

ROY COOPER
Governor

MICHAEL S. REGAN
Secretary



April 29, 2020

Mary S. Walker, Regional Administrator
USEPA Region 4
Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, GA 30303-8960

Subject: North Carolina's Recommendation on Boundaries for the 2010 1-Hour Primary Sulfur Dioxide National Ambient Air Quality Standard for Cunningham and Limestone Townships – Round 4

Dear Ms. Walker:

Pursuant to the requirements of the federal Clean Air Act and on behalf of Governor Roy Cooper, I am submitting the State of North Carolina's recommendations for completing designations for the 2010 1-hour primary sulfur dioxide (SO₂) National Ambient Air Quality Standard (NAAQS). Under the U.S. Environmental Protection Agency's (EPA) Data Requirements Rule (DRR), North Carolina elected to conduct source-oriented monitoring for three years to evaluate ambient SO₂ concentrations in three townships. The recommendations are based on an evaluation of the five factors specified in EPA's "Area Designations for the 2010 Primary Sulfur Dioxide National Ambient Air Quality Standard – Round 4," dated September 5, 2019.

In this submittal, I am pleased to recommend an attainment designation for Cunningham and Limestone Townships. North Carolina is preparing a source specific SO₂ State Implementation Plan (SIP) for Blue Ridge Paper Products to support its designation recommendation of attainment for Beaverdam Township. Therefore, North Carolina's recommendation for designating Beaverdam Township is not included in this submittal because it will be included in the source-specific SIP submittal.

North Carolina's recommendations for Cunningham and Limestone Townships are based on the 3-year design value calculated using the annual 99th percentile of 1-hour daily maximum concentrations measured by source-oriented ambient monitors in each township for calendar years 2017, 2018, and 2019. The monitoring data for each year have been certified. For Limestone Township, the design value is 12 parts per billion (ppb) or 16% of the NAAQS (i.e., 75 ppb). For Cunningham Township, the design value is 32 ppb or 43% of the NAAQS.

Based on the collective review of air quality measurements, emissions records, and other factors, we believe that the enclosed boundary recommendations are based on sound science and verifiable assessment techniques. We recognize the health impacts of SO₂ and believe the recommendations support North Carolina's and EPA's goals of cleaner air, healthier lives, a stronger economy, and more effective conservation of our land and water. The information provided herein fully supports EPA's Round 4 designation action which must be completed by December 31, 2020.



North Carolina is committed to protecting the health of our citizens, our environment, and our economy. Improving and maintaining air quality is critical to the health of our citizens, our future growth, prosperity, and quality of life. We look forward to discussing these boundary recommendations with you. More detailed information and supporting data are included in the enclosed recommendations package.

Sincerely,

A handwritten signature in black ink, reading "Michael S. Regan". The signature is fluid and cursive, with the first name "Michael" and last name "Regan" clearly legible.

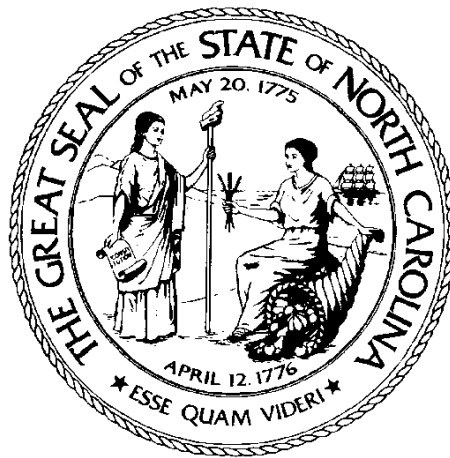
Michael S. Regan, Secretary
Department of Environmental Quality

MSR/maa

Enclosure

cc: The Honorable Roy Cooper
Ms. Sheila C. Holman
Mr. Michael A. Abraczinskas
Ms. Leslie Rhodes
Ms. Ashley Featherstone
Mr. Minor Barnette

**State of North Carolina's
Recommendation on Boundaries
for the 2010 1-Hour Sulfur Dioxide
Primary National Ambient Air Quality
Standard for Cunningham and Limestone
Townships – Round 4**



April 29, 2020

Governor Roy Cooper

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I. Executive Summary

1. Purpose

On June 22, 2010, the U.S. Environmental Protection Agency (EPA) revised the Sulfur Dioxide (SO₂) Primary National Ambient Air Quality Standard (NAAQS).¹ The EPA adopted a new 1-hour standard of 75 parts per billion (ppb), measured as a three-year average of the annual 99th percentile of 1-hour daily maximum concentrations (40 CFR 50.17).

