



Missouri Department of Natural Resources
Air Pollution Control Program
2018 Monitoring Network Plan

August 7, 2018

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SUMMARY OF PROPOSED CHANGES

Missouri's Monitoring Network Plan discusses the recent and proposed changes summarized below in detail in the following sections:

- The Bills Creek and Pevely North lead monitoring sites were discontinued in January 2017, and the Pevely site was discontinued at the end of calendar year 2017 as proposed in the 2016 and 2017 Monitoring Network Plans and approved by the U.S. Environmental Protection Agency Region VII.
- Sampling frequency at the Dunklin High School and Sherman lead monitoring sites was changed from every three days to every six days, and sampling frequency for the collocated sampler at Mott Street was changed from every other day to every three days in January 2018.
- The Department of Natural Resources proposes to discontinue lead monitoring at the Glover site at the end of 2018 pending requirements related to facility demolition or site cleanup activities.
- The department proposes to discontinue operation of the Margarett monitoring site in St. Louis at the end of calendar year 2018. Pollutants currently monitored at Margarett include sulfur dioxide, PM₁₀, and nitrogen oxides. EPA has designated Margarett as one of 40 NO₂ monitoring stations nationwide sited in a location to protect susceptible and vulnerable populations. The department requests that the Margarett site be replaced with the Blair Street site for this designation; see Section 7 for more discussion.
- Operation of the Sunset organic carbon/elemental carbon instrument at the Blair Street site was discontinued in September 2017, and EPA was notified.
- A Teledyne API 640x PM₁₀ and PM_{2.5} instrument has been installed and operated at the Blair Street site to evaluate its potential future use in the network. PM₁₀ from this instrument is being reported as the primary PM₁₀ measurement at Blair Street. Designation of the 640x as the primary PM₁₀ instrument allowed discontinuation of the collocated Federal Reference Method (FRM) PM₁₀ measurement at Blair Street. Additional 640x instruments will be procured and installed at Arnold West and Ladue, pending available funds.
- The Branson ozone monitoring site was discontinued at the end of the 2017 ozone monitoring season, Oct. 31, 2017, as proposed in the 2017 Monitoring Network Plan and approved by EPA.
- The department proposes to discontinue PM₁₀ monitoring at the Troost site in Kansas City.
- A Photochemical Assessment Monitoring Station (PAMS) Implementation Plan, updated from the version included in the 2017 Monitoring Network Plan, is included as Section 9 of this Monitoring Network Plan. PAMS monitoring will begin at the Blair Street site in June 2019.

HOW TO MAKE PUBLIC COMMENTS CONCERNING THIS PLAN

The 2018 Monitoring Network Plan (Revision 0) was posted on the internet for public review and comment on May 30, 2018. Comments concerning the plan were received electronically at cleanair@dnr.mo.gov, by email to department staff, by mail to the Air Program's street address, and by mail to the following address:

Missouri Department of Natural Resources
Air Pollution Control Program
Air Quality Analysis Section/Air Monitoring Unit
P.O. Box 176
Jefferson City MO 65102

No comments were received after June 30, 2018, and all comments and responses are included in Appendix 2. The only changes to the plan (other than updates to this section and the addition of Appendix 2) were correction of two typographical errors and correction of some technical errors in Appendix 1, as described in Appendix 2.

INTRODUCTION

The Missouri Department of Natural Resources operates an extensive network of ambient air monitors to comply with the Clean Air Act and its amendments. The Ambient Air Quality Monitoring Network for Missouri includes State and Local Air Monitoring Stations (SLAMS), Special Purpose Monitors (SPM), and a National Core (NCore) monitoring site consistent with requirements in federal regulation in Title 40, Code of Federal Regulations, Part 58 (40 CFR 58).

40 CFR 58.10 requires that states submit to EPA an annual monitoring network plan including any proposed network changes. A network assessment is required every five years, and the most recent one was completed in 2015. 40 CFR 58.10 also requires that the plan include a statement of whether the operation of each monitor meets the requirements of appendices A, B, C, D, and E of 40 CFR 58 where applicable. All of the monitors in the Missouri air monitoring network, including those operated by the state and those operated by industries under state review meet the applicable requirements of 40 CFR 58. With regard to SLAMS changes, approval by the EPA Regional Administrator is required.

The plan must contain the following information for each monitoring station in the network; most of this information is listed for each site in Appendix 1; number 5 is addressed in the body of this document:

1. The Air Quality System (AQS) site identification number for existing stations.
2. The location, including the street address and geographical coordinates, for each monitoring station.
3. The sampling and analysis method used for each measured parameter.
4. The operating schedule for each monitor.
5. Any proposal to remove or move a monitoring station within a period of eighteen months following the plan submittal.

6. The monitoring objective and spatial scale of representativeness for each monitor.
7. The identification of any sites that are or are not suitable for comparison against the annual PM_{2.5} National Ambient Air Quality Standard (NAAQS).
8. The metropolitan statistical area, core-based statistical area, combined statistical area or other area represented by the monitor.

Network Design

Federal regulation (40 CFR Part 58) establishes the design criteria for the ambient air monitoring network. The network is designed to meet three general objectives:

- Provide air pollution data to the public in a timely manner.
- Support compliance with ambient air quality standards and emissions strategy development.
- Support air pollution research studies.

Specific objectives for the monitoring sites are to determine the highest pollution concentrations in an area, measure typical concentrations in areas of high population density, determine the impact of significant sources or source categories, determine general background levels and determine the extent of regional pollutant transport among populated areas. Minimum site requirements are provided for ozone (O₃), sulfur dioxide (SO₂), carbon monoxide (CO), nitrogen dioxide (NO₂), airborne particulate matter with aerodynamic diameter equal to or smaller than 10 micrometers (PM₁₀), and airborne particulate matter with aerodynamic diameter equal to or smaller than 2.5 micrometers (PM_{2.5}) based on Core Based Statistical Area (CBSA) population. 40 CFR 58 Appendix E establishes the specific requirements for monitor/probe siting to ensure the ambient data represents the stated objectives and spatial scale. The requirements are pollutant/scale specific and involve horizontal/vertical placement. Periodically, department staff visit and evaluate each monitoring site to ensure that each site continues to meet the requirements of 40 CFR 58 Appendix E. Any issues related to probe siting, such as growth of trees or other vegetation, are addressed by taking appropriate action following the site visits. Documentation of these reviews is maintained. Additional details concerning the sites may be found in Appendix 1.

There is only one PM_{2.5} monitor in Missouri that is not applicable for comparison to the annual NAAQS. The Branch Street site is a middle-scale site focused on a group of sources in the industrial riverfront area and is not representative of neighborhood or larger spatial scale for PM_{2.5} monitoring. The PM_{2.5} monitors deployed to collocate with the near-roadway NO₂ monitors are micro-scale monitors, but EPA has indicated in 40 CFR 58 Appendix D, 4.7.1(c)(2) that "...In many situations, monitoring sites that are representative of microscale or middle-scale impacts are not unique and are representative of many similar situations. This can occur along traffic corridors or other locations in a residential district. In this case, one location is representative of a number of small scale sites and is appropriate for evaluation of long-term or chronic effects." These monitors may be considered by EPA to be representative of larger areas near roadways and comparable to the annual PM_{2.5} NAAQS consistent with 40 CFR 58.30.

Unanticipated Network Modifications

Changes to the monitoring network may occur outside the annual monitoring network planning process due to unforeseen circumstances resulting from severe weather, natural events, changes in property ownership, or other situations that occur after the monitoring plan has been posted for public inspection and approved by the EPA Regional Administrator. Changes to the monitoring network may also be necessary because of financial constraints resulting from changes in federal funding or changes in funding available from air emission fees from industrial facilities. Any changes to the network that result from conditions outside the state's logistical control and not included in the current monitoring network plan will be communicated in writing to EPA Region VII staff and identified in the subsequent annual monitoring network plan.

Special Purpose Monitors

A monitor is designated as a special purpose monitor (SPM) consistent with the regulatory definition in 40 CFR 58.20 (a): "An SPM is defined as any monitor included in an agency's monitoring network that the agency has designated as a special purpose monitor in its annual monitoring network plan and in AQS, and which the agency does not count when showing compliance with the minimum requirements of this subpart for the number and siting of monitors of various types."

SPMs may be established for many different purposes, including but not limited to, NAAQS compliance evaluation, air quality research and characterization, air quality investigation, and monitoring method evaluation.

The Department includes SPMs in the annual monitoring network plan required by 40 CFR 58.10. The department installs or approves the installation of these monitors consistent with 40 CFR 58.20 (f). In addition, the department removes, or allows removal of these monitors, following federal guidelines, which are different for SPMs than for SLAMS. There is more description of each SPM later in the document. The Missouri Monitoring Network Description, Appendix 1, identifies which monitors are SPM and which are SLAMS.

Industrial Monitors

Ambient air monitoring sites classified as Industrial in this plan indicate that the ambient air monitoring at that site is being conducted by the industrial source or its contractor under an approved industrial monitoring Quality Assurance Project Plan (QAPP) and departmental Quality Management Plan (QMP). Department staff conducts quality assurance audits of these monitoring sites consistent with the approved QAPP.

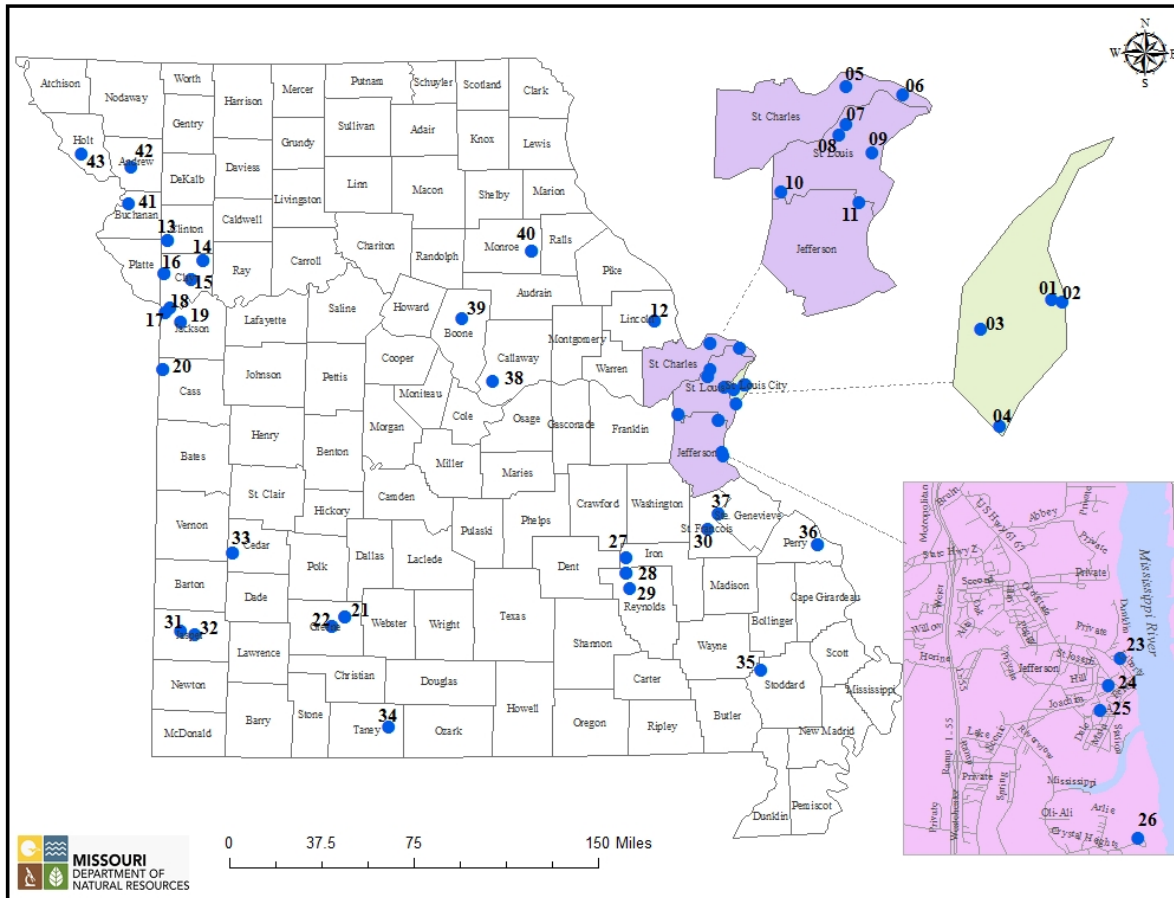
For decades Missouri has overseen ambient air monitoring sites operated by industrial sources for NAAQS compliance. The department has incorporated these Industrial sites in the annual Monitoring Network Plans. Currently, industrial monitoring for some lead and SO₂ sites is incorporated in the ambient air monitoring network.

Some industrial monitoring sites in the lead network are classified in AQS as non-regulatory due to the sites having transitioned to non-ambient status. However, the department has required continued monitoring at these locations in agreements with the industrial source for trends analysis or other purposes.

2018 AMBIENT AIR MONITORING NETWORK, STATE SITES

The 2018 statewide monitoring network is shown in the following map and table.

2018 Missouri State Monitoring Network



Legend (State's Monitoring Network)						
<u>St. Louis Area</u>			<u>Springfield Area</u>			<u>Acronyms</u>
Site#	Site Name	Parameter Monitored	Site#	Site Name	Parameter Monitored	
01	Blair Street	PM ₁₀ , PM _{2.5} , PM _{2.5} (Spec), PMCoarse, PM ₁₀ -LC, PM ₁₀ -Pb, O ₃ , SO ₂ , NO ₂ , NO _x , NO _x , NO, CO, Carbonyls, PAHs, VOCs, Air Toxics, Carbons, PM ₁₀ Metals, WS, WD, OT, IT, SR, BP, RH	21	Fellows Lake	O ₃ , IT	PM ₁₀ Particulate Matter (Diameter size ≤10 micrometer)
02	Branch Street	PM ₁₀ , PM _{2.5} , PMCoarse, PM ₁₀ -LC, WS, WD, OT, IT, BP, RH	22	Hillcrest High School	O ₃ , PM ₁₀ , PM _{2.5} , PMCoarse, PM ₁₀ -LC, OT, IT, BP, RH	PM _{2.5} Particulate Matter (Diameter size ≤2.5 micrometer)
03	Forest Park	PM _{2.5} , PMCoarse, PM ₁₀ -LC, NO ₂ , NO _x , NO, CO, BC, WS, WD, OT, IT, SR, BP, RH, Prec				PMCoarse Particulate Matter (Diameter size between 2.5 and 10 micrometer)
04	South Broadway	PM ₁₀ , PM _{2.5} , PM ₁₀ -LC, PMCoarse, IT, BP, RH	<u>Herculean Area</u>			Spec Speciation
05	Orchard Farm	O ₃ , IT	23	Sherman	Pb	SO ₂ Sulfur Dioxide
06	West Alton	O ₃ , WS, WD, OT, IT, SR	24	Dunklin	Pb	NO ₂ Nitrogen Dioxide
07	Rider Trail I-70	NO ₂ , NO _x , NO, WS, WD, OT, IT, SR, Prec, BP SO ₂ (RES)	25	Mott Street	Pb	NO Nitric Oxide
08	Maryland Heights	O ₃ , IT	26	Ursuline North	Pb	NO _y Reactive Oxides of Nitrogen
09	Ladue	PM _{2.5} , OT, IT, BP, RH	<u>New Lead Belt Area</u>			NO _x Oxides of Nitrogen
10	Pacific	O ₃ , IT	Site#	Site Name	Parameter Monitored	O ₃ Ozone
11	Arnold West	PM ₁₀ , PM _{2.5} , PM _{2.5} (Spec), PM ₁₀ -LC, IT PMCoarse, O ₃ , WS, WD OT, IT, BP, RH	27	Buick NE	Pb, SO ₂ , WS, WD, IT	CO Carbon Monoxide
12	Foley West*	O ₃ , IT	28	Oates	Pb	Pb Lead (High Volume)
			29	Fletcher	Pb	BC Black Carbon
			30	St. Joe State Park	Pb	Prec Precipitation
			<u>Outstate Area</u>			WS Resultant Wind Speed
			Site#	Site Name	Parameter Monitored	WD Resultant Wind Direction
			31	Alba	O ₃ , IT	OT Outside Temperature
			32	Carthage	PM ₁₀ , WS, WD, IT	IT Inside Temperature
			33	El Dorado Springs	PM _{2.5} , PMCoarse, PM ₁₀ -LC, O ₃ , WS, WD, OT, IT, BP, RH	SR Solar Radiation
			34	Hercules Glades	PM _{2.5} (Spec)-IMPROVE	BP Barometric Pressure
			35	Mingo	PM _{2.5} (Spec)-IMPROVE	RH Relative Humidity
			36	Farrar	O ₃ , IT	IMPROVE Interagency Monitoring of Protected Visual Environment (Regional Haze)
			37	Bonne Terre	O ₃ , IT, SR	RES Research
			38	New Bloomfield	O ₃ , IT	
			39	Finger Lakes	O ₃ , IT	
			40	Mark Twain State Park	PM ₁₀ , SO ₂ , NO ₂ , NO _x , NO, O ₃ , WS, WD, IT	
			41	St. Joseph Pump Station	PM ₁₀ , PM _{2.5} , PMCoarse, PM ₁₀ -LC, WS, WD, OT, IT, RH	
			42	Savannah	O ₃ , IT	
			43	Forest City, Exide	Pb	
<u>Kansas City Area</u>			*Relocated from former Foley site			
Site#	Site Name	Parameter Monitored				
13	Trimble	O ₃ , IT				
14	Watkins Mill	O ₃ , IT				
15	Liberty	PM _{2.5} , PMCoarse, PM ₁₀ -LC, O ₃ , OT, IT, SR, BP, RH				
16	Rocky Creek	O ₃ , IT				
17	Troost	PM _{2.5} , PM ₁₀ -LC, SO ₂ , NO ₂ , NO _x , OT, IT				
18	Front Street	PM ₁₀				
19	Blue Ridge I-70	PM _{2.5} , PMCoarse, PM ₁₀ -LC, NO ₂ , NO _x , NO, CO, BC, WS, WD, OT, IT, SR, BP, RH, Prec				
20	Richards Gebaur-South	PM _{2.5} , PMCoarse, PM ₁₀ -LC, O ₃ , WS, WD, OT, IT, BP, RH				

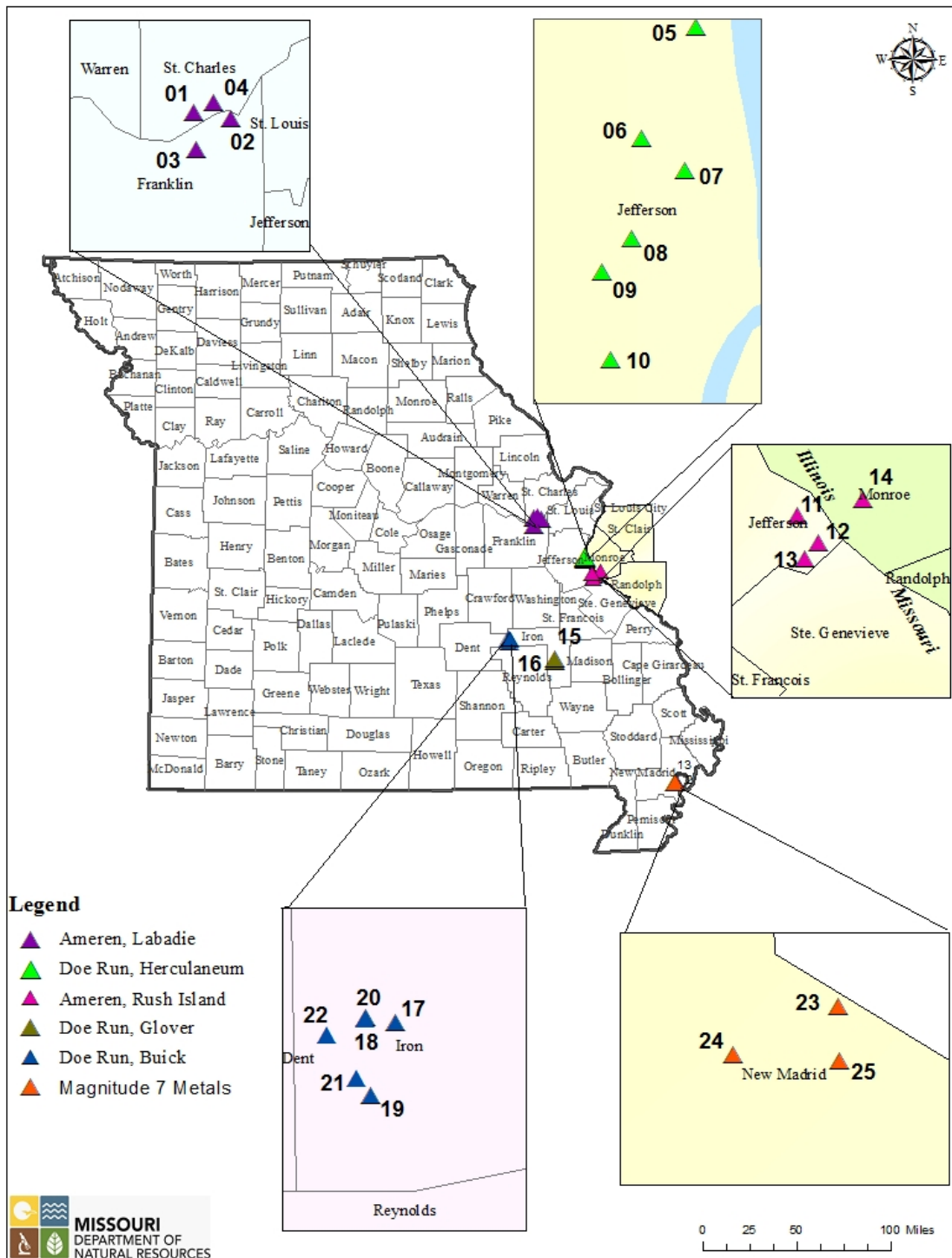
Notes:

- The acronym PM₁₀-LC is also commonly referred to as PM_{10c} when collected with a low volume sampler consistent with appendix O to Part 50. PM₁₀-LC means particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers where the concentration is reported at local conditions of ambient temperature and barometric pressure. PM₁₀-LC is used in this document to describe any continuous or filter based PM₁₀ low volume measurement concentration that is reported at local conditions of ambient temperature and barometric pressure.
- PM₁₀ means particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers where the concentration is adjusted to EPA reference conditions of ambient temperature and barometric pressure (25 °C and 760 millimeters of mercury or STP).
- PMcoarse is also frequently referred to as PM_{10-2.5}.

2018 AMBIENT AIR MONITORING NETWORK, INDUSTRIAL SITES

Monitoring sites operated by industries are shown in the following map and listed in the following table.

2018 Missouri Industry Monitoring Networks



Legend (Industry Monitoring Network)

Ameren, Labadie Energy Center

Site#	Site Name	Parameter Monitored
01	Northwest	SO ₂ , (WS, VWS, WD, OT, σ_ϕ , σ_e , RH) [^]
02	Valley	SO ₂ , (WS, VWS, WD, OT, SR, BP, RH, Prec, σ_ϕ , σ_e) [^]
03	Southwest	SO ₂
04	North	SO ₂

Acronyms

SO ₂	Sulfur Dioxide
Pb	Lead (High Volume)
σ_e	Sigma Theta (Standard Deviation of Horizontal Wind Direction)
WS	Resultant Wind Speed
WD	Resultant Wind Direction
OT	Outside Temperature
SR	Solar Radiation
BP	Barometer Pressure
RH	Relative Humidity
σ_ϕ	Sigma Theta (Standard Deviation of Vertical Wind Speed)
Prec	Precipitation
VWS	Vertical Wind Speed

Doe Run, Herculanum

Site#	Site Name	Parameter Monitored
05	Sherman	Pb
06	Dunklin	Pb
07	Broadway	(WS, WD, OT, SR, BP, RH, Prec, σ_e) ^{^a}
08	Mott Street	Pb
09	North Cross	Pb
10	Church Street*	Pb

Ameren, Rush Island Energy Center

Site#	Site Name	Parameter Monitored
11	Weaver-AA	SO ₂
12	Johnson Tall Tower	(WS, VWS, WD, OT, σ_ϕ , σ_e) [^]
13	Natchez	SO ₂
14	Fults, IL	SO ₂ , (WS, VWS, WD, OT, SR, BP, RH, Prec, σ_ϕ , σ_e) [^]

^a	Metrological Data is not submitted to the EPA Air Quality (AQ5) Database
[^]	Regulatory Dispersion Modeling Grade Parameters
*	Non-Ambient Monitor

Doe Run, Glover

Site#	Site Name	Parameter Monitored
15	Post Office #2*	Pb
16	Big Creek*	Pb

Doe Run, Buick

Site#	Site Name	Parameter Monitored
17	Buick NE	Pb
18	Buick North#5*	Pb
19	Buick South#1*	Pb, (WS, WD, OT, SR, BP, RH, Prec, σ_e) ^{^a}
20	Hwy 32 Northeast	SO ₂
21	West Entrance	SO ₂
22	County Road 75	SO ₂

Magnitude 7 Metals

Site#	Site Name	Parameter Monitored
23	Site #1	SO ₂
24	Site #2	SO ₂
25	Site #3	SO ₂ , (WS, WD, OT) [^]

MONITORING NETWORK AND PROPOSED CHANGES

1. Lead Monitoring Network

Changes to airborne lead (Pb) monitoring requirements were published in the Federal Register on Dec. 27, 2010. The new rules require a plan for monitoring lead sources emitting 0.50 tons per year (tpy) or more, revised from the previous requirement for monitoring sources emitting one ton per year or more. Airports are specifically exempted from these requirements except for a special study being conducted at specific airports, none of which are in Missouri.

