

2021-2022 Annual Monitoring Network Plan for the North Carolina Division of Air Quality

Volume 2

Site Descriptions by Division of Air Quality Regional Office and Metropolitan Statistical Area

C. The Mooresville Monitoring Region



July 1, 2021

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C. The Mooresville Monitoring Region

The Mooresville monitoring region, shown in Figure C1, consists of four areas: (1) the eastern portion of the Hickory-Lenoir-Morganton metropolitan statistical area, or MSA, (Alexander and Catawba counties), (2) Cleveland County, (3) the Charlotte MSA - Cabarrus, Gaston, Iredell, Lincoln, Mecklenburg, Rowan and Union counties and (4) Stanly County.

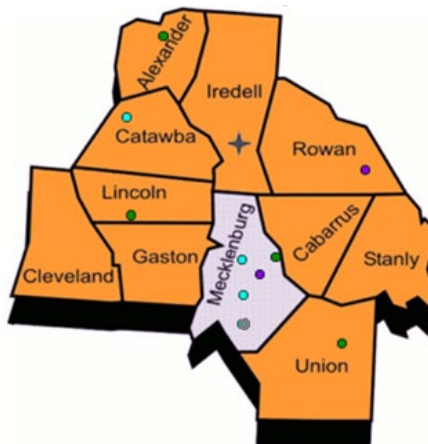
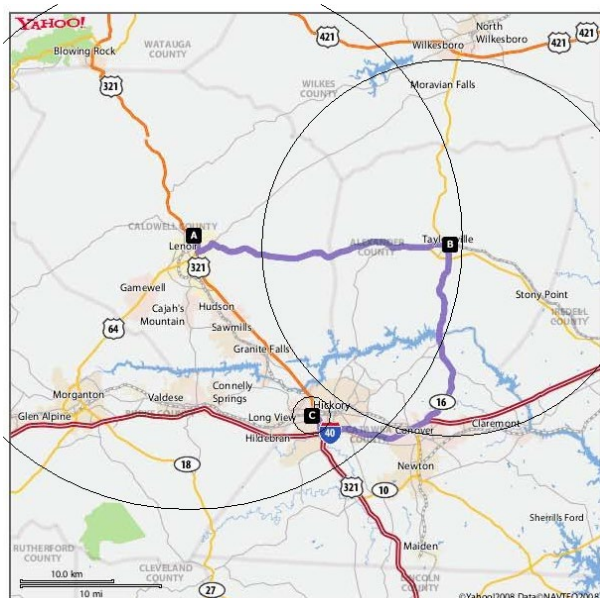


Figure C1. The Mooresville monitoring region

The dots show the approximate locations of most monitoring sites in this region

(1) Hickory-Lenoir-Morganton MSA

The Hickory-Lenoir-Morganton MSA consists of four counties: Alexander, Burke, Caldwell and Catawba County. The major urban areas are the Cities of Hickory, Lenoir and Morganton. The North Carolina Division of Air Quality, or DAQ, currently operates three monitoring sites in the Hickory-Lenoir-Morganton MSA. These sites are located at Taylorsville-Liledoun in Alexander County, Lenoir in Caldwell County and the Hickory Water Tower in Catawba County. Figure C2 shows the locations of these monitors.



A is the Lenoir ozone monitoring site; B is the Taylorsville-Liledoun ozone monitoring site; C is the Hickory particle monitoring site. Circles around the monitors show the scale of representation: Lenoir is regional - 50 Km plus; Taylorsville Liledoun is urban - 4 to 50 Km; Hickory is neighborhood - 0.5 to 4 Km.

Figure C2. Locations of monitors in the Hickory-Lenoir-Morganton MSA

At the Taylorsville-Liledoun site, DAQ operates a seasonal ozone monitor and a rotating PM₁₀ monitor that operates 12-months every third year. Figure C3 shows the site. Table C1 summarizes monitoring information for the site. Figure C4 through Figure C7 show views looking north, east, south and west. DAQ established this site as the downwind site for the Hickory-Lenoir-Morganton MSA in 2013 to replace the Taylorsville-Waggin Trail site. The division requested and received permission to combine the 2014 and 2015 data from the Liledoun site with the 2013 data from the Taylorsville site to provide a valid design value for recommended designations due in 2016. This site is the design value monitor for the MSA. Until this year, the regulations at 40 CFR Part 58, Appendix D required the Hickory-Lenoir-Morganton MSA to have two ozone monitoring sites. The 2018-2020 design value is less than 85 percent of the national ambient air quality standard, or NAAQS, so the regulations currently require only one monitor for the MSA. The DAQ does not plan to shut down either of the two ozone monitors in the MSA at this time.



Figure C3. Taylorsville Liledoun ozone and particle monitoring site, 37-003-0005

Table C1. Site Table for Taylorsville-Liledoun								
Site Name:		Taylorsville Liledoun		AQS Site Identification Number:		37-003-0005		
Location:		700 Liledoun Road, Taylorsville, North Carolina						
CBSA:		Hickory-Lenoir-Morganton, NC			CBSA #:		25860	
Latitude	35.9138	Longitude	-81.1910	Datum:		WGS84	Elevation	365 meters
Parameter Name		Method			Method Reference ID		Sample Duration	Sampling Schedule
Ozone		Instrumental with ultra violet photometry, 047			EQOA-0880-047		1-Hour	March 1 to Oct. 31
PM10 total 0-10um STP		Met One Beta Attenuation BAM-1020, 122			EQPM-0798-122		1-hour	Year-round, every third year
Date Monitor Established:		Ozone					Aug. 2, 2013	

Table C1. Site Table for Taylorsville-Liledoun					
		PM10 total 0-10um STP			March 23, 2016
Nearest Road:	Liledoun Road		Traffic Count:	6400	Year of Count: 2016
Parameter Name	Distance to Road	Direction to Road	Monitor Type	Statement of Purpose	
Ozone	219 meters	Southeast	SLAMS	Real-time AQI reporting and forecasting. Compliance w/NAAQS.	
PM10 total 0-10um STP	219 meters	Southeast	Special purpose	Prevention of significant deterioration, PSD, Modeling	
Parameter Name	Monitoring Objective	Scale	Suitable for Comparison to NAAQS	Proposal to Move or Change	
Ozone	General Background	Urban	Yes	None	
PM10 total 0-10um STP	General Background	Urban	Yes	Will operate 7/1/2019 to 6/30/2020	
Parameter Name		Meets Part 58 Requirements for:			
		Appendix A	Appendix C	Appendix D	Appendix E
Ozone		Yes	Yes	Yes	Yes
PM10 total 0-10um STP		Yes	Yes	Yes – not required	Yes
Parameter Name	Probe Height	Distance to Support		Distance to Trees	Obstacles
Ozone	3.65 meters	1.06 meters		> 20 meters	None
PM10 total 0-10um STP	2.3876 meters	2.032 meters		> 20 meters	None

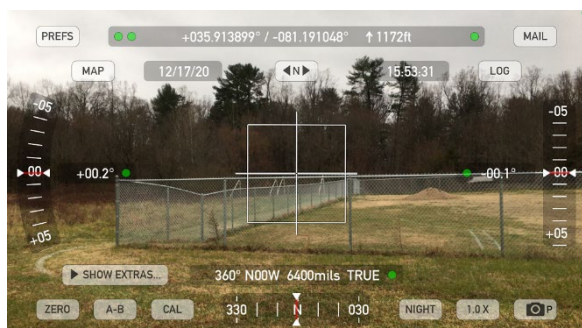


Figure C4. Looking north from the Taylorsville-Liledoun site



Figure C6. Looking east from the Taylorsville-Liledoun site

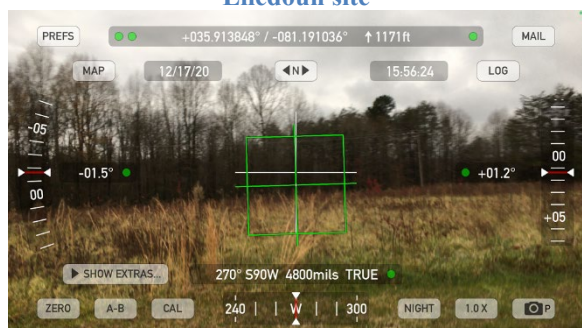


Figure C5. Looking west from the Taylorsville-Liledoun site

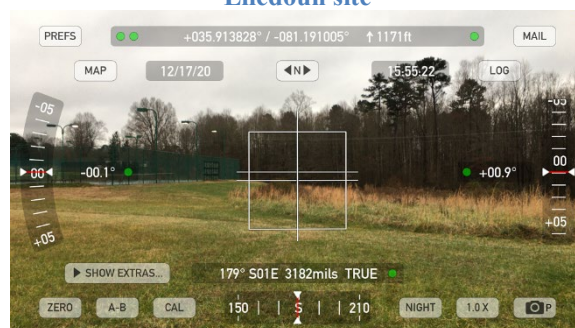


Figure C7. Looking south from the Taylorsville-Liledoun site

DAQ established the Taylorsville-Liledoun site on Aug. 2, 2013, after the division discovered in January 2013 that Alexander County planned to establish a vehicle maintenance facility at the Waggin Trail site. Because these construction plans, once implemented, made the Waggin Trail

site unacceptable for ozone monitoring, DAQ identified the Taylorsville-Liledoun site for the ozone monitor. As shown in Figure C8, the Taylorsville-Liledoun site is located almost exactly one mile south of the former Waggin Trail site, behind the Alexander County Board of Education building, 700 Liledoun Road, Taylorsville. The State Climate Office operates a meteorological tower in the same area where the ozone monitor is located. The Waggin Trail and Taylorsville-Liledoun site operated simultaneously from Aug. 2 through Oct. 31, 2013.



