Missouri Department of Natural Resources
Air Pollution Control Program
2015 Monitoring Network Plan

July 27, 2015

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SUMMARY OF PROPOSED CHANGES

Missouri's Monitoring Network Plan addresses the following proposed changes:

- Additional direct nitrogen dioxide (NO_2) monitor at the Forest Park near roadway site.
- Discontinuation of the MSU site in Springfield and relocation to the Hillcrest High School site.
- Discontinuation of the St. Joe State Park Lead (Pb) SPM monitor.
- Discontinuation request for the TSP Lead Monitor at the St. Louis NCore site pending approval and revisions to 40 CFR 58 Monitoring Plan.
- Change the Forest City lead monitor from an SPM to SLAMS.
- Industry sulfur dioxide (SO_2) Special Purpose Monitoring (SPM) around the Labadie Energy Center.
- Industry SO_2 SPM monitoring around the Rush Island Energy Center.

Two $PM_{2.5}$ speciation samplers (Bonne Terre and Liberty) have been discontinued and sampling frequency at one site (Arnold West) has been changed to 1 every 6 days from 1 every 3 days in accordance with the US EPA final recommendations from the $PM_{2.5}$ Chemical Speciation Network (CSN) Assessment (http://www.epa.gov/ttn/amtic/files/2014conference/tuelandis.pdf).

In addition, the IMPROVE Protocol sampler at the Eldorado Springs Site may need to be discontinued as a result of a national IMPROVE Protocol assessment, currently underway and possible consequent changes in funding. This issue will be addressed in future communication with US EPA and any changes will be documented in the next Monitoring Network Plan.

As part of the condition of receiving one-time section 103 Grant funds to implement the NO_2 near-roadway monitoring network, the department will continue to conduct special purpose $PM_{2.5}$, $PM_{10\text{-}LC}$, $PM_{10\text{-}2.5}$, $PM_{2.5}$ black carbon, and meteorological, monitoring at the Forest Park and Blue Ridge I-70 near-roadway NO_2 sites and will conduct NO_2 and meteorological monitoring at an additional new near-roadway site in the St. Louis area. CO monitoring is also required by regulation at one near-road site in the St. Louis area and one in the Kansas City area (see Section 8 below).

HOW TO MAKE PUBLIC COMMENTS CONCERNING THIS PLAN

Comments concerning this Monitoring Network Plan may be sent electronically to: cleanair@dnr.mo.gov or in writing to the following address and must be received by close of business July 20, 2015:

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

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 the State of Missouri consists of State and Local Air Monitoring Stations (SLAMS), Special Purpose Monitoring (SPM) Stations, and National Core (NCore) monitoring consistent with requirements in federal regulation 40 CFR 58.

40 CFR 58.10 requires that states submit to EPA an annual monitoring network plan including any proposed network changes. With regard to state and local air monitoring station changes, approval by the Environmental Protection Agency Regional Administrator is required.

The plan must contain the following information for each monitoring station in the network:

1. The Air Quality System 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, to measure typical concentrations in areas of high population density, to determine the impact of significant sources or source categories, to determine general background levels and to determine the extent of regional pollutant transport among populated areas. Minimum site requirements are provided for ozone, sulfur dioxide, CO, NO_2, PM_{10} and particulate matter based on Core Based Statistical Area (CBSA) population.

Appendix E to Part 58 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. 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 NO_2 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. Any changes to the network that result due to 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 (SPM)

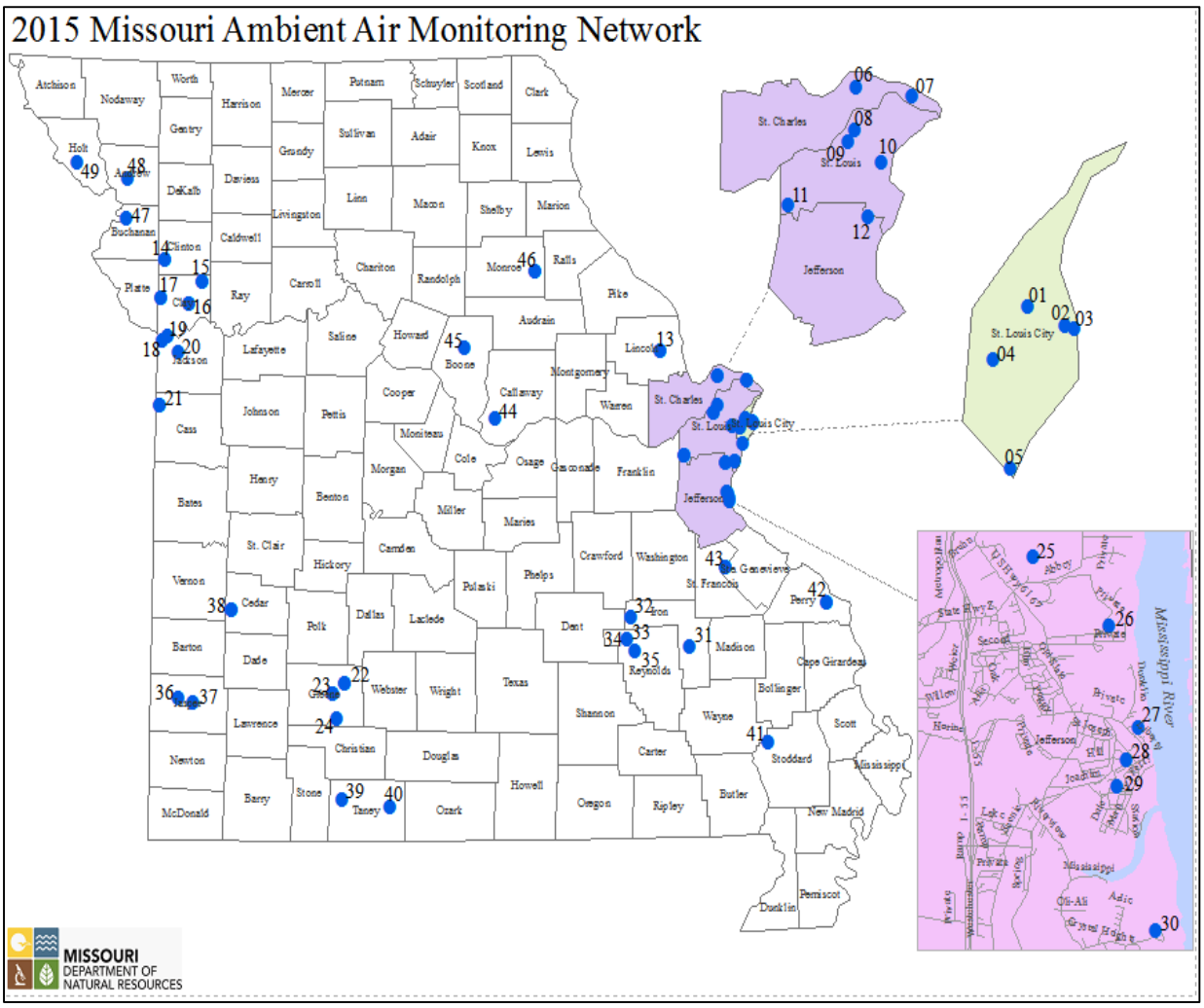
Consistent with 40 CFR 58.20 (a) "An SPM is defined as any monitor included in an agency's monitoring network that the agency has designated as a special purpose monitor in its annual monitoring network plan and in AQS, and which the agency does not count when showing compliance with the minimum requirements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

Special purpose monitors 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 §58.10. The department installs and 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. 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.

CURRENT AMBIENT AIR MONITORING NETWORK, STATE SITES

The current statewide monitoring network is shown below in the map and table.



Legend (State's Monitoring Network)

St. Louis Area

Site#	Site Name	Parameter Monitored
01	Margaretta	PM_{10}, SO_2, NO_2, NOx, NO, IT
02	Blair Street	PM_{10}, $PM_{10\text{-}LC}$, $PM_{2.5}$, $PM_{2.5}$ (Spec), PMCoarse, O_3, SO_2, NO_2, NO_y, NOx, NO, CO, Carbonyls, PAHs, VOCs, Air Toxics, Carbons, PM_{10} Metals, WS, WD, OT, IT, SR, BP, RH
03	Branch Street	PM_{10}, $PM_{10\text{-}LC}$, $PM_{2.5}$, PMCoarse, WS, WD, OT, IT, BP, RH
04	Forest Park	$PM_{10\text{-}LC}$, $PM_{2.5}$, PMCoarse, NO_2 NOx, NO, CO, BC, WS, WD, OT, IT, SR, BP, RH, Prec
05	South Broadway	PM_{10}, $PM_{10\text{-}LC}$, $PM_{2.5}$, PMCoarse IT, BP, RH
06	Orchard Farm	O_3, IT
07	West Alton	O_3, WS, WD, OT, IT, SR
08	Rider Trail, 1-70	NO_2, NOx, NO, WS, WD, OT, IT, SR, Prec
09	Maryland Heights	O_3, IT
10	Ladue	$PM_{10\text{-}LC}$, $PM_{2.5}$, PMCoarse, WS, WD, OT, IT, BP, RH
11	Pacific	O_3, WS, WD, OT, IT
12	Arnold West	PM_{10}, $PM_{10\text{-}LC}$, $PM_{2.5}$, $PM_{2.5}$ (Spec), PMCoarse, O_3, WS, WD, OT, IT, BP, RH
13	Foley	O_3, WS, WD, IT

Kansas City Area

Site#	Site Name	Parameter Monitored
14	Trimble	O_3, IT
15	Watkins Mill	O_3, IT
16	Liberty	$PM_{10\text{-}LC}$, $PM_{2.5}$, PMCoarse, O_3, WS, WD, OT, IT, SR, BP, RH
17	Rocky Creek	O_3, IT
18	Troost	PM_{10}, $PM_{2.5}$, SO_2, NO_2, NOx, OT, IT
19	Front Street	PM_{10}
20	Blue Ridge, I-70	$PM_{10\text{-}LC}$, $PM_{2.5}$, PMCoarse, NO_2, NOx, NO, CO, BC, WS, WD, OT IT, SR, BP, RH, Prec
21	Richards Gebaur-South	$PM_{10\text{-}LC}$, $PM_{2.5}$, PMCoarse, O_3, WS, WD, OT, IT, BP, RH

Springfield Area

Site#	Site Name	Parameter Monitored
22	Fellows Lake	O_3, IT
23	Hillcrest High School	O_3, PM_{10}, $PM_{10\text{-}LC}$, $PM_{2.5}$, PMCoarse, OT, IT, BP, RH
24	South Charleston	SO_2, IT

Herculaneum Area

Site#	Site Name	Parameter Monitored
25	Pevely North	Pb
26	Pevely	Pb
27	Sherman	Pb
28	Dunklin High School	Pb
29	Mott Street	Pb, SO_2, WS, WD, IT
30	Ursuline North	Pb

New Lead Belt Area

Site#	Site Name	Parameter Monitored
31	Glover	Pb
32	Buick NE	Pb, SO_2, WS, WD, IT
33	Oates	Pb
34	Bill's Creek	Pb
35	Fletcher	Pb