Department staff reviewed the 2014 reported lead emissions and identified only one source not previously identified, NorthStar Battery plant number 1 in Springfield, as emitting greater than 0.50 tpy of lead and for which ambient air monitoring is not currently being conducted or where EPA has not already granted a modeling waiver consistent with 40 CFR 58 Appendix D, 4.5 (a) (ii). However, the most recent revised construction permit (no. 122016-001, issued in December 2016) for that facility limits its lead emissions to not more than 0.25 ton per year. Also, source testing done at that facility in June 2017 resulted in the lead emissions estimate for 2016 being reduced to 0.02 tpy. Therefore, monitoring adjacent to this facility is not required. A review of 2015 and 2016 emissions data did not identify any additional sources emitting greater than 0.50 tpy. Quality assured 2017 emissions data will be reviewed when it becomes available, and any additional sources emitting more than 0.50 tpy will be evaluated and addressed in the 2019 Monitoring Network Plan.

1.1 Forest City, Exide Monitoring Site

The 2013 Monitoring Network Plan identified the resumption of total suspended particulate matter (TSP) lead monitoring at a location near the Exide Secondary Lead Smelter in Forest City, Missouri. The monitoring method initially deployed, as described in the 2012 Monitoring Network Plan, utilized a low volume PM₁₀ sampler and lead analysis performed by X-ray fluorescence (XRF) following specifications and procedures in 40 CFR 50 Appendix Q. After deployment of the Pb-PM₁₀ FRM sampler, as an SPM, in March of 2012, three month rolling averages of airborne lead were monitored at concentrations greater than 0.15 micrograms per cubic meter (µg/m³). As a result a TSP lead sampler was deployed in August 2012 for subsequent attainment determination. The department discontinued the Pb-PM₁₀ FRM in December 2013 but the Pb-TSP sampler continues to monitor lead at the site. As a result of changes in operations at that facility, including addition of pollution control equipment, an exceedance of the lead NAAQS has not been monitored at that site since October-December 2013. Discontinuing the Forest City monitor may be proposed in future monitoring network plans if this trend continues.

1.2 Doe Run Operated Sites

Doe Run operates lead monitoring sites in the vicinity of their industrial facilities in Herculaneum, Glover, and Boss. Operation of some of these sites is required by consent judgments or agreements with the department, and operation of other sites is voluntary.

Doe Run Herculaneum also operates one ten meter tower meteorological monitoring site as per language set forth under the 2011 Consent Judgment. Doe Run Herculaneum discontinued the 40 meter tower at Broad Street as per the Consent Judgment.

1.3 Department's Lead Monitoring Network in Herculaneum

Monitoring at the Pevely North site was discontinued in January 2017 as proposed in the 2016 Monitoring Network Plan and approved by EPA. Monitoring at the Pevely site was discontinued at the end of 2017 as proposed in the 2017 Monitoring Network Plan and approved by EPA.

With the cessation of primary lead smelting at the Doe Run facility in Herculaneum, the department has modified the sampling schedule at the Dunklin High School and Sherman sites to every sixth day and the schedule for the collocated sampler at the Mott Street site to every third day effective in January 2018. The department continues to carefully evaluate the lead data monitored at its sites in Herculaneum and may consider additional modification in the future.

1.4 St. Joe State Park Monitoring Site

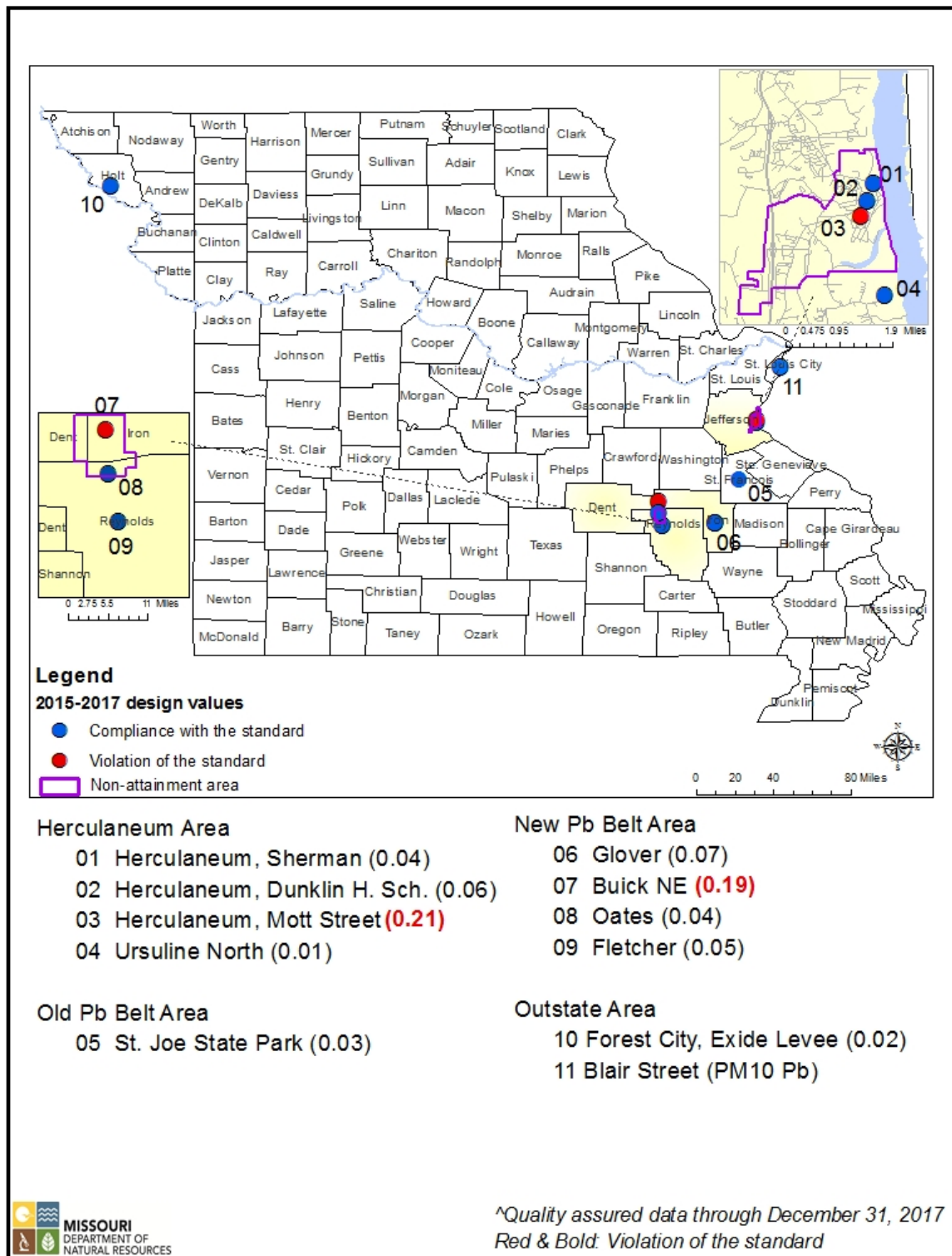
The department has reduced the frequency of sampling at the SPM lead site at St. Joe State Park from every third day to every sixth day. The St. Joe State Park site was intended to monitor airborne lead concentrations during remediation activities involving old lead mining waste in the Federal Mine tailings. The bulk of the remediation activity was completed as of late July/early August of 2014. The three-month rolling average has not exceeded the lead standard, $0.15 \mu\text{g}/\text{m}^3$, since the site began monitoring lead on July 1, 2010. The highest three-month rolling average airborne lead concentration at that site was $0.14 \mu\text{g}/\text{m}^3$ in July-September 2011. This elevated lead concentration was attributable to remediation activities near the monitor. Since that time the three-month average lead concentration at that site has not exceeded $0.13 \mu\text{g}/\text{m}^3$.

1.5 Glover Lead Monitor

The department proposes to discontinue the Glover lead monitor at the end of calendar year 2018 pending requirements related to facility demolition or site cleanup activities and provided that no exceedance of the lead NAAQS is measured during the remainder of 2018. The Glover smelter has been inactive since 2003. The only exceedance of the $0.15 \mu\text{g}/\text{m}^3$ lead standard at the department's Glover site since monitoring was resumed in Glover in 2010 was in 2013 and resulted from demolition activities at the facility. Discontinuation of lead monitoring at Glover will meet the conditions of 40 CFR 58.14 c that the NAAQS has not been exceeded for five years and that the probability of exceeding 80 percent of the NAAQS is less than 10 percent. Doe Run operates two airborne lead monitors on Doe Run property in Glover. Continued operation of these industrial monitors will be consistent with any future modifications of the 2003 Settlement Agreement between the department, the Missouri Air Conservation Commission, and the Doe Run Company.

The 2018 lead monitoring network is shown in the following map.

**2018 Missouri Lead Monitoring Network*, NAAQS=0.15µg/m³ (3 month).
(Numbers in parenthesis are 2015-2017 Design Values)**



*The Glover site is proposed for discontinuation at the end of CY 2018. No other changes are proposed in this plan.

2. Sulfur Dioxide (SO₂) Monitoring Network

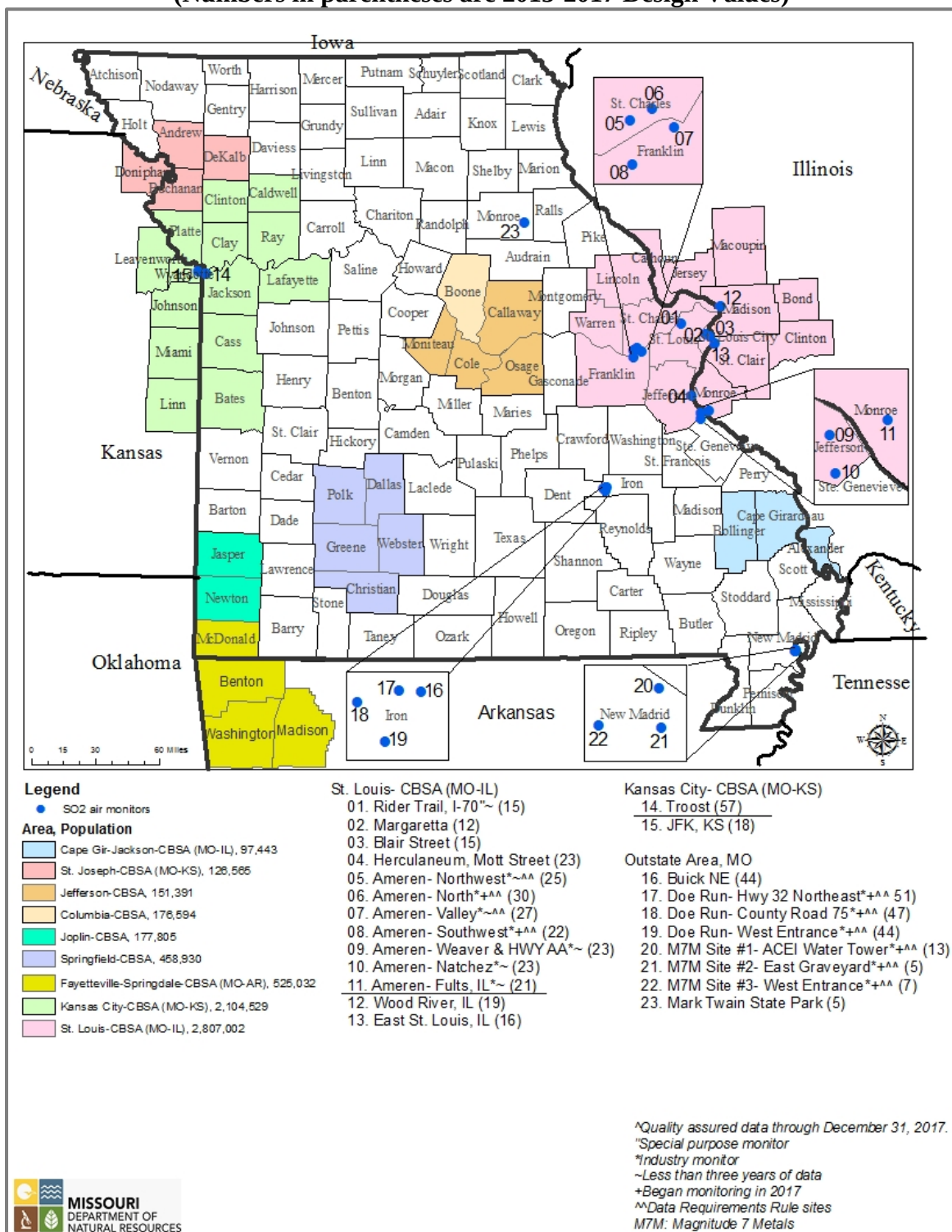
On June 2, 2010, EPA revised the primary SO₂ standard by establishing a one-hour standard at the level of 75 parts per billion (ppb). EPA revoked the two previous primary standards of 140 ppb evaluated over 24-hrs and 30 ppb evaluated over an entire year. The 2011 Monitoring Network Plan (<http://dnr.mo.gov/env/apcp/docs/2011monitoringnetwork.pdf>) identified the minimum network monitoring required by the Population Weighted Emissions Index (PWEI). This analysis has been updated using 2017 estimated population data from the United States Census Bureau and 2014 National Emission Inventory (NEI) emissions data. Results are summarized in the following table. The required numbers of monitoring sites based on the PWEI are two sites in the St. Louis CBSA, one site in the Kansas City CBSA, and no others required in Missouri CBSAs. This requirement is met by the Blair Street and East St. Louis, Illinois sites in the St. Louis area and by the Troost site in Kansas City respectively and exceeded if the Wood River site in Illinois and the JFK site in Kansas are also considered. The East St. Louis site is expected to continue based on communication received from the Illinois Environmental Protection Agency.

The department is proposing to discontinue all monitoring, including SO₂, at the Margarett site in St. Louis. Discontinuation of SO₂ monitoring at Margarett meets the conditions of 40 CFR 58.14 c that the NAAQS has not been exceeded for five years and that the probability of exceeding 80 percent of the NAAQS is less than 10 percent.

Population Weighted Emission Index (PWEI) Summary				
Area	Estimated 2017 Population	2014 NEI SO2 Emissions (tpy)	PWEI	Required Number of Monitors
Kansas City	2,128,912	39,984.07	85,123	1
St. Louis	2,807,338	80,150.26	225,009	2
Fayetteville-Springdale-Rogers	537,463	8,307.59	4,465	0
Springfield	462,369	5,241.20	2,423	0
Joplin	178,507	6,481.34	1,157	0
Columbia	178,271	6,288.77	1,121	0
Jefferson City	151,465	240.76	36	0
St. Joseph	126,935	1,228.81	156	0
Cape Girardeau MSA	96,782	789.12	76	0
Maryville	22,472	27.00	1	0
Warrensburg	53,897	37.40	2	0
Marshall	22,660	55.29	1	0
Sedalia Micro.	42,558	100.69	4	0
Branson	87,054	153.61	13	0
Kirksville	29,885	112.04	3	0
Moberly	24,945	16,615.31	414	0
Lebanon	35,443	90.89	3	0
Mexico	25,641	50.90	1	0
Fort Leonard Wood	52,059	76.06	4	0
Rolla	44,744	340.16	15	0
West Plains	40,103	132.86	5	0
Fort Madison-Keokuk	59,038	698.12	41	0
Quincy	76,201	1,417.95	108	0
Hannibal	38,858	3,386.27	132	0
Farmington	66,705	90.97	6	0
Poplar Bluff	72,785	166.09	12	0
Sikeston	38,541	6,730.25	259	0
PWEI=population*SO2(tpy)/1,000,000				
PWEI > 1,000,000: 3 monitors				
1,000,000 > PWEI > 100,000: 2 monitors				
100,000 > PWEI ≥ 5,000: 1 monitor				
SO2 emissions including fire emissions				

The department's 2018 SO₂ monitoring network is shown in the following map.

**2018 Missouri Sulfur Dioxide (SO₂) Monitoring Network*, NAAQS=75 ppb (1 hour).
(Numbers in parentheses are 2015-2017 Design Values)**



*The Department proposes to discontinue SO₂ monitoring at Margaretta. No other changes to the SO₂ network are proposed in this plan.

In May 2014 EPA published proposed data requirements regulations related to SO₂ air quality monitoring and air quality dispersion modeling near emission sources. These requirements were finalized in the SO₂ Data Requirements Rule (DRR) published in the Federal Register on August 21, 2015. This final rule requires that air agencies must characterize air quality, either by monitoring or modeling, around sources that emit 2,000 tons per year (tpy) or more of SO₂. The requirement for air quality characterization near a source may be avoided by adopting enforceable emission limits that ensure that the source will not emit more than 2,000 tpy of SO₂.

On January 15, 2016, the department submitted a final list identifying the sources in the state around which SO₂ air quality will be characterized. That submittal may be found at <https://www3.epa.gov/airquality/sulfurdioxide/drr/mo.pdf>. The Ameren Labadie Energy Center and the Noranda Aluminum (now known as Magnitude 7 Metals) facility (both discussed later in this section) were included on that list. The Doe Run Buick Resource Recycling Facility (also discussed later in this section) reported emissions less than 2,000 tpy but was also included on the list because emissions from that facility were uncertain and under review at the time of the January 2016 submittal. The Ameren Rush Island Energy Center was not included in the list, because it is within a previously-designated nonattainment area (designated as nonattainment due to emissions from another facility). Monitoring in the area around Rush Island is being conducted on an accelerated schedule (compared to the DRR timeline) by agreement between the department and Ameren associated with the plan for the Jefferson County nonattainment area submitted to EPA in May 2015.

For each facility listed in the January 2016 submittal, the state was required to identify by July 1, 2016, the approach (ambient monitoring or air quality modeling) that would be used to characterize air quality or identify sources whose emissions will be limited to less than 2,000 tpy by an enforceable agreement. For source areas that were to be evaluated through ambient monitoring, the air agency was required to submit information on monitoring sites to EPA by July 1, 2016, as part of its annual monitoring network plan. This SO₂ monitoring to meet the DRR was required to begin by Jan. 1, 2017. Monitoring near these sources in Missouri is discussed in the following sections. This monitoring is being conducted by the industries operating the sources, but the monitoring must be conducted in accordance with the SLAMS requirements in 40 CFR Part 58, and the department reviewed and approved the siting of the monitors based on federal regulations and oversaw the operation of the monitors. To meet the requirements of the DRR, these monitors will need a minimum of three years of monitoring data. The sources cannot discontinue monitoring thereafter without EPA approval based on the requirements of 40 CFR 51.1203(c)(3) or 40 CFR 58.14.

2.1 Industrial SO₂ & Meteorological Monitoring near the Labadie and Rush Island Energy Centers

As indicated in the Missouri 2015 Monitoring Network Plan, two SO₂ ambient Air Monitoring networks were deployed around the Labadie and Rush Island power plants. At the time that plan was posted for public inspection, EPA had not promulgated the SO₂ DRR or revisions to the monitoring requirements in 40 CFR 58. The SO₂ DRR and revisions to 40 CFR 58 were published in the Federal Register on Aug. 21, 2015 and March 28, 2016, respectively.

The revised quality assurance requirements of 40 CFR 58 Appendix A, section 1.1 (a) state that “This appendix specifies the minimum quality system requirements applicable to SLAMS and other monitor types whose data are intended to be used to determine compliance with the NAAQS (e.g., SPMs, tribal, CASTNET, NCore, industrial, etc.),...” This revision supports states using monitors with any of these classifications to satisfy the DRR monitoring requirements in 40 CFR 51.1203 (c) so long as these monitors are operated in a manner equivalent to SLAMS. Both SLAMS and industrial NAAQS compliance monitoring networks in Missouri are operated under a department-approved QAPP consistent with the Departmental Quality Management Plan (QMP) that has been approved by EPA Region VII.

EPA Region VII indicated in a January 25, 2016, letter approving the 2015 Missouri Monitoring Network Plan that they did not evaluate the Labadie and Rush Island SO₂ monitoring networks described in detail in that plan due to the classification at that time of those monitors as Special Purpose Monitors (SPM).

After reviewing the revisions to 40 CFR 58 against monitor classifications as they apply to NAAQS compliance monitoring, the Labadie and Rush Island SO₂ monitors have been classified as industrial SO₂ monitors. This is consistent with how the department has characterized industrial monitors used for NAAQS compliance in both the SO₂ and lead ambient air monitoring networks.

The following sections describe the current status of the Labadie and Rush Island SO₂ monitoring networks based on the 2016 and 2017 Monitoring Network Plan.

2.1.1 Labadie Energy Center

On March 20, 2015, EPA updated implementation guidance as a result of the March 2, 2015, U.S. District Court for the Northern District of California accepting an enforceable order and agreement between EPA and Sierra Club and Natural Resources Defense Council. This agreement is intended to resolve litigation related to the deadline for completing the one-hour SO₂ NAAQS designations process.

After proposing the first two SO₂ monitors near the Labadie Energy Center in the 2015 Monitoring Network Plan, EPA promulgated the SO₂ DRR. Consistent with the DRR definitions section, 40 CFR 51.1200, the area designation status with respect to the one-hour SO₂ NAAQS determines if this area is subject to the DRR. The DRR applies if the area around the Labadie Energy Center is not designated as a nonattainment area. On June 30, 2016, EPA designated that area as unclassifiable (Federal Register, volume 81, number 133, July 12, 2016). Therefore, the DRR applies to this area and to the monitoring network as proposed in the 2016 Monitoring Network Plan and approved by EPA.

The department will continue to work with Ameren to collect quality assured SO₂ ambient air quality data and meteorological data near the Labadie Energy Center to provide quantifiable and useful technical information to meet the DRR requirements and supplement the ongoing one-hour SO₂ NAAQS implementation process.

Two industrial SO₂ ambient air monitoring sites and a meteorological monitoring station began operation in April 2015 in the area around the Ameren Labadie Energy Center, located at 226 Labadie Power Plant Road in Franklin County, Missouri. Two additional industrial SO₂ monitoring sites southwest and north of the Labadie Energy Center were installed and began operation on January 1, 2017. The location of those sites was determined on the basis of dispersion modeling as discussed in the 2016 Monitoring Network Plan. Also, meteorological monitoring using a 10 meter tower was added at the Northwest site. A sound detection and ranging (SODAR) instrument was initially located at the Valley site, relocated to the Northwest site in February 2017, and relocated again to the Labadie plant site in August 2017. These monitoring sites (see the following table) are operated by Ameren under a department-approved Quality Assurance Project Plan (QAPP). The rationale for site selection based on modeling results is discussed extensively in the 2015 and 2016 Monitoring Network Plans.

Summary of Labadie Area Industrial Monitoring Stations:

Monitoring Objective: Source Oriented

Spatial Scale of representativeness: Middle Scale (100 square meters [m²] to 0.5 square kilometer [km²])

Labadie Northwest -SO₂, 10 Meter Meteorological Station. (Latitude: 38.5818
Longitude: -90.865528)

Labadie Valley -SO₂, 10 Meter Meteorological Station. (Latitude: 38.572522
Longitude: -90.796911)

Labadie Southwest -SO₂. (Latitude: 38.52825 Longitude: -90.86301)

Labadie North -SO₂. (Latitude: 38.59557 Longitude: -90.82864)

2.1.2 Rush Island Energy Center

On March 23, 2015, the department and Ameren entered into a consent agreement (see Appendix 3 of the 2015 Monitoring Network Plan) that included Ameren installing and operating an SO₂ monitoring network around the Rush Island Energy Center under department oversight. The siting of these monitors was consistent with the technical process described in the SO₂ DRR.

Although the primary objective of the Rush Island ambient air monitoring project is to satisfy the terms of the aforementioned consent agreement, it is possible that the quality assured monitoring data may be used for other future purposes depending on the final outcome of EPA's national implementation strategy for the 2010 one-hour SO₂ NAAQS and the Jefferson County nonattainment area implementation process.

The department will continued to work with Ameren to collect quality assured SO₂ ambient air quality data and meteorological data near the Rush Island power station to provide quantifiable and useful information to supplement the ongoing one-hour SO₂ NAAQS implementation process.

The Rush Island monitoring network design was based on evaluation of dispersion modeling, as described in the 2015 and 2016 Monitoring Network Plans. This network began operation in December 2015.