Figure C8. Relationship between old Waggin Trail site (north) and Taylorsville Liledoun site (south)

At **Lenoir**, 37-027-0003, the DAQ operates a seasonal ozone monitor, the second required ozone-monitor for the MSA. In 2013, DAQ added a special purpose sulfur dioxide monitor at Lenoir that operates every third year to provide data for prevention of significant deterioration,

PSD, modeling for industrial expansion. Figure C9 shows the site. Table C2 summarizes monitoring information for the site. Figure C10 to Figure C17 provide views looking north, northeast, east, southeast, south, southwest, west and northwest from the site. Before the start of the 2021 ozone season, DAQ replaced the shelter at the site.



Figure C9. Lenoir ozone and sulfur dioxide monitoring site

Table C2. Site Table for Lenoir

Site Name:	Lenoir			AQS Site Identification Number:			37-027-0003			
Location:	291 Nuway Circle, Lenoir, North Carolina									
MSA:		Hickory-Lenoir-Morganton, NC				CBSA #:		25860		
Latitude	35.935833	Longitude	-81.530278	Datum:	WGS84	Elevation		366 meters		
Parameter Name	Method				Method Reference ID		Sample Duration		Sampling Schedule	
Ozone	Instrumental with ultra violet photometry, 047				EQOA-0880-047		1-Hour		March 1 to Oct. 31	
Sulfur dioxide	Instrumental with pulsed fluorescence, 060				EQSA-0486-060		1-Hour		Year-round; every third year	
Date Monitor Established:		Ozone						Jan. 1, 1981		
		Sulfur dioxide						Jan. 1, 2013		
Nearest Road:	Nuway Circle		Traffic Count:		5800		Year of Count:		2018	
Parameter Name	Distance to Road		Direction to Road		Monitor Type		Statement of Purpose			
Ozone	146 meters		East		SLAMS		Real-time AQI reporting & forecasting. Compliance w/NAAQS.			
Sulfur dioxide	146 meters		East		Special purpose		Prevention of significant deterioration, PSD, Modeling			
Parameter Name	Monitoring Objective		Scale	Suitable for Comparison to NAAQS			Proposal to Move or Change			
Ozone	General background		Regional	Yes			None			
Sulfur dioxide	General background		Regional	Yes			None			
Parameter Name		Meets Part 58 Requirements:								
		Appendix A		Appendix C		Appendix D		Appendix E		
Ozone		Yes		Yes		Yes		Yes		

Sulfur dioxide	Yes	Yes	Yes – not required	Yes
Parameter Name	Probe Height	Distance to Support	Distance to Trees	Obstacles
Ozone	4.46 meters	1.60 meters	>20 meters	None
Sulfur dioxide	4.39 meters	1.5748 meter	>20 meters	None



Figure C10. Looking north from the Lenoir site



Figure C13. Looking northeast from the Lenoir site



Figure C11. Looking northwest from the Lenoir site



Figure C14. Looking east from the Lenoir site



Figure C12. Looking west from the Lenoir site



Figure C15. Looking southeast from the Lenoir site



Figure C16. Looking southwest from the Lenoir site



Figure C17. Looking south from the Lenoir site

At the Hickory site, DAQ operates collocated continuous fine particle monitors. The division shut down the collocated one-in-six-day federal reference method or FRM fine particle monitor on June 12, 2019. DAQ shut down the speciation fine particle SASS and University Research Glass, or URG, monitors and the two one-in-six-day high volume PM10 monitors in 2014. In 2015, DAQ added a second continuous fine particle monitor that recently received equivalency status to the site so DAQ could evaluate its performance. On Jan. 1, 2017, the division made the second continuous monitor the primary monitor and shut down the primary FRM monitor at the site. Figure C18 through Figure C26 show the site as well as views looking north, northeast, east, southeast, south, southwest, west and northwest. Table C3 summarizes monitoring information for the site.



Figure C18. Hickory fine particle monitoring site



Figure C19. Looking north from the Hickory site



Figure C20. Looking northwest from the Hickory site



Figure C21. Looking west from the Hickory site



Figure C22. Looking southwest from the Hickory site



Figure C23. Looking northeast from the Hickory site



Figure C24. Looking east from the Hickory site



Figure C25. Looking southeast from the Hickory site



Figure C26. Looking south from the Hickory site

Table C3. Site Table for Hickory

Site Name:	Hickory			AQS Site Identification Number	37-035-0004		
Location:	1650 1 st Street, Hickory, North Carolina						
MSA:		Hickory-Lenoir-Morganton, NC			CBSA #:	25860	
Latitude		35.728889	Longitude	-81.365556	Datum:	WGS84	
Elevation		333 meters					
Parameter Name		Method			Method Reference ID	Sample Duration	Sampling Schedule
PM 2.5 local conditions, BAM 1022, primary		Met One BAM-1022 Mass Monitor w/ VSCC			EQPM-1013-209	1-Hour	Year Round
PM 2.5 local conditions, BAM 1022, collocated		Met One BAM-1022 Mass Monitor w/ VSCC			EQPM-1013-209	1-Hour	Year Round
Date Monitor Established:		PM 2.5 local conditions, BAM 1022					Sept. 14, 2015
		PM 2.5 local conditions, BAM 1022					July 14, 2019
Nearest Road:		2 nd Avenue SW		Traffic Count:	3200	Year of Count:	2017
Parameter Name		Distance to Road	Direction to Road	Monitor Type		Statement of Purpose	
PM 2.5 local conditions, BAM 1022		21.34 meters	South southeast	SLAMS		Compliance w/NAAQS. AQI reporting. SIP required monitor.	
PM 2.5 local conditions, BAM 1022		22.25 meters	South southeast	SLAMS, QA Collocated		Compliance w/NAAQS. AQI reporting. SIP required monitor.	
Parameter Name		Monitoring Objective	Scale		Suitable for Comparison to NAAQS		Proposal to Move or Change
PM 2.5 local conditions, BAM 1022, primary		Population Exposure	Neighborhood		Yes		None
PM 2.5 local conditions, BAM 1022, collocated		Population Exposure	Neighborhood		Yes		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	
PM 2.5 local conditions, BAM 1022, primary			Yes	Yes	Yes	Yes	
PM 2.5 local conditions, BAM 1022, collocated			Yes	Yes	Yes	Yes	
Parameter Name			Probe Height	Distance to Support		Distance to Trees	Obstacles
PM 2.5 local conditions, BAM 1022, primary			2.4892 meters	2.1082 meters		>20 meters	None
PM 2.5 local conditions, BAM 1022, collocated			2.3368 meters	2.0574 meters		>20 meters	None

DAQ shut down both one-in-six-day PM₁₀ monitors on Dec. 31, 2014. Title 40 CFR Part 58, Appendix D did not require the PM₁₀ monitor, the division did not use the PM₁₀ data from this site for permit modeling and the monitor was no longer needed to ensure an adequate PM₁₀ network. The United States Environmental Protection Agency, or EPA, ended the funding for the analysis of the SASS and URG samples in January 2015. Thus, DAQ also shut down these monitors in 2014. At the end of December 2015, DAQ replaced the well impactor ninety-six, or WINS, on the FRM with a very sharp cut cyclone, or VSCC. DAQ made this change because the VSCC is easier and less expensive to maintain.

In the future, Highway US 321 going past the site will be widened. Construction will dictate some temporary changes and rerouting of traffic lanes, closure of an overpass near the

site, as well as the striking of new right of ways near the site on the two roads that border the water tower property. The road itself will not increase, just the right of way distance, and maybe some sidewalk/improvements area would increase. On May 12, 2021, the City of Hickory contacted DAQ about moving the monitors approximately 25 meters northward towards 1st Avenue SW as shown in Figure 27. The monitors will remain at least 17 meters from the nearest travel lane on all sides. As shown in the wind rose in the inset of Figure 27, the predominant winds at the Hickory airport are from the south and south southwest. DOT has not provided a schedule for when the move will occur.