Outstate Area

Site#	Site Name	Parameter Monitored
36	Alba	O_3, IT
37	Carthage	PM_{10}, WS, WD, IT
38	El Dorado Springs	$PM_{10\text{-}LC}$, $PM_{2.5}$, PMCoarse, O_3 WS, WD, OT, IT, BP, RH $PM_{2.5}$ (Spec)-IMPROVE (Protocol)
39	Branson	O_3, WS, WD, IT
40	Hercules Glades	$PM_{2.5}$ (Spec)-IMPROVE
41	Mingo	$PM_{2.5}$ (Spec)-IMPROVE
42	Farrar	O_3, IT
43	Bonne Terre	O_3
44	New Bloomfield	O_3, IT
45	Finger Lakes	O_3, IT
46	Mark Twain State Park	PM_{10}, SO_2, NO_2, NO_x, NO, O_3, WS, WD, IT
47	St. Joseph Pump Station	PM_{10}, $PM_{10\text{-}LC}$, $PM_{2.5}$, PMCoarse WS, WD OT, IT, BP, RH
48	Savannah	O_3, WS, WD, IT

Outstate Area Cont'

Site#	Site Name	Parameter Monitored
49	Forest City, Exide	Pb

Acronym

PM_{10}	Particulate Matter (Diameter size≤10 micrometer)
$PM_{10\text{-}LC}$	PM_{10} Local Condition
$PM_{2.5}$	Particulate Matter (Diameter
PMCoarse	Particulate Matter (Diameter size between 2.5 and 10 micrometer
Spec	Speciation
SO_2	Sulfur Dioxide
NO_2	Nitrogen Dioxide
NO	Nitric Oxide
NO_y	Reactive Oxides of Nitrogen
NO_x	Oxides of Nitrogen
CO	Carbon Monoxide
Pb	Lead (High Volume)
BC	Black Carbon
Prec	Precipitation
WS	Resultant Wind Speed
WD	Resultant Wind Direction
OT	Outside Temperature
IT	Indoor Temperature
SR	Solar Radiation
BP	Barometer Pressure
RH	Relative Humidity
IMPROVE	Interagency Monitoring of PROtected Visual Environment (Regional Haze)

Notes:

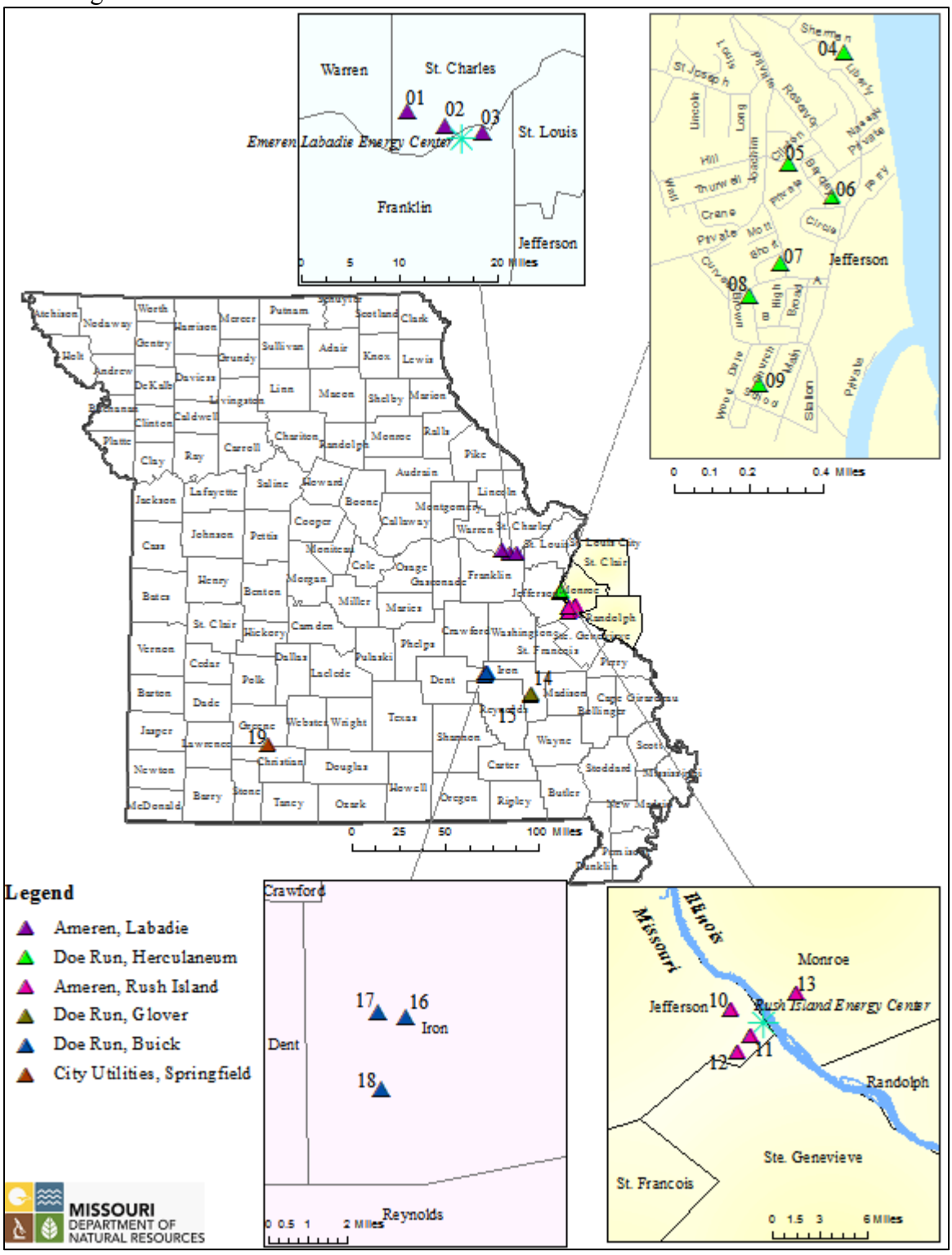
a. The acronym $PM_{10\text{-}LC}$ is also commonly referred to as PM_{10c} when collected with a low volume sampler consistent with appendix O to Part 50. $PM_{10\text{-}LC}$ means particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers where the concentration is reported at local conditions of ambient temperature and barometric pressure. $PM_{10\text{-}LC}$ is used in this document to describe any continuous or filter based PM_{10} low volume measurement concentration that is reported at local conditions of ambient temperature and barometric pressure.

b. PM_{10} 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).

c. PMcoarse is also frequently referred to as $PM_{10\text{-}2.5}$.

CURRENT AMBIENT AIR MONITORING NETWORK, INDUSTRY SITES

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



Legend (Industry Monitoring Network)

Ameren, Labadie Energy Center

Site#	Site Name	Parameter Monitored
01	Osage Ridge[a]	(WS, VWS, WD, OT, σ_ϕ, σ_e)^
02	Northwest	SO_2
03	Valley[a]	SO_2, (WS, VWS, WD, OT, SR, BP, RH, Prec, σ_ϕ, σ_e)^

Doe Run, Herculaneum

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

Ameren, Rush Island Energy Center

10	Weaver-AA	SO_2
11	Rush Tall Tower[a]	(WS, VWS, WD, OT, σ_ϕ, σ_e)^
12	Natchez	SO_2
13	Fults, IL[a]	SO_2, (WS, VWS, WD, OT, SR, BP, RH, Prec, σ_ϕ σ_e)^

Doe Run, Glover

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

Doe Run, Buick

Site#	Site Name	Parameter Monitored
16	Buick NE	Pb
17	Buick North#5*	Pb
18	Buick South#1*[a]	Pb, (WS, WD, OT, SR, BP, RH, Prec, σ_e)^

City Utilities, Springfield

Site#	Site Name	Parameter Monitored
19	James River South	SO_2

Acronym	
SO_2	Sulfur Dioxide
Pb	Lead (High Volume)
WS	Resultant Wind Speed
WD	Resultant Wind Direction
OT	Outside Temperature
SR	Solar Radiation
BP	Barometer Pressure
RH	Relative Humidity
Prec	Precipitation
VWS	Vertical Wind Speed
σ_e	Sigma Theta (Standard Deviation of Horizontal Wind Direction)
σ_ϕ	Sigma Phi (Standard Deviation of Vertical Wind Speed)

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

PROPOSED CHANGES TO THE NETWORK

1. Lead Monitoring Network

Changes to airborne lead monitoring requirements were published in the Federal Register: December 27, 2010 (Volume 75, Number 247). The new rules require a plan for monitoring lead sources emitting 0.50 tons per year 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 2011 National Emissions Inventory (NEI) and did not identify any additional lead sources emitting greater than 0.50 tons of lead per year 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). Department staff will review the 2014 NEI lead data and evaluate any newly identified sources as part of the 2016 Monitoring Network Plan before making any additional monitoring network changes. In addition air modeling simulation will be performed where necessary to estimate the maximum potential ground level airborne lead concentrations from the electric generating stations that combust coal as their primary fuel to substantiate a monitoring waiver request consistent with 40 CFR 58 Appendix D 4.5(a)(ii).

1.1 Forest City, Exide Monitoring Site

The 2013 Monitoring Network Plan identified the resumption of lead TSP monitoring at a location near the Exide Secondary Lead Smelter in Forest City, MO. The monitoring method initially deployed, as described in the 2012 Monitoring Network Plan, utilized the low volume PM_{10c} sampler and Pb-PM_{10} analysis performed by X-ray Fluorescence (XRF) following specifications and procedures in 40 CFR part 50 Appendix Q. Since the deployment of the Pb-PM_{10} FRM, as a Special Purpose Monitor, in March of 2012, three month rolling averages of airborne lead were monitored at concentrations greater than 0.15 micrograms per cubic meter ($\mu g/m^3$). As a result a Pb-TSP sampler was deployed in August 2012 for subsequent attainment determination. The department discontinued the Pb-PM_{10} FRM in December 2013 but the Pb-TSP sampler will continue to monitor lead at the site. The department will change the monitor designation from an SPM to SLAMS since the Exide facility is now reporting annual lead emissions greater than 0.5 tons per year and the monitor is required by the minimum monitoring requirements of 40 CFR 58.

1.2 Doe Run Operated Sites

1.2.1 Doe Run Lead 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. The Doe Run monitoring sites in Glover (called Post Office and Big Creek) are enclosed by fences within Doe Run property and are therefore no longer considered to be in ambient air.

1.2.2 Doe Run Meteorological Sites

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

With the cessation of operation of emission units at the Doe Run facility in Herculaneum, the department will carefully evaluate the lead data monitored at its sites in Herculaneum and may consider modification, particularly sampling schedules at the Mott site.

1.4 St. Joe State Park Monitoring Site

The department proposes to discontinue the Special Purpose lead monitoring site at St. Joe State Park. 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 remediation activity has since been completed as of late July/early August of 2014. The three-month rolling average has not exceeded the lead standard, 0.15 $\mu g/m^3$ since the site began monitoring lead on July 1, 2010. The highest three-month rolling average airborne lead concentration at that site was 0.141 $\mu g/m^3$ in July-September 2011. These elevated lead concentrations were attributable to remediation activities near the monitor. Since that time the lead concentration at that site has not exceeded 0.134 $\mu g/m^3$.

1.5 Blair Street TSP Lead Monitor

The department proposes to discontinue the TSP Lead Monitor at the Blair Street NCore site in St. Louis pending approval of revisions to Ambient Monitoring Quality Assurance and other requirements, 40 CFR 58.

2. Sulfur Dioxide Monitoring Network

On June 2, 2010, the US EPA revised the primary sulfur dioxide (SO_2) standard by establishing a 1-hour standard at the level of 75 parts per billion (ppb). The 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[1] identified the minimum network monitoring required by the Population Weighted Emissions Index (PWEI). This analysis has been updated using 2010 census data and 2011 NEI emissions. The required numbers of monitoring sites based on the PWEI (2 sites each in the St. Louis and Kansas City CBSAs) did not change.