Summary of Rush Island area Industrial Monitoring Stations:

Monitoring Objective: Source Oriented

Spatial Scale of representativeness: Middle Scale (100 m² to 0.5 km²)

Weaver-AA -SO₂. (Latitude: 38.144529 Longitude: -90.304726)

Natchez -SO₂, (Latitude: 38.10525 Longitude: -90.29842)

Fults, IL, -SO₂, 10 Meter Meteorological Station (Latitude: 38.15908 Longitude: -90.22728)

Johnson Tall Tower -Meteorological Station Only, anemometers at 62.5 meter (m) and 132.5 m levels (Latitude: 38.11999 Longitude: -90.28214)

2.2 Industrial SO₂ & Meteorological Monitoring near the Doe Run Buick Resource Recycling Facility

The Doe Run Company began SO₂ monitoring at three sites in the area around the Buick Resource Recycling Facility near Boss, Mo. starting Jan. 1, 2017, to meet the requirements of the SO₂ DRR, as described above. Meteorological monitoring is already being conducted at the Buick South lead monitoring site, south of the facility. These sites are being operated under a department-approved QAPP, which includes performance evaluations (audits) by department staff. Locations of these ambient SO₂ monitoring sites was determined on the basis of air quality modeling of the impact of facility emissions, as described in the 2016 Monitoring Network Plan.

Summary of Doe Run Buick area Industrial Monitoring Stations:

Monitoring Objective: Source Oriented

Spatial Scale of representativeness: Middle Scale (100 m² to 0.5 km²)

West Entrance -SO₂. (Latitude: 37.63211 Longitude: -91.13565)

County Road 75 -SO₂, (Latitude: 37.64876 Longitude: -91.14890)

Hwy 32 Northeast (Former PSD site) -SO₂, (Latitude: 37.65319 Longitude: 91.12795)

2.3 Industrial SO₂ & Meteorological Monitoring near the Magnitude 7 Metals (formerly Noranda Aluminum) Facility

Magnitude 7 Metals is conducting SO₂ monitoring at three sites and meteorological monitoring at one site in the area around their facility near New Madrid, Missouri. Monitoring at these sites started in January 2017 to meet the requirements of the SO₂ DRR, as described above. These sites are being operated under a department-approved QAPP, which includes performance evaluations (audits) by department staff. Locations for these ambient SO₂ monitoring sites were determined on the basis of air quality modeling of the impact of facility emissions, and the potential area for meteorological monitoring was determined on the basis of an analysis by a department meteorologist. These evaluations are described in the 2016 Monitoring Network Plan.

Summary of Magnitude 7 Metals area Industrial Monitoring Stations:

Monitoring Objective: Source Oriented

Spatial Scale of representativeness: Middle Scale (100 m² to 0.5 km²)

Site 1 -SO₂, (Latitude: 36.51361 Longitude: -89.56111)

Site 2 -SO₂, (Latitude: 36.50861 Longitude: -89.56083)

Site 3 -SO₂ and Meteorology, (Latitude: 36.50889 Longitude: -89.57083)

2.4 Rider Trail I-70 Site

The department added an SO₂ monitor, designated as SPM, to the existing Rider Trail I-70 monitoring site in May 2016. The addition of a sulfur dioxide monitor at this site is to evaluate SO₂ levels in the general area. Any SO₂ concentrations monitored at this site may be due to several emissions sources in the area. If the monitor records SO₂ at levels of concern, the department will gather additional information to try to determine which sources are causing or contributing to the levels of concern. Since the site was installed the fourth highest daily one-hour SO₂ concentration monitored in 2016 was 14 ppb. The fourth highest daily one-hour SO₂ concentration monitored in 2017 was 16 ppb.

Since the monitor is located in the near-roadway environment, and there are several SO₂ sources in the area, the department is initially classifying the spatial scale of representativeness of the SO₂ measurements as middle-scale. This classification may be reevaluated if trends in the monitoring data and other analysis warrant increasing the spatial scale of representativeness. The monitoring objective for this monitor is to measure population exposure.

3. National Air Toxics Trends Stations (NATTS), and Other Non-Criteria Pollutant Special Purpose Monitoring

3.1 National Air Toxics Trends Stations Monitoring

Routine NATTS monitoring will continue at Blair Street.

3.2 Organic and Elemental Carbon Monitor Evaluation Project

Operation of the Sunset Organic and Elemental Carbon instrument was discontinued and EPA notified on Sept. 1, 2017. The possibility of evaluation of a Magee Scientific total carbon analyzer is under discussion with EPA and is contingent on availability of funds.

3.3 Black Carbon

As part of the condition of receiving one time section 103 Grant funds to implement certain sites for the near-roadway monitoring network, the department will continue to conduct special purpose PM_{2.5} black carbon monitoring at the Forest Park and Blue Ridge I-70 near roadway NO₂ sites as well as at the Blair Street NATTS site using aethalometers.

4. PM_{2.5} Monitoring Network

4.1 PM_{2.5} SLAMS Network

The minimum monitoring requirement, based on population and historic PM_{2.5} measurements (40 CFR 58 Appendix D) requires three sites in St. Louis (because of PM_{2.5} concentrations measured on the Illinois side) and two sites in Kansas City. The St. Louis requirement is more than met by four Missouri sites plus three Illinois sites in the St. Louis CBSA (in addition to the near-road sites). The Kansas City requirement is more than met by three Missouri sites plus three Kansas sites in the Kansas City CBSA (in addition to the near-road sites).

The requirement for regional background PM_{2.5} monitoring is met by the Hercules Glades and Mingo IMPROVE sites. In addition to these sites, the Arnold West and El Dorado Springs sites also serve to monitor transport into eastern and western Missouri urban areas respectively.

The TEOM-1405-DF is the primary instrument being used in the state network for PM_{2.5} measurement. EPA has also designated the TEOM-1405-DF, operating with firmware version 1.70 and later, as a Federal Equivalent Method (FEM) on November 12, 2013, for PM₁₀ and PM_{10-2.5}, (<http://www.gpo.gov/fdsys/pkg/FR-2013-11-12/pdf/2013-27016.pdf>). However, the department does not report data from the PM₁₀ FEM channels of the TEOM-1405-DF instruments to AQS.

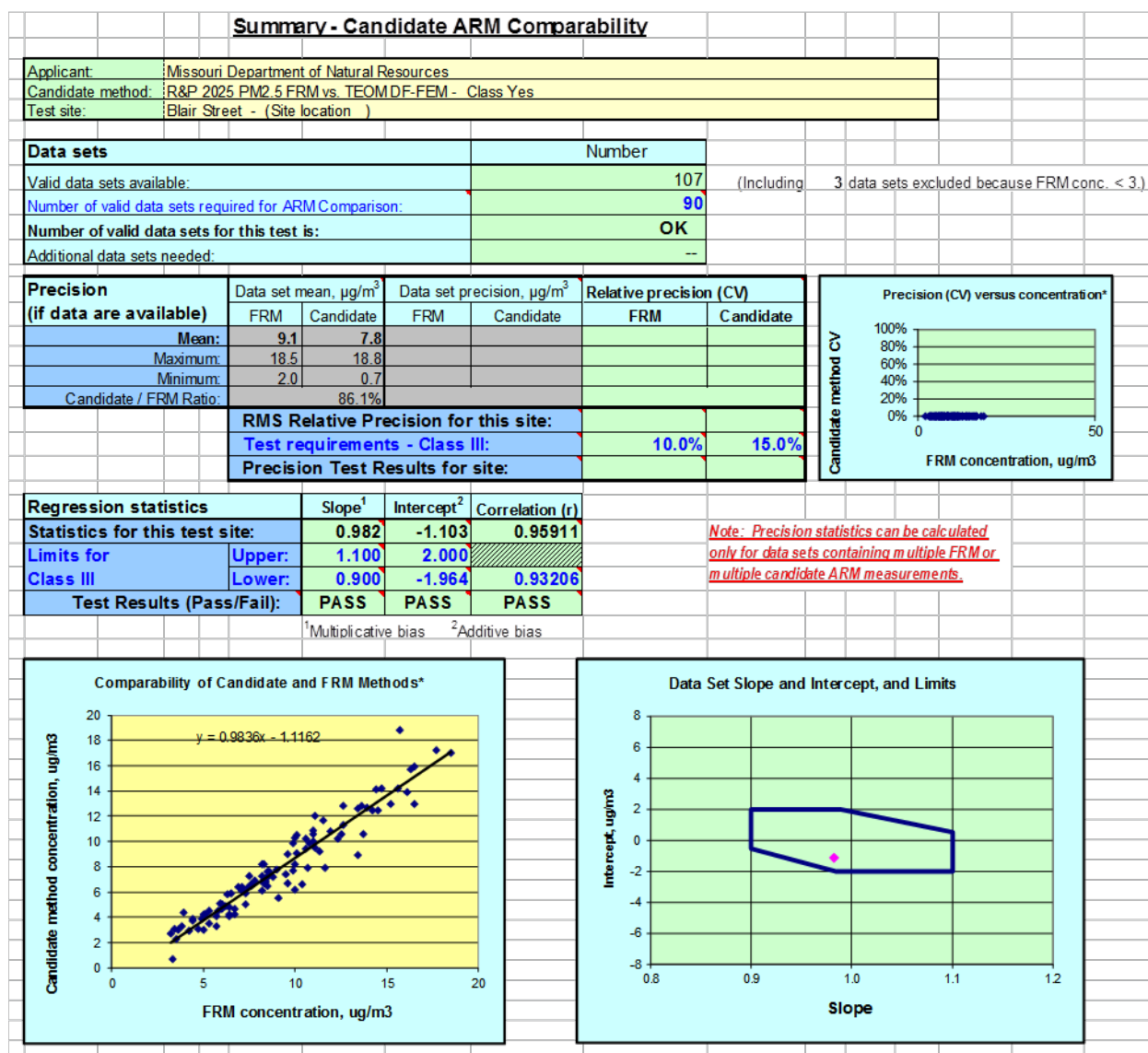
Network PM_{2.5} collocated FRM requirements were previously satisfied at the Blair Street NCore site in St. Louis and the Troost site in Kansas City. The following figure shows FRM/FEM comparability statistics (Class III performance criteria of 40 CFR Part 53) for the TEOM-1405-DF (EQPM-0609-182) operating at the Blair Street, St. Louis site. The additive and multiplicative bias meets the Class III performance criteria of 40 CFR Part 53.

The “Revisions to Ambient Monitoring Quality Assurance and Other Requirements; Final Rule,” Federal Register, volume 81, number 59, March 28, 2016, effective April 27, 2016, removed the requirement for collocated monitoring for PM_{10-2.5} at NCore sites from 40 CFR Part 58. Therefore, operation of the collocated set of filter samplers used for measurement of PM_{10-2.5} filter samplers was discontinued at the Blair Street site. At the same time, the TEOM-1405-DF FEM was re-designated as the primary PM_{2.5} instrument at this site. The FRM PM_{2.5} sampler at Blair Street was re-designated as the collocated reporting FRM sampler for the state network, and also provides PM_{2.5} for the calculation of PM_{10-2.5} and reporting FRM PM_{2.5} for the NCore site. This change allowed the collocated FRM PM_{2.5} sampler at the Troost site to be discontinued. One FRM PM₁₀ sampler remains at Blair Street which is used to report both PM_{10c} (at local conditions) for calculation of PM_{10-2.5} and PM₁₀ (at standard conditions). The current PM_{2.5} network is summarized in the table later in this section.

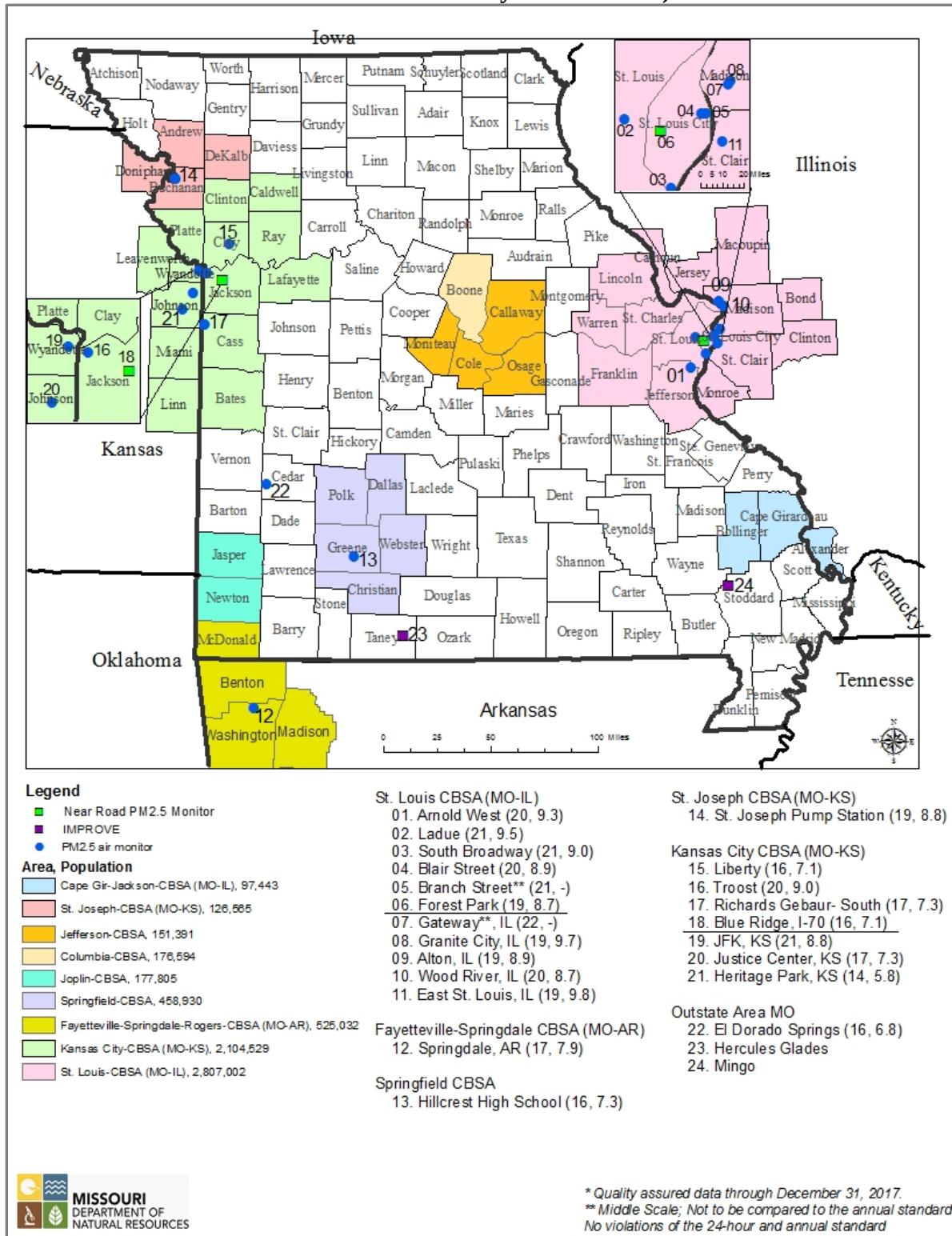
Two TEOM-1405-DF instruments are operated at the St. Joseph Pump Station site, one designated as primary, and one as collocated to satisfy the collocation requirement for that FEM method. The department will continue to operate a 1405-F PM_{2.5} instrument and a collocated FRM at Ladue in part to evaluate the 1405-F for possible additional future use in the network.

The department is also operating a Teledyne API 640x instrument at Blair Street for PM₁₀ measurement and to evaluate this instrument, which measures airborne particulate concentration using light scattering, for possible future use in the PM_{2.5} network. The department also plans to procure, install, and operate two additional 640x instruments at the Ladue and Arnold West sites for evaluation and possible future incorporation into the PM_{2.5} network.

FRM/FEM Comparability Statistics
Blair Street, St. Louis, Jan. 1, 2017 through Nov. 30, 2017,
(Preliminary Data)



2018 Missouri PM_{2.5} Monitoring Network*, NAAQS=35 µg/m³ (24 hours), 12 µg/m³ (1 year). (Numbers in parentheses are 2015-2017 Design Values for the 24-hour and 1-year standards)



*Teledyne API 640x instruments will be added at Ladue and Arnold West. No other changes to the PM_{2.5} network are proposed in this plan.

4.2 PM_{2.5} Chemical Speciation Network (CSN)

PM_{2.5} speciation sampling is currently being conducted at two locations: Blair Street in St. Louis and Arnold West. The sampling schedule at Arnold West was modified to every six days in February 2015. Sampling continues to be done every three days at Blair Street.

4.3 PM_{2.5} Section 103 Federal Funding

The department is not proposing any changes to the PM_{2.5} monitoring network other than adding two more 640x instruments. However, this is contingent on EPA providing 100 percent of the federal Section 103 grant funds at historical levels which are used to operate and maintain the PM_{2.5} monitoring network, EPA has awarded adequate funding for the PM_{2.5} network for April 2018 through March 2019, but issued only about half of the budgeted funds as of this writing. If the additional federal Section 103 grant funding is not received, the plan will have to be modified to bring operating expenses in line with the available revenue.

40 CFR 58.14 (c) indicates that “State, or where appropriate, local agency requests for SLAMS monitor station discontinuation, subject to the review of the Regional Administrator, will be approved if any of the following criteria are met and if the requirements of appendix D to this part, if any, continue to be met. Other requests for discontinuation may also be approved on a case-by-case basis if discontinuance does not compromise data collection needed for implementation of a NAAQS and if the requirements of appendix D to this part, if any, continue to be met.” Consistent with 40 CFR 58.14(b), if reductions become necessary, the department will provide written communication describing the network changes to the EPA regional administrator for review and approval.

2018 Missouri PM_{2.5} Monitoring Network

Site	Schedule*	Type	Agency	Purpose
St. Louis				
1. Blair Street	3	Collocated FRM	ESP	Doubles as PMcoarse Difference method, Quality Assurance
	3	Speciation	ESP	Chemical Speciation Network
	H	TEOM-1405-DF FEM	ESP	24 hr Annual, NAAQS/AQI, Ncore, PM-10-2.5 continuous
	H	T640X PM Mass Monitor FEM	ESP	Method Performance Evaluation/Research. Not for NAAQS Compliance Determination
2. Branch Street	H	TEOM-1405-DF FEM	ESP	24 hr NAAQS/AQI, PM10-2.5 continuous (unique middle scale monitor†)
3. Forest Park, I-64 (near-roadway)	H	TEOM-1405-DF FEM	ESP	24 hr & Annual/AQI, PM10-2.5 continuous (micro scale monitor)
4. South Broadway	H	TEOM-1405-DF FEM	ESP	24 hr & Annual NAAQS/AQI, PM10-2.5 continuous
5. Ladue	H	TEOM-1405-F FEM	ESP	24 hr & Annual NAAQS/AQI
	6	Collocated FRM	ESP	Quality Assurance
6. Arnold West	6	Speciation	ESP	Chemical Speciation Network
	H	TEOM-1405-DF FEM	ESP	24 hr & Annual NAAQS/AQI, PM10-2.5 continuous
Kansas City				
7. Liberty	H	TEOM-1405-DF FEM	ESP	24 hr & Annual NAAQS/AQI, PM10-2.5 continuous
8. Troost	H	TEOM-1405-DF FEM	ESP	24 hr & Annual NAAQS/AQI, PM10-2.5 continuous
9. Blue Ridge I-70 (near-roadway)	H	TEOM-1405-DF FEM	ESP	24 hr & Annual/AQI, PM10-2.5 continuous (micro scale monitor)
10. Richards-Gebaur South	H	TEOM-1405-DF FEM	ESP	24 hr & Annual NAAQS/AQI, PM10-2.5 continuous
Springfield				
11. Hillcrest High School	H	TEOM-1405-DF FEM	ESP	24 hr & Annual NAAQS/AQI, PM10-2.5 continuous
Outstate				
12. St. Joseph Pump Station	H	TEOM-1405-DF FEM	ESP	24 hr & Annual NAAQS/AQI, PM10-2.5 continuous
	H	Collocated TEOM-1405-DF FEM	ESP	Quality Assurance
13. El Dorado Springs	H	TEOM-1405-DF FEM	ESP	24 hr & Annual/AQI, PM10-2.5 continuous
14. Mingo	3	IMPROVE	Fish & Wildlife Service	Chemical Speciation Network
15. Hercules Glades	3	IMPROVE	Forest Service	Chemical Speciation Network
* 3 = Every third day; 6 = Every sixth day; H = Continuous monitoring, hourly data reported.				
† The Branch St. Monitor is a unique middle scale impact site and not eligible for comparison to the Annual PM _{2.5} NAAQS consistent with 40 CFR 58.30.				

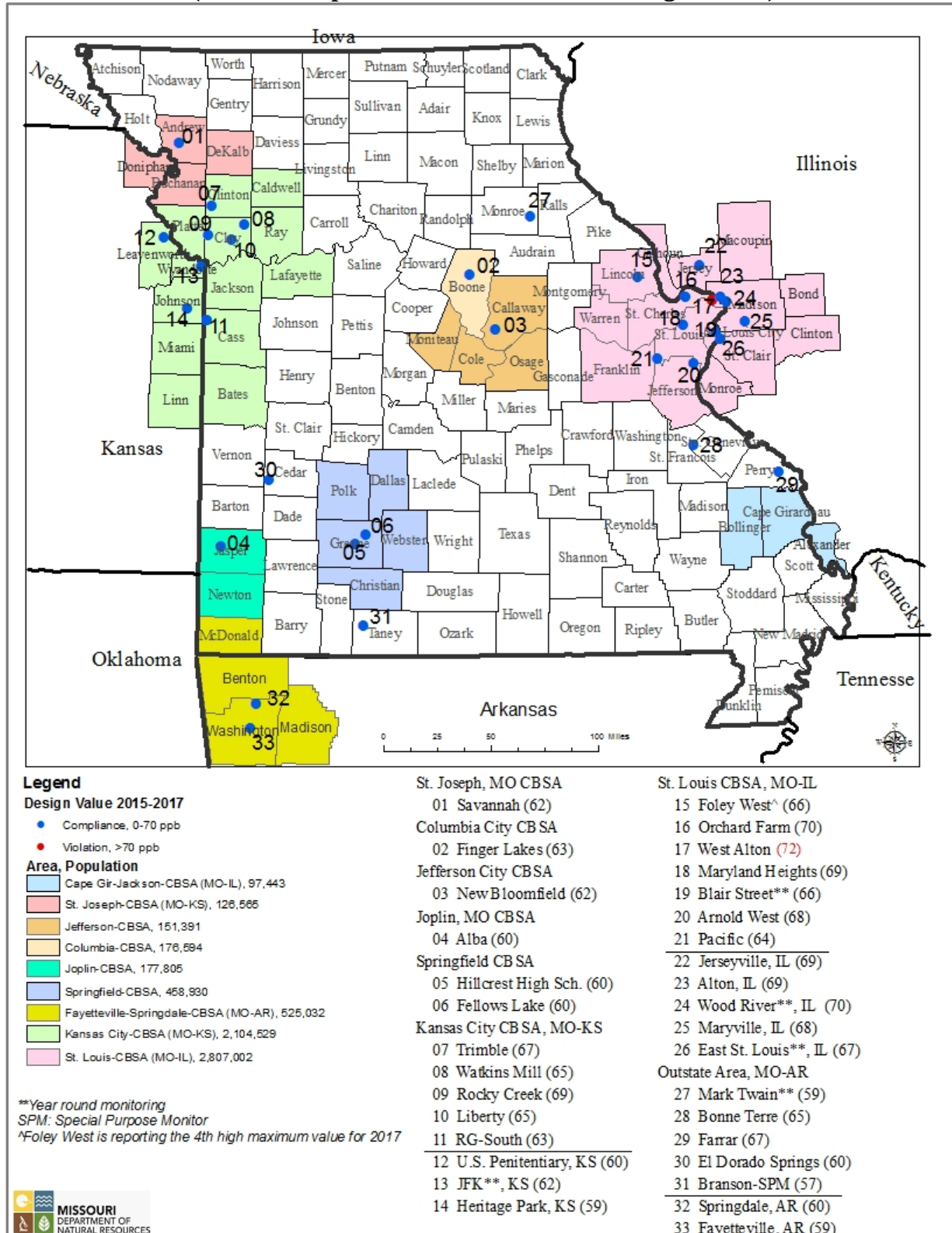
5. Ozone Monitoring Network

The Foley monitoring site (number 15 on the map later in this section) was relocated by a distance of 1.49 kilometers and renamed Foley West before the start of the 2017 ozone monitoring season in March 2017, as discussed in the 2017 Monitoring Network Plan. The Branson ozone monitoring site was discontinued at the end of the 2017 ozone season, Oct. 31, 2017, as discussed in the 2017 Monitoring Network Plan.

There are no other planned changes to the ozone monitoring network, and ozone monitoring will continue to be conducted all year at the Mark Twain State Park (MTSP) site to collect ozone background concentrations need for PSD modeling projects and at Blair Street to meet the NCore ozone monitoring requirement. The current monitoring network is based on the current ozone standard and ground-level ozone air quality monitoring network design requirements. The current ozone monitoring network meets the population-based requirements in 40 CFR 58 Appendix D, which requires a minimum of two sites each in the St. Louis, Kansas City, and Springfield areas. The ozone monitoring requirement for the Fayetteville-Springdale-Rogers CBSA is met by two ozone monitoring sites in Arkansas, which is reasonable, since 96 percent of the population of that CBSA is in Arkansas and only 4 percent in Missouri.

Reduction of the ozone NAAQS to 0.070 parts per million (ppm), equal to 70 ppb, was published in the Federal Register in October 2015, effective in December 2015. That change also included extension of the ozone monitoring season in Missouri to include the month of March and a requirement for photochemical assessment monitoring stations (PAMS) at NCore sites in nonattainment areas starting in June 2019. See Section 9 for the PAMS implementation plan.

