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2016-2017 Annual Monitoring Network Plan for the North Carolina Division of Air Quality

Volume 2

Site Descriptions by Air Quality Control Region and Metropolitan Statistical Area

F. The Washington Monitoring Region

July 1, 2016

Nothing Compares℠

State of North Carolina | Department of Environmental Quality | Division of Air Quality
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F. The Washington Monitoring Region

The Washington monitoring region, shown in Figure F1, consists of five sections: (1) the Greenville metropolitan statistical area, MSA, (Pitt County), (2) the Goldsboro MSA (Wayne County), (3) the New Bern MSA (Craven, Jones and Pamlico counties) (4) the non-MSA portion of the Washington monitoring region (Beaufort, Bertie, Camden, Chowan, Dare, Greene, Hertford, Hyde, Lenoir, Martin, Pasquotank, Perquimans, Tyrrell and Washington counties) and (5) the Virginia Beach-Norfolk-Newport News MSA (Currituck and Gates counties).

Figure F1. The Washington monitoring region
The red dots show the approximate locations of most of the monitoring sites in this region.

(1) The Greenville MSA

The Greenville MSA consists of Pitt County. The principal city is Greenville. The North Carolina Division of Air Quality, DAQ, operates one monitoring site in this MSA – a collocated ozone and fine particle monitoring site at the Pitt County Agricultural Center in Greenville. Table F1 summarizes site monitoring information. Figure F2 shows the site location. Both monitors began operating Apr. 1, 2008. Figure F3 through Figure F8 provide views of the site and views looking north, east, south and west from the site.

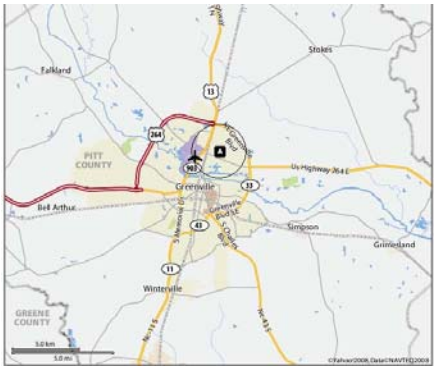


Figure F2. Locations of monitors in the Greenville MSA
A is the Pitt County Agriculture Center ozone and fine particle monitoring site. The circle represents the neighborhood scale of 4 Km.

Figure F3. Aerial view of the Pitt Co Ag Center site

Figure F4. The Pitt Co Ag Center ozone and fine particle monitoring site

Table F1. Site Table for Pitt County Agriculture Center

Site Name:	Pitt County Agriculture Center		
AQS Site Identification Number	37-147-0006		
Location:	403 Government Circle Greenville, North Carolina		
CBSA:	Greenville, NC	**CBSA #:**	24780
Latitude	35.638610	**Datum:**	WGS84
Longitude	-77.358050		
Elevation	7 meters		

Parameter Name	Method	Method Reference ID	Sample Duration	Sampling Schedule
Ozone	Instrumental With Ultra Violet Photometry (047)	EQOA-0880-047	1-Hour	Apr. 1 to Oct. 31
PM 2.5 Local Conditions	R & P Model 2025 PM2.5 Sequential w/WINS – Gravimetric Analysis (118)	RFPS-0498-118	24-Hour	Every Third Day, Year Round
PM 2.5 Local Conditions	Met One BAM-1022 Mass Monitor w/ VSCC	EQPM-1013-209	1-Hour	Year Round

Date Monitor Established:	Ozone	Apr. 1, 2008
Date Monitor Established:	PM 2.5 Local Conditions	Apr. 1, 2008
Date Monitor Established	PM 2.5 Local Conditions, continuous	Apr. 8, 2016

Nearest Road:	New Hope/Detention / Detention Drive		
Traffic Count:	None available – estimated < 3100	**Year of Count:**	2012

Parameter Name	Distance to Road	Direction to Road	Monitor Type	Statement of Purpose
Ozone	200 meters	West	SLAMS	Real-time AQI reporting. Compliance w/NAAQS.
PM 2.5 Local Conditions	200 meters	West	SLAMS	Compliance w/NAAQS.
PM 2.5 Local Conditions	200 meters	West	SPM	Real-time AQI reporting

Parameter Name	Monitoring Objective	Scale	Suitable for Comparison to NAAQS	Proposal to Move or Change
Ozone	Population Exposure	Neighborhood	Yes	None
PM 2.5 Local Conditions	Population Exposure	Neighborhood	Yes	None
PM 2.5 Local Conditions	Population Exposure	Neighborhood	No	None

Parameter Name	Meets Part 58 Appendix A Requirements	Meets Part 58 Appendix C Requirements	Meets Part 58 Appendix D Requirements	Meets Part 58 Appendix E Requirements
Ozone	Yes	Yes	Yes	Yes
PM 2.5 Local Conditions	Yes	Yes	No requirements	Yes
PM 2.5 Local Conditions	Yes	Yes	No requirements	Yes

Parameter Name	Probe Height (m)	Distance to Support	Distance to Trees	Obstacles
Ozone	2.616	1.2192 meter	>20 meters	None
PM 2.5 Local Conditions	2.286	2.06 meters	>20 meters	None
PM 2.5 Local Conditions	2.3	2 meters	>20 meters	None

Figure F5. Pitt Co Ag Center site looking north

Figure F7. Pitt Co Ag Center site looking east

Figure F6. Pitt Co Ag Center site looking west

Figure F8. Pitt Co Ag Center site looking south

In 2016 the site was relocated on the property. Details about the site relocation are provided in Volume 1, Section 2. In 2016 a continuous fine particle monitor was added to the site.

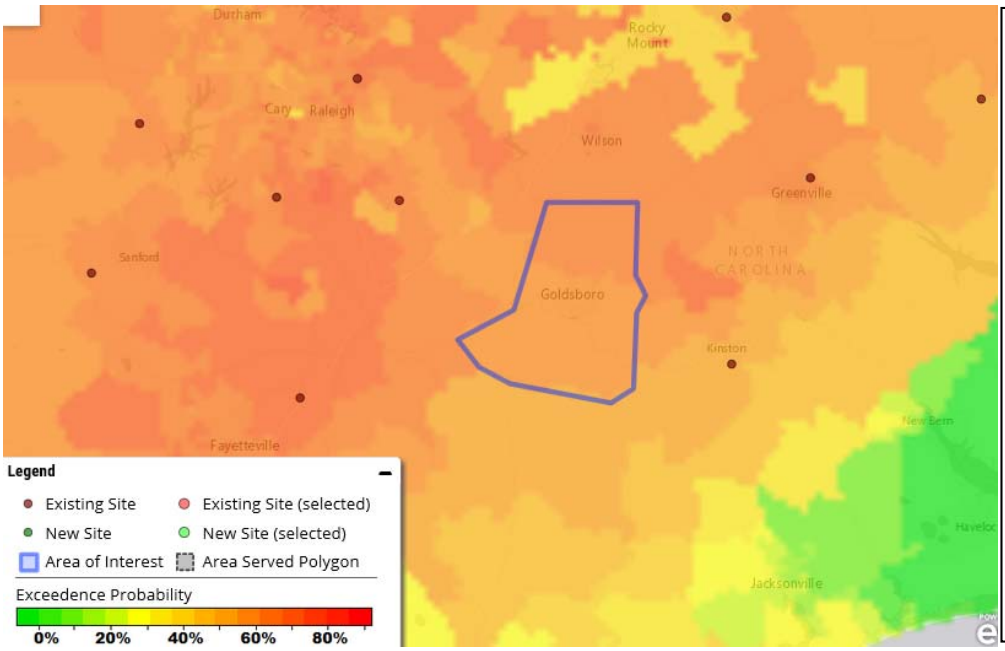
The **lead monitoring network requirements** as modified in 2016 do not result in any lead monitors in the Greenville MSA. The Greenville MSA does not have any permitted facilities located within its bounds that emit 0.5 ton or more per year of lead.[1] Changes to the **ozone monitoring requirements** in 2015 did not result in more monitoring in the Greenville MSA. The MSA currently has the minimum number of monitors required by 40 CFR 58 Appendix D for population exposure monitoring in urban areas. Ozone monitoring will begin a month earlier on Mar. 1 instead of Apr. 1 starting in 2017. The 2010 **nitrogen dioxide monitoring requirements** did not add nitrogen dioxide monitors in the Greenville MSA because the population is less than 500,000. The 2010 **sulfur dioxide monitoring requirements** also did not result in more monitoring in this area because there are no large sources of sulfur dioxide in the MSA. The changes to the **carbon monoxide monitoring requirements** did not result in additional monitoring in this MSA because the population is less than one million.