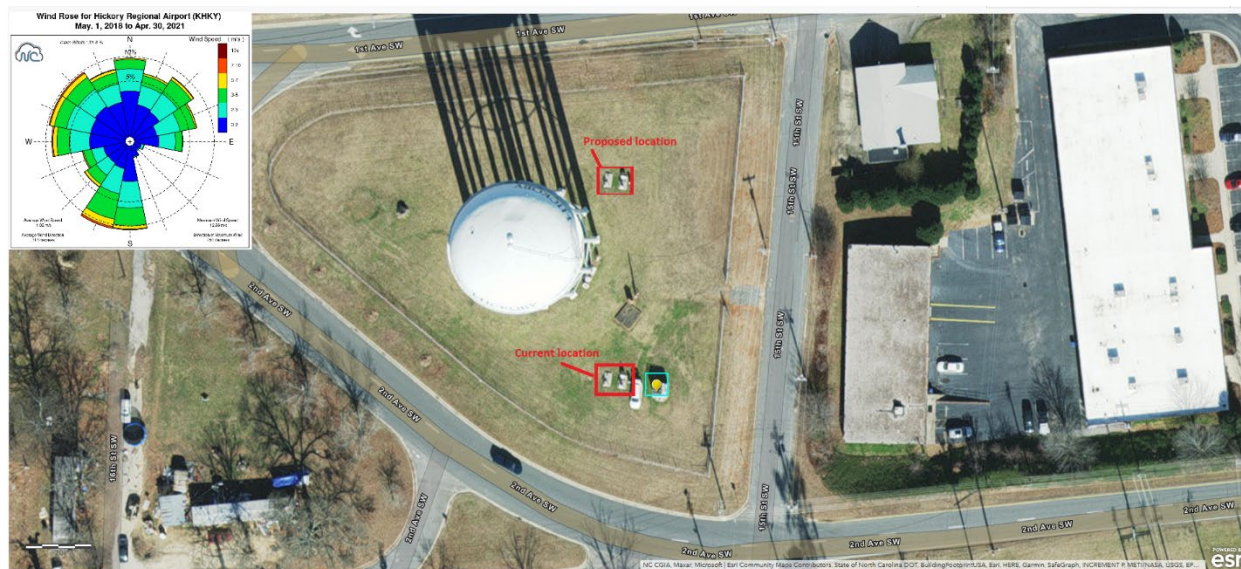


Figure 27. Aerial view of the Hickory fine particle monitoring site showing relative positions of the current location and proposed location

The Hickory-Lenoir-Morganton MSA did not need to do lead monitoring to meet the 2010 **lead monitoring** requirements. It has no facilities within the MSA reporting over one half ton of lead emissions to the air.¹

The 2015 **ozone monitoring** requirements do not require additional monitors in the Hickory-Lenoir-Morganton MSA. The MSA has the minimum number of monitors required by 40 CFR Part 58, Appendix D for population exposure monitoring in urban areas. Seasonal ozone monitoring starts on March 1 instead of April 1 beginning in 2017.

The Hickory-Lenoir-Morganton MSA did not need additional monitors to comply with the 2010 **nitrogen dioxide monitoring** requirements. It is too small to require area-wide monitors or near-roadway monitoring.

DAQ will not need to add source-oriented monitors in the Hickory-Lenoir-Morganton MSA to comply with the 2010 **sulfur dioxide monitoring** requirements for source-oriented monitoring.

¹ United States Environmental Protection Agency. 2015 Toxic Release Inventory, released March 2017, available on the worldwide web at https://iaspub.epa.gov/triexplorer/tri_release.chemical.

No additional monitors were required to comply with the population weighted emission index, PWEI, monitoring requirements because the total sulfur dioxide emissions in this MSA multiplied by the total MSA population does not result in a high enough index to require monitoring. This area will also not operate any near-road **carbon monoxide** and **fine particle** monitors because the population is under one million.

(2) Cleveland County – Shelby Micropolitan Statistical Area

Cleveland County is part of the Charlotte-Concord combined statistical area. The micropolitan statistical area (miSA) of Shelby is in the county. DAQ currently does not operate any monitors in Cleveland County. The December 2010 revisions to the **lead monitoring** network regulations did not result in additional monitoring in Cleveland County. This county is not required to add ozone monitors because the area does not have any MSAs that must meet the minimum number of monitors required by 40 CFR Part 58, Appendix D for population exposure monitoring in urban areas. Cleveland County is too small to require area-wide nitrogen dioxide monitors or near roadway monitoring for nitrogen dioxide, carbon monoxide and fine particles. The 2010 **sulfur dioxide** monitoring requirements also did not result in additional monitoring in this area because there are no large sources of sulfur dioxide in this county. This county is also not required to monitor for **carbon monoxide** because the population is too small to require near road carbon monoxide monitoring.

(3) Charlotte-Gastonia-Concord MSA

The Charlotte-Gastonia-Concord MSA consists of 11 counties: Anson, Cabarrus, Gaston, Iredell, Lincoln, Mecklenburg, Rowan and Union in North Carolina and Chester, Lancaster and York in South Carolina. The major urban areas are Charlotte, Gastonia and Concord in North Carolina and Rock Hill in South Carolina. This MSA is one of the fastest growing areas in North Carolina. Currently, DAQ operates three monitoring sites in the Charlotte-Gastonia-Concord MSA, Mecklenburg County Air Quality, MCAQ, operates five, the South Carolina Department of Health and Environmental Conservation, DHEC, operates one, and the Catawba Indian Nation operates one. These sites are located at Crouse in Lincoln County, Friendship Park, Ramblewood Park, Remount Road, Garinger High School and University Meadows in Charlotte in Mecklenburg County, Rockwell in Rowan County, Monroe in Union County, York and Avenue of the Nations in York County, South Carolina. MCAQ shut down the Montclair site on April 1, 2019 after receiving a notice that Charlotte-Mecklenburg Schools would evict them in mid-April. MCAQ moved the fine particle monitor to Friendship Park and the PM₁₀ monitor to Ramblewood Park in late 2019. Figure C28 displays the locations of these monitors.

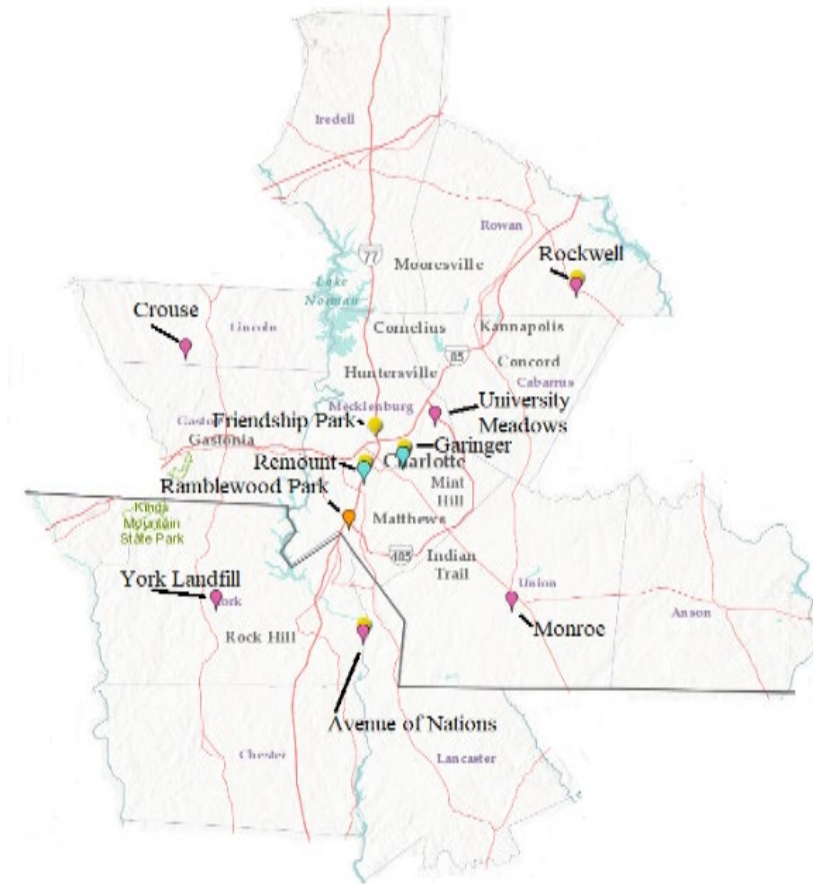


Figure C28. Monitoring sites in the Charlotte-Concord-Gastonia MSA

DAQ shut down the **Enochville** seasonal ozone monitor in Rowan County at the end of the 2013 ozone season and the Grier Middle School fine-particle monitoring site in Gaston County in February 2015. At the end of the 2014 ozone season, the property owner evicted MCAQ from the Arrowood site in Mecklenburg County and at the end of the 2015 ozone season, the property owner evicted MCAQ from the County Line site. Mecklenburg County Air Quality established the University Meadows site on April 1, 2016, to replace the County Line site.

MCAQ also shut down the Fire Station #11 PM10 site on June 29, 2016, due to issues at the site, and the Oakdale fine-particle monitoring site at the end of 2016, so MCAQ could move the monitor to the Remount Road near-road site. DAQ shut down the **Grier Middle School** site on Feb. 25, 2015. The NAAQS and AQI monitors were not required by 40 CFR Part 58, Appendix D. DAQ no longer needed the continuous monitor at the site for air quality forecasting and because of the lower fine particle concentrations throughout the state, the monitors were no longer needed to ensure an adequate fine particle network.

On February 13, 2019, Metric Construction, a construction contractor working for Charlotte-Mecklenburg Schools, notified MCAQ that they would need to remove their Montclair air monitoring station from the premises of Montclair Elementary School to make way for

construction of a new school building on the property. Metric Construction commenced construction around May 1, 2019. Pre-construction work at the site required removal of power from the monitoring station as early as mid to late April, 2019. Thus, MCAQ terminated monitoring at the Montclair air monitoring station on April 1, 2019.

Appendix B to Volume 1 discusses the MCAQ sites and monitors. Only the three DAQ sites (Crouse in Lincoln County, Rockwell in Rowan County and Monroe in Union County) are further discussed in this subsection.

At the **Crouse** site in Lincoln County, DAQ operates a seasonal ozone monitor. Figure C29 shows the site. Table C4 summarizes monitoring information for the site. Figure C30 through Figure C37 provides views looking north, northeast, east, southeast, south, southwest, west and northwest. The division established the site in 1993 as the secondary downwind site for the Charlotte-Concord-Gastonia MSA. Today, it provides valuable information on ozone concentrations in Lincoln County, which DAQ may use to keep parts of the county from receiving a nonattainment designation for the ozone standard.