**2018 Missouri Ozone (O₃) Monitoring Network*, NAAQS=70 ppb (8 hour).
(Numbers in parentheses are 2015-2017 Design Values)**



*Foley was relocated to Foley West before the start of 2017 O₃ monitoring. Branson was discontinued at the end of the 2017 O₃ season. No changes to the O₃ network are proposed in this plan.

6. PM₁₀ Monitoring Network

The department discontinued collocated FRM PM₁₀ monitoring at the Blair Street in St. Louis in February 2018, because the FRM PM₁₀ measurement has been replaced as the primary measurement with the Teledyne API 640X instrument, so that collocation is no longer required.

The department is proposing to discontinue all monitoring, including PM₁₀, at the Margarett site in St. Louis. The St. Louis CBSA will then include four PM₁₀ sites (not including the microscale Forest Park site), more than enough to meet the minimum monitoring requirement of two to four sites specified in 40 CFR 58 Appendix D, 4.6. This monitor count includes the Granite City Fire Station site in Illinois, which is expected to continue based on communication received from the Illinois Environmental Protection Agency.

The department is proposing to discontinue PM₁₀ monitoring at the Troost site in Kansas City. The PM₁₀ minimum monitoring requirement of two to four sites in the Kansas City CBSA will continue to be met by the Front Street site in Missouri and the JFK site in Kansas. The JFK site is expected to continue, because it is the NCore site for the Kansas City area.

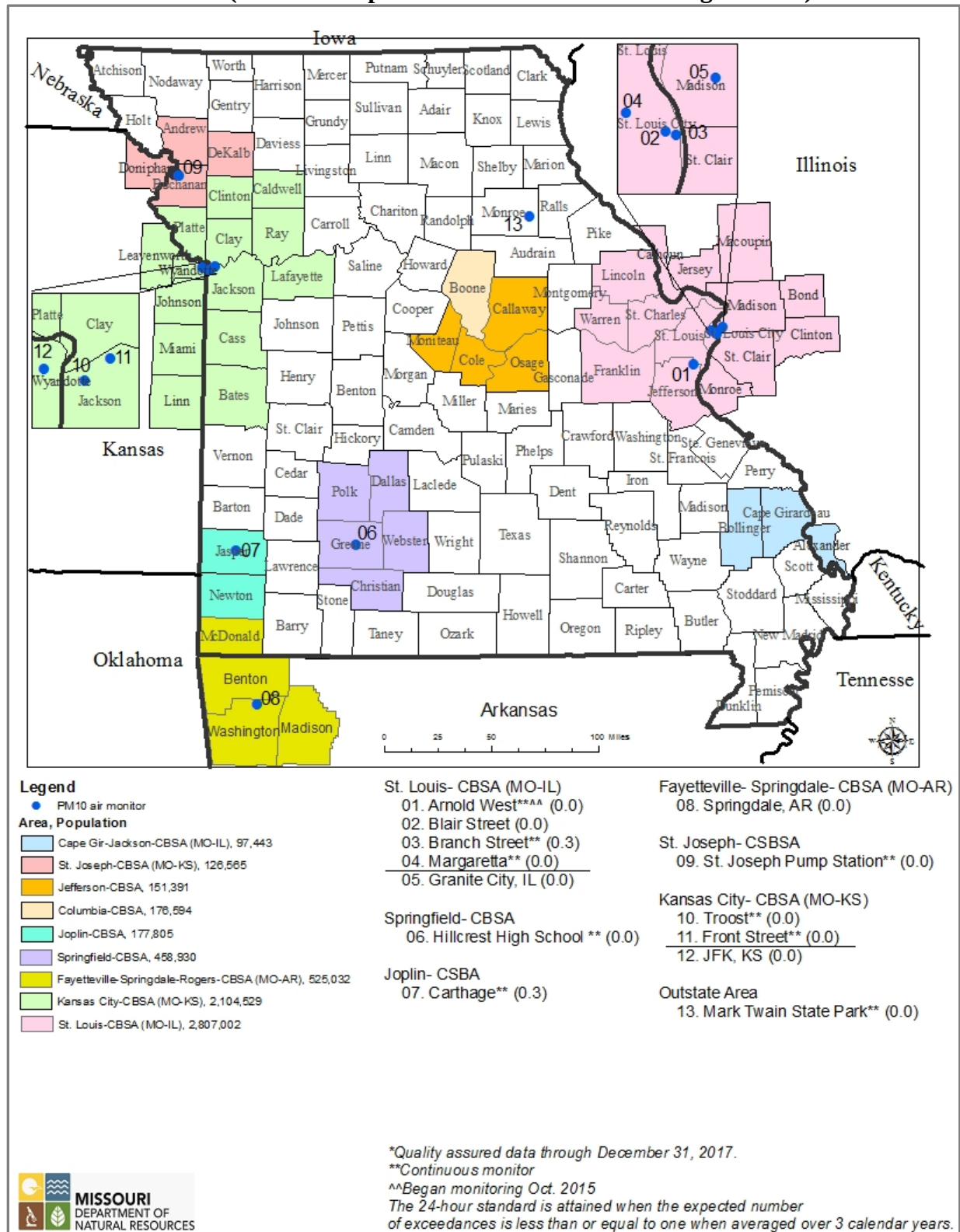
Discontinuation of PM₁₀ monitoring at Margarett and at Troost meets the conditions of 40 CFR 58.14 c that the NAAQS has not been exceeded for five years and that the probability of exceeding 80 percent of the NAAQS is less than 10 percent.

The PM₁₀ minimum monitoring requirement of zero to one in the Springfield CBSA is being met by the Hillcrest High School site. The 2017 estimated population of the Springfield CBSA is 462,369. If this population increases to 500,000 or more, the requirement will increase to one to two sites and will continue to be met.

The 2017 estimated population of the Fayetteville-Springdale-Rogers CBSA is 537,463, but only 4 percent of this population (22,828) is in Missouri. Therefore, the PM₁₀ monitoring requirement for this area is best met by a monitoring site in Arkansas. Based on correspondence from the Arkansas Department of Environmental Quality, such a site was established on Jan. 1, 2017.

A collocated PM₁₀ TEOM-1400ab monitor was installed at the Carthage site in April 2016 and continues to operate because of the importance of that site as being near a potential source.

**2018 Missouri PM₁₀ Monitoring Network*, NAAQS=150 µg/m³ (24 hour).
(Numbers in parentheses are 2015-2017 Design Values)**



*The department proposes to discontinue the Margaretta and Troost PM₁₀ sites. No other changes to the PM₁₀ network are proposed in this plan.

7. Nitrogen Dioxide (NO₂) Monitoring Network

The final rule published in 2010 revising the NO₂ NAAQS to add the one-hour standard of 100 ppb (3-year average of annual 98th percentile) requires near-road NO₂ monitoring at two sites in the St. Louis CBSA (population 2.8 million) and one site in the Kansas City CBSA (population 2.0 million), based on population and traffic count. Sites were to be identified in the 2012 air monitoring network plan and begin operation by January 1, 2013. The schedule was revised in a rulemaking published in 2013 that required the first St. Louis area near-road site to begin operation in January 2014, the Kansas City area site to begin operation in January 2014, and the second St. Louis area site to begin operation in January 2015. Due in part to receipt of EPA funding for establishment of near-road sites, the department established the first St. Louis area site in January 2013, and the Kansas City area site was established in July 2013. The second near-roadway site in the St. Louis area was established in January 2015. The site selection process was described in the 2013 Monitoring Network Plan, <http://dnr.mo.gov/env/apcp/2013monitoringnetworkplan.pdf>.

The first St. Louis area near-roadway site, Forest Park, is located adjacent to I-64 west of downtown St. Louis. Air monitoring results at that site are consistent with commuter traffic, heaviest on weekday mornings. The second St. Louis area site, called Rider Trail S. I-70, is adjacent to Interstate 70 just west of Interstate 270. Interstate 70 extends across the United States and carries through traffic in addition to commuter traffic and other local traffic. Therefore, the fleet mix and congestion patterns relative to time of day and day of the week are expected to be different than at the first site

The community-wide monitoring network requirement of 40 CFR 58 Appendix D, 4.3.3(a) in CBSAs with population larger than one million is satisfied by the Troost site in Kansas City and the Blair Street site in St. Louis and exceeded if the JFK site in Kansas and the East St. Louis site in Illinois are also considered.

40 CFR 58, Appendix D, 4.3.4 includes the following additional requirement for NO₂ monitoring:

“4.3.4 Regional Administrator Required Monitoring

- (a) The Regional Administrators, in collaboration with States, must require a minimum of forty additional NO₂ monitoring stations nationwide in any area, inside or outside of CBSAs, above the minimum monitoring requirements, with a primary focus on siting these monitors in locations to protect susceptible and vulnerable populations....”

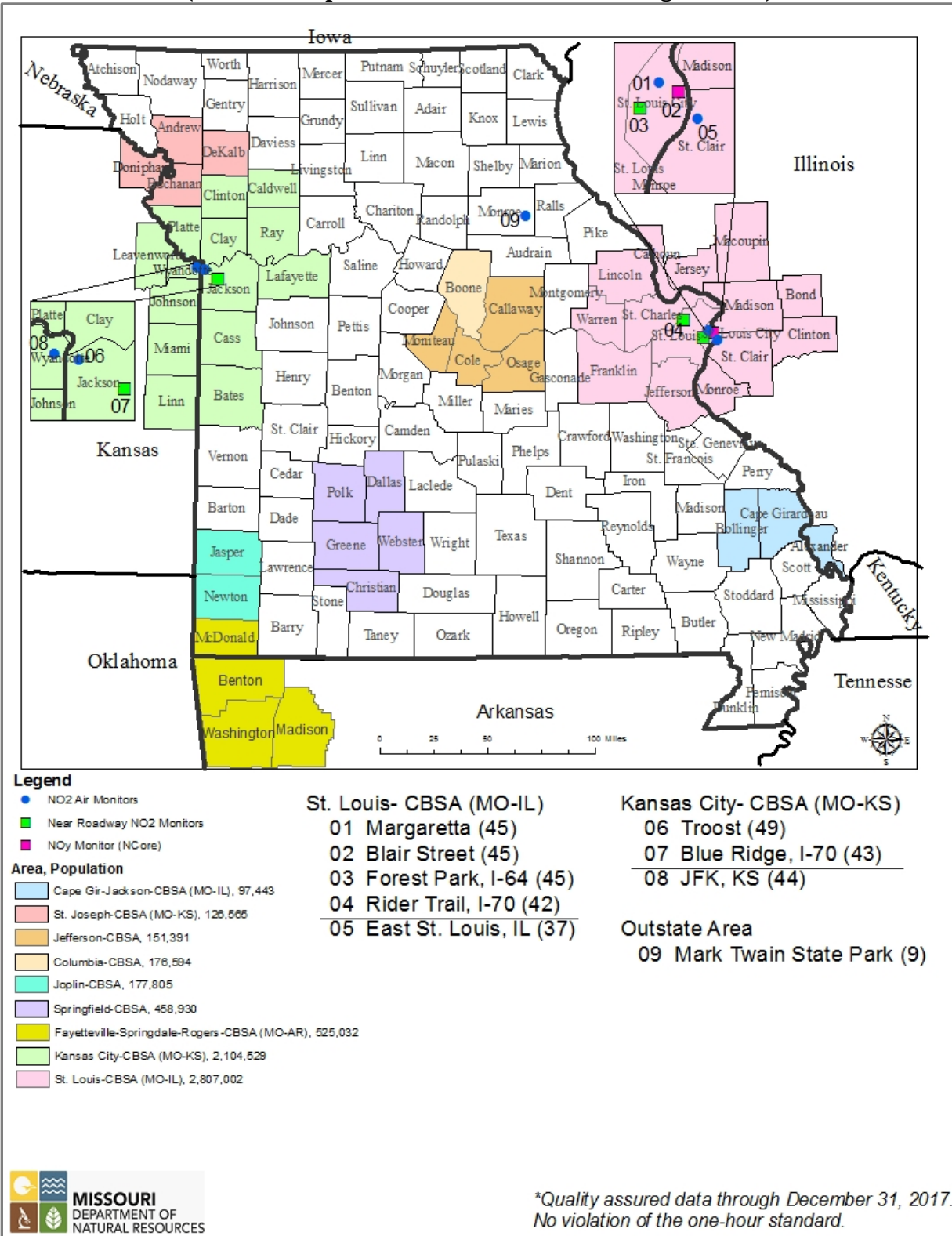
EPA has identified the Margaretta NO₂ site in St. Louis and the JFK site in Kansas City, Kansas as two of these NO₂ monitoring stations in locations to protect a susceptible and vulnerable population. For additional information about this topic see the following EPA website: <http://www.epa.gov/ttn/amtic/svpop.html>. The department is proposing, in this plan, to discontinue NO₂ monitoring at the Margaretta site and requesting that EPA designate the Blair Street site as being in an area where susceptible and vulnerable populations live, work, and play, and therefore meeting this requirement. At the time EPA selected the Margaretta site as meeting

this requirement, as of January 1, 2013, the department was not operating an NO₂ monitor at Blair Street site. Since that time, changes to the monitoring network requirements as discussed below require permanent NO₂ monitoring at Blair St.

The department is operating a primary and backup photolytic NO₂ monitor at the Blair Street site. Photolytic NO₂ monitoring is identified in EPA's long term monitoring strategy, and this monitoring supplements the required NO_y monitoring being conducted at the Blair Street NCore site. The photolytic NO₂ monitor at Blair Street will also satisfy the requirement for true NO₂ monitoring as part of the PAMS program (see Section 9).

Discontinuation of NO₂ monitoring at Margareta meets the conditions of 40 CFR 58.14 c that the NAAQS has not been exceeded for five years and that the probability of exceeding 80 percent of the NAAQS is less than 10 percent.

**2018 Missouri Nitrogen Dioxide (NO₂) Monitoring Network*, NAAQS=100 ppb (1 hour).
(Numbers in parentheses are 2015-2017 Design Values)**

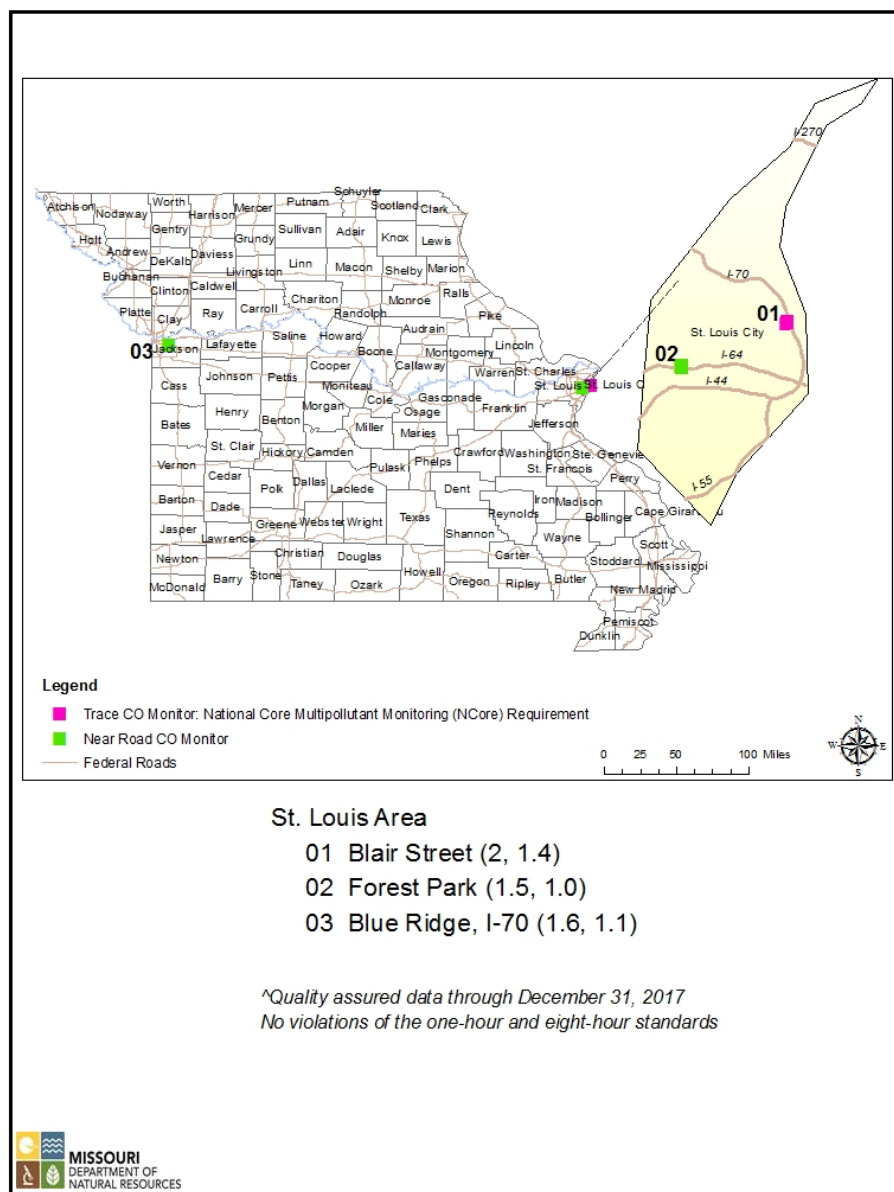


*The department proposes to discontinue NO₂ monitoring at Margaretta. No other changes to the NO₂ network are proposed in this plan.

8. Carbon Monoxide (CO) Monitoring Network

On Aug. 12, 2011, the EPA issued a decision to retain the existing NAAQS for CO. A final rule published on Aug. 31, 2013, requires near-road CO monitoring at one site in the St. Louis CBSA by January 2015 and one site in the Kansas City CBSA by January 2017. The department established CO monitoring sites at the same time as the NO₂ monitoring sites at the Forest Park I-40/64 and Blue Ridge I-70 near-roadway monitoring sites. No changes to the CO monitoring network are proposed in this plan.

2018 Missouri Carbon Monoxide (CO) Monitoring Network*, NAAQS=35 ppm (1 hour), 9 ppm (8 hour). (Numbers in parentheses are 2015-2017 Design Values for the 1-hour and 8-hour standards)



*No changes to the CO network are proposed in this plan.

9. Photochemical Assessment Monitoring Station Implementation Plan

9.1 Introduction: Regulatory Requirements and Guidance Documents

The “National Ambient Air Quality Standards for Ozone; Final Rule,” Federal Register, volume 80, number 206, Oct. 26, 2015, included amendment of 40 CFR 58, Appendix D (5) to include the following:

“5. NETWORK DESIGN FOR PHOTOCHEMICAL ASSESSMENT MONITORING STATIONS (PAMS) AND ENHANCED OZONE MONITORING

- (a) State and local monitoring agencies are required to collect and report PAMS measurements at each NCore site required under paragraph 3(a) of this appendix located in a CBSA with a population of 1,000,000 or more, based on the latest available census figures.
- (b) PAMS measurements include:
 - (1) Hourly averaged speciated volatile organic compounds (VOCs);
 - (2) Three 8-hour averaged carbonyl samples per day on a 1 in 3 day schedule, or hourly averaged formaldehyde;
 - (3) Hourly averaged O₃;
 - (4) Hourly averaged nitrogen oxide (NO), true nitrogen dioxide (NO₂), and total reactive nitrogen (NO_y);
 - (5) Hourly averaged ambient temperature;
 - (6) Hourly vector-averaged wind direction;
 - (7) Hourly vector-averaged wind speed;
 - (8) Hourly average atmospheric pressure;
 - (9) Hourly averaged relative humidity;
 - (10) Hourly precipitation;
 - (11) Hourly averaged mixing-height;
 - (12) Hourly averaged solar radiation; and
 - (13) Hourly averaged ultraviolet radiation...
- (g) At a minimum, the monitoring agency shall collect the required PAMS measurements during the months of June, July, and August.”

The same rule included amendment of 40 CFR 58.10 (a) (10) to include the following:

“A plan for making Photochemical Assessment Monitoring Stations (PAMS) measurements, if applicable, in accordance with the requirements of appendix D paragraph 5(a) of this part shall be submitted to the EPA Regional Administrator no later than July 1, 2018. The plan shall provide for the required PAMS measurements to begin by June 1, 2019.”

EPA has published a guidance document entitled “PAMS Required Sites Quality Assurance Implementation Plan [QAIP],” October 2016, https://www3.epa.gov/ttn/amtic/files/ambient/pams/PAMS%20Quality%20Assurance%20Implementation%20Plan_092716_V4.0.pdf. The QAIP provides guidance for both EPA and monitoring organizations in implementation of the above-referenced PAMS requirements. The QAIP includes the following recommendations:

“Monitoring organization PAMS Implementation Plan: The monitoring organization Implementation Plan document will specify how the monitoring organization will perform the measurements for the Required Network. The plan will include details on activities such as monitoring site location, costs, and schedule of events, among other information. The plan will also include any waivers to siting or monitoring methods.” (page 13)

“Monitoring organizations should have their PAMS waivers and Required Network Implementation Plans finalized by July 2017 and must have them completed by the end of October 2017.”²⁰

²⁰ The regulation requires that monitoring organization Required Network IPs be developed in their Annual Network Plans due July 2018. However, in order to be operational by June 2019, it would be beneficial to have plans finalized by the end of October 2017.” (page 21)

EPA is also developing additional guidance including a PAMS Technical Assistance Document (TAD), standard operating procedures for some of the instrument systems, and either a national Quality Assurance Project Plan (QAPP) or model QAPP for monitoring organizations. EPA also conducts monthly conference calls to disseminate information and guidance on PAMS monitoring.

This section of the 2018 Monitoring Network Plan is intended to fulfill the regulatory requirement in 40 CFR 58.10 (a) (10) for submittal of a PAMS implementation plan by July 2018. An earlier version of this section was included in the 2017 Monitoring Network Plan to meet the recommended schedule in the QAIP for submittal of the plan by July 2017 in advance of the regulatory requirement.

9.2 PAMS Measurements

The department will conduct PAMS monitoring at the Blair Street Station in St. Louis. The Blair Street Station is an NCore site in a CBSA with a population of greater than 1 million. The NCore site in the Kansas City CBSA is in Kansas City, Kansas. Accordingly, it is expected that PAMS monitoring in the Kansas City CBSA will be conducted by the state or local agency responsible for operation of that site.

PAMS monitoring will begin at Blair Street in June 2019 and will be conducted during the months of June, July, and August each year as long as the regulatory requirements are in place and funding is available to support this activity.

The department does not plan to request any of the waivers from EPA described in 40 CFR 58, Appendix D (5) (c) through (f).

Each of the required measurements in 40 CFR 58, Appendix D (5) (b) is discussed below.

1. Hourly averaged speciated volatile organic compounds (VOCs). EPA has evaluated several gas chromatographs (GC) designed to measure concentrations of hourly average speciated VOCs. EPA is developing contracts with two of the vendors of these GC systems and plans to provide an instrument from one of the vendors to each monitoring organization that is required to conduct PAMS monitoring and chooses to acquire the GC system through one of the EPA contracts. Based on information available at this time, the Department expects to select either the Markes Unity-XR Thermal Desorber with Agilent 7890B Auto-Gas Chromatograph with Flame Ionization Detection or the Consolidated Analytical Systems (CAS)/Chromatotec AirmOzone Auto-Gas Chromatograph with Flame Ionization Detection. The department's preference at this time is the CAS/Chromatotec system. Use of either of these systems will also require procurement and installation of additional equipment and supplies, including a sampling manifold, zero air supply, gas dilution calibrator, calibration gas and associated regulators, and data logger. This list will be refined and become more detailed as more information becomes available and after the specific VOC instrument system is selected. This element of the required PAMS measurements is clearly the one that will require the most planning and preparation and will be the most labor-intensive during each summer measurement season.

The following table lists target compounds for this measurement (carbonyl compounds included in the table will be measured in samples described under 2 below).

2. Three 8-hour averaged carbonyl samples per day on a 1 in 3 day schedule, or hourly averaged formaldehyde. The department will procure, install, and utilize a sampler capable of collecting multiple 8-hour samples using derivatized sorbent tubes according to EPA method TO-11A. An example of such a sampler is the ATEC 8000 series. The department is not aware of an instrument currently available at reasonable cost that reliably measures hourly-averaged formaldehyde; this requirement was likely written into the regulation in anticipation of future instrument development. Analysis of TO-11A samples for the carbonyls listed in the following table (identified by footnote b) will be made available by EPA using their national contract analytical laboratory.