[1] Data obtained from the DAQ emission inventory database.

(2) The Goldsboro MSA

The Goldsboro MSA consists of Wayne County. The major metropolitan area is the City of Goldsboro. The DAQ does not operate any monitoring sites in the Goldsboro MSA. The fine-particle monitoring site located at Dillard Middle School was shut down on Dec. 31, 2015.

Currently, the DAQ does not monitor for ozone in Goldsboro because there are ozone monitors in the neighboring counties of Johnston and Lenoir. Figure F9 shows the locations of these monitors as well as the Leggett and Pitt County monitors in relation to the Goldsboro MSA. Modeling also indicates that the probability of there being an exceedance of the 2015 ozone standard in the Goldsboro is area is only moderate, around 50 percent. The surrounding ozone monitors should adequately characterize the ozone concentrations in the Goldsboro area.



The Goldsboro MSA is outlined in blue. The West Johnston ozone monitor is to the west; the Leggett ozone monitor is to the north northeast; the Pitt Co Ag Center ozone monitor is to the northeast; the Lenoir Community College ozone monitor is to the east; the Wade ozone monitor is to the southwest of Goldsboro.

Figure F9. Ozone monitors surrounding the Goldsboro MSA and probability of exceeding the 2015 ozone standard

The **lead monitoring network** requirements as modified in 2016 do not add any lead monitors in the Goldsboro MSA. The Goldsboro MSA does not have any permitted facilities located within its bounds that emit 0.5 tons or more per year of lead.

The 2010 **nitrogen dioxide monitoring requirements** also did not increase the number of monitors in the Goldsboro MSA because its population is less than 500,000. The 2010 **sulfur dioxide monitoring requirements** did not result in additional sulfur dioxide monitors because there are not enough emissions or people in the MSA to require PWEI monitoring. The 2011 changes to the **carbon monoxide monitoring requirements** also did not result in the addition of any carbon monoxide monitors because the population is less than one million.

(3) The New Bern MSA

The New Bern MSA is made up of three counties – Craven, Jones and Pamlico counties. The DAQ currently does not operate any monitoring stations in the New Bern MSA. The current monitoring regulations do not require the DAQ to operate any monitors in this area.

The **lead monitoring** network requirements as modified in 2016 do not require lead monitors in the New Bern MSA. The MSA does not have any permitted facilities located within its bounds that emit 0.5 tons or more of lead per year.[2]

The 2015 **ozone monitoring requirements** did not require adding an ozone monitor to the New Bern MSA. As shown in Figure F10, modeling indicates that the area has a low probability of exceeding the current ozone standard. The DAQ operates an ozone monitor just to the west of the MSA at Lenoir Community College, which has a higher probability of exceeding the standard than anywhere in the MSA. The EPA operates a Clean Air Status and Trends Network, CASTNET, monitor just to the east of the MSA. These two monitors should adequately characterize ozone concentrations in this area.

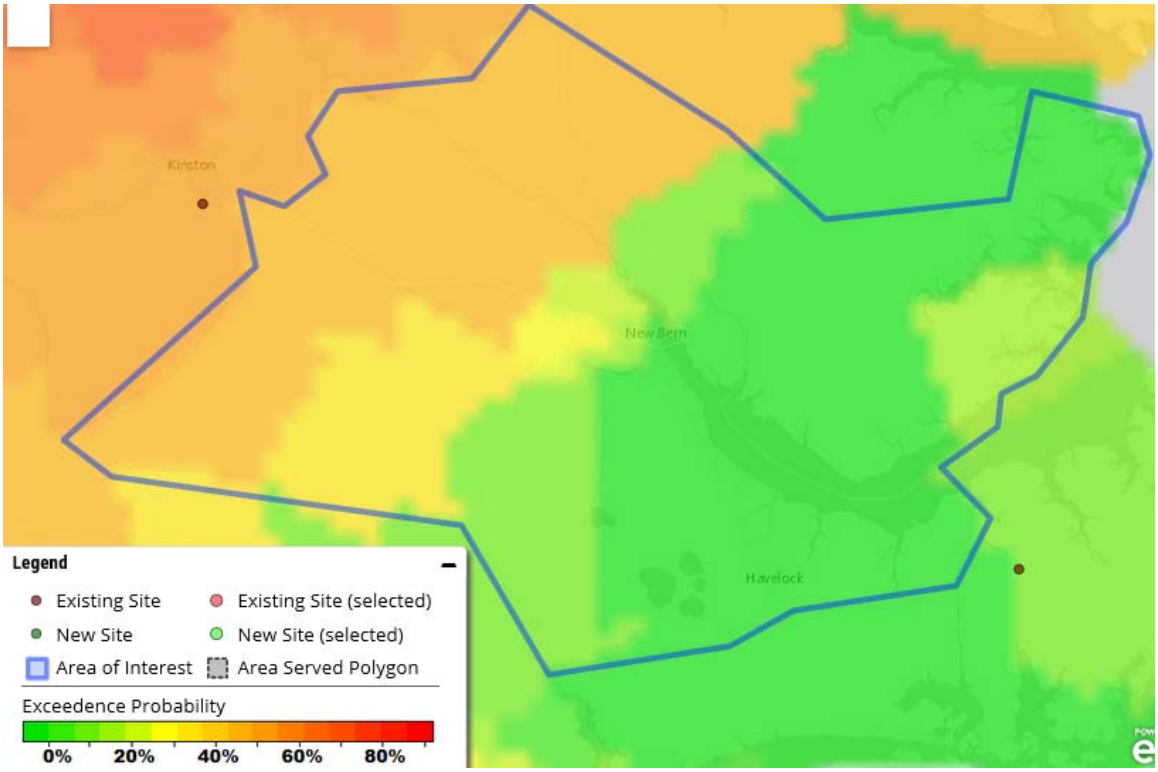


Figure F10. Map of ozone exceedance probability for the New Bern MSA

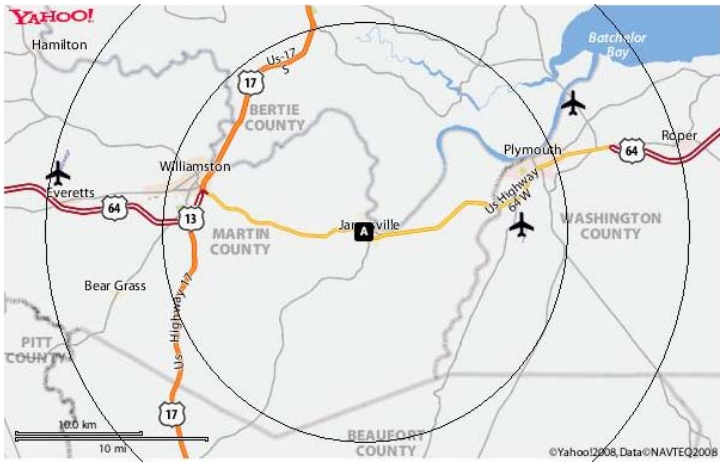
This area also did not have to add any monitors to comply with the 2010 **nitrogen dioxide monitoring** requirements because it does not have any roadways that exceed the population threshold. It also did not need to add monitors for the 2010 **sulfur dioxide monitoring**

[2] Data obtained from the DAQ emission inventory database.

requirements because there are no facilities in the MSA emitting large enough quantities of sulfur dioxide to trigger source-oriented monitoring. This area will also not need to add monitors to comply with the **changes to the carbon monoxide monitoring requirements** because the population is less than one million.