The purpose of this document is to recommend that EPA designate the following townships in North Carolina as “attainment” of the 2010 1-hour SO₂ NAAQS.

- Limestone Township in Buncombe County
- Cunningham Township in Person County

North Carolina’s recommendations are based on the 3-year design value calculated using the annual 99th percentile of 1-hour daily maximum concentrations measured by source-oriented ambient monitors in each township for calendar years (CYs) 2017, 2018, and 2019. The monitoring data for CYs 2017, 2018 and 2019 have been certified. For Limestone Township, the design value is 12 ppb or 16% of the NAAQS. For Cunningham Township, the design value is 32 ppb or 43% of the NAAQS.

2. Organization of this Document

Section II of this document provides background information on the designation process and status with respect to the 2010 1-hour SO₂ NAAQS. Section III provides an evaluation of the five factors included in EPA’s guidance for Round 4 designations. Section IV presents North Carolina’s conclusions and designation recommendations.

II. Background

On August 21, 2015 (80 FR 51052), EPA promulgated the SO₂ Data Requirements Rule (DRR) (40 CFR Part 51, Subpart BB) that specified requirements for state and local air agencies to provide additional monitoring or modeling information on a timetable consistent with the court-ordered designation deadlines.² The DRR required air agencies to characterize air quality using either modeling of actual facility-wide emissions or using appropriately sited ambient air quality monitors for facilities with annual SO₂ emissions of 2,000 tons or more.

On January 15, 2016, North Carolina submitted to EPA a final list identifying facilities with greater than 2,000 tons per year of SO₂ emissions. On June 30, 2016, North Carolina submitted to EPA its proposed approach for evaluating air quality around the facilities using modeling or monitoring. On January 13, 2017, North Carolina submitted to EPA recommendations for

¹ *Primary National Ambient Air Quality Standard for Sulfur Dioxide*, Final Rule, 75 FR 35520, June 22, 2010.

² *Data Requirements Rule for the 2010 1-Hour Sulfur Dioxide (SO₂) Primary National Ambient Air Quality Standard (NAAQS)*, Final Rule, 80 FR 51052, August 21, 2015 (<https://www.govinfo.gov/content/pkg/FR-2015-08-21/pdf/2015-20367.pdf>).

designating all remaining townships in the state as “attainment” except for three townships. On December 21, 2017, EPA designated all townships in North Carolina as “attainment/unclassifiable” for which North Carolina recommended an “attainment” designation.³

Under the DRR, North Carolina elected to conduct source-oriented monitoring to evaluate ambient SO₂ concentrations near three facilities. Table 1 identifies the facilities and townships in which they are located for which source-oriented monitoring was conducted. The Duke Energy Progress’ (DEP) Roxboro Steam Electric Plant and the Blue Ridge Paper Products facility were selected for monitoring because their 2015 actual emissions exceeded EPA’s 2,000 ton per year SO₂ emissions threshold for evaluation. For the DEP Asheville Steam Electric Plant, 2015 actual emissions were below EPA’s 2,000 ton per year threshold; however, the North Carolina Department of Environmental Quality (DEQ)/Division of Air Quality (DAQ) elected to characterize air quality surrounding this facility because third-party modeling was submitted to the agency.

Table 1. North Carolina Facilities Characterized through Ambient Monitoring

Township	County	Facility
Limestone	Buncombe	Duke Energy Progress – Asheville Steam Electric Plant
Cunningham	Person	Duke Energy Progress – Roxboro Steam Electric Plant
Beaverdam	Haywood	Blue Ridge Paper Products

For Blue Ridge Paper Products, North Carolina is preparing a source specific SO₂ State Implementation Plan (SIP) to support its designation recommendation for Beaverdam Township. Therefore, North Carolina’s boundary recommendation for designating Beaverdam Township is not included in this document because it will be included in the source-specific SIP for the facility.

