Ohio | Environmental Protection Agency

Ohio's 2010 Revised Sulfur Dioxide National Ambient Air Quality Standard Recommended Designations and Nonattainment Boundaries

Prepared by:
The Ohio Environmental Protection Agency
Division of Air Pollution Control

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An Explanation of Ohio EPA's Analysis

General Discussion

Promulgated on June 2, 2010 and effective August 23, 2010, U.S. EPA revised the primary national ambient air quality standard (NAAQS) for sulfur dioxide (SO_2) [75 FR 35520]. Ohio currently has no counties designated nonattainment for SO_2.

On June 2, 2010, U.S. EPA replaced the 24-hour[1] and annual[2] standards with a new short-term standard based on the 3-year average of the 99th percentile of the yearly distribution of 1-hour daily maximum SO_2 concentrations. U.S. EPA established the level of the new 1-hour standard at 75 parts per billion (ppb).

In accordance with Clean Air Act (CAA) Section 107(d), U.S. EPA must designate areas as ''attainment,'' ''nonattainment'' or ''unclassifiable'' for the new 1-hour SO_2 standard within two years following promulgation of the new standard, or June 3, 2012[3]. States are expected to submit initial area designation recommendations by June 3, 2011.

U.S. EPA's final area designations are expected to be based principally on 2008 to 2010 air quality data reported from SO_2 monitors currently in place, and any refined modeling the States choose to conduct specifically for initial area designations. U.S. EPA expects to designate areas in the following manner:

- Nonattainment if <u>either</u> monitoring data or appropriate refined modeling results show a violation.
- Attainment if monitoring <u>and</u> appropriate modeling data show no violations. For an area to be designated as attainment, appropriate dispersion modeling regarding such sources needs to show the absence of violations even if monitoring does not show a violation.[4]
- Unclassifiable for all other areas lacking monitoring data and air quality modeling results showing no violations.

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[1] 0.14 part per million (ppm) averaged over a 24-hour period, not to be exceeded more than once per year.

[2] 0.030 ppm annual arithmetic mean

[3] Although U.S. EPA promulgated (signed) the standard on June 2, States were not notified until June 3. As such, the due dates are based upon when States were notified.

[4] This has been U.S. EPA's general position throughout the history of implementation of the SO_2 NAAQS program. *See, e.g.,* ''Air Quality Control Regions, Criteria, and Control Techniques; Attainment Status Designations,'' 43 FR 40412, 40415–16 (Sept. 11, 1978); ''Air Quality Control Regions, Criteria, and Control Techniques,'' 43 FR 45993, 46000–02 (Oct. 5, 1978); ''Air Quality Implementation Plans: State Implementation Plans; General Preamble,'' 57 FR 13498, 13545, 13547– 48 (Apr. 16, 1992); ''Approval and Promulgation of State Implementation Plans; Call for Sulfur Dioxide SIP Revisions for Billings/Laurel, MT,'' 58 FR 41430 (Aug. 4, 1993); ''Designation of Areas for Air Quality Planning Purposes; Ohio,'' 59 FR 12886, 12887 (Mar. 18, 1994); ''Ambient Air Quality Standards, National and Implementation Plans for Sulfur Oxides (Sulfur Dioxide),'' 60 FR 12492, 12494– 95 (Mar. 7, 1995); ''Air Quality Implementation Plans; Approval and Promulgation: Various States: Montana,'' 67 FR 22167, 22170–71, 22183–887 (May 2, 2002).

U.S. EPA's final rule acknowledges the unique challenges presented by SO_2 [75 FR 35550 - 35551]. U.S. EPA clarifies that for a short-term 1-hour standard it is more technically appropriate, efficient, and effective to use modeling as the principle means of assessing compliance for medium to larger sources. Whereas for other NAAQS pollutants, there is comparatively less dependence upon conducting refined modeling and air quality monitoring is more appropriate for determining whether all areas are attaining the NAAQS. U.S. EPA states that favoring modeling to determine compliance with the SO_2 standard is consistent with U.S. EPA's historical practice.

U.S. EPA's final rule anticipates the identification of violations and compliance with the 1-hour SO_2 standard for areas without currently operating monitors, but with sources that might have the potential to cause or contribute to violations of the NAAQS, would primarily be accomplished through refined, source oriented air quality dispersion modeling analyses, supplemented with a new, limited network of ambient air quality monitors.

U.S. EPA identified the need to issue guidance in order for modeling to be done on the scale sufficient to identify all areas that might violate the new 1-hour SO_2 standard. However, the agency also acknowledged it would take more time to issue this guidance than is available in order to use it for this initial round of attainment designations. This guidance, entitled "Area Designations for the 2010 Revised Primary Sulfur Dioxide National Ambient Air Quality Standards," was provided on March 24, 2011 (herein referred to as "SO_2 Designation Guidance"). Consequently, U.S. EPA stated in the final rule that it does not believe it would be realistic or appropriate to expect States to complete such modeling and incorporate the results in initial designation recommendations by June 3, 2011. Rather, the agency more likely expect States will start with the county level presumption for counties with violating monitors and use the five factor analysis for the basis of boundary recommendations. U.S. EPA's SO_2 Designation Guidance acknowledges that a nonattainment area should contain the area violating the standard (e.g. the area around a violating monitor), as well as any adjacent areas (e.g., counties or portions thereof) that contain emissions sources contributing to the violation. In addition, the agency more likely expects States will submit unclassifiable recommendations where monitoring shows no violation or where there is a lack of monitoring.

U.S. EPA further anticipates that a post-designation approach would rely on CAA Section 110(a)(1) State Implementation Plans (SIPs), often referred to as ''maintenance'' or ''infrastructure'' SIPs. The Infrastructure SIP will ensure that all areas attain and maintain the 1-hour SO_2 standard on a timely basis even if they are designated "unclassifiable" initially. The Infrastructure SIP is due within 3 years after promulgation of the new NAAQS, or June 3, 2013, and does not depend upon designating an area ''nonattainment'' based on recently monitored or modeled SO_2 levels. This period of time would allow States to use U.S. EPA's anticipated guidance on modeling for the new 1-hour SO_2 standard. Additionally, this period of time will allow States to account for SO_2 reduction levels at individual sources that are anticipated to result from promulgated national and regional rules. Ultimately, States must show

attainment and maintenance of the new 1-hour SO_2 standard as expeditiously as practicable, but no later than five years after initial designation (or approximately August 2017).

In contrast, but similar, State SIPs that address areas designated as nonattainment (*i.e.,* ''nonattainment area SIPs'') are due within 18 months from the effective date of the designation (or approximately February 2014), under CAA Section 192.

Once areas have both appropriate monitoring data (if required) and modeling data (as appropriate and consistent with the new guidance) showing no violations of the SO_2 standard, and have met other applicable requirements of CAA Section 107(d)(3), U.S. EPA would consider re-designating them from unclassifiable or nonattainment to attainment under CAA Section 107(d)(3).

Ohio EPA's Approach

This submittal is Ohio's recommendation for the initial designations. Ohio EPA is recommending areas of the State with 2008 to 2010 air quality data showing a violation as nonattainment areas. In accordance with U.S. EPA's final rule and SO_2 Designation Guidance, the starting point for the area designated nonattainment would be the county boundary associated with the violation unless additional information is provided to U.S. EPA demonstrating a different boundary is appropriate. U.S. EPA's SO_2 Designation Guidance states that U.S. EPA generally believes that in the absence of other relevant information it is appropriate to use county boundaries to define nonattainment areas, but they recognize that the five-factor analysis and other information may support designating only a portion of a county as nonattainment. U.S. EPA states that modeling could be used to address several of these factors simultaneously, but also acknowledges they do not believe it would be realistic or appropriate to expect States to complete such modeling and incorporate the results in these initial designation recommendations. Ohio EPA will be using the five-factor analysis approach and not conducting additional modeling analysis as a part of this submittal. While using this approach, the SO_2 Designation Guidance states this analysis should show that: 1) violations are not occurring in nearby portions that are excluded from the recommended nonattainment area; and 2) the excluded portions do not contain emission sources that contribute to the monitored or modeled violations.

In addition, Ohio EPA is recommending certain areas be designated as attainment. Any area where monitoring is lacking <u>and</u> modeling is not appropriate (based on a lack of sources emitting 100 TPY and a lack of smaller sources with the potential to cause or contribute to a violation of the new SO_2 standard) is recommended as an attainment area. As stated in U.S. EPA's final rule, the agency only intends to designate an area as attainment if monitoring <u>and</u> appropriate modeling data show no violations. As further stated in the SO_2 Designation Guidance, an area can be designated as attainment if there are no monitored violations and where appropriate modeling analysis is conducted, "if needed." This approach is suitable as not all areas of a Ohio contained monitoring or have sources that emit over 100 TPY of SO_2 or have a collection of

smaller sources that have the potential to cause or contribute to a violation of the SO_2 standard. In these cases modeling is not appropriate or necessitated and these areas should be designated as attainment consistent with U.S. EPA's broader approach for designations. This document will provide adequate justification for such areas using data from the 2008 actual emissions information submitted by Ohio's sources for incorporation into the 2008 National Emissions Inventory (NEI).

The remaining areas of the State are recommended as unclassifiable. After additional modeling occurs in the future, Ohio EPA will address areas recommended as unclassifiable in the upcoming Infrastructure SIP.

The following summarizes the major factors included in Ohio's analysis for designation recommendations. Specifically, Ohio has used the five factor analysis approach, as recommended in the SO_2 Designation Guidance, to support nonattainment boundary recommendations.

Factor 1: Air Quality Data

The air quality analysis looks at the 3-year average of the 99th percentile of the yearly distribution of 1-hour daily maximum SO_2 concentrations for each county based on data for 2008 to 2010. The level of the new 1-hour SO_2 standard is 75 ppb. Data is retrieved from the U.S. EPA's Air Quality System (AQS) at http://www.epa.gov/ttn/airs/airsaqs/ and is presented in ppb in all tables. The three-year averages for monitors that are violating the standard are highlighted in yellow. Monitoring sites that have less than 75 percent capture in any one quarter are highlighted in red. Ohio EPA operates a network of federally approved monitors. AQS data retrieval sheets are provided in Appendix A. The State and local air monitoring stations (SLAMS) data certification report for calendar year 2010 is provided in Appendix B.

Factor 2: Emissions Data

Emissions of SO_2 for 2008 are derived from Ohio EPA's Fee Emission Reports (FERs) which are the basis for Ohio's 2008 NEI submittal. Tables identified in this analysis show all stationary sources with reported SO_2 emissions in TPY at the facility level within each county. U.S. EPA's Designation Guidance identifies that significant emissions levels in a nearby area may indicate the potential for the area to contribute to a violation of the SO_2 NAAQS. U.S. EPA also suggests considering sources within 50 kilometers (km) of a violating monitor when conducting modeling to support nonattainment recommendations. Therefore, for counties with violating monitors, Ohio sources within 50 kilometers (km) of the monitor are included in the inventory analysis for each recommended nonattainment area. In addition, for counties with non-violating monitors, sources within 50 kilometers (km) of the monitor are included in the inventory analysis. For counties without monitors, only sources within the county borders are included in the inventory analysis for Ohio's recommendation. Appendix C contains a detailed list of all SO_2 sources in the State.

Within Ohio, there are a total of 858,551 TPY of actual SO_2 emissions in 2008 as depicted in Figure 1 below:

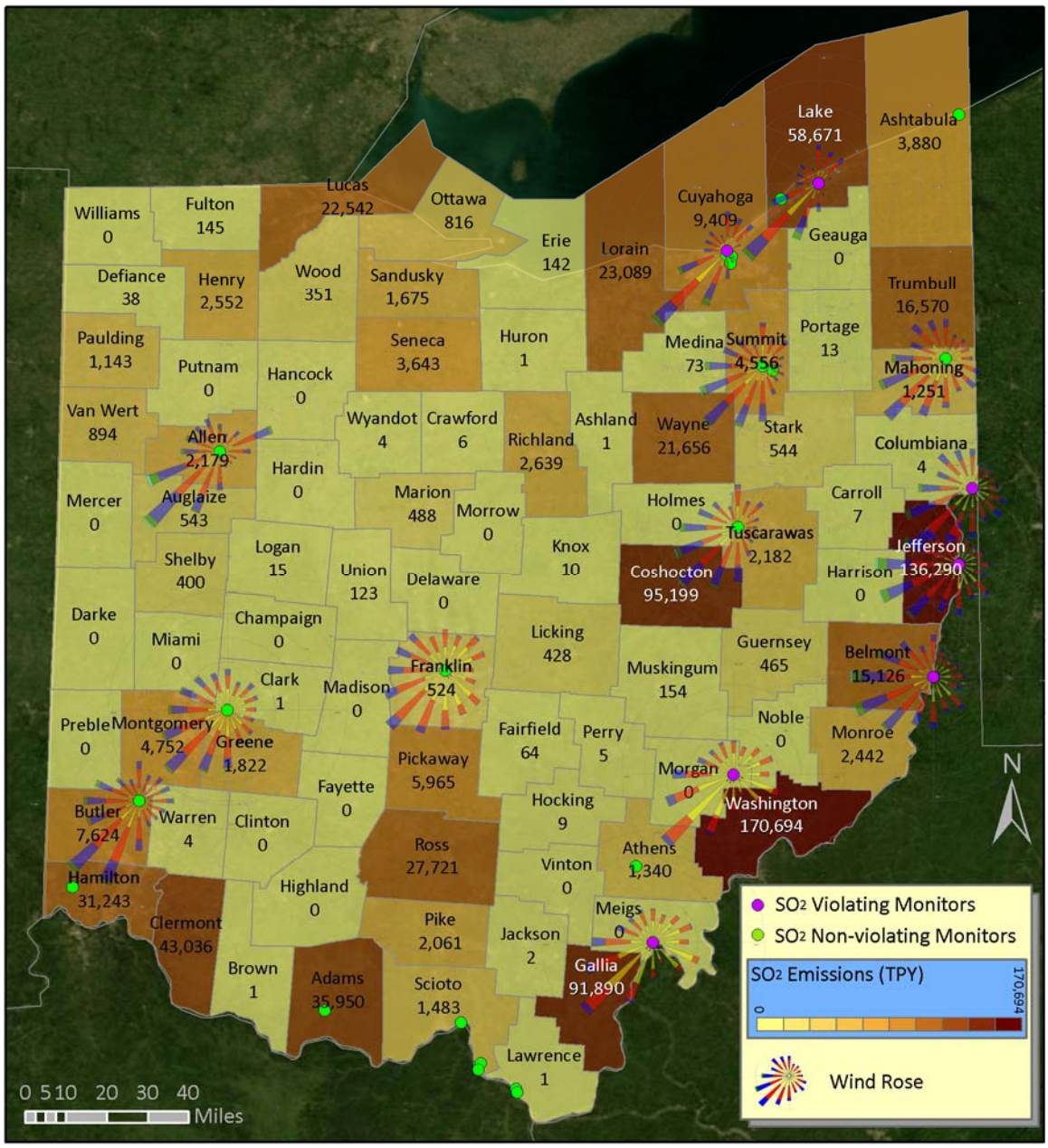


Figure 1: 2008 SO_2 Emissions (TPY) in Each Ohio County

Figure 2 below, the most significant emissions occur in urbanized areas such as Cleveland and Cincinnati and along Lake Erie and the Ohio River, where the predominant sources are electric generating units (EGUs).

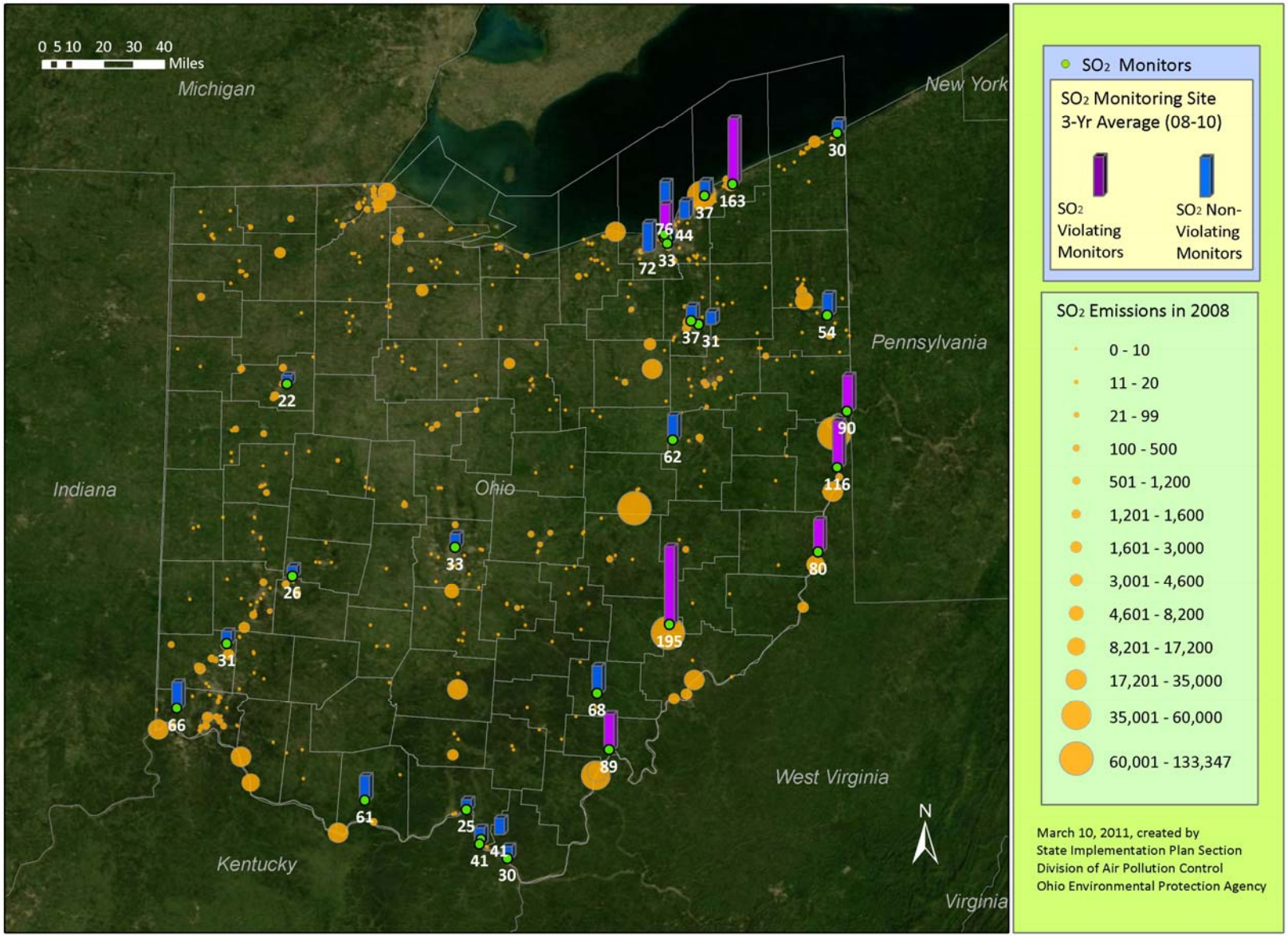


Figure 2: 2008 Source Location and Magnitude of SO_2 Emissions (TPY) in Ohio

Factor 3: Meteorology

The meteorology review looks at wind data gathered at stations in and near Ohio by the National Weather Service (NWS). Figures presented under this factor indicate the annual average winds for each NWS site. These data may also suggest that emissions in some directions relative to the violation may be more prone to contribute than emissions in other directions.

Ohio is located in what is meteorologically termed the Mid-Latitudes. For pollutant dispersion, the most important meteorological parameter is wind speed and wind direction. In this region, surface weather systems predominantly travel from west to east, guided by either the sub-tropical or polar jet streams. The resulting surface transport winds associated with these systems will generally have a western component with additional southern components in the summer and northern components in the winter, although, on any given day, winds can blow from any direction.

Discussions regarding this factor will show representative wind roses for several locations in-and-around Ohio. The regional nature of mid-latitude wind distributions may best be represented by the Columbus and Dayton airport wind roses. Columbus and Dayton are located in a relatively flat area in the central part of the State, generally unaffected by significant orographic or other surface features (e.g., Lake Erie).

These general wind patterns can be modified by two general geographic features. Ohio is bounded on the north by Lake Erie which can provide localized modifications to the general flow, primarily by the introduction of land breezes and lake breezes along the Lake during periods of low synoptic wind speeds. These effects would best be represented by the Toledo and Cleveland airport wind roses.

The second major geographic feature affecting winds in Ohio is the hilly terrain located in the east, south and southeast portions of the State. While the remainder of the State is primarily agricultural, these portions of the State, which represent the foot hills of the Appalachians, have significant forested areas which modify the surface roughness lengths and can impact wind speed and wind direction. The Covington, Huntington and Pittsburgh airport wind roses best illustrate the range of deviations that can occur.

As stated above, at any location within the State, winds can blow from any direction. Any given period could have average winds from any direction, thus making counties in all directions from the urban industrial core area potentially important emission source areas.

Factor 4: Topography and Land Use/Land Cover

The topography and land use/land cover analysis looks at physical features and land use or cover that might have an effect on the airshed and, therefore, the distribution of pollutants over an area. Ohio does not have significant topographic features that significantly influence the distribution of SO_2 concentrations within the areas. Tables

presented under this factor show the land use/land cover for each county in percentage of urban (residential, commercial, industrial, transportation, grasses), cropland, pasture, forest, and wetlands (all types). Maps for this section are provided in Appendix D. The sources for the information provided in this section are:

Ohio Department of Natural Resources, Division of Soil and Water
http://www.dnr.state.oh.us/default/soils/surveysupplements/tabid/17839/Default.aspx

Ohio Department of Development, Office of Strategic Research
http://www.odod.state.oh.us/research/files/s0.htm

Factor 5: Jurisdictional Boundaries

The analysis of jurisdictional boundaries looks at the planning and organizational structure of an area to determine if the implementation of controls in a potential nonattainment area can be carried out in a cohesive manner. Core Based Statistical Areas (CBSAs), comprised of Metropolitan Statistical Areas (MSAs) and Combined Statistical Areas (CSAs), boundaries were considered for these recommendations. Maps showing the CBSAs, MSAs and CSAs in Ohio and a Metropolitan Planning Organizations (MPO) map are provided in Appendix E. For information on the MPOs referenced in this document, please see: http://www.odotnet.net/Planning/ACCESS%20OHIO/Final/AppendixB.pdf.

Organization of this Document

Ohio EPA's analysis below is divided into three sections for all of Ohio. Section 1 is comprised of all counties containing a monitor showing violations. To support the boundary recommendations, analyses of the factors (described above) is included in this document. Section 2 is comprised of all counties containing a monitor(s) showing no violations. Section 3 is for all counties without a monitor and is further divided into two sections. Section 3A is counties that may necessitate additional modeling in the future as part of Ohio's Infrastructure SIP. Section 3B is for counties that do not necessitate additional modeling due to low SO_2 emissions, as discussed above.

Section 1

Counties Containing Violating SO_2 Monitors

Recommended Nonattainment

Belmont County

Recommended Nonattainment Boundary: Partial Belmont County (Mead, Pease, Pultney, and York Townships)

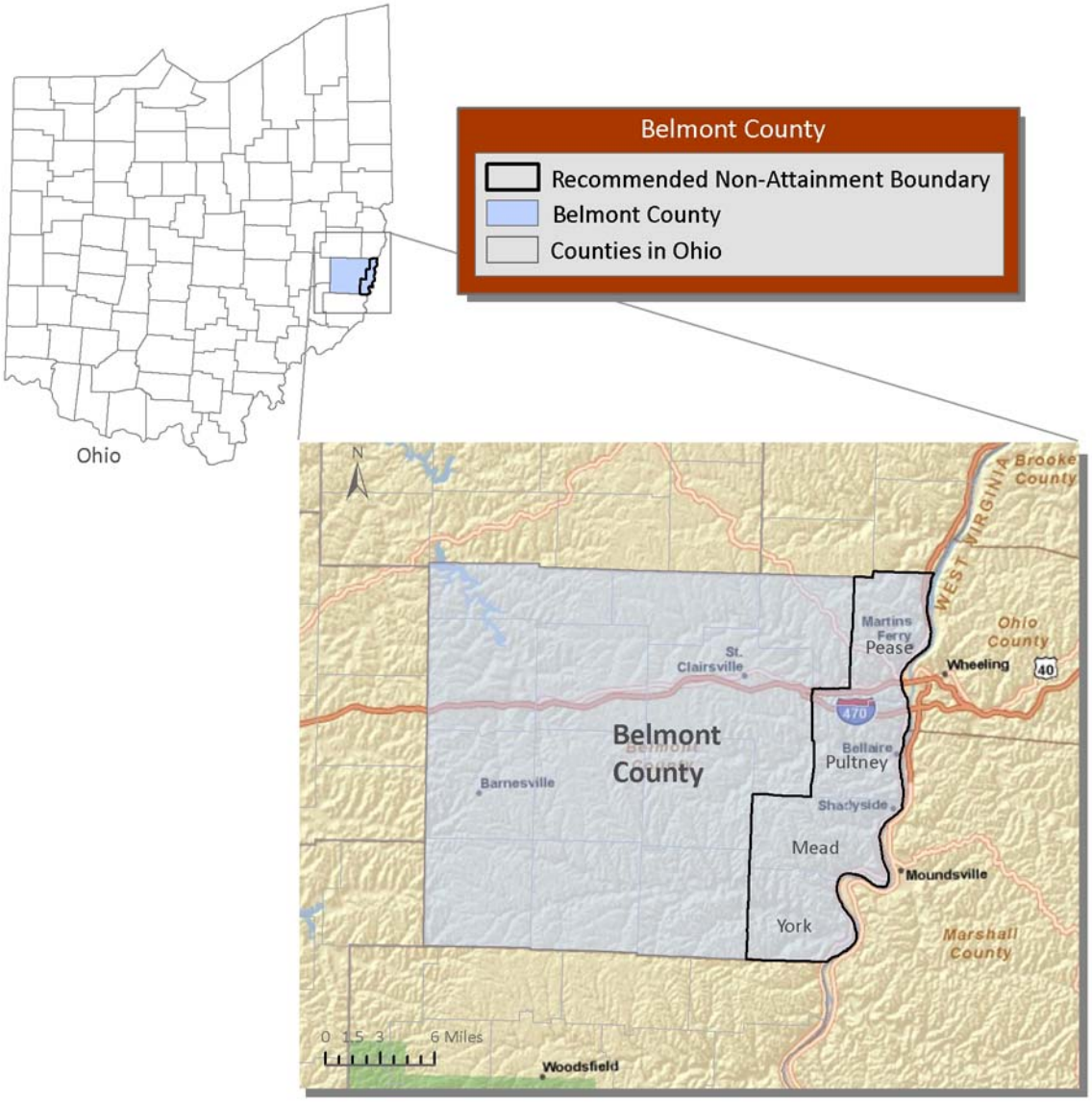


Figure 3: Recommended Nonattainment Boundary for Belmont County

Discussion:

Ohio EPA is recommending partial nonattainment of Belmont County, as indicated in the map above, and supported by an analysis of the factors. The remainder of Belmont County is recommended as unclassifiable. This discussion summarizes the most relevant results of these analyses.