(4) The Non-MSA Portion of the Washington Monitoring Region

The non-MSA Portion of the Washington monitoring region consists of 14 counties: Beaufort, Bertie, Camden, Chowan, Dare, Greene, Hertford, Hyde, Lenoir, Martin, Pasquotank, Perquimans, Tyrrell and Washington. No MSAs are located here. The Kill Devil Hills micropolitan statistical area, MiSA, is in Dare County and the Washington MiSA is in Beaufort County. Camden, Pasquotank and Perquimans counties are included in the Elizabeth City MiSA. The Kinston MiSA is located in Lenoir County. The DAQ operates three monitoring sites in this area. These sites are located at Jamesville in Martin County, at Lenoir Community College in Lenoir County and at the Bayview Ferry in Beaufort County. Figure F11 shows the location of the Jamesville monitoring site.



A is the Jamesville site. The circles approximate the scale of representation for the monitors (the ozone monitor is urban – 4 to 50 Km - inner circle; the particle monitor is regional - 50 Km plus - outer circle).

Figure F11. Location of the Jamesville monitoring site

Figure F12. Jamesville ozone, particle and sulfur dioxide monitoring site

At the **Jamesville** site, 37-117-0001, the DAQ operates a seasonal ozone monitor, a special purpose sulfur dioxide monitor that operates for 12 months every three years and a special purpose PM_{10} monitor that operates for 12 months every three years. Figure F12 through Figure F20 provide a view of the Jamesville site as well as views looking north, northeast, east, southeast, south, southwest, west and northwest from the site. The fine-particle monitors at this site were shut down on Dec. 31, 2015.

Figure F13. Looking north from the Jamesville site

Figure F14. Looking northwest from the Jamesville site

Figure F15. Looking west from the Jamesville site

Figure F16. Looking southwest from the Jamesville site

Figure F17. Looking northeast from the Jamesville site

Figure F18. Looking east from the Jamesville site

Figure F19. Looking southeast from the Jamesville site

Figure F20. Looking south from the Jamesville site

At the **Bayview** Ferry site in Beaufort County the DAQ operates a sulfur dioxide monitor. This site began operating in January 2011 to replace the Aurora sulfur dioxide monitoring site. Figure F21 shows the locations of the two sites. In 2010 the PCS Phosphate manufacturing facility started logging near the Aurora sulfur dioxide monitoring site, located on the fence-line of their manufacturing facility. Although PCS rerouted the logging trucks so they no longer went by the monitoring station and indicated the area near the monitoring site was not scheduled to be mined until sometime around 2015, the DAQ relocate the monitor across the Pamlico River to the Bayview Ferry station because more people live there and the new site is downwind of the PCS facility. Figure F22 to Figure F26 show the site and views looking north, east, south and west. This site is source-oriented, located downwind of the PCS Phosphate facility in Beaufort County.

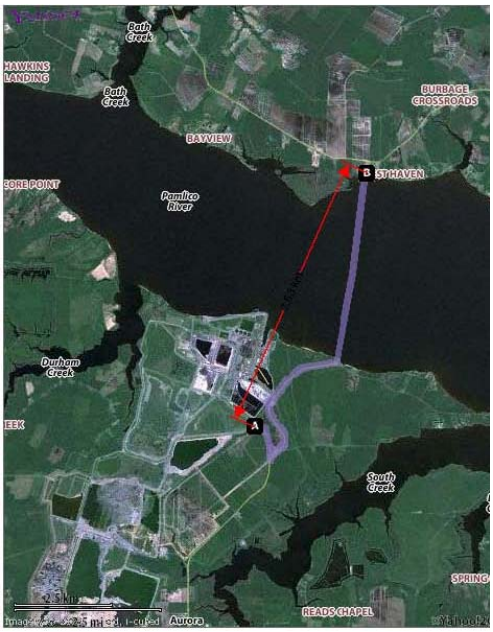


Figure F21. Location of the Bayview Ferry site (B) relative to the Aurora site (A)

Figure F22. Bayview Ferry sulfur dioxide monitoring site

Figure F23. Looking north from the Bayview Ferry site

Figure F25. Looking east from the Bayview Ferry site

Figure F24. Looking west from the Bayview Ferry site

Figure F26. Looking south from the Bayview Ferry site

At the **Lenoir Community College** site, 37-107-0004, the DAQ operates a seasonal ozone monitor. In 2009, a screen was installed between the monitoring site and nearby baseball field to block glare from an observatory from interfering with the people playing baseball. In 2010, a large scoreboard was also installed. As a result, in 2011, the DAQ moved the site to another location on the campus. Figure F27 shows the locations of the old monitoring site and the new monitoring site to the west. The monitoring site and views looking north, east, south and west are provided in Figure F28 through Figure F32. The collocated meteorological tower measuring wind speed, wind direction, two-meter and 10-meter ambient temperature, relative humidity, solar radiation and rain fall was shut down on Nov. 3, 2014. The fine particle monitor at this site was shut down at the end of 2013.

Figure F27. New and old LCC monitoring site locations

Figure F28. Lenoir Community College ozone monitoring site

Figure F29. Looking north from the LCC site location

Figure F31. Looking east from the LCC site location

Figure F30. Looking west from the LCC site location

Figure F32. Looking south from the LCC site location

In 2008 EPA expanded the **lead monitoring network** to support the lower lead NAAQS of 0.15 micrograms per cubic meter promulgated in 2008. In 2010, the EPA focused monitoring efforts on fence line monitoring located at facilities that emit 0.5 tons or more of lead per year and at National Core, NCore, monitoring sites. The December 2010 changes to the lead monitoring network requirements did not require lead monitoring in this area of the Washington monitoring

region. The non-MSA portion of the Washington monitoring region does not have any NCore monitoring sites and does not have any permitted facilities located within its bounds that emit 0.5 tons or more of lead per year.[3]

2015 **ozone monitoring requirements** require monitoring to start one month earlier on Mar. 1 instead of Apr. 1 starting in 2017. The 2010 **nitrogen dioxide monitoring** requirements did not result in additional monitoring in this area because there is not an MSA with a population of 500,000 or more and there are not any roadways that exceed the traffic threshold. The DAQ does not expect the 2010 **sulfur dioxide monitoring** requirements to increase the number of monitors in this area because the DAQ believes the existing source-oriented monitor at Bayview is adequate and appropriately sited to serve as the required source-oriented monitor for the PCS Phosphate facility. The 2011 **changes to the carbon monoxide monitoring requirements** will not add additional monitors to the area because the population is under one million.

(5) The Virginia Beach-Norfolk-Newport News MSA

The North Carolina portion of the Virginia Beach-Norfolk-Newport News MSA is made up of two counties - Currituck and Gates. The DAQ currently does not operate any monitoring sites in these two counties. The DAQ has an agreement with Virginia that Virginia will fulfill all of North Carolina's monitoring requirements for the Currituck and Gates County portion of the Virginia Beach-Norfolk-Newport News MSA.[4]

The **lead monitoring** network requirements as modified in 2016 do not require any lead monitoring in these counties. These counties do not have any permitted facilities located within their bounds that emit 0.5 tons or more of lead per year.[5]

The 2015 **ozone monitoring requirements** did not add monitors to these counties. They are part of an MSA that already meets the population exposure monitoring requirements for urban areas.