III. Supporting Information (Factor Analysis)

In developing its recommendations, North Carolina used EPA’s *Area Designations for the 2010 Primary Sulfur Dioxide National Ambient Air Quality Standard – Round 4*,⁴ and conducted an evaluation of five factors specified in the guidance. The five factors required to be considered are: 1) jurisdictional boundaries, 2) ambient air quality data or dispersion modeling, 3) emissions related data, 4) meteorology, and 5) geography and topography. The following presents the DEQ’s analysis of the five factors.

1. Jurisdictional Boundary

The EPA guidance requests clearly defined legal boundaries for carrying out the air quality planning and enforcement functions. Previously, for Round 3 SO₂ designations under the DRR,

³ *Air Quality Designations for the 2010 Sulfur Dioxide (SO₂) Primary National Ambient Air Quality Standard—Round 3*, Final Rule, 83FR1098, January 9, 2018. (40 CFR 81.334)

⁴ *Area Designations for the 2010 Primary Sulfur Dioxide National Ambient Air Quality Standard – Round 4*, Memorandum from Peter Tsirigotis, Director, Office of Air Quality Planning and Standards, U.S Environmental Protection Agency, to Regional Air Division Directors, Regions 1 - 10, September 5, 2019.

the DEQ recommended that EPA complete designations for North Carolina at the township level because of the 1-hour averaging time of the 2010 SO₂ NAAQS. The EPA agreed with the DEQ's recommendations and performed Round 3 designations by township.⁵ For Round 4, the DEQ recommends that EPA complete attainment designations for Limestone and Cunningham Townships.

2. Ambient Air Quality Monitoring

North Carolina submitted relevant information to EPA as part of its annual monitoring network plan to establish a monitoring site near each of the two facilities.⁶ All monitoring procedures and data collection efforts were conducted in accordance with EPA's monitoring requirements specified in 40 CFR Part 58. Source-oriented monitoring for DEP's Roxboro Steam Electric Plant began on January 1, 2017. Monitoring for DEP's Asheville Steam Electric Plant began on January 5, 2017 due to difficulties getting power connected at the site; however, complete monitoring data was collected for the quarter. Monitoring for these two sites was continued through December 31, 2019 to complete three years of monitoring. Monitoring data for CY 2017, 2018 and 2019 have been certified and served as the basis for calculating the design value for each site to determine compliance with the NAAQS.

Table 2 presents the three-year design value for each monitoring site based on certified data for CY 2017, 2018, and 2019. Figure 1 shows the location of source-oriented monitors and SO₂ sources in the Limestone Township, Buncombe County. Figure 2 shows the location of source-oriented monitors and SO₂ sources in the Cunningham Township, Person County.

Table 2. Certified Ambient Air SO₂ Monitoring Data and Design Values (2017 – 2019)

Monitoring Site ID	Monitor Name	County / Township	99th Percentile (ppb) by Calendar Year			3-Year Design Value (2017-2019)	Percent of the NAAQS (75 ppb)
			2017	2018	2019		
370210037	Skyland	Buncombe / Limestone	18.2	9.8	7.7	12	16%
371450004	Semora	Person / Cunningham	31.1	24.7	40.9	32	43%

⁵ *Air Quality Designations for the 2010 Sulfur Dioxide (SO₂) Primary National Ambient Air Quality Standard—Round 3*, Final Rule, 83 FR 1098, January 9, 2018. (40 CFR 81.334)

⁶ <http://deq.nc.gov/about/divisions/air-quality/air-quality-data/annual-network-plan> (accessed January 3, 2017).