On April 17, 2014, US EPA issued proposed data requirements regulations related to SO_2 air quality monitoring and air quality dispersion modeling near emission sources. These proposed regulations were published in the Federal Register on May 13, 2014, but have not yet been finalized. Once finalized, they will require either modeling or monitoring to adequately

[1] http://dnr.mo.gov/env/apcp/docs/2011monitoringnetwork.pdf

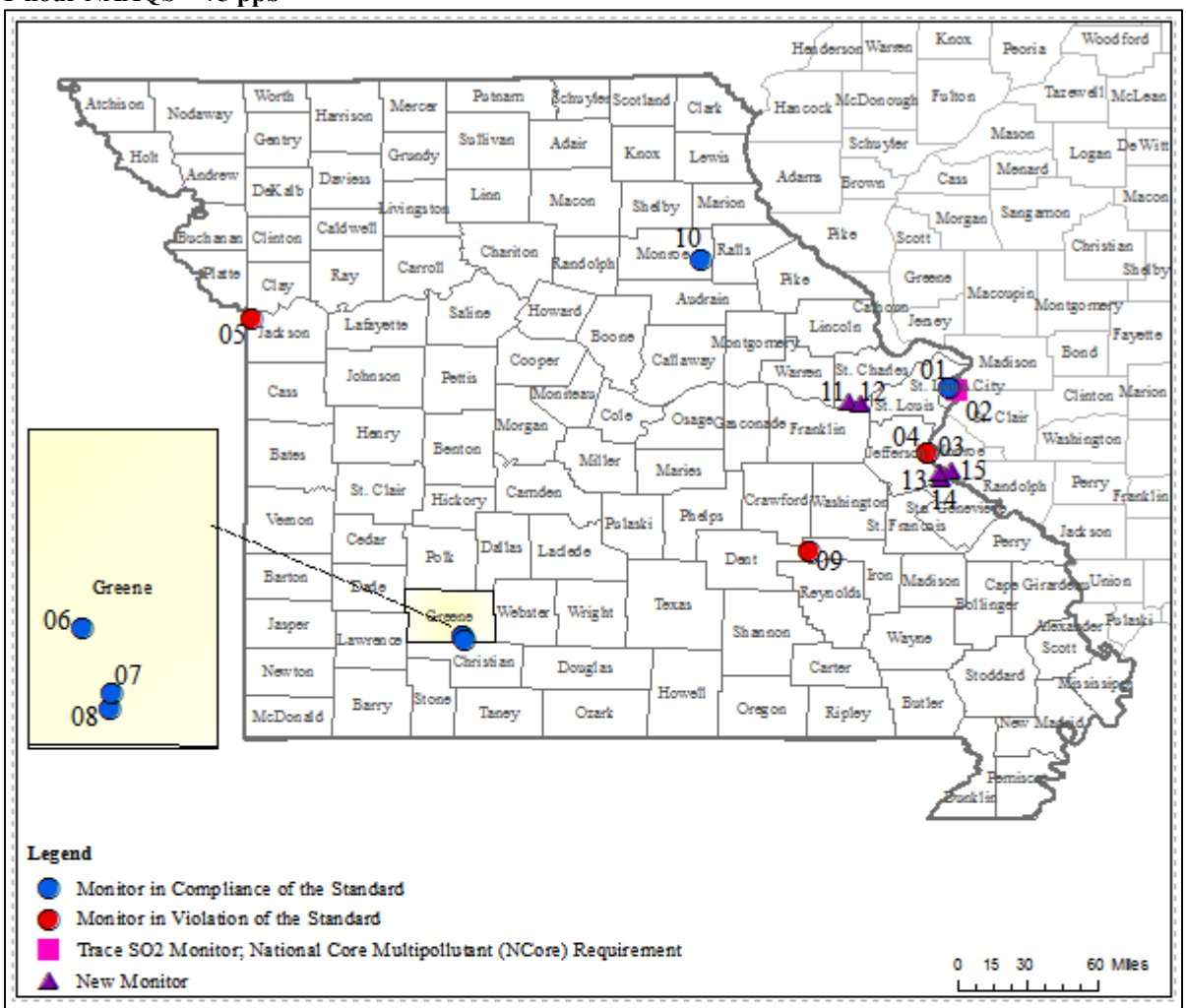
characterize ambient SO_2 concentrations near emission sources larger than a designated size; monitoring pursuant to these regulations will be required to begin in January 2017. The department's current SO_2 network will be modified as necessary to be consistent with the SO_2 Data Requirements Final Rule (DRR). The department has indicated if a source chooses to monitor, versus modeling, that the source is responsible for the cost of the monitor. However, the department will review, and approve the siting of the monitor(s) based on federal regulations and oversee the operation of the monitors. Currently, since the DRR is not final and the monitoring requirements are still draft, any monitors sited for SO_2 are considered Special Purpose Monitors. Once the rule is finalized, it is the intention to convert these monitors to SLAMS. In order to utilize the data for NAAQS compliance, the monitors will need a minimum of three years of monitoring data and the source cannot discontinue the monitor without prior approval from the department.

2.1 Special Purpose Industrial SO_2 & Meteorological Monitoring near the Labadie Energy Center

The department's current SO_2 monitoring network (Figure 2.1) was modified to add two special purpose SO_2 ambient air monitoring sites and two meteorological monitoring stations in an area around the Ameren UE Labadie Energy Center, located at 226 Labadie Power Plant Road in Franklin, County, MO. These monitoring sites (see the following table) are operated by Ameren UE under a department-approved Quality Assurance Project Plan (QAPP).

Summary of New Special Purpose Monitoring Stations (SPM):
Monitoring Objective: Source Oriented
Spatial Scale of representativeness: Middle Scale ($100m^2$ to 0.5 km^2)
Labadie Northwest -SO_2. (Lat: 38.5818 Long: -90.865528)
Labadie Valley NE -SO_2, 10 Meter Meteorological Station (Lat: 38.572522 Long: -90.796911)
Labadie Osage Ridge -Meteorological Station only, anemometers at 56.4 and 90 m levels (Lat: 38.60586 Long: -90.9362)

Figure 2.1. Missouri Statewide SO_2 Monitoring Network, 2015
1-hour NAAQS = 75 ppb



Site#	SiteName (12-14 DV*)	Site#	SiteName (12-14 DV*)	Site#	SiteName (12-14 DV*)
St. Louis Area, MO		Springfield Area, MO		Ameren, Labadie	
01	Margaretta (26)	06	South Charleston (35)	11	Northwest^~
02	Blair Street (46)	07	Wildwood Lane^**" (40)	12	Valley^~
03	Herc, Main Street**" **(172)**	08	James River-South^ (32)	Ameren, Rush Island	
04	Herc, Mott Street **(143)**	Outstate Area, MO		13	Weaver-AA^^
Kansas City Area, MO		09	Buick NE **(76)**	14	Natchez^^
05	Troost **(150)**	10	Mark Twain State Park" (8)	15	Fults, IL^^

**Quality assured data through December 31st, 2014*
***Discontinued*
"Less than 3 years of data
^Industry Monitor
~Began Monitoring in 2015
^^Site not operating and still under review
Red & Bold: Violation of the standard

MISSOURI DEPARTMENT OF NATURAL RESOURCES

In July 2012 the department and Ameren UE technical staff began discussing a potential SO_2 ambient air monitoring project to characterize areas of anticipated 1-hour SO_2 ground level impact from the Labadie Energy Center and to collect meteorological data suitable for use in regulatory dispersion modeling studies of the coal fired power plant's emission impact. The department anticipated that data from these monitors could potentially be used for several purposes including use in a future EPA rulemaking described as the SO_2 Data Requirements Rule. The proposed Data Requirements Rule and SO_2 implementation strategy is discussed in detail at EPA's website: http://www.epa.gov/oaqps001/sulfurdioxide/implement.html

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 the EPA and Sierra Club and Natural Resources Defense council. This agreement is intended to resolve litigation related to the deadline for completing the 1-hour SO_2 NAAQS designations process. Although this agreement and subsequent change in EPA's implementation strategy may limit the potential future use of quality assured SO_2 monitoring and meteorological data in this area for some purposes, the department believes characterizing current air quality and meteorology near the Labadie Energy Center will provide quantifiable and useful information to supplement the ongoing 1-hour SO_2 NAAQS implementation process.

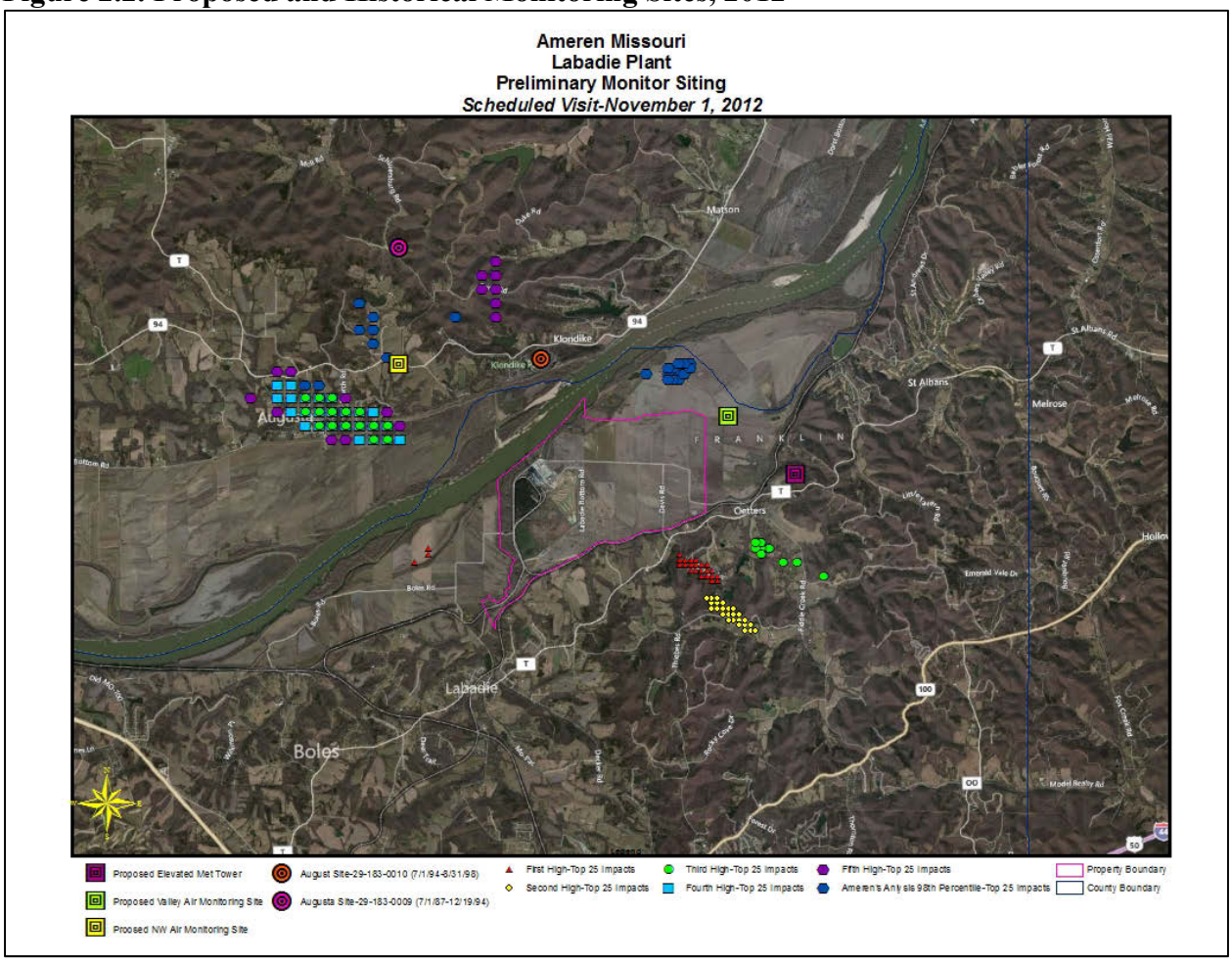
2.1.1 Analysis and Site Section

Due to the lack of recent on-site or nearby meteorological data at the Labadie Energy Center, the department used a weight of evidence approach to evaluate the siting of the Labadie SO_2 monitors and meteorological stations following guidance in the draft EPA SO_2 NAAQS Designations, Source-Oriented Monitoring, Technical Assistance Document (TAD) Draft December 2013. This evaluation included a review of relative dispersion modeling, local meteorological evaluation methodology submitted by Ameren UE, historical departmental SLAMS SO_2 monitoring data, nearby meteorological stations, and local topography.