Figure C29. Crouse ozone monitoring site

Table C4. Site Table for Crouse

Site Name:	Crouse		AQS Site Identification Number		37-109-0004
Location:	1487 Riverview Road, Lincolnton, North Carolina				
CBSA:	Charlotte-Gastonia-Concord, NC-SC			CBSA #:	16740
Latitude	35.438556	Longitude	-81.276750	Datum:	WGS84
Elevation	270 meters				

Table C4. Site Table for Crouse

Parameter Name	Method	Method Reference ID	Sample Duration	Sampling Schedule
Ozone	Instrumental with ultra violet photometry, 047	EQOA-0880-047	1-Hour	March 1 to Oct. 31
Date Monitor Established: Ozone				July 1, 1993
Nearest Road:	Riverview Road	Traffic Count:	2200	Year of Count: 2015
Parameter Name	Distance to Road	Direction to Road	Monitor Type	Statement of Purpose
Ozone	62 meters	Southwest	SLAMS	Compliance w/NAAQS. Real-time AQI reporting & forecasting.
Parameter Name	Monitoring Objective	Scale	Suitable for Comparison to NAAQS	Proposal to Move or Change
Ozone	General background	Urban	Yes	None
Meets Requirements of 40 CFR Part 58				
Parameter Name	Appendix A	Appendix C	Appendix D	Appendix E
Ozone	Yes	Yes	Yes	Yes
Parameter Name	Probe Height (m)	Distance to Support	Distance to Trees	Obstacles
Ozone	3.5	1.3 meter	>20 meters	None



Figure C30. Looking north from the Crouse site



Figure C31. Looking northwest from the Crouse site



Figure C32. Looking northeast from the Crouse site

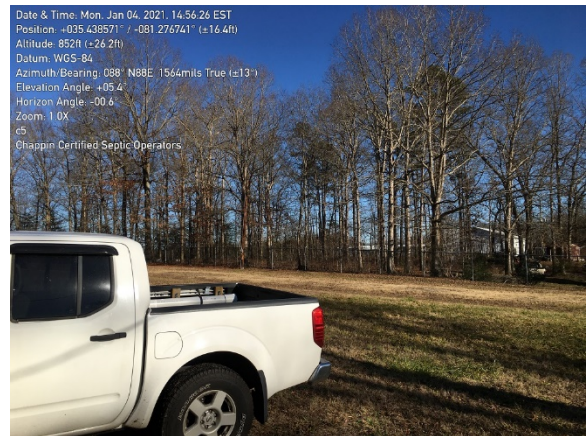


Figure C33. Looking east from the Crouse site



Figure C34. Looking west from the Crouse site



Figure C36. Looking southeast from the Crouse site



Figure C35. Looking southwest from the Crouse site

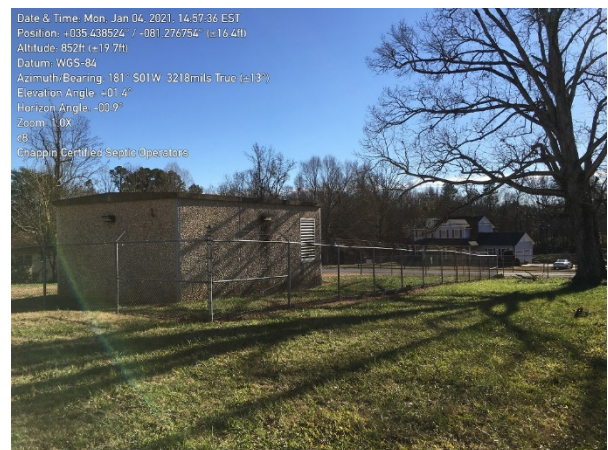


Figure C37. Looking south from the Crouse site

At **Rockwell**, DAQ operates a year-round ozone monitor and a continuous fine particle monitor. On March 12, 2019, the division added a rainwater collection sampler to the site. DAQ shut down the continuous fine-particle nitrate monitor and aethalometer as well as a reactive-oxides-of-nitrogen monitor that operated year-round at this site in 2016. DAQ operated these monitors to provide information for planning purposes and to evaluate state regulations. Title 40 CFR Part 58, Appendix D or any other EPA regulations did not require these monitors. DAQ made the decision to shut down these monitors based on staffing considerations, the age of the equipment and the decision that the division did not need the additional data provided by these monitors for planning purposes. DAQ shut down the aethalometer on Aug. 8, 2016 (because the monitor was broken and removed from service), the reactive oxides of nitrogen monitor on Nov. 3, 2016, and the nitrate monitor on Nov. 4, 2016.

DAQ shut down the one-in-three-day fine particle FRM monitor, one-in-six day collocated fine particle monitor and continuous fine particle monitor at the end of 2015. The division shut down the one-in-six-day speciation fine particle monitors in January 2015 because the EPA stopped

funding the sample analysis for them. On Oct. 24, 2019, the DAQ resumed fine particle monitoring at the site to provide background data for PSD modeling.

In October 2020, DAQ added a nitrogen dioxide monitor to the site. Table C5 summarizes monitoring information for the site. Figure C38 through Figure C46 provide pictures of the site as well as views looking north, northeast, east, southeast, south, southwest, west and northwest.

Table C5. Site Table for Rockwell

Site Name:		Rockwell	AQS Site Identification Number		37-159-0021	
Location:		316 West Street, Rockwell, North Carolina				
CBSA:	Charlotte-Gastonia-Concord, NC-SC			CBSA #:	16740	
Latitude	35.551868	Longitude	-80.395039	Datum:	WGS84	
Elevation	240 meters					
Parameter Name	Method			Method Reference ID	Sample Duration	Sampling Schedule
Ozone	Instrumental with ultra violet photometry, 047			EQOA-0880-047	1-Hour	Year-round
PM 2.5 local conditions, BAM 1022	Met One BAM-1022 Mass Monitor w/ VSCC			EQPM-1013-209	1-Hour	Year Round
Nitrogen dioxide, CAPS	Teledyne Advanced Pollution Instrumentation, Model T500U cavity attenuated phase shift spectroscopy Nitrogen Dioxide Analyzer Automated			EQNA-0514-212	1-Hour	Year Round
Date Monitor Established:		Ozone				April 1, 1993
		PM 2.5 local conditions, BAM 1022				Oct. 24, 2019
		Nitrogen dioxide, CAPS				Oct. 22, 2020
Nearest Road:		Gold Hill Road				
Traffic Count:		610		Year of Count:		2016
Parameter Name		Distance to Road	Direction to Road	Monitor Type	Statement of Purpose	
Ozone		17 meters	North	Special purpose	Ozone precursor monitoring. Compliance w/NAAQS. Modeling.	
PM 2.5 local conditions, BAM 1022		18 meters	North	Special purpose	Compliance w/NAAQS. Modeling.	
Nitrogen dioxide, CAPS		17 meters	North	Special purpose	PSD modeling/permitting	
Parameter Name		Monitoring Objective		Scale	Suitable to Compare to NAAQS	Proposal to Move or Change
Ozone		Highest concentration		Urban	Yes	None
PM 2.5 local conditions, BAM 1022		Population Exposure		Neighborhood	Yes	None
Nitrogen dioxide, CAPS		General Background			Yes	None
Parameter Name		Meets 40 CFR Part 58 Requirements for:				
		Appendix A	Appendix C	Appendix D		Appendix E
Ozone		Yes	Yes	Yes – the monitor is not required		Yes
PM 2.5 local conditions, BAM 1022		Yes	Yes	Yes – the monitor is not required		Yes
Nitrogen dioxide, CAPS		Yes	Yes	Yes – the monitor is not required		Yes
Parameter Name		Probe Height (m)		Distance to Support	Distance to Trees	Obstacles
Ozone		3.5		1.1 meters	> 20 meters	None
PM 2.5 local conditions, BAM 1022		2.4		2.1 meters	> 20 meters	None
Nitrogen dioxide, CAPS		3.5		1.1 meters	> 20 meters	None



Figure C38. The Rockwell ozone and fine particle site, 37-159-0021



Figure C39. Looking north from the Rockwell site



Figure C41. Looking northeast from the Rockwell site



Figure C40. Rockwell site looking northwest



Figure C42. Looking east from the Rockwell site



Figure C43. Looking west from the Rockwell site



Figure C45. Looking southeast from the Rockwell site



Figure C44. Looking southwest from the Rockwell site



Figure C46. Looking south from the Rockwell site

At the **Monroe Middle School** site, DAQ operates a seasonal ozone monitor. Figure C47 shows the site. Table C6 summarizes monitoring information for the site. Figure C48 through Figure C51 provide views looking north, east, south and west. This ozone-monitoring site is one of seven for the MSA. Title 40 CFR Part 58, Appendix D requires the Charlotte-Gastonia-Concord MSA to have two ozone monitoring sites. The site is located at the goal end of a soccer field, so soccer balls sometimes damage the probe. DAQ has investigated moving the site to another part of Monroe; however, this site meets the siting criteria in 40 CFR Part 58, Appendix E better than any nearby alternative location. DAQ has also added a fence on the roof of the building between the probe and soccer field to protect the probe. The DAQ is adding meteorological sensors and a continuous fine particle monitor to the site during 2021.