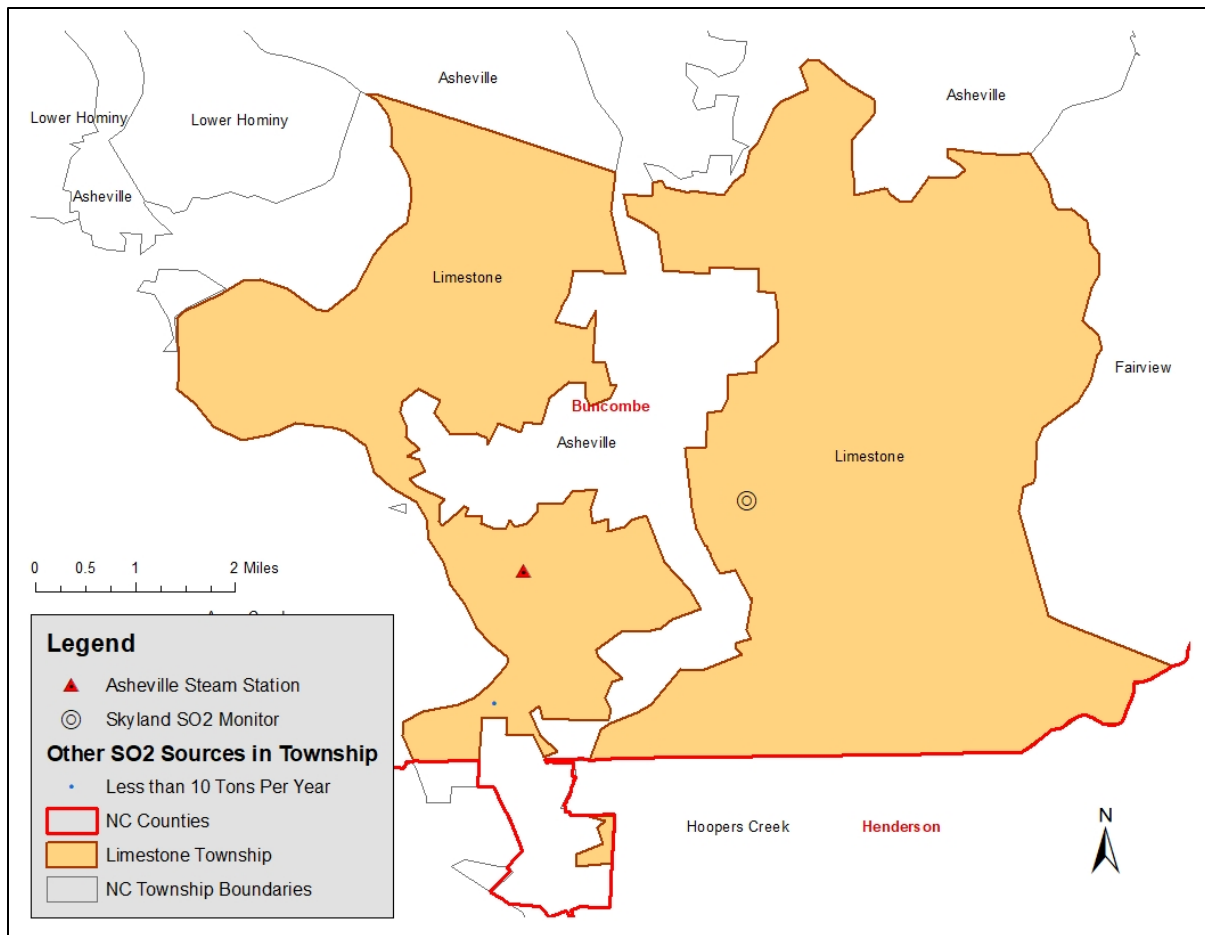


Figure 1. Asheville Steam Electric Plant and Skyland SO₂ Monitoring Site.