As identified in the siting methodology document (Appendix 2) a meteorological monitoring station at the Jefferson City, MO regional airport was selected as a representative surface meteorological station for relative dispersion modeling analysis.

Figure 2.2 plots the proposed and historical SO_2 monitoring sites against the dispersion modeling output used for an on-site evaluation trip on November 1, 2012.

Figure 2.2. Proposed and Historical Monitoring Sites, 2012



The former MDNR ambient air monitoring sites known as Augusta (AQS #29-183-0009) and Augusta Quarry (AQS # 29-183-0010) were in operation from 1987-1994 and 1994-1998, respectively but subsequently discontinued due to relatively low monitored concentrations as compared to the previous SO_2 NAAQS; their continued operation was no longer required by NAAQS compliance monitoring rules in place at that time. Although these former monitoring sites show a history of monitoring exceedances of the current 1-hour SO_2 NAAQS, the frequency of exceedances at the Augusta Quarry site was relatively low; only about 22 1-hour SO_2 exceedances were monitored between 1994 and 1998. Some of these exceedances occurred on the same day, which suggests that this site may not have been located in an area expected to monitor frequent high 1-hour SO_2 concentrations.

Changes in 1-hour SO_2 design value trends over the period indicate that these sites were monitoring steep declines in 1-hour SO_2 concentrations (Figure 2.3) which was likely due to significant emissions reductions at the Labadie Energy Center. See the SO_2 emission trends in Figure 2.4. For reference, the Queeny Park site (AQS# 29-189-0006, 305 WEIDMAN ROAD) is not depicted in Figure 2.2 but was located approximately 30 km east-northeast of the Labadie Energy Center in St. Louis County and also monitored generally decreasing concentration trends over the same period.

Figure 2.3. Design Value Trends, Augusta, Augusta Quarry, and Queeny Park

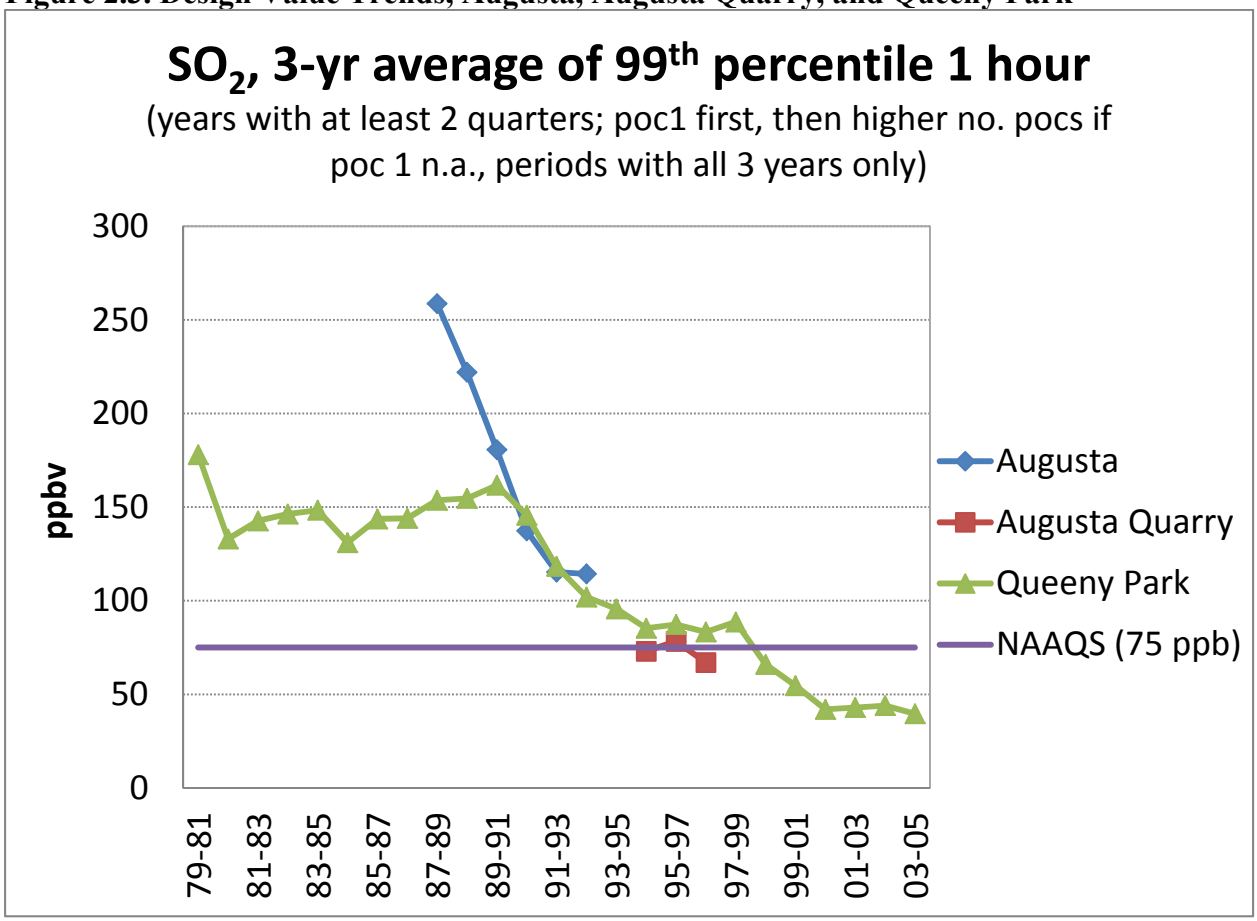
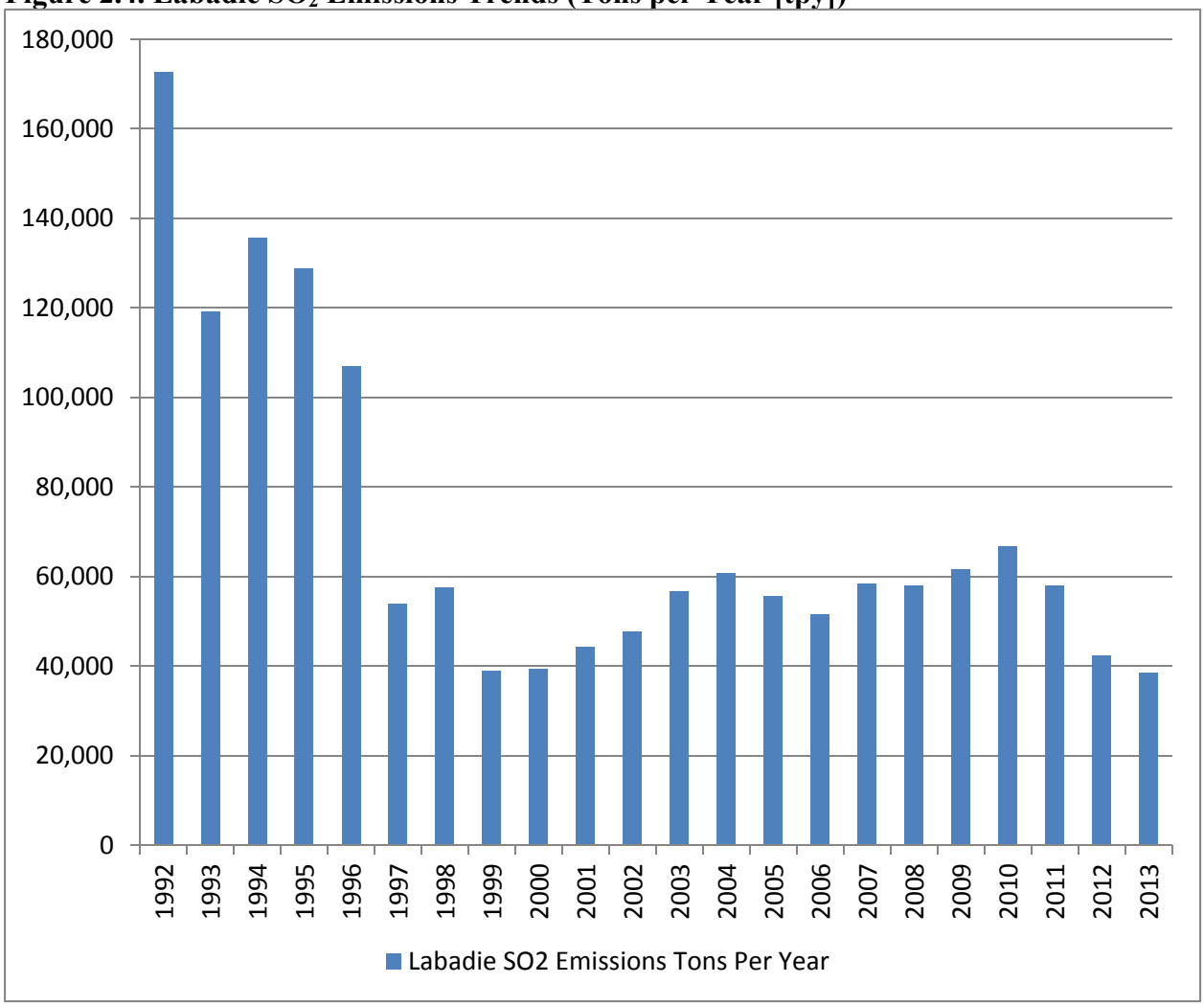


Figure 2.4. Labadie SO_2 Emissions Trends (Tons per Year [tpy])



In addition to SO_2 monitoring, the Augusta Quarry site had an on-site meteorological station monitoring wind speed and wind direction at a height of approximately 7 meters above ground level. However, this station was intended for culpability analysis and not of sufficient quality to be used for regulatory dispersion modeling consistent with the requirements of 40 CFR 51 Appendix W. Despite the limitations of this historical meteorological data, department staff annualized the data set for monitored SO_2 concentration trends by wind speed and wind direction to compare to more recent area meteorological data obtained from EPA's AirNowTech system and Ameren UE's monitor siting methodology document.

Figure 2.5 depicts hourly SO_2 concentrations vs. the on-site wind direction. 0 or 360 degrees indicates winds are blowing from the north, 180 degrees indicates winds blowing from the south, 270 winds blowing from the West, 90 winds blowing from the east. The Labadie Energy center is located approximately south-southwest of the former Augusta Quarry site. Figure 2.6 shows hourly SO_2 concentrations vs. wind speed for the same period.