As seen under Factor 1, Belmont County contains one monitor, which is violating for the 2008 to 2010 air quality period. As seen under Table 2 below, there are 51,662.17 TPY of SO_2 emissions from Ohio within 50 km of the violating monitor. There are 15,126 TPY of SO_2 emissions within Belmont County, representing 29.3% of the emissions within 50 km. The excluded portion of Belmont County does not contain any additional emission sources that could contribute to the monitored violations as all of the Belmont County emissions are located within the recommended partial nonattainment area. The majority of emissions, 66.0% or 34,095 TPY, are within Jefferson County. Jefferson County is also being recommended as a partial nonattainment due to a violating monitor.

As indicated in Figure 5 below, the majority of sources are to the north or south of Shadyside, Ohio, where the monitor is located, along the Ohio River.

Refer to the discussion for Jefferson County for more information related to Ohio's analysis for Belmont, Jefferson and Columbiana County.

Factor 1: Air Quality Data

Table 1: Belmont County 2008 to 2010 SO_2 Air Quality Data

SO_2 Monitoring Site(s)		Yearly averages (ppb)			3-yr averages (ppb)
County	Site ID	2008	2009	2010	2008-2010
Belmont	39-013-3002	105	74	62	80

*Yellow highlights denote violation of SO_2 NAAQS (75 ppb)
*Red highlights denote <75% capture in any one quarter

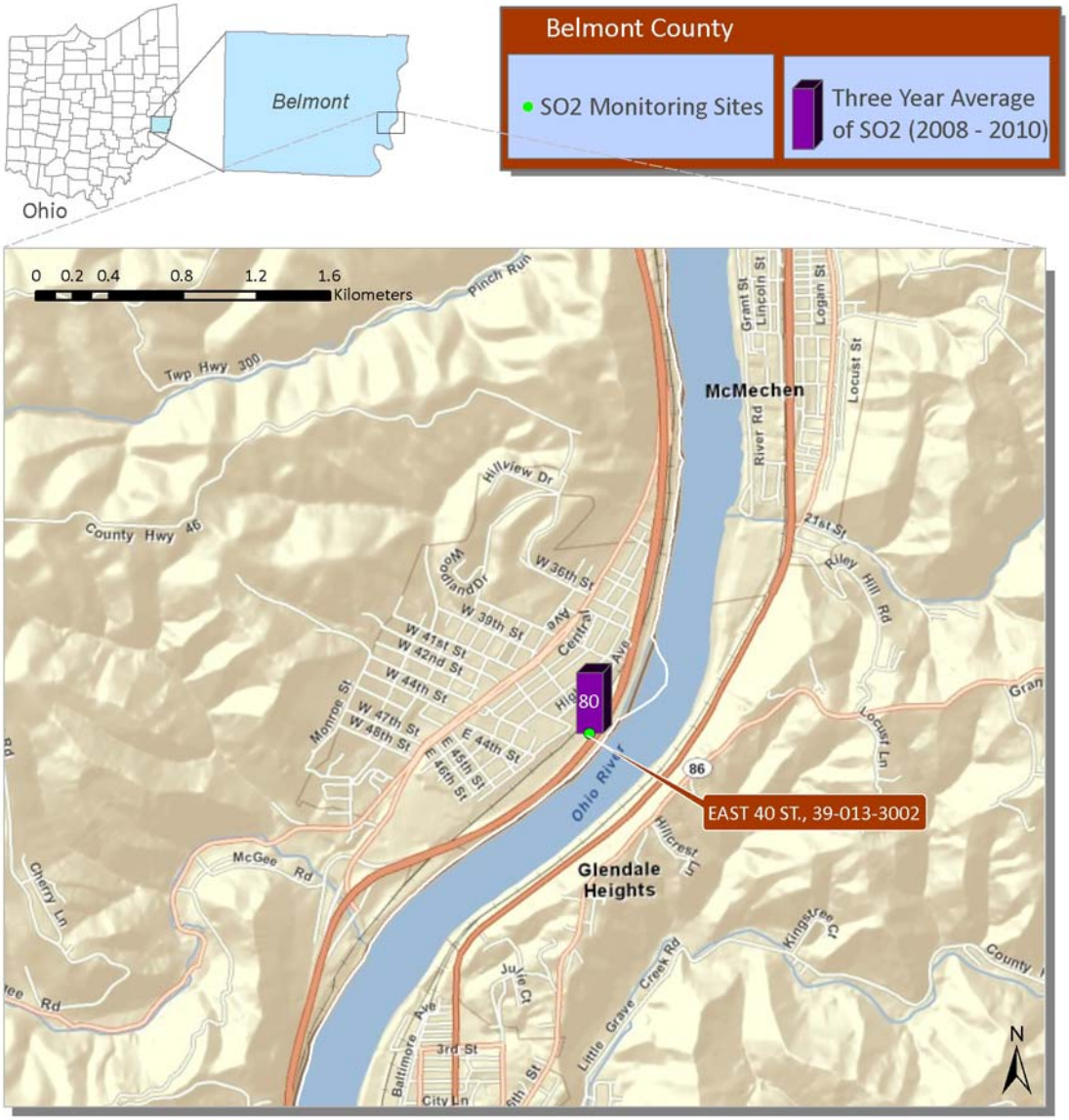


Figure 4: Belmont County SO_2 Monitor Locations and Site ID Numbers

Factor 2: Emissions

There are 51,662.17 TPY of actual SO_2 emissions from Ohio within 50 km of the violating monitor. Only 15,126.07 TPY of actual SO_2 emissions are within Belmont County. All of those emissions are within the recommended nonattainment boundary.

Table 2: 2008 Ohio Sources of SO_2 Emissions (TPY) within 50 Kilometers of the Belmont County Violating Monitor

State	County	Facility ID	Facility Name	2008 SO2 Emissions (TPY)	Distance from Monitor (km)
OH	Belmont	0607130015	R. E. BURGER PLANT	15126.00	6.7
OH	Belmont	0607090013	Severstal Wheeling, Inc.-Martins Ferry	0.06	17.6
OH	Belmont	0607090208	Nickles Bakery of Martins Ferry Inc.	0.01	13.8
			Belmont Total	***15126.07***	
OH	Jefferson	0641050002	Cardinal Power Plant (Cardinal Operating Company)	33311.90	32.6
OH	Jefferson	0641090010	Severstal Wheeling, Inc	699.99	40.9
OH	Jefferson	0641090234	Mingo Junction Energy Center, LLC	82.37	40.9
OH	Jefferson	0641120012	Severstal Wheeling, Inc - Yorkville Plant	0.24	31.6
			Jefferson Total	***34094.50***	
OH	Monroe	0656000001	Ormet Primary Aluminum Corp.	2441.60	30.5
			Monroe Total	***2441.60***	
			Grand Total	***51662.17***	

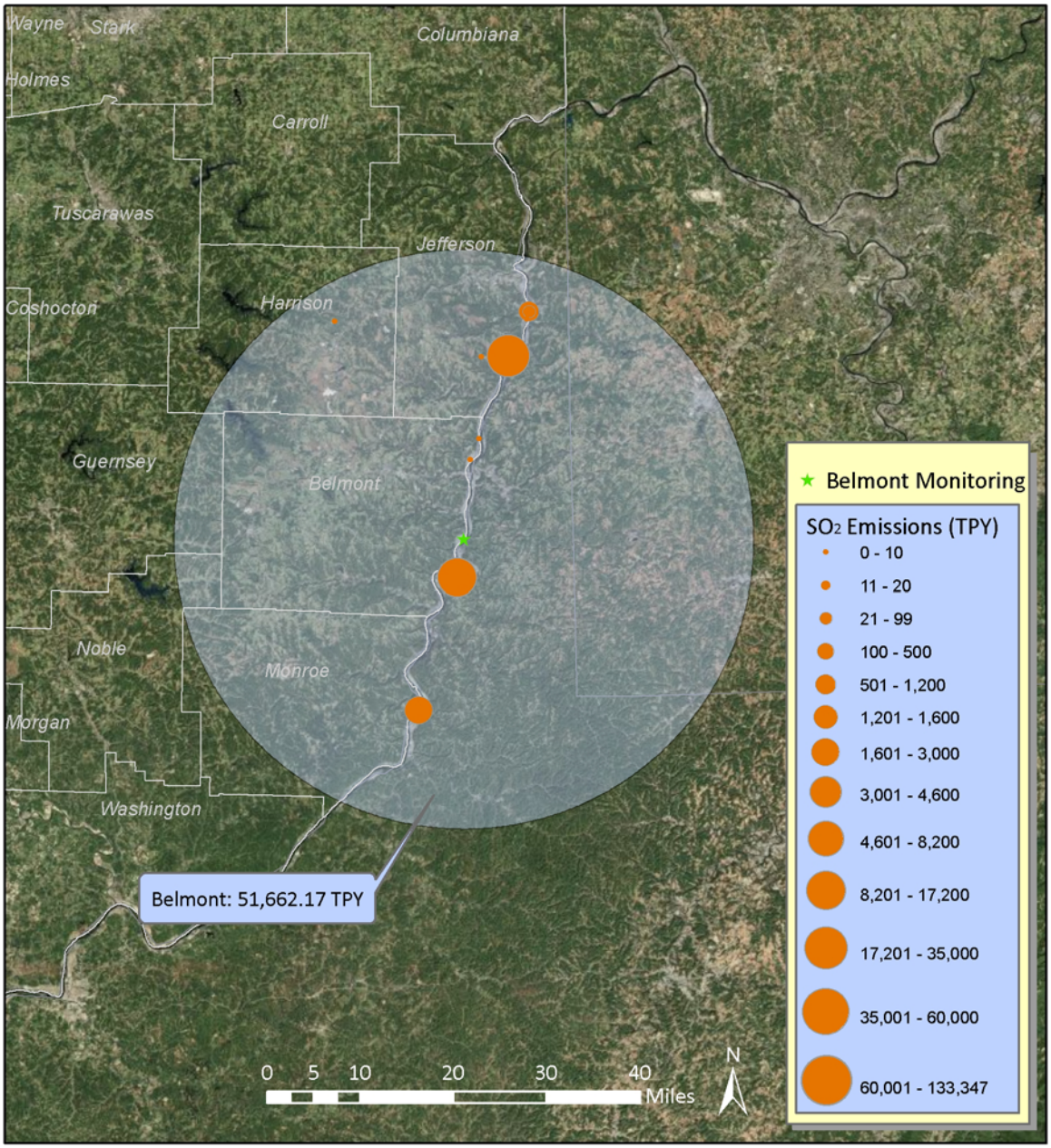


Figure 5: 2008 Ohio Sources of SO_2 Emissions (TPY) within 50 Kilometers of the Belmont County Violating Monitor

Factor 3: Meteorology

Please refer to the Factor 3 general discussion at the beginning of this document for general meteorological information applicable to Belmont County.

Ohio is bounded on the east by the Ohio River and Appalachian Mountains. During the day, surface winds blow from the bottom of the valley to higher elevations creating a valley breeze; however, during the evening, a mountain breeze forms as surface winds blow from higher elevations down in to the valley. The valleys also experience nighttime inversions which can influence wind patterns. These effects would best be represented by the Pittsburgh International airport wind rose.

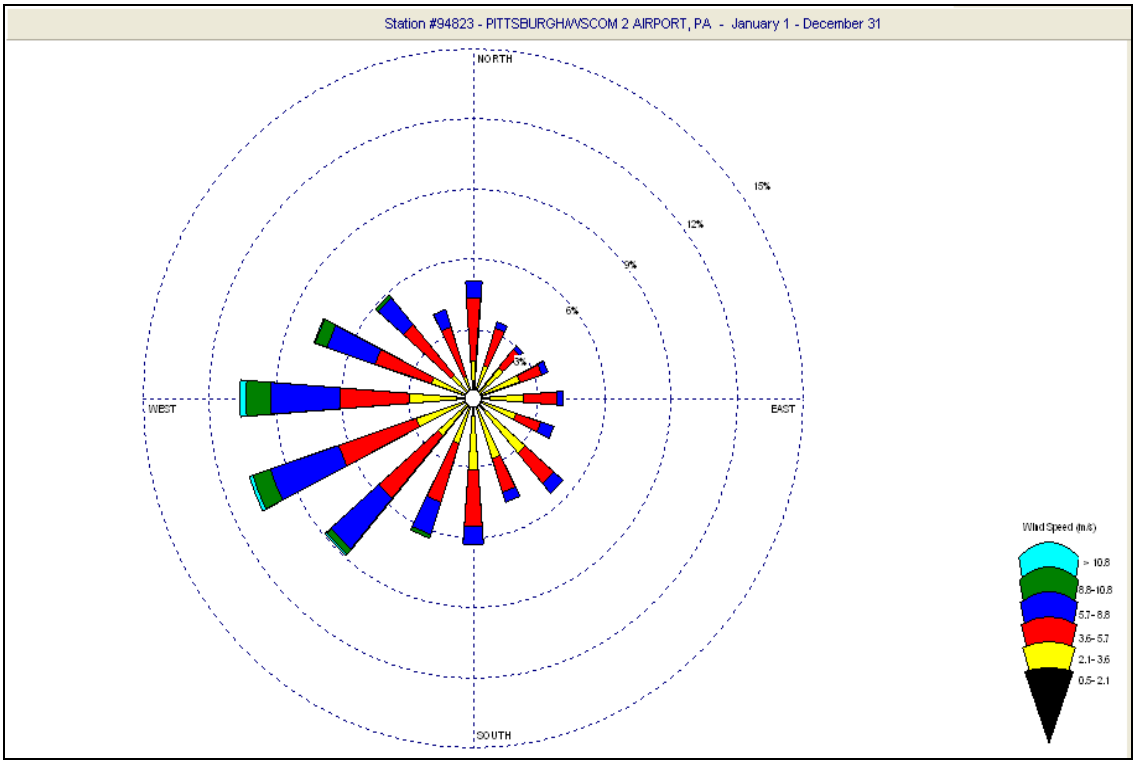


Figure 6: Belmont County Wind Rose

Factor 4: Topography and Land Use/Land Cover

Belmont County is located within one physiographic province: the Marietta Plateau to the west and the Little Switzerland Plateau to the east of the Alleghany Plateaus (see Appendix E). Belmont County is bordered to the east by the Ohio River. The highest elevation in the County is 1,397 ft. at Galloway's Knob near St. Clairsville. The lowest elevation is 625 ft, the normal pool elevation of the Ohio River.

As shown in the following pie chart, the land use/land cover in Belmont County is predominately forested.

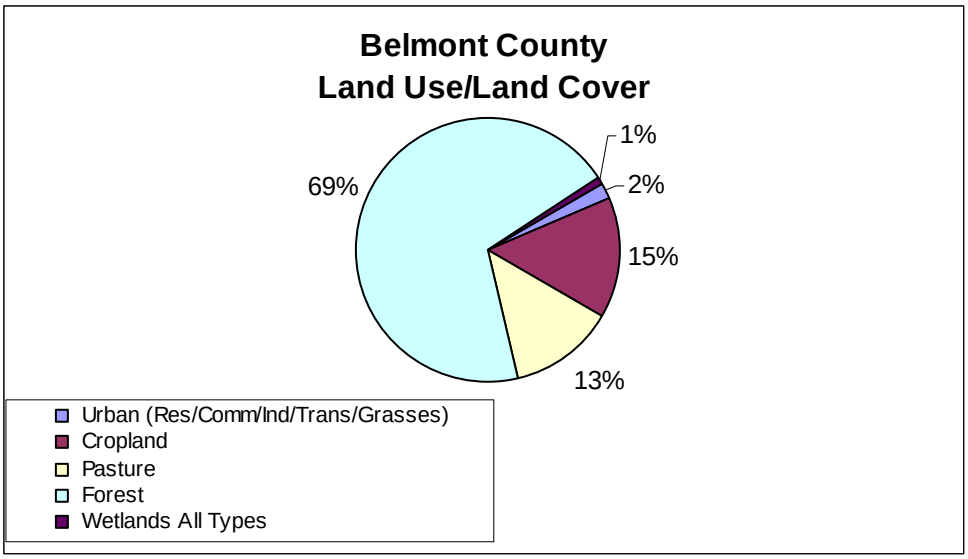


Figure 7: Belmont County Land Use/Land Cover

The Belmont County area does not have any geographical or topographical barriers significantly affecting transport of SO_2 within its air shed. Therefore, this factor provides no reason to delineate sources potentially included versus excluded from any these analyses.

Factor 5: Jurisdictional Boundaries

The Wheeling, WV-OH MSA includes: Marshall and Ohio Counties in West Virginia and Belmont County in Ohio. The principal city is Wheeling, WV. There is no CSA for this area.

The Ohio EPA Central Office and Southeast District Office are responsible for air quality planning within all areas of Belmont County. The Bel-O-Mar Regional Council and Interstate Planning Commission is the planning agency designated as the Metropolitan Planning Organization for the greater Wheeling area. The Bel-O-Mar region is composed of Belmont County in Ohio as well as both Ohio and Marshall Counties in West Virginia.

The partial nonattainment boundary for Belmont County was selected at the township jurisdictional boundary.

Jefferson County

Recommended Nonattainment Boundary: Partial Jefferson County (Cross Creek, Island Creek, Knox, Saline, Steubenville, Warren, and Wells Townships)

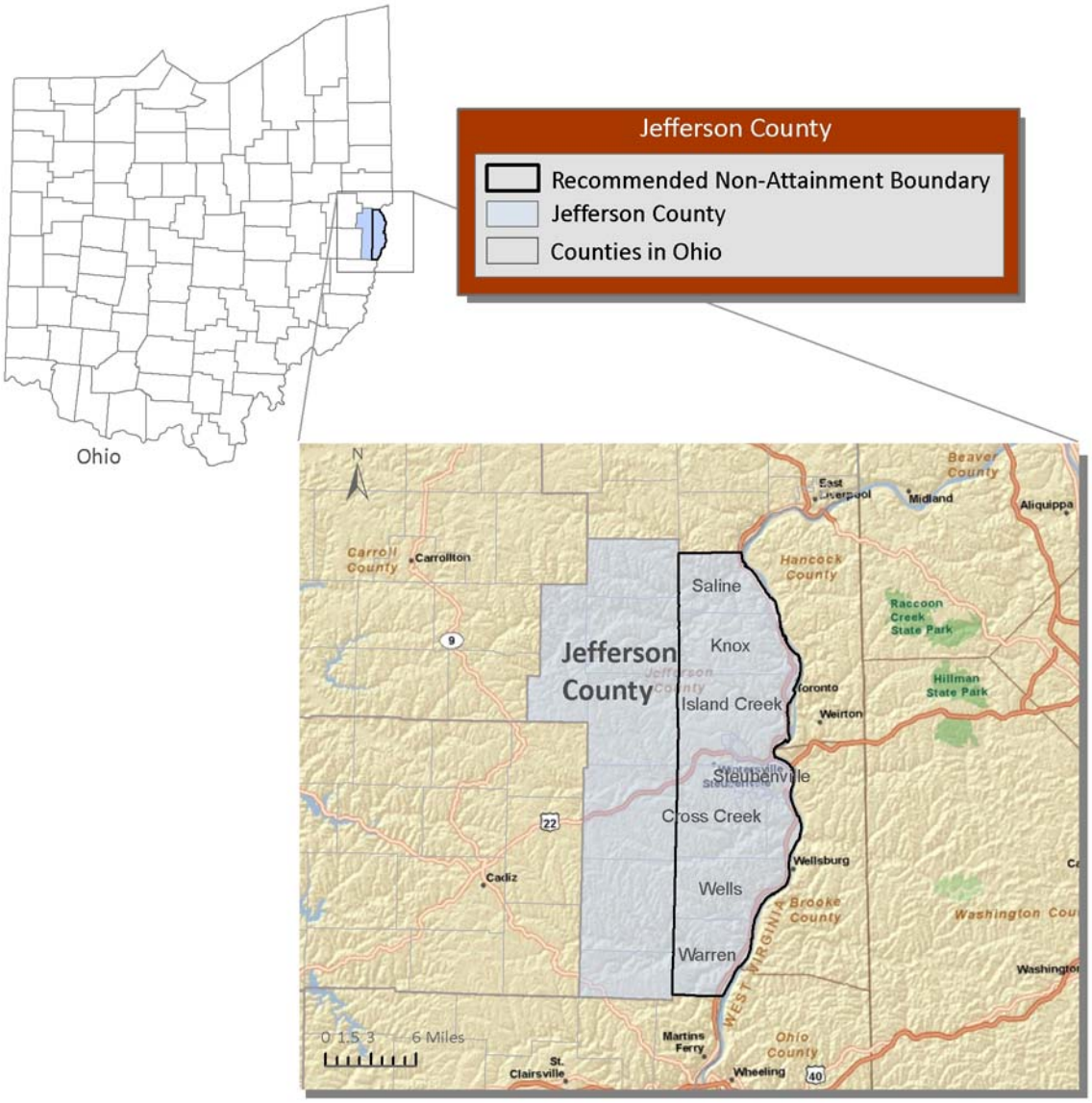


Figure 8: Recommended Nonattainment Boundary for Jefferson County

Discussion:

Ohio EPA is recommending partial nonattainment of Jefferson County, as indicated in the map above, and supported by an analysis of the factors. The remainder of Jefferson County is recommended as unclassifiable. This discussion summarizes the most relevant results of these analyses.

As seen under Factor 1, Jefferson County contains one monitor which is violating for the 2008 to 2010 air quality period. As seen under Table 4 below, there are 136,293.62 TPY of SO_2 emissions from Ohio within 50 km of the violating monitor. There are 136,289.77 TPY of SO_2 emissions within Jefferson County, representing >99% of the emissions within 50 km. The excluded portion of Jefferson County does not contain any additional emission sources that could contribute to the monitored violations as all of the Jefferson County emissions are located within the recommended partial nonattainment area.

As indicated in Figure 11 below, the majority of sources are to the north or south of Steubenville, Ohio, where the monitor is located, along the Ohio River. This is evident for all monitored violations for Belmont, Jefferson and Columbiana Counties. Therefore, Ohio EPA is recommending that all areas containing significant SO_2 emission sources along the Ohio River corridor of Belmont, Jefferson and Columbiana Counties be designated as nonattainment as depicted in Figure 9 below.