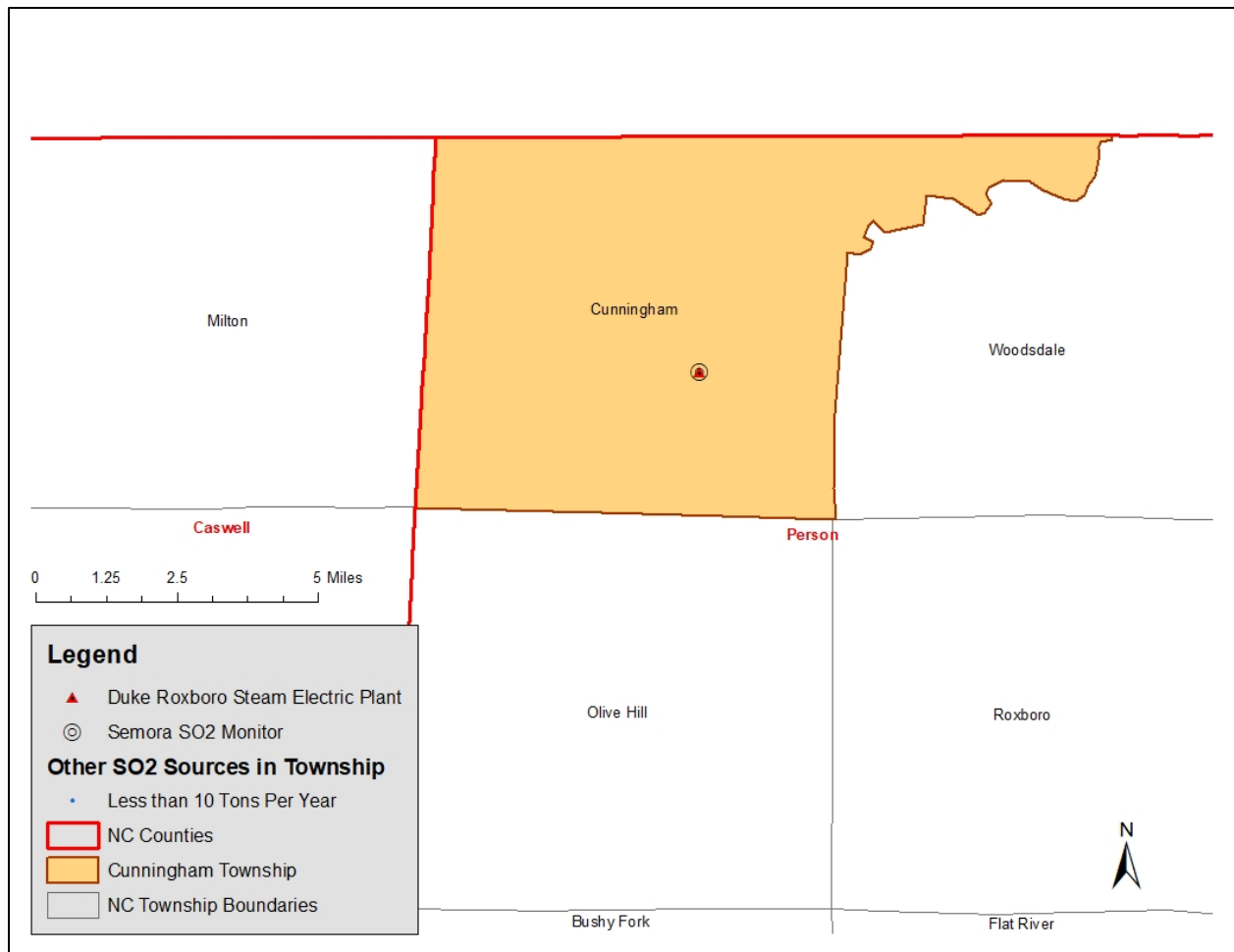


Figure 2. Roxboro Steam Electric Plant and Semora SO₂ Monitoring Site.

3. Emissions Related Data

Table 3 shows SO₂ emissions for stationary sources in Cunningham and Limestone Townships for CYs 2017, 2018 and 2019. The SO₂ sources in Limestone Township in Buncombe County are DEP's Asheville Steam Electric Plant and Cedar Peaks Enterprises, Inc. Cedar Peaks Enterprises is a portable asphalt plant that operated in Buncombe County during CY 2017 only. The DEP's Asheville Plant is the only SO₂ source that operated in Limestone Township during CY 2018 and CY 2019. The two coal-fired boilers that were operated at the plant during the 2017 – 2019 monitoring period were permanently shut down on January 29, 2020. The coal-fired boilers have been replaced with natural gas combined cycle units that emit significantly lower SO₂ emissions than the coal units; therefore, the SO₂ emissions for this facility are expected to be much lower than in previous years when the coal-fired boilers were operated.

The DEP's Roxboro Steam Electric Plant and CertainTeed Roxboro Wallboard Facility are the only two stationary sources of SO₂ emissions in Cunningham Township. The major source of SO₂ emissions is DEP's Roxboro Steam Electric Plant. Although emissions have increased from CY 2017 through CY 2019, the design value is 32 ppb which is well below the NAAQS.