Revised PAMS Target List^a

Existing Priority Compounds	Optional Compounds
1,2,3-Trimethylbenzene	1,3 Butadiene
1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene
1-Butene	1-Pentene
2,2,4-Trimethylpentane	2,2-Dimethylbutane
Acetaldehyde ^b	2,3,4-Trimethylpentane
Benzene	2,3-Dimethylbutane
Cis-2-Butene	2,3-Dimethylpentane
Ethane	2,4-Dimethylpentane
Ethylbenzene	2-Methylheptane
Ethylene	2-Methylhexane
Formaldehyde ^b	2-Methylpentane
Isobutane	3-Methylheptane
Isopentane	3-Methylhexane
Isoprene	3-Methylpentane
M/P Xylene	Acetone
M-Ethyltoluene	Acetylene
N-Butane	Alpha Pinene
N-Hexane	Benzaldehyde ^b
N-Pentane	Beta Pinene
O-Ethyltoluene	Cis-2-Pentene
O-Xylene	Carbon Tetrachloride
P-Ethyltoluene	Cyclohexane
Propane	Cyclopentane
Propylene	Ethanol
Styrene	Isopropylbenzene
Toluene	M-Diethylbenzene
Trans-2-Butene	Methylcyclohexane
	Methylcyclopentane
	N-Decane
	N-Heptane
	N-Nonane
	N-Octane
	N-Propylbenzene
	N-Undecane
	P-Diethylbenzene
	Tetrachloroethylene
	Trans-2-Pentene

^a This table only includes individual target compounds. Monitoring agencies should continue measuring and reporting total non-methane organic compounds (TNMOC)

^b These compounds are carbonyls and are measured using Method TO-11a

Source: <https://www3.epa.gov/ttn/amtic/files/ambient/pams/targetlist.pdf>

3. Hourly Averaged O₃. Hourly averaged ozone is already measured at Blair Street as a part of the NCore requirements and will continue.

4. Hourly averaged nitrogen oxide (NO), true nitrogen dioxide (NO₂), and total reactive nitrogen (NO_y). NO and NO_y are already measured at Blair Street as a part of the NCore requirements and will continue. True NO₂ is already measured at Blair Street using an analyzer with a photolytic NO₂ converter; this measurement will also continue.

5. -10. Hourly averaged ambient temperature, hourly vector-averaged wind direction, hourly vector-averaged wind speed, hourly average atmospheric pressure, hourly averaged relative humidity, and hourly precipitation. Temperature, wind direction, wind speed, atmospheric pressure, and relative humidity are already measured at Blair Street and will continue. The department will procure, install, and utilize a precipitation measurement instrument.

11. Hourly averaged mixing height. EPA plans to develop a national contract with one or more vendors of ceilometers, which are instruments using a laser to measure mixing height, and provide an instrument to each monitoring organization that is required to conduct PAMS monitoring. Based on information available at this time, the department expects that the ceilometer to be installed and utilized is likely to be a Vaisala CL-51 with appropriate software. EPA acquisition of ceilometers is not expected to occur until Federal Fiscal Year 2020. Therefore, the mixing height measurement is not expected to begin in June 2019 but may begin in June 2020 depending on the progress of EPA acquisition of ceilometers.

12. Hourly averaged solar radiation. Solar radiation is already measured at Blair Street and will continue.

13. Hourly averaged ultraviolet radiation. The department will procure, install, and utilize an ultraviolet radiation measurement instrument.

9.3 PAMS Implementation Schedule and Resource Requirements

The following table lists some of the major schedule elements associated with implementation of PAMS measurement and tentative starting and ending dates (month and year) for each activity. It is based on the QAIP referenced above and associated information from EPA, including information provided during regular PAMS conference calls, and includes relevant activities planned by EPA. As noted in the table, timing of some of the schedule elements, especially capital equipment acquisition, depends on availability of funding and availability of instrumentation from national contracts; if the availability of funding or of instrumentation from national contracts is delayed, other schedule elements will be delayed (see number 11 above), and startup of sampling in June 2019 could be jeopardized.

Personnel resource and cost estimates for this activity are being developed by the department and will be communicated separately to EPA Region VII staff.

Tentative PAMS Implementation Schedule

	Start	Finish
QA Related Tasks		
EPA: PAMS TAD and Auto GC SOPs and workgroup review/iteration/comment	2/17	7/18
EPA: PAMS generic QAPP and SOPs (NO ₂ , ceilometer, carbonyl sampling/analysis) and review/iteration/comment	7/17	7/18
EPA: PAMS proficiency testing (PT) and TSA program development and review/iteration/comment	11/17	7/18
EPA: Development of quality control/PT reports	4/18	9/18
Department: Draft PAMS QAPP and SOPs	12/17	12/18
EPA (Region VII): Review QAPP and SOPs	12/18	3/19
Department: Finalize QAPP and SOPs	3/19	5/19
EPA: TSA audit training/readiness reviews	10/18	3/19
EPA: Proficiency testing on operational sites/labs	10/18	5/19
Implementation Tasks		
Department: Implementation plan development (this plan)	1/17	6/18
Department: Personnel resource and cost estimate planning and development	1/17	12/18
Department: Continue to participate in monthly PAMS conference calls and review guidance documents as available	1/17	5/19
EPA and Department: Capital equipment acquisition from national contract (GC and ceilometer; depends on EPA schedule)	11/17	12/20
Department: Other equipment and supplies acquisition (depends on funding availability)	7/17	4/19
Department: Equipment installation	1/19	4/19
Department: Equipment shakedown/testing	4/19	5/19
Department: First PAMS measurement season (not including mixing height measurement which may start in 2020)	6/19	8/19

NETWORK DESCRIPTION/COMPONENTS

See Appendix 1 for the Network Description, which includes the following components.

Site Data

All ambient air monitoring sites are recorded in the EPA's Air Quality System (AQS) database. Data includes location data such as latitude and longitude.

AQS Site Code

The site code includes a numerical designation for state, county, and individual site. The state and county codes are assigned a number based on the alphabetical order of the state or county. Site numbers are assigned sequentially by date established in most counties. St. Louis County sites also have a division for municipality within St. Louis County.

Street Address

The official post office address of the lot where the monitors are located. Because not all sites are located in cities or towns, the street address is occasionally given as the intersection of the nearest streets or highways.

Geographical Coordinates

The coordinate system used by the department is latitude and longitude.

Air Quality Control Region

Air Quality Control Regions (AQCR) are defined by EPA and designate either urban regions, like St. Louis or Kansas City, or rural sections of a state, such as northeast or southwest Missouri.

<u>AQCR</u>	<u>AQCR Name</u>
070	Metropolitan St. Louis
094	Metropolitan Kansas City
137	Northern Missouri
138	Southeast Missouri
139	Southwest Missouri

Core Based Statistical Area

Core Based Statistical Areas (CBSA) are defined by the U.S. Census Bureau.

<u>CBSA Code</u>	<u>CBSA Name</u>
00000	Not in a CBSA
16020	Cape Girardeau-Jackson, Missouri-Illinois
17860	Columbia, Missouri
22220	Fayetteville-Springdale-Rogers, Arkansas-Missouri
27620	Jefferson City, Missouri
27900	Joplin, Missouri
28140	Kansas City, Missouri-Kansas
41140	St. Joseph, Missouri-Kansas

41180	St. Louis, Missouri-Illinois
44180	Springfield, Missouri

Monitor Data

Each monitor is designed to detect a specific chemical pollutant or group of related pollutants. A site may have one or many monitors and not all sites will have the same monitors.

Pollutant

The common name of the pollutant. Criteria pollutants are defined by statute in the Clean Air Act.

AQS Pollutant Code

Each pollutant has a unique numerical code.

<u>Pollutant Code</u>	<u>Pollutant</u>
14129	Lead – Local Conditions (LC)
42101	Carbon Monoxide
42401	Sulfur Dioxide
42406	Sulfur Dioxide 5-minute
42600	Reactive Oxides of N (NOY)
42601	Nitric Oxide
42602	Nitrogen Dioxide
42603	Oxides of Nitrogen
44201	Ozone
61103	Resultant Wind Speed
61104	Resultant Wind Direct
62101	Outdoor Temperature
62107	Indoor Temperature
62201	Relative Humidity
63301	Solar Radiation
64101	Barometric Pressure
68105	Average Ambient Temperature
68108	Sample Barometric Pressure
81102	PM ₁₀
88313	Black Carbon-LC
85101	PM ₁₀ – LC
85129	Lead PM10 LC - FRM/FEM
86101	PMCoarse – LC (FRM Difference)
88101	PM _{2.5} FRM
88500	PM _{2.5} Total Atmospheric
88502	PM _{2.5} AQI/Speciation
88503	PM _{2.5} Reference
61106	Sigma Theta
62106	Temperature Difference
65102	Precipitation
88314	UV Carbon PM _{2.5} -Local Condition

85102	Antimony
85103	Arsenic PM ₁₀ LC
85107	Barium PM ₁₀ LC
85109	Bromine PM ₁₀ LC
85110	Cadmium PM ₁₀ LC
85111	Calcium PM ₁₀ LC
85112	Chromium PM ₁₀ LC
85113	Cobalt PM ₁₀ LC
85114	Copper PM ₁₀ LC
85126	Iron PM ₁₀ LC
85128	Lead PM ₁₀ LC
85132	Manganese PM ₁₀ LC
85136	Nickel PM ₁₀ LC
85142	Mercury PM ₁₀ LC
85154	Selenium PM ₁₀ LC
85160	Tin PM ₁₀ LC
85161	Titanium PM ₁₀ LC
85164	Vanadium PM ₁₀ LC
85166	Silver PM ₁₀ LC
85167	Zinc PM ₁₀ LC
85173	Thallium PM ₁₀ LC
85180	Potassium PM ₁₀ LC
88160	Tin PM ₁₀ LC
	Organic Carbon Chemical Speciation Network Unadjusted
88305	PM _{2.5} LC TOT
88312	Total Carbon PM _{2.5} LC TOT
88316	Optical Elemental Carbon PM _{2.5} LC TOT

Parameter Occurrence Code

The Parameter Occurrence Code (POC) distinguishes between different monitors for the same pollutant, most often collocated monitors used for precision and quality assurance. For PM_{2.5}, different parameter occurrence codes are assigned to FRM, collocated FRM, continuous, and speciation monitors.

Collocated

Collocated monitors are used for precision and quality assurance activities, and for redundancy for critical pollutants such as ozone.

Sampling Frequency

Sampling frequency varies for each pollutant, depending on the nature of the NAAQS standard and the technology used in the monitoring method. Most gaseous pollutants, PM_{2.5} and PM₁₀ monitors use continuous monitoring FEM methods and are averaged over one hour. Some particulate pollutants are filter-based FRM methods and averaged over one day.

Scale of Representation

Each monitor is intended to represent an area with similar pollutant concentration. The scales range from only a few meters to many kilometers.

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

Monitor Type

The monitor's administrative classification is determined by the purpose for the monitor in the agency sampling strategy. Assignment of monitor types “NCORE” and “PAMS” is limited to EPA headquarters and is done only after a complete review and approval for all site/monitor metadata.

<u>Code</u>	<u>Description</u>
IMPROVE	IMPROVE or IMPROVE Protocol
INDEX SITE	(not currently used by Missouri)
INDUSTRIAL	Used to indicate sites operated by an industry Primary Quality Assurance Organization (PQAO)
NATTS	National Air Toxics Trends Station
NON-EPA FEDERAL	(not currently used by Missouri)
NON-REGULATORY	Not used for NAAQS Compliance
PAMS	Photochemical Assessment Monitoring Stations
PROPOSED NCORE	Proposed NCore
QA COLLOCATED	Collocated to Satisfy 40 CFR 58 Appendix A
SLAMS	State or Local Air Monitoring Station
SPECIAL PURPOSE	Special Purpose Monitoring Station (SPM or SPMS)
SUPLMNTL SPECIATION	Supplemental Speciation
TRENDS SPECIATION	Trends Speciation
TRIBAL MONITORS	(not currently used by Missouri)
UNOFFICIAL PAMS	(not currently used by Missouri)

State Monitoring Objective

Each monitor has a distinct objective such as providing real-time data for public awareness or use in determining compliance with regulations. The state monitoring

objective provides more information about the purpose of the monitoring in addition to the monitor objective required of 40 CFR 58.10(a)(6).

<u>State Objective Code</u>	<u>Objective</u>
AQI	Public Information
COM	NAAQS Compliance
MET	Meteorological Data
RES	Research
STA	State Standard

Units

The physical terms used to quantify the pollutant concentration, such as parts per million or micrograms per cubic meter.

<u>Unit Code</u>	<u>Unit Description</u>
001	$\mu\text{g}/\text{m}^3$
007	parts per million
008	parts per billion
011	meters per second
012	miles per hour
013	knots
014	degree, compass
015	degree Fahrenheit
016	millibars
017	degree Celsius
018	Langleys
019	percent humidity
021	inches
022	inches Mercury
025	Langleys per minute
059	Millimeter (Mercury)
073	Liters/minute STP-Flow
077	Micrograms
079	Watts/m^2
083	Cubic meter/minute
105	$\mu\text{g}/\text{m}^3$ LC
106	Minutes
107	Percent
118	Liters/minute LC-Flow
119	Cubic meters/minute LC-Flow
121	parts per trillion

Monitoring/Analytical Method

Each monitor relies on a scientific principle to determine the pollutant concentration, which is described by the sampling method. Each method code is specific for a particular

pollutant; therefore a three numeral code may be used for different methods for different pollutants. This is required by 40 CFR 58.10(a)(3).

Monitoring Objective

This is the primary monitoring objective(s) for the monitoring parameter required by 40 CFR 58.10(a)(6). The monitoring objective is specific to the pollutant. Some sites may have more than one monitoring objective, but the primary objective is listed first.

APPENDIX 1: MISSOURI MONITORING NETWORK DESCRIPTION

Missouri Ambient Air Monitoring Network



<i>MIC</i>	<i>Microscale</i>	<i>Several meters up to about 100 meters</i>
<i>MID</i>	<i>Middle</i>	<i>100 meters to 0.5 kilometer</i>
<i>NBR</i>	<i>Neighborhood</i>	<i>0.5 to 4.0 kilometers range</i>
<i>URB</i>	<i>Urban</i>	<i>4 to 50 kilometers</i>
<i>REG</i>	<i>Regional</i>	<i>Tens to hundreds of kilometers</i>
<i>COM</i>	<i>National Ambient Air Quality Standards (NAAQS) Compliance</i>	
<i>MET</i>	<i>Meteorological Data</i>	
<i>N/A</i>	<i>Not Applicable</i>	
<i>NCore</i>	<i>National Multi-Pollutant Monitoring Stations</i>	
<i>NON-A</i>	<i>Non-Ambient Site</i>	
<i>NON-R</i>	<i>Non-Regulatory</i>	
<i>PQAO</i>	<i>Primary Quality Assurance Organization</i>	
<i>RES</i>	<i>Research</i>	
<i>SLAMS</i>	<i>State and Local Monitoring Stations</i>	
<i>SIP</i>	<i>State Implementation Plan</i>	
<i>SPEC</i>	<i>Speciation</i>	
<i>STA</i>	<i>State Standard</i>	
<i>SPM</i>	<i>Special Purpose Monitoring</i>	
<i>SPP</i>	<i>Special Purpose Project</i>	
<i>Coll</i>	<i>Collocated monitor. A secondary monitor at a site.</i>	

Ameren Missouri (PQAO - 1440)

Labadie, North

AQS Site Number **29-183-9004**

~150 ft. north of Terry Rd and ~200 ft. Kingfisher Ct, Augusta, MO 63332

Latitude: 38.59557 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.82864 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 816

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
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Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
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Labadie, Northwest

AQS Site Number **29-183-9002**

Rt. 94, Augusta, MO 63332 near the intersection with Schlusersburg Road

Latitude: 38.5818 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.865528 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 550

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Outdoor Temperature	62101	Industrial	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (10m Probe Height)
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Outdoor Temperature	62101	Industrial	3	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (2m Probe Height)
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Outdoor Temperature Diff	62106	Industrial	1	☐	1	N/A	MET	116	Temp Diff deg C	041	Instrumental: Elect or Mach Avg Lev 2-Lev1	Other (10m - 2m Probe Heights)
Relative Humidity	62201	Industrial	1	☐	1	N/A	MET	019	%humidity	061	Met One 083D	Other
Std Dev Hz Wind Direction	61106	Industrial	1	☐	1	N/A	MET	014	deg	063	Arithmetic Standard Deviation	Other (10m Tower)
Std Dev Vt Wind Direction	61107	Industrial	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Wind Direction - Resultant	61104	Industrial	1	☐	1	N/A	MET	014	deg	020	Vector Summation	Other (10m Tower)
Wind Direction - Scalar	61102	Industrial	1	☐	1	N/A	MET	014	deg	063	Climatronics	Other (10m Tower)
Wind Speed - Resultant	61103	Industrial	1	☐	1	N/A	MET	011	m/s	020	Vector Summation	Other (10m Tower)

Wind Speed - Scalar	61101	Industrial	1	☐	1	N/A	MET	011	m/s	063	Climatronics	Other (10m Tower)
Wind Speed - Vertical	61109	Industrial	1	☐	1	N/A	MET	011	m/s	020	Electronic Averaging	Other (10m Tower)
WS - Sigma Theta (Vertical)	61110	Industrial	1	☐	1	N/A	MET	011	m/s	020	Arithmetic Standard Deviation	Other (10m Tower)

Labadie, Southwest

AQS Site Number **29-071-9002**

870 Albertina Lane, Labadie, MO 63055

Latitude: 38.52825 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.86301 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 630

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented

Labadie, Valley Site

AQS Site Number **29-071-9001**

2901 Labadie Bottom Road, Labadie, MO 63055

Latitude: 38.572522 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.796911 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 525

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Barometric Pressure	64101	Industrial	1	☐	1	N/A	MET	016	Millbars	015	Instrumental- Barometric Press Transducer	Other
Outdoor Temperature	62101	Industrial	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (10m Probe Height)
Outdoor Temperature	62101	Industrial	3	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (2m Probe Height)
Outdoor Temperature Diff	62106	Industrial	1	☐	1	N/A	MET	116	Temp Diff deg C	041	Instrumental: Elect or Mach Avg Lev 2-Lev1	Other (10m - 2m Probe Heights)
Precipitation	65102	Industrial	1	☐	1	N/A	MET	021	inches	014	Heated Tipping Bucket	Other
Relative Humidity	62201	Industrial	1	☐	1	N/A	MET	019	%humidity	061	Met One 083D	Other
Solar Radiation	63301	Industrial	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental- Pyranometer	Other
Std Dev Hz Wind Direction	61106	Industrial	1	☐	1	N/A	MET	014	deg	063	Arithmetic Standard Deviation	Other (10m Tower)
Std Dev Vt Wind Direction	61107	Industrial	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)

Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Wind Direction - Resultant	61104	Industrial	1	☐	1	N/A	MET	014	deg	020	Vector Summation	Other (10m Tower)
Wind Direction - Scalar	61102	Industrial	1	☐	1	N/A	MET	014	deg	063	Climatronics	Other (10m Tower)
Wind Speed - Resultant	61103	Industrial	1	☐	1	N/A	MET	011	m/s	020	Vector Summation	Other (10m Tower)
Wind Speed - Scalar	61101	Industrial	1	☐	1	N/A	MET	011	m/s	063	Climatronics	Other (10m Tower)
Wind Speed - Vertical	61109	Industrial	1	☐	1	N/A	MET	011	m/s	020	Electronic Averaging	Other (10m Tower)
WS - Sigma Theta (Vertical)	61110	Industrial	1	☐	1	N/A	MET	011	m/s	020	Arithmetic Standard Deviation	Other (10m Tower)

Rush Island, Fults-Site, IL

AQS Site Number **17-133-9001**

Off Ivy Road, Fults, IL 62244

Latitude: 38.15908 **AQCR:** 138 SE Missouri

Longitude: -90.22728 **MSA:** 0000 Not in a MSA

Elevation (ft): 446

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Barometric Pressure	64101	Industrial	1	☐	1	N/A	MET	016	Millbars	015	Instrumental-Barometric Press Transducer	Other
Outdoor Temperature	62101	Industrial	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (10m Probe Height)
Outdoor Temperature	62101	Industrial	3	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (2m Probe Height)
Outdoor Temperature Diff	62106	Industrial	1	☐	1	N/A	MET	116	Temp Diff deg C	041	Instrumental: Elect or Mach Avg Lev 2-Lev1	Other (10m - 2m Probe Heights)
Precipitation	65102	Industrial	1	☐	1	N/A	MET	021	inches	014	Heated Tipping Bucket	Other
Relative Humidity	62201	Industrial	1	☐	1	N/A	MET	019	%humidity	061	Met One 083D	Other
Solar Radiation	63301	Industrial	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other

Std Dev Hz Wind Direction	61106	Industrial	1	☐	1	N/A	MET	014	deg	063	Arithmetic Standard Deviation	Other (10m Tower)
Std Dev Vt Wind Direction	61107	Industrial	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Wind Direction - Resultant	61104	Industrial	1	☐	1	N/A	MET	014	deg	020	Vector Summation	Other (10m Tower)
Wind Direction - Scalar	61102	Industrial	1	☐	1	N/A	MET	014	deg	063	Climatronics	Other (10m Tower)
Wind Speed - Resultant	61103	Industrial	1	☐	1	N/A	MET	011	m/s	020	Vector Summation	Other (10m Tower)
Wind Speed - Scalar	61101	Industrial	1	☐	1	N/A	MET	011	m/s	063	Climatronics	Other (10m Tower)
Wind Speed - Vertical	61109	Industrial	1	☐	1	N/A	MET	011	m/s	020	Electronic Averaging	Other (10m Tower)

WS - Sigma Theta (Vertical)	61110	Industrial	1	☐	1	N/A	MET	011	m/s	020	Arithmetic Standard Deviation	Other (10m Tower)
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Rush Island, Johnson Tall Tower AQS Site Number 29-099-9008

600 Johnson Rd., Festus, MO 63028

Latitude: 38.11999 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.28214 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 656

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State- Obj	AQS Unit- Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Outdoor Temperature	62101	Industrial	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (62.5m Probe Height)
Outdoor Temperature	62101	Industrial	3	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (132.5m Probe Height)
Outdoor Temperature Diff	62106	Industrial	1	☐	1	N/A	MET	116	Temp Diff deg C	041	Instrumental: Elect or Mach Avg Lev 2-Lev1	Other (132.5m- 62.5m Probe Heights)
Std Dev Hz Wind Direction	61106	Industrial	1	☐	1	N/A	MET	014	deg	063	Arithmetic Standard Deviation	Other (132.5m, 15 min)
Std Dev Hz Wind Direction	61106	Industrial	2	☐	1	N/A	MET	014	deg	063	Arithmetic Standard Deviation	Other (132.5m, 60 min)
Std Dev Hz Wind Direction	61106	Industrial	3	☐	1	N/A	MET	014	deg	063	Arithmetic Standard Deviation	Other (62.5m, A-15 min)
Std Dev Hz Wind Direction	61106	Industrial	4	☐	1	N/A	MET	014	deg	063	Arithmetic Standard Deviation	Other (62.5m, A-60 min)

Std Dev Hz Wind Direction	61106	Industrial	5	☐	1	N/A	MET	014	deg	063	Arithmetic Standard Deviation	Other (62.5m, B-15 min)
Std Dev Hz Wind Direction	61106	Industrial	6	☐	1	N/A	MET	014	deg	063	Arithmetic Standard Deviation	Other (62.5m, B-60 min)
Std Dev Vt Wind Direction	61107	Industrial	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (132.5m, 15 min)
Std Dev Vt Wind Direction	61107	Industrial	2	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (132.5m, 60min)
Std Dev Vt Wind Direction	61107	Industrial	3	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (62.5m, A-15 min)
Std Dev Vt Wind Direction	61107	Industrial	4	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (62.5m, A-60min)
Std Dev Vt Wind Direction	61107	Industrial	5	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (62.5m, B-15 min)
Std Dev Vt Wind Direction	61107	Industrial	6	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (62.5m B. 60 min)
Wind Direction - Resultant	61104	Industrial	1	☐	1	N/A	MET	014	deg	020	Vector Summation	Other (132.5m Probe Height)
Wind Direction - Resultant	61104	Industrial	2	☐	1	N/A	MET	014	deg	020	Vector Summation	Other (62.5m Probe Height)

Wind Direction - Resultant	61104	Industrial	3	☐	1	N/A	MET	014	deg	020	Vector Summation	Other (62.5m Probe Height)
Wind Direction - Scalar	61102	Industrial	1	☐	1	N/A	MET	014	deg	063	Climatronics	Other (132.5m Probe Height)
Wind Direction - Scalar	61102	Industrial	2	☐	1	N/A	MET	014	deg	063	Climatronics	Other (62.5m Probe Height)
Wind Direction - Scalar	61102	Industrial	3	☐	1	N/A	MET	014	deg	063	Climatronics	Other (62.5m Probe Height)
Wind Speed - Resultant	61103	Industrial	1	☐	1	N/A	MET	011	m/s	020	Vector Summation	Other (132.5m Probe Height)
Wind Speed - Resultant	61103	Industrial	2	☐	1	N/A	MET	011	m/s	020	Vector Summation	Other (62.5m Probe Height)
Wind Speed - Resultant	61103	Industrial	3	☐	1	N/A	MET	011	m/s	020	Vector Summation	Other (62.5m Probe Height)
Wind Speed - Scalar	61101	Industrial	1	☐	1	N/A	MET	011	m/s	063	Climatronics	Other (132.5m Probe Height)
Wind Speed - Scalar	61101	Industrial	2	☐	1	N/A	MET	011	m/s	063	Climatronics	Other (62.5m Probe Height)
Wind Speed - Scalar	61101	Industrial	3	☐	1	N/A	MET	011	m/s	063	Climatronics	Other (62.5m Probe Height)