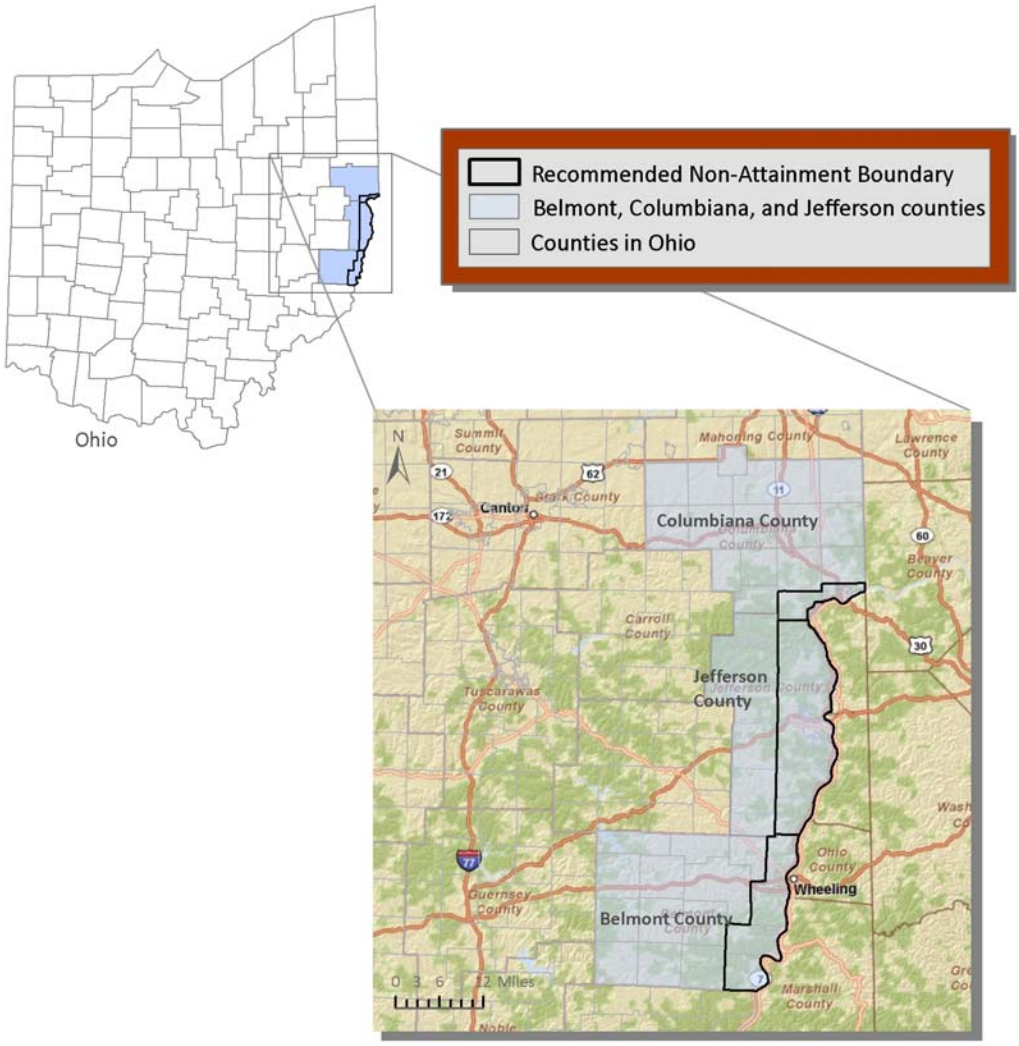


Figure 9: Ohio River Nonattainment Corridor for Belmont, Jefferson and Columbiana Counties

Factor 1: Air Quality Data

Table 3: County 2008 to 2010 SO_2 Air Quality Data

SO_2 Monitoring Site(s)		Yearly averages (ppb)			3-yr averages (ppb)
County	Site ID	2008	2009	2010	2008-2010
Jefferson	39-081-0017	135	85	127	116

*Yellow highlights denote violation of SO_2 NAAQS (75 ppb)
*Red highlights denote <75% capture in any one quarter

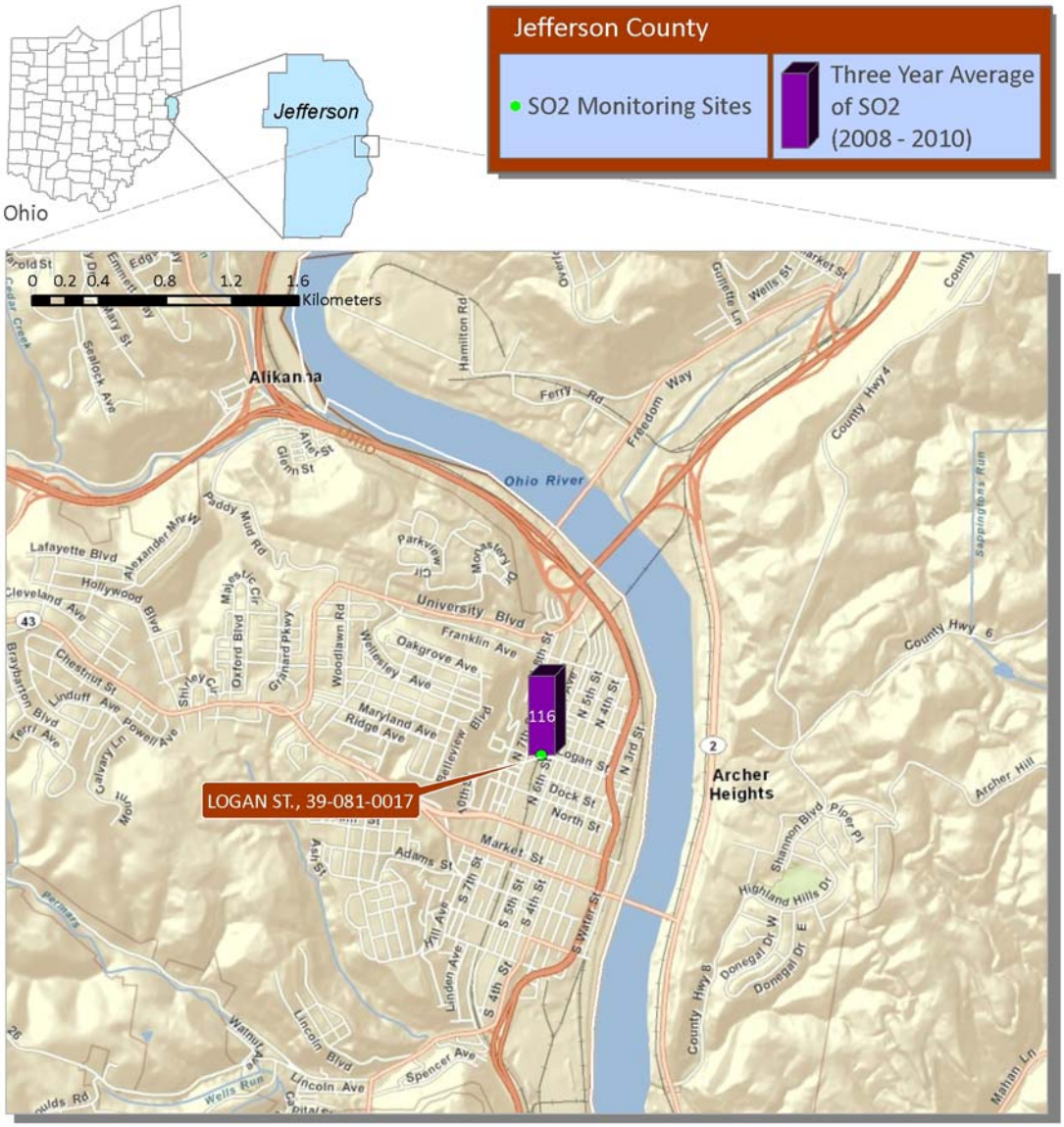


Figure 10: Jefferson County SO_2 Monitor Locations and Site ID Numbers

Factor 2: Emissions

There are 136,293.62 TPY of SO_2 emissions from Ohio within 50 km of the violating monitor. There are 136,289.77 TPY of actual SO_2 emissions within Jefferson County. All of those emissions are within the recommended nonattainment boundary.

Table 4: 2008 Ohio Sources of SO_2 Emissions (TPY) within 50 Kilometers of the Jefferson County Violating Monitor

State	County	Facility ID	Facility Name	2008 SO2 Emissions (TPY)	Distance from Monitor (km)
OH	Belmont	0607090013	Severstal Wheeling, Inc.- Martins Ferry	0.06	28.1
OH	Belmont	0607090208	Nickles Bakery of Martins Ferry Inc.	0.01	32.0
			Belmont Total	***0.07***	
OH	Carroll	0210000046	Tennessee Gas Pipline- Station 214	0.22	45.7
OH	Carroll	0210000101	Dominion Transmission-Carroll Station	0.01	32.7
			Carroll Total	***0.23***	
OH	Columbiana	0215020233	Heritage - WTI, Inc.	3.55	30.0
			Columbiana Total	***3.55***	
OH	Jefferson	0641160017	W. H. SAMMIS PLANT	102195.00	18.4
OH	Jefferson	0641050002	Cardinal Power Plant (Cardinal Operating Company)	33311.90	13.0
OH	Jefferson	0641090010	Severstal Wheeling, Inc	699.99	5.3
OH	Jefferson	0641090234	Mingo Junction Energy Center, LLC	82.37	5.3
OH	Jefferson	0641120012	Severstal Wheeling, Inc - Yorkville Plant	0.24	14.8
OH	Jefferson	0641180064	Titanium Metals Corporation	0.20	9.0
OH	Jefferson	0641000223	Apex Environmental, LLC - Sanitary Landfill	0.07	27.3
			Jefferson Total	***136289.77***	
			Grand Total	***136293.62***	

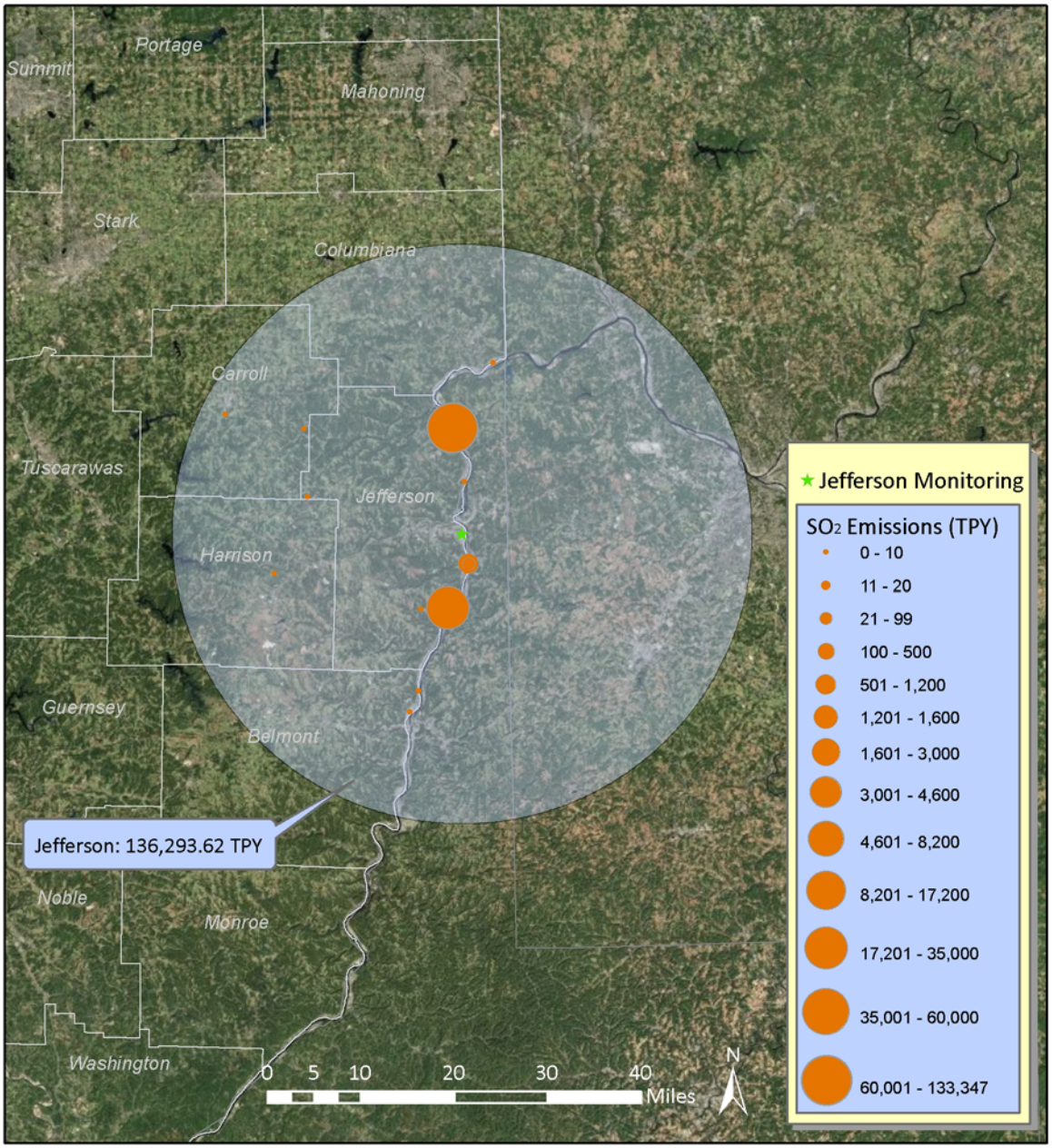


Figure 11: 2008 Ohio Sources of SO_2 Emissions (TPY) within 50 Kilometers of the Jefferson County Violating Monitor

Factor 3: Meteorology

Please refer to the Factor 3 general discussion at the beginning of this document for general meteorological information applicable to Jefferson County.

Ohio is bounded on the east by the Ohio River and Appalachian Mountains. During the day, surface winds blow from the bottom of the valley to higher elevations creating a valley breeze; however, during the evening, a mountain breeze forms as surface winds blow from higher elevations down in to the valley. The valleys also

experience nighttime inversions which can influence wind patterns. These effects would best be represented by the Pittsburgh International airport wind rose.

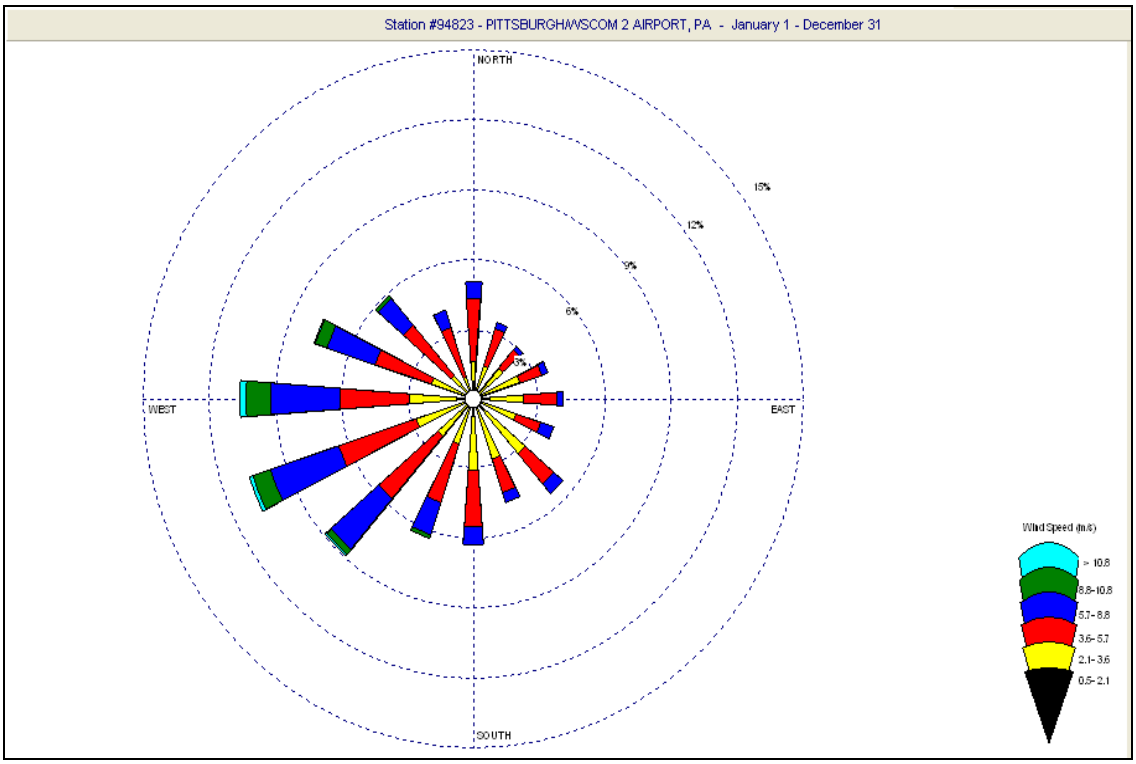


Figure 12: Jefferson County Wind Rose

Factor 4: Topography and Land Use/Land Cover

Jefferson County is in the unglaciated Allegheny Plateau region (see Appendix E). The county has been extensively dissected by drainageways that empty into the Ohio River, which is the sinuous eastern border of the county. Relief is generally greatest in the eastern part of the county. The elevation ranges from 1,388 feet to about 644 feet above sea level.

As shown in the following pie chart, the land use/land cover in Jefferson County is predominately characterized as forest area.

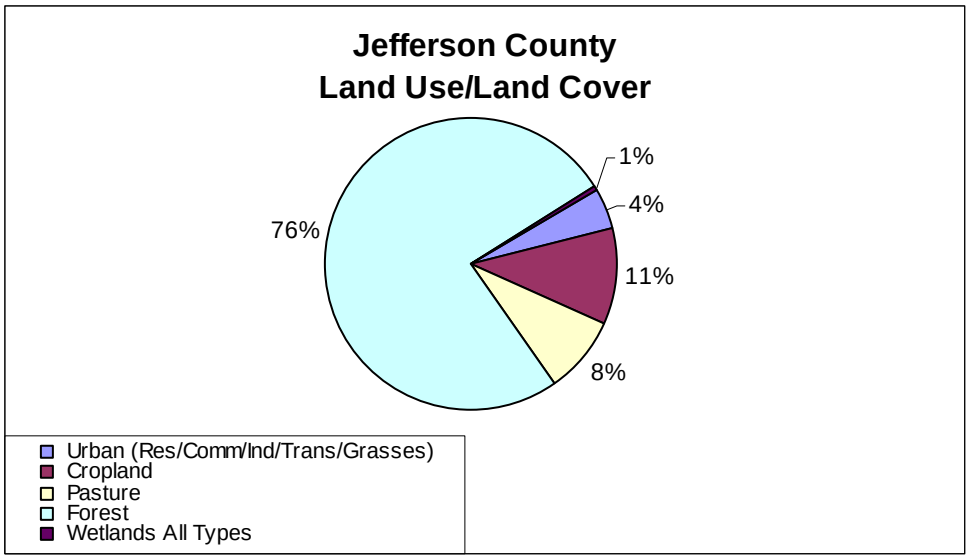


Figure 13: Jefferson County Land Use/Land Cover

The Jefferson County area does not have any geographical or topographical barriers significantly affecting transport of SO_2 within its air shed. Therefore, this factor provides no reason to delineate sources potentially included versus excluded from these analyses.

Factor 5: Jurisdictional Boundaries

The Weirton-Steubenville, WV-OH MSA includes: Brooke and Hancock Counties, West Virginia and Jefferson County, Ohio. The principal cities are Weirton, WV and Steubenville, OH. There is no CSA for this area.

The Ohio EPA Central Office and Southeast District Office are responsible for air quality planning within all areas of Jefferson County. The Brooke-Hancock-Jefferson Metropolitan Planning Commission (BHJMPO) is the planning agency designated as the Metropolitan Planning Organization for the Weirton-Steubenville area. The BHJMPO region is composed of three counties: Hancock and Brooke Counties in West Virginia and Jefferson County in Ohio.

The partial nonattainment boundary for Jefferson County was selected at the township jurisdictional boundary.

Columbiana County

Recommended Nonattainment Boundary: Partial Columbiana County (Liverpool and Yellow Creek Townships)

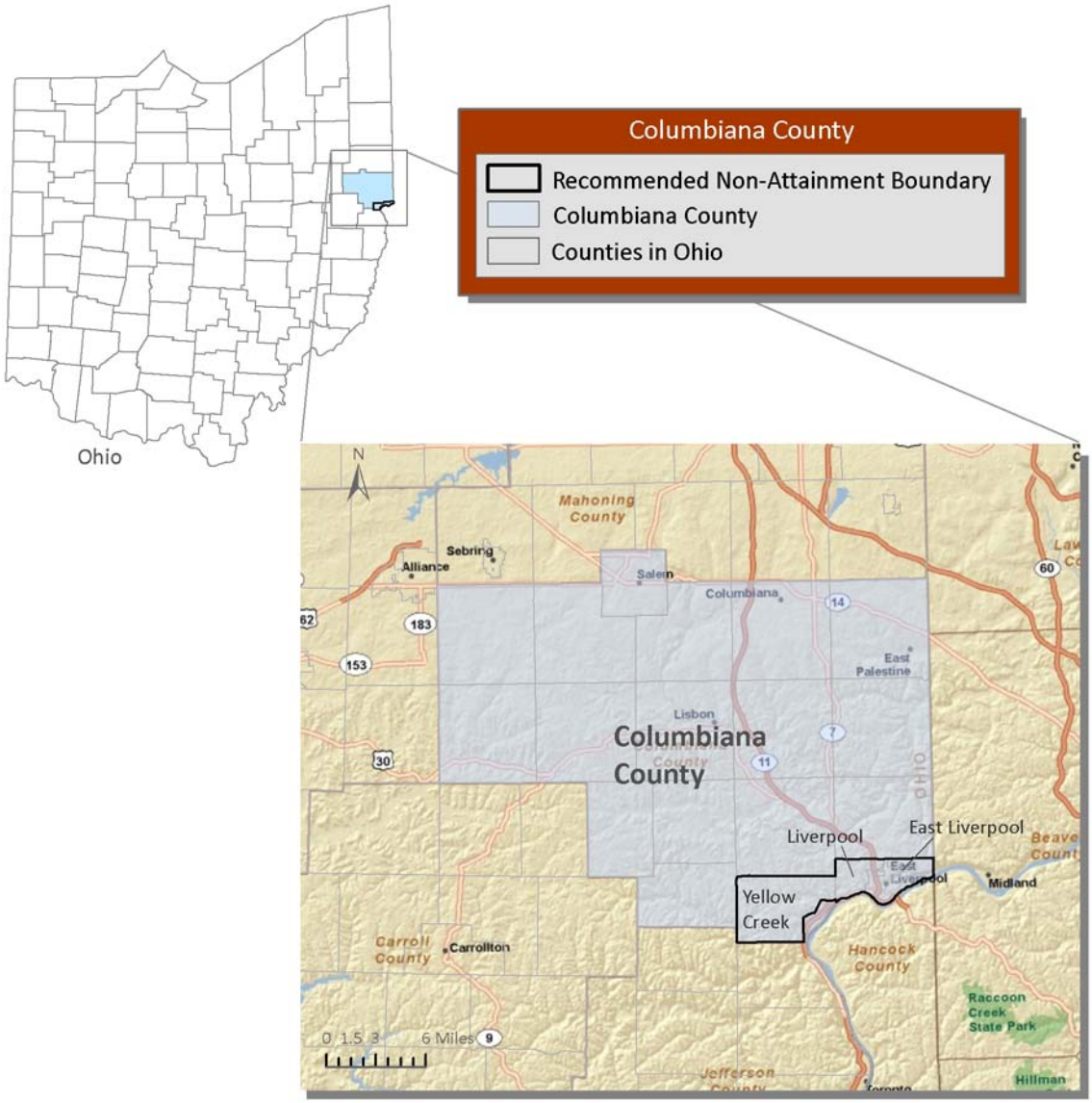


Figure 14: Recommended Nonattainment Boundary for Columbiana County

Discussion:

Ohio EPA is recommending partial nonattainment of Columbiana County, as indicated in the map above, and supported by an analysis of the factors. The remainder of Jefferson County is recommended as unclassifiable. This discussion summarizes the most relevant results of these analyses.

As seen under Factor 1, Columbiana County contains one monitor which is violating for the 2008 to 2010 air quality period. As seen under Table 6 below, there are 136,665.47 TPY of SO_2 emissions from Ohio within 50 km of the violating monitor. There are 3.57 TPY of SO_2 emissions within Columbiana County, representing <1% of the emissions within 50 km. The majority of emissions, >99.7% or 136,289.77 TPY, are within Jefferson County. Jefferson County is also being recommended as partial nonattainment due to a violating monitor.

As indicated in Figure 16 below, the majority of sources are to the north or south of East Liverpool, Ohio, where the monitor is located, along the Ohio River. One Ohio source, WTI Heritage, is co-located with the monitor and included in the recommended partial nonattainment area. Although WTI Heritage's emissions are very low (3.55 TPY in 2008), the company is located at a lower elevation and up-wind of the monitor.

The excluded portion of Columbiana County does not contain any additional emission sources that could contribute to the monitored violations. Only 0.02 TPY of emissions from Columbiana County are excluded from the recommended nonattainment area and the sources of these emissions are over 27 and 45 kilometers up-wind from the violating monitor.

Refer to the discussion for Jefferson County for more information related to Ohio's analysis for Belmont, Jefferson and Columbiana County.

Factor 1: Air Quality Data

Table 5: Columbiana County 2008 to 2010 SO_2 Air Quality Data

SO_2 Monitoring Site(s)		Yearly averages (ppb)			3-yr averages (ppb)
County	Site ID	2008	2009	2010	2008-2010
Columbiana	39-029-0022	111	113	47	90

*Yellow highlights denote violation of SO_2 NAAQS (75 ppb)
*Red highlights denote <75% capture in any one quarter

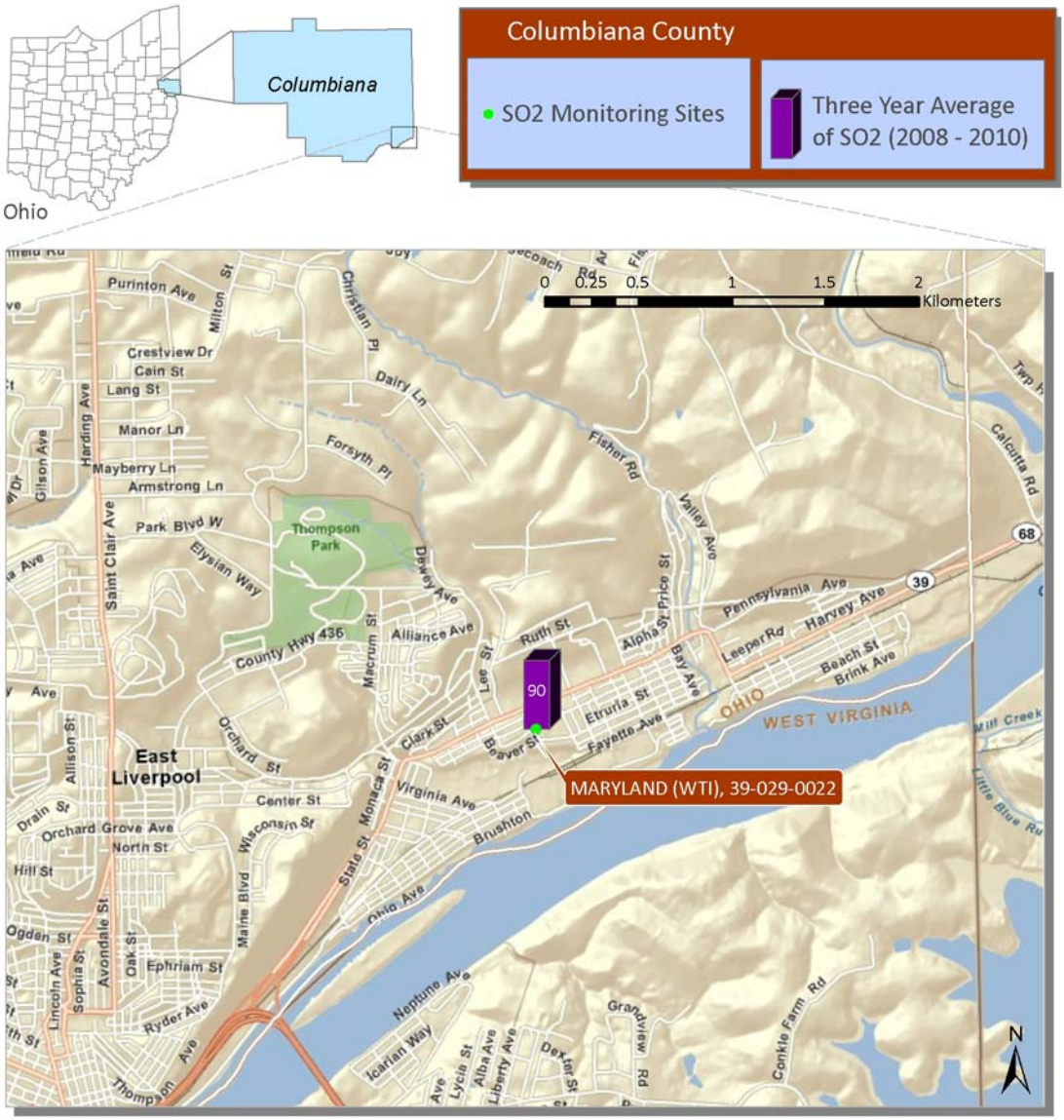


Figure 15: Columbiana County SO_2 Monitor Locations and Site ID Numbers

Factor 2: Emissions

There are 136,665.47 TPY of SO_2 emissions from Ohio within 50 km of the violating monitor. Only 3.57 TPY of actual SO_2 emissions are within Belmont County. Of those 3.57 TPY, 3.55 TPY of those emissions are within the recommended nonattainment boundary. The remaining 0.02 TPY of emissions are over 27 and 45 kilometers up-wind from the violating monitor.

