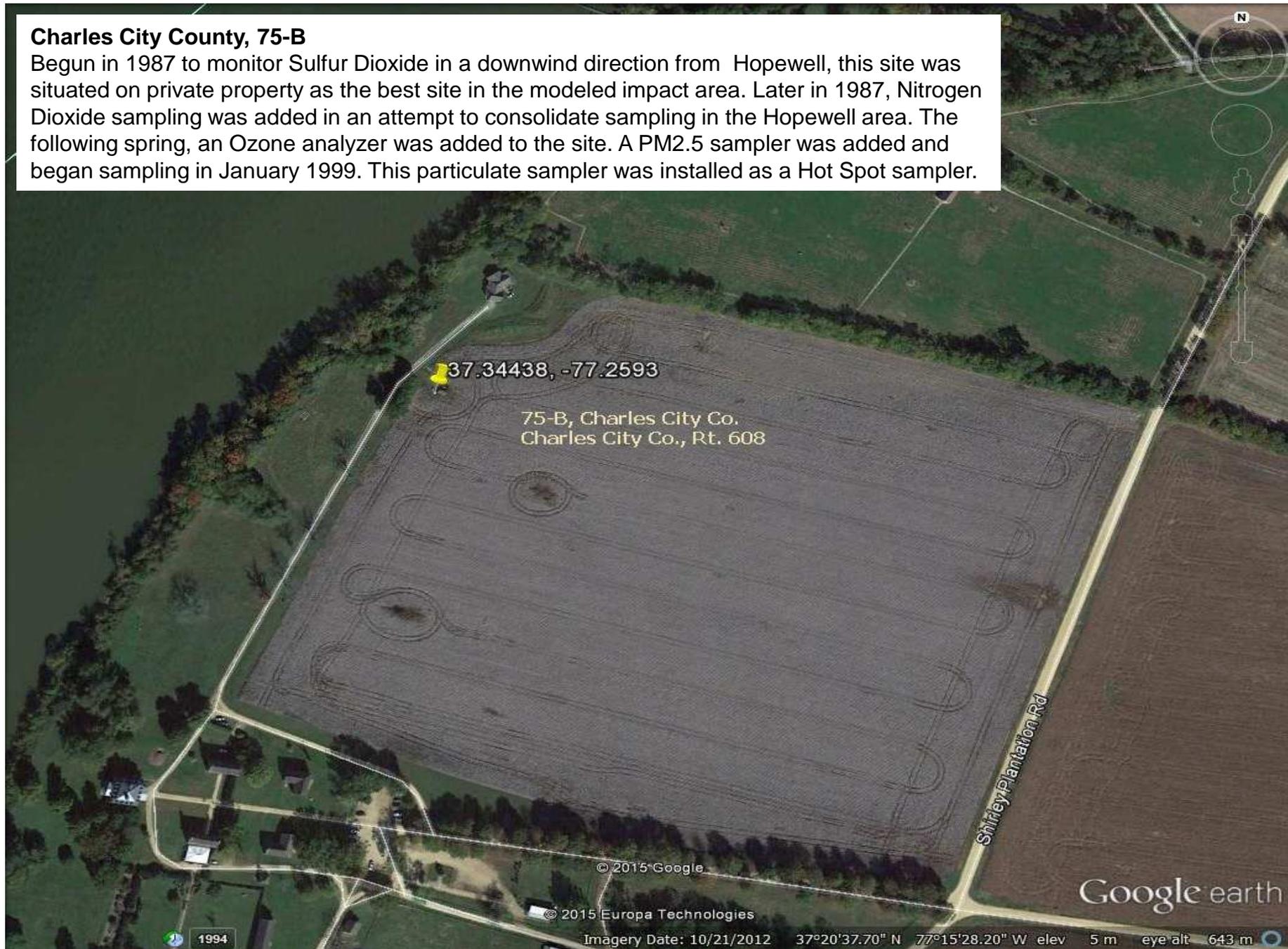
Counties: Charles City, Chesterfield, Dinwiddie, Goochland, Greensville, Hanover, Henrico, New Kent, Powhatan, Prince George, Surry, Sussex

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

CBSA/MSA: 40060 – Richmond, VA

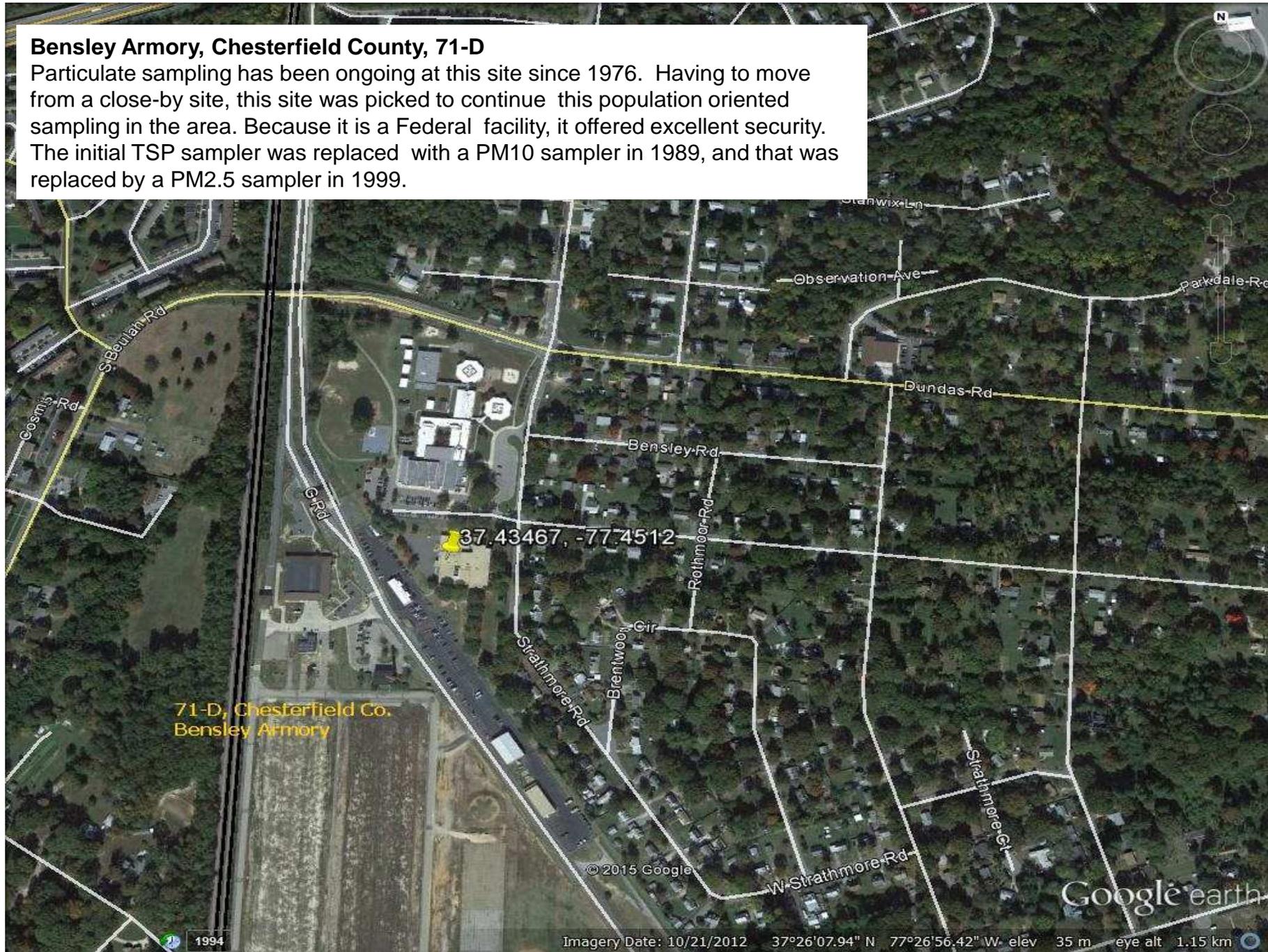
Charles City County, 75-B

Begun in 1987 to monitor Sulfur Dioxide in a downwind direction from Hopewell, this site was situated on private property as the best site in the modeled impact area. Later in 1987, Nitrogen Dioxide sampling was added in an attempt to consolidate sampling in the Hopewell area. The following spring, an Ozone analyzer was added to the site. A PM_{2.5} sampler was added and began sampling in January 1999. This particulate sampler was installed as a Hot Spot sampler.



Bensley Armory, Chesterfield County, 71-D

Particulate sampling has been ongoing at this site since 1976. Having to move from a close-by site, this site was picked to continue this population oriented sampling in the area. Because it is a Federal facility, it offered excellent security. The initial TSP sampler was replaced with a PM10 sampler in 1989, and that was replaced by a PM2.5 sampler in 1999.



Beach Road, Chesterfield, 71-H

Air monitoring began in April 1980 at the Beach Road VDOT shop in Chesterfield County. Because of its location and security, this site was picked as the upwind Ozone site for the Richmond metropolitan area.



McClellan Road, Hanover County, 73-E

This site was established in 2001 as a replacement for the Richmond Metropolitan Area downwind ozone monitoring site. The original site was on county property and after many years of sampling, VA DEQ was asked to remove the shelter and sampling equipment. To maintain the correct distance and direction downwind of Richmond, the monitoring site had to be placed on private property.