Figure C47. Monroe ozone monitoring site, 37-179-0003



Figure C48. Looking north from the Monroe site



Figure C49. Looking east from the Monroe site



Figure C50. Looking west from the Monroe site



Figure C51. Looking south from the Monroe site

Table C6. Site Table for Monroe Middle School

Site Name:	Monroe Middle School			AQS Site Identification Number	37-179-0003
Location:	701 Charles Street, Monroe, North Carolina				
CBSA:	Charlotte-Gastonia-Concord, NC-SC			CBSA #:	16740
Latitude	34.973889	Longitude	-80.540833	Datum:	WGS84
Elevation	184 meters				
Parameter Name	Method	Method Reference ID	Sample Duration	Sampling Schedule	
Ozone	Instrumental with ultra violet photometry, 047	EQOA-0880-047	1-Hour	March 1 to Oct. 31	
Date Monitor Established:	Ozone			April 7, 1999	
Nearest Road:	Charles Street	Traffic Count:	3700	Year of Count:	2017
Parameter Name	Distance to Road	Direction to Road	Monitor Type	Statement of Purpose	
Ozone	71.3 meters	West	Special Purpose	Compliance w/NAAQS. Real-time AQI reporting & forecasting.	
Parameter Name	Monitoring Objective	Scale	Suitable for Comparison to NAAQS	Proposal to Move or Change	
Ozone	Population Exposure	Neighborhood	Yes	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	
Parameter Name	Probe Height (m)	Distance to Support	Distance to Trees	Obstacles	
Ozone	3.9	1.1 meter	>20 meters	None	

DAQ continues to operate the Monroe site because it provides valuable information for developing nonattainment boundaries and the division has used the data from this site in the past

to keep the EPA from designating parts of Union County as being in nonattainment with the ozone standard.

Changes to the **lead monitoring** requirements in 2010 resulted in additional monitoring in the Charlotte-Gastonia-Concord MSA. This MSA has an NCore monitoring site. Monitoring for lead in the ambient air at that site began Dec. 27, 2011. This lead monitoring ended on April 30, 2016, when new monitoring regulations became effective.²

The 2015 **ozone monitoring** requirements did not result in additional monitoring in the Charlotte-Gastonia-Concord MSA. The MSA currently exceeds the minimum number of monitors required by 40 CFR Part 58, Appendix D for population exposure monitoring in urban areas. Beginning in 2017, seasonal ozone monitoring starts on March 1 instead of April 1.

The 2010 **nitrogen dioxide** monitoring requirements required additional monitoring in the Charlotte-Gastonia-Concord MSA. The MSA was required to have an area-wide monitor starting in 2013 and a near-roadway monitor starting in 2014. In 2017, the population estimates for the Charlotte-Gastonia-Concord MSA exceeded 2.5 million, requiring the need for a second near-road monitoring station. MCAQ plans to install a second near-road station whenever the EPA provides the funding to do so.

The 2010 **sulfur dioxide** monitoring requirements also required additional monitoring in the Charlotte-Gastonia-Concord MSA. Originally, the EPA required this MSA to have two population-weighted emission index, or PWEI, monitors within the MSA because the MSA had large sources of sulfur dioxide as well as large numbers of people. These PWEI monitors were located at the Garinger High School monitoring site in Charlotte and at the York monitoring site in York, South Carolina. However, a decline in sulfur dioxide emissions resulted in only one PWEI monitor being required. Thus, the York sulfur dioxide monitor shut down in June 2014. However, when South Carolina moved the York site, sulfur dioxide monitoring resumed in York County.

The changes in the **carbon monoxide monitoring** requirements also resulted in more monitoring in this MSA. Because the population in the MSA is over one million people, a near-road carbon monoxide monitor started operating at Remount Road in 2017.

(4) Stanly County – Albemarle Micropolitan Statistical Area

Stanly County is part of the Charlotte-Concord combined statistical area. The Albemarle MiSA is in Stanly County. DAQ does not operate any monitoring sites in this county.

The expansion of the **lead monitoring** network to support the lower lead NAAQS did not result in monitoring in Stanly County. The 2015 **ozone monitoring** requirements also did not result in

² Revisions to Ambient Monitoring Quality Assurance and Other Requirements, Federal Register, Vol. 81, No. 59, Monday, March 28, 2016, available on the worldwide web at <https://www.gpo.gov/fdsys/pkg/FR-2016-03-28/pdf/2016-06226.pdf>.

more monitoring in this area. This area does not have any MSAs requiring a minimum number of monitors by 40 CFR Part 58, Appendix D for population exposure monitoring in urban areas.

The 2010 **nitrogen dioxide** monitoring requirements did not result in additional monitoring in Stanly County. The area is too small to require area-wide monitors or near-roadway monitoring. The 2010 **sulfur dioxide** monitoring requirements did not require any additional monitoring in this area because the population and sulfur dioxide emissions do not exceed the required threshold for monitoring. The 2011 changes to the **carbon monoxide monitoring** requirements also did not require additional monitors in this area because the population is too small.

Appendix C.1 Annual Network Site Review Forms for 2020

Taylorsville-Liledoun

Lenoir

Hickory

Crouse

Rockwell

Monroe Middle School in Monroe

Site Review Form Calendar Year 2020

Site Information

Region <u>MRO</u>	Site Name <u>Taylorsville Liledoun</u>	AQS Site # <u>37-003-0005</u>	
Street Address <u>1487 Riverview Road</u>		City <u>Lincolnton</u>	
Urban Area <input type="checkbox"/> Not in an Urban Area <input type="checkbox"/>	Core-based Statistical Area <u>Hickory-Lenoir-Morganton, NC</u>		
Enter Exact		Method of Measuring	
Latitude <u>35.9138</u>	Longitude <u>-81.1910</u>		
In Decimal Degrees	In Decimal Degrees	Other (explain)	Explanation: <u>NCDOT Maps</u>
Elevation Above/below Mean Sea Level (in meters)		<u>354.00</u>	
Name of nearest road to inlet probe <u>Liledoun Road</u> ADT <u>6400</u> Year latest available <u>2019</u>			
Distance of ozone probe to nearest traffic lane (m) <u>220</u> Direction from ozone probe to nearest traffic lane <u>SW</u>			
Comments: <u>None.</u>			
Name of nearest major road <u>W. Hwy 64</u> ADT <u>7900</u> Year latest available <u>2019</u>			
Distance of site to nearest major road (m) <u>525.00</u> Direction from site to nearest major road <u>SW</u>			
Comments: <u>None.</u>			
Site located near electrical substation/high voltage power lines?			Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Distance of site to nearest railroad track		(m) <u>2152</u>	Direction to RR <u>NE</u> <input type="checkbox"/> NA
OPTIONAL 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 <input checked="" type="checkbox"/> 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.			
<u>t</u>			

ANSWER ALL APPLICABLE QUESTIONS:

Parameters	Monitoring Objective	Scale	Site Type
<input checked="" type="checkbox"/> O ₃	<input checked="" type="checkbox"/> General/Background <input type="checkbox"/> Highest Concentration <input type="checkbox"/> Max O ₃ Concentration <input type="checkbox"/> Population Exposure <input type="checkbox"/> Source Oriented <input type="checkbox"/> Transport <input type="checkbox"/> Upwind Background <input type="checkbox"/> Welfare Related Impacts	<input type="checkbox"/> Micro <input type="checkbox"/> Middle <input type="checkbox"/> Neighborhood <input checked="" type="checkbox"/> Urban <input type="checkbox"/> Regional	<input checked="" type="checkbox"/> SLAMS <input type="checkbox"/> SPM
Probe inlet height (from ground) 2-15 m? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Give actual measured height from ground (meters) <u>3.65</u>			
Distance of outer edge of probe inlet from horizontal (wall) and/or vertical (roof) supporting structure > 1 m? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Actual measured distance from outer edge of probe to supporting structure (meters) <u>1.06</u>			
Is probe > 20 m from the nearest tree drip line? Yes <input checked="" type="checkbox"/> *No <input type="checkbox"/> (answer *'d questions)			
*Is probe > 10 m from the nearest tree drip line? Yes <input type="checkbox"/> *No <input type="checkbox"/> *Number of trees within 10 meters _____			
*Distance from probe to closest tree (m) _____ Direction from probe to tree _____ *Height of tree above probe (m) _____			
Are there any obstacles to air flow? *Yes <input type="checkbox"/> (answer *'d questions) No <input checked="" type="checkbox"/>			
*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 <input type="checkbox"/> No <input type="checkbox"/>			

Site Review Form Calendar Year 2020

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: None.

Date of Last Site Pictures: December 17, 2021 New Pictures Submitted? Yes ☒ No ☐

Reviewer PJC Date: January 8, 2021

Ambient Monitoring Coordinator PJC Date: 1/8/2021

Instructions:

Trees: The probe or inlet must be at least 10 meters or further from the drip line of trees. A distance of at least 20 meters between the probe and any tree or trees is preferred.

Obstacles: An obstacle is anything that restricts air flow. A tree can be an obstacle because it has branches and leaves that restrict the flow of air but a pole is not considered to be an obstacle. To avoid interference from obstacles, the probe or inlet must have unrestricted airflow and be located away from obstacles. The distance from the obstacle to the probe or inlet must be at least twice the height that the obstacle protrudes above the probe, inlet, or monitoring path.

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.