Table 6: 2008 Ohio Sources of SO2 Emissions (TPY) within 50 Kilometers of the Columbiana County Violating Monitor

State	County	Facility ID	Facility Name	2008 SO2 Emissions (TPY)	Distance from Monitor (km)
OH	Carroll	0210000047	Summitville Tiles, Inc. - Minerva Plant	6.67	49.3
OH	Carroll	0210000046	Tennessee Gas Pipeline- Station 214	0.22	46.9
OH	Carroll	0210000101	Dominion Transmission-Carroll Station	0.01	34.5
			Carroll Total	***6.91***	
OH	Columbiana	0215020233	Heritage - WTI, Inc.	3.55	0.5
OH	Columbiana	0215050202	BRINKER COMPRESSOR STATION	0.01	27.5
OH	Columbiana	0215000182	Dominion East Ohio - Columbiana Compressor Station	0.01	45.8
			Columbiana Total	***3.57***	
OH	Jefferson	0641160017	W. H. SAMMIS PLANT	102195.00	13.6
OH	Jefferson	0641050002	Cardinal Power Plant (Cardinal Operating Company)	33311.90	43.4
OH	Jefferson	0641090010	Severstal Wheeling, Inc	699.99	35.4
OH	Jefferson	0641090234	Mingo Junction Energy Center, LLC	82.37	35.4
OH	Jefferson	0641120012	Severstal Wheeling, Inc - Yorkville Plant	0.24	44.7
OH	Jefferson	0641180064	Titanium Metals Corporation	0.20	21.5
OH	Jefferson	0641000223	Apex Environmental, LLC - Sanitary Landfill	0.07	39.6
			Jefferson Total	***136289.77***	
OH	Mahoning	0250050996	Carbon Limestone Landfill Gas Power Station	9.30	40.3
OH	Mahoning	0250000840	Mahoning Landfill, Inc.	2.92	31.6
OH	Mahoning	0250000989	BAIRD BROTHERS SAWMILL INC	0.27	48.1
OH	Mahoning	0250070850	Carbon Limestone Sanitary Landfill	0.14	43.1
OH	Mahoning	0250090626	Astro Coatings, Incorporated	0.03	47.4
			Mahoning Total	***12.66***	
OH	Trumbull	0278000013	Denman Tire Corporation	352.56	41.0
			Trumbull Total	***352.56***	
			Grand Total	***136665.47***	

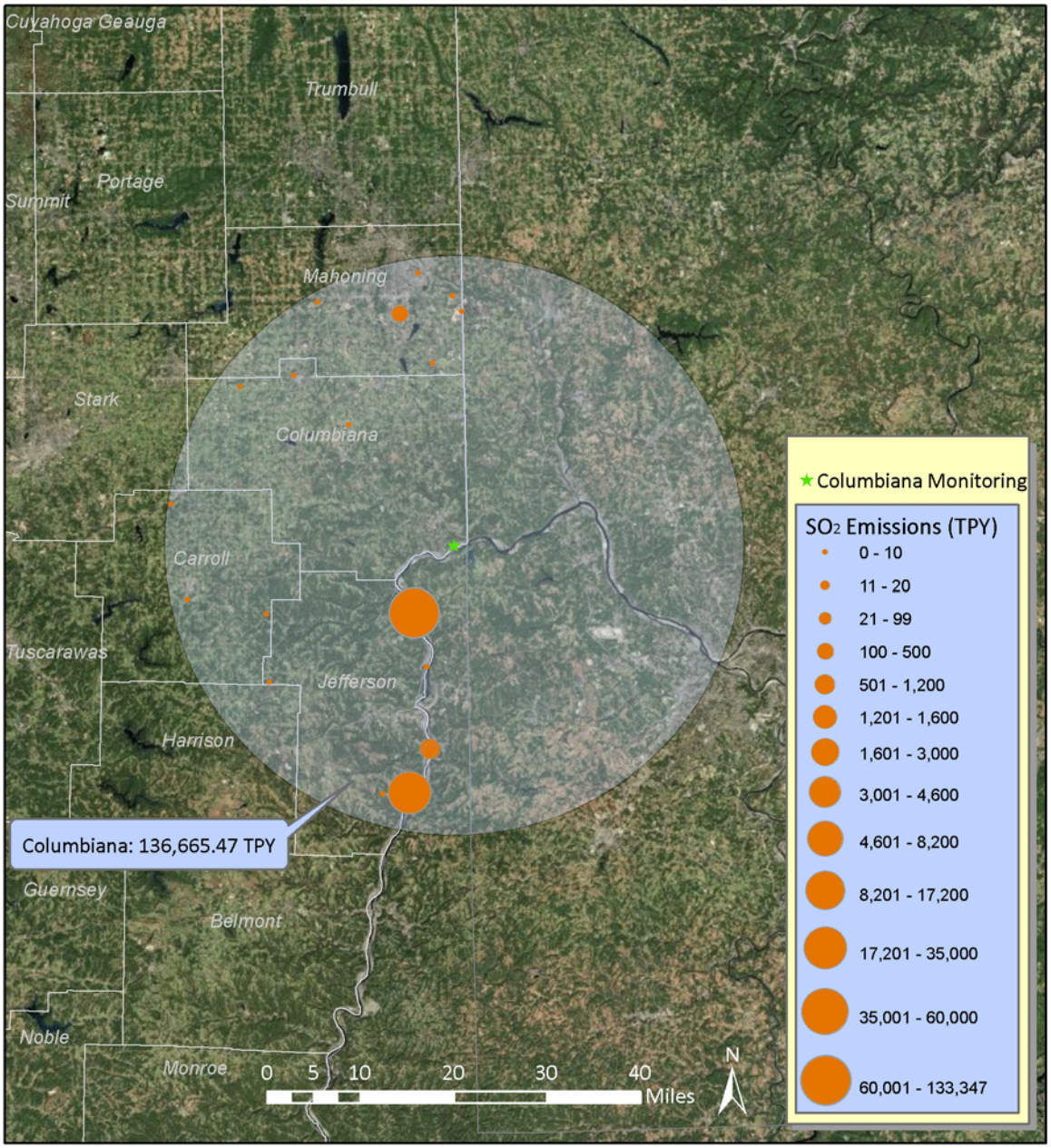


Figure 16: 2008 Ohio Sources of SO_2 Emissions (TPY) within 50 Kilometers of the Columbiana County Violating Monitor

Factor 3: Meteorology

Please refer to the Factor 3 general discussion at the beginning of this document for general meteorological information applicable to Columbiana County.

Ohio is bounded on the east by the Ohio River and Appalachian Mountains. During the day, surface winds blow from the bottom of the valley to higher elevations creating a valley breeze; however, during the evening, a mountain breeze forms as surface winds blow from higher elevations down in to the valley. The valleys also

experience nighttime inversions which can influence wind patterns. These effects would best be represented by the Pittsburgh International airport wind rose.

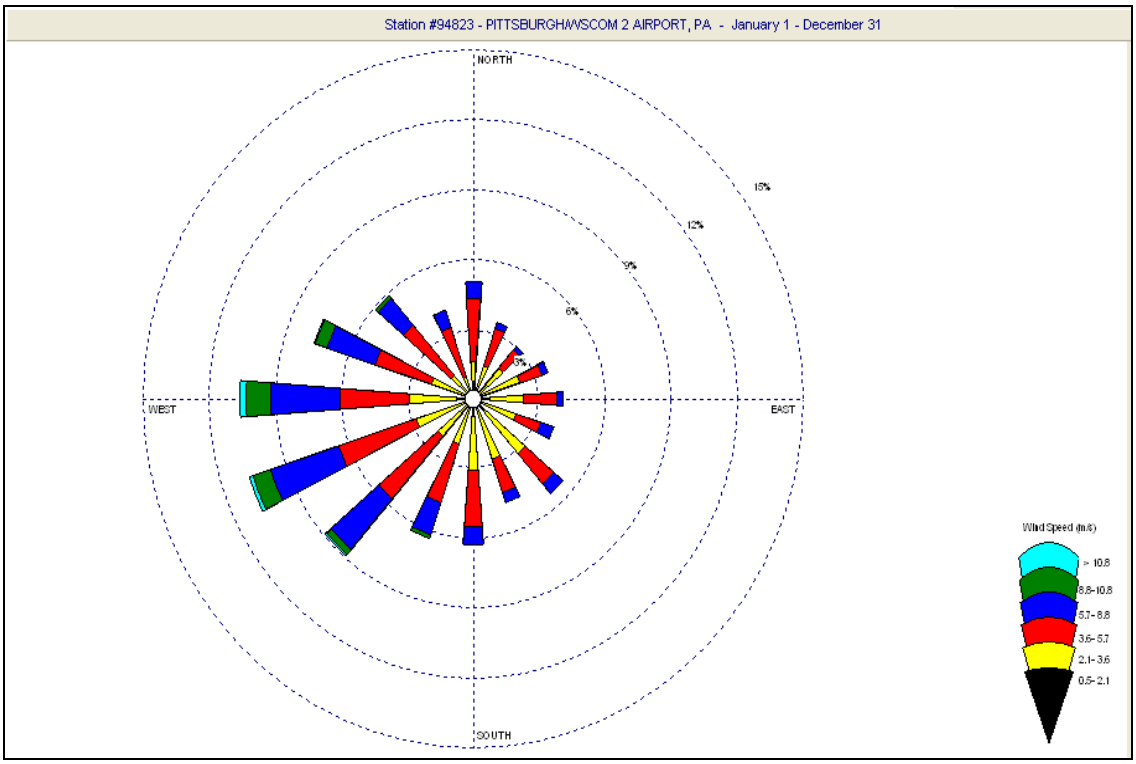


Figure 17: Columbiana County Wind Rose

Factor 4: Topography and Land Use/Land Cover

Columbiana County is in the Allegheny Plateau region (see Appendix E), with the southern third of the county on the edge of the unglaciated Allegheny Plateau Province. Topography varies from rolling uplands in the northern part of the county to higher relief and steep uplands in the central area and a more rugged landscape in the unglaciated portion in the southern part of the county.

As shown in the following pie chart, the land use/land cover is predominately characterized as forest and cropland.

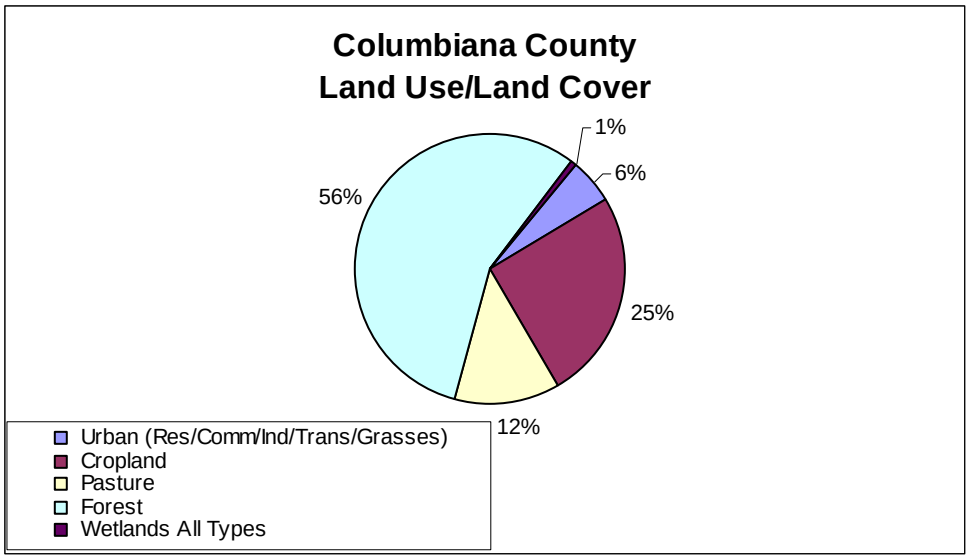


Figure 18: Columbiana County Land Use/Land Cover

The Columbiana County area does not have any geographical or topographical barriers significantly affecting transport of SO_2 within its air shed. Therefore, this factor provides no reason to delineate sources potentially included versus excluded from these analyses.

Factor 5: Jurisdictional Boundaries

Columbiana County is the only county in the East Liverpool-Salem, OH metropolitan statistical area. The Youngstown-Warren-Boardman, OH-PA MSA includes: Mahoning and Trumbull Counties in Ohio and Mercer County in Pennsylvania. The CSA also includes Columbiana County.

The Ohio EPA Central Office and Northeast District Office are responsible for air quality planning within all areas of Columbiana County. Columbiana County is not represented by an MPO.

The partial nonattainment boundary for Columbiana County was selected at the township jurisdictional boundary.

Meigs County

Recommended Nonattainment Boundary: Partial Meigs County (Salisbury Township) and Partial Gallia County (Cheshire Township)

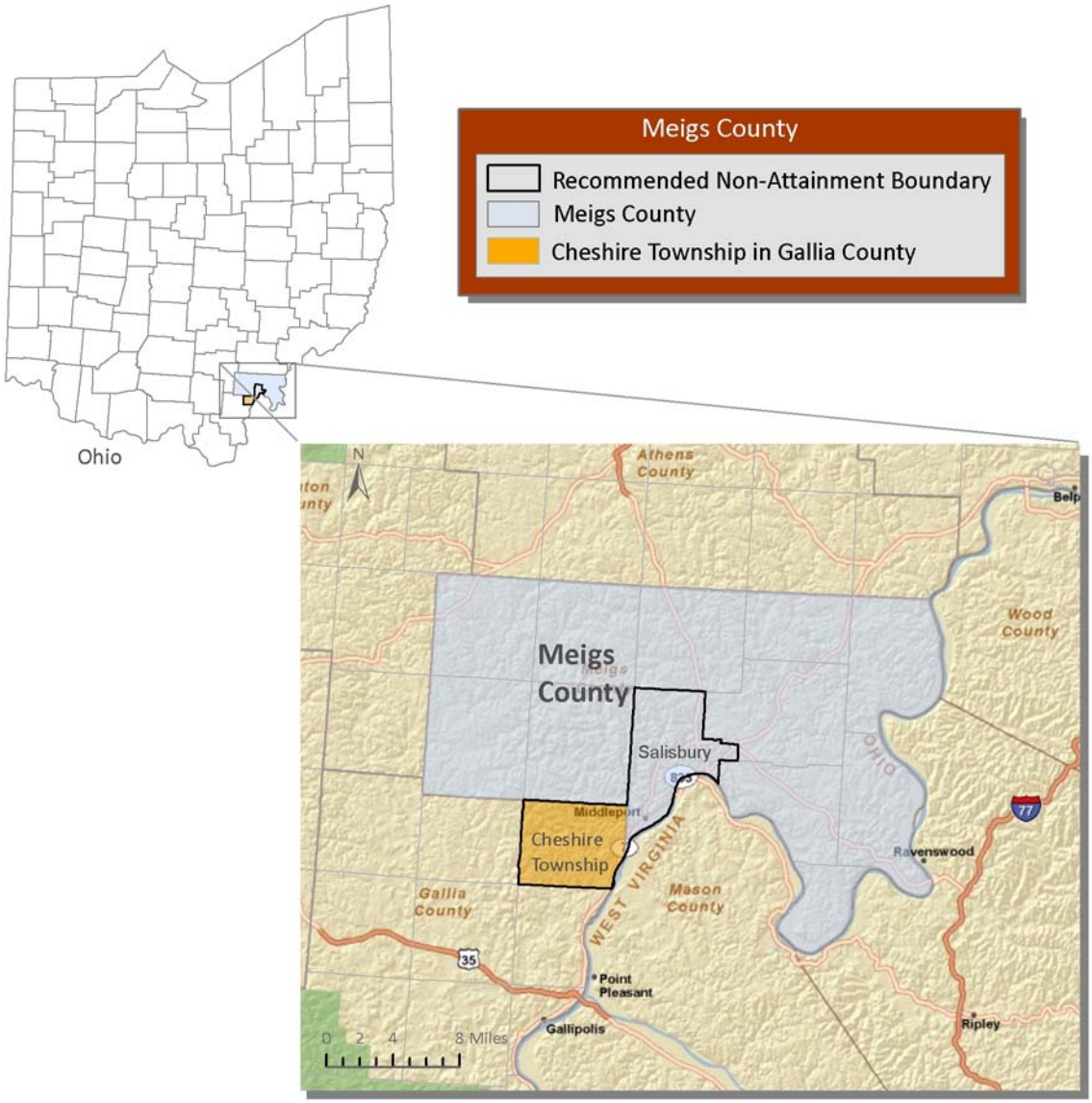


Figure 19: Recommended Nonattainment Boundary for Meigs and Gallia County

Discussion:

Ohio EPA is recommending partial nonattainment of Meigs County and partial nonattainment of Gallia County, as indicated in the map above, and supported by an analysis of the factors. The remainder of Meigs County and Gallia County are recommended as unclassifiable. This discussion summarizes the most relevant results of these analyses.

As seen under Factor 1, Meigs County contains one monitor which is violating for the 2008 to 2010 air quality period. As seen under Table 8 below, there are 96,222.90 TPY of SO_2 emissions from Ohio within 50 km of the violating monitor. There are 0 TPY of SO_2 emissions within Meigs County; therefore, the excluded portion of Meigs County does not contain any additional emission sources that could contribute to the monitored violations. The majority of emissions, 95.5% or 91,889.50 TPY, are from Gallia County. Specifically, these emissions emanate from two sources located within the boundary suggested as partial nonattainment for Gallia County. These sources are south-southwest of the violating monitor and wind patterns are generally from the southwest. Ohio EPA believes it would not be appropriate to designate all of Gallia County nonattainment because there are no other significant sources of SO_2 emissions within Gallia County.

As indicated in Figure 21 below, the most significant sources are located south of Pomeroy, Ohio, where the monitor is located nearby, along the Ohio River.

Factor 1: Air Quality Data

Table 7: Meigs County 2008 to 2010 SO_2 Air Quality Data

SO_2 Monitoring Site(s)		Yearly averages (ppb)			3-yr averages (ppb)
County	Site ID	2008	2009	2010	2008-2010
Meigs	39-105-1001	78	94	94	89

*Yellow highlights denote violation of SO_2 NAAQS (75 ppb)
*Red highlights denote <75% capture in any one quarter

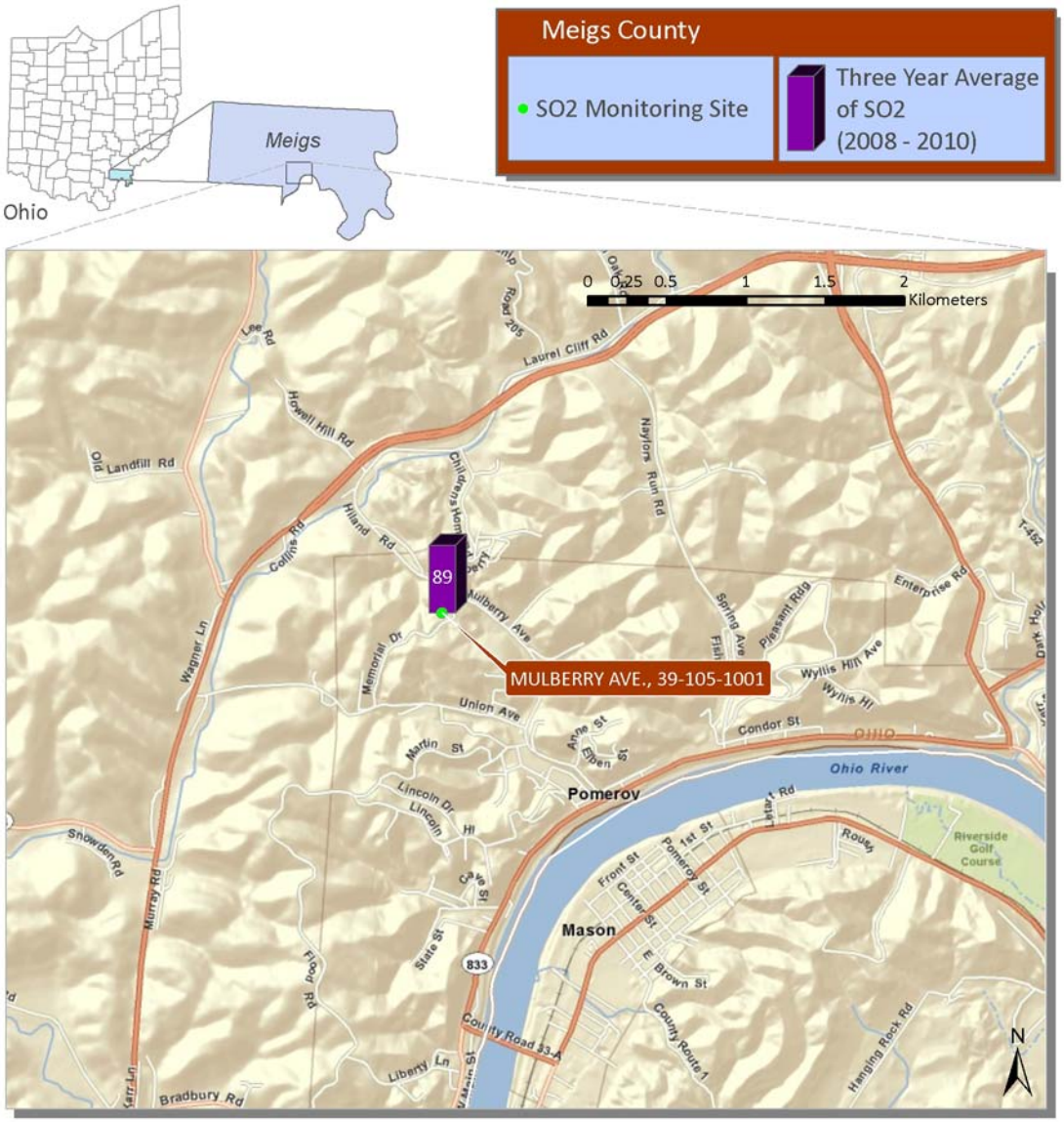


Figure 20: County SO_2 Monitor Locations and Site ID Numbers

Factor 2: Emissions

There are 96,222.90 TPY of SO_2 emissions from Ohio within 50 km of the violating monitor. There are no actual SO_2 emissions within Meigs County.