Emissions were the highest in 2019 but the 99th percentile concentration recorded by the monitor was 40.9 ppb. It is not anticipated that emissions at the facility will reach levels that will cause a violation of the NAAQS in the future.

Table 3. Annual SO₂ Emissions for Stationary Sources in Limestone and Cunningham Townships, North Carolina (2017 – 2019)

Facility Name	EIS Facility ID*	Total SO2 Emissions (Tons/Year)		
		CY2017	CY2018	CY2019
<i>Sources in Limestone Township, Buncombe County</i>				
Duke Energy Progress - Asheville Steam Electric Plant	8392811	792.25	779.69	711.37
Cedar Peaks Enterprises, Inc. [Facility is a portable asphalt plant that only operated within the township during CY2017]	18094211	9.25	0.00	0.00
Total Emissions		801.50	779.69	711.37
<i>Sources in Cunningham Township, Person County</i>				
Duke Energy Progress - Roxboro Steam Electric Plant	7300029	3,413.60	3,605.05	4,141.56
CertainTeed Roxboro Wallboard Facility	7300082	0.38	0.33	0.4
Total Emissions		3,413.98	3,605.38	4,141.96

* EPA Emissions Inventory System.

4. Meteorology

Meteorology was considered in the siting of the SO₂ ambient air monitors for Limestone and Cunningham Townships. The locations of the monitors were determined using the American Meteorological Society (AMS)/EPA Regulatory Model (AERMOD) which is the preferred air dispersion model because it is capable of handling rural and urban areas, flat and complex terrain, surface and elevated releases and multiple sources, including, point, area and volume sources, to address ambient impacts for the designations process. For the Limestone Township, National Weather Service (NWS) Automated Surface Observation Station (ASOS) data for 2012 to 2014 for the station located at Asheville, NC were processed using AERMET. For the Cunningham Township, NWS ASOS data for 2012 to 2014 for the station located at Danville, Virginia were processed using AERMET. Upper air data for the same period from Greensboro, North Carolina, were used for both sites. AERMinute was also used in processing the data for both sites to incorporate additional wind data. In addition, the monitoring sites account for meteorology affecting the monitored area during the sampling process. Therefore, this factor is accounted for in the monitoring results.

5. Topography and Geography

Topography and geography were considered in the siting of the SO₂ ambient air monitors for Limestone and Cunningham Townships. The locations of the monitors were determined using AERMOD. Terrain data used in the analysis were obtained from the United States Geological Survey (USGS) Seamless Data Server.⁷ The 1 arc-second National Elevation Dataset (NED) data were obtained in the GeoTIFF format and used in determining receptor elevations and hill heights using the AERMOD Terrain Preprocessor (AERMAP). Therefore, topography and geography are accounted for in the monitoring results.

IV. Conclusions

Based on the results of applying EPA's five factor analysis, the DEQ recommends that EPA designate Limestone Township and Cunningham Townships as attainment of the 2010 1-hour SO₂ NAAQS for the following reasons:

- **Limestone Township:** Based on three years (CYs 2017 – 2019) of certified monitoring data collected by the monitor sited near DEP's Asheville Steam Electric Plant (the largest source of SO₂ emissions in the township), the three-year SO₂ design value is 12 ppb or 16% of the NAAQS. As of January 29, 2020, two coal-fired boilers were permanently shut down and replaced with natural gas combined cycle units that will keep SO₂ emissions at much lower levels in the future. The State concludes that the emissions levels at the DEP Asheville Plant will not interfere with the attainment of 1-hour SO₂ NAAQS and recommends that Limestone Township be designated attainment.
- **Cunningham Township:** Based on three years (CYs 2017 – 2019) of certified monitoring data collected by the monitor sited near DEP's Roxboro Steam Electric Plant (the largest source of SO₂ emissions in the township), the three-year SO₂ design value is 32 ppb or 43% of the NAAQS. Based on a review of the ambient air concentration and emission trends over the past three years, the State concludes that the emissions levels at the DEP Roxboro Plant will not interfere with the attainment of 1-hour SO₂ NAAQS and recommends that Cunningham Township be designated attainment.

⁷ USGS, <http://viewer.nationalmap.gov/viewer/>.