Figure 2.5. SO_2 Concentration Trends by Hour vs. the On-Site Wind Direction

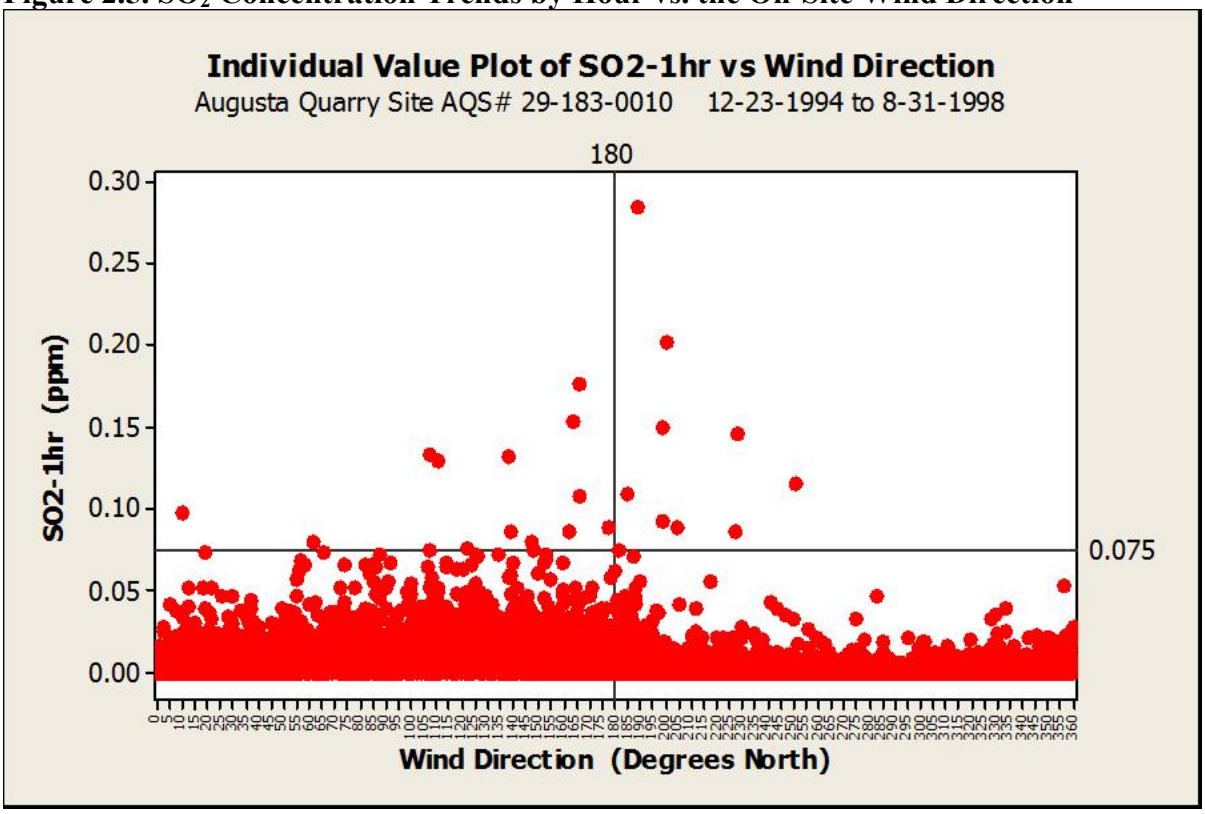


Figure 2.6. SO_2 Concentration Trends by Hour vs. the On-Site Wind Speed

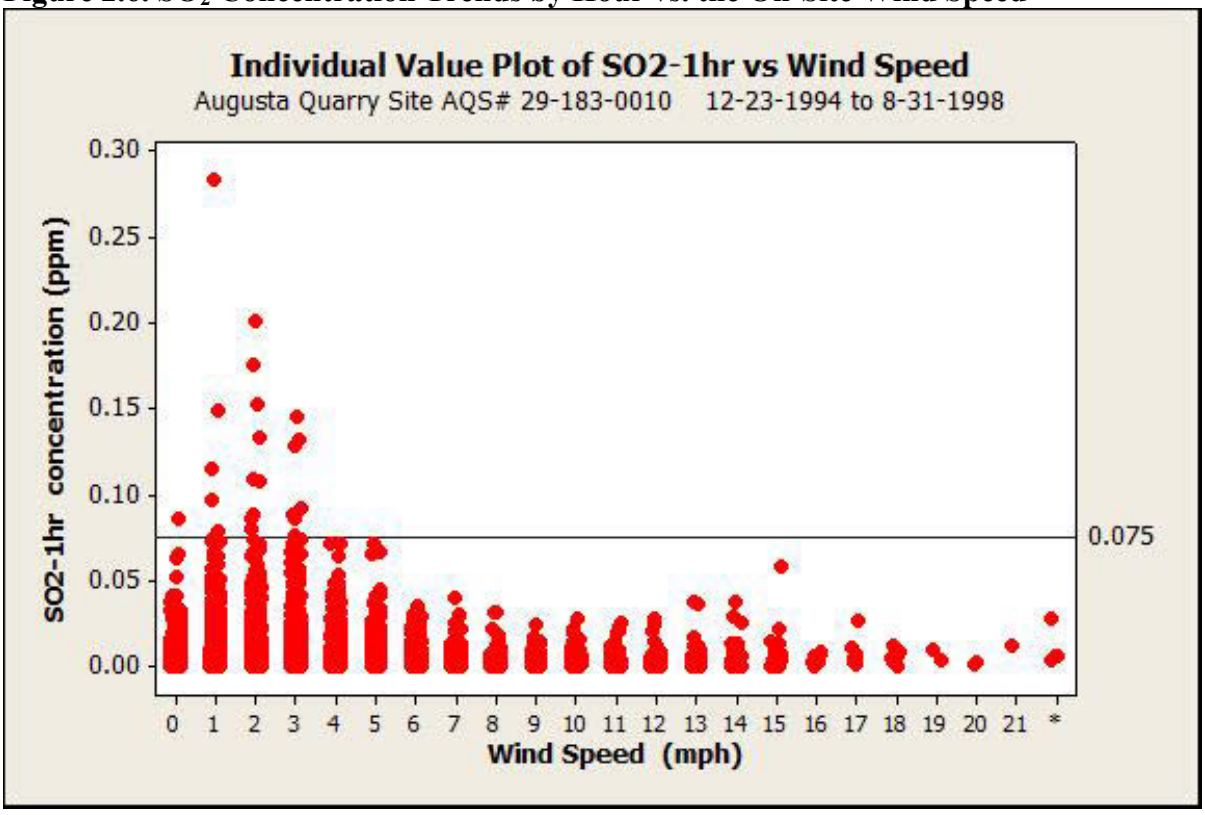


Figure 2.7 shows frequency of wind direction at the Augusta Quarry site. Site evaluation and photographic records for this site indicate that there was a stand of trees to the southeast of the monitoring site which may explain the low frequency in wind direction from the 50 to 150 degree sector of wind rose. The frequency of winds from 0 to 50 degrees tends to indicate river valley influence since the site was oriented on the bluff where the river valley runs northeast to southwest. However, due to the nearby trees and the low elevation of this anemometer (about 7 meters above ground level) the department cautions use of this data for some purposes. However, it does provide another piece of evidence that local meteorology in this area is complex.

Figure 2.7. Former Augusta Quarry Frequency of Wind Direction by Degrees Compass (Degrees from North).

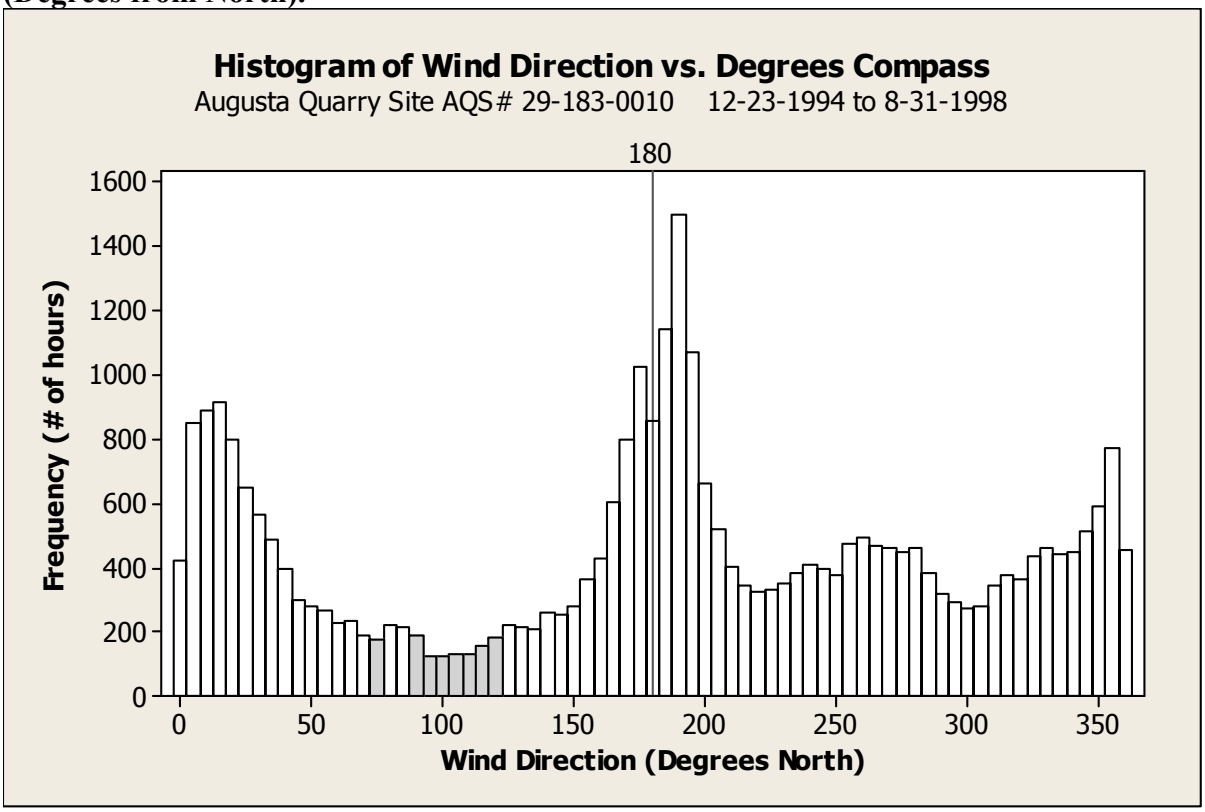
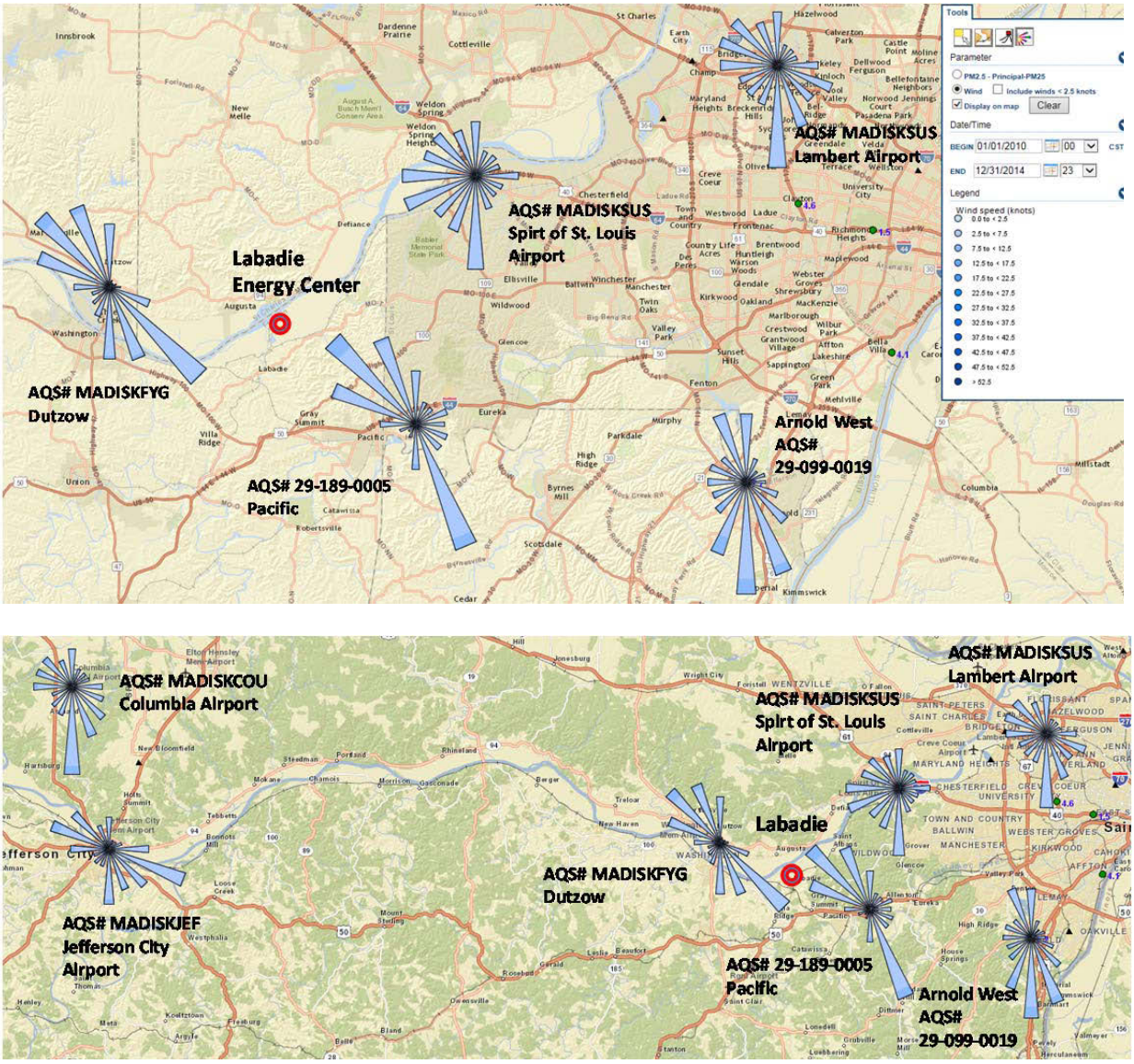