Table 8: 2008 Ohio Sources of SO_2 Emissions (TPY) within 50 Kilometers of the Meigs County Violating Monitor

State	County	Facility ID	Facility Name	2008 SO2 Emissions (TPY)	Distance from Monitor (km)
OH	Athens	0605010016	Ohio University Lausche Heating Plant	1338.13	32.8
OH	Athens	0605000008	Texas Eastern Transmission LP - Athens	2.14	23.5

State	County	Facility ID	Facility Name	2008 SO2 Emissions (TPY)	Distance from Monitor (km)
OH	Athens	0605000020	Tennessee Gas Pipeline Station 204	0.08	24.7
			Athens Total	***1340.35***	
OH	Gallia	0627000003	Ohio Valley Electric Corp., Kyger Creek Station	59635.30	15.3
OH	Gallia	0627010056	General James M. Gavin Power Plant	32254.20	13.1
			Gallia Total	***91889.50***	
OH	Vinton	0682000012	MCARTHUR COMPRESSOR STATION	0.01	48.4
			Vinton Total	***0.01***	
OH	Washington	0684010011	KRATON Polymers U.S. LLC	2993.04	43.8
			Washington Total	***2993.04***	
			Grand Total	***96222.90***	

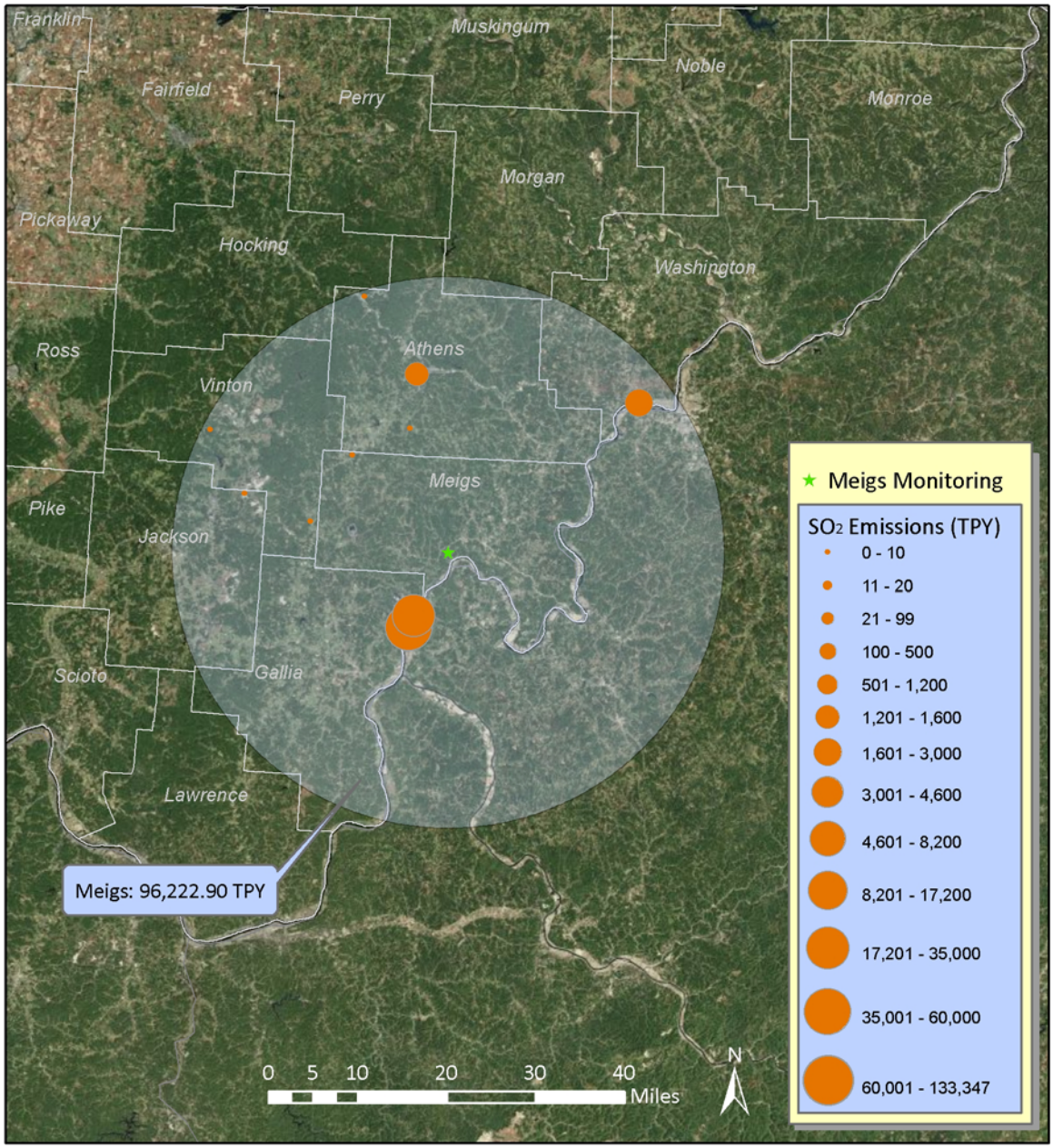


Figure 21: 2008 Ohio Sources of SO_2 Emissions (TPY) within 50 Kilometers of the Meigs County Violating Monitor

Factor 3: Meteorology

Please refer to the Factor 3 general discussion at the beginning of this document for general meteorological information applicable to Meigs and Gallia Counties.

Ohio is bounded on the east by the Ohio River and Appalachian Mountains. During the day, surface winds blow from the bottom of the valley to higher elevations creating a valley breeze; however, during the evening, a mountain breeze forms as surface winds blow from higher elevations down in to the valley. The valleys also

experience nighttime inversions which can influence wind patterns. These effects would best be represented by the Pittsburgh International airport wind rose.

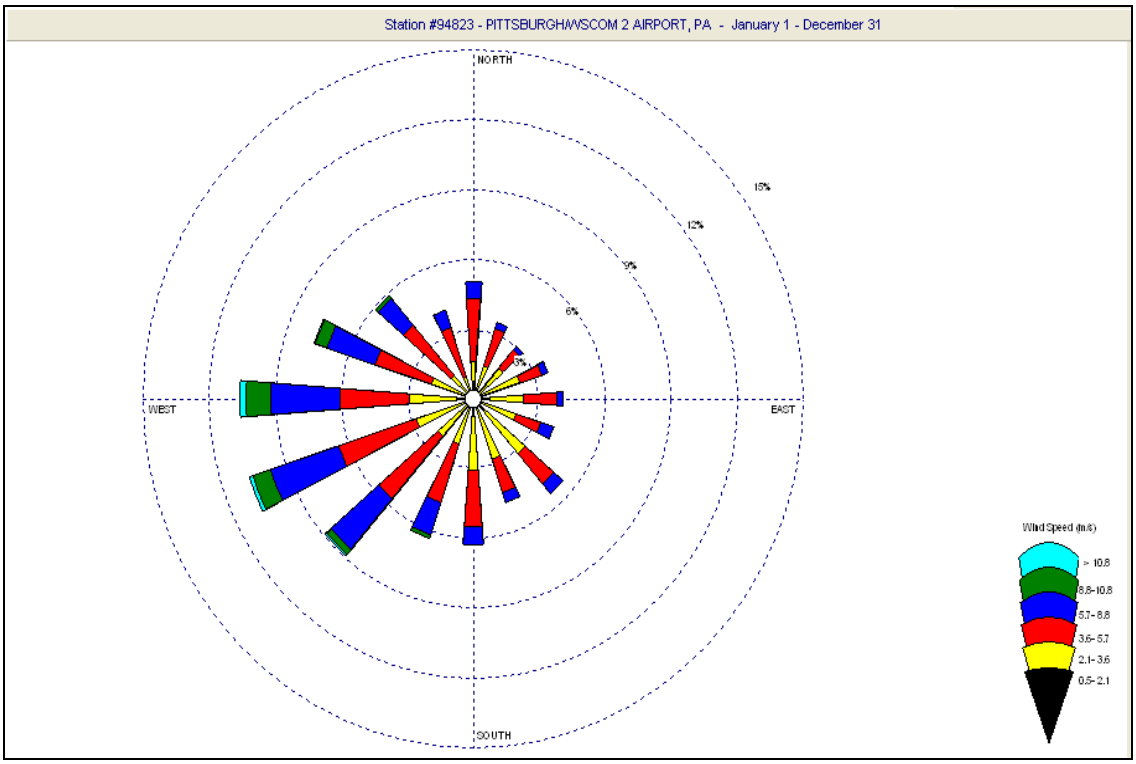


Figure 22: Meigs and Gallia County Wind Rose

Factor 4: Topography and Land Use/Land Cover

Meigs and Gallia Counties are located within one physiographic province: the Marietta Plateau to the east and the Ironton Plateau on the very western edge of the Alleghany Plateaus (see Appendix E). Meigs and Gallia Counties are bordered to the east by the Ohio River. The highest point in Meigs County, about 1,007 feet above sea level, is Greenler, in Scipio Township. The lowest point in Meigs County, about 540 feet above sea level, is in an area of Salisbury Township where the Ohio River leaves the county. The average elevation difference from ridge crest to drainage notch is about 250 feet in Meigs County. Gallia County is extensively dissected by drainage ways and has hilly and rough topography. The highest point in the county is about 1,060 feet and the lowest is about 515 feet above sea level. Cheshire Township in Gallia County is at 823 feet.

As shown in the following pie charts, the land use/land cover in Meigs and Gallia Counties are predominately forest.

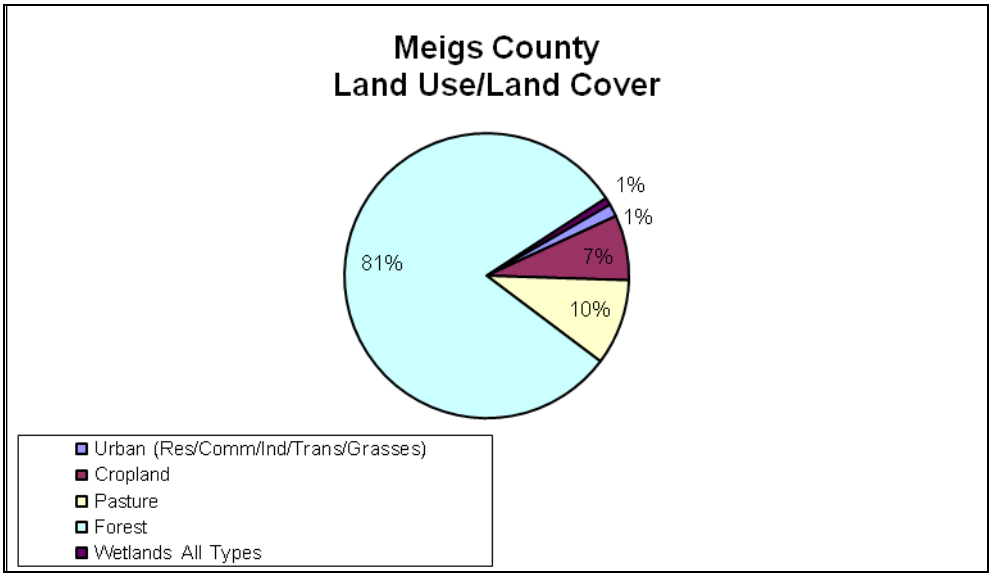


Figure 23: Meigs County Land Use/Land Cover

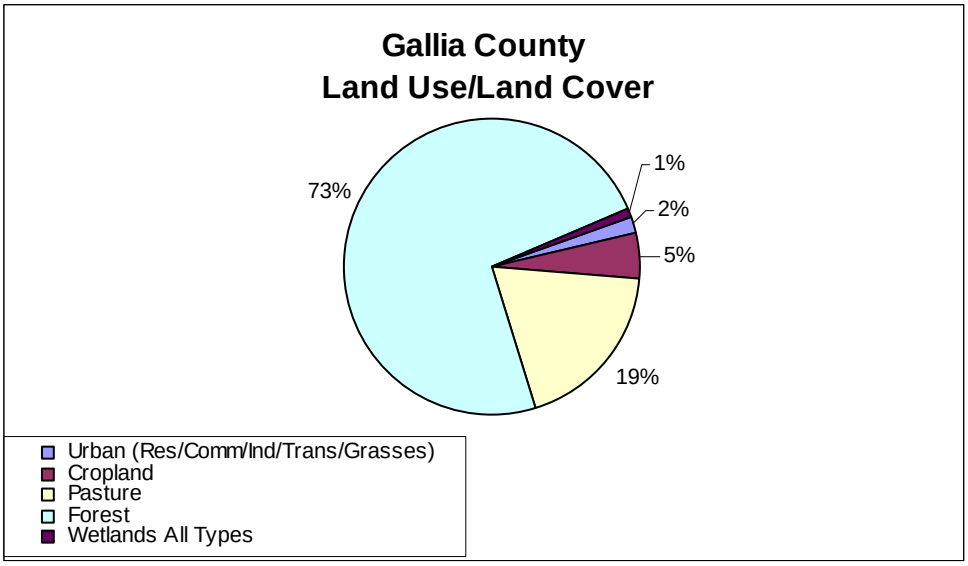


Figure 24: Gallia County Land Use/Land Cover

The Meigs and Gallia Counties area does not have any geographical or topographical barriers significantly affecting transport of SO_2 within its air shed. Therefore, this factor provides no reason to delineate sources potentially included versus excluded from these analyses.

Factor 5: Jurisdictional Boundaries

There is no MSA or CSA for Meigs and Gallia Counties.

The Ohio EPA Central Office and Southeast District Office are responsible for air quality planning within all areas of Meigs and Gallia Counties. Meigs and Gallia Counties are not represented by an MPO.

The partial nonattainment boundaries for Gallia and Meigs County were selected at the township jurisdictional boundary.

Lake County

Recommended Nonattainment Boundary: Lake County

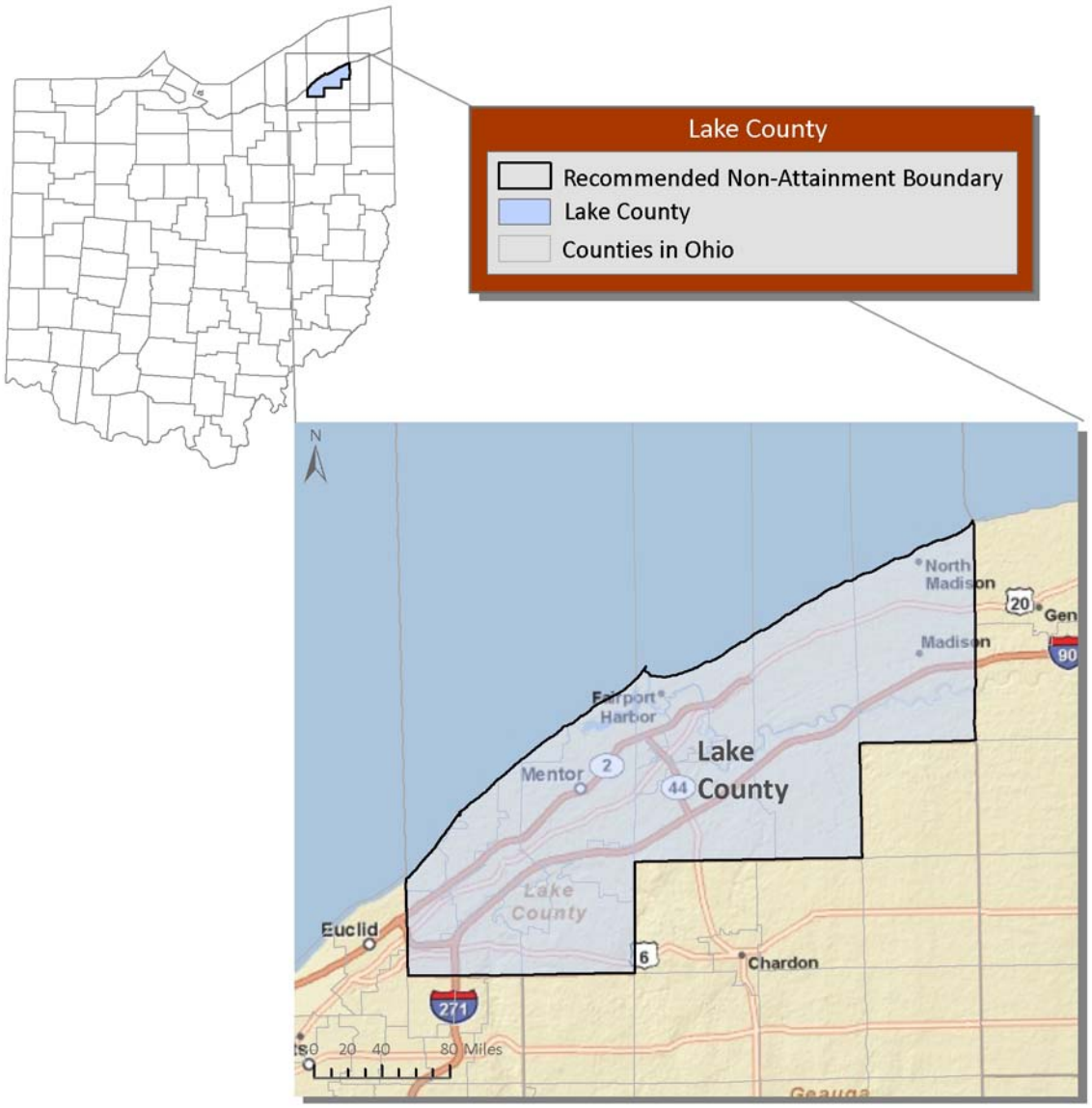


Figure 25: Recommended Nonattainment Boundary for Lake County

Discussion:

Ohio EPA is recommending nonattainment of Lake County, as indicated in the map above, and supported by an analysis of the factors. This discussion summarizes the most relevant results of these analyses.

As seen under Factor 1, Lake County contains two monitors, of which one is violating for the 2008 to 2010 air quality period. The violating monitor is east northeast, and up-wind, of the non-violating monitor and Cuyahoga County. As seen

under Table 10 below, there are 71,486.91 TPY of SO_2 emissions within 50 km of the violating monitor. There are 58,670.72 TPY of SO_2 emissions within Lake County, representing 82.1% of the emissions within 50 km. Additionally, there are emissions of 8,936.29 TPY, or 12.5%, within Cuyahoga County. However, it is not believed that Cuyahoga County emissions are a significant contributor to the Lake County monitor's violations. These emissions are downwind of the non-violating monitor and Ohio EPA would expect if Cuyahoga County emissions were significantly contributing to Lake County nonattainment then both Lake County monitors would be violating. Ashtabula County contains 3,879.90 TPY, or 5.4%, of SO_2 the areas emissions. This is attributed predominantly to one source located more than 48 km up-wind of the violating monitor. Therefore, Ohio EPA does not believe Ashtabula County emissions contribute to nonattainment in Lake County.

Factor 1: Air Quality Data

Table 9: Lake County 2008 to 2010 SO_2 Air Quality Data

SO_2 Monitoring Site(s)		Yearly averages (ppb)			3-yr averages (ppb)
County	Site ID	2008	2009	2010	2008-2010
Lake	39-085-0003	42	37	31	37
	39-085-0007[5]		186	139	
	39-085-3002	164			163

*Yellow highlights denote violation of SO_2 NAAQS (75 ppb)
*Red highlights denote <75% capture in any one quarter

[5] Monitor -3002 was replaced by monitor -0007 as part of a relocation approved under Ohio's Annual Monitoring Plan. Therefore, 2008 to 2010 data is combined.

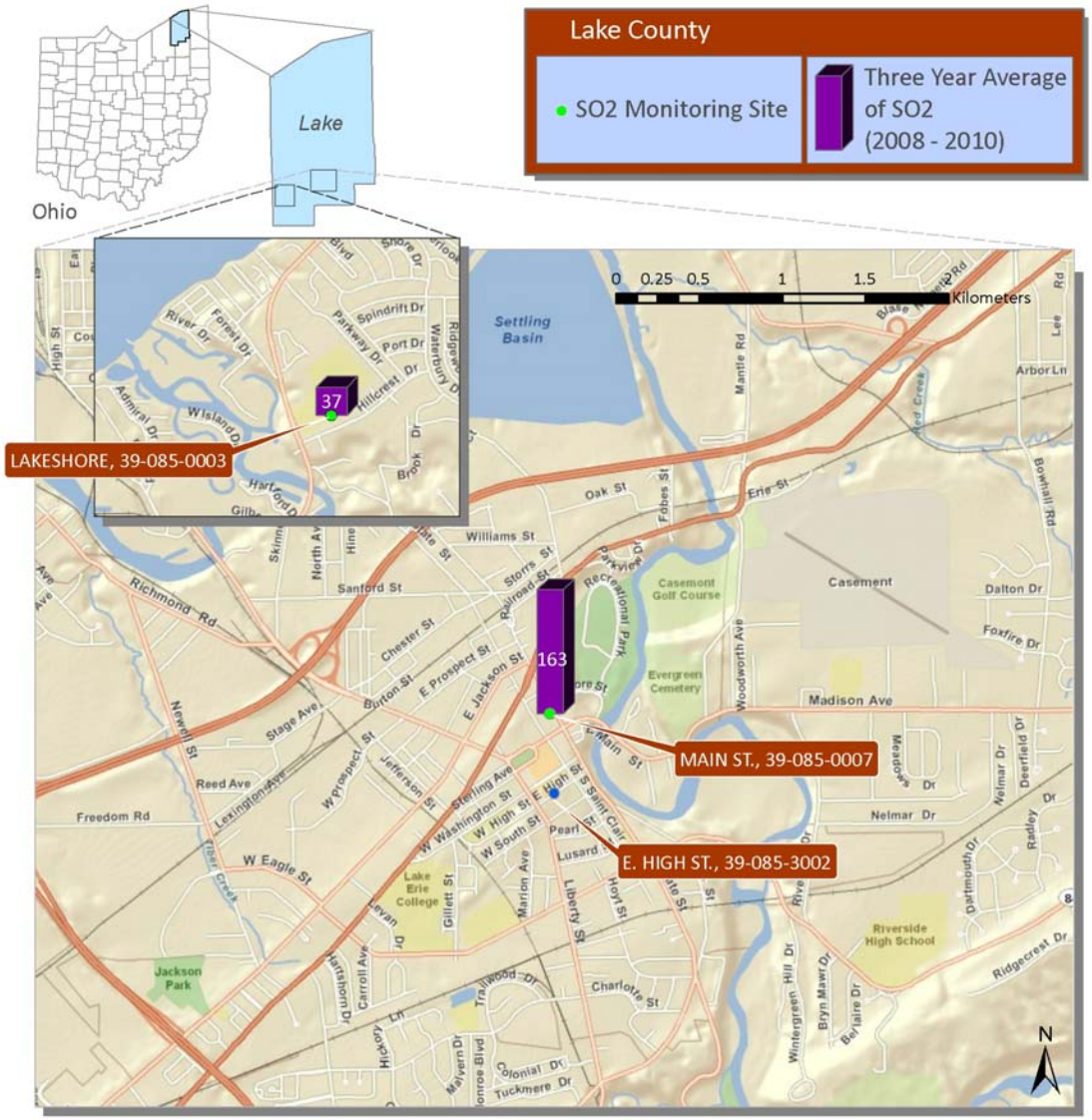


Figure 26: Lake County SO2 Monitor Locations and Site ID Numbers

Factor 2: Emissions

There are 71,486.91 TPY of SO_2 emissions from Ohio within 50 km of the violating monitor.

Table 10: 2008 Ohio Sources of SO_2 Emissions (TPY) within 50 Kilometers of the Lake County Violating Monitor

State	County	Facility ID	Facility Name	2008 SO2 Emissions (TPY)	Distance from Monitor (km)
OH	Ashtabula	0204010000	FirstEnergy Generation Corp., Ashtabula Plant	3850.10	48.6

State	County	Facility ID	Facility Name	2008 SO2 Emissions (TPY)	Distance from Monitor (km)
OH	Ashtabula	0204010193	Millennium Inorganic Chemicals, Inc. - Plant 2	19.68	43.4
OH	Ashtabula	0204010200	Millennium Inorganic Chemicals, Inc. Plant #I	6.41	44.9
OH	Ashtabula	0204030303	USA Waste Geneva Landfill, Inc.	2.93	28.4
OH	Ashtabula	0204010230	Molded Fiber Glass Companies, Plant 2	0.78	39.9
			Ashtabula Total	***3879.90***	
OH	Cuyahoga	1318000250	Cleveland Electric Illuminating Co., Lake Shore Plant	4582.10	39.3
OH	Cuyahoga	1318003060	The Medical Center Company	2203.14	40.6
OH	Cuyahoga	1318000250	Cleveland Thermal LLC	1331.85	45.3
OH	Cuyahoga	1318001610	ArcelorMittal Cleveland Inc.	718.09	46.8
OH	Cuyahoga	1318171620	Charter Steel - Cleveland Inc	60.91	47.0
OH	Cuyahoga	1318172480	Southerly Wastewater Treatment Center	34.27	47.7
OH	Cuyahoga	1318958480	Independence Recycling, Inc.	2.42	45.4
OH	Cuyahoga	1318247810	Cuyahoga Regional Sanitary Landfill	2.18	43.3
OH	Cuyahoga	1318538150	MM Cuyahoga Energy LLC	0.37	42.0
OH	Cuyahoga	1318170310	ALCOA-Cleveland Works	0.29	48.7
OH	Cuyahoga	1318202140	The Lincoln Electric Company	0.16	27.3
OH	Cuyahoga	1318247720	BFI - Glenwillow Landfill	0.15	46.0
OH	Cuyahoga	1318002700	Sunoco Partners Marketing & Terminals LP	0.14	43.5
OH	Cuyahoga	1318002970	MetroHealth Medical Center	0.11	48.0
OH	Cuyahoga	1318001620	SIFCO Forge Group, Inc.	0.06	41.0
OH	Cuyahoga	1318030170	Hukill Chemical Corporation	0.02	46.1
OH	Cuyahoga	1318170170	Angstrom Graphics MIdwest, Inc.	0.01	45.3
OH	Cuyahoga	1318226140	Automated Packaging Systems	0.01	43.9
OH	Cuyahoga	1318000130	Cleveland Public Power - Service Center	<0.00	48.8
OH	Cuyahoga	1318000840	Manufacturers Plating Company, Inc.	<0.00	41.6
OH	Cuyahoga	1318000130	Cleveland Public Power - Collinwood Substation	<0.00	34.6
			Cuyahoga Total	***8936.29***	
OH	Lake	0243160009	CLEVELAND ELECTRIC ILLUMINATING CO., EASTLAKE PLANT	50519.40	17.4
OH	Lake	0243110008	PAINESVILLE MUNICIPAL ELECTRIC PLANT	7211.41	1.0
OH	Lake	0243030257	Carmeuse Lime, Inc - Grand River Operations	910.00	4.2
OH	Lake	0243000024	The Lubrizol Corporation	22.94	2.7

State	County	Facility ID	Facility Name	2008 SO2 Emissions (TPY)	Distance from Monitor (km)
OH	Lake	0243150025	The Lubrizol Corporation - Wickliffe Facility	6.72	22.9
OH	Lake	0243111198	LAKE COUNTY SOLID WASTE FACILITY	0.11	4.4
OH	Lake	0243111362	Avery Dennison STD, Bldg 5	0.06	1.1
OH	Lake	0243111361	Avery Dennison MFD, Bldg 7	0.02	1.1
OH	Lake	0243081207	CFF of Avery Dennison	0.02	4.9
OH	Lake	0243001188	Marking Films Div. of Avery Dennison Building #11	0.02	3.5
OH	Lake	0243111416	Avery Dennison PFF, Bldg 3	0.01	1.1
OH	Lake	0243161415	Momentive Performance Materials Quartz Inc	<0.00	20.4
OH	Lake	0243081365	Avery Dennison Corporation - Fasson Roll North America	<0.00	12.8
OH	Lake	0204000423	Sigma Ohio Inc. PLT 3 formerly Picken's Plastics Inc.	<0.00	40.3
			Lake Total	***58670.72***	
			Grand Total	***71486.91***	