Site Review Form Calendar Year 2020

Site Information

Region <u>ARO</u>	Site Name <u>Lenoir</u>	AQS Site # <u>37-027-0003</u>	
Street Address <u>291 Nuway Circle</u>		City <u>Lenoir</u>	
Urban Area <u>LENOIR</u>	Core-based Statistical Area <u>Hickory-Lenoir-Morganton, NC</u>		
Enter Exact			
Latitude <u>-81.5306</u>	Longitude <u>35.9359</u>	Method of Measuring	
In Decimal Degrees	In Decimal Degrees	Explanation: <u>Google Earth Pro</u>	
Elevation Above/below Mean Sea Level (in meters)		<u>372.00</u>	
Name of nearest road to inlet probe <u>Nuway Circle</u> ADT <u>5800</u> Year latest available <u>2018</u>			
Distance of ozone probe to nearest traffic lane (m) <u>146</u> Direction from ozone probe to nearest traffic lane <u>E</u>			
Comments: _____			
Name of nearest major road <u>Hwy 321</u> ADT <u>23000</u> Year latest available <u>2019</u>			
Distance of site to nearest major road (m) <u>146.00</u> Direction from site to nearest major road <u>E</u>			
Comments: _____			
Site located near electrical substation/high voltage power lines?			Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Distance of site to nearest railroad track		(m) <u>1023</u>	Direction to RR <u>WSW</u> <input type="checkbox"/> NA
OPTIONAL 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 <input checked="" type="checkbox"/> 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
<input checked="" type="checkbox"/> O ₃	<input checked="" type="checkbox"/> General/Background <input type="checkbox"/> Highest Concentration <input type="checkbox"/> Max O ₃ Concentration <input type="checkbox"/> Population Exposure <input type="checkbox"/> Source Oriented <input type="checkbox"/> Transport <input type="checkbox"/> Upwind Background <input type="checkbox"/> Welfare Related Impacts	<input type="checkbox"/> Micro <input type="checkbox"/> Middle <input type="checkbox"/> Neighborhood <input type="checkbox"/> Urban <input checked="" type="checkbox"/> Regional	<input checked="" type="checkbox"/> SLAMS <input type="checkbox"/> SPM
Probe inlet height (from ground) 2-15 m? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Give actual measured height from ground (meters) <u>4.46</u>			
Distance of outer edge of probe inlet from horizontal (wall) and/or vertical (roof) supporting structure > 1 m? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Actual measured distance from outer edge of probe to supporting structure (meters) <u>1.60</u>			
Is probe > 20 m from the nearest tree drip line? Yes <input checked="" type="checkbox"/> *No <input type="checkbox"/> (answer *'d questions)			
*Is probe > 10 m from the nearest tree drip line? Yes <input type="checkbox"/> *No <input type="checkbox"/> *Number of trees within 10 meters _____			
*Distance from probe to closest tree (m) _____ Direction from probe to tree _____ *Height of tree above probe (m) _____			
Are there any obstacles to air flow? *Yes <input type="checkbox"/> (answer *'d questions) No <input checked="" type="checkbox"/>			
*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 <input type="checkbox"/> No <input type="checkbox"/>			

Site Review Form Calendar Year 2020

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: _____

Date of Last Site Pictures: September 10, 2018 New Pictures Submitted? Yes ☐ No ☒

Reviewer Terri Davis Date: November 2, 2020

Ambient Monitoring Coordinator Steve Ensley Date: December 16, 2020

Instructions:

Trees: The probe or inlet must be at least 10 meters or further from the drip line of trees. A distance of at least 20 meters between the probe and any tree or trees is preferred.

Obstacles: An obstacle is anything that restricts air flow. A tree can be an obstacle because it has branches and leaves that restrict the flow of air but a pole is not considered to be an obstacle. To avoid interference from obstacles, the probe or inlet must have unrestricted airflow and be located away from obstacles. The distance from the obstacle to the probe or inlet must be at least twice the height that the obstacle protrudes above the probe, inlet, or monitoring path.

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.

Site Review Form Calendar Year 2020

Site Information

Region <u>MRO</u>	Site Name <u>Hickory</u>	AQS Site # <u>37-035-0004</u>
Street Address <u>1st Ave. SW at 15th St. SW</u>		City <u>Hickory</u>
Urban Area <u>HICKORY</u>	Core-based Statistical Area <u>Hickory-Lenoir-Morganton, NC</u>	
Enter Exact		
Latitude <u>35.729030</u>	Longitude <u>-81.3657847</u>	Method of Measuring: Google Earth
In Decimal Degrees	In Decimal Degrees	Matches Web Map: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Elevation Above/below Mean Sea Level (in meters) <u>348.00</u>		Method of Measuring: <u>NCDOT Maps</u>
Name of nearest road to inlet probe <u>2nd Ave. SW</u> ADT Latest available <u>3200</u> Year latest available <u>2019</u>		
Distance of PM inlet to nearest traffic lane (m) <u>22.6</u> Direction from inlet to nearest traffic lane <u>SSW</u>		
Comments: <u>None.</u>		
Name of nearest major road <u>Dr. MLK Mem. Hwy. / HWY 321</u> ADT <u>39500</u> Year latest available <u>2019</u>		
Distance of site to nearest major road (m) <u>159.10</u> Direction from site to nearest major road <u>NE</u>		
Comments: <u>None.</u>		
Site located near electrical substation/high voltage power lines?		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Distance of site to nearest railroad track	(m) <u>211</u> Direction to RR <u>N</u>	<input type="checkbox"/> NA
OPTIONAL Distance of site to nearest power pole w/transformer		(m) <u>33</u> Direction <u>E</u>
Distance between site and drip line of water tower (m) <u>16.8</u> Direction from site to water tower <u>NW</u>		<input type="checkbox"/> 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.		
<u>None noted.</u>		

Instructions:

Address: Sometimes local addresses change. Confirm the local address of the site using a 911 locator or the address used by the local utility company, community or county to identify the site location.

Urban Area: If the monitor is located within the bounds of an urban area (an incorporated area with a population of 10,000 or more people), select the appropriate urban area from the list. Otherwise select "Not in an Urban Area".

Core-Based Statistical Area (CBSA): If the monitor is located in a county that belongs to a metropolitan statistical area (MSA) or a micropolitan statistical area (MiSA), then it is in a core-based statistical area. If the monitoring station is located in a county included in a MSA or MiSA, select the CBSA from the list. Otherwise select "None".

Longitude and Latitude: Determine the longitude and latitude using Google Earth. Report the longitude and latitude that matches up with the exact location of the monitoring shelter or monitor if no shelter is at the site. **The longitude and latitude should be entered in decimal degrees. Use a conversion program, such as <http://transition.fcc.gov/mb/audio/bickel/DDDMSS-decimal.html>, to convert to decimal degrees if needed.**

Road Information: For the nearest road to the inlet probe, list whatever roadway that carries vehicles closest to the probe, whether it is a named or public road and even if it has very little traffic. Use the comments space to describe the road or the source of the annual average daily traffic (AADT) counts. If the monitor is located near an unnamed, little used, private road, use the nearest major road space to list the closest named public road to the site. Include the distance and direction of the nearest major road from the site and the AADT if available. If the closest road is a small public road but there is a large major roadway such as an interstate highway, divided highway, major thoroughfare, etc., near the monitoring station use the nearest major road space to list the information about this major roadway. Include the distance and direction of the major road from the site and the AADT. The AADT for state roads can be obtained from the North Carolina Division of Transportation at <http://www.ncdot.gov/travel/statemapping/trafficvolumemaps/default.html>. For AADT values for local roadways contact the appropriate local governments.

Any Sources of Potential Bias: Use this space to record information about the site that is not requested elsewhere. Especially note any changes that occurred near the site in the past year, such as road construction, building construction, new businesses, businesses closing, or changes in traffic patterns, crops or other agricultural activities.