Figure 2.8 shows wind rose plots for other area meteorological stations reporting data to EPA's AirNowTech system (2010-2014). Several weather stations in the plot have predominant wind directions from the southeast: Pacific (AQS # 29-189-0005), Jefferson City (MADIS-KJEF), and MADIS (MADISKFYG) near Dutzow MO. This result tends to indicate that, in the absence of strong synoptic forcing, the river valley will tend to influence local wind flow.

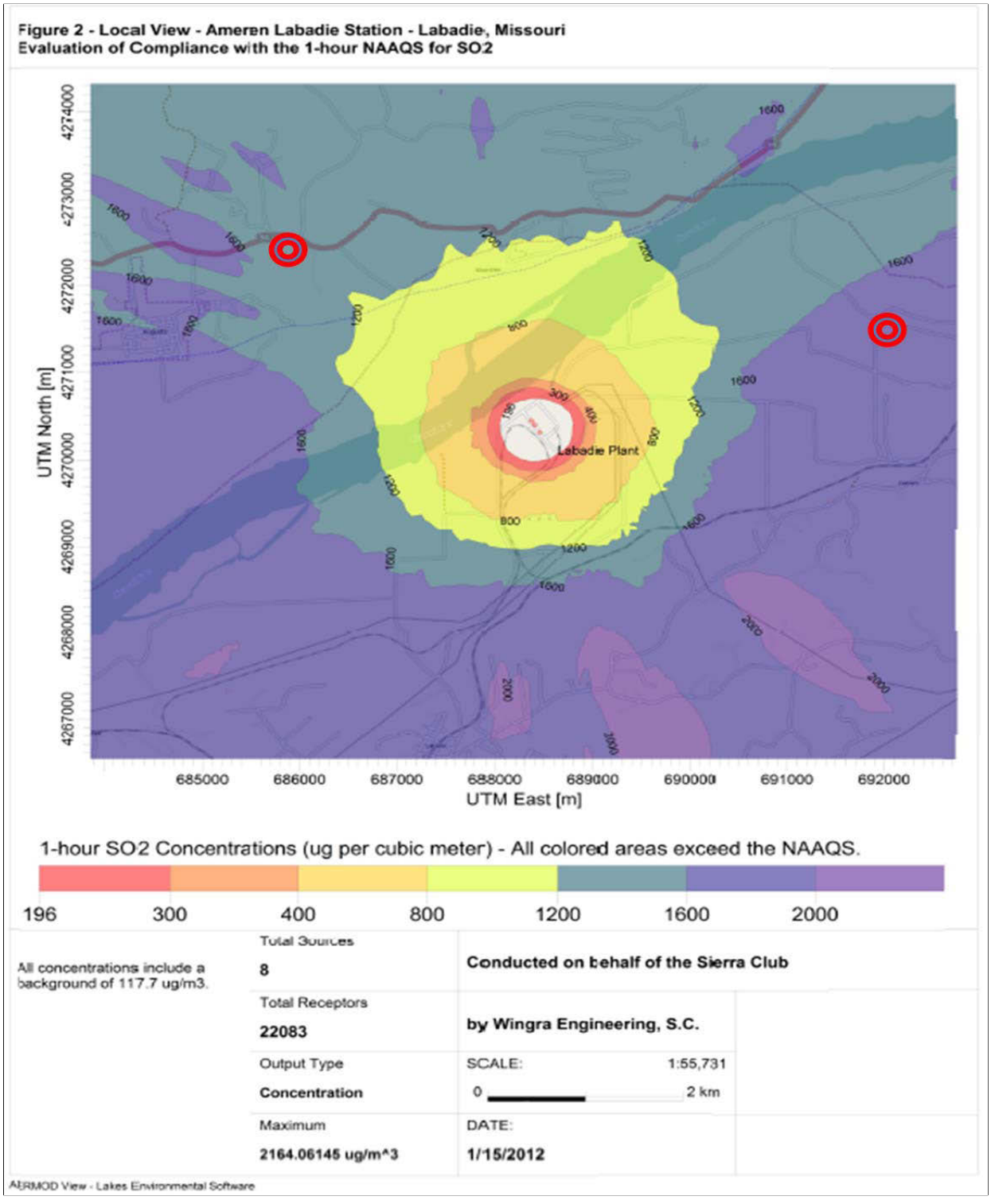
Figure 2.8. Wind Rose Plots Surrounding Labadie



Department staff also evaluated dispersion modeling by the Sierra Club submitted as comments to the department's 2014 Monitoring Network Plan. The Sierra Club's dispersion modeling reportedly used the Spirit of St. Louis Airport surface meteorological station (located approximately 22 miles northeast of the Labadie Energy Center) for the surface meteorological data input.

Figure 2.9 shows the approximate location of proposed Labadie SO_2 Monitoring sites relative to Sierra Club modeling submitted as public comments to the MO 2014 Monitoring Network Plan. The Labadie Valley (NE) site is superimposed on the purple shaded region, suggesting that if this modeling is representative of the area one of the proposed monitoring sites is located in an area of anticipated high SO_2 concentrations.

Figure 2.9: Proposed Labadie Monitoring Locations Relative to Sierra Club Modeling Results



2.2 Special Purpose Industrial SO_2 & Meteorological Monitoring near the Rush Island Energy Center

Discussion has begun between the department and Ameren Missouri regarding special purpose SO_2 monitoring near the Rush Island generating station in Jefferson County, similar to that discussed above near the Labadie generating station. On March 23, 2015 the Department and Ameren UE entered into a Consent Agreement (Appendix 3) which included Ameren installing and operating an SO_2 monitoring network around the Rush Island Energy Center under department oversight.

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 1-hour SO_2 NAAQS and the pending promulgation of the EPA Data Requirements Rule.

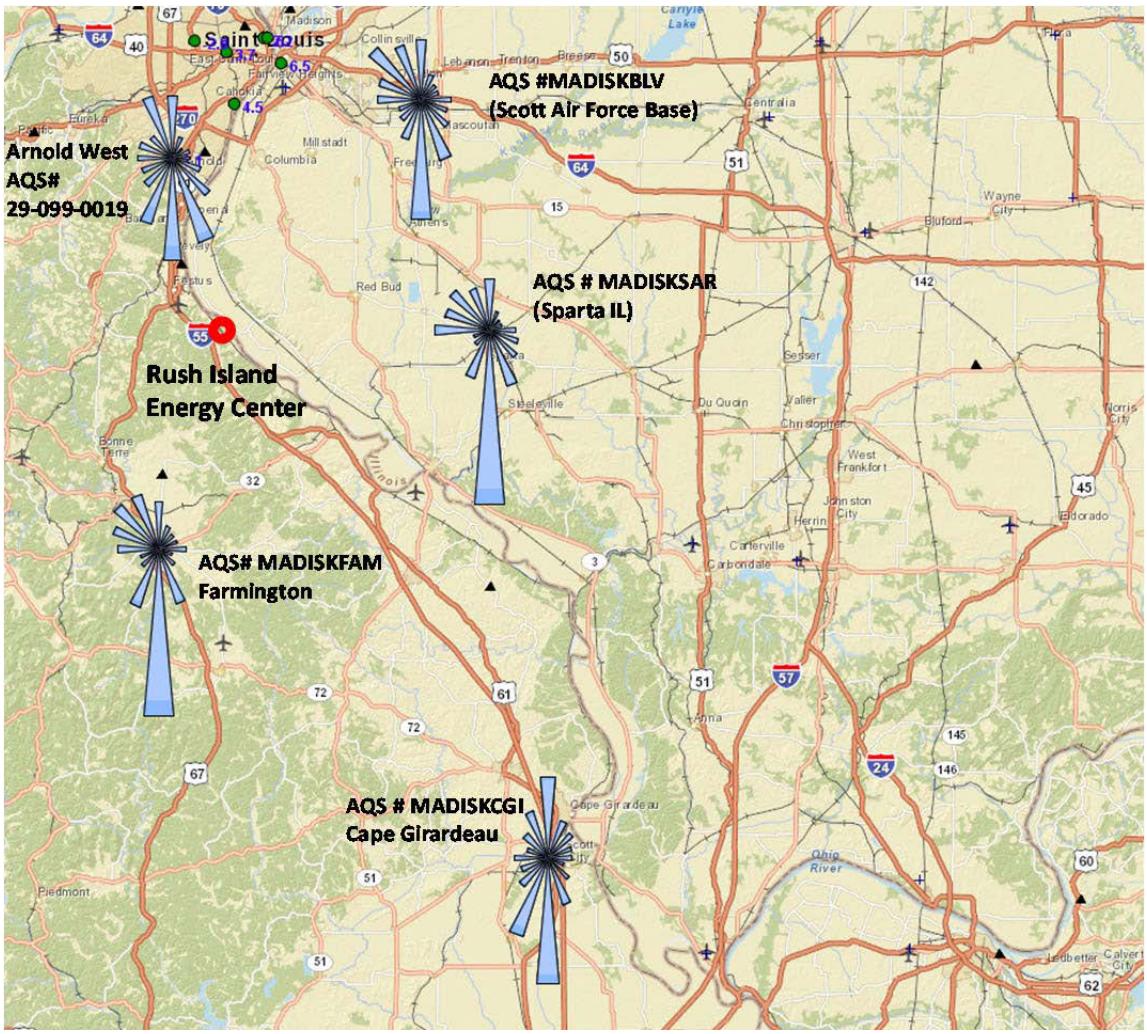
On April 29, 2015 Ameren submitted a meteorological and SO_2 monitoring site methodology document for department review and approval (Appendix 4). In anticipation of receiving the methodology document and monitor siting proposal, department staff visited candidate site locations with Ameren staff on March 31, 2015 to determine if the candidate locations meet the ambient air monitoring siting criteria of 40 CFR 58 Appendix E. On May 20, 2015 staff visited and evaluated the siting criteria of a third candidate SO_2 monitoring location.