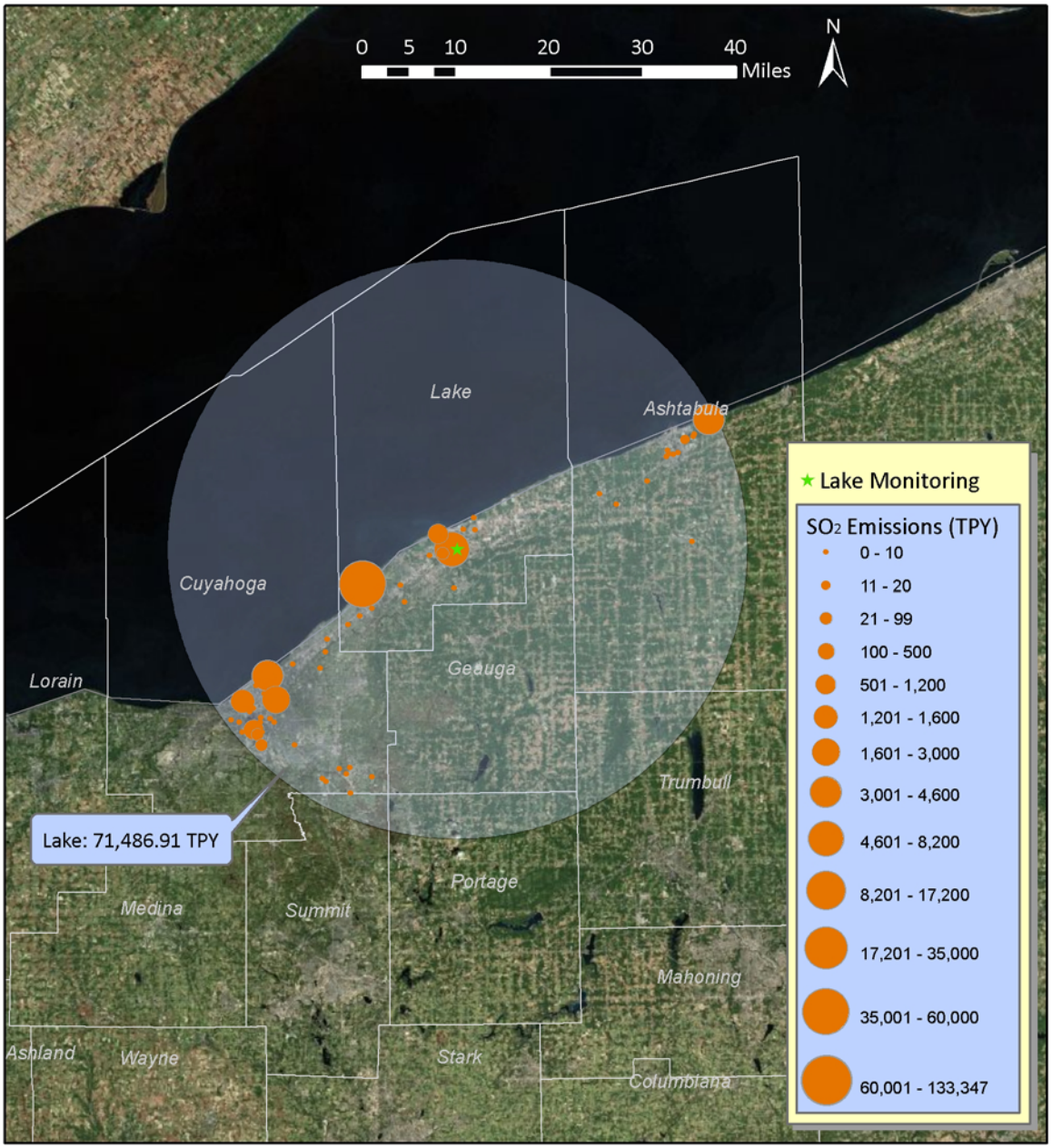


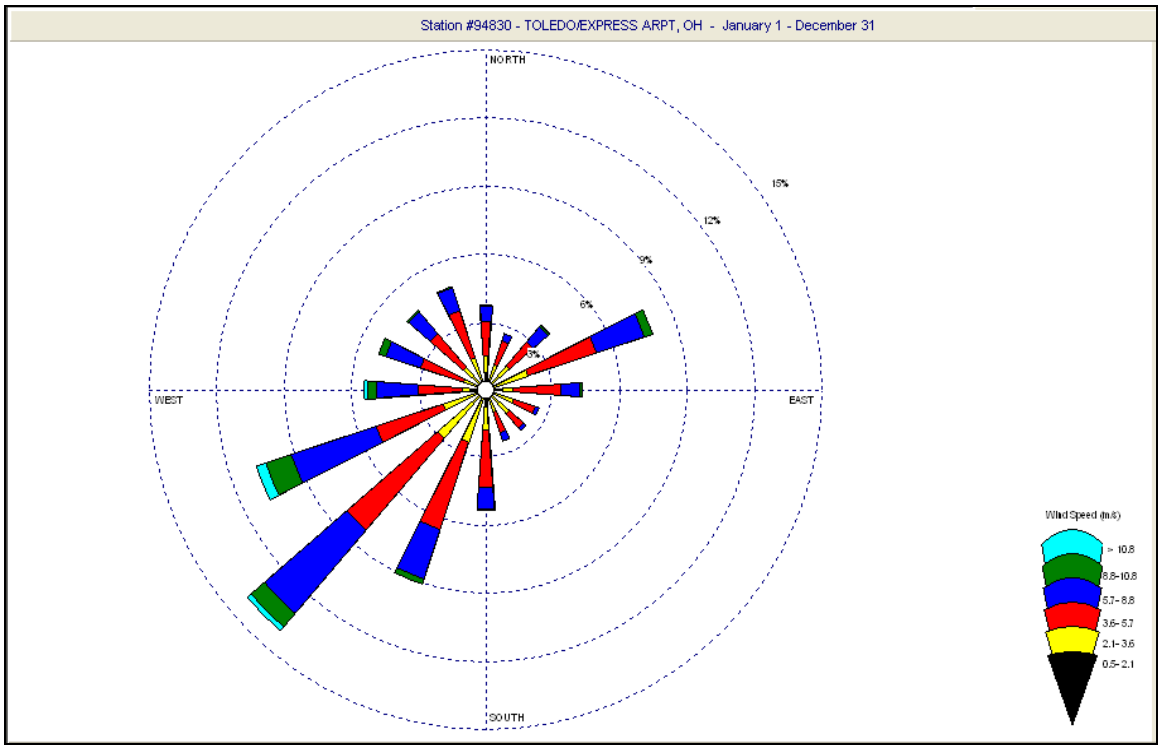
Figure 27: 2008 Ohio Sources of SO_2 Emissions (TPY) within 50 Kilometers of the Lake County Violating Monitor

Factor 3: Meteorology

Please refer to the Factor 3 general discussion at the beginning of this document for general meteorological information applicable to Lake County.

Ohio is bounded on the north by Lake Erie which can provide localized modifications to the general wind pattern, primarily by the introduction of land breezes and sea breezes along the Lake during periods of low synoptic wind speeds. Sea breezes typically form during the day as surface winds blow from water to land. Land breezes typically form during the evening as surface winds blow from land to water.

These effects would best be represented by the Toledo and Cleveland airport wind roses.



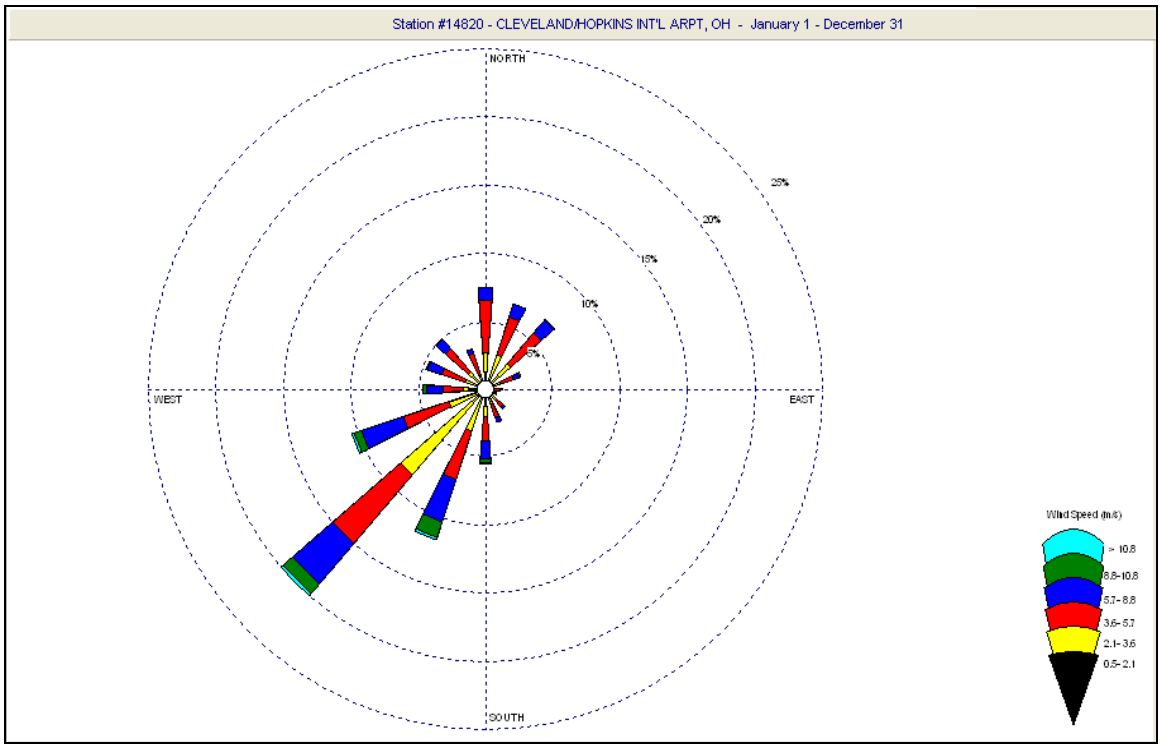


Figure 28: Lake County Wind Roses

Factor 4: Topography and Land Use/Land Cover

Lake County is located within two physiographic provinces: the glaciated Allegheny Plateau of the Killbuck-Glaciated Pittsburgh Plateau on the south and the Huron-Erie Lake Plains section of the Central Lowland Province on the north (see Appendix E). Elevation ranges between 1250 and 1260 feet above sea level.

As shown in the following pie charts the land use/land cover in Lake County is predominately forest and to a lesser extent, urban.

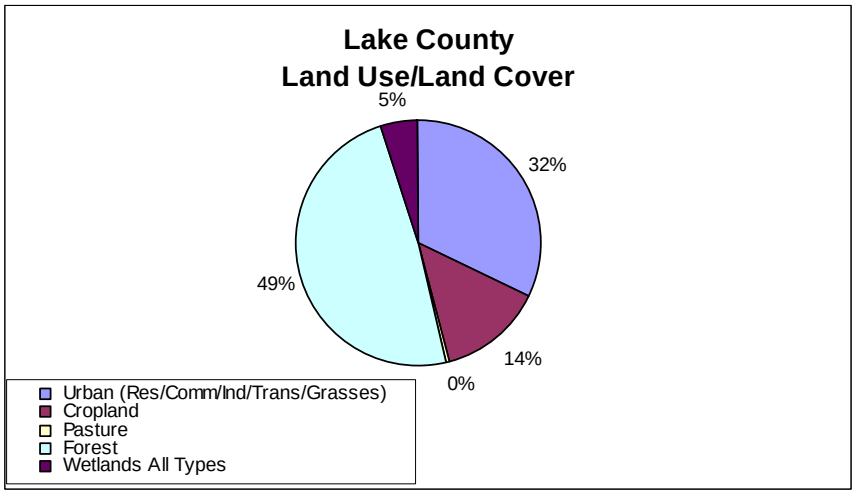


Figure 29: Lake County Land Use/Land Cover

The Lake County area does not have any geographical or topographical barriers significantly affecting transport of SO_2 within its air shed. Therefore, this factor provides no reason to delineate sources potentially included versus excluded from these analyses.

Factor 5: Jurisdictional Boundaries

The Cleveland-Elyria-Mentor, OH MSA includes Cuyahoga, Geauga, Lake, Lorain and Medina Counties in Ohio. The principal cities are Cleveland, Elyria and Mentor. The CSA also includes Ashtabula, Portage and Summit Counties.

The Ohio EPA Central Office and Northeast District Office are responsible for air quality planning within all areas of Lake County. The Northeast Ohio Areawide coordinating Agency (NOACA) is the planning agency designated as the Metropolitan Planning Organization for the greater Cleveland area. The NOACA region is composed of five counties: Cuyahoga, Geauga, Lake, Lorain, and Medina.

Morgan County

Recommended Nonattainment Boundary: Partial Morgan County (Center Township) and Partial Washington County (Waterford Township)

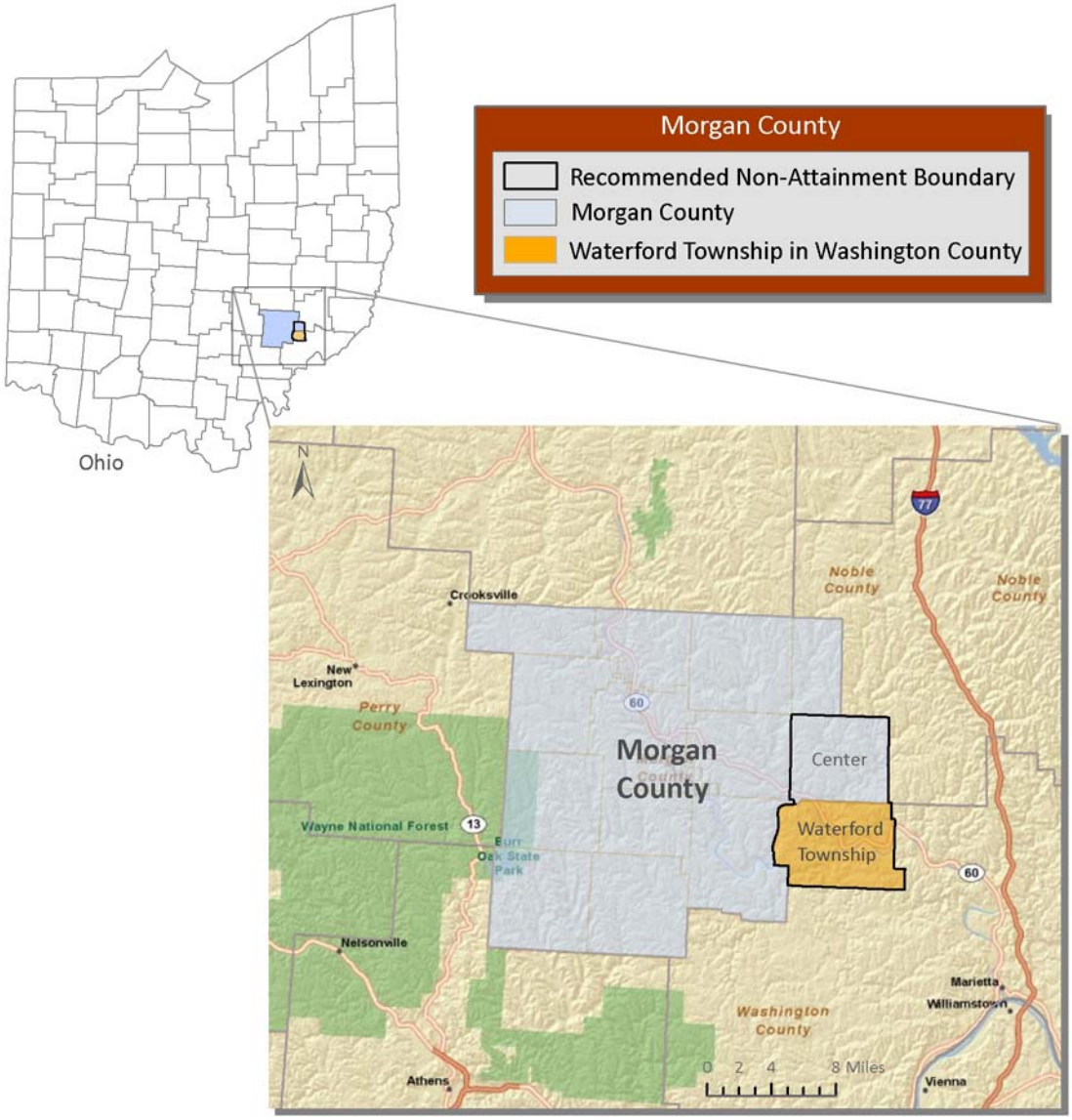


Figure 30: Recommended Nonattainment Boundary for Morgan and Washington County

Discussion:

Ohio EPA is recommending partial nonattainment of Morgan County and partial nonattainment of Washington County, as indicated in the map above, and supported by an analysis of the factors. The remainder of Morgan County and Washington County are recommended as unclassifiable.

As seen under Factor 1, Morgan County contains one monitor which is violating for the 2008 to 2010 air quality period. As seen under Table 12 below, there are 140,750.18 TPY of SO_2 emissions within 50 km of the violating monitor. There are 0 TPY of SO_2 emissions within Morgan County; therefore, the excluded portion of

Morgan County does not contain any additional emission sources that could contribute to the monitored violation. The majority of emissions, 99.6% or 140,130.47 TPY, are from Washington County. Specifically, these emissions emanate from one source located within the boundary suggested as partial nonattainment for Washington County. Ohio EPA believes it would not be appropriate to designate all of Washington County nonattainment because there are no other significant sources of SO_2 emissions within Washington County that are in close proximity (and up-wind) to significantly impact the Morgan County monitor.

As indicated in Figure 32 below, the majority of significant sources are located in the recommended partial nonattainment area south southeast of the violating monitor in adjacent Washington County, as discussed above.

Factor 1: Air Quality Data

Table 11: Morgan County 2008 to 2010 SO_2 Air Quality Data

SO_2 Monitoring Site(s)		Yearly averages (ppb)			3-yr averages (ppb)
County	Site ID	2008	2009	2010	2008-2010
Morgan	39-115-0004	220	198	167	195

*Yellow highlights denote violation of SO_2 NAAQS (75 ppb)
*Red highlights denote <75% capture in any one quarter

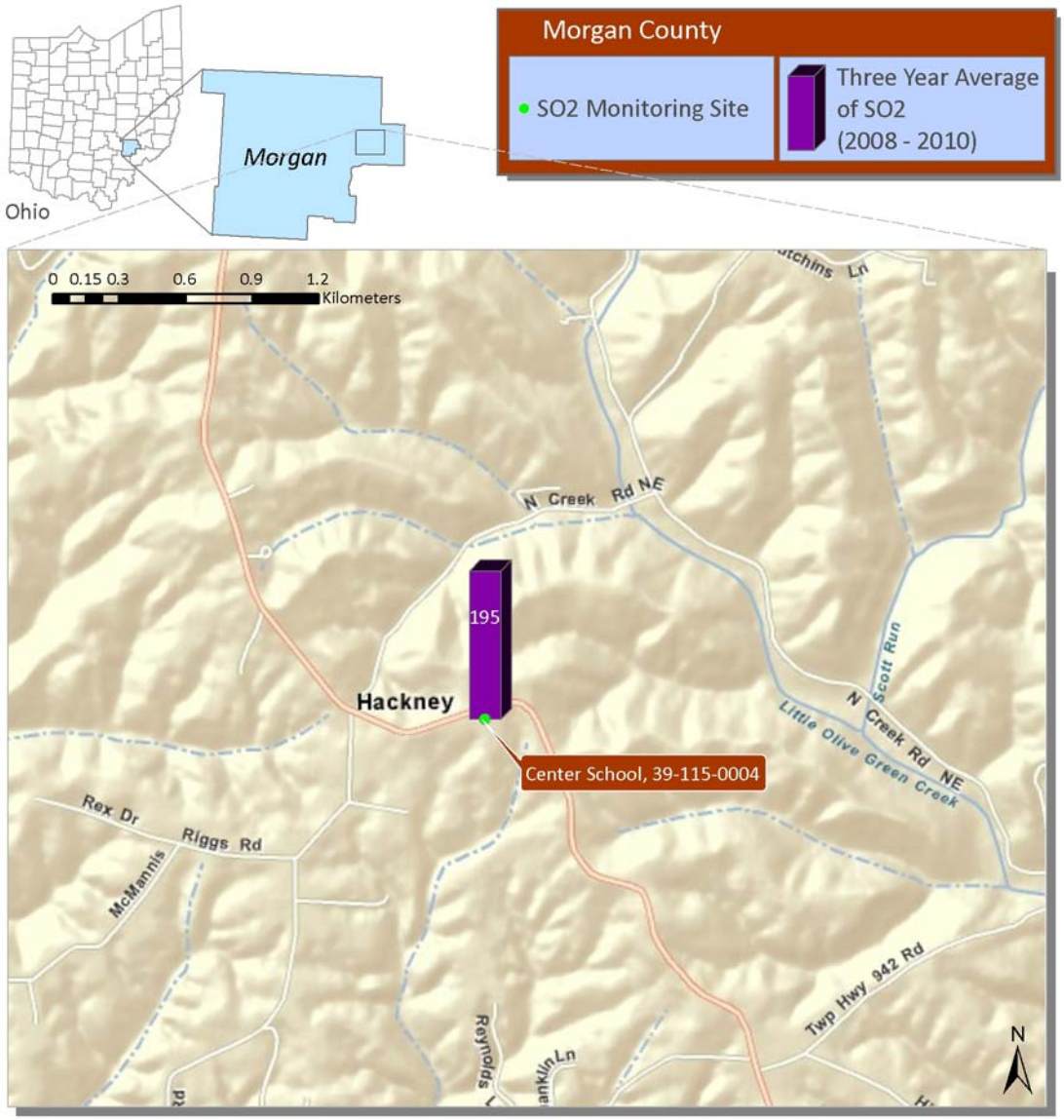


Figure 31: Morgan County SO2 Monitor Locations and Site ID Numbers

Factor 2: Emissions

There are 140,750.18 TPY of SO_2 emissions from Ohio within 50 km of the violating monitor. There are no actual SO_2 emissions within Morgan County.

Table 12: 2008 Ohio Sources of SO_2 Emissions (TPY) within 50 Kilometers of the Morgan County Violating Monitor

State	County	Facility ID	Facility Name	2008 SO2 Emissions (TPY)	Distance from Monitor (km)
OH	Guernsey	0630010005	Metallurg Vanadium Corporation	463.57	40.5
OH	Guernsey	0630000001	Tennessee Gas Pipeline Station 209	1.71	34.1

State	County	Facility ID	Facility Name	2008 SO2 Emissions (TPY)	Distance from Monitor (km)
OH	Guernsey	0630010006	Centria	0.05	45.2
OH	Guernsey	0630000104	Cambridge Compressor - New Concord	0.01	38.5
			Guernsey Total	***465.34***	
OH	Monroe	0656000032	Texas Eastern Transmission LP - Berne	0.04	35.8
			Monroe Total	***0.04***	
OH	Muskingum	0660010007	Owens Brockway Glass Containers - Plant #12	151.95	46.7
OH	Muskingum	0660010101	Burnham Foundry	2.07	47.6
OH	Muskingum	0660010006	AK Steel - Zanesville Works	0.29	46.2
OH	Muskingum	0660000235	New Bakery of Ohio, Inc	0.01	39.6
			Muskingum Total	***154.32***	
OH	Noble	0661000027	International Converter, Inc. - Caldwell	0.01	16.7
			Noble Total	***0.01***	
OH	Perry	0664000067	Superior Fibers Shawnee LLC	0.01	46.4
			Perry Total	***0.01***	
OH	Washington	0684000000	Muskingum River Power Plant	133347.00	4.7
OH	Washington	0684020037	R. H. Gorsuch Station[6]	30564.00	32.1
OH	Washington	0684010011	KRATON Polymers U.S. LLC	2993.04	39.3
OH	Washington	0684010049	Evonik Degussa Corporation	2593.10	37.8
OH	Washington	0684000105	Globe Metallurgical Inc.	1190.61	5.4
OH	Washington	0684020006	Eramet Marietta, inc.	4.89	31.7
OH	Washington	0684000212	Washington Energy Facility	0.81	5.9
OH	Washington	0684000213	Columbus Southern Power Company - Waterford Plant	0.66	11.7
OH	Washington	0684020001	Americas Styrenics, LLC	0.32	31.8
OH	Washington	0684020008	Solvay Advanced Polymers LLC	0.02	32.0
OH	Washington	0684020025	Churchtown Compressor Station (Cobra Pipeline Co. LTD)	0.01	22.7
			Washington Total	***140130.47***	
			Grand Total	***140750.18***	

[6] This source was permanently shut down at the end of 2010 and is not included in the emission totals.