37.60613, -77.2188

73-E, Hanover Co.
McClellan Road

628

McClellan Rd

© 2015 Google

Google earth

1994

Imagery Date: 10/21/2012

37°36'22.21" N 77°13'04.65" W elev 46 m eye alt 354 m

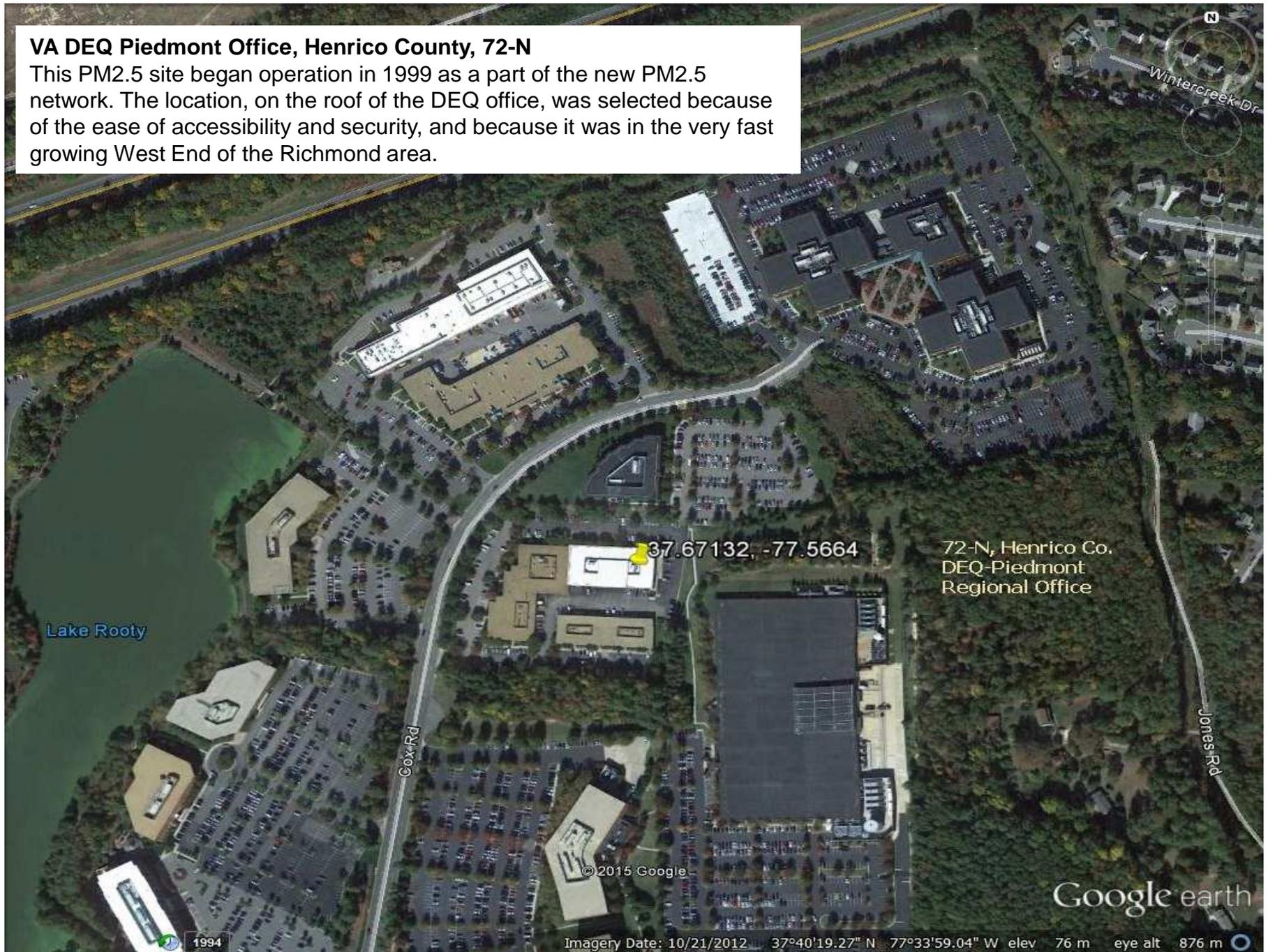
MathScience Innovation Center, Henrico County, 72-M

This site began in 1981 as a replacement monitoring location for sites lost in the city of Richmond. Ozone and SO₂ were located in a storage room with a probe support extending above the roof. A shelter was later added as was more instrumentation. In 2008 the MathScience Center site became a National Air Toxics Trend Site. In 2011 this also became the NCore location for DEQ as well.



VA DEQ Piedmont Office, Henrico County, 72-N

This PM2.5 site began operation in 1999 as a part of the new PM2.5 network. The location, on the roof of the DEQ office, was selected because of the ease of accessibility and security, and because it was in the very fast growing West End of the Richmond area.



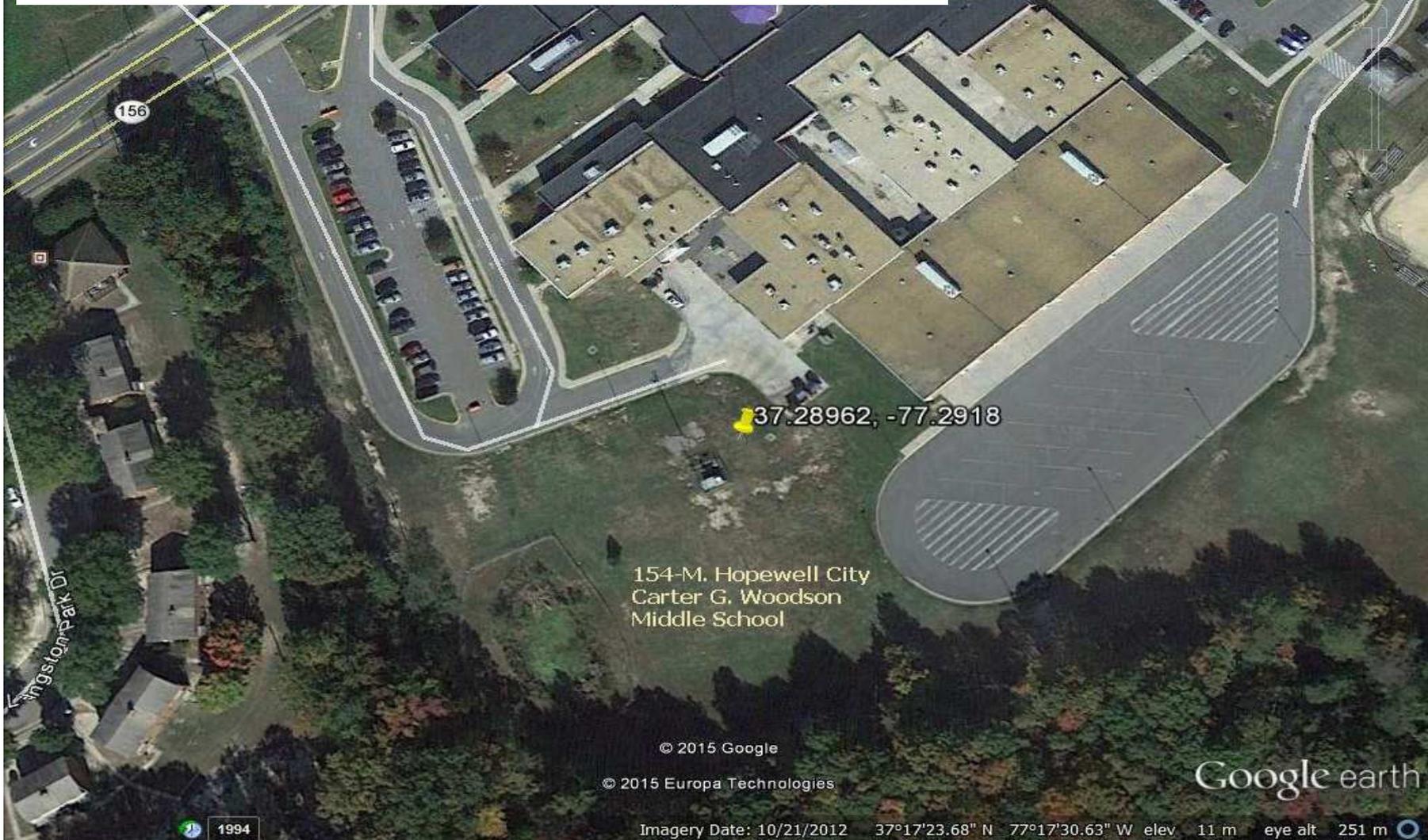
West Point Elementary School, 82-C

This sit was installed as a replacement for a close by TSP site in August 1978 on the local elementary school. The site was in a downwind direction of a local source and offered good security and free air flow. In 1990 the TSP was removed and a PM10 was installed.



Woodson Middle School, Hopewell, 154-M

The Woodson Middle School site is currently one of three Urban Air Toxics Sites in Virginia. The site was originally established as part of the Hopewell Community Air Toxics Study which began in 2009. When the Study was completed, the site was retained for further sampling in the Hopewell area and was designated the Urban Air Toxics Site due to the existence of a NATTS site in the Richmond area at the MathScience Center site.



Bryan Park, Richmond, 158-X

Established in mid-2013 as part of the EPA mandated Near Road Monitoring program, this site is in Bryan Park alongside I-95 at its highest traffic volume stretch in the Richmond area. Neelson Watkins, EPA OAQPS, inspected the monitoring site in December 2013 and was pleased with the location, site layout and proximity to the interchange of I-95 and I-64.

158-X, Richmond City
Joseph Bryan Park

Bryan Park

37.59088, -77.46925

Bellevue Ave

Princeton Rd

161

Henric Rd

95

64

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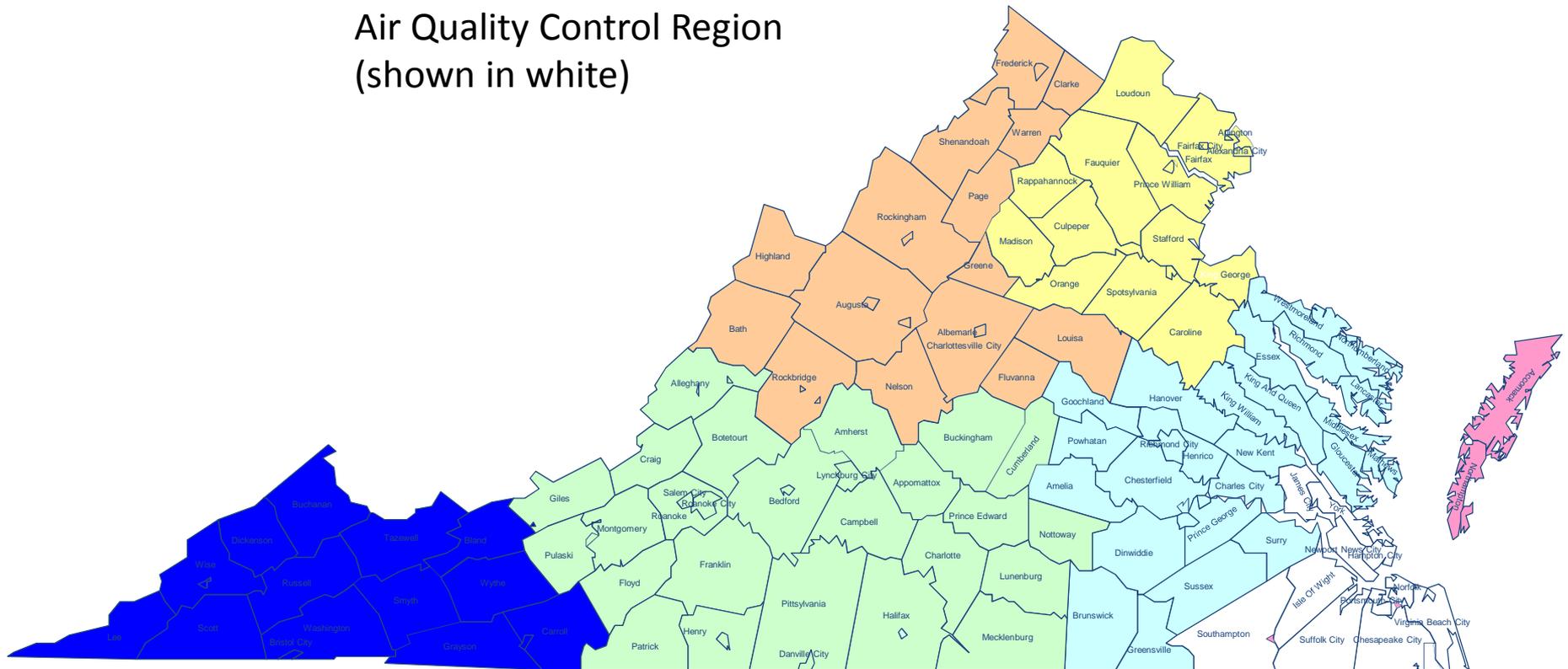
Google earth

1994

Imagery Date: 10/21/2012 37°35'27.13" N 77°28'09.30" W elev 55 m eye alt 871 m

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

NASA Langley Research Center, Hampton, 179-K

Sampling began in 2010 at this site. This location was a replacement site for the VA School in Hampton that had operated since 1972. The location on the northern portion of the NASA Langley Research Center property has free air flow and excellent security.

179-K, Hampton City
NASA Langley Research
Center

37.10373, -76.387

Wythe Landing Loop

Sunsaker Loop

W Bush Rd

E Bush Rd

N Dryden St

© 2015 Google

© 2015 Europa Technologies

Google earth

1994

Imagery Date: 4/23/2014 37°06'12.74" N 76°23'12.66" W elev 2 m eye alt 663 m

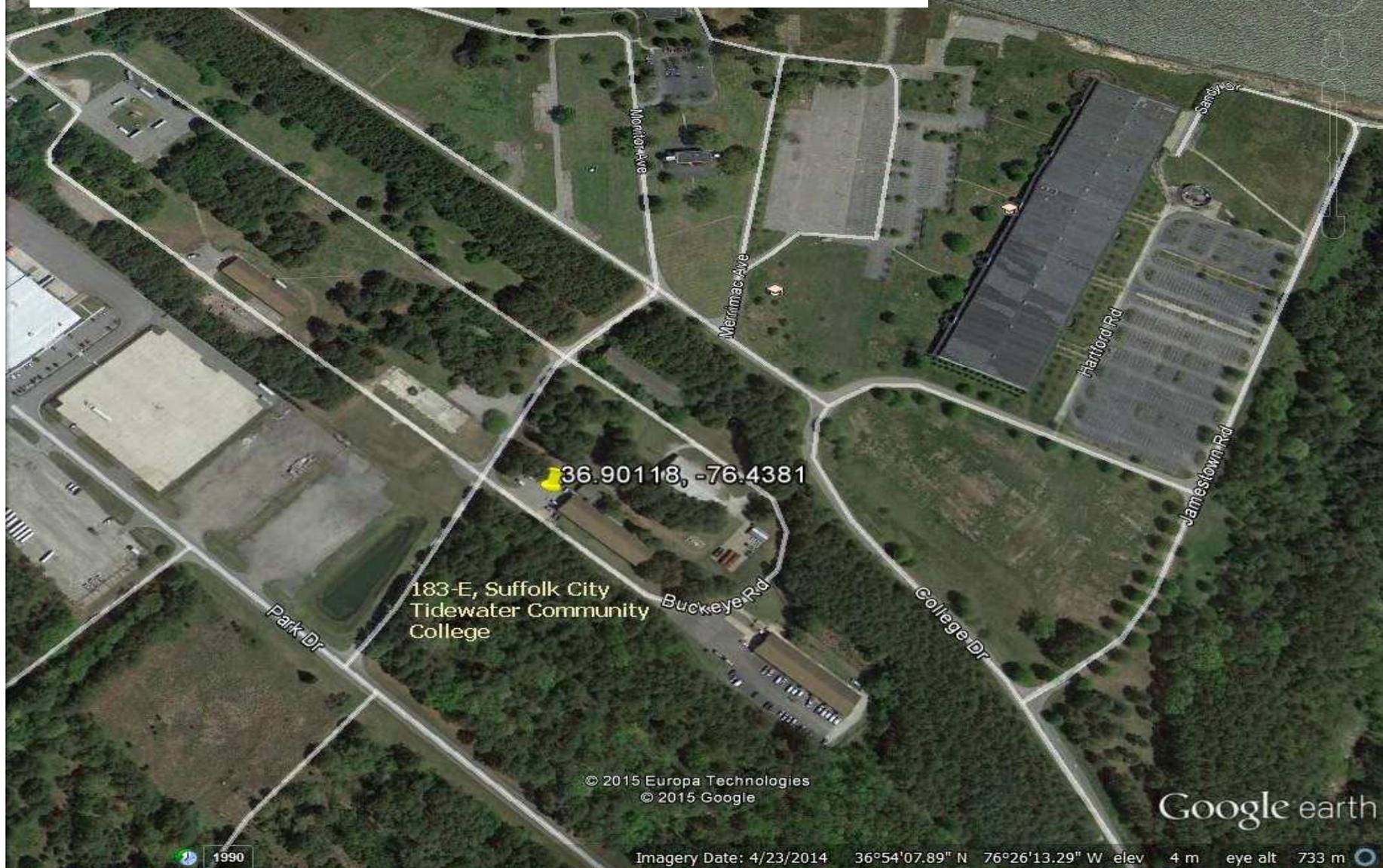
NOAA Storage Lot, Norfolk, 181-A1

This site was established in 2006 as a close-by replacement site for the Norfolk Post Office site that was shut down due to the post office closing. This site was chosen for representativeness of the sampling area, free air flow and excellent security.



Suffolk, 183-E

This monitoring site began operation in April 1987 as a NAMS ozone station. The site offered excellent security and is upwind of the Newport News-Hampton area on the Tidewater Peninsula (on the other side of Hampton Roads).



Suffolk, 183-F

This monitoring site was established in 1991 as an EPA required replacement for the terminated NAMS ozone monitoring site at the Cheriton Post Office on the eastern shore of Virginia.



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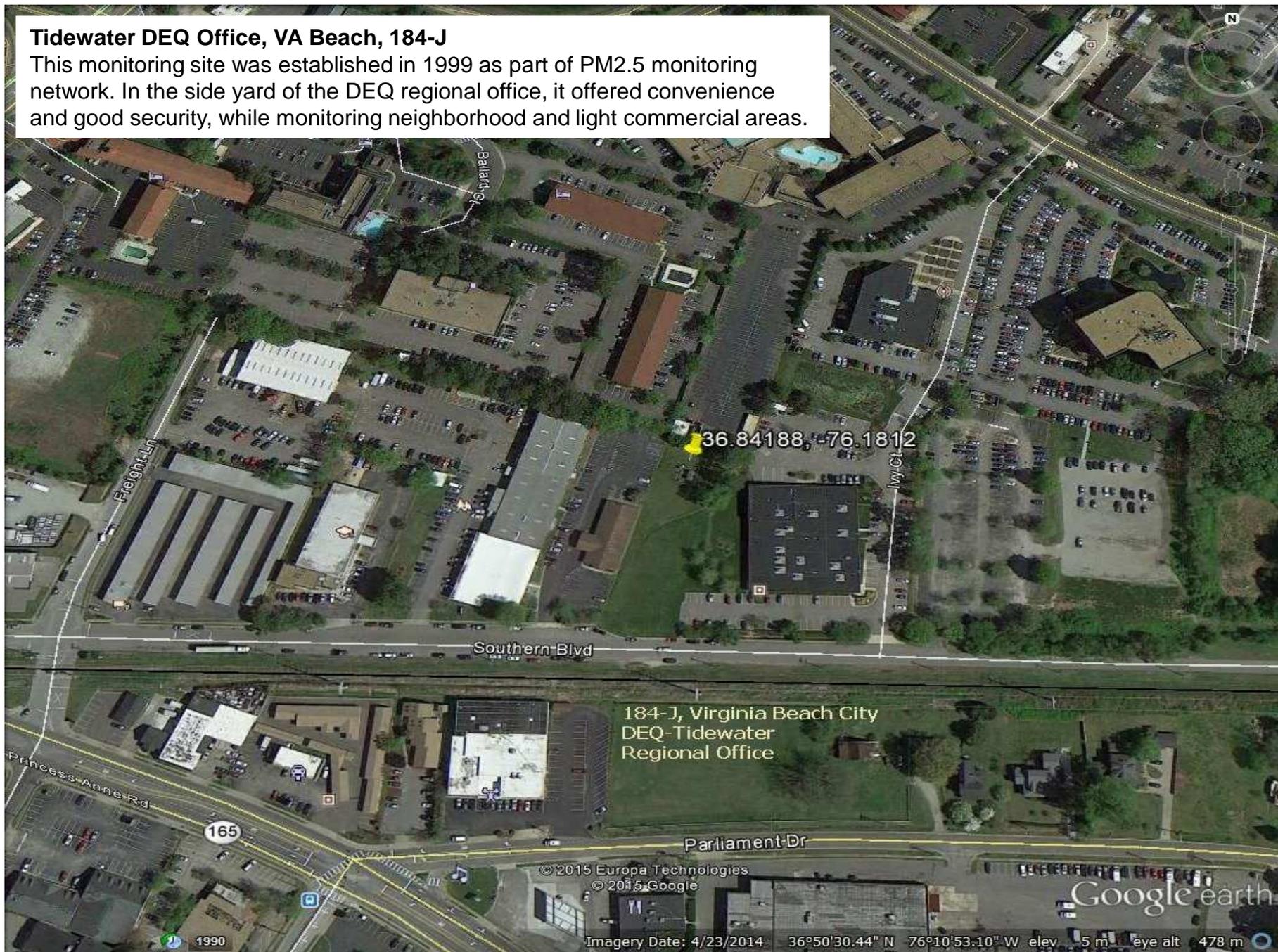
Google earth

1994

Imagery Date: 10/25/2014 36°39'59.50" N 76°43'37.06" W elev 21 m eye alt 1.10 km

Tidewater DEQ Office, VA Beach, 184-J

This monitoring site was established in 1999 as part of PM2.5 monitoring network. In the side yard of the DEQ regional office, it offered convenience and good security, while monitoring neighborhood and light commercial areas.



36.84188, -76.1812

184-J, Virginia Beach City
DEQ-Tidewater
Regional Office

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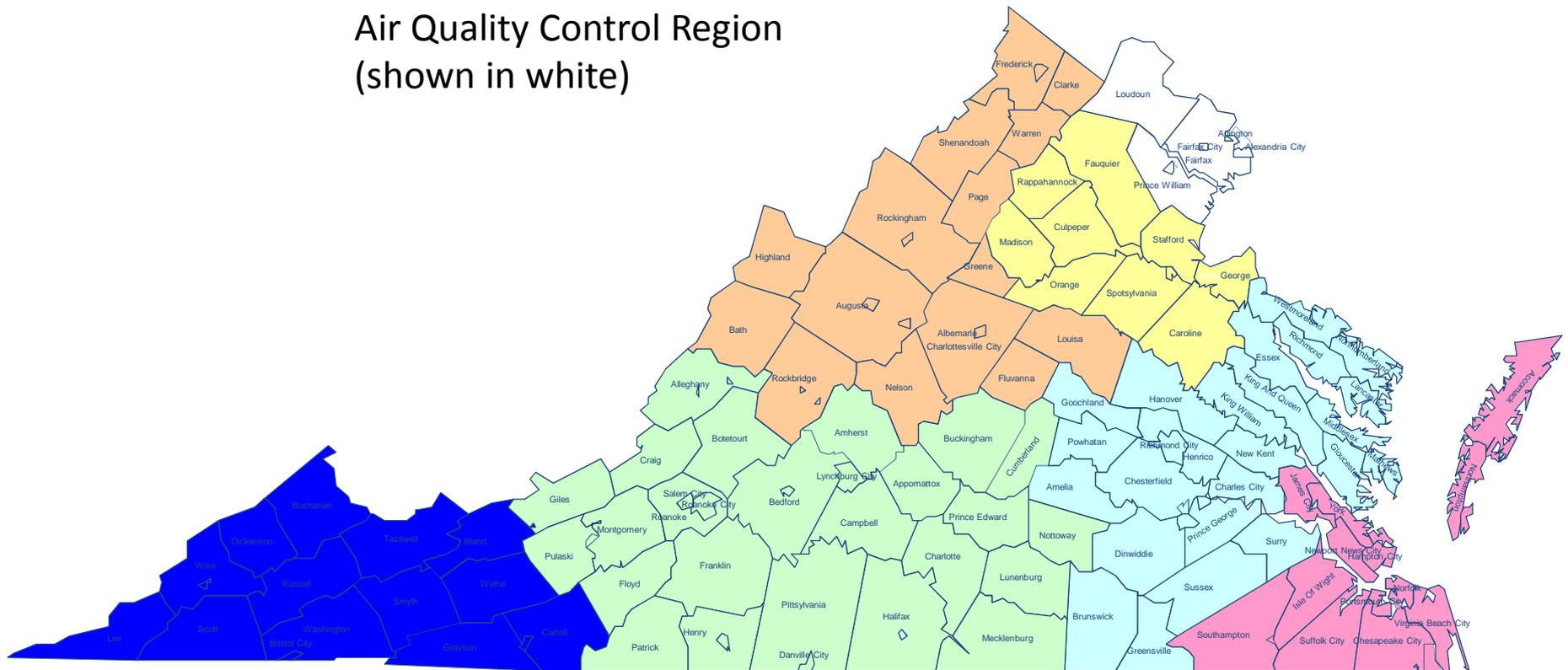
Google earth

Imagery Date: 4/23/2014 36°50'30.44" N 76°10'53.10" W elev. 5 m eye alt 478 m

1990

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

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



Counties: Arlington, Fairfax, Loudoun, Prince William

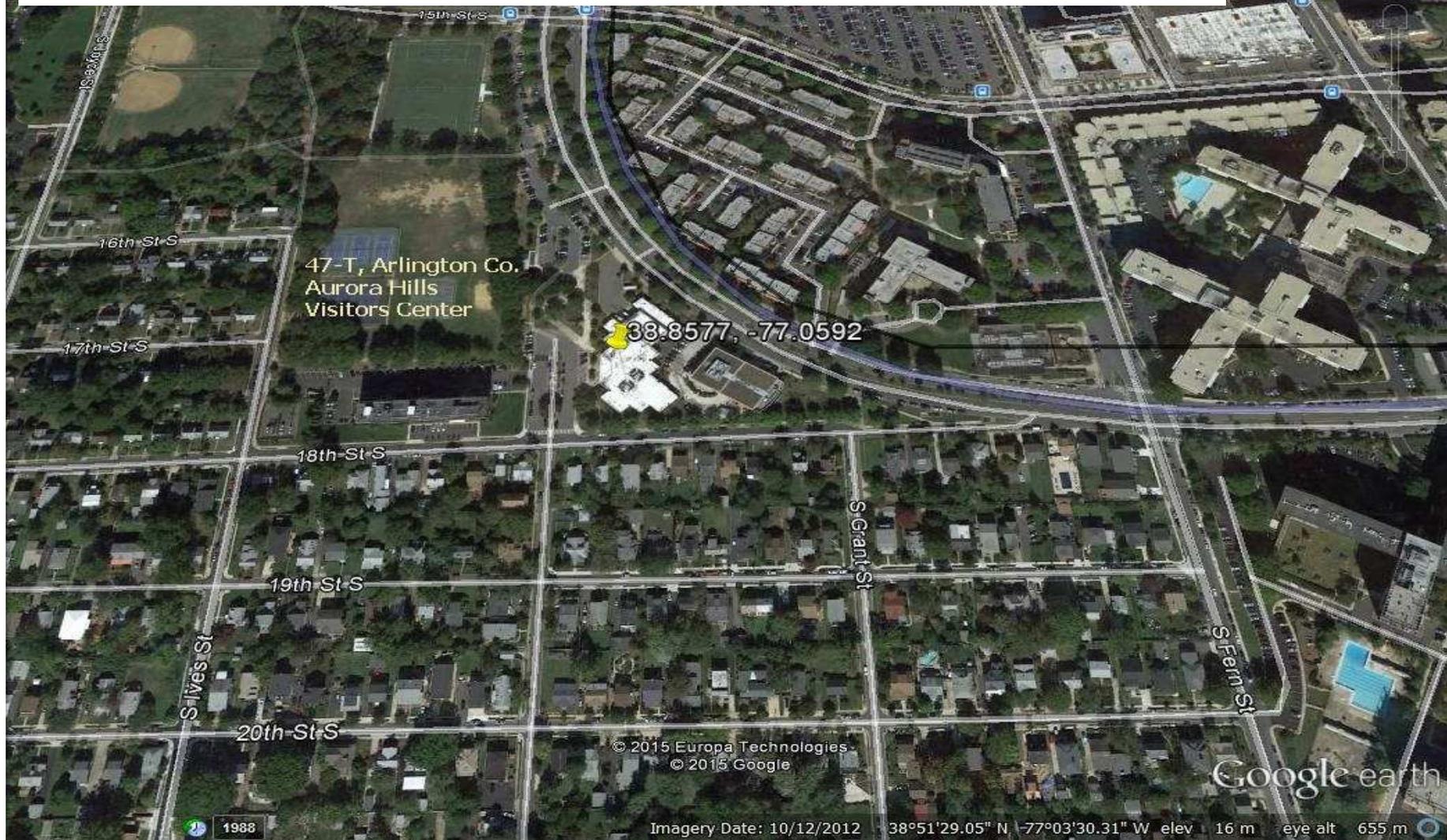
Cities: Alexandria, Fairfax, Falls Church, Manassas, Manassas Park

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

Aurora Hills Visitor Center, Arlington, 47-T

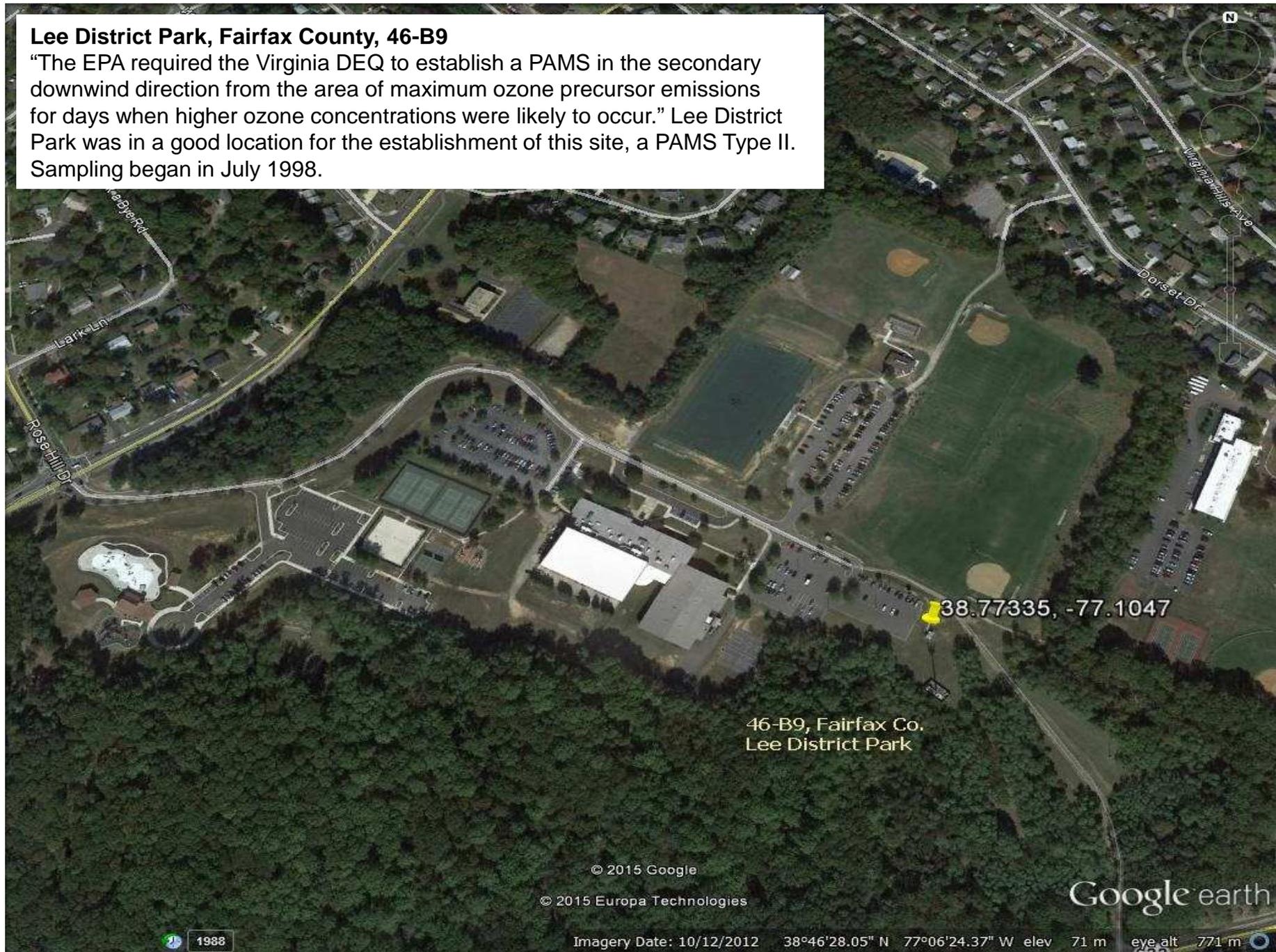
This monitoring site was established in late 1977 and began operation in early 1978. The County of Arlington supplied the location and some of the instrumentation (Hydrogen Generator, O3 analyzer, SO2 analyzer, & NOx analyzer) with the stipulation that VA DEQ personnel operate the station.

Instrumentation has been added over the years. The site was set up to allow visiting citizens to view the operation of the station through a large glass window. Representatives of the GAO visited and inspected the site in Feb. 1979 to complete a questionnaire on the air monitoring coverage by this station.



Lee District Park, Fairfax County, 46-B9

"The EPA required the Virginia DEQ to establish a PAMS in the secondary downwind direction from the area of maximum ozone precursor emissions for days when higher ozone concentrations were likely to occur." Lee District Park was in a good location for the establishment of this site, a PAMS Type II. Sampling began in July 1998.



46-B9, Fairfax Co.
Lee District Park

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Google earth

1988

Imagery Date: 10/12/2012 38°46'28.05" N 77°06'24.37" W elev 71 m eye alt 771 m

Broad Run High School, Ashburn, Loudoun County, 38-I

In 1997 VA DEQ was looking for a suitable site in Loudoun County to monitor Ozone, Nitrogen Dioxide and Particulate Matter to address citizen concerns. The site at Broad Run High School was deemed acceptable and sampling began in April 1998.

38-I, Loudoun Co.
Broad Run High
School

39.02473, -77.4893

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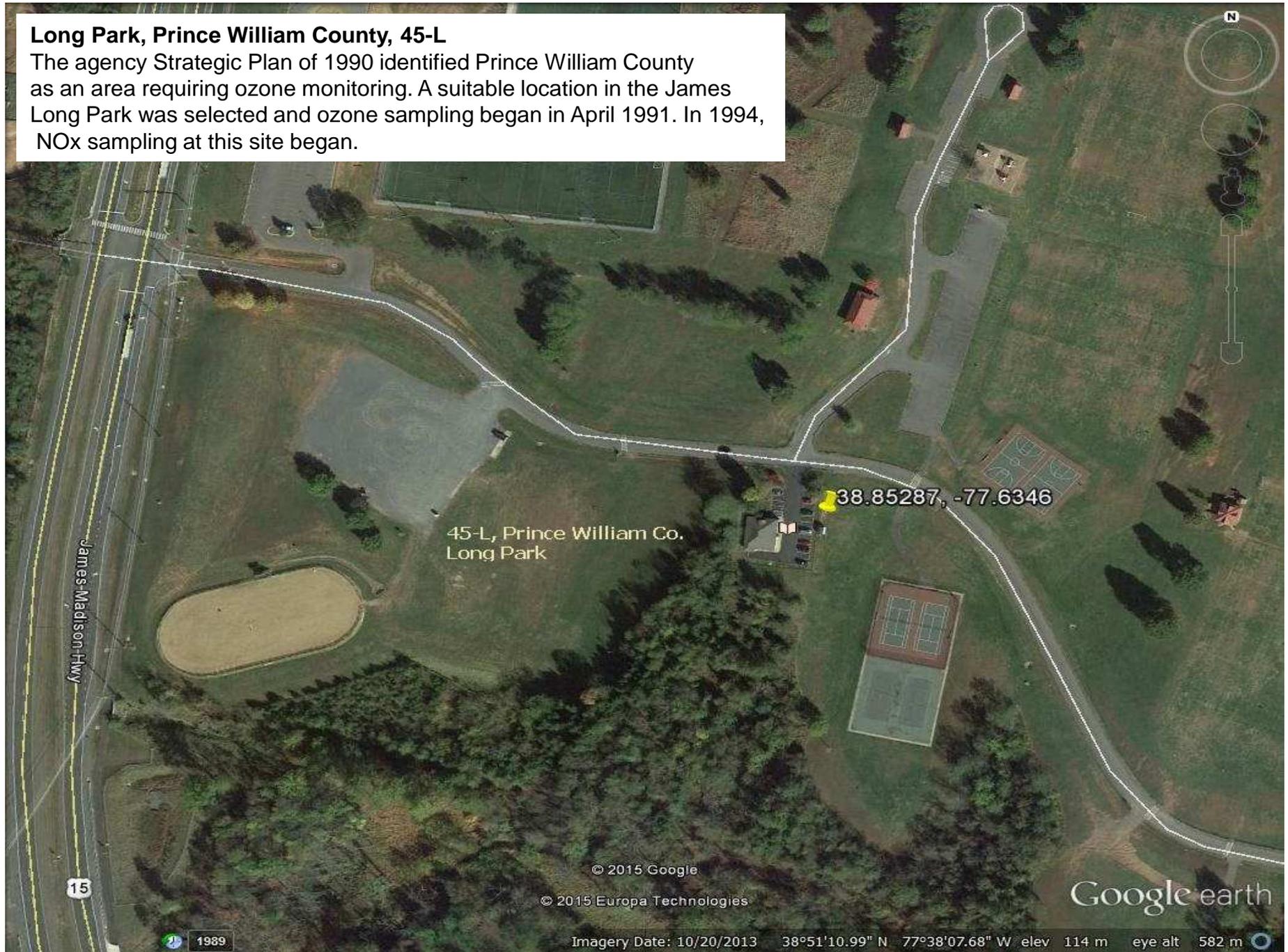
Google earth

1988

Imagery Date: 10/12/2012 39°01'28.70" N 77°29'21.18" W elev 90 m eye alt 287 m

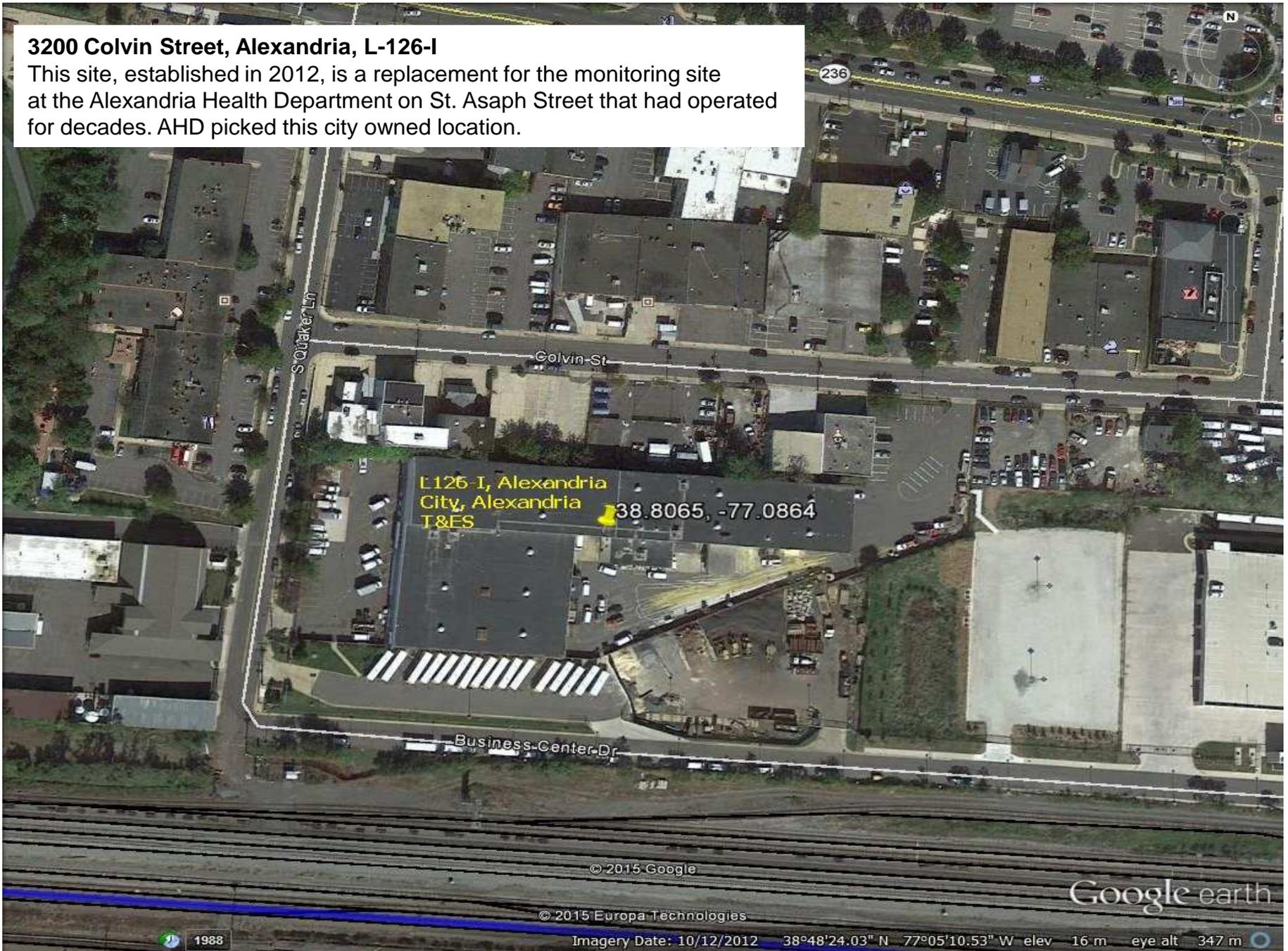
Long Park, Prince William County, 45-L

The agency Strategic Plan of 1990 identified Prince William County as an area requiring ozone monitoring. A suitable location in the James Long Park was selected and ozone sampling began in April 1991. In 1994, NOx sampling at this site began.



3200 Colvin Street, Alexandria, L-126-I

This site, established in 2012, is a replacement for the monitoring site at the Alexandria Health Department on St. Asaph Street that had operated for decades. AHD picked this city owned location.



© 2015 Google

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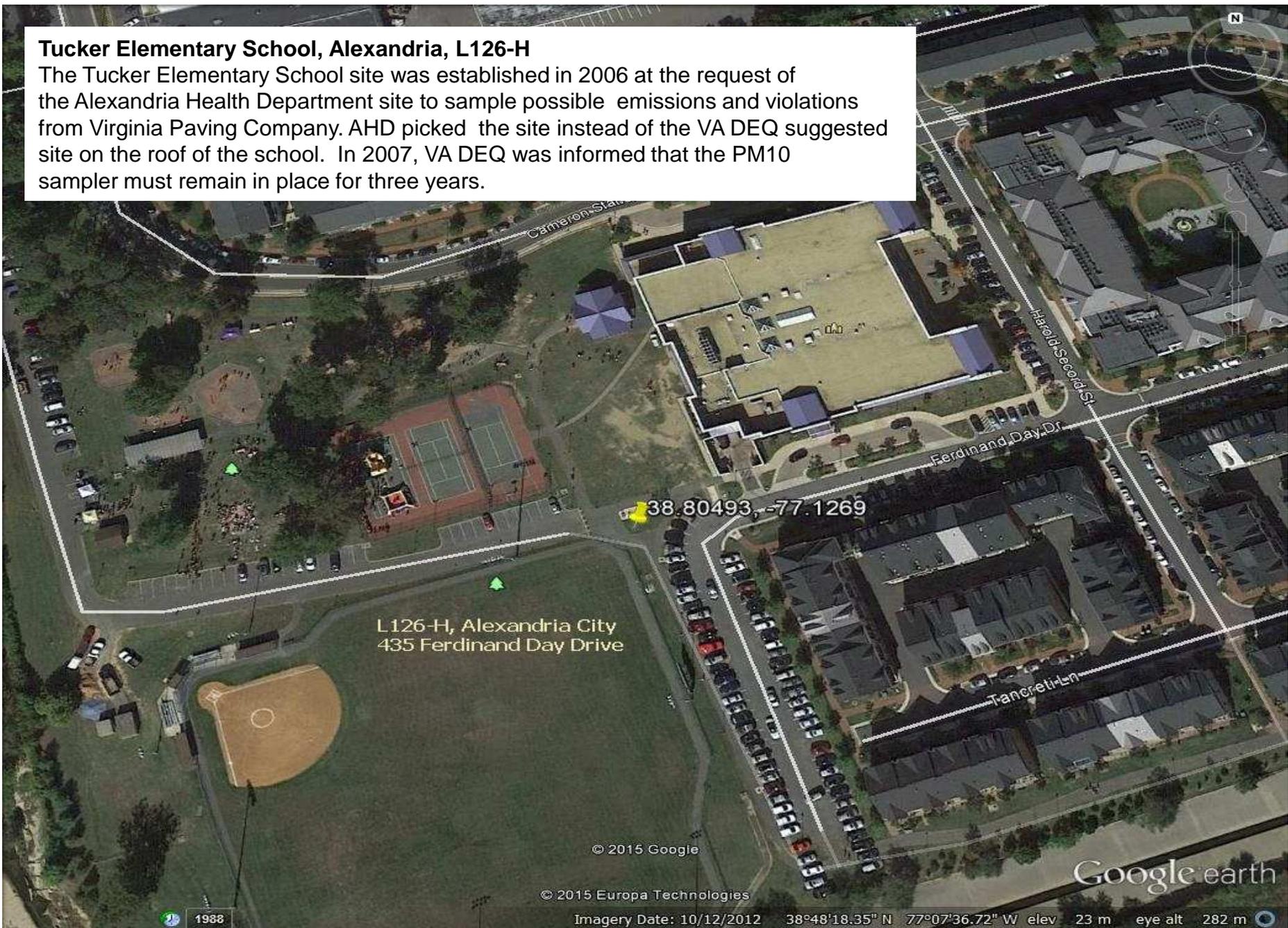
Google earth

1988

Imagery Date: 10/12/2012 38°48'24.03" N 77°05'10.53" W elev 16 m eye alt 347 m

Tucker Elementary School, Alexandria, L126-H

The Tucker Elementary School site was established in 2006 at the request of the Alexandria Health Department site to sample possible emissions and violations from Virginia Paving Company. AHD picked the site instead of the VA DEQ suggested site on the roof of the school. In 2007, VA DEQ was informed that the PM10 sampler must remain in place for three years.



L126-H, Alexandria City
435 Ferdinand Day Drive

38.80493, -77.1269

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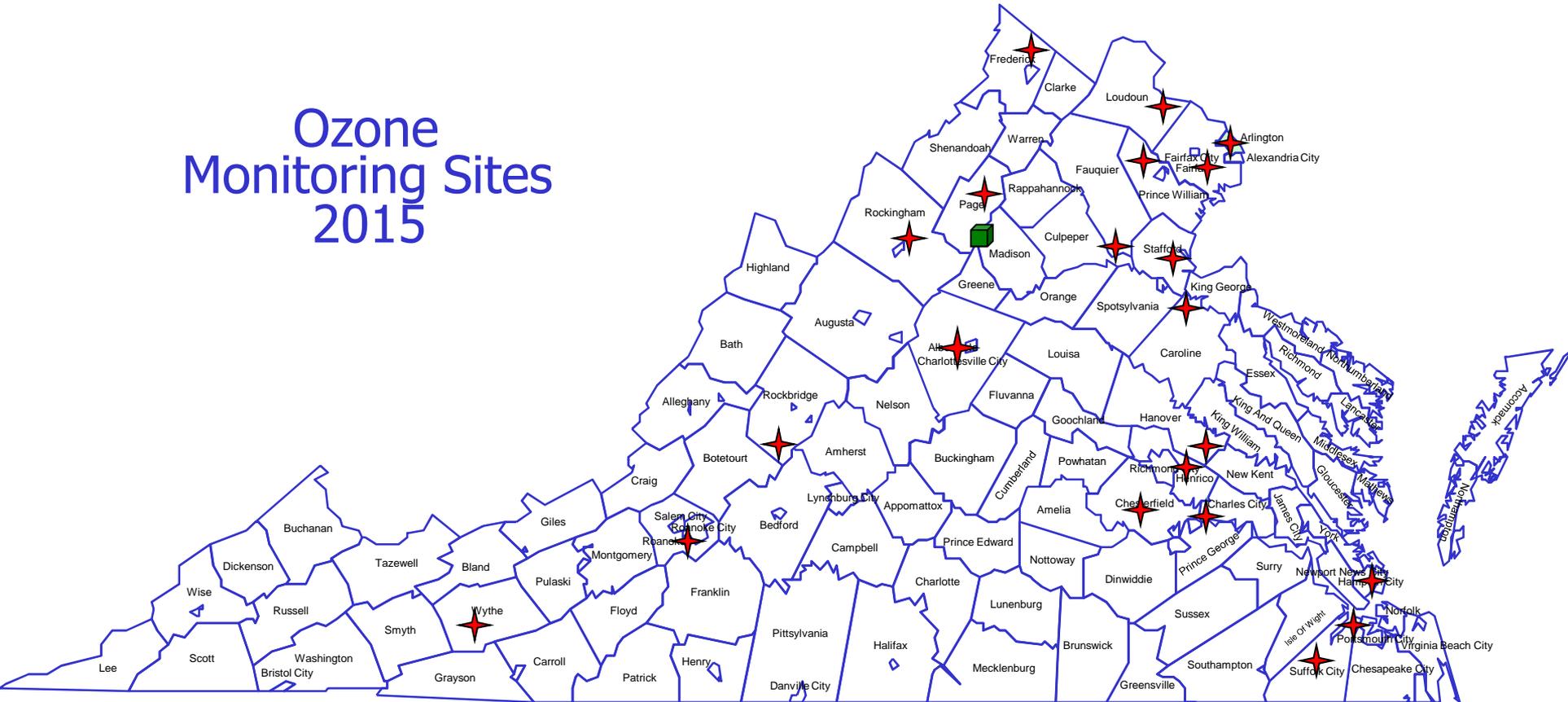
Google earth

1988

Imagery Date: 10/12/2012 38°48'18.35" N 77°07'36.72" W elev 23 m eye alt 282 m

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

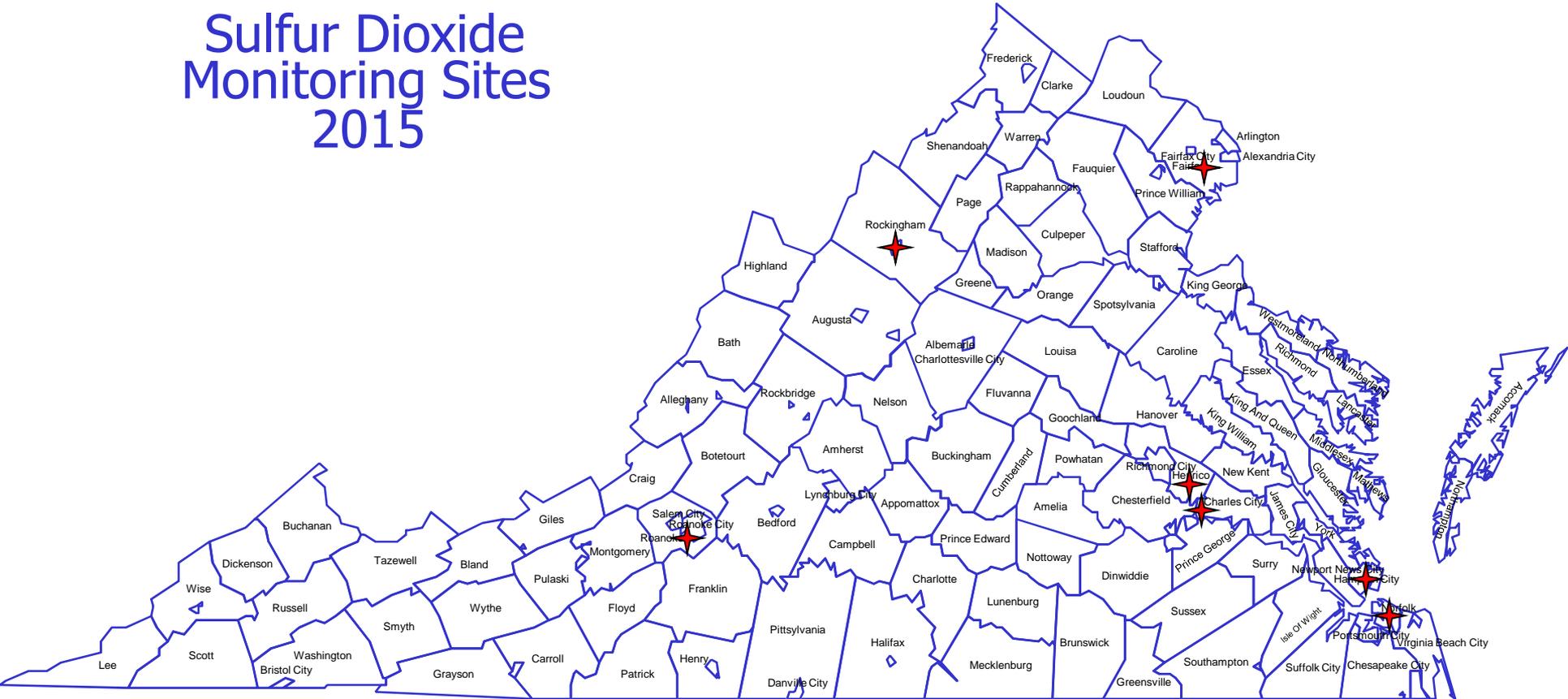
Ozone Monitoring Sites 2015



-  **VA Department of Environmental Quality**
-  **National Park Service**

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Sulfur Dioxide Monitoring Sites 2015

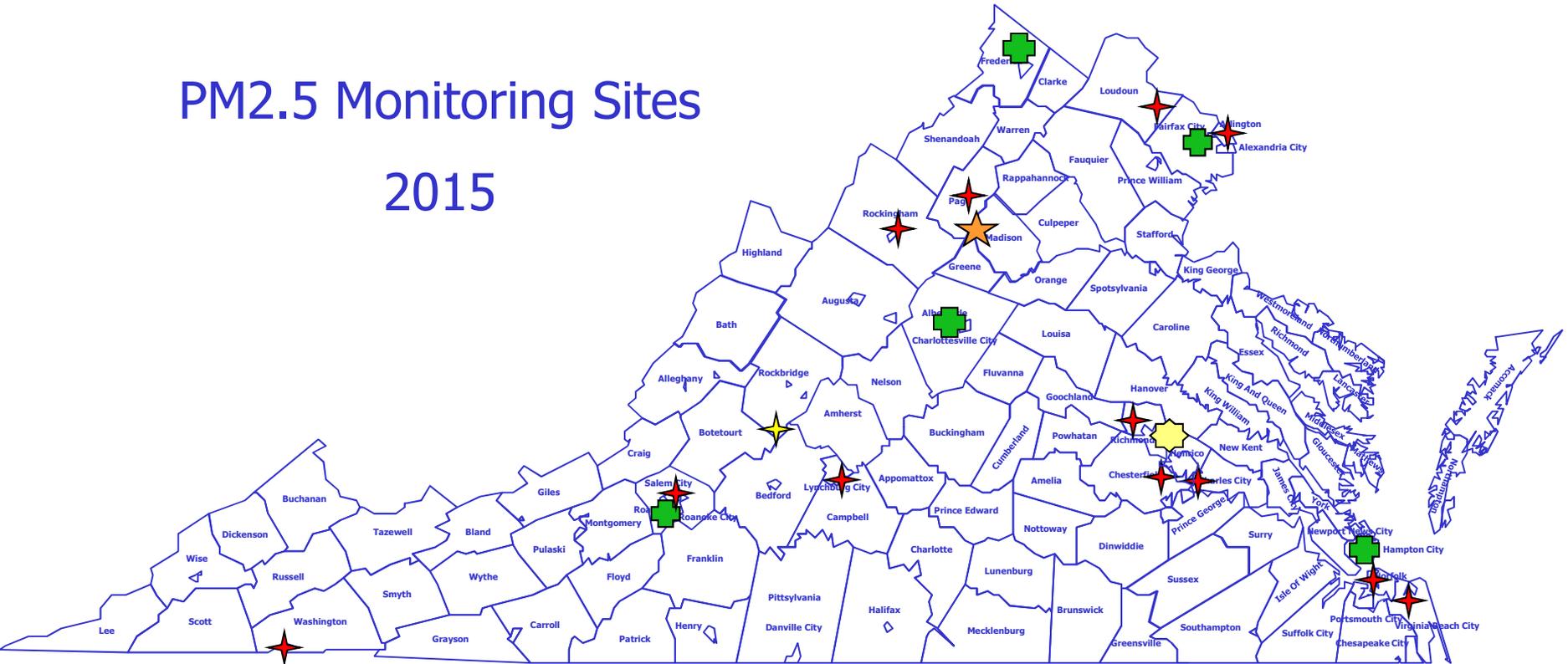


VA Department of Environmental Quality

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

PM2.5 Monitoring Sites

2015



 FRM Mass Sampler

 FRM Mass and TEOM Samplers

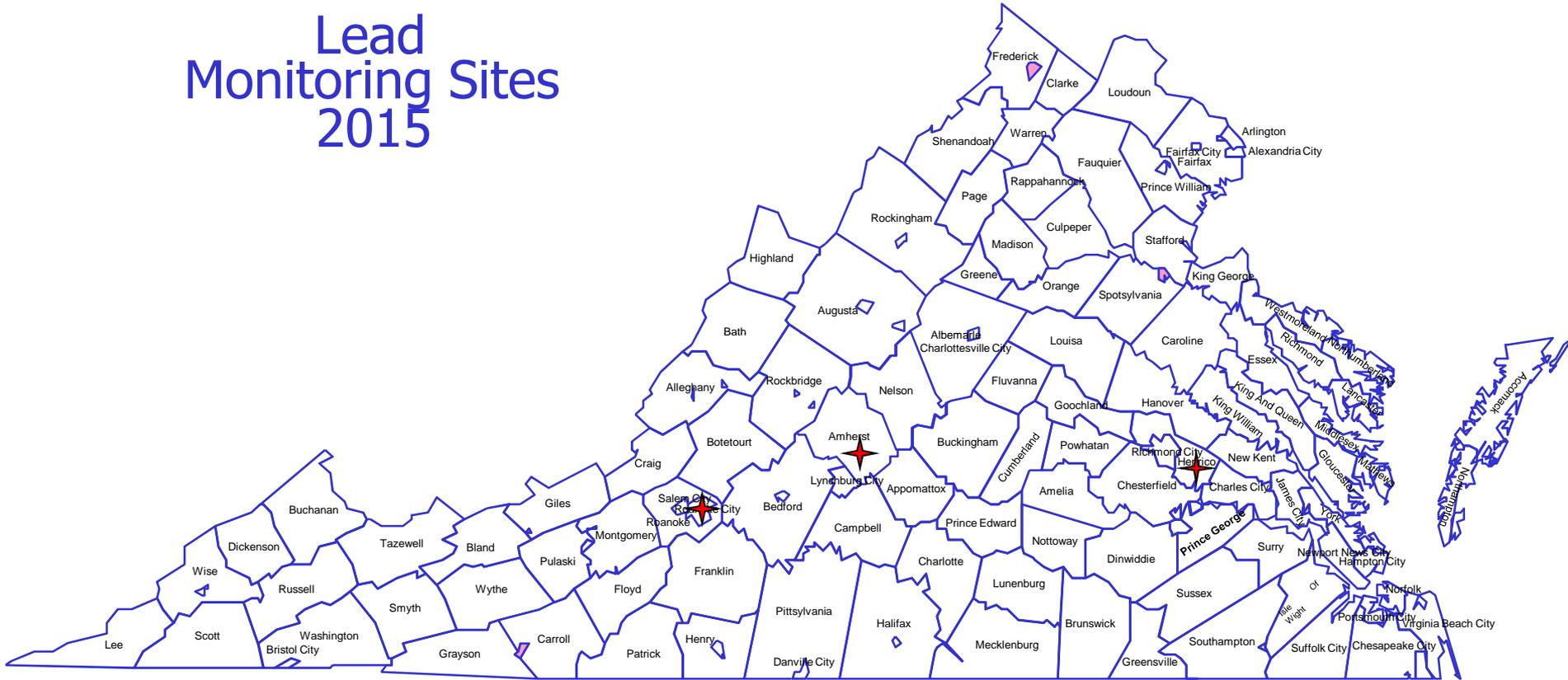
 IMPROVE sampler

 FRM Mass, Speciation, TEOM Sampler, Carbon

 TEOM & IMPROVE sampler, Big Meadows, NPS

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Lead Monitoring Sites 2015



APPENDIX A. BUCHANAN COUNTY
VANSANT LEAD (Pb) M SAMPLER WAIVER



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

COPY

JUN 17 2014

Mr. David K. Paylor, Director
Virginia Department of Environmental Quality
629 East Main Street
Richmond, VA 23219

Dear Mr. ~~Paylor~~ *David*:

By letter and enclosures dated May 6, 2014, the Virginia Department of Environmental Quality (VADEQ) submitted to the U.S. Environmental Protection Agency (EPA) a request for a waiver of the requirement for a source-oriented lead-total suspended particles (Pb-TSP) monitor in Buchanan County, VA. The basis for this request can be found in 40 CFR Part 58, Appendix D, Section 4.5(a)(ii) which allows the Regional Administrator to grant a waiver to a state agency based on evidence of ambient Pb monitoring data indicating that the maximum concentration will not exceed 50 percent of the NAAQS.

The Buchanan County, VA Pb-TSP monitor (Air Quality System ID 51-027-0006) began operating on November 1, 2010 and was shut down on December 18, 2013 due to construction and demolition activities nearby the monitor. Based on our review of Pb-TSP data for calendar years 2011 - 2013 it has been determined that there is a complete set of data as defined in 40 CFR Part 50, Appendix R, Section 4(a) and that the maximum design value is 0.01 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). This calculated design value is more than 50% below the Pb NAAQS of 0.15 $\mu\text{g}/\text{m}^3$.

Therefore, EPA grants VADEQ a waiver for the Buchanan County, VA Pb-TSP monitor. This waiver must be renewed every five years as part of the network assessment required under 40 CFR Part 58, Section 10(d).

If you have any questions please do not hesitate to contact me or have your staff contact Mr. Matt Colip, EPA's Virginia Liaison at (215) 814-5439. For questions regarding this approval action, your staff may contact Ms. Diana Esher, Director, Air Protection Division, at (215) 814-2706.

Sincerely,

Shawn M. Garvin
Regional Administrator

cc: Mr. Mike Dowd, VADEQ





COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219

Mailing address: P.O. Box 1105, Richmond, Virginia 23218

Fax: 804-698-4019 - TDD (804) 698-4021

www.deq.virginia.gov

Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4020
1-800-592-5482

May 6, 2014

Mr. Shawn Garvin
Regional Administrator
U.S. EPA Region III
1650 Arch Street
Philadelphia, PA 19103-2029

Subject: Request for Waiver of Source Oriented Lead-TSP Air Monitoring site

Dear Mr. Garvin:

Virginia Department of Environmental Quality (DEQ) is formally requesting a waiver of the requirement for a source oriented Lead-TSP monitor in Buchanan County, Virginia. Appendix D of 40 CFR part 58 requires that state agencies install source oriented monitors at locations near sources that emit more than one half ton per year of Lead air emissions. This section of the regulations also provides the criteria for requesting a waiver of this requirement. The technical and regulatory basis for this request is outlined in Attachment 1 to this letter.

The original Lead monitor had been in place since November 1, 2010. At the request of the owner, DEQ has removed the original monitor; and there is no possibility that the monitor can be rebuilt at the same location. The analytical information from this site indicates that there is no concern relative to any NAAQS compliance issues, and the maximum value for this site is well below the regulatory threshold of less than 50 percent of the ambient air standard. If you have any questions regarding this waiver request, please contact Chuck Turner, Director of DEQ's Office of Air Quality Monitoring, at (804) 527-5178. Thank you for your consideration of this request.

Sincerely,

A handwritten signature in black ink, appearing to read "David K. Paylor".

David K. Paylor

Attachments

Attachment 1. - Waiver Request, Monitoring Site EPA No. 51-027-0006, Vansant Lead TSP Site, Buchanan County, Air Quality Control Region 1

Regulatory Basis for Waiver Request

The requirement to submit an annual monitoring network plan is contained in 40 CFR §58.10 entitled "Annual monitoring network plan and periodic network assessment". Paragraph 10 of §58.10 allows for a waiver request for source oriented Lead TSP monitors according to the requirements of paragraph 4.5(a)(ii) of Appendix D to 40 CFR part 58. The basis upon which a waiver can be granted from the criteria from paragraph 4.5(a)(ii) is as follows:

the State ... can demonstrate the Pb source will not contribute to a maximum Pb concentration in ambient air in excess of 50 percent of the NAAQS (based on historical monitoring data, modeling, or other means).

Applicable Ambient Air Standard

The primary and secondary ambient air quality standard for Lead TSP is specified in 40 CFR §50.16(a) and is described as "0.15 micrograms per cubic meter, arithmetic mean concentration over a 3-month period, measured in the ambient air as Pb". The method by which compliance with these standards is demonstrated is contained in paragraph (b) of the same section which states that "The national primary and secondary ambient air quality standards for Pb are met when the maximum arithmetic 3-month mean concentration for a 3-year period, as determined in accordance with appendix R of this part, is less than or equal to 0.15 micrograms per cubic meter".

Background

The Source-oriented Lead TSP monitor located at the Vansant monitoring site (EPA no. 51-027-0006) was designated a source-oriented monitor intended to determine the ambient impacts on the ambient lead concentration from Jewell Coal and Coke Company air emissions. . The monitor was located on property owned by Consol Energy Inc. and was designated as the "VP-1 Upper Stock Pile" area in company terminology. The site began operating on November 1, 2010 and was in operation through December 18, 2014. The site was shutdown and removed at the request of the Consol Energy Inc. Consol Energy intended to demolish an existing abandoned industrial operation and repurpose the property. The monitoring site was located in the area where the demolition equipment was to be located during the demolition.

Request for Waiver

The Virginia Department of Environmental Quality is requesting a waiver of the requirement to relocate a source oriented monitor for the purpose of determining ambient lead impacts from Jewell Coal and Coke Company. The monitor has operated for more than three years so a regulatorily accurate design value for Lead can be determined. The AQS AMP 480 Design Value Report for design value year 2013 indicates that the design value for this monitor is .01 which is less than 50% of the NAAQS which is the criteria for granting the waiver. The AQS AMP 480 report is attached for your review.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
 AIR QUALITY SYSTEM
 PRELIMINARY DESIGN VALUE REPORT

Report Date: May. 5, 2014

Pollutant: Lead (TSP) LC(14129)

Design Value Year: 2013

Standard Units: Micrograms/cubic meter (LC) (105)

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

NAAQS Standard: Lead 3-Month 2009

Statistic: 3-Month Rolling Average Level: .15

State Name: Virginia

Site ID	STREET ADDRESS	2013					2012				2011				3-Year		Total Valid
		Max Value	Maximum Month	Param	Cert& Eval	Valid Months	Max Value	Maximum Month	Param	Cert& Eval	Valid Months	Max Value	Maximum Month	Param	Cert& Eval	Valid Months	
51-009-0007	788 Colony Road	.01	JAN	14129	S	12	.01	MAY	14129	12	.02	JAN	14129	12	.02	Y JAN 2011	36
51-027-0006	Route 628, Consolidated	.01	JAN	14129	S	12	.01	JAN	14129	12	.01	JAN	14129	12	.01	Y JAN 2013	36
51-087-0014	2401 HARTMAN STREET MA	.00	JAN	14129	S	12	.01	NOV	14129	9	.00	JAN	14129	12	.01	N NOV 2012	33
51-770-0011	101 CHERRY HILL CIRCLE	.11	MAY	14129	S	7	.05	JAN	14129	12	.05	APR	14129	11	.11	N MAY 2013	30

- Notes:**
1. Computed design values are a snapshot of the data at the time the report was run (may not be all data for year).
 2. Some PM2.5 24-hour DVs for incomplete data that are marked invalid here may be marked valid in the Official report due to additional analysis.
 3. Annual Values not meeting completeness criteria are marked with an asterisk ('*').