Staff reviewed the closest meteorological stations closest to the Rush Island Energy Center and confirmed that other meteorological stations show similar wind rose patterns as the Cahokia IL station selected for dispersion modeling (figure 2.10). On a regional scale and over longer averaging time wind patterns may look similar but for the purposes of dispersion modeling wind roses may not be the best tool to compare meteorological patterns.

Due to the lack of historical departmental SO_2 monitoring around the Rush Island Energy Center, the Rush Island monitoring network design will rely on an evaluation of dispersion modeling rather than the weight of evidence approach which was used for the Labadie Energy Center monitoring network evaluation. Department staff conducted dispersion modeling in reviewing the 3 ambient monitoring sites and 2 meteorological stations Ameren is proposing for this project. This modeling review supports the selection of the general areas of monitoring sites proposed by Ameren based on their modeling (Appendix 5).

Summary of New Rush Island area Special Purpose Monitoring Stations (SPM):
Monitoring Objective: Source Oriented
Spatial Scale of representativeness: Middle Scale ($100m^2$ to 0.5 km^2)
Weaver-AA -SO_2. (Lat: 38.144529 Long: -90.304726)
Natchez -SO_2, (Lat: 38.10525 Long: -90.29842)
Fults, IL, -SO_2, 10 Meter Meteorological Station (Lat: 38.15908 Long: -90.22728)
Rush Tall Tower -Meteorological Station Only, anemometers at 60m and 90m levels (Lat: 38.11999 Long: -90.28214)

Figure 2.10: Meteorological Stations Closest to the Rush Island Energy Center



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. In addition to the regular NATTS monitoring, additional NATTS grant funds are being utilized to support continuing collocation of a near real time PM_{10} Metals Monitor (Xact™ 620) at the Blair Street site to increase understanding of the temporal variation of metals in the ambient air (particularly arsenic and lead) routinely measured by the time integrated 24-hr filter based PM_{10} sampling at this site. This project is useful in supplementing ambient air monitoring data objectives addressed in EPA's multi pollutant strategy. Continued availability of funding will allow the PM_{10} Metals Monitor (Xact™ 620) to continue for at least the first half of 2016.

3.2 Organic and Elemental Carbon Monitor Evaluation Project

The EPA Office of Air Quality Planning and Standards (OAQPS) contacted the EPA Regional Office and the state of Missouri about participating in a three year monitor evaluation study which began in the summer/fall of 2011. EPA provided the monitor and certain related components in exchange for the state providing in-kind staff time to operate and report data to the EPA Air Quality System (AQS) from the instrument. The location for the study is the Blair St. site, since the site is currently part of the NCore, NATTS and Chemical Speciation monitoring programs. The data from the Blair Street site is used extensively in various health and air pollution studies. Since elemental and organic carbon account for a significant amount of the particulate matter mass measured at this site at various times, understanding the temporal variation in carbon species relative to the 24-hr integrated filter based carbon data will be useful in understanding the local source contributions and diurnal variation in the carbon concentrations. This project will be useful in supplementing ambient air monitoring data objectives addressed in EPA's multi-pollutant monitoring strategy.

Currently, the preliminary near real-time monitoring data for this monitor is being reported each hour to the State of Missouri web page and is being uploaded to AQS.

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 NO_2 sites using Aethalometers.

4. $PM_{2.5}$ Monitoring Network

4.1 $PM_{2.5}$ SLAMS Network

The PM_{10c} (local conditions of ambient temperature and barometric pressure) channel and PMcoarse ($PM_{10-2.5}$) channel from the TEOM-1405-DF are being reported for each site as a Special Purpose Monitor since they are available simultaneously with the $PM_{2.5}$ FEM channel. The EPA designated the TEOM-1405-DF, operating with firmware version 1.70 and later, as a Federal Equivalent Method (FEM) on November 12, 2013 for PM_{10c} and $PM_{10-2.5,}$ (http://www.gpo.gov/fdsys/pkg/FR-2013-11-12/pdf/2013-27016.pdf). The Thermo-Fisher 1.70 firmware version was integrated into the TEOM-1405-DF samplers and the department is evaluating the performance of the firmware. Once they are determined to be successfully operating as FEM comparable instruments, the PM_{10c} and $PM_{10-2.5}$ parameters will provide more temporal and spatial coverage for the various fractions of particulate matter at the $PM_{2.5}$ monitoring sites in the network.

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

The TEOM-1405-DF is collocated at the St. Joseph Pump Station site to satisfy the collocation requirement for that FEM method.

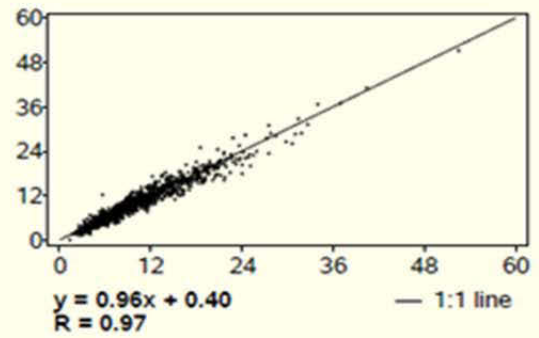
Class III Performance Criteria of 40 CFR Part 53
Blair Street St. Louis Air Quality System # 29-510-0085
TEOM-1405-DF, EQPM-0609-182 ($PM_{2.5}$)
January 6, 2012 through December 31, 2014
Source: EPA AirData $PM_{2.5}$ Continuous Monitor Comparability Assessments

PM 2.5 Continuous Monitor Comparability Assessment

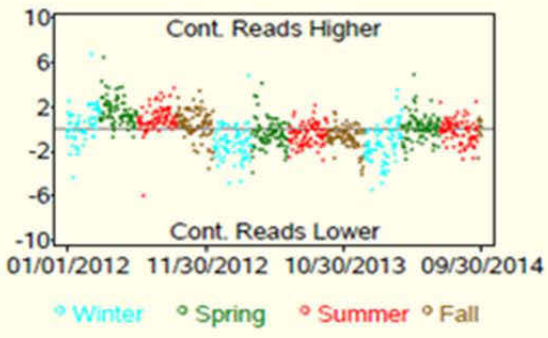
Site 29-510-0085: St. Louis, MO

FRM: R & P Model 2025 PM-2.5 Sequential Air Sampler w/VSCC-Gravimetric (145,118), PM2.5 - Local Conditions (88101), POC=1
Cont: Thermo Scientific TEOM 1405-DF Dichotomous FDMS-FDMS Gravimetric (182), PM2.5 - Local Conditions (88101), POC=4

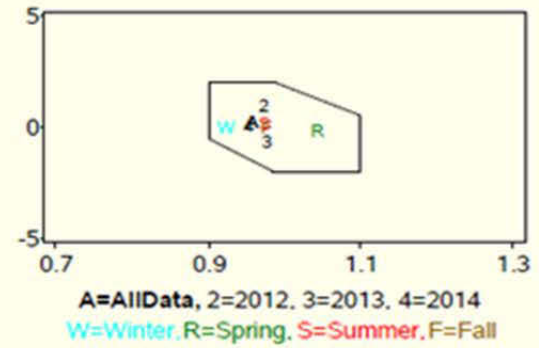
Cont. (y) vs. FRM (x) PM 2.5 (µg/m³)



Cont. minus FRM PM 2.5 (µg/m³)

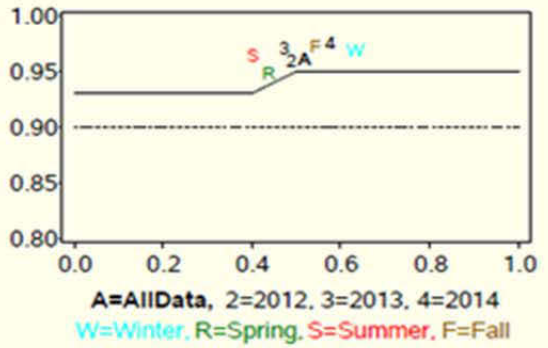


Additive (y) vs. Multiplicate (x) Bias



A=AllData, 2=2012, 3=2013, 4=2014
W=Winter, R=Spring, S=Summer, F=Fall

R (y) vs. FRM CCV (x)



A=AllData, 2=2012, 3=2013, 4=2014
W=Winter, R=Spring, S=Summer, F=Fall

Mean PM 2.5 (µg/m³)

Dataset	N	FRM	Cont	Ratio (Cont/FRM)
AllData	**934**	**11.0**	**11.0**	**0.99**
Winter	224	11.8	11.0	0.94
Spring	263	9.7	10.1	1.04
Summer	261	11.8	11.9	1.01
Fall	186	10.9	10.8	0.99
2012	335	10.3	11.1	1.08
2013	342	11.1	10.4	0.93
2014	257	11.9	11.5	0.97

Appendix A Statistics

Dataset	N (all observations)	Bias	N (only >= 3 ug/m^3)	Bias
AllData	**934**	**-0.1**	**904**	**0.6**
Winter	224	-5.1	213	-4.4
Spring	263	3.5	253	5.0
Summer	261	1.0	258	1.2
Fall	186	-0.9	180	-0.5
2012	335	10.2	328	10.5
2013	342	-8.5	329	-7.3
2014	257	-2.4	247	-2.0

Data Source: EPA AQS Data Mart

Generated on: February 25, 2015

IMPROVE Protocol Site; El Dorado Springs

The EPA has been conducting an assessment of the IMPROVE Protocol Sites in an effort to optimize the Chemical Speciation Network (CSN) and create a network that is sustainable going forward. As a result of this assessment, EPA is recommending defunding a number of monitoring sites. Should these recommendations become final, the state of Missouri will be affected at the following sites that are recommended for defunding: El Dorado Springs. EPA is currently soliciting feedback regarding their recommendations. These changes are recommended to take place in January 2016. Final changes to the CSN network in the state of Missouri will be reflected in the 2016 Monitoring Plan

Missouri State University Site (MSU)

New construction on the campus of Missouri State University in Springfield required relocation of the MSU monitoring site in April 2015. The $PM_{2.5}$ and PM_{10} instrument at MSU was relocated to the Hillcrest High School site; also in Springfield about 4 miles to the north (see Figure 4.1). With winds predominately from the south in the Springfield area as depicted by winds at the Joplin Regional Airport below (Figure 4.2), the Hillcrest site is more than likely to monitor similar $PM_{2.5}$ impacts as the MSU site. The Hillcrest site formerly monitored for PM_{10} from 1989 to 1999 and the trends were similar to those at MSU (see Figure 4.3). Other potential sites were evaluated and discussed with EPA Region VII staff, and relocation to the Hillcrest High School site was determined to be the best option.