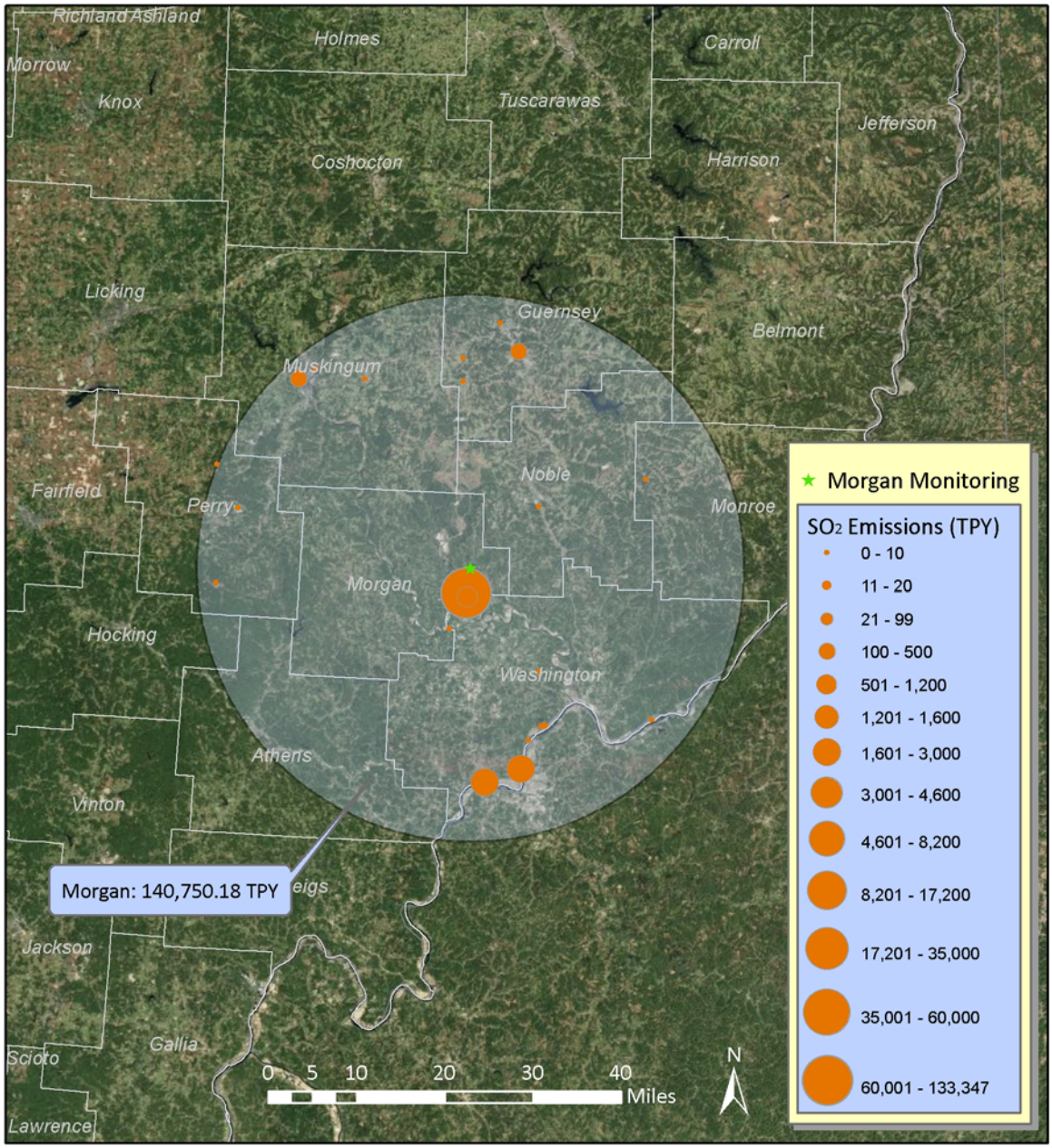


Figure 32: 2008 Ohio Sources of SO_2 Emissions (TPY) within 50 Kilometers of the Morgan County Violating Monitor

Factor 3: Meteorology

Please refer to the Factor 3 general discussion at the beginning of this document for general meteorological information applicable to Morgan and Washington County.

Morgan County lies in the foothills of the Appalachian Mountains. Although the area is gently rolling, local meteorology is influenced by the terrain. Foothill valleys experience nighttime inversions which can control local wind patterns. The general

wind patterns typically follow a southwest to northeast flow. These effects would best be represented by the Huntington, West Virginia wind rose.

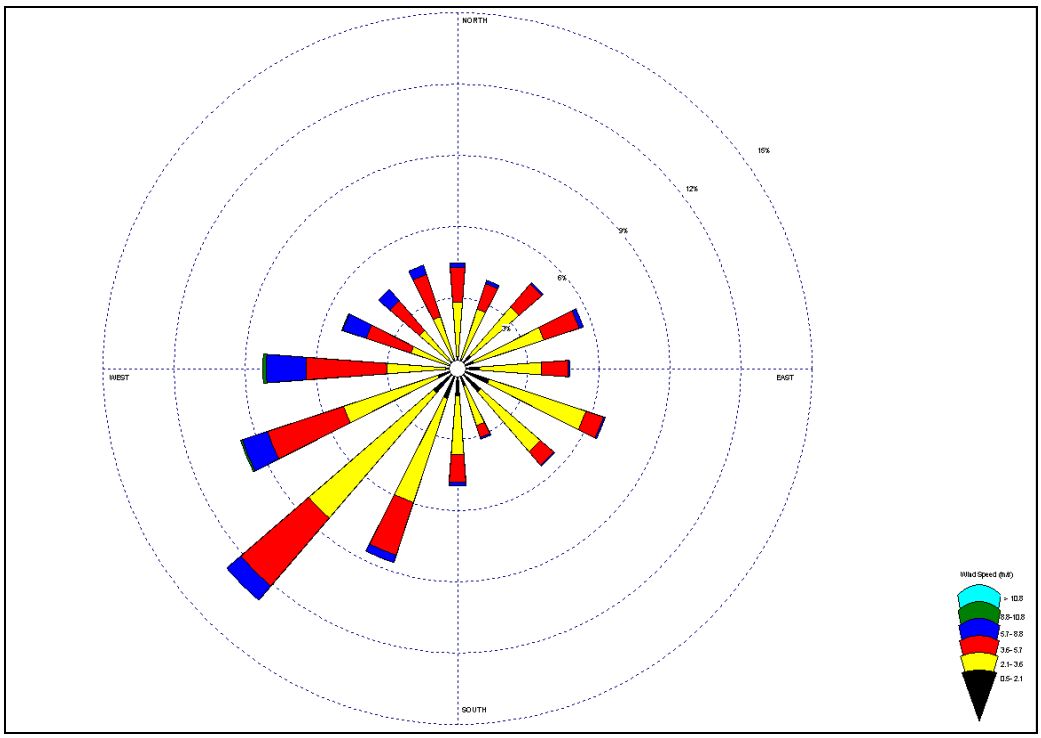


Figure 33: Morgan and Washington County Wind Rose

Factor 4: Topography and Land Use/Land Cover

Morgan and Washington Counties lie in the unglaciated Appalachian Plateaus Province (see Appendix E). Rugged, they consist mostly of steep hillsides and narrow ridgetops with Washington County also containing stream valleys. Some broad, gently sloping uplands are in the western part of Morgan County. The elevation ranges from about 630 feet to 1115 feet above sea level. The eastern part of Washington County is rugged with steep to very steep slopes while the central and western parts of the county have a more rolling topography, wider ridgetops and fewer steep side slopes. The lowest point in the county is 580 feet and the highest is more than 1,200 feet above sea level.

As shown in the following pie charts, the land use/land cover in Morgan and Washington Counties are predominately forest.

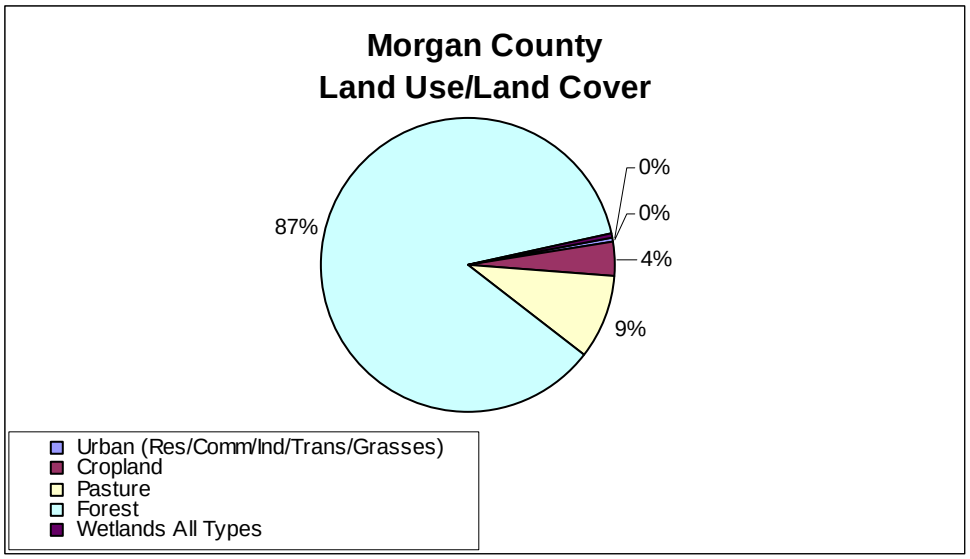


Figure 34: Morgan County Land Use/Land Cover

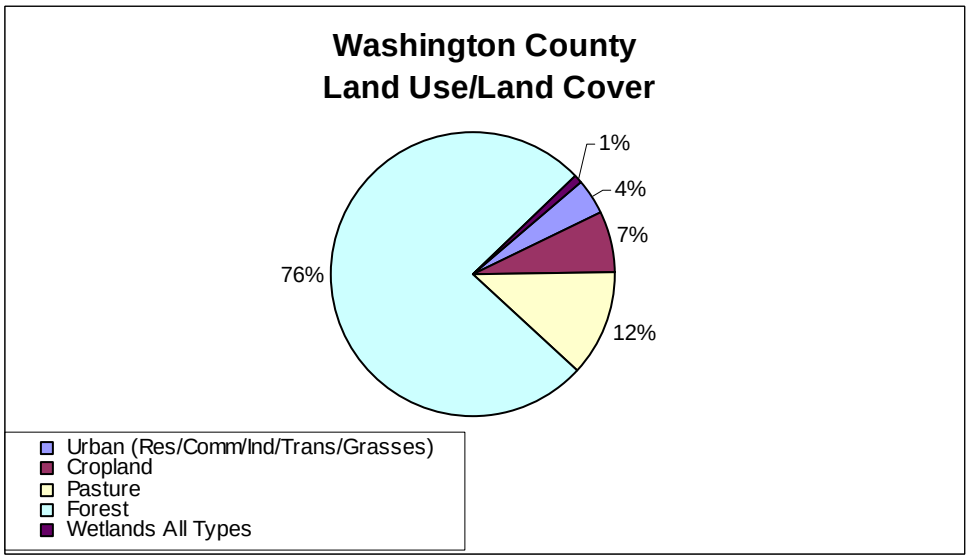


Figure 35: Washington County Land Use/Land Cover

The Morgan and Washington Counties area does not have any geographical or topographical barriers significantly affecting transport of SO_2 within its air shed. Therefore, this factor provides no reason to delineate sources potentially included versus excluded from these analyses.

Factor 5: Jurisdictional Boundaries

There is no MSA or CSA for Morgan County. Morgan County is not represented by an MPO.

The Parkersburg-Marietta-Vienna, WV-OH MSA includes: Pleasants, Wirt and Wood Counties in West Virginia; and Washington County in Ohio. The principal cities are Parkersburg and Vienna in West Virginia, and Marietta in Ohio. There is no CSA for this area.

The Wood, Wirt, Washington Interstate Planning Commission (WWWIPC) is the planning agency designated as the Metropolitan Planning Organization for Parkersburg-Marietta area. The WWWIPC region is composed of two counties: Wood County, WV and the greater Marietta area of Washington County, OH.

The Ohio EPA Central Office and Southeast District Office are responsible for air quality planning within all areas of Morgan and Washington County.

The partial nonattainment boundaries for Morgan County and Washington County were selected at the township jurisdictional boundary.

Section 2

Counties Containing Non-Violating SO_2 Monitors

Recommended Unclassifiable

Counties Recommended Unclassifiable:

1. Adams County
2. Allen County
3. Ashtabula County
4. Athens County
5. Butler County
6. Clark County
7. Cuyahoga County
8. Franklin County
9. Lawrence County
10. Hamilton County
11. Mahoning County
12. Scioto County
13. Summit County
14. Tuscarawas County

Discussion:

Ohio EPA is recommending the above counties be designated as unclassifiable. The discussion and information relevant to Cuyahoga County is provided separately at the end of this section of the document. The following discussion and information is relevant to all other counties listed above.

U.S. EPA's rule states that in order for an area to be designated attainment there must be monitoring and appropriate modeling data showing no violations. Although each of these counties contains a monitor(s) indicating attainment, there are, or may be, sources of emissions within 50 km of these monitors that may necessitate additional modeling in the future under Ohio's Infrastructure SIP.

Air Quality Data:

Table 13: 2008 to 2010 SO_2 Air Quality Data for Non-Violating Monitors in Ohio

SO_2 Monitoring Site(s)		Yearly averages (ppb)			3-yr averages (ppb)
County	Site ID	2008	2009	2010	2008-2010
Adams	39-001-0001	59	80	43	61
Allen	39-003-0002[7]	20	23		
	39-003-0009		13	23	22
Ashtabula	39-007-1001	36	34	20	30
Athens	39-009-0004	76	58	71	68
Butler	39-017-1004[8]	32	30	31	31

[7] Monitor -0002 was replaced by monitor -0009 as part of a relocation approved under Ohio's Annual Monitoring Plan. Therefore, 2009 data is combined.

SO_2 Monitoring Site(s)		Yearly averages (ppb)			3-yr averages (ppb)
County	Site ID	2008	2009	2010	2008-2010
Clark	39-023-0003	24	27	28	26
Franklin	39-049-0034[9]	29	36		33
Hamilton	39-061-0010[10]			66	66
Lawrence[11]	39-087-0006	37	23	26	
	39-087-0012			33	30
Mahoning	39-099-0013	60	54	48	54
Scioto	39-145-0013	30	22	24	25
	39-145-0020	44	36	52	41
	39-145-0022	39	32	50	41
Summit	39-153-0017	34	31	27	31
	39-153-0022	37	35	38	37
Tuscarawas	39-157-0006	64	64	58	62

*Yellow highlights denote violation of SO_2 NAAQS (75 ppb)
*Red highlights denote <75% capture in any one quarter

[8] This monitor was an approved discontinuation in April of 2010 as a part of Ohio's Annual Monitoring Plan. Therefore, data substitution analysis was not performed on this site. The 2006 to 2008 design value of 41 ppb and the 2007-2009 design value of 33 ppb is further evidence that this site has historically attained the standard.

[9] This monitor was an approved discontinuation in 2009 as a part of Ohio's Annual Monitoring Plan. Only two quarters of data were collected in 2009. Therefore, data substitution analysis was not performed on this site. The 2006 to 2008 design value of 33 ppb and the 2007-2009 design value of 33 ppb is further evidence that this site has historically attained.

[10] This is a new monitor that began running February 22, 2010 as a part of Ohio's Annual Monitoring Plan. Data incompleteness is attributed to this start date. Date since February 22, 2010 has been complete.

[11] Monitor -0006 was replaced with -0012 on April 1, 2010 as a part of Ohio's Annual Monitoring Plan. Therefore, 2010 data is combined.

Figure 36: SO_2 Monitor Locations and Site ID Numbers for Non-Violating Monitors in Ohio

Emissions:

Figure 37 below identifies the total emissions from Ohio within the 50 km radius of each county's non-violating monitor.

Appendix C contains a detailed list of all SO_2 sources in the State of Ohio.

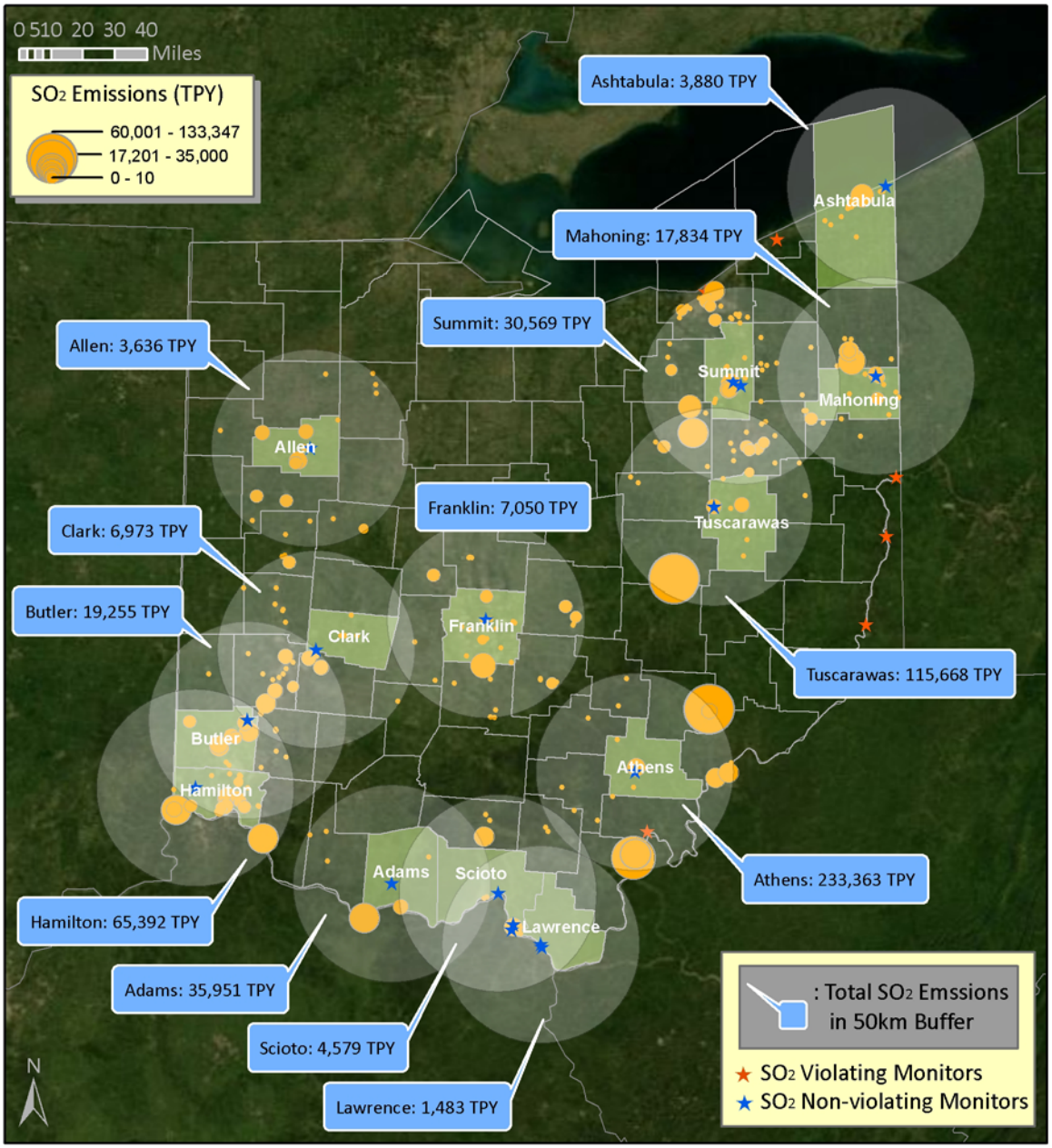


Figure 37: 2008 Ohio Sources of SO_2 Emissions (TPY) within 50 Kilometers of Non-Violating Monitors in Ohio

Cuyahoga County

Discussion:

Ohio EPA is recommending Cuyahoga County be designated as unclassifiable. Cuyahoga County contains four monitoring sites. As seen under Table 14, one monitor's design value currently indicates a violation, 76 ppb. However, it is Ohio EPA's opinion that the nonattainment status of this monitor cannot be validated in accordance with Appendix T of 40 CFR Part 50. The remaining three monitors all meet Appendix T requirements and their design values indicate attainment of the standard. Although these monitors indicate attainment, there are, or may be, sources of emissions within 50 km of these monitors that may necessitate additional modeling in the future under Ohio's Infrastructure SIP. Because of the emission sources and the validation issues associated with the monitor with a calculated design value of 76 ppb, Ohio EPA is recommending Cuyahoga County be designated as unclassifiable.

This discussion summarizes the most relevant results of these analyses.

As seen under Table 15 below, there are 95,733.32 TPY of SO_2 emissions from Ohio within 50 km of the invalid monitor. There are only 9,344 TPY of SO_2 emissions within Cuyahoga County, representing 9.8% of the emissions within 50 km. The majority of emissions, 61.3% or 58,671 TPY, are from Lake County. Lake County is being recommended as nonattainment due to a violating monitor. In addition, Lorain County contributes 24.1%, or 23,089 TPY, of the SO_2 emissions. The majority of these emissions are from one source, the Avon Lake power plant. Avon Lake is located northwest of the violating monitor while winds in Cuyahoga County are predominantly from the southwest. Lorain County does not contain a monitor and is being recommended as unclassifiable. Additional modeling may be necessitated under Ohio's Infrastructure SIP.

As indicated in Figure 39 below, the majority of sources are located within the City of Cleveland area, where the monitors are located, although more significant emissions are located throughout the 50 km radius as discussed above.

As indicated under Table 14, the design value for monitor 39-035-0060 indicates a violation of the 75 ppb standard (76 ppb). This monitor did not collect data in 2009 from May 22 to the end of July due to reconstruction of the building housing the monitor. Because of this reconstruction, both 2nd and 3rd quarters of 2009 do not meet the criteria under Appendix T, Section 3.(b), for 75% data capture completeness in a quarter. In addition, the monitor does not meet the criteria for the substitution tests under Appendix T, Section 3.(c)(i)[12] or 3.(c)(iii)[13] so the substitution

[12] (c) In the case of one, two, or three years that do not meet the completeness requirements of section 3(b) of this appendix and thus would normally not be useable for the calculation of a valid 3-year 1-hour primary standard design value, the 3-year 1-hour primary standard design value shall nevertheless be considered valid if one of the following conditions is true.

test cannot be performed in an attempt to validate the design value that is above the standard. Therefore, Ohio EPA believes this monitor falls under the privy of the Administrator's discretion under Appendix T, Section 3.(d)[14] and it is Ohio EPA's recommendation that this monitor's design value is not valid and the remaining three monitors in the county should be relied upon.

As seen under Table 14 below, historical yearly averages indicate the invalid monitor is typically not the highest reading monitor in the area. Between 2006 and 2010, the invalid monitor was only the highest reading monitor in 2007 and 2009. In 2007, three of the monitors in the area had yearly averages very close to each other; 80, 81 and 85 (for the invalid monitor). In 2009, the year for which data incompleteness occurred for the invalid monitor, yearly averages were much lower at the sites with valid data capture (24, 50 and 60) compared to the invalid monitor (83).

Ohio EPA believes the most appropriate approach in this situation is to designate Cuyahoga County as unclassifiable. Additional modeling conducted as part of Ohio's Infrastructure SIP will more appropriately analyze emissions from the sources in this area than relying upon a single invalid monitor's design value in a county where three additional monitors indicate attainment.

(i) At least 75 percent of the days in each quarter of each of three consecutive years have at least one reported hourly value, and the design value calculated according to the procedures specified in section 5 is above the level of the primary 1-hour standard.

[13] (iii)(A) A 1-hour primary standard design value that is above the level of the NAAQS can be validated if the substitution test in section 3(c)(iii)(B) results in a "test design value" that is above the level of the NAAQS. The test substitutes actual "low" reported daily maximum 1-hour values from the same site at about the same time of the year (specifically, in the same three months of the calendar) for unknown hourly values that were not successfully measured. Note that the test is merely diagnostic in nature, intended to confirm that there is a very high likelihood that the original design value (the one with less than 75 percent data capture of hours by day and of days by quarter) reflects the true above-NAAQS-level status for that 3-year period; the result of this data substitution test (the "test design value", as defined in section 3(c)(iii)(B)) is not considered the actual design value. For this test, substitution is permitted only if there are a minimum number of available daily data points from which to identify the low quarter-specific daily maximum 1-hour values, specifically if there are at least 200 days across the three matching quarters of the three years under consideration (which is about 75 percent of all possible daily values in those three quarters) for which 75 percent of the hours in the day have reported concentrations. Only days with at least 75 percent of the hours reported shall be considered in identifying the low value to be used for substitution.

[14] (d) A 1-hour primary standard design value based on data that do not meet the completeness criteria stated in 3(b) and also do not satisfy section 3(c), may also be considered valid with the approval of, or at the initiative of, the Administrator, who may consider factors such as monitoring site closures/moves, monitoring diligence, the consistency and levels of the valid concentration measurements that are available, and nearby concentrations in determining whether to use such data.