Wind Speed - Vertical	61109	Industrial	1	☐	1	N/A	MET	011	m/s	020	Electronic Averaging	Other (132.5m Probe Height)
Wind Speed - Vertical	61109	Industrial	2	☐	1	N/A	MET	011	m/s	020	Electronic Averaging	Other (62.5m Probe Height)
Wind Speed - Vertical	61109	Industrial	3	☐	1	N/A	MET	011	m/s	020	Electronic Averaging	Other (62.5m Probe Height)
WS - Sigma Theta (Vertical)	61110	Industrial	1	☐	1	N/A	MET	011	m/s	020	Arithmetic Standard Deviation	Other (132.5m Probe Height)
WS - Sigma Theta (Vertical)	61110	Industrial	2	☐	1	N/A	MET	011	m/s	020	Arithmetic Standard Deviation	Other (62.5m Probe Height)
WS - Sigma Theta (Vertical)	61110	Industrial	3	☐	1	N/A	MET	011	m/s	020	Arithmetic Standard Deviation	Other (62.5m Probe Height)

Rush Island, Natchez

AQS Site Number29-099-9009

917 Natchez Trace Drive, Bloomsdale, MO 63627

Latitude: 38.10525 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.29842 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 505

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented

802 Weaver Road, Festus, MO 63028

Latitude: 38.144972 AQCR: 070 Metropolitan St. Louis

Longitude: -90.304783 MSA: 7040 St. Louis, MO-IL

Elevation (ft): 502

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented

Doe Run Buick (PQAO - 1288)

County Road 75

AQS Site Number **29-093-9010**

98 Iron County Road, Bixby, MO 65439

Latitude: 37.64876 **AQCR:** 138 SE Missouri

Longitude: -91.14980 **MSA:** 0000 Not in a MSA

Elevation (ft): 1365

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
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Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
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Doe Run Buick - Buick NE (Pb sampling to change to 1in1)

AQS Site Number **29-093-9008**

346 Power Lane, Bixby West, MO 65439

Latitude: 37.65214 **AQCR:** 138 SE Missouri

Longitude: -91.11689 **MSA:** 0000 Not in a MSA

Elevation (ft): 1423

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Lead (TSP) - LC FRM/FEM 14129		Industrial	1	☐	1/6	MID	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented
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Doe Run Buick - North #5 (NON-A)

AQS Site Number **29-093-0021**

Doe Run Buick - North#5, Buick, MO 65439

Latitude: 37.65178 **AQCR:** 138 SE Missouri

Longitude: -91.13094 **MSA:** 0000 Not in a MSA

Elevation (ft): 1443

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Lead (TSP) - LC FRM/FEM 14129	Industrial	1	☐	1/6	MID	SIP	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented
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Doe Run Buick - South #1 (NON-A)

AQS Site Number **29-093-0016**

Doe Run Buick - South#1, Buick, MO 65439

Latitude: 37.62400 **AQCR:** 138 SE Missouri

Longitude: -91.12827 **MSA:** 0000 Not in a MSA

Elevation (ft): 1502

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Lead (TSP) - LC FRM/FEM 14129	Industrial	1	☐	1/6	MID	SIP	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented
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Lead (TSP) - LC FRM/FEM 14129	Industrial	2	☒	1/6	MID	SIP	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Quality Assurance (Collocation)
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Hwy 32 Northeast

AQS Site Number **29-093-9009**

1582 Highway 32, Bixby, MO 65439

Latitude: 37.65319 **AQCR:** 138 SE Missouri

Longitude: -91.12795 **MSA:** 0000 Not in a MSA

Elevation (ft): 1384

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
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Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
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West Entrance

AQS Site Number29-093-9011

18594 Hwy KK, Boss, MO 65440

Latitude: 37.63211 **AQCR:** 138 SE Missouri

Longitude: -91.13565 **MSA:** 0000 Not in a MSA

Elevation (ft): 1463

<i>Pollutant</i>	<i>AQS Code</i>	<i>AQS Monitor Type</i>	<i>AQS POC</i>	<i>Coll</i>	<i>AQS Freq</i>	<i>AQS Scale</i>	<i>State- Obj</i>	<i>AQS Unit- Code</i>	<i>AQS Unit</i>	<i>AQS Method Code</i>	<i>AQS Method</i>	<i>AQS Monitor Objective</i>
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Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
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Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
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Doe Run Glover (PQAO - 1289)

Doe Run Glover - Big Creek #5 (NON-A)

AQS Site Number **29-093-0029**

Doe Run Glover - Big Creek #5, Hwy 49 Glover, MO 65439

Latitude: 37.47211 **AQCR:** 138 SE Missouri

Longitude: -90.68919 **MSA:** 0000 Not in a MSA

Elevation (ft): 836

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Lead (TSP) - LC FRM/FEM 14129	Industrial	1	☐	1/6	MID	SIP	105	ug/m^3-LC	189	Inter-Mountain Lab, Inc Mass Spectra ICAP	Source Oriented
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Doe Run Glover - Post Office #2 (NON-A)

AQS Site Number **29-093-0027**

Doe Run Glover - Post Office #2, Hwy 49 Glover, MO 65439

Latitude: 37.48532 **AQCR:** 138 SE Missouri

Longitude: -90.68991 **MSA:** 0000 Not in a MSA

Elevation (ft): 831

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Lead (TSP) - LC FRM/FEM 14129	Industrial	1	☐	1/6	MID	SIP	105	ug/m^3-LC	189	Inter-Mountain Lab, Inc Mass Spectra ICAP	Source Oriented
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Lead (TSP) - LC FRM/FEM 14129	Industrial	2	☒	1/6	MID	SIP	105	ug/m^3-LC	189	Inter-Mountain Lab, Inc Mass Spectra ICAP	Quality Assurance (Collocation)
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Doe Run Herculaneum (PQAO - 1290)

Herculaneum, Church Street (NON-A)

AQS Site Number **29-099-0024**

951 Church St., Herculaneum, MO 63048

Latitude: 38.258667 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.380889 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 463

Pollutant	AQS Code	AQS Monitor Type	AQS POC	AQS Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Lead (TSP) - LC FRM/FEM 14129	Industrial	1	☐	1/6	NBR	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented
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Lead (TSP) - LC FRM/FEM 14129	Industrial	2	☒	1/6	NBR	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Quality Assurance (Collocation)
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Herculaneum, City Hall (Mott Street)

AQS Site Number **29-099-0020**

360 Short Street, Herculaneum, MO, 63048

Latitude: 38.263394 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.379667 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 468

Pollutant	AQS Code	AQS Monitor Type	AQS POC	AQS Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Lead (TSP) - LC FRM/FEM 14129	Industrial	1	☐	1/1	MID	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented & Highest Concentration
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Lead (TSP) - LC FRM/FEM 14129	Industrial	2	☒	1/3	MID	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Quality Assurance (Collocation)
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Herculaneum, Dunklin High School

AQS Site Number **29-099-9002**

1 Black Cat Dr., Herculaneum, MO, 63048

Latitude: 38.26703 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.37875 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 445

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Lead (TSP) - LC FRM/FEM 14129	Industrial	1	☐	1/3	NBR	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented & Population Exposure
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Herculaneum, North Cross

AQS Site Number **29-099-0023**

North Cross, Herculaneum, MO 63048

Latitude: 38.26216 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.38126 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 463

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Lead (TSP) - LC FRM/FEM 14129	Industrial	1	☐	1/1	NBR	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented & Population Exposure
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Herculaneum, Sherman

AQS Site Number **29-099-9004**

460 Sherman St., Herculaneum, MO, 63048

Latitude: 38.27170 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.37658 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 462

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Lead (TSP) - LC FRM/FEM 14129	Industrial	1	☐	1/6	NBR	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented
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Environmental Services Program (ESP) [PQAO - 0588]

Alba

AQS Site Number **29-097-0004**

20400 Millwood Rd., Alba, MO 64755

Latitude: 37.2385 **AQCR:** 139 SW Missouri

Longitude: -94.42468 **MSA:** 3710 Joplin, MO

Elevation (ft): 965

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration & Population Exposure
Ozone	44201	SLAMS	2	☒	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-

Arnold West

AQS Site Number **29-099-0019**

1709 Lonedell Dr., Arnold, MO 63010

Latitude: 38.44862 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.3958 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 639

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Ammonium Ion PM2.5 LC	88301	SLAMS	6	☐	1/6	NBR	RES	105	ug/m^3-LC	812	Met One SASS Nylon	Population Exposure (UC-Davis)

Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
OP CSN_Rev Undj PM2.5 LC TOR	88378	SLAMS	6	☐	1/6	NBR	RES	105	ug/m^3-LC	842	URG 3000N w/Pall Quartz filter & Cyclone Inlet	Population Exposure (UC-Davis)
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	SLAMS	2	☒	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-
PM10 - LC/FEM/NonFEM	85101	SPM	5	☐	1	NBR	COM	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM10 - STP FRM/FEM	81102	SLAMS	3	☐	1	NBR	COM	001	ug/m^3	079	R&P SA246B TEOM	Population Exposure
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	182	FDMS-Gravimetric 1405-DF	Population Exposure

PM2.5 Tot Atmospheric	88500	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM2.5 Volatile Channel	88503	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PMCoarse - LC FRM/FEM	86101	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	207	FDMS-Gravimetric 1405-DF	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	Other (10m Tower)

Blair Street

AQS Site Number **29-510-0085**

3247 Blair Street, St. Louis, MO 63107

Latitude: 38.65638 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.19825 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 492

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Ammonium Ion PM2.5 LC	88301	SLAMS	6	☐	1/3	NBR	RES	105	ug/m^3-LC	812	Met One SASS Nylon	Highest Concentration (UC-Davis)

Barometric Pressure	64101	SLAMS	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Black Carbon PM2.5 LC	88313	SLAMS	1	☐	1	NBR	RES	105	ug/m^3-LC	894	Magee Scientific TAPI M633 Aethalometer	Population Exposure
Carbon Monoxide	42101	NCORE	1	☐	1	NBR	COM	007	ppm	055	Gas Filter Corr Thermo Electron 48C-TL	Population Exposure
Indoor Temperature	62107	SLAMS	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other (Large Shelter)
Indoor Temperature	62107	SLAMS	2	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other (Small Shelter)
Lead PM10 LC - FRM/FEM 85129		SLAMS	6	☐	1/6	NBR	RES	108	ng/m^3-LC	907	R&P Partisol 2025 Teflon	Population Exposure (ERG)
Lead PM10 LC - FRM/FEM 85129		SLAMS	7	☒	1/6	NBR	RES	108	ng/m^3-LC	907	R&P Partisol 2025 Teflon	Population Exposure (ERG)
Nitric Oxide	42601	NCORE	1	☐	1	NBR	COM	008	ppb	699	Teledyne API 200 EU/501	Population Exposure
Nitric Oxide	42601	SLAMS	2	☐	1	NBR	COM	008	ppb	200	Teledyne API T200UP Photolytic	Population Exposure
Nitrogen Dioxide	42602	SLAMS	2	☐	1	NBR	COM	008	ppb	200	Teledyne API T200UP Photolytic	Population Exposure

OP CSN_Rev Undj PM2.5 LC TOR	88378	SLAMS	6	☐	1/3	NBR	RES	105	ug/m^3-LC	842	URG 3000N w/Pall Quartz filter & Cyclone Inlet	Highest Concentration (UC-Davis)
Outdoor Temperature	62101	NCORE	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Oxides of Nitrogen	42603	SLAMS	2	☐	1	NBR	COM	008	ppb	200	Teledyne API T200UP Photolytic	Population Exposure
Ozone	44201	NCORE	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	NCORE	2	☒	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-
PM10 - LC/FEM/NonFEM	85101	SLAMS	1	☐	1/3	NBR	COM	105	ug/m^3-LC	127	Lo-Vol R&P 2025 Sequential	Population Exposure
PM10 - LC/FEM/NonFEM	85101	SLAMS	5	☐	1	NBR	COM	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM10 - LC/FEM/NonFEM	85101	SLAMS	6	☐	H	NBR	COM	105	ug/m^3-LC	239	Teledyne API T640x	Population Exposure
PM10 - STP FRM/FEM	81102	SLAMS	1	☐	1/3	NBR	COM	001	ug/m^3	127	Lo-Vol R&P 2025 Sequential	Population Exposure
PM10 - STP FRM/FEM	81102	SLAMS	6	☐	H	NBR	COM	001	ug/m^3	239	Teledyne API T640x	Population Exposure

PM2.5 - LC FRM/FEM	88101	NCORE	2	☐	1/3	NBR	COM	105	ug/m^3-LC	145	R&P 2025 Sequential w/VSCC	Quality Assurance (Collocation)
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	182	FMDS- Gravimetric DF	Population 1405- Exposure
PM2.5 Tot Atmospheric	88500	SLAMS	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FMDS- Gravimetric DF	Population 1405- Exposure
PM2.5 Volatile Channel	88503	SLAMS	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FMDS- Gravimetric DF	Population 1405- Exposure
PMCoarse - LC FRM/FEM	86101	SLAMS	2	☐	1/3	NBR	COM	105	ug/m^3-LC	176	Thermo 2025 Sequential PM2.5	Population PM10- Exposure
PMCoarse - LC FRM/FEM	86101	SLAMS	6	☐	H	NBR	COM	105	ug/m^3-LC	240	Teledyne API T640x	Population Exposure
PMCoarse - LC FRM/FEM	86101	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	207	FMDS- Gravimetric DF	Population 1405- Exposure
Reactive Oxides of N (NOY)	42600	NCORE	1	☐	1	NBR	COM	008	ppb	699	Teledyne API 200 EU/501	Population Exposure
Relative Humidity	62201	NCORE	1	☐	1	N/A	MET	019	%humidity	014	Instrumental- Hygrometer C94 Probe	Other
Solar Radiation	63301	SLAMS	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental- Pyranometer	Other

Std Dev Hz Wind Direction	61106	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
Sulfur Dioxide	42401	NCORE	1	☐	1	NBR	COM	008	ppb	560	Pulsed Fluorescent 43i-TLE	Population Exposure
Sulfur Dioxide Max 5-min Avg	42406	NCORE	1	☐	1	NBR	COM	008	ppb	560	Pulsed Fluorescent	Population Exposure
UV Carbon PM2.5 LC	88314	SLAMS	1	☐	1	NBR	RES	105	ug/m^3-LC	894	Magee Scientific TAPI M633 Aethalometer	Population Exposure
Wind Direction - Resultant	61104	NCORE	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)
Wind Speed - Resultant	61103	NCORE	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Blue Ridge, I-70 AQS Site Number 29-095-0042

4018 Harvard Lane, Kansas City, MO 64133

Latitude: 39.047911 **AQCR:** 094 Metropolitan Kansas City

Longitude: -94.450513 **MSA:** 3760 Kansas City, MO-KS

Elevation (ft): 960

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other

Black Carbon PM2.5 LC	88313	SPM	1	☐	1	MIC	COM	105	ug/m^3-LC	894	Magee Scientific TAPI M633 Aethalometer	Source Oriented
Carbon Monoxide	42101	SLAMS	1	☐	1	MIC	COM	007	ppm	055	Gas Filter Corr Thermo Electron 48C-TL	Source Oriented
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Nitric Oxide	42601	SPM	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescen ce	Source Oriented
Nitrogen Dioxide	42602	SLAMS	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescen ce	Source Oriented
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Outdoor Temperature	62101	SPM	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (10m Probe Height)
Outdoor Temperature	62101	SPM	3	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (2m Probe Height)
Outdoor Temperature Diff	62106	SPM	1	☐	1	N/A	MET	116	Temp Diff deg C	041	Instrumental: Elect or Mach Avg Lev 2-Lev1	Other
Oxides of Nitrogen	42603	SPM	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescen ce	Source Oriented

PM10 - LC/FEM/NonFEM	85101	SPM	5	☐	1	MIC	COM	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Source Oriented
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	MIC	COM	105	ug/m^3-LC	182	FDMS-Gravimetric 1405-DF	Source Oriented
PM2.5 Tot Atmospheric	88500	SPM	1	☐	1	MIC	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Source Oriented
PM2.5 Volatile Channel	88503	SPM	1	☐	1	MIC	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Source Oriented
PMCoarse - LC FRM/FEM	86101	SLAMS	8	☐	1	MIC	COM	105	ug/m^3-LC	207	FDMS-Gravimetric 1405-DF	Source Oriented
Precipitation	65102	SPM	1	☐	1	N/A	MET	021	inches	014	Heated Tipping Bucket	Other
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Solar Radiation	63301	SPM	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other
Std Dev Hz Wind Direction	61106	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)

UV Carbon PM2.5 LC	88314	SPM	1	☐	1	MIC	COM	105	ug/m^3-LC	894	Magee Scientific TAPI M633 Aethalometer	Source Oriented
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Bonne Terre AQS Site Number 29-186-0005

15797 Highway D, Bonne Terre, MO 63628

Latitude: 37.90084 **AQCR:** 138 SE Missouri

Longitude: -90.42388 **MSA:** 0000 Not in a MSA

Elevation (ft): 840

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State- Obj	AQS Unit- Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	REG	COM	007	ppm	047	Ultraviolet Photometric	Regional Transport
Ozone	44201	SLAMS	2	☒	1	REG	COM	007	ppm	047	Ultraviolet Photometric	-
Solar Radiation	63301	SPM	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental- Pyranometer	Other

Branch Street**AQS Site Number 29-510-0093**

100 Branch St., St. Louis, MO 63102

Latitude: 38.65643 **AQCR:** 070 Metropolitan St. Louis**Longitude:** -90.18977 **MSA:** 7040 St. Louis, MO-IL**Elevation (ft):** 429

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
PM10 - LC/FEM/NonFEM	85101	SPM	5	☐	1	MID	COM	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Source Oriented
PM10 - STP FRM/FEM	81102	SLAMS	3	☐	1	MID	COM	001	ug/m^3	079	R&P SA246B TEOM	Source Oriented
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	MID	COM	105	ug/m^3-LC	182	FDMS-Gravimetric 1405-DF	Source Oriented
PM2.5 Tot Atmospheric	88500	SPM	1	☐	1	MID	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Source Oriented

PM2.5 Volatile Channel	88503	SPM	1	☐	1	MID	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Source Oriented
PMCoarse - LC FRM/FEM	86101	SLAMS	8	☐	1	MID	COM	105	ug/m^3-LC	207	FDMS-Gravimetric 1405-DF	Source Oriented
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Std Dev Hz Wind Direction	61106	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Buick NE

AQS Site Number 29-093-0034

346 Power Lane, Bixby West, MO 65439

Latitude: 37.65212 **AQCR:** 138 SE Missouri

Longitude: -91.11653 **MSA:** 0000 Not in a MSA

Elevation (ft): 1423

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
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Lead (TSP) - LC FRM/FEM 14129	SLAMS	1	☐	1/6	MID	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented & Highest Concentration	
Lead (TSP) - LC FRM/FEM 14129	SLAMS	2	☒	1/6	MID	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Quality Assurance (Collocation)	
Sulfur Dioxide	42401	SPM	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	SPM	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (6 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (6 meters)

Carthage

AQS Site Number29-097-0003

530 Juniper, Carthage, MO 64836

Latitude: 37.19822 AQCR: 139 SW Missouri

Longitude: -94.31702 MSA: 3710 Joplin, MO

Elevation (ft): 986

Elevation (ft): 500

<i>Pollutant</i>	<i>AQS Code</i>	<i>AQS Monitor Type</i>	<i>AQS POC Coll</i>	<i>AQS Freq</i>	<i>AQS Scale</i>	<i>State-Obj</i>	<i>AQS Unit-Code</i>	<i>AQS Unit</i>	<i>AQS Method Code</i>	<i>AQS Method</i>	<i>AQS Monitor Objective</i>	
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other

PM10 - STP FRM/FEM	81102	SLAMS	3	☐	1	MID	COM	001	ug/m^3	079	R&P SA246B TEOM	Source Oriented
PM10 - STP FRM/FEM	81102	SLAMS	4	☒	1	MID	COM	001	ug/m^3	079	R&P SA246B TEOM	Quality Assurance (Collocation)
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (5.5 meters)

El Dorado Springs

AQS Site Number **29-039-0001**

Highway 97 & Barnes Road, El Dorado Springs, MO 64744

Latitude: 37.70097 **AQCR:** 139 SW Missouri

Longitude: -94.03474 **MSA:** 0000 Not in a MSA

Elevation (ft): 965

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)

Ozone	44201	SLAMS	1	☐	1	REG	COM	007	ppm	047	Ultraviolet Photometric	Regional Transport
Ozone	44201	SLAMS	2	☒	1	REG	COM	007	ppm	047	Ultraviolet Photometric	-
PM10 - LC/FEM/NonFEM	85101	SPM	5	☐	1	REG	COM	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Regional Transport
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	REG	COM	105	ug/m^3-LC	182	FDMS-Gravimetric 1405-DF	Regional Transport
PM2.5 Tot Atmospheric	88500	SPM	1	☐	1	REG	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Regional Transport
PM2.5 Volatile Channel	88503	SPM	1	☐	1	REG	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Regional Transport
PMCoarse - LC FRM/FEM	86101	SLAMS	8	☐	1	REG	COM	105	ug/m^3-LC	207	FDMS-Gravimetric 1405-DF	Regional Transport
Relative Humidity	62201	SPM	2	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	Other (5.5 meters)

Wind Speed - Resultant 61103 SPM 1 ☐ 1 N/A MET 012 mph 067 Instrumental: RM Young Model 05103 Other (5.5 meters)

Farrar

AQS Site Number **29-157-0001**

County Rd. 342, Farrar, MO 63746

Latitude: 37.70264 **AQCR:** 138 SE Missouri

Longitude: -89.698640 **MSA:** 0000 Not in a MSA

Elevation (ft): 497

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration & Extreme Downwind
Ozone	44201	SLAMS	2	☒	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-

Fellows Lake

AQS Site Number **29-077-0042**

4208 E. Farm Rd. 66, Springfield, MO 65803

Latitude: 37.31912 **AQCR:** 139 SW Missouri

Longitude: -93.20422 **MSA:** 7920 Springfield, MO

Elevation (ft): 1346

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other

Ozone	44201	SLAMS	1	☐	1	URB	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration & Population Exposure
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Ozone	44201	SLAMS	2	☒	1	URB	COM	007	ppm	047	Ultraviolet Photometric	-
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Finger Lakes AQS Site Number 29-019-0011

1505 E. Peabody Road, Columbia, MO 65202

Latitude: 39.07803 **AQCR:** 137 Northern Missouri

Longitude: -92.31632 **MSA:** 1740 Columbia, MO

Elevation (ft): 726

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
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Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration & Population Exposure
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Ozone	44201	SLAMS	2	☒	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-
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Fletcher AQS Site Number 29-179-0002

Forest Rd. 2236, Westfork, MO 64498

Latitude: 37.46889 **AQCR:** 138 SE Missouri

Longitude: -91.08847 **MSA:** 0000 Not in a MSA

Elevation (ft): 1256

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Lead (TSP) - LC FRM/FEM 14129 SLAMS 1 ☐ 1/6 NBR COM 105 ug/m^3-LC 813 Inductively Coupled Plasma Mass Spectroscopy Source Oriented

Foley West AQS Site Number 29-113-0004

2100 Highway Y Foley, MO 63347

Latitude: 39.04577 **AQCR:** 137 Northern Missouri

Longitude: -90.84927 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 715

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Extreme Downwind

Ozone	44201	SLAMS	2	☒	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-
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Forest City, Exide Levee AQS Site Number 29-087-0008

300 S. Washington St., Oregon MO, 64473

Latitude: 40.027222 **AQCR:** 137 Northern Missouri

Longitude: -95.235833 **MSA:** 0000 Not in a MSA

Elevation (ft): 904

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Lead (TSP) - LC FRM/FEM 14129	SLAMS	1	☐	1/6	MID	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented
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Forest Park

AQS Site Number **29-510-0094**

5600 Clayton Avenue, St. Louis, MO 63110

Latitude: 38.63114 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.28115 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 551

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Black Carbon PM2.5 LC	88313	SPM	1	☐	1	MIC	COM	105	ug/m^3-LC	894	Magee Scientific TAPI M633 Aethalometer	Source Oriented
Carbon Monoxide	42101	SLAMS	1	☐	1	MIC	COM	007	ppm	055	Gas Filter Corr Thermo Electron 48C-TL	Source Oriented
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Nitric Oxide	42601	SPM	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented
Nitrogen Dioxide	42602	SLAMS	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)

Outdoor Temperature	62101	SPM	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (10m Probe Height)
Outdoor Temperature	62101	SPM	3	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (2m Probe Height)
Outdoor Temperature Diff	62106	SPM	1	☐	1	N/A	MET	116	Temp Diff deg C	041	Instrumental: Elect or Mach Avg Lev 2-Lev1	Other (10m - 2m Probe Height)
Oxides of Nitrogen	42603	SPM	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented
PM10 - LC/FEM/NonFEM	85101	SPM	5	☐	1	MIC	COM	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Source Oriented
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	MIC	COM	105	ug/m^3-LC	182	FDMS-Gravimetric 1405-DF	Source Oriented
PM2.5 Tot Atmospheric	88500	SPM	1	☐	1	MIC	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Source Oriented
PM2.5 Volatile Channel	88503	SPM	1	☐	1	MIC	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Source Oriented
PMCoarse - LC FRM/FEM	86101	SLAMS	8	☐	1	MIC	COM	105	ug/m^3-LC	207	FDMS-Gravimetric 1405-DF	Source Oriented

Precipitation	65102	SPM	1	☐	1	N/A	MET	021	inches	014	Heated Tipping Bucket	Other
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Solar Radiation	63301	SLAMS	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other
Std Dev Hz Wind Direction	61106	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
UV Carbon PM2.5 LC	88314	SPM	1	☐	1	MIC	COM	105	ug/m^3-LC	894	Magee Scientific TAPI M633 Aethalometer	Source Oriented
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Front Street

AQS Site Number **29-095-0018**

1331 N. Jackson, Kansas City, MO 64120

Latitude: 39.13198 **AQCR:** 094 Metropolitan Kansas City

Longitude: -94.53128 **MSA:** 3760 Kansas City, MO-KS

Elevation (ft): 728

Pollutant	AQS Code	AQS Monitor Type	AQS POC	AQS Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
PM10 - STP FRM/FEM	81102	SLAMS	3	☐	1	NBR	COM	001	ug/m^3	079	R&P SA246B TEOM	Highest Concentration & Population Exposure

Glover (Proposed to be discontinued) AQS Site Number **29-093-0033**

Highway 49, approx. 0.4m South Highways 21/49/72 Intersection, Glover, 63620

Latitude: 37.48966 **AQCR:** 138 SE Missouri

Longitude: -90.69246 **MSA:** 0000 Not in a MSA

Elevation (ft): 912

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Lead (TSP) - LC FRM/FEM 14129	SLAMS	1	☐	1/6	NBR	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Other
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Herculaneum, Dunklin High School AQS Site Number **29-099-0005**

1 Black Cat Dr., Herculaneum, MO, 63048

Latitude: 38.26703 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.37875 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 445

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Lead (TSP) - LC FRM/FEM 14129	SLAMS	1	☐	1/6	NBR	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented
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Herculaneum, Mott Street

AQS Site Number **29-099-0027**

360 Short Street, Herculaneum, MO, 63048

Latitude: 38.263394 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.379667 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 468

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Lead (TSP) - LC FRM/FEM 14129		SLAMS	1	☐	1/1	MID	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented & Highest Concentration
Lead (TSP) - LC FRM/FEM 14129		SLAMS	2	☒	1/3	MID	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Quality Assurance (Collocation)
Sulfur Dioxide	42401	SLAMS	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented & Highest Concentration
Sulfur Dioxide Max 5-min Avg	42406	SPM	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented & Highest Concentration
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	Other (5.5 meters)

Herculaneum, Sherman

AQS Site Number **29-099-0013**

460 Sherman St., Herculaneum, MO, 63048

Latitude: 38.27170 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.37658 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 462

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Lead (TSP) - LC FRM/FEM 14129		SLAMS	1	☐	1/6	NBR	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented

Hillcrest High School

AQS Site Number **29-077-0036**

3319 N. Grant, Springfield, MO 65803

Latitude: 37.25607 **AQCR:** 139 SW Missouri

Longitude: -93.29970 **MSA:** 7920 Springfield, MO

Elevation (ft): 1321

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Ozone	44201	SLAMS	1	☐	1	URB	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure

Ozone	44201	SLAMS	2	☒	1	URB	COM	007	ppm	047	Ultraviolet Photometric	-
PM10 - LC/FEM/NonFEM	85101	SPM	5	☐	1	NBR	COM	105	ug/m^3-LC	790	FDMS- Gravimetric 1405- DF	Population Exposure
PM10 - STP FRM/FEM	81102	SLAMS	3	☐	1	NBR	COM	001	ug/m^3	079	R&P SA246B TEOM	Population Exposure
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	182	FDMS- Gravimetric 1405- DF	Population Exposure
PM2.5 Tot Atmospheric	88500	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS- Gravimetric 1405- DF	Population Exposure
PM2.5 Volatile Channel	88503	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS- Gravimetric 1405- DF	Population Exposure
PMCoarse - LC FRM/FEM	86101	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	207	FDMS- Gravimetric 1405- DF	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental- Computed (Indirect)	Other

73 Hunter Ave., Ladue, MO 63124

Latitude: 38.65028 **AQCR:** 070 Metropolitan St. Louis**Longitude:** -90.35021 **MSA:** 7040 St. Louis, MO-IL**Elevation (ft):** 511

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
PM2.5 - LC FRM/FEM	88101	SLAMS	1	☐	1	NBR	COM	105	ug/m^3-LC	181	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Population Exposure
PM2.5 - LC FRM/FEM	88101	SLAMS	2	☐	1/6	NBR	COM	105	ug/m^3-LC	145	R&P 2025 Sequential w/VSCC	Quality Assurance (Collocation)
PM2.5 Volatile Channel	88503	SLAMS	1	☐	1	NBR	COM	105	ug/m^3-LC	181	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other

Highway 33 & County Home Rd., Liberty, MO 64068

Latitude: 39.30314 **AQCR:** 094 Metropolitan Kansas City**Longitude:** -94.37678 **MSA:** 3760 Kansas City, MO-KS**Elevation (ft):** 941

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	SLAMS	2	☒	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-
PM10 - LC/FEM/NonFEM	85101	SPM	5	☐	1	NBR	COM	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	182	FDMS-Gravimetric 1405-DF	Population Exposure

PM2.5 Tot Atmospheric	88500	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM2.5 Volatile Channel	88503	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PMCoarse - LC FRM/FEM	86101	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	207	FDMS-Gravimetric 1405-DF	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Solar Radiation	63301	SPM	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other

Margaretta (Proposed to be discontinued)

AQS Site Number29-510-0086

4520 Margaretta, St. Louis, MO 63115

Latitude: 38.673172 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.239086 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 514

Pollutant	AQS Code	AQS Monitor Type	AQS POC	AQS Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Nitric Oxide	42601	SPM	1	☐	1	NBR	COM	008	ppb	074	Chemiluminescence	Population Exposure

Nitrogen Dioxide	42602	SLAMS	1	☐	1	NBR	COM	008	ppb	074	Chemiluminescence	Population Exposure
Oxides of Nitrogen	42603	SPM	1	☐	1	NBR	COM	008	ppb	074	Chemiluminescence	Population Exposure
PM10 - STP FRM/FEM	81102	SLAMS	3	☐	1	MID	COM	001	ug/m^3	079	R&P SA246B TEOM	Population Exposure
Sulfur Dioxide	42401	SLAMS	1	☐	1	NBR	COM	008	ppb	060	Pulsed Fluorescent	Population Exposure
Sulfur Dioxide Max 5-min Avg	42406	SLAMS	1	☐	1	NBR	COM	008	ppb	060	Pulsed Fluorescent	Population Exposure

Mark Twain State Park

AQS Site Number **29-137-0001**

20057 State Park Office Rd., Stoutsville, MO 65283

Latitude: 39.47510 **AQCR:** 137 Northern Missouri

Longitude: -91.78899 **MSA:** 0000 Not in a MSA

Elevation (ft): 710

Pollutant	AQS Code	AQS Monitor Type	AQS POC	AQS Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Nitric Oxide	42601	SPM	1	☐	1	REG	COM	008	ppb	074	Chemiluminescence	General/Background

Nitrogen Dioxide	42602	SPM	1	☐	1	REG	COM	008	ppb	074	Chemiluminescence	General/Background
Oxides of Nitrogen	42603	SPM	1	☐	1	REG	COM	008	ppb	074	Chemiluminescence	General/Background
Ozone	44201	SLAMS	1	☐	1	REG	COM	007	ppm	047	Ultraviolet Photometric	General/Background
Ozone	44201	SLAMS	2	☒	1	REG	COM	007	ppm	047	Ultraviolet Photometric	-
PM10 - STP FRM/FEM	81102	SPM	3	☐	1	REG	SIP	001	ug/m^3	079	R&P SA246B TEOM	General/Background
Sulfur Dioxide	42401	SPM	1	☐	1	REG	SIP	008	ppb	060	Pulsed Fluorescent	General/Background
Sulfur Dioxide Max 5-min Avg	42406	SPM	1	☐	1	NBR	COM	008	ppb	060	Pulsed Fluorescent	General/Background
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Maryland Heights

AQS Site Number **29-189-0014**

13044 Marine Ave., Maryland Heights, MO 63146

Latitude: 38.71085 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.47606 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 607

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
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Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
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Ozone	44201	SLAMS	2	☒	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-
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New Bloomfield

AQS Site Number **29-027-0002**

2625 Meadow Lake View, New Bloomfield, MO, 65063

Latitude: 38.70608 **AQCR:** 137 Northern Missouri

Longitude: -92.09308 **MSA:** 0000 Not in a MSA

Elevation (ft): 860

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
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Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration & Population Exposure
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Ozone	44201	SLAMS	2	☒	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-
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Oates AQS Site Number 29-179-0034

13155 Highway KK, Boss, MO 65440

Latitude: 37.56485 **AQCR:** 138 SE Missouri

Longitude: -91.11423 **MSA:** 0000 Not in a MSA

Elevation (ft): 1134

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Lead (TSP) - LC FRM/FEM 14129	SLAMS	1	☐	1/6	NBR	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented
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Orchard Farm AQS Site Number 29-183-1004

2165 Highway V, St. Charles, MO 63301

Latitude: 38.8994 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.44917 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 441

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
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Ozone	44201	SLAMS	1	☐	1	URB	COM	007	ppm	047	Ultraviolet Photometric	Extreme Downwind
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Ozone	44201	SLAMS	2	☒	1	URB	COM	007	ppm	047	Ultraviolet Photometric	-
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Pacific**AQS Site Number 29-189-0005**

18701 Old Highway 66, Pacific, MO 63039

Latitude: 38.49011 **AQCR:** 070 Metropolitan St. Louis**Longitude:** -90.70509 **MSA:** 7040 St. Louis, MO-IL**Elevation (ft):** 524

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
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Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
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Ozone	44201	SLAMS	2	☒	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-
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Richards Gebaur-South**AQS Site Number 29-037-0003**

1802 E. 203rd Street, Belton, MO, 64012

Latitude: 38.75961 **AQCR:** 094 Metropolitan Kansas City**Longitude:** -94.57983 **MSA:** 3760 Kansas City, MO-KS**Elevation (ft):** 1082

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
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Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
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Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	SLAMS	2	☒	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-
PM10 - LC/FEM/NonFEM	85101	SPM	5	☐	1	NBR	COM	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	182	FDMS-Gravimetric 1405-DF	Population Exposure
PM2.5 Tot Atmospheric	88500	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM2.5 Volatile Channel	88503	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PMCoarse - LC FRM/FEM	86101	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	207	FDMS-Gravimetric 1405-DF	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other

Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	Other (10m Tower)

Rider Trail, I-70

AQS Site Number **29-189-0016**

13080 Hollenberg Drive, Bridgeton, MO 63044

Latitude: 38.75264 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.44884 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 515

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Nitric Oxide	42601	SPM	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented
Nitrogen Dioxide	42602	SLAMS	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented
Outdoor Temperature	62101	SPM	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (10m Probe Height)

Outdoor Temperature	62101	SPM	3	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (2m Probe Height)
Outdoor Temperature Diff	62106	SPM	1	☐	1	N/A	MET	116	Temp Diff deg C	041	Instrumental: Elect or Mach Avg Lev 2-Lev1	Other (10m - 2m Probe Height)
Oxides of Nitrogen	42603	SPM	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented
Precipitation	65102	SPM	1	☐	1	N/A	MET	021	inches	014	Heated Tipping Bucket	Other
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Solar Radiation	63301	SPM	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other
Std Dev Hz Wind Direction	61106	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
Sulfur Dioxide	42401	SPM	1	☒	1	MID	SPP	008	ppb	060	Pulsed Fluorescent	Population Exposure
Sulfur Dioxide Max 5-min Avg	42406	SPM	1	☒	1	MID	SPP	008	ppb	060	Pulsed Fluorescent	Population Exposure

Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)
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Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10m Tower)
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Rocky Creek

AQS Site Number29-047-0006

13131 Highway 169, Kansas City, MO 64165

Latitude: 39.33188 **AQCR:** 094 Metropolitan Kansas City

Longitude: -94.58069 **MSA:** 3760 Kansas City, MO-KS

Elevation (ft): 990

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
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Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
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Ozone	44201	SLAMS	2	☒	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-
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Savannah

AQS Site Number29-003-0001

11796 Highway 71, Savannah, MO 64485

Latitude: 39.9544 **AQCR:** 137 Northern Missouri

Longitude: -94.849 **MSA:** 7000 St. Joseph, MO

Elevation (ft): 1120

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	SLAMS	2	☒	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-

South Broadway

AQS Site Number29-510-0007

8227 South Broadway, St. Louis, MO 63111

Latitude:

38.5425

AQCR:

070

Metropolitan St. Louis

Longitude:

-90.263611

MSA:

7040

St. Louis, MO-IL

Elevation (ft):

452

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Barometric Pressure	64101	SLAMS	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
PM10 - LC/FEM/NonFEM	85101	SPM	5	☐	1	NBR	COM	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure

PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	182	FDMS-Gravimetric 1405-DF	Population Exposure
PM2.5 Tot Atmospheric	88500	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM2.5 Volatile Channel	88503	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PMCoarse - LC FRM/FEM	86101	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	207	FDMS-Gravimetric 1405-DF	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other

St. Joe State Park

AQS Site Number **29-187-0007**

2800 Pimville Rd., Park Hills, MO 63601

Latitude: 37.81413 **AQCR:** 138 SE Missouri

Longitude: -90.50738 **MSA:** 0000 Not in a MSA

Elevation (ft): 937

Pollutant	AQS Code	AQS Monitor Type	AQS POC	AQS Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Lead (TSP) - LC FRM/FEM	14129	SPM	1	☐	1/6	NBR	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented
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St. Joseph Pump Station

AQS Site Number **29-021-0005**

S. Highway 759, St. Joseph, MO 64501

Latitude: 39.741667 **AQCR:** 094 Metropolitan Kansas City

Longitude: -94.858333 **MSA:** 7000 St. Joseph, MO

Elevation (ft): 845

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Barometric Pressure	64101	SPM	2	☒	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Outdoor Temperature	62101	SPM	2	☒	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
PM10 - LC/FEM/NonFEM	85101	SPM	5	☐	1	NBR	COM	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM10 - LC/FEM/NonFEM	85101	SPM	6	☒	1	NBR	COM	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Quality Assurance (Collocation)

PM10 - STP FRM/FEM	81102	SLAMS	3	☐	1	NBR	COM	001	ug/m^3	079	R&P SA246B TEOM	Population Exposure
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	182	FMDS-Gravimetric 1405-DF	Population Exposure
PM2.5 - LC FRM/FEM	88101	SLAMS	5	☒	1	NBR	COM	105	ug/m^3-LC	182	FMDS-Gravimetric 1405-DF	Quality Assurance (Collocation)
PM2.5 Tot Atmospheric	88500	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FMDS-Gravimetric 1405-DF	Population Exposure
PM2.5 Tot Atmospheric	88500	SPM	2	☒	1	NBR	AQI	105	ug/m^3-LC	790	FMDS-Gravimetric 1405-DF	Quality Assurance (Collocation)
PM2.5 Volatile Channel	88503	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FMDS-Gravimetric 1405-DF	Population Exposure
PM2.5 Volatile Channel	88503	SPM	2	☒	1	NBR	AQI	105	ug/m^3-LC	790	FMDS-Gravimetric 1405-DF	Quality Assurance (Collocation)
PMCoarse - LC FRM/FEM	86101	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	207	FMDS-Gravimetric 1405-DF	Population Exposure
PMCoarse - LC FRM/FEM	86101	SLAMS	9	☒	1	NBR	COM	105	ug/m^3-LC	207	FMDS-Gravimetric 1405-DF	Quality Assurance (Collocation)
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other

Relative Humidity	62201	SPM	2	☒	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	Other (5.5 meters)

Trimble AQS Site Number 29-049-0001

7536 SW. O Highway, Trimble, MO 64492

Latitude: 39.53063 **AQCR:** 137 Northern Missouri
Longitude: -94.55594 **MSA:** 3760 Kansas City, MO-KS
Elevation (ft): 1033

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration
Ozone	44201	SLAMS	2	☒	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-

Troost (PM10 STP FRM Proposed to be discontinued)

AQS Site Number **29-095-0034**

724 Troost (Rear), Kansas City, MO 64106

Latitude: 39.10465 **AQCR:** 094 Metropolitan Kansas City

Longitude: -94.57055 **MSA:** 3760 Kansas City, MO-KS

Elevation (ft): 941

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Nitric Oxide	42601	SPM	1	☐	1	URB	COM	008	ppb	074	Chemiluminescence	Population Exposure
Nitrogen Dioxide	42602	SLAMS	1	☐	1	URB	COM	008	ppb	074	Chemiluminescence	Population Exposure
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Oxides of Nitrogen	42603	SPM	1	☐	1	URB	COM	008	ppb	074	Chemiluminescence	Population Exposure
PM10 - LC/FEM/NonFEM	85101	SPM	5	☐	1	NBR	COM	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure

PM10 - STP FRM/FEM	81102	SLAMS	3	☐	1	NBR	COM	001	ug/m^3	079	R&P SA246B TEOM	Population Exposure
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	182	FDMS- Gravimetric 1405- DF	Population Exposure
PM2.5 Tot Atmospheric	88500	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS- Gravimetric 1405- DF	Population Exposure
PM2.5 Volatile Channel	88503	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS- Gravimetric 1405- DF	Population Exposure
PMCoarse - LC FRM/FEM	86101	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	207	FDMS- Gravimetric 1405- DF	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental- Computed (Indirect)	Other
Sulfur Dioxide	42401	SLAMS	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	SLAMS	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented

Ursuline North

AQS Site Number29-099-0025

210 Glennon Heights Rd., Crystal City, MO 63019

Latitude: 38.243 AQCR: 070 Metropolitan St. Louis

Longitude: -90.37372 MSA: 7040 St. Louis, MO-IL

Elevation (ft): 578

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Lead (TSP) - LC FRM/FEM 14129		SLAMS	1	☐	1/6	NBR	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented & Upwind Background

Watkins Mill State Park

AQS Site Number29-047-0003

Watkins Mill Road, Lawson, MO 64062

Latitude: 39.407419 AQCR: 094 Metropolitan Kansas City

Longitude: -94.265142 MSA: 3760 Kansas City, MO-KS

Elevation (ft): 1009

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	URB	COM	007	ppm	047	Ultraviolet Photometric	Extreme Downwind
Ozone	44201	SLAMS	2	☒	1	URB	COM	007	ppm	047	Ultraviolet Photometric	-

General Electric Store, Highway 94, West Alton, MO 63386

Latitude: 38.8725 **AQCR:** 070 Metropolitan St. Louis**Longitude:** -90.226389 **MSA:** 7040 St. Louis, MO-IL**Elevation (ft):** 425

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	URB	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration & Population Exposure
Ozone	44201	SLAMS	2	☒	1	URB	COM	007	ppm	047	Ultraviolet Photometric	-
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Solar Radiation	63301	SPM	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	Other (10m Tower)

Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	Other (10m Tower)
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Magnitude 7 Metals (PQAO - 2368)

Magnitude 7 Metals, Site # 1 AECI Water Tower Location AQS Site Number 29-143-9001

391 St Jude Industrial Park, New Madrid, MO 63869

Latitude: 36.51364 **AQCR:** 138 SE Missouri

Longitude: -89.56093 **MSA:** 0000 Not in a MSA

Elevation (ft): 297

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	Industrial	1	☐	1	MID	MET	017	deg C	013	Electronic Averaging	Other
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented

Magnitude 7 Metals, Site # 2 East Graveyard AQS Site Number 29-143-9002

391 St Jude Industrial Park, New Madrid, MO 63869

Latitude: 36.50838 **AQCR:** 138 SE Missouri

Longitude: -89.56074 **MSA:** 0000 Not in a MSA

Elevation (ft): 296

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	Industrial	1	☐	1	MID	MET	017	deg C	013	Electronic Averaging	Other

Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
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Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
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Magnitude 7 Metals, Site # 3 West Entrance	AQS Site Number 29-143-9003
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391 St Jude Industrial Park, New Madrid, MO 63869

Latitude: 36.50899 **AQCR:** 138 SE Missouri

Longitude: -89.57099 **MSA:** 0000 Not in a MSA

Elevation (ft): 298

Pollutant	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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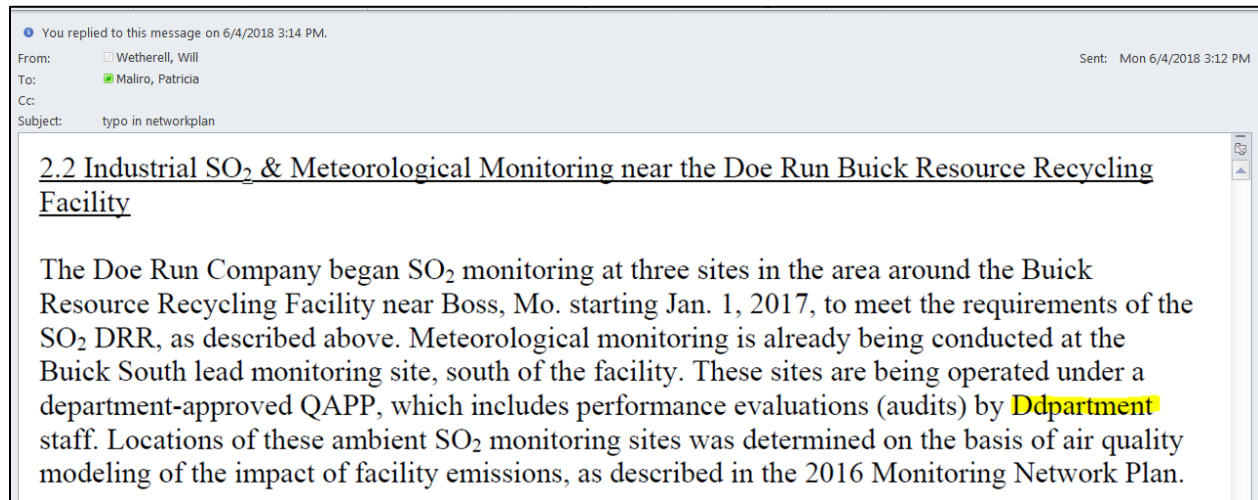
Indoor Temperature	62107	Industrial	1	☐	1	MID	MET	017	deg C	013	Electronic Averaging	Other
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Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
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Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
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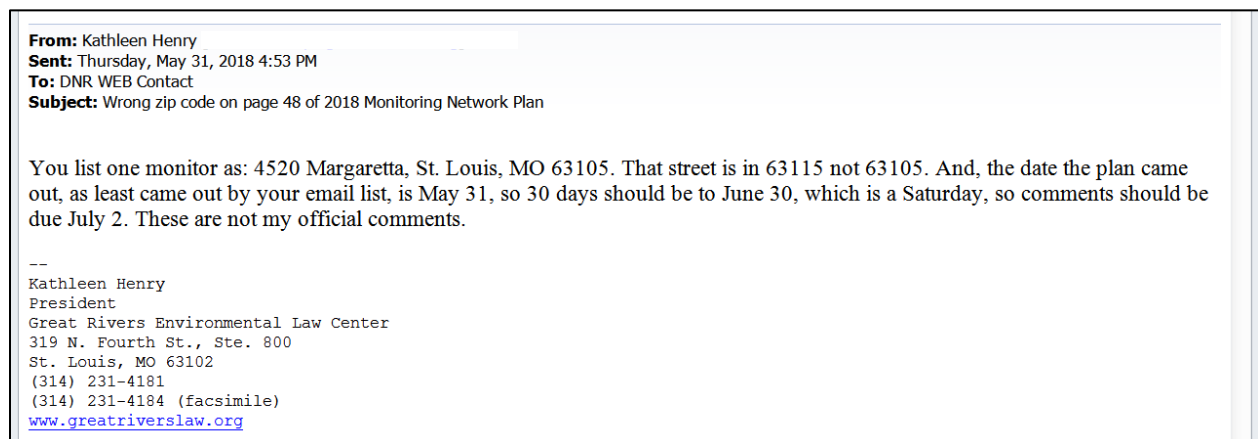
APPENDIX 2: COMMENTS ON PROPOSED 2018 MONITORING NETWORK PLAN, RESPONSES TO COMMENTS, AND CORRECTIONS

1. Emailed comment from Will Wetherell, Missouri Department of Natural Resources, Environmental Services Program, June 4, 2018



This comment identified a typographical error (highlighted in yellow in the email) in the plan as posted for public comment. The error has been corrected.

2. Emailed comment from Kathleen Henry, Great Rivers Environmental Law Center, May 31, 2018



This comment identified a typographical error (incorrect zip code) in Appendix 1 of the plan. The error has been corrected. The comment also stated that comments should be accepted through July 2. All comments received have been addressed in this appendix; no comments were received after June 30, 2018.

3. Comment letter from Steven C. Whitworth, Ameren Missouri, June 29, 2018



June 29, 2018

Missouri Department of Natural Resources
Air Pollution Control Program
Air Quality Analysis Section/Air Monitoring Unit
P.O. Box 176
Jefferson City, MO 65102-0176

Re: Ameren's Comments on the MDNR 2016 Monitoring Network Plan Update

On behalf of Ameren Missouri, we appreciate this opportunity to comment on the "Missouri Department of Natural Resources, Air Pollution Control Program, 2018 Monitoring Network Plan" (monitoring plan). As noted in the annual update, the plan describes the establishment and maintenance of an air quality surveillance system that consists of a network of air monitoring stations and outlines changes from the previous year's plan.

Ameren offers these comments on the annual update of the monitoring plan.

Ameren fully supports the Department's efforts to ensure that the air quality in the state is meeting the National Ambient Air Quality Standards (NAAQS). Ameren is committed to operate and maintain the air quality monitoring networks around the Labadie and Rush Island energy centers consistent with requirements in federal regulation 40 CFR 58 as well as the state approved Quality Assurance Project Plans (QAPP) and the Department's Quality Management Plan (QMP).

As indicated by the inclusion of the Labadie and Rush Island monitoring networks in the 2018 monitoring network plan, as well as previous annual updates, the locations of the monitors are appropriate to determine compliance with the National Ambient Air Quality Standard (NAAQS) for SO₂. The monitoring plan states on page 17 that:

"This monitoring is being conducted by the industries operating the sources, but the monitoring must be conducted in accordance with the SLAMS requirements in 40 CFR Part 58, and the department reviewed and approved the siting of the monitors based on federal regulations and oversaw the operation of the monitors."

The monitoring plan further states on page 18 that:

"The revised quality assurance requirements of 40 CFR 58 Appendix A, section 1.1 (a) state that "This appendix specifies the minimum quality system requirements applicable to SLAMS and other monitor types whose data are intended to be used to determine compliance with the NAAQS (e.g., SPMs, tribal, CASTNET, NCore, industrial, etc.),..." This revision supports states using monitors with any of these classifications to satisfy the DRR monitoring requirements in 40 CFR 51.1203 (c) so long as these monitors are operated in a manner equivalent to SLAMS."

It is important to recognize that the Department approved the locations of the sites based on dispersion modeling conducted by the Department and also that the QAPPs for each site are equivalent with a SLAMS site.

As you know the primary purpose of both the Labadie and Rush Island monitoring networks are to demonstrate compliance with the SO₂ NAAQS. Both of the monitoring networks are designed consistent with the requirement of the final Data Requirements Rule (DRR) and fully meet the monitoring requirements of the DRR.

Ameren also offers these comments related to Appendix 1: Missouri Monitoring Network Description. For all of the Ameren Missouri meteorological monitoring sites, the standard deviation of the vector horizontal wind direction has been reported the as AQS code 61107, which based on Appendix 1, MDNR is interpreting as the standard deviation of vertical wind direction. Vertical wind direction is not measured at the sites. We would like to confirm whether 61107 is the correct code for the standard deviation of the vector horizontal wind direction at these locations; Labadie Northwest, AQS site number 29-183-9002; Labadie Valley, AQS site number 29-071-9001; Rush Island Fults, AQS site number 17-133-9001; and Rush Island Johnson Tall Tower, AQS site number 29-099-9008.

For the Rush Island Johnson Tall Tower, AQS site number 29-099-9008, there are two horizontal wind direction sensors at the 62.5 m level and one horizontal wind direction sensor on the 132.5 m level. Currently, there is reporting of 12 standard deviation values for these three sensors. The description in Appendix 1 for the Johnson Tall Tower should have six listings in the pollutant column of the descriptions for each AQS code of 61106 and 61107; two at the 132.5 m level and four at the 62.5 m level. For the AQS code 61106, the Appendix 1 description has five at the 62.5 m level and one at the 132.5 m level. For AQS code 61107, the Appendix 1 description has five at the 132.5 m level and one at the 62.5 m level. For the scalar, AQS code 61106, wind direction calculations for each sensor is being reported as the hourly average of the 15 minute standard deviations and hourly average standard deviation (as AQS code 61106). For the vector (AQS code 61107) wind direction calculations for each sensor is being reported as the hourly average of the 15 minute standard deviations and hourly average standard deviation (as AQS code 61107). As mentioned above we are seeking confirmation that AQS code 61107 is the correct code for this parameter. Note that we have attached the coding information for all of the parameters at the Johnson Tall Tower for your reference.

Please contact me at your convenience if you have questions related to these comments or if you need any additional information.

Sincerely,



Steven C. Whitworth
Senior Director, Environmental Policy and Analysis

	Units	RD	Action Code	State Code	County Code	Site ID	Parameter	POC	Sample Duration	Unit	Method	Date	Start Time	Sample Value
Johnson Tall Tower														
Vertical Wind Speed Upper	m/s	RD	I	29	099	9008	61109	1	1	011	020	20151231	00:00	#.#
Vertical Wind Speed Lower A	m/s	RD	I	29	099	9008	61109	2	1	011	020	20151231	00:00	#.#
Vertical Wind Speed Lower B	m/s	RD	I	29	099	9008	61109	3	1	011	020	20151231	00:00	#.#
Standard Deviation of Vertical WS Upper	m/s	RD	I	29	099	9008	61110	1	1	011	020	20151231	00:00	#.#
Standard Deviation of Vertical WS Lower A	m/s	RD	I	29	099	9008	61110	2	1	011	020	20151231	00:00	#.#
Standard Deviation of Vertical WS Lower B	m/s	RD	I	29	099	9008	61110	3	1	011	020	20151231	00:00	#.#
Horizontal Wind Speed Upper Scalar	m/s	RD	I	29	099	9008	61101	1	1	011	063	20151231	00:00	#.#
Horizontal Wind Speed Upper Vector	m/s	RD	I	29	099	9008	61103	1	1	011	020	20151231	00:00	#.#
Horizontal Wind Speed Lower Scalar A	m/s	RD	I	29	099	9008	61101	2	1	011	063	20151231	00:00	#.#
Horizontal Wind Speed Lower Vector A	m/s	RD	I	29	099	9008	61103	2	1	011	020	20151231	00:00	#.#
Horizontal Wind Speed Lower Scalar B	m/s	RD	I	29	099	9008	61101	3	1	011	063	20151231	00:00	#.#
Horizontal Wind Speed Lower Vector B	m/s	RD	I	29	099	9008	61103	3	1	011	020	20151231	00:00	#.#
Horizontal Wind Direction Upper Scalar	Degrees	RD	I	29	099	9008	61102	1	1	014	063	20151231	00:00	#
Horizontal Wind Direction Upper Vector	Degrees	RD	I	29	099	9008	61104	1	1	014	020	20151231	00:00	#
Horizontal Wind Direction Lower Scalar A	Degrees	RD	I	29	099	9008	61102	2	1	014	063	20151231	00:00	#
Horizontal Wind Direction Lower Vector A	Degrees	RD	I	29	099	9008	61104	2	1	014	020	20151231	00:00	#
Horizontal Wind Direction Lower Scalar B	Degrees	RD	I	29	099	9008	61102	3	1	014	063	20151231	00:00	#
Horizontal Wind Direction Lower Vector B	Degrees	RD	I	29	099	9008	61104	3	1	014	020	20151231	00:00	#
STDV HWD Upper Yamartino 15 min	Degrees	RD	I	29	099	9008	61106	1	1	014	063	20151231	00:00	#
STDV HWD Upper Yamartino 60 min	Degrees	RD	I	29	099	9008	61106	2	1	014	063	20151231	00:00	#
STDV HWD Upper Vector 15 min	Degrees	RD	I	29	099	9008	61107	1	1	014	020	20151231	00:00	#
STDV HWD Upper Vector 60 min	Degrees	RD	I	29	099	9008	61107	2	1	014	020	20151231	00:00	#
STDV HWD Lower A Yamartino 15 min	Degrees	RD	I	29	099	9008	61106	3	1	014	063	20151231	00:00	#
STDV HWD Lower A Yamartino 60 min	Degrees	RD	I	29	099	9008	61106	4	1	014	063	20151231	00:00	#
STDV HWD Lower B Yamartino 15 min	Degrees	RD	I	29	099	9008	61106	5	1	014	063	20151231	00:00	#
STDV HWD Lower B Yamartino 60 min	Degrees	RD	I	29	099	9008	61106	6	1	014	063	20151231	00:00	#
STDV HWD Lower A Vector 15 min	Degrees	RD	I	29	099	9008	61107	3	1	014	020	20151231	00:00	#
STDV HWD Lower A Vector 60 min	Degrees	RD	I	29	099	9008	61107	4	1	014	020	20151231	00:00	#
STDV HWD Lower B Vector 15 min	Degrees	RD	I	29	099	9008	61107	5	1	014	020	20151231	00:00	#
STDV HWD Lower B Vector 60 min	Degrees	RD	I	29	099	9008	61107	6	1	014	020	20151231	00:00	#
Ambient Temperature Lower	°C	RD	I	29	099	9008	62101	3	1	017	040	20151231	00:00	#.#
Ambient Temperature Upper	°C	RD	I	29	099	9008	62101	2	1	017	040	20151231	00:00	#.#
Temperature Difference	°C	RD	I	29	099	9008	62106	1	1	116	041	20151231	00:00	#.#

The department acknowledges and appreciates the comments regarding the air monitoring networks near the Labadie and Rush Island generating stations. These comments reemphasize statements made in the plan. Appendix 1 of the plan has been corrected based on the comments in the latter part of the letter.

4. Comment letter from Michael Jay, EPA Region 7, June 29, 2018



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 7**

11201 Renner Boulevard
Lenexa, Kansas 66219

JUN 29 2018

Ms. Darcy Bybee, Director
Missouri Department of Natural Resources
Air Pollution Control Program
1659 East Elm Street
Jefferson City, Missouri 65101

Dear Ms. Bybee:

The U.S. Environmental Protection Agency appreciates the opportunity to participate in the development of the Missouri Department of Natural Resources' 2018 Monitoring Network Plan (or the plan), posted for public inspection and comment from May 31, 2018 to June 29, 2018, in accordance with the provisions of the Code of Federal Regulations, 40 CFR Part 58-*Ambient Air Surveillance*.

The plan proposes to discontinue a State and Local Air Monitoring Station located in Glover, Missouri, also known as the Glover monitor (AQS ID# 29-093-0033. The Glover monitor is the only SLAMS monitor located in a maintenance area for the 1978 Lead National Ambient Air Quality Standard. There appears to be a gap in the maintenance planning requirements for the area, due in October 2012. As such, the EPA asks that the MoDNR reassess its maintenance planning and monitoring obligations before finalizing its plans to discontinue the Glover monitor.

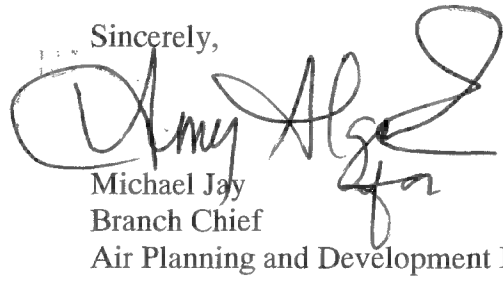
In addition to the Glover monitor, the plan indicates that the MoDNR intends to discontinue the Margaretta and Troost monitors (AQS ID#s 29-510-0086, 29-095-0034 respectively). The plan indicates that discontinuation the Glover, Margaretta and Troost monitors' is appropriate because the monitors have not exceeded the NAAQS for five years and that the probability of exceeding 80 percent of the NAAQS is less than 10 percent. However, the plan does not provide data on which the MoDNR based those assertions. The EPA recommends that the MoDNR provide additional information in the plan (such as monitoring "levels, trends, and variability observed in the past" in accordance with 40 CFR Part §58.14(c)(1)) before finalizing its plans to discontinue the monitors.

Also, as noted by the EPA informally last year, the EPA recommends that MoDNR consider making revisions to its plan to include discussion regarding how the MoDNR is meeting some of its monitoring network requirements through agreement with other states per 40 CFR Part 58, App. D, 2(e). The EPA presumes that the annual network plan development process, subsequent documentation requirements, and Regional Administrator approval are sufficient to fulfill the documentation of network designs that cross Metropolitan Statistical Area/Combined Statistical Area boundaries and that, at this time, no other formal agreements need to be made with RA approval. It is very important that the annual monitoring network plan be very clear where this reliance is made. Currently the plan only has a brief statement about "communication received from the state of Illinois Environmental Protection Agency" and does not include discussion of agreements or communications with the states of Kansas, Iowa or Arkansas. Absent adequate documentation of these agreements in the annual network plan, the MoDNR would need to provide separate agreements between the MoDNR and other state and/or local monitoring agencies to the EPA for RA approval.



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The plan is well organized and thorough. The EPA appreciates your commitment to protecting air quality for the citizens of Missouri and dedication to our shared mission. I look forward to continued work with you and your staff.

Sincerely,

Michael Jay
Branch Chief
Air Planning and Development Branch

Responses are presented in the same order as the comments in the letter.

Glover Monitor

No violations of the 1978 lead NAAQS have been monitored in the Glover area since the fourth quarter of 1996, and the area was designated as being in attainment of the 1978 lead NAAQS in 2004. State air monitoring (lead and sulfur dioxide) in the Glover area was discontinued in 2004, only to be resumed if the Glover lead smelter resumed operation, with the approval of EPA (letter from John Houlihan, EPA to Leanne Tippet of the department, May 26, 2004; copy on the following page). Monitoring by the Doe Run Company at the Post Office and Big Creek sites in Glover was continued at that time and is still ongoing. Contingency measures in the maintenance plan are related to smelter operation, but the Glover smelter is still not operating, and resumption of operation is not planned.

The current Glover monitoring site was only established in 2010 based on the 2009 monitoring network plan following the implementation of the revised lead NAAQS in 2008. The current site was not established based on any requirements of the maintenance plan for the 1978 lead NAAQS and was never in operation during operation of the Glover smelter. The exceedance at the current Glover site in 2013 was a violation of the 2008 lead NAAQS, but not of the 1978 Lead NAAQS, and was due to demolition activity at the smelter complex. Without an active source of lead emissions above 0.5 tpy in the Glover area, the Glover SLAMS monitor is not required as part of the minimum ambient air monitoring requirements of 40 CFR 58. The current Glover monitor is not identified in the Glover area maintenance plan for the 1978 lead NAAQS, and it meets the monitor discontinuation criteria of 40 CFR 58.14, as discussed in more detail later in this appendix.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
901 NORTH 5TH STREET
KANSAS CITY, KANSAS 66101

MAY 26 2004

Ms. Leanne J. Tippet, Director
MDNR Air Pollution Control Program
P.O. Box 176
Jefferson City, MO 65102

Dear Ms. Tippet:

Thank you for your recent letter regarding MDNR's plans to discontinue sulfur dioxide and lead ambient air monitoring in the vicinity of the temporarily inoperative Doe Run Glover facility.

We concur with your approach to discontinue State monitoring for both sulfur dioxide and lead until your office receives notification of resumption of smelter operations at the Doe Run Glover facility. We also concur with your approach to have the facility continue operating their two lead monitoring sites during this shut-down period. The cessation of State monitoring activity as described in your May 13, 2004 letter to Josh Tapp is approved.

In addition, we appreciate your commitment to reexamine the ambient air monitoring network design for lead in the vicinity of the Doe Run Glover facility in order to be prepared to collect the highest quality data in the event that production is resumed. If we can offer assistance with this activity, or if you have any questions or comments, please contact Mike Davis at (913) 551-7096.

Sincerely,

John Houlihan, Chief

Environmental Monitoring and Water Compliance Branch
Environmental Services Division

cc: Joshua Tapp, ARTD/PLDE

RECEIVED
2004 MAY 28 AM 10:05
AIR POLLUTION
CONTROL PMH



Supporting Information for Discontinuing Monitors

The requirements for discontinuation of a SLAMS monitor are included in 40 CFR 58.14 (c)(1):

“(1) Any $PM_{2.5}$, O_3 , CO , PM_{10} , SO_2 , Pb , or NO_2 SLAMS monitor which has shown attainment during the previous five years, that has a probability of less than 10 percent of exceeding 80 percent of the applicable NAAQS during the next three years based on the levels, trends, and variability observed in the past, and which is not specifically required by an attainment plan or maintenance plan. In a nonattainment or maintenance area, if the most recent attainment or maintenance plan adopted by the State and approved by EPA contains a contingency measure to be triggered by an air quality concentration and the monitor to be discontinued is the only SLAMS monitor operating in the nonattainment or maintenance area, the monitor may not be discontinued.”

The department is proposing in this plan to discontinue the following monitors: SO_2 , NO_2 , and PM_{10} at Margaretta; PM_{10} (only) at Troost; and lead at Glover. Supporting information for each of these is presented here.

SO_2 design values at Margaretta for recent periods were as follows; all of these are below the level of the NAAQS, which is 75 ppb (80 percent of the NAAQS is 60):

<u>3-Year Period</u>	<u>SO_2 Design Value at Margaretta</u>
2011-13	29
2012-14	26
2013-15	19
2014-16	16
2015-17	12
Average	20.4
UB	27.1

These data were evaluated based on guidance in Section 4 of AMBIENT AIR MONITORING NETWORK ASSESSMENT GUIDANCE, Analytical Techniques for Technical Assessments of Ambient Air Monitoring Networks, EPA-454/D-07-001, 2007. This analysis involves calculation of

$$UB = Avg + t * s / (n)^{1/2}$$

Where UB stands for upper bound, Avg is the average design value, s is standard deviation, n is the number of values, and t is student's t for n-1. If UB is less than 80 percent of the NAAQS, then the probability of exceeding 80 percent is less than 10 percent, and that condition for removal is met. The UB for SO_2 at Margaretta is 27.1, which is less than 60, so the condition is met.

For NO_2 at Margaretta, the level of the NAAQS is 100 ppb, 80 percent of the NAAQS is 80, and the values (all below the NAAQS) are as follows:

<u>3-Year Period</u>	<u>NO₂ Design Value at Margaretta</u>
2011-13	53
2012-14	49
2013-15	47
2014-16	45
2015-17	45
Average	47.8
UB	51.0

Since all of these values are less than 100, and 51.0 is less than 80, the condition is met.

For PM₁₀, the design value is expressed in units of days, so it is more reasonable to do a calculation similar to that above in units of the annual second maximum concentration and compare to 150 µg/m³, the level for determining exceedance (80 percent equals 120):

<u>Year</u>	<u>PM₁₀ Second Maximum at Margaretta</u>
2013	39
2014	53
2015	60
2016	37
2017	41
Average	46.0
UB	55.5

Since all of these values are less than 150, and 55.5 is less than 120, the condition is met.

<u>Year</u>	<u>PM₁₀ Second Maximum at Troost</u>
2013	40
2014	50
2015	46
2016	49
2017	57
Average	48.4
UB	54.3

Since all of these values are less than 150, and 54.3 is less than 120, the condition is met.

The lead NAAQS is exceeded whenever the three-month rolling average concentration exceeds 0.15 µg/m³. The last exceedance was in April-June of 2013 and resulted from short-term demolition at the smelter facility, which has not been operated since 2003. Therefore, it is reasonable to conduct an analysis similar to that above and compare maximum three-month rolling average concentrations in each year to the level of the NAAQS, 0.15 µg/m³ (80 percent equals 0.12):

<u>Year</u>	<u>Maximum 3-Month Rolling Average Glover</u>
2014	0.082
2015	0.060
2016	0.066
2017	0.025
2018 (through May)	0.020
Average	0.051
UB	0.076

Since all of these values are less than 0.15, and 0.076 is less than 0.12, the condition is met, provided that the three-month rolling average concentrations continue to be low for the remainder of 2018.

Monitoring in Areas that Cross State Boundaries

The letter references 40 CFR 58 Appendix D 2 (e), which reads as follows:

“(e) This appendix uses the statistical-based definitions for metropolitan areas provided by the Office of Management and Budget and the Census Bureau. These areas are referred to as metropolitan statistical areas (MSA), micropolitan statistical areas, core-based statistical areas (CBSA), and combined statistical areas (CSA). A CBSA associated with at least one urbanized area of 50,000 population or greater is termed a Metropolitan Statistical Area (MSA). A CBSA associated with at least one urbanized cluster of at least 10,000 population or greater is termed a Micropolitan Statistical Area. CSA consist of two or more adjacent CBSA. In this appendix, the term MSA is used to refer to a Metropolitan Statistical Area. By definition, both MSA and CSA have a high degree of integration; however, many such areas cross State or other political boundaries. MSA and CSA may also cross more than one air shed. The EPA recognizes that State or local agencies must consider MSA/CSA boundaries and their own political boundaries and geographical characteristics in designing their air monitoring networks. The EPA recognizes that there may be situations where the EPA Regional Administrator and the affected State or local agencies may need to augment or to divide the overall MSA/CSA monitoring responsibilities and requirements among these various agencies to achieve an effective network design. Full monitoring requirements apply separately to each affected State or local agency in the absence of an agreement between the affected agencies and the EPA Regional Administrator.”

This regulation says nothing about formal agreements between states. It only discusses agreements between state or local agencies and the EPA Regional Administrator. Therefore, the department agrees with the statement in the letter that *“The EPA presumes that the annual network plan development process, subsequent documentation requirements, and Regional Administrator approval are sufficient to fulfill the documentation of network designs that cross Metropolitan Statistical Area/Combined Statistical Area boundaries and that, at this time, no other formal agreements need to be made with RA approval.”*

There are three cross-state areas discussed in the plan: the Kansas City area, the St. Louis area, and the Fayetteville-Springdale-Rogers area. The comment letter mentions Iowa, but there is no area where Missouri relies on Iowa monitoring to meet minimum monitoring requirements.

The Kansas City area includes counties in both Missouri and Kansas. Monitoring network plans in both states are informed by informal communication between the states. Since both of these states are in EPA Region 7, Region 7 staff reviews and the Regional Administrator approves monitoring network plans for both states. Therefore, as indicated by the sentence quoted from the comment letter, Regional Administrator approval of both plans is sufficient documentation that both plans are adequate.

The St. Louis area includes counties in both Missouri and Illinois. Since Illinois is in a different EPA region (Region 5), the department took the additional step of communicating by email with the State of Illinois, as indicated in the plan, to confirm that specific monitors in Illinois were planned to be continued so that minimum requirements would be met. Although Missouri and Illinois are in different EPA regions, it is reasonable to assume that EPA staff could communicate between regions and that Regional Administrator approval of both plans is sufficient documentation that both plans are adequate.

As stated in the plan, 96 percent of the population of the Fayetteville-Springdale-Rogers Metropolitan Statistical Area is in Arkansas; only four percent of the population of that area is in Missouri. Therefore, it is reasonable that monitoring requirements for this area continue to be met by monitors in Arkansas. Although Missouri and Arkansas are in different EPA regions, it is reasonable to assume that EPA staff could communicate between regions and that Regional Administrator approval of both plans is sufficient documentation that both plans are adequate.

5. Emailed comments from residents of Lone Jack, Missouri, June 29 and 30, 2018

From: Wilkinson, Chad W
Sent: Friday, June 29, 2018 11:42 PM
To: Nahach, Lisa <Lisa.Nahach@dnr.mo.gov>
Subject: Air quality monitoring in Lone Jack

We need this to take place where we live close to Lone Jack. We will be happy to allow this to take place on our property. Please let us know.

From: Amy Wilkinson
Sent: Friday, June 29, 2018 11:45 PM
To: Nahach, Lisa <Lisa.Nahach@dnr.mo.gov>
Subject: Lone Jack

We request air quality tests be taken in rural Lone Jack. We are willing to aid your efforts. This is a residential area with hundreds, if not thousands, of young children. Our health and well-being are at risk.

Amy Wilkinson

From: Davis, Karen
Sent: Saturday, June 30, 2018 12:02 AM
To: Nahach, Lisa <Lisa.Nahach@dnr.mo.gov>
Subject: Air quality testing

Dear Madam or Sir,

I saw your tweet about suggestions for locations for air quality monitoring. Since you recently approved a permit for a large cattle cafo less than 3 miles from my home and within 5 miles of two schools, despite known health hazards from airborne particulate within miles of cafos, please monitor the air near Lone Jack, MO. Our future generations are depending on you to protect them and our environment.

Thanks for all you do,
Karen Davis

--

Mrs. Karen Davis
Kindergarten Teacher
Summit Christian Academy

From: karenrlux
Sent: Saturday, June 30, 2018 11:09 AM
To: Nahach, Lisa <Lisa.Nahach@dnr.mo.gov>; Lone Jack Neighbors
Subject: Air Monitoring

The community of Lone Jack has so many people being affected. Thousands of citizens as you could see from the outflow of concern of the Valley Oaks permit.

Please take those lives into consideration. With so many being affected air quality should be monitored. This would be a step in the right direction for DNR.

Karen Lux
Realty Executives of Kansas City
www.lonejackrealestate.com

These emailed comments did not specifically reference the 2018 Monitoring Network Plan, but their timing may have been prompted by the posting of the plan and its availability for comment. They requested that the department conduct air monitoring in the vicinity of the recently permitted expansion of a concentrated animal feeding operation (CAFO) near Lone Jack, Missouri.

As discussed in the introduction to this plan, the Department operates an ambient air quality monitoring network to comply with regulatory requirements in 40 CFR 58 which are based on the Clean Air Act. The network is operated primarily to determine whether the National Ambient Air Quality Standards (NAAQS) are being met and, if a NAAQS is not met, to provide data useful in planning for attainment of the standard. The Department will continue to analyze the entire state's air quality and place monitors at appropriate locations. There are currently no plans to place a monitor near Lone Jack, Missouri.