Figure 4.1. MSU Relocated to Hillcrest

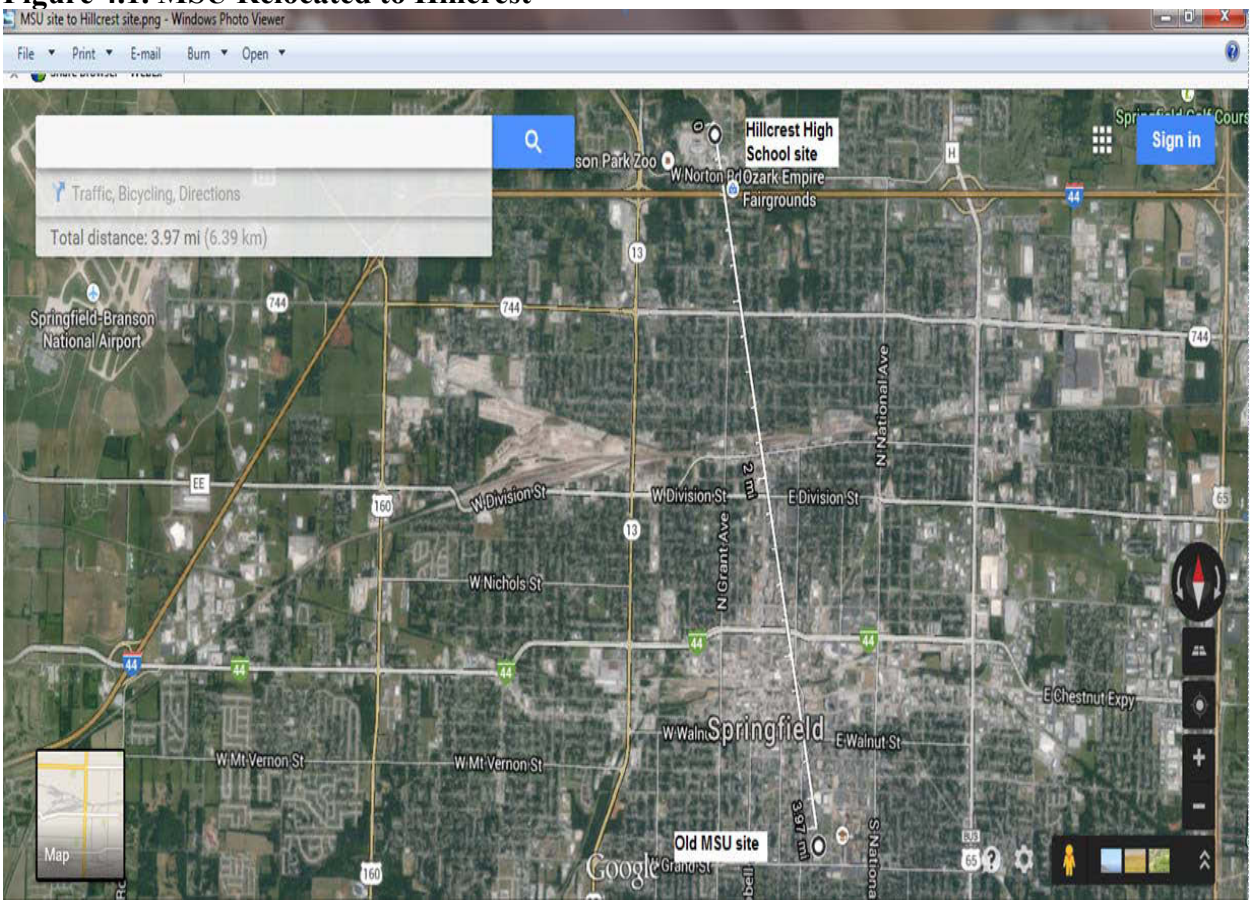


Figure 4.2. Wind Roses from Joplin Regional Airport

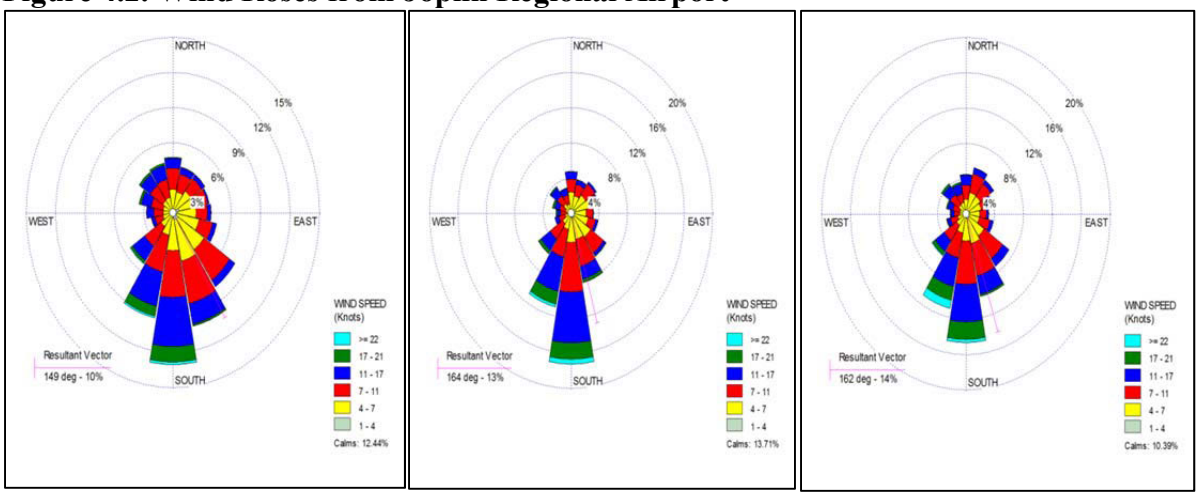
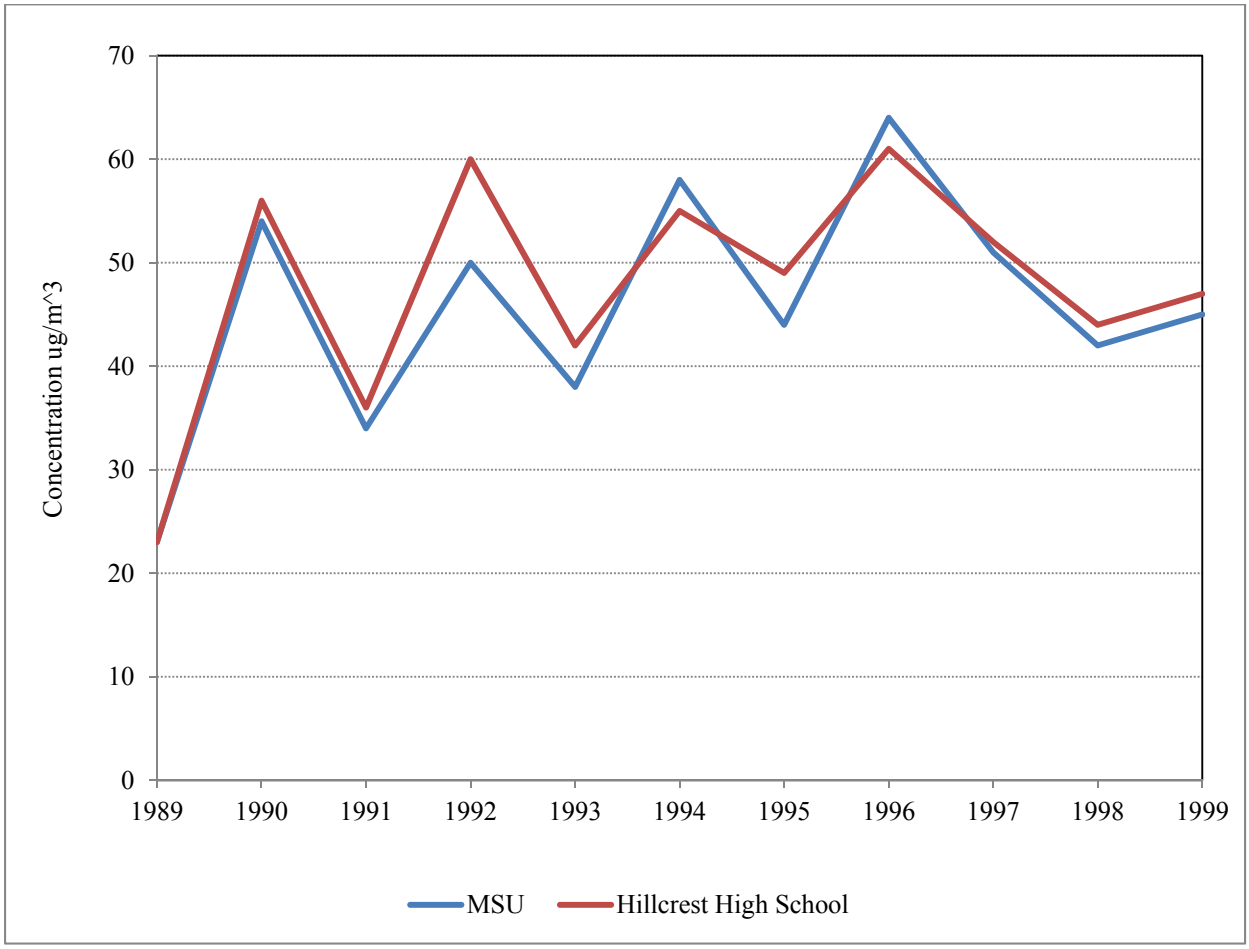


Figure 4.3. MSU and Hillcrest High School PM_{10} 24-hour Average 1st Maximum Concentrations



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. Bonne Terre and Liberty have been discontinued as per recommendation from the US EPA evaluation of the national speciation network. The sampling schedule at Arnold West has been modified to every six days.

REVISED $PM_{2.5}$ MONITORING NETWORK

Site	Schedule*	Type	Agency	NAAQS
St. Louis				
1. Blair St.	1	FRM	ESP	24 hr & Annual, NCore PMcoarse
	6	Collocated	ESP	Doubles as PMcoarse collocated sampler
	3	Speciation	ESP	
	H	TEOM-1405-DF FEM	ESP	AQI, NCore PM10-2.5 continuous
2. Branch St.	H	TEOM-1405-DF FEM	ESP	24 hr & Annual/AQI, PM10-2.5 continuous (unique middle scale monitor†)
3. South Broadway	H	TEOM-1405-DF FEM	ESP	24 hr & Annual/AQI, PM10-2.5 continuous
4. Ladue	H	TEOM-1405-DF FEM	ESP	24 hr & Annual/AQI, PM10-2.5 continuous
5. Arnold West	6	Speciation	ESP	
	H	TEOM-1405-DF FEM	ESP	24 hr & Annual/AQI, PM10-2.5 continuous
6. Forest Park (near-roadway)	H	TEOM-1405-DF FEM	ESP	24 hr & Annual/AQI, PM10-2.5 continuous (micro scale monitor)
Kansas City				
7. Liberty	H	TEOM-1405-DF FEM	ESP	24 hr & Annual/AQI, PM10-2.5 continuous
8. Troost	6	Collocated FRM	ESP	24 hr & Annual (Quality Assurance)
	H	TEOM-1405-DF FEM	ESP	24 hr & Annual/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/AQI, PM10-2.5 continuous
Springfield				
11. Hillcrest High School	H	TEOM-1405-DF FEM	ESP	24 hr & Annual/AQI, PM10-2.5 continuous
St. Joseph				
12. Pump Station	H	TEOM-1405-DF FEM	ESP	24 hr & Annual/AQI, PM10-2.5 continuous
	H	TEOM-1405-DF FEM	ESP	Collocated FEM-PM2.5
Outstate				
13. El Dorado Springs	H	TEOM-1405-DF FEM	ESP	24 hr & Annual/AQI, PM10-2.5 continuous
	3	IMPROVE - Protocol	ESP	
14. Mingo	3	IMPROVE	Fish & Wildlife Service	
15. Hercules Glades	3	IMPROVE	Forest Service	

* 1 = Everday sampling; 3 = Every third day; 6 = Every sixth day; H = Continuous monitoring, hourly data reported.