Site Review Form Calendar Year 2020

Parameters	Monitoring Objective	Scale	Monitor Type
Air flow < 200 L/min <input type="checkbox"/> PM2.5 FRM <input type="checkbox"/> PM10 Cont. (BAM) <input type="checkbox"/> PM10-2.5 FRM <input type="checkbox"/> PM10-2.5 BAM <input type="checkbox"/> PM2.5 Cont. (BAM1020) <input checked="" type="checkbox"/> PM2.5 Cont. (BAM1022) <input type="checkbox"/> PM2.5 Cont. (T640X)	<input type="checkbox"/> General/Background <input type="checkbox"/> Highest Concentration <input checked="" type="checkbox"/> Population Exposure <input type="checkbox"/> Source Oriented <input type="checkbox"/> Transport <input type="checkbox"/> Welfare Related Impacts	<input type="checkbox"/> Micro <input type="checkbox"/> Middle <input checked="" type="checkbox"/> Neighborhood <input type="checkbox"/> Urban <input type="checkbox"/> Regional	<input checked="" type="checkbox"/> SLAMS <input type="checkbox"/> SPM <input type="checkbox"/> Nonregulatory
Probe inlet height (from ground) <input type="checkbox"/> < 2 m <input checked="" type="checkbox"/> 2-7m <input type="checkbox"/> 7-15 m <input type="checkbox"/> > 15 m Actual measured distance from probe inlet to ground (meters) <u>HC BAM 2.48, HCA BAM 2.48</u> Distance of outer edge of probe inlet from horizontal (wall) and/or vertical (platform or roof) supporting structure > 2 m? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Actual measured distance from outer edge of probe inlet to supporting structure (meters) <u>HC BAM 2.1, HCA BAM 2.1</u>			
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 <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>
Are collocated PM2.5 Monitors (Two FRMs, FRM & BAM, BAM & BAM) Located at Site? *Yes <input checked="" type="checkbox"/> (answer *'d questions) No <input type="checkbox"/> NA <input type="checkbox"/>			
* Entire inlet opening of collocated PM 2.5 samplers (X) within 1 to 4 m of each other? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Give actual (meters): <u>2.13</u>			
*Are collocated PM2.5 sampler inlets within 1 m vertically of each other? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Give actual (meters): <u>0</u>			
Is a low-volume PM10 monitor collocated with a PM2.5 monitor at the site to measure PM10-2.5? *Yes <input type="checkbox"/> (answer *'d questions) No <input checked="" type="checkbox"/> NA <input type="checkbox"/>			
* Entire inlet opening of collocated PM10 and PM2.5 samplers for PM10-2.5 (X) within 2 to 4 m of each other? Yes <input type="checkbox"/> No <input type="checkbox"/>			
*Are collocated PM10 and PM2.5 sampler inlets within 1 m vertically of each other? Yes <input type="checkbox"/> No <input type="checkbox"/>			
Is probe > 20 m from the nearest tree drip line? Yes <input checked="" type="checkbox"/> *No <input type="checkbox"/> (answer *'d questions)			
*Is probe > 10 m from the nearest tree drip line? Yes <input type="checkbox"/> *No <input type="checkbox"/> *Number of trees within 10 meters _____ *Distance from probe to closest tree (m) _____ Direction from probe to tree _____ *Height of tree above probe (m) _____			
Are there any obstacles to air flow? *Yes <input type="checkbox"/> (answer *'d questions) No <input checked="" type="checkbox"/>			
*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 <input type="checkbox"/> No <input type="checkbox"/> *Width of obstacle in terms of degrees blocked (see instructions) _____			

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: None _____

Date of Last Site Pictures: 12/21/2020 New Pictures Submitted? Yes ☒ No ☐

Reviewer PJC Date: January 8, 2021

Ambient Monitoring Coordinator PJC Date: 1/8/2021

Site Review Form Calendar Year 2020

Site Information

Region <u>MRO</u>	Site Name <u>Crouse</u>	AQS Site # <u>37-109-0004</u>	
Street Address- <u>1487 Riverview Road</u>		City <u>Lincolnton</u>	
Urban Area <input type="checkbox"/> Not in an Urban Area <input type="checkbox"/>	Core-based Statistical Area <u>Charlotte-Gastonia-Concord, NC-SC</u>		
Enter Exact		Method of Measuring	
Latitude <u>35.4385</u>	Longitude <u>-81.2767</u>		
In Decimal Degrees	In Decimal Degrees	Other (explain)	Explanation: <u>NCDOT Maps</u>
Elevation Above/below Mean Sea Level (in meters)		<u>265</u>	
Name of nearest road to inlet probe <u>Riverview Road</u> ADT <u>2200</u> Year latest available <u>2019</u>			
Distance of ozone probe to nearest traffic lane (m) <u>52.8</u> Direction from ozone probe to nearest traffic lane <u>SSW</u>			
Comments: <u>None.</u>			
Name of nearest major road <u>E. Hwy 150</u> ADT <u>8800</u> Year latest available <u>2019</u>			
Distance of site to nearest major road (m) <u>88.40</u> Direction from site to nearest major road <u>NW</u>			
Comments: <u>None.</u>			
Site located near electrical substation/high voltage power lines?			Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Distance of site to nearest railroad track		(m) <u>303</u> Direction to RR <u>W</u>	<input type="checkbox"/> NA
OPTIONAL Distance of site to nearest power pole w/transformer		(m) _____	Direction _____
Distance between site and drip line of water tower (m) <u>28</u>		Direction from site to water tower <u>NNE</u> <input type="checkbox"/> 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.			
<u>None noted.</u>			

ANSWER ALL APPLICABLE QUESTIONS:

Parameters	Monitoring Objective	Scale	Site Type
<input checked="" type="checkbox"/> O ₃	<input checked="" type="checkbox"/> General/Background <input type="checkbox"/> Highest Concentration <input type="checkbox"/> Max O ₃ Concentration <input type="checkbox"/> Population Exposure <input type="checkbox"/> Source Oriented <input type="checkbox"/> Transport <input type="checkbox"/> Upwind Background <input type="checkbox"/> Welfare Related Impacts	<input type="checkbox"/> Micro <input type="checkbox"/> Middle <input type="checkbox"/> Neighborhood <input checked="" type="checkbox"/> Urban <input type="checkbox"/> Regional	<input checked="" type="checkbox"/> SLAMS <input type="checkbox"/> SPM
Probe inlet height (from ground) 2-15 m? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Give actual measured height from ground (meters) <u>3.50</u>			
Distance of outer edge of probe inlet from horizontal (wall) and/or vertical (roof) supporting structure > 1 m? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Actual measured distance from outer edge of probe to supporting structure (meters) <u>1.3</u>			
Is probe > 20 m from the nearest tree drip line? Yes <input checked="" type="checkbox"/> *No <input type="checkbox"/> (answer *'d questions)			
*Is probe > 10 m from the nearest tree drip line? Yes <input type="checkbox"/> *No <input type="checkbox"/> *Number of trees within 10 meters _____			
*Distance from probe to closest tree (m) _____ Direction from probe to tree _____ *Height of tree above probe (m) _____			
Are there any obstacles to air flow? *Yes <input type="checkbox"/> (answer *'d questions) No <input checked="" type="checkbox"/>			
*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 <input type="checkbox"/> No <input type="checkbox"/>			

Site Review Form Calendar Year 2020

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: None

Date of Last Site Pictures: January 4, 2021 New Pictures Submitted? Yes ☒ No ☐

Reviewer PJC Date: January 8, 2021

Ambient Monitoring Coordinator PJC Date: 1/8/2021

Instructions:

Trees: The probe or inlet must be at least 10 meters or further from the drip line of trees. A distance of at least 20 meters between the probe and any tree or trees is preferred.

Obstacles: An obstacle is anything that restricts air flow. A tree can be an obstacle because it has branches and leaves that restrict the flow of air but a pole is not considered to be an obstacle. To avoid interference from obstacles, the probe or inlet must have unrestricted airflow and be located away from obstacles. The distance from the obstacle to the probe or inlet must be at least twice the height that the obstacle protrudes above the probe, inlet, or monitoring path.

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.

Site Review Form Calendar Year 2020

Site Information

Region <u>MRO</u>	Site Name <u>Monroe Middle School</u>	AQS Site # <u>37-179-0003</u>	
Street Address <u>701 Charles Street</u>		City <u>Monroe</u>	
Urban Area <u>MONROE</u>	Core-based Statistical Area <u>Charlotte-Gastonia-Concord, NC-SC</u>		
Enter Exact			
Latitude <u>-80.5410</u>	Longitude <u>34.9739</u>	Method of Measuring	
In Decimal Degrees	In Decimal Degrees	Other (explain)	Explanation: <u>Google Maps</u>
Elevation Above/below Mean Sea Level (in meters)		<u>184.00</u>	
Name of nearest road to inlet probe <u>Charles Street</u> ADT <u>3400</u> Year latest available <u>2019</u>			
Distance of ozone probe to nearest traffic lane (m) <u>71</u> Direction from ozone probe to nearest traffic lane <u>W</u>			
Comments: <u>None.</u>			
Name of nearest major road <u>HWY 74/601</u> ADT <u>49000</u> Year <u>2019</u>			
Distance of site to nearest major road (m) <u>1548.00</u> Direction from site to nearest major road <u>ENE</u>			
Comments: <u>None.</u>			
Site located near electrical substation/high voltage power lines?			Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Distance of site to nearest railroad track		(m) <u>975</u> Direction to RR <u>NE</u>	<input type="checkbox"/> NA
OPTIONAL Distance of site to nearest power pole w/transformer		(m) <u>967</u>	Direction <u>NE</u>
Distance between site and drip line of water tower (m)		Direction from site to water tower	<input checked="" type="checkbox"/> 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.			
<u>None.</u>			

ANSWER ALL APPLICABLE QUESTIONS:

Parameters	Monitoring Objective	Scale	Site Type
<input checked="" type="checkbox"/> O ₃	<input type="checkbox"/> General/Background <input type="checkbox"/> Highest Concentration <input type="checkbox"/> Max O ₃ Concentration <input checked="" type="checkbox"/> Population Exposure <input type="checkbox"/> Source Oriented <input type="checkbox"/> Transport <input type="checkbox"/> Upwind Background <input type="checkbox"/> Welfare Related Impacts	<input type="checkbox"/> Micro <input type="checkbox"/> Middle <input checked="" type="checkbox"/> Neighborhood <input type="checkbox"/> Urban <input type="checkbox"/> Regional	<input checked="" type="checkbox"/> SLAMS <input type="checkbox"/> SPM
Probe inlet height (from ground) 2-15 m? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Give actual measured height from ground (meters) <u>3.90</u>			
Distance of outer edge of probe inlet from horizontal (wall) and/or vertical (roof) supporting structure > 1 m? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Actual measured distance from outer edge of probe to supporting structure (meters) <u>1.10</u>			
Is probe > 20 m from the nearest tree drip line? Yes <input checked="" type="checkbox"/> *No <input type="checkbox"/> (answer *'d questions)			
*Is probe > 10 m from the nearest tree drip line? Yes <input type="checkbox"/> *No <input type="checkbox"/> *Number of trees within 10 meters _____ *Distance from probe to closest tree (m) _____ Direction from probe to tree _____ *Height of tree above probe (m) _____			
Are there any obstacles to air flow? *Yes <input type="checkbox"/> (answer *'d questions) No <input checked="" type="checkbox"/>			
*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 <input type="checkbox"/> No <input type="checkbox"/>			

Site Review Form Calendar Year 2020

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: None.