Air Quality Data:

Table 14: Cuyahoga County 2008 to 2010 SO_2 Air Quality Data

SO_2 Monitoring Site(s)		Yearly averages (ppb)					3-yr averages (ppb)
County	Site ID	2006	2007	2008	2009	2010	2008-2010
Cuyahoga	39-035-0038	75	80	81	60	76	72
	39-035-0045	65	64	43	50	38	44
	39-035-0060	75	85	70	83	75	**76**
	39-035-0065	125	81	50	25	25	33

*Yellow highlights denote violation of SO_2 NAAQS (75 ppb)
*Red highlights denote <75% capture in any one quarter

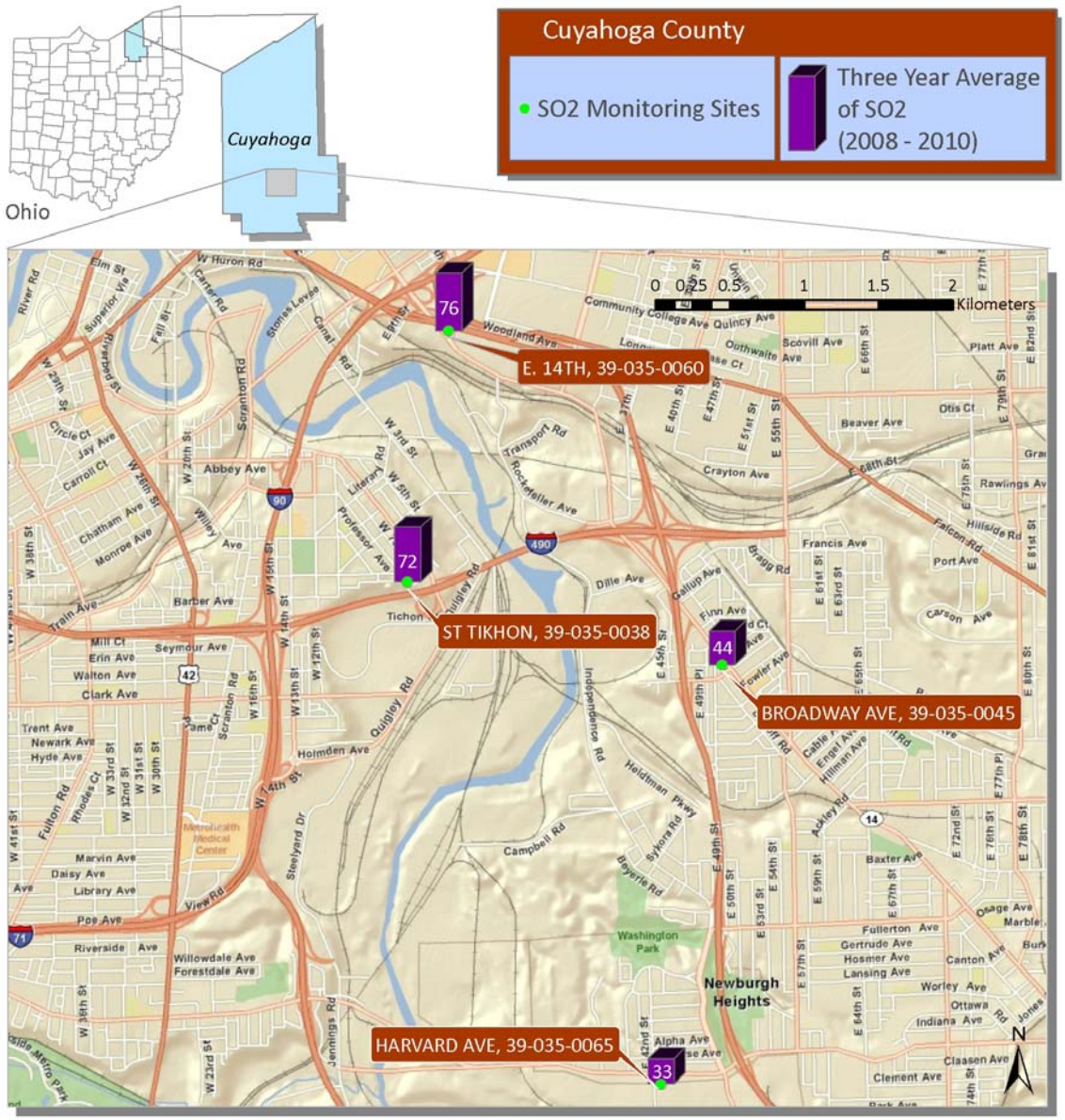


Figure 38: Cuyahoga County SO_2 Monitor Locations and Site ID Numbers

Emissions:

There are 95,733.32 TPY of actual SO_2 emissions from Ohio within 50 km of the violating monitor. Only 9,344.19 TPY of actual SO_2 emissions are within Cuyahoga County.

Table 15: 2008 Ohio Sources of SO_2 Emissions (TPY) within 50 Kilometers of the Cuyahoga County Violating Monitors

State	County	Facility ID	Facility Name	2008 SO2 Emissions (TPY)	Distance from Monitor (km)
OH	Cuyahoga	1318000250	Cleveland Electric Illuminating Co., Lake Shore Plant	4582.10	5.7
OH	Cuyahoga	1318003060	The Medical Center Company	2203.14	4.8
OH	Cuyahoga	1318000250	Cleveland Thermal LLC	1331.85	1.0
OH	Cuyahoga	1318001610	ArcelorMittal Cleveland Inc.	718.09	4.8
OH	Cuyahoga	1318270380	DiGeronimo Aggregates LLC	406.98	15.1
OH	Cuyahoga	1318120180	Ford Motor Company, Cleveland Casting Plant[15]	64.87	15.2
OH	Cuyahoga	1318171620	Charter Steel - Cleveland Inc	60.91	5.7
OH	Cuyahoga	1318172480	Southerly Wastewater Treatment Center	34.27	7.7
OH	Cuyahoga	1318958480	Independence Recycling, Inc.	2.42	1.6
OH	Cuyahoga	1318247810	Cuyahoga Regional Sanitary Landfill	2.18	21.0
OH	Cuyahoga	1318538150	MM Cuyahoga Energy LLC	0.37	20.7
OH	Cuyahoga	1318001170	NASA John H. Glenn Research Center - Lewis Field	0.30	15.4
OH	Cuyahoga	1318170310	ALCOA-Cleveland Works	0.29	5.3
OH	Cuyahoga	1318120180	Ford Motor Company, Cleveland Engine Plants	0.23	15.4
OH	Cuyahoga	1318281220	GrafTech International Holdings Inc.	0.23	7.8
OH	Cuyahoga	1318202140	The Lincoln Electric Company	0.16	17.4
OH	Cuyahoga	1318247720	BFI - Glenwillow Landfill	0.15	23.5
OH	Cuyahoga	1318002700	Sunoco Partners Marketing & Terminals LP	0.14	4.7
OH	Cuyahoga	1318002970	MetroHealth Medical Center	0.11	3.8
OH	Cuyahoga	1318001620	SIFCO Forge Group, Inc.	0.06	4.0
OH	Cuyahoga	1318000100	PPG Industries, Inc. - Cleveland	0.05	10.1

[15] This source was permanently shut down at the end in 2009 and is not included in the emission totals.

State	County	Facility ID	Facility Name	2008 SO2 Emissions (TPY)	Distance from Monitor (km)
OH	Cuyahoga	1318451030	General Motors LLC - Parma Plant	0.05	11.3
OH	Cuyahoga	1318394000	Southwest General Health Center	0.03	18.4
OH	Cuyahoga	1318617350	USG Interiors, Inc., American Metals Corp., Westlake	0.03	22.7
OH	Cuyahoga	1318030170	Hukill Chemical Corporation	0.02	19.1
OH	Cuyahoga	1318170170	Angstrom Graphics MIdwest, Inc.	0.01	4.0
OH	Cuyahoga	1318226140	Automated Packaging Systems	0.01	10.8
OH	Cuyahoga	1318000130	Cleveland Public Power - Service Center	<0.00	2.9
OH	Cuyahoga	1318000840	Manufacturers Plating Company, Inc.	<0.00	4.4
OH	Cuyahoga	1318000130	Cleveland Public Power - Collinwood Substation	<0.00	11.5
			Cuyahoga Total	***9344.19***	
OH	Lake	0243160009	CLEVELAND ELECTRIC ILLUMINATING CO., EASTLAKE PLANT	50519.40	28.4
OH	Lake	0243110008	PAINESVILLE MUNICIPAL ELECTRIC PLANT	7211.41	43.9
OH	Lake	0243030257	Carmeuse Lime, Inc - Grand River Operations	910.00	43.7
OH	Lake	0243000024	The Lubrizol Corporation	22.94	42.2
OH	Lake	0243150025	The Lubrizol Corporation - Wickliffe Facility	6.72	21.8
OH	Lake	0243111362	Avery Dennison STD, Bldg 5	0.06	44.1
OH	Lake	0243111361	Avery Dennison MFD, Bldg 7	0.02	44.1
OH	Lake	0243081207	CFF of Avery Dennison	0.02	40.2
OH	Lake	0243001188	Marking Films Div. of Avery Dennison Building #11	0.02	47.5
OH	Lake	0243111416	Avery Dennison PFF, Bldg 3	0.01	44.1
			Lake Total	***58670.60***	
OH	Lorain	0247030013	Avon Lake Power Plant	22598.10	25.9
OH	Lorain	0247100408	OBERLIN COLLEGE	467.85	50.6
OH	Lorain	0247000760	BFI - Lorain County Facilities	8.16	46.3
OH	Lorain	0247080229	Republic Engineered Products, Inc	5.42	38.5
OH	Lorain	0247100968	Lorain County LFG Power Station	5.38	46.8
OH	Lorain	0247050278	Ross Incineration Services, Inc.	2.89	34.9
OH	Lorain	0247080961	Lorain Tubular Company LLC	0.54	38.2
OH	Lorain	0247080049	EDGEWATER PLANT	0.50	42.4

State	County	Facility ID	Facility Name	2008 SO2 Emissions (TPY)	Distance from Monitor (km)
OH	Lorain	0247030471	Ford Motor Company - Ohio Assembly Plant	0.31	32.4
OH	Lorain	0247040014	Elyria Foundry	0.10	39.2
OH	Lorain	0247100320	Oberlin Municipal Light & Power System	0.09	50.7
OH	Lorain	0247040195	BASF Catalysts, LLC	0.06	37.8
OH	Lorain	0247040822	3M Elyria	0.02	40.5
			Lorain Total	***23089.42***	
OH	Medina	1652050040	Owens Corning Roofing and Asphalt, LLC	72.79	43.4
OH	Medina	1652050060	3M Medina	0.01	44.3
			Medina Total	***72.80***	
OH	Portage	1667040090	Kent State University Heating Plant	0.29	48.8
OH	Portage	1667040020	Schneller LLC	0.02	48.6
			Portage Total	***0.31***	
OH	Summit	1677010760	Akron Thermal Energy Corporation	2244.44	48.2
OH	Summit	1677010030	Cargill, Incorporated - Salt Division (Akron, OH)	1437.72	51.0
OH	Summit	1677010030	Emerald Performance Materials, LLC	872.37	50.9
OH	Summit	1677010980	Akron Regional Landfill Inc	1.20	39.4
OH	Summit	1677010190	Goodyear Tire & Rubber Co.	0.20	50.1
OH	Summit	1677110030	Morgan Adhesives Company (MACtac)	0.04	39.0
OH	Summit	1677010090	The University of Akron	0.02	48.4
OH	Summit	1677000110	Pechiney Plastic Packaging Inc	0.01	40.0
			Summit Total	***4556.00***	
			Grand Total	***95733.32***	

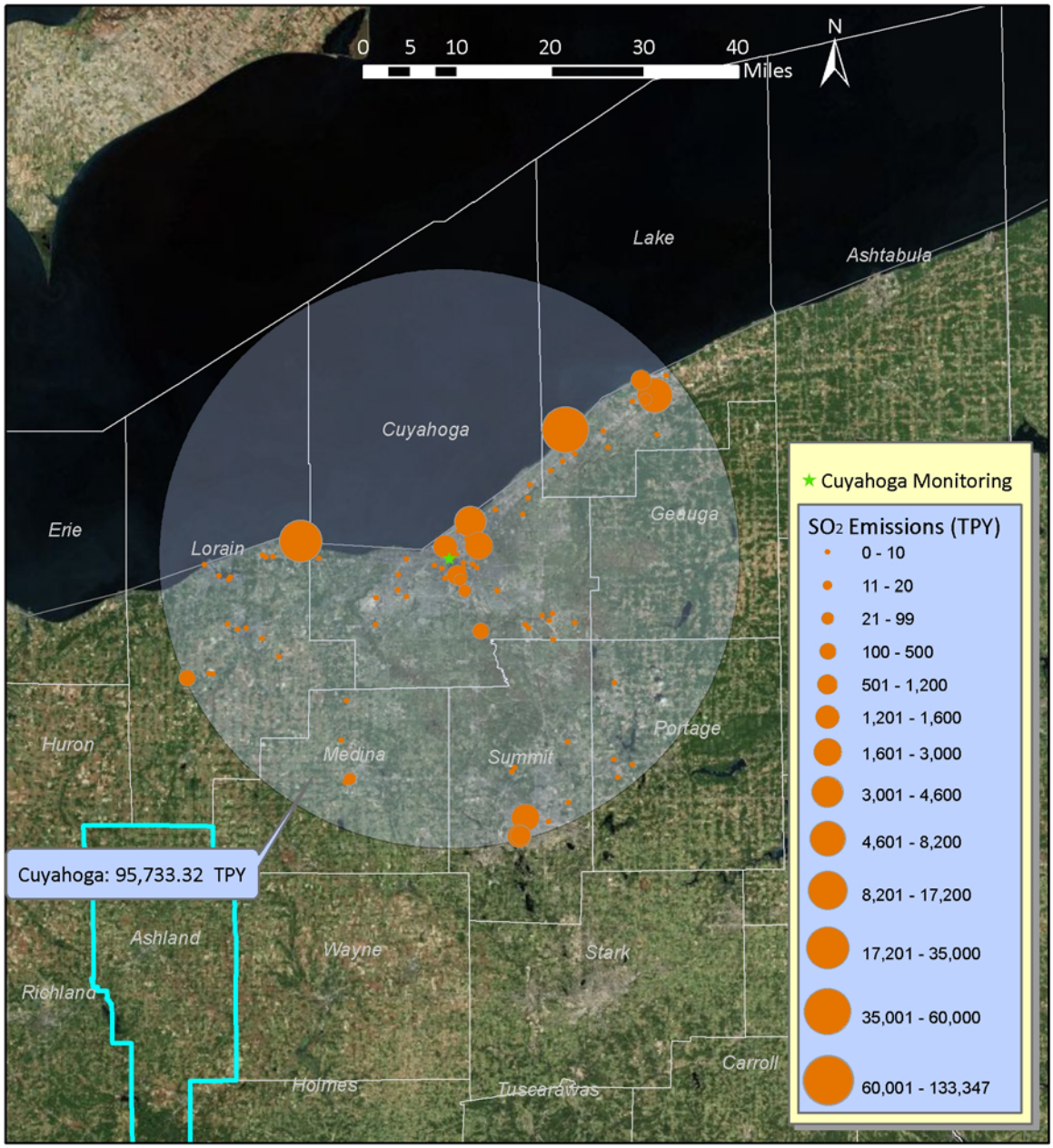


Figure 39: 2008 Ohio Sources of SO_2 Emissions (TPY) within 50 Kilometers of the Cuyahoga County Violating Monitor

Section 3

Counties Without SO_2 Monitors

Section 3A

Counties That May Necessitate Modeling

Recommended Unclassifiable

Counties Recommended Unclassifiable[16]:

1. Auglaize County
2. Clermont County
3. Coshocton County
4. Erie County
5. Fulton County
6. Gallia County (except Cheshire Township)
7. Greene County
8. Guernsey County
9. Henry County
10. Licking County
11. Lorain County
12. Lucas County
13. Marion County
14. Monroe County
15. Montgomery County
16. Muskingum County
17. Ottowa County
18. Paulding County
19. Pickaway County
20. Pike County
21. Richland County
22. Ross County
23. Sandusky County
24. Seneca County
25. Shelby County
26. Stark County
27. Trumbull County
28. Union County
29. VanWert County
30. Washington County (except Waterford Township)
31. Wayne County
32. Wood County

Discussion:

Ohio EPA is recommending the above counties be designated as unclassifiable. Each of these counties does not contain a monitor indicating current air quality and these counties have sources of emissions within the county border that may necessitate additional modeling in the future under Ohio's Infrastructure SIP.

[16] Counties with violating monitors recommended as partial nonattainment and partial unclassifiable are addressed in other sections of this recommendation.

Emissions:

Figure 40 below identifies the total emissions within the each county identified above. Appendix C contains a detailed list of all SO_2 sources in the State of Ohio.

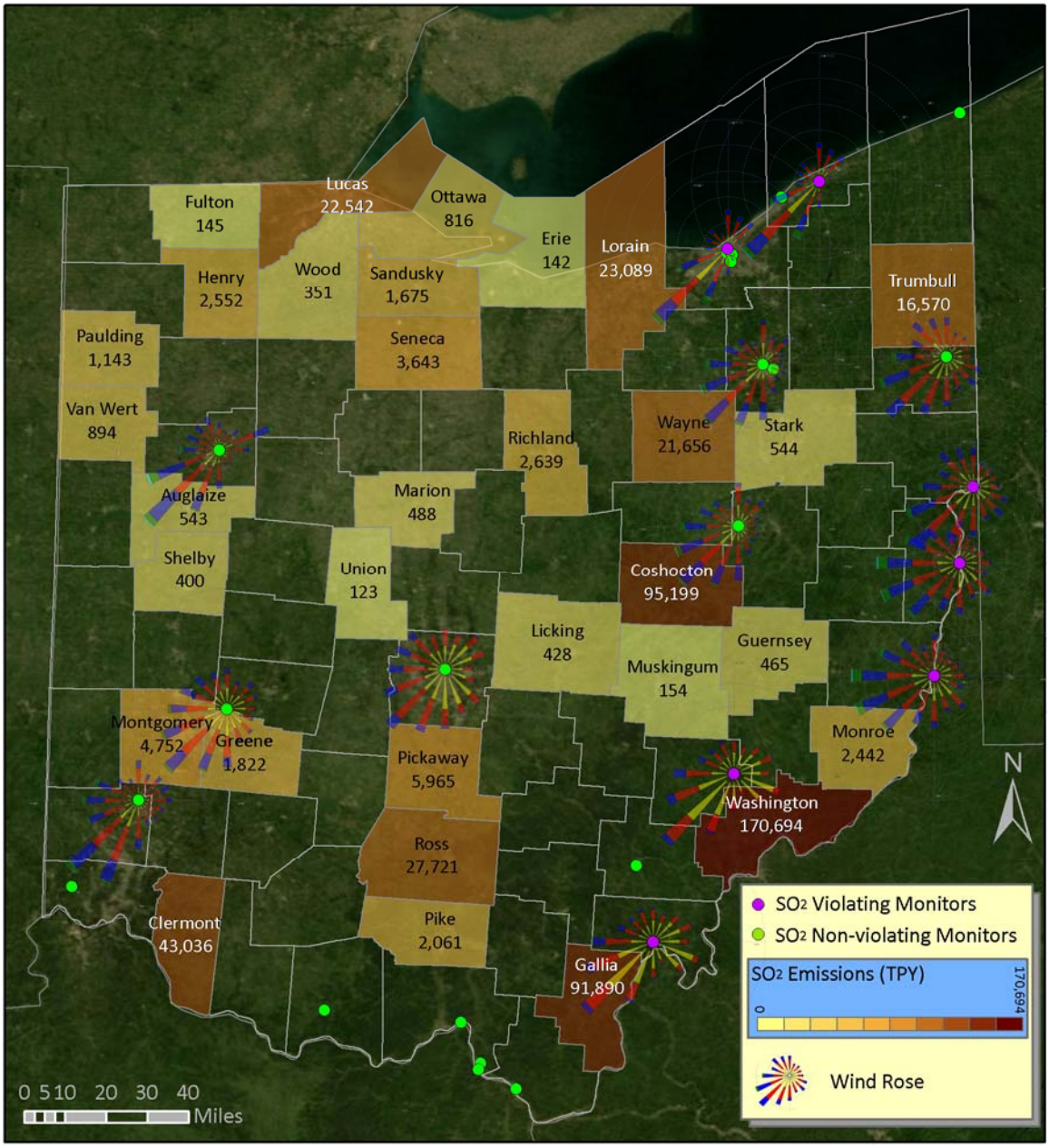


Figure 40: 2008 Ohio Sources of SO_2 Emissions (TPY) Within the County Borders for Counties Without Monitors that are Recommended as Unclassifiable in Ohio

Section 3B

Counties That Do Not Necessitate Modeling

Recommended Attainment

Counties Recommended Attainment:

1. Ashland County
2. Brown County
3. Carroll County
4. Champaign County
5. Clinton County
6. Crawford County
7. Darke County
8. Defiance County
9. Delaware County
10. Fairfield County
11. Fayette County
12. Geauga County
13. Hancock County
14. Hardin County
15. Harrison County
16. Highland County
17. Hocking County
18. Holmes County
19. Huron County
20. Jackson County
21. Knox County
22. Logan County
23. Madison County
24. Medina County
25. Mercer County
26. Miami County
27. Morrow County
28. Noble County
29. Perry County
30. Portage County
31. Preble County
32. Putnam County
33. Vinton County
34. Warren County
35. Williams County
36. Wyandot County

Discussion:

Ohio EPA is recommending the above counties be designated as attainment. These counties do not necessitate monitoring <u>and</u> these are counties where modeling would not be appropriate based on a lack of sources emitting 100 or more tons of SO_2 per year and a lack of smaller sources with the potential to cause or contribute to a violation of the new SO_2 standard. As stated in U.S. EPA's final rule, they only

intend to designate an area as attainment if monitoring and appropriate modeling data show no violations. Ohio's approach for recommending these counties be designated attainment is appropriate as not all counties in Ohio have sources that emit over 100 tons of SO_2 per year or have a collection of smaller sources that have the potential to cause or contribute to a violation of the SO_2 standard. For each of the 36 counties above, total county-wide actual emissions are less than 75 TPY in 2008 within each of those counties. In addition, there are no sources of SO_2 emissions in the following counties (as seen in Appendix C), and, therefore; no potential for SO_2 emissions: Champaign, Clinton, Geauga, Hardin, Mercer, and Morrow Counties.

In addition, not all areas of Ohio necessitate monitoring. These 36 counties are not currently being monitored. Under U.S. EPA's final rule, additional monitoring may be necessitated in certain areas of the State based on a population weighted emissions index (PWEI) within core based statistical areas (CBSAs[17]). Eleven of the counties identified above (Brown, Delaware, Fairfield, Geauga, Madison, Medina, Miami, Morrow, Portage, Preble and Warren Counties) are within CBSAs that may require additional monitoring. However, based on the siting requirements in U.S. EPA's rule [75 FR 35561], Ohio would not be siting monitors that could indicate a violation within these counties of the CBSAs as they represent counties within each CBSA with the lowest expected concentrations and very insignificant sources.

For the reasons stated above, these areas should be designated as attainment consistent with U.S. EPA's broader approach for designations.

Emissions:

Figure 41 below identifies the total emissions within each county identified above. Appendix C contains a detailed list of all SO_2 sources in the State of Ohio.

[17] A map of Ohio's CBSA's can be found in Appendix D

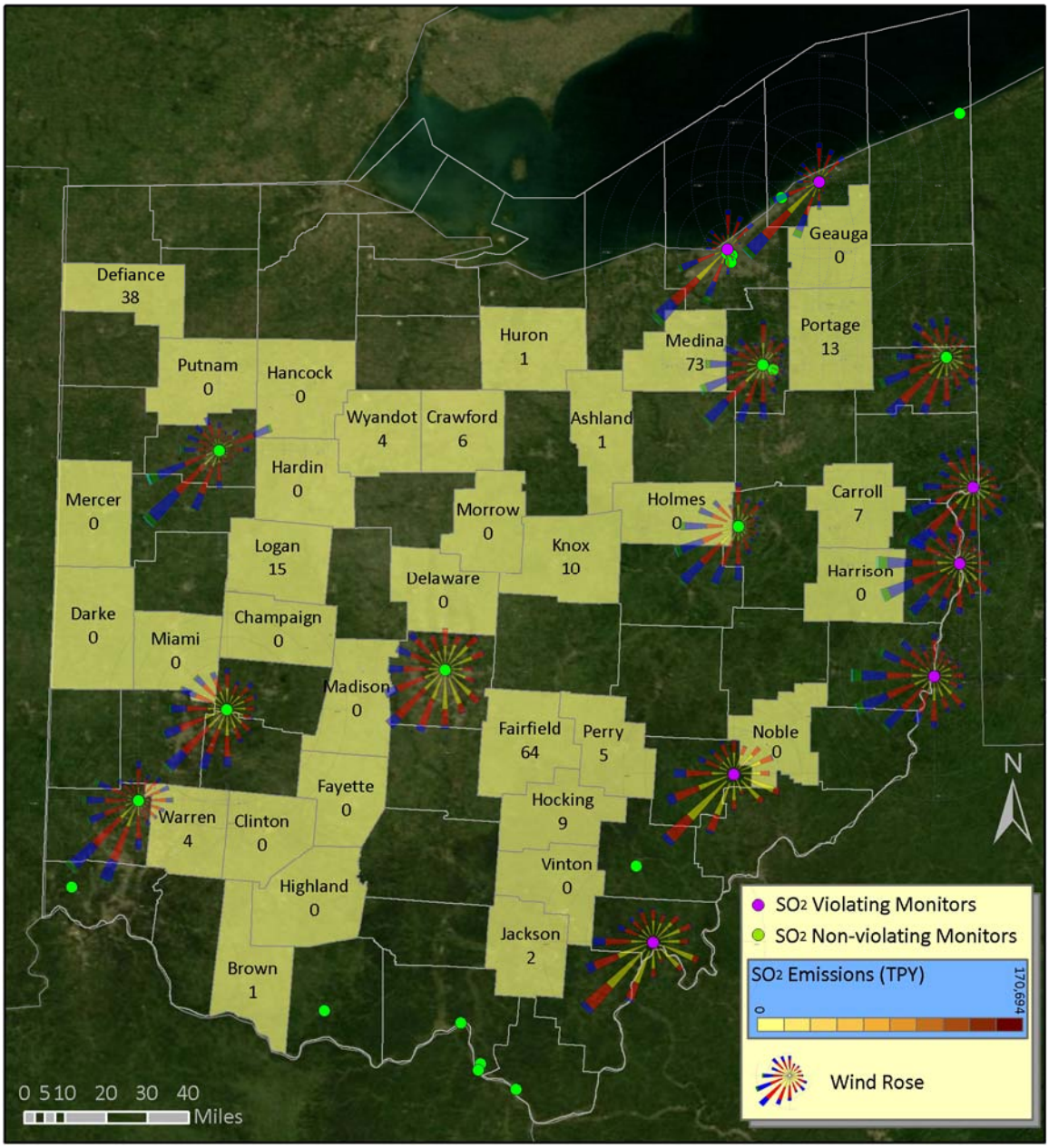


Figure 41: 2008 Ohio Sources of SO_2 Emissions (TPY) Within the County Borders for Counties Without Monitors that are Recommended as Attainment in Ohio