This area is not required to add monitors to comply with the 2010 **nitrogen dioxide monitoring** requirements because it does not have any roadways that exceed the traffic threshold. It also is not required to monitor by the 2010 **sulfur dioxide monitoring requirements** because there are no facilities in these counties emitting large enough quantities of sulfur dioxide to trigger source-oriented monitoring. This area will also not need to monitor to meet the **carbon monoxide monitoring requirements** because those requirements will be met by Virginia.

[3] Ibid.
[4] North Carolina - Virginia Monitoring Agreement, 05/09/2016, available at http://xapps.ncdenr.org/aq/documents/DocsSearch.do?dispatch=download&documentId=7862.
[5] Data obtained from the DAQ emission inventory database.

Appendix F.1 Annual Network Site Review Forms for 2015

Pitt County Agricultural Center in Greenville

Jamesville

Bayview Ferry

Lenoir Community College in Kinston

Site Review Form Calendar Year 2015

Site Information

Region WARO	**Site Name** Pitt Ag	**AQS Site # 37-147-0006**
Street Address 300-500 Government Circle		**City** Greenville
Urban Area GREENVILLE	**Core-based Statistical Area** Greenville, NC	

Enter Exact		
Longitude -77.357994	**Latitude** 35.638662	**Method of Measuring**
In Decimal Degrees	In Decimal Degrees	**Other (explain)** **Explanation: Google Earth**
Elevation Above/below Mean Sea Level (in meters)		7

Name of nearest road to inlet probe SR 1529 ADT 3200 Year latest available 2014

Comments: _____

Distance of site to nearest major road (m) 643.47 Direction from site to nearest major road SSW

Name of nearest major road Hwy 33 ADT 9200 Year 2014

Comments: _____

Site located near electrical substation/high voltage power lines? Yes ☒ No ☐

Distance of site to nearest railroad track	(m) 256 Direction to RR SSW ☐NA
Distance of site to nearest power pole w/transformer	(m) 12 Direction SE

Distance between site and drip line of water tower (m) _____ Direction from site to water tower _____ ☒NA

Explain any sources of potential bias; include cultivated fields, loose bulk storage, stacks, vents, railroad tracks, construction activities, fast food restaurants, and swimming pools.

Site will be moved in 2016.

ANSWER ALL APPLICABLE QUESTIONS:

Parameters	Monitoring Objective	Scale	Monitor Type
☐ NA ☐ SO_2 (NAAQS) ☐ SO_2 (trace-level) ☐ NO_x (NAAQS) ☐ $HSNO_y$ ☒ O_3 ☐ NH_3 ☐ Hydrocarbon ☐ Air Toxics ☐ HSCO (Not Micro) ☐ CO (trace-level)	☐ General/Background ☐ Highest Concentration ☐ Max O3 Concentration ☒ Population Exposure ☐ Source Oriented ☐ Transport ☐ Upwind Background ☐ Welfare Related Impacts	☐ Micro ☐ Middle ☒ Neighborhood ☐ Urban ☐ Regional	☒ SLAMS ☐ SPM **Monitor Network Affiliation** ☐ NCORE ☐ Unofficial PAMS

Probe inlet height (from ground) 2-15 m? Yes ☒ No ☐ Give actual measured height from ground (meters) 2.61

Distance of outer edge of probe inlet from horizontal (wall) and/or vertical (roof) supporting structure > 1 m? Yes ☒ No ☐
Actual measured distance from outer edge of probe to supporting structure (meters) 1.21

Distance of outer edge of probe inlet from other monitoring probe inlets > 1 m? Yes ☒ No ☐ NA ☐

Is probe > 20 m from the nearest tree drip line? Yes ☒ *No ☐ (answer *'d questions)

*Is probe > 10 m from the nearest tree drip line? Yes ☐ *No ☐

*Distance from probe to tree (m) _____ Direction from probe to tree ___ *Height of tree (m) _____

Are there any obstacles to air flow? *Yes ☐ (answer *'d questions) No ☒

*Identify obstacle _____ Distance from probe inlet (m) _____ Direction from probe inlet to obstacle ___

*Is distance from inlet probe to obstacle at least twice the height that the obstacle protrudes above the probe? Yes ☐ No ☐

Distance of probe to nearest traffic lane (m) 72 Direction from probe to nearest traffic lane S

Site Review Form Calendar Year 2015

Parameters	Monitoring Objective	Scale	Monitor Type
☐ NA ☐ NO_y (trace-level)	☐ General/Background_____ ☐ Highest Concentration_____ ☐ Max O3 Concentration_____ ☐ Population Exposure_____ ☐ Source Oriented_____ ☐ Transport_____ ☐ Upwind Background_____ ☐ Welfare Related Impacts _____	☐ Micro_____ ☐ Middle_____ ☐ Neighborhood_____ ☐ Urban_____ ☐ Regional_____	☐ SLAMS _____ ☐ SPM_____ **Monitor Network Affiliation** ☐ NCORE_____

Probe inlet height (from ground) 10-15 m? Yes ☐ No ☐
Actual measured distance from probe inlet to ground (meters) _____

Distance of outer edge of probe inlet from horizontal and/or vertical supporting structure > 1 m? Yes ☐ No ☐
Actual measured distance from outer edge of probe inlet to supporting structure (meters) _____

Distance of outer edge of probe inlet from other monitoring probe inlets > 1 m? Yes ☐ No ☐ NA ☐

Is probe > 20 m from the nearest tree drip line? Yes ☐ *No ☐ (answer *'d questions)

*Is probe > 10 m from the nearest tree drip line? Yes ☐ *No ☐
*Distance from probe to tree (m) _____ Direction from probe to tree ___ *Height of tree (m) _____

Are there any obstacles to air flow? *Yes ☐ (answer *'d questions) No ☐

*Identify obstacle _____ Distance from probe inlet (m) _____Direction from probe inlet to obstacle ___
*Is distance from inlet probe to obstacle at least twice the height that the obstacle protrudes above the probe? Yes ☐ No ☐

Distance of probe to nearest traffic lane (m) _____ Direction from probe to nearest traffic lane ___

Parameters	Monitoring Objective	Scale	Monitor Type
☐ NA Air flow > 200 L/min ☐ PM10 ☐ TSP ☐ TSP Pb	☐ Highest Concentration_____ ☐ Population Exposure_____ ☐ Source Oriented_____ ☐ Background_____ ☐ Transport_____ ☐ Welfare Related Impacts _____	☐ Micro_____ ☐ Middle_____ ☐ Neighborhood_____ ☐ Urban_____ ☐ Regional_____	☐ SLAMS _____ ☐ SPM_____ **Monitor Network Affiliation** ☐ NCORE_____

Probe inlet height (from ground) ☐ < 2 m _____ ☐ 2-7m _____ ☐ 7-15 m _____ ☐ > 15 m_____

Actual measured distance from probe inlet to ground (meters) _____

Distance of outer edge of probe inlet from horizontal (wall) and/or vertical (platform or roof) supporting structure > 2 m?
Actual measured distance from probe to supporting structure (meters) _____ Yes ☐ No ☐

Entire inlet opening of collocated PM-10, TSP or TSP Pb Samplers (X) within 2 to 4 m of each other? Yes ☐ No ☐ NA ☐

Actual measured distance (X) including entire inlet openings of both (all) collocated probe inlets (meters) _____

Distance (Y) between outer edge of any high volume inlet and any other high or low volume inlet ≥ 2 m? Yes ☐ No ☐ NA ☐

Is probe > 20 m from the nearest tree drip line? Yes ☐ *No ☐ (answer *'d questions)

*Is probe > 10 m from the nearest tree drip line? Yes ☐ *No ☐
*Distance from probe to tree (m) _____ Direction from probe to tree ___ *Height of tree (m) _____

Are there any obstacles to air flow? *Yes ☐ (answer *'d questions) No ☐

*Identify obstacle _____ Distance from probe inlet (m) _____Direction from probe inlet to obstacle ___
*Is distance from inlet probe to obstacle at least twice the height that the obstacle protrudes above the probe? Yes ☐ No ☐

Distance of probe to nearest traffic lane (m) _____ Direction from probe to nearest traffic lane ___

Site Review Form Calendar Year 2015

Parameters	Monitoring Objective	Scale	Site Type
☐ NA Air flow < 200 L/min ☒ PM2.5 FRM ☐ PM10 FRM ☐ PM10 Cont. (BAM) ☐ PM10-2.5 FRM ☐ PM10-2.5 BAM ☐ PM10 Lead (PB) ☐ PM2.5 Cont. (TEOM) ☐ PM2.5 Cont. (BAM) ☐ PM2.5 Spec. (SASS) ☐ PM2.5 Spec. (URG) ☐ PM2.5 Cont. Spec.	☐ General/Background ☐ Highest Concentration ☒ Population Exposure ☐ Source Oriented ☐ Transport ☐ Welfare Related Impacts	☐ Micro ☐ Middle ☒ Neighborhood ☐ Urban ☐ Regional	☒ SLAMS ☐ SPM **Monitor Network Affiliation** ☐ NCORE ☐ SUPPLEMENTAL SPECIATION **Monitor NAAQS Exclusion** ☐ NONREGULATORY

Probe inlet height (from ground) ☐ < 2 m ☒ 2-7m ☐ 7-15 m ☐ > 15 m
Actual measured distance from probe inlet to ground (meters) 2.286

Distance of outer edge of probe inlet from horizontal (wall) and/or vertical (platform or roof) supporting structure > 2 m?
Actual measured distance from outer edge of probe inlet to supporting structure (meters) 2.06 Yes ☒ No ☐

Distance (Y) between outer edge of probe inlets of any low volume monitor and any other low volume monitor at the site = 1 m or greater? Yes ☐ No ☐ NA ☒
Distance (Y) between outer edge of all low volume monitor inlets and any Hi-Volume PM-10 or TSP inlet = 2 m or greater? Yes ☐ No ☐ NA ☒

Are collocated PM2.5 Monitors (Two FRMs, FRM & BAM, FRM & TEOM, BAM & TEOM) Located at Site? *Yes ☐ (answer *'d questions) No ☒ NA ☐
* Entire inlet opening of collocated PM 2.5 samplers (X) within 2 to 4 m of each other? Yes ☐ No ☐ Give actual (meters) ____
*Are collocated PM2.5 sampler inlets within 1 m vertically of each other? Yes ☐ No ☐ Give actual (meters) ____

Is an URG 3000 monitor collocated with a SASS monitor at the site? *Yes ☐ (answer *'d questions) No ☐ NA ☒
* Entire inlet opening of collocated speciation samplers inlets (X) within 2 to 4 m of each other? Yes ☐ No ☐
Give actual (meters) ____
* Are collocated speciation sampler inlets within 1 m vertically of each other? Yes ☐ No ☐ Give actual (meters) ____

Is a low-volume PM10 monitor collocated with a PM2.5 monitor at the site to measure PM10-2.5? *Yes ☐ (answer *'d questions) No ☒ NA ☐
* Entire inlet opening of collocated PM10 and PM2.5samplers for PM10-2.5 (X) within 2 to 4 m of each other? Yes ☐ No ☐
*Are collocated PM10 and PM2.5 sampler inlets within 1 m vertically of each other? Yes ☐ No ☐

Is probe > 20 m from the nearest tree drip line? Yes ☒ *No ☐ (answer *'d questions)
*Is probe > 10 m from the nearest tree drip line? Yes ☐ *No ☐
*Distance from probe to tree (m) ____ Direction from probe to tree ___ *IIeight of tree (m) ____

Are there any obstacles to air flow? *Yes ☐ (answer *'d questions) No ☒
*Identify obstacle ___ Distance from probe inlet (m) ____Direction from probe inlet to obstacle ___
*Is distance from inlet probe to obstacle at least twice the height that the obstacle protrudes above the probe? Yes ☐ No ☐

Distance of probe to nearest traffic lane (m) 68 Direction from probe to nearest traffic lane S

RECOMMENDATIONS:
1) Maintain current site status? Yes ☒ *No ☐ (answer *'d questions)
*2) Change monitoring objective? Yes ☐ (enter new objective ____) No ☐-
*3) Change scale of representativeness? Yes ☐ (enter new scale) No ☐
*4) Relocate site? Yes ☒ No ☐

Comments: The Building at this site (Pitt Ag) will be moved to a different location on the same property for 2016. The cuurrent building will be replaced with a new one. A BAM 1022 is scheduled to be added to the site in 2016. When the process of moving is complete, new pictures of the site will be provided.

Date of Last Site Pictures 2012 New Pictures Submitted? Yes ☐ No ☒

Reviewer Peter Susi Date December 2, 2015

Ambient Monitoring Coordinator Steven Daniels Date1/20/2016

Site Review Form Calendar Year 2015

Site Information

Region WARO	**Site Name** Jamesville	**AQS Site # 37-117-0001**
Street Address 1210 Hayes Street		**City** Jamesville
Urban Area Not in an Urban Area	**Core-based Statistical Area** None	

Enter Exact		
Longitude -76.906249	**Latitude** 35.81066	**Method of Measuring**
In Decimal Degrees	In Decimal Degrees	**Other (explain)** **Explanation: Goggle Earth**

Elevation Above/below Mean Sea Level (in meters) ____

Name of nearest road to inlet probe Hayes Street ADT _____ Year latest available _____

Comments: Dead end, unpaved road (ADT not avaliable)

Distance of site to nearest major road (m) 119.00 Direction from site to nearest major road SSW

Name of nearest major road US 64 Bypass ADT 6800 Year 2013

Comments: _____

Site located near electrical substation/high voltage power lines? Yes ☐ No ☒

Distance of site to nearest railroad track	(m) 175 Direction to RR SSW ☐NA
Distance of site to nearest power pole w/transformer	(m) 50 Direction NNE

Distance between site and drip line of water tower (m) _____ Direction from site to water tower _____ ☒NA

Explain any sources of potential bias; include cultivated fields, loose bulk storage, stacks, vents, railroad tracks, construction activities, fast food restaurants, and swimming pools.

Cultivated Fields

ANSWER ALL APPLICABLE QUESTIONS:

Parameters	Monitoring Objective	Scale	Monitor Type
☐ NA ☐ SO_2 (NAAQS) ☐ SO_2 (trace-level) ☐ NO_x (NAAQS) ☐ $HSNO_y$ ☒ O_3 ☐ NH_3 ☐ Hydrocarbon ☐ Air Toxics ☐ HSCO (Not Micro) ☐ CO (trace-level)	☒ General/Background ☐ Highest Concentration ☐ Max O3 Concentration ☐ Population Exposure ☐ Source Oriented ☐ Transport ☐ Upwind Background ☐ Welfare Related Impacts	☐ Micro ☐ Middle ☐ Neighborhood ☐ Urban ☒ Regional	☐ SLAMS ☐ SPM **Monitor Network Affiliation** ☐ NCORE ☐ Unofficial PAMS

Probe inlet height (from ground) 2-15 m? Yes ☒ No ☐ Give actual measured height from ground (meters) 4.50

Distance of outer edge of probe inlet from horizontal (wall) and/or vertical (roof) supporting structure > 1 m? Yes ☒ No ☐
Actual measured distance from outer edge of probe to supporting structure (meters) 1.80

Distance of outer edge of probe inlet from other monitoring probe inlets > 1 m? Yes ☐ No ☐ NA ☒

Is probe > 20 m from the nearest tree drip line? Yes ☒ *No ☐ (answer *'d questions)

*Is probe > 10 m from the nearest tree drip line? Yes ☐ *No ☐

*Distance from probe to tree (m) _____ Direction from probe to tree ___ *Height of tree (m) _____

Are there any obstacles to air flow? *Yes ☐ (answer *'d questions) No ☒

*Identify obstacle _____ Distance from probe inlet (m) _____ Direction from probe inlet to obstacle ___

*Is distance from inlet probe to obstacle at least twice the height that the obstacle protrudes above the probe? Yes ☐ No ☐

Distance of probe to nearest traffic lane (m) 129 Direction from probe to nearest traffic lane SSW

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Parameters	Monitoring Objective	Scale	Monitor Type
☒ NA ☐ NO_y (trace-level)	☐ General/Background_____ ☐ Highest Concentration_____ ☐ Max O3 Concentration_____ ☐ Population Exposure_____ ☐ Source Oriented_____ ☐ Transport_____ ☐ Upwind Background_____ ☐ Welfare Related Impacts _____	☐ Micro_____ ☐ Middle_____ ☐ Neighborhood_____ ☐ Urban_____ ☐ Regional_____	☐ SLAMS _____ ☐ SPM_____ **Monitor Network Affiliation** ☐ NCORE_____

Probe inlet height (from ground) 10-15 m? Yes ☐ No ☐
Actual measured distance from probe inlet to ground (meters) _____

Distance of outer edge of probe inlet from horizontal and/or vertical supporting structure > 1 m? Yes ☐ No ☐
Actual measured distance from outer edge of probe inlet to supporting structure (meters) _____

Distance of outer edge of probe inlet from other monitoring probe inlets > 1 m? Yes ☐ No ☐ NA ☐

Is probe > 20 m from the nearest tree drip line? Yes ☐ *No ☐ (answer *'d questions)

*Is probe > 10 m from the nearest tree drip line? Yes ☐ *No ☐
*Distance from probe to tree (m) _____ Direction from probe to tree ___ *Height of tree (m) _____

Are there any obstacles to air flow? *Yes ☐ (answer *'d questions) No ☐

*Identify obstacle _____ Distance from probe inlet (m) _____Direction from probe inlet to obstacle ___
*Is distance from inlet probe to obstacle at least twice the height that the obstacle protrudes above the probe? Yes ☐ No ☐

Distance of probe to nearest traffic lane (m) _____ Direction from probe to nearest traffic lane ___

Parameters	Monitoring Objective	Scale	Monitor Type
☒ NA Air flow > 200 L/min ☐ PM10 ☐ TSP ☐ TSP Pb	☐ Highest Concentration_____ ☐ Population Exposure_____ ☐ Source Oriented_____ ☐ Background_____ ☐ Transport_____ ☐ Welfare Related Impacts _____	☐ Micro_____ ☐ Middle_____ ☐ Neighborhood_____ ☐ Urban_____ ☐ Regional_____	☐ SLAMS _____ ☐ SPM_____ **Monitor Network Affiliation** ☐ NCORE_____

Probe inlet height (from ground) ☐ < 2 m _____ ☐ 2-7m _____ ☐ 7-15 m _____ ☐ > 15 m_____

Actual measured distance from probe inlet to ground (meters) _____

Distance of outer edge of probe inlet from horizontal (wall) and/or vertical (platform or roof) supporting structure > 2 m?
Actual measured distance from probe to supporting structure (meters) _____ Yes ☐ No ☐

Entire inlet opening of collocated PM-10, TSP or TSP Pb Samplers (X) within 2 to 4 m of each other? Yes ☐ No ☐ NA ☐

Actual measured distance (X) including entire inlet openings of both (all) collocated probe inlets (meters) _____

Distance (Y) between outer edge of any high volume inlet and any other high or low volume inlet ≥ 2 m? Yes ☐ No ☐ NA ☐

Is probe > 20 m from the nearest tree drip line? Yes ☐ *No ☐ (answer *'d questions)

*Is probe > 10 m from the nearest tree drip line? Yes ☐ *No ☐
*Distance from probe to tree (m) _____ Direction from probe to tree ___ *Height of tree (m) _____

Are there any obstacles to air flow? *Yes ☐ (answer *'d questions) No ☐

*Identify obstacle _____ Distance from probe inlet (m) _____Direction from probe inlet to obstacle ___
*Is distance from inlet probe to obstacle at least twice the height that the obstacle protrudes above the probe? Yes ☐ No ☐

Distance of probe to nearest traffic lane (m) _____ Direction from probe to nearest traffic lane ___

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Parameters	Monitoring Objective	Scale	Site Type
☐ NA Air flow < 200 L/min ☒ PM2.5 FRM ☒ PM10 FRM ☐ PM10 Cont. (BAM) ☐ PM10-2.5 FRM ☐ PM10-2.5 BAM ☐ PM10 Lead (PB) ☐ PM2.5 Cont. (TEOM) ☒ PM2.5 Cont. (BAM) ☐ PM2.5 Spec. (SASS) ☐ PM2.5 Spec. (URG) ☐ PM2.5 Cont. Spec.	☒ General/Background _____ ☐ Highest Concentration _____ ☐ Population Exposure _____ ☐ Source Oriented _____ ☐ Transport _____ ☐ Welfare Related Impacts _____	☐ Micro _____ ☐ Middle _____ ☐ Neighborhood _____ ☐ Urban _____ ☒ Regional _____	☒ SLAMS _____ ☐ SPM_____ **Monitor Network Affiliation** ☐ NCORE _____ ☐ SUPPLEMENTAL SPECIATION _____ **Monitor NAAQS Exclusion** ☐ NONREGULATORY_____

Probe inlet height (from ground) ☐ < 2 m _____ ☒ 2-7m _____ ☐ 7-15 m _____ ☐ > 15 m _____
Actual measured distance from probe inlet to ground (meters) 2.3

Distance of outer edge of probe inlet from horizontal (wall) and/or vertical (platform or roof) supporting structure > 2 m?
Actual measured distance from outer edge of probe inlet to supporting structure (meters) 2.06 Yes ☒ No ☐

Distance (Y) between outer edge of probe inlets of any low volume monitor and any other low volume monitor at the site = 1 m or greater? Yes ☒ No ☐ NA ☐
Distance (Y) between outer edge of all low volume monitor inlets and any Hi-Volume PM-10 or TSP inlet = 2 m or greater? Yes ☐ No ☐ NA ☒

Are collocated PM2.5 Monitors (Two FRMs, FRM & BAM, FRM & TEOM, BAM & TEOM) Located at Site? *Yes ☒ (answer *'d questions) No ☐ NA ☐
* Entire inlet opening of collocated PM 2.5 samplers (X) within 2 to 4 m of each other? Yes ☒ No ☐ Give actual (meters) 3.6
*Are collocated PM2.5 sampler inlets within 1 m vertically of each other? Yes ☒ No ☐ Give actual (meters) 0.1

Is an URG 3000 monitor collocated with a SASS monitor at the site? *Yes ☐ (answer *'d questions) No ☐ NA ☒
* Entire inlet opening of collocated speciation samplers inlets (X) within 2 to 4 m of each other? Yes ☐ No ☐
Give actual (meters) _____
* Are collocated speciation sampler inlets within 1 m vertically of each other? Yes ☐ No ☐ Give actual (meters) _____

Is a low-volume PM10 monitor collocated with a PM2.5 monitor at the site to measure PM10-2.5? *Yes ☐ (answer *'d questions) No ☒ NA ☐
* Entire inlet opening of collocated PM10 and PM2.5samplers for PM10-2.5 (X) within 2 to 4 m of each other? Yes ☐ No ☐
*Are collocated PM10 and PM2.5 sampler inlets within 1 m vertically of each other? Yes ☐ No ☐

Is probe > 20 m from the nearest tree drip line? Yes ☒ *No ☐ (answer *'d questions)

*Is probe > 10 m from the nearest tree drip line? Yes ☐ *No ☐
*Distance from probe to tree (m) _____ Direction from probe to tree ___ *Height of tree (m) _____

Are there any obstacles to air flow? *Yes ☐ (answer *'d questions) No ☒
*Identify obstacle ____ Distance from probe inlet (m) _____Direction from probe inlet to obstacle ___
*Is distance from inlet probe to obstacle at least twice the height that the obstacle protrudes above the probe? Yes ☐ No ☐

Distance of probe to nearest traffic lane (m) 129 Direction from probe to nearest traffic lane SSW

RECOMMENDATIONS:

1) Maintain current site status? Yes ☒ *No ☐ (answer *'d questions)

*2) Change monitoring objective? Yes ☐ (enter new objective _____) No ☐-
*3) Change scale of representativeness? Yes ☐ (enter new scale _) No ☐
*4) Relocate site? Yes ☐ No ☐

Comments: PM10 FRM operates 1 in 3 years. Sampler started April 1, 2015 and will stop March 31, 2016. PM10 and PM2.5 samplers are 6.2m appart.

Date of Last Site Pictures 2012_____ New Pictures Submitted? Yes ☐ No ☒

Reviewer Steven Daniels Date 11/23/2015

Ambient Monitoring Coordinator Steven Daniels Date1/20/2016

Site Review Form Calendar Year 2015

Site Information

Region WARO	**Site Name** Bayview	**AQS Site # 37-013-0151**
Street Address 229 Hwy 306N		**City** Bath
Urban Area Not in an Urban Area	**Core-based Statistical Area** None	

Enter Exact		Method of Measuring	
Longitude -76.76244	**Latitude** 35.40217		
In Decimal Degrees	In Decimal Degrees	**Other (explain)**	**Explanation: Google Earth**

Elevation Above/below Mean Sea Level (in meters) **1.54**

Name of nearest road to inlet probe Hwy 306 ADT 290 Year latest available 2013

Comments: _____

Distance of site to nearest major road (m) 370.00 Direction from site to nearest major road N

Name of nearest major road Hwy 92 ADT 1600 Year latest available 2011

Comments: _____

Site located near electrical substation/high voltage power lines?	Yes ☐ No ☒
Distance of site to nearest railroad track	(m) _____ Direction to RR ___ ☒NA
Distance of site to nearest power pole w/transformer	(m) 50 Direction NE
Distance between site and drip line of water tower (m) _____	Direction from site to water tower _____ ☒NA

Explain any sources of potential bias; include cultivated fields, loose bulk storage, stacks, vents, railroad tracks, construction activities, fast food restaurants, and swimming pools.

_____

ANSWER ALL APPLICABLE QUESTIONS:

Parameters	Monitoring Objective	Scale	Monitor Type
☐ Ozone (O_3)	☐ General/Background ☐ Highest Concentration ☐ Max O3 Concentration ☐ Population Exposure ☐ Source Oriented ☐ Transport ☐ Upwind Background ☐ Welfare Related Impacts	☐ Micro ☐ Middle ☐ Neighborhood ☐ Urban ☐ Regional	☐ SLAMS ☐ SPM

Probe inlet height (from ground) 2-15 m? Yes ☐ No ☐ Give actual measured height from ground (meters) _____

Distance of outer edge of probe inlet from horizontal (wall) and/or vertical (roof) supporting structure > 1 m? Yes ☐ No ☐

Actual measured distance from outer edge of probe to supporting structure (meters) _____

Distance of outer edge of probe inlet from other gas monitoring probe inlets > 0.25 m? Yes ☐ No ☐ NA ☐

Is probe > 20 m from the nearest tree drip line? Yes ☐ *No ☐ (answer *'d questions)

*Is probe > 10 m from the nearest tree drip line? Yes ☐ *No ☐

*Distance from probe to tree (m) _____ Direction from probe to tree ___ *Height of tree (m) _____

Are there any obstacles to air flow? *Yes ☐ (answer *'d questions) No ☐

*Identify obstacle _____ Distance from probe inlet (m) _____ Direction from probe inlet to obstacle ___

*Is distance from inlet probe to obstacle at least twice the height that the obstacle protrudes above the probe? Yes ☐ No ☐

Distance of probe to nearest traffic lane (m) _____ Direction from probe to nearest traffic lane ___

Site Review Form Calendar Year 2015

OZONE MONITOR RECOMMENDATIONS:

1) Maintain current monitor status? Yes ☐ *No ☐ (answer *'d questions)

*2) Change monitoring objective? Yes ☐ (enter new objective _____) No ☐-

*3) Change scale of representativeness? Yes ☐ (enter new scale _) No ☐

*4) Relocate monitor? Yes ☐ No ☐

Comments: _____

ANSWER ALL APPLICABLE QUESTIONS:

Parameters	Monitoring Objective	Scale	Monitor Type
☒ SO_2 (NAAQS) ☐ SO_2 (trace-level)	☐ General/Background ☐ Highest Concentration ☐ Population Exposure ☒ Source Oriented ☐ Transport ☐ Upwind Background ☐ Welfare Related Impacts	☐ Micro ☐ Middle ☐ Neighborhood ☒ Urban ☐ Regional	☒ SLAMS ☐ SPM

Probe inlet height (from ground) 2-15 m? Yes ☒ No ☐ Give actual measured height from ground (meters) 5.5

Distance of outer edge of probe inlet from horizontal (wall) and/or vertical (roof) supporting structure > 1 m? Yes ☒ No ☐
Actual measured distance from outer edge of probe to supporting structure (meters) 1.35

Distance of outer edge of probe inlet from other monitoring probe inlets > 1 m? Yes ☐ No ☐ NA ☒

Is probe > 20 m from the nearest tree drip line? Yes ☐ *No ☒ (answer *'d questions)

*Is probe > 10 m from the nearest tree drip line? Yes ☐ *No ☐

*Distance from probe to tree (m) _____ Direction from probe to tree ___ *Height of tree (m) _____

Are there any obstacles to air flow? *Yes ☐ (answer *'d questions) No ☒

*Identify obstacle _____ Distance from probe inlet (m) _____Direction from probe inlet to obstacle ___

*Is distance from inlet probe to obstacle at least twice the height that the obstacle protrudes above the probe? Yes ☐ No ☐

Distance of probe to nearest traffic lane (m) 70 Direction from probe to nearest traffic lane E

SULFUR DIOXIDE MONITOR RECOMMENDATIONS:

1) Maintain current monitor status? Yes ☒ *No ☐ (answer *'d questions)

*2) Change monitoring objective? Yes ☐ (enter new objective _____) No ☐-

*3) Change scale of representativeness? Yes ☐ (enter new scale _) No ☐

*4) Relocate monitor? Yes ☐ No ☐

Comments: Bayview Ferry Terminal is 65 meters to the West. Diesel powered ferried are a source of SO2. Roof of supporting structure is an A-frame and the verticle distance of probe is above the crown of the roof. Alos in years past I have put the incorect elevation above sealevel for this site. It is actually 1.54 meters above sealevel.

Date of Last Site Pictures 2010 New Pictures Submitted? Yes ☒ No ☐

Reviewer Peter Susi Date December 2, 2015

Ambient Monitoring Coordinator Steven Daniels Date January 20, 2016

Revised 2016-01-20

Site Review Form Calendar Year 2015

Site Information

Region WARO	Site Name LCC	AQS Site # 37-107-0004
Street Address-231 Hwy 58 South		City Kinston
Urban Area KINSTON	Core-based Statistical Area Kinston, NC	
Enter Exact		
Longitude -77.5668	Latitude 35.2322	Method of Measuring
In Decimal Degrees	In Decimal Degrees	Other (explain) / Explanation: Google Earth
Elevation Above/below Mean Sea Level (in meters)		15

Name of nearest road to inlet probe College Drive ADT 0 Year latest available 0

Distance of ozone probe to nearest traffic lane (m) 386 Direction from ozone probe to nearest traffic lane N

Comments: On Campus

Name of nearest major road Hwy 70 ADT 16000 Year latest available 2013

Distance of site to nearest major road (m) 386.00 Direction from site to nearest major road N

Comments: Site located on Lenoir Community College Campus

Site located near electrical substation/high voltage power lines? Yes ☐ No ☒

Distance of site to nearest railroad track (m) _____ Direction to RR ___ ☒NA

Distance of site to nearest power pole w/transformer (m) _____ Direction ___

Distance between site and drip line of water tower (m) _____ Direction from site to water tower _____ ☒NA

Explain any sources of potential bias; include cultivated fields, loose bulk storage, stacks, vents, railroad tracks, construction activities, fast food restaurants, and swimming pools.

_____

ANSWER ALL APPLICABLE QUESTIONS:

Parameters	Monitoring Objective	Scale	Site Type
☒ O_3	☒General/Background ☐Highest Concentration ☐Max O3 Concentration ☐Population Exposure ☐Source Oriented ☐Transport ☐Upwind Background ☐Welfare Related Impacts	☐Micro ☐Middle ☒Neighborhood ☐Urban ☐Regional	☒SLAMS ☐SPM

Probe inlet height (from ground) 2-15 m? Yes ☒ No ☐

Give actual measured height from ground (meters) 3.78

Distance of outer edge of probe inlet from horizontal (wall) and/or vertical (roof) supporting structure > 1 m? Yes ☒ No ☐

Actual measured distance from outer edge of probe to supporting structure (meters) 1.02

Is probe > 20 m from the nearest tree drip line? Yes ☒ *No ☐ (answer *'d questions)

*Is probe > 10 m from the nearest tree drip line? Yes ☐ *No ☐

*Distance from probe to tree (m) _____ Direction from probe to tree ___ Height of tree (m) _____

Are there any obstacles to air flow? *Yes ☐ (answer *'d questions) No ☒

*Identify obstacle _____ Distance from probe inlet (m) 30 Direction from probe inlet to obstacle ___

*Is distance from inlet probe to obstacle at least twice the height that the obstacle protrudes above the probe? Yes ☐ No ☐

Site Review Form Calendar Year 2015

RECOMMENDATIONS:

1) Maintain current site status? Yes ☒ *No ☐ (answer *'d questions)

*2) Change monitoring objective? Yes ☐ (enter new objective: _____) No ☐

*3) Change scale of representativeness? Yes ☐ (enter new scale:) No ☐

*4) Relocate site? Yes ☐ No ☐

Comments: A PM10 is planned for 2016.

Date of Last Site Pictures: 2015 New Pictures Submitted? Yes ☐ No ☒

Reviewer Peter Susi Date: December 2, 2015

Ambient Monitoring Coordinator Steven Daniels Date: 1/20/2016

Instructions:

If the annual network review has indicated that the monitoring objectives and scale of representativeness for the site have not changed and the siting criteria still meets those monitoring objectives and that scale of representativeness and there are no other reasons to modify the site in any way, check "Yes" to the question "Maintain current site status?" and skip the rest of the recommendations section.

If the annual network review has indicated that the monitoring objectives, scale of representativeness, or siting criteria have changed for some reason or there is another reason to modify the site in some way, check "No" to the question "Maintain current site status?" and complete the rest of the recommendations section. If the monitoring objective or scale of representativeness needs to be changed, check the "Yes" box and write in the new monitoring objective or scale of representativeness on the line. Otherwise check the "No" box. If the site needs to be relocated, check the "Yes" box. If the site needs to be shut down, write "Shut down" in the comments line. Also use the comments line to explain any change requested.

Check the site picture archive to find out when the last set of site pictures were taken and write the date down on the line. If the pictures are more than five years old or if something at the site has changed in the past year, take new site pictures. Changes that require new site pictures include additions, removals, or movement of monitors at the site, growth or removal of trees and other shrubs at the site, and construction of roads or buildings at or in the vicinity of the site.

Pictures of the site should at a minimum include at least one picture showing the site itself and pictures standing at the probe or inlet or as close as possible to the probe or inlet looking in the four compass directions (north, east, south, and west). If meteorological data are collected at the site, pictures standing at the meteorological tower looking southwest and northeast should also be included. Sometimes pictures looking at the site from the four compass directions are also helpful.

Be sure to correctly identify the pictures as to which compass direction they show. This documentation may be achieved by using good notes when taking the pictures, holding a compass in front of the camera, or placing a sign with the appropriate direction indicated somewhere in the picture. Label the pictures with the name of the site using the two digit logger ID (HC, JW, *etc.*), the direction (N, NE, E, SE, S, SW, W, NW), and the date taken (YYYYMMDD) and transfer the pictures to the group drive in the appropriate Incoming/Regional Office directory.

Appendix F-2. Scale of Representativeness

Each station in the monitoring network must be described in terms of the physical dimensions of the air parcel nearest the monitoring station throughout which actual pollutant concentrations are reasonably similar. Area dimensions or scales of representativeness used in the network description are:

a) Microscale - defines the concentration in air volumes associated with area dimensions ranging from several meters up to about 100 meters.
b) Middle scale - defines the concentration typical of areas up to several city blocks in size with dimensions ranging from about 100 meters to 0.5 kilometers.
c) Neighborhood scale – defines concentrations within an extended area of a city that has relatively uniform land use with dimensions ranging from about 0.5 to 4.0 kilometers.
d) Urban scale - defines an overall citywide condition with dimensions on the order of 4 to 50 kilometers.
e) Regional Scale - defines air quality levels over areas having dimensions of 50 to hundreds of kilometers.

Closely associated with the area around the monitoring station where pollutant concentrations are reasonably similar are the basic monitoring exposures of the station.

There are six basic exposures:

a) Sites located to determine the highest concentrations expected to occur in the area covered by the network.
b) Sites located to determine representative concentrations in areas of high population density.
c) Sites located to determine the impact on ambient pollution levels of significant sources or source categories.
d) Sites located to determine general background concentration levels.
e) Sites located to determine the extent of regional pollutant transport among populated areas.
f) Sites located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts and in support of secondary standards.

The design intent in siting stations is to correctly match the area dimensions represented by the sample of monitored air with the area dimensions most appropriate for the monitoring objective of the station. The following relationship of the six basic objectives and the scales of representativeness are appropriate when siting monitoring stations:

Table F2. Site Type Appropriate Siting Scales

1. Highest concentration	Micro, middle, neighborhood (sometimes urban or regional for secondarily formed pollutants)
2. Population oriented	Neighborhood, urban
3. Source impact	Micro, middle, neighborhood
4. General/background & regional transport	Urban, regional
5. Welfare-related impacts	Urban, regional