Date of Last Site Pictures: January 4, 2021 New Pictures Submitted? Yes ☒ No ☐

Reviewer MWH Date: December 22, 2020

Ambient Monitoring Coordinator PJC Date: 1/8/2021

Instructions:

Trees: The probe or inlet must be at least 10 meters or further from the drip line of trees. A distance of at least 20 meters between the probe and any tree or trees is preferred.

Obstacles: An obstacle is anything that restricts air flow. A tree can be an obstacle because it has branches and leaves that restrict the flow of air but a pole is not considered to be an obstacle. To avoid interference from obstacles, the probe or inlet must have unrestricted airflow and be located away from obstacles. The distance from the obstacle to the probe or inlet must be at least twice the height that the obstacle protrudes above the probe, inlet, or monitoring path.

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.

Site Review Form Calendar Year 2020

Site Information

Region <u>MRO</u>	Site Name <u>Rockwell</u>	AQS Site # <u>37-159-0021</u>	
Street Address <u>316 West Street</u>		City <u>Rockwell</u>	
Urban Area <input type="checkbox"/> Not in an Urban Area <input type="checkbox"/>	Core-based Statistical Area <u>Charlotte-Concord-Gastonia, NC-SC</u>		
Enter Exact			
Latitude <u>-80.3953</u>	Longitude <u>35.5519</u>	Method of Measuring	
In Decimal Degrees	In Decimal Degrees	Other (explain)	Explanation: <u>Google Maps</u>
Elevation Above/below Mean Sea Level (in meters)		<u>234.00</u>	
Name of nearest road to inlet probe <u>Gold Hill Road</u> ADT <u>650</u> Year latest available <u>2019</u>			
Comments: <u>None.</u>			
Distance of site to nearest major road (m) <u>370.00</u> Direction from site to nearest major road <u>S</u>			
Name of nearest major road <u>HWY 52</u> ADT <u>8100</u> Year <u>2018</u>			
Comments: <u>None.</u>			
Site located near electrical substation/high voltage power lines?			Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Distance of site to nearest railroad track		(m) <u>737</u> Direction to RR <u>SW</u>	<input type="checkbox"/> NA
OPTIONAL 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 <input checked="" type="checkbox"/> 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.			
<u>None noted.</u>			

ANSWER ALL APPLICABLE QUESTIONS:

Parameters	Monitoring Objective	Scale	Monitor Type
<input type="checkbox"/> NA <input type="checkbox"/> SO ₂ (NAAQS) <input type="checkbox"/> SO ₂ (trace-level) <input checked="" type="checkbox"/> NO ₂ (NAAQS) <input type="checkbox"/> HSN _O _y <input checked="" type="checkbox"/> O ₃ <input type="checkbox"/> NH ₃ <input type="checkbox"/> Hydrocarbon <input type="checkbox"/> Air Toxics <input type="checkbox"/> CO (trace-level)	<input type="checkbox"/> General/Background _____ <input checked="" type="checkbox"/> Highest Concentration _____ <input type="checkbox"/> Max O ₃ Concentration _____ <input type="checkbox"/> Population Exposure _____ <input type="checkbox"/> Source Oriented _____ <input type="checkbox"/> Transport _____ <input type="checkbox"/> Upwind Background _____ <input type="checkbox"/> Welfare Related Impacts _____	<input type="checkbox"/> Micro _____ <input type="checkbox"/> Middle _____ <input type="checkbox"/> _____ Neighborhood _____ <input checked="" type="checkbox"/> Urban _____ <input type="checkbox"/> Regional _____	<input checked="" type="checkbox"/> SLAMS _____ <input type="checkbox"/> SPM _____ Monitor Network Affiliation <input type="checkbox"/> NCORE _____ <input type="checkbox"/> Unofficial PAMS _____
Probe inlet height (from ground) 2-15 m? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Give actual measured height from ground (meters) <u>3.50</u>			
Distance of outer edge of probe inlet from horizontal (wall) and/or vertical (roof) supporting structure > 1 m? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Actual measured distance from outer edge of probe to supporting structure (meters) <u>1.10</u>			
Distance of outer edge of probe inlet from other monitoring probe inlets > 1 m? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>			
Is probe > 20 m from the nearest tree drip line? Yes <input checked="" type="checkbox"/> *No <input type="checkbox"/> (answer *d questions)			
*Is probe > 10 m from the nearest tree drip line? Yes <input type="checkbox"/> *No <input type="checkbox"/> *Number of trees within 10 meters _____			
*Distance from probe to closest tree (m) _____ Direction from probe to tree _____ *Height of tree above probe (m) _____			
Are there any obstacles to air flow? *Yes <input type="checkbox"/> (answer *d questions) No <input checked="" type="checkbox"/>			
*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 <input type="checkbox"/> No <input type="checkbox"/>			
Distance of probe to nearest traffic lane (m) <u>17</u> Direction from probe to nearest traffic lane <u>N</u>			

Site Review Form Calendar Year 2020

Parameters	Monitoring Objective	Scale	Site Type
<input type="checkbox"/> NA Air flow < 200 L/min <input type="checkbox"/> PM2.5 FRM <input type="checkbox"/> PM10 FRM <input type="checkbox"/> PM10 Cont. (BAM) <input type="checkbox"/> PM10-2.5 FRM <input type="checkbox"/> PM10-2.5 BAM <input checked="" type="checkbox"/> PM2.5 Cont. (BAM)	<input type="checkbox"/> General/Background _____ <input type="checkbox"/> Highest Concentration _____ <input checked="" type="checkbox"/> Population Exposure _____ <input type="checkbox"/> Source Oriented _____ <input type="checkbox"/> Transport _____ <input type="checkbox"/> Welfare Related Impacts _____	<input type="checkbox"/> Micro _____ <input type="checkbox"/> Middle _____ <input checked="" type="checkbox"/> Neighborhood _____ <input type="checkbox"/> Urban _____ <input type="checkbox"/> Regional _____	<input type="checkbox"/> SLAMS _____ <input checked="" type="checkbox"/> SPM _____ Monitor NAAQS Exclusion <input type="checkbox"/> NONREGULATORY _____
Probe inlet height (from ground) <input type="checkbox"/> < 2 m <input checked="" type="checkbox"/> 2-7m <input type="checkbox"/> 7-15 m <input type="checkbox"/> > 15 m _____ Actual measured distance from probe inlet to ground (meters) <u>2.4</u> 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) <u>2.1</u> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> 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 <input type="checkbox"/> No <input type="checkbox"/> NA <input checked="" type="checkbox"/>			
Are collocated PM2.5 Monitors (Two FRMs, FRM & BAM, BAM & BAM) Located at Site? *Yes <input type="checkbox"/> (answer *'d questions) No <input checked="" type="checkbox"/> NA <input type="checkbox"/> * Entire inlet opening of collocated PM 2.5 samplers (X) within 2 to 4 m of each other? Yes <input type="checkbox"/> No <input type="checkbox"/> Give actual (meters) _____ *Are collocated PM2.5 sampler inlets within 1 m vertically of each other? Yes <input type="checkbox"/> No <input type="checkbox"/> Give actual (meters) _____			
Is a low-volume PM10 monitor collocated with a PM2.5 monitor at the site to measure PM10-2.5? *Yes <input type="checkbox"/> (answer *'d questions) No <input checked="" type="checkbox"/> NA <input type="checkbox"/> * Entire inlet opening of collocated PM10 and PM2.5 samplers for PM10-2.5 (X) within 2 to 4 m of each other? Yes <input type="checkbox"/> No <input type="checkbox"/> *Are collocated PM10 and PM2.5 sampler inlets within 1 m vertically of each other? Yes <input type="checkbox"/> No <input type="checkbox"/>			
Is probe > 20 m from the nearest tree drip line? Yes <input checked="" type="checkbox"/> *No <input type="checkbox"/> (answer *'d questions) *Is probe > 10 m from the nearest tree drip line? Yes <input type="checkbox"/> *No <input type="checkbox"/> *Number of trees within 10 meters _____ *Distance from probe to closest tree (m) _____ Direction from probe to tree _____ *Height of tree above probe (m) _____			
Are there any obstacles to air flow? *Yes <input type="checkbox"/> (answer *'d questions) No <input checked="" type="checkbox"/> *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 <input type="checkbox"/> No <input type="checkbox"/> Distance of probe to nearest traffic lane (m) <u>18</u> Direction from probe to nearest traffic lane <u>N</u>			

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:

Date of Last Site Pictures 12/17/2020 New Pictures Submitted? Yes ☒ No ☐

Reviewer MWH

Date December 22, 2020

Ambient Monitoring Coordinator PJC

Date January 8, 2021

Appendix C-2. Scale of Representativeness

Each agency must describe each station in the monitoring network 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) Micro-scale - 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 match correctly 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 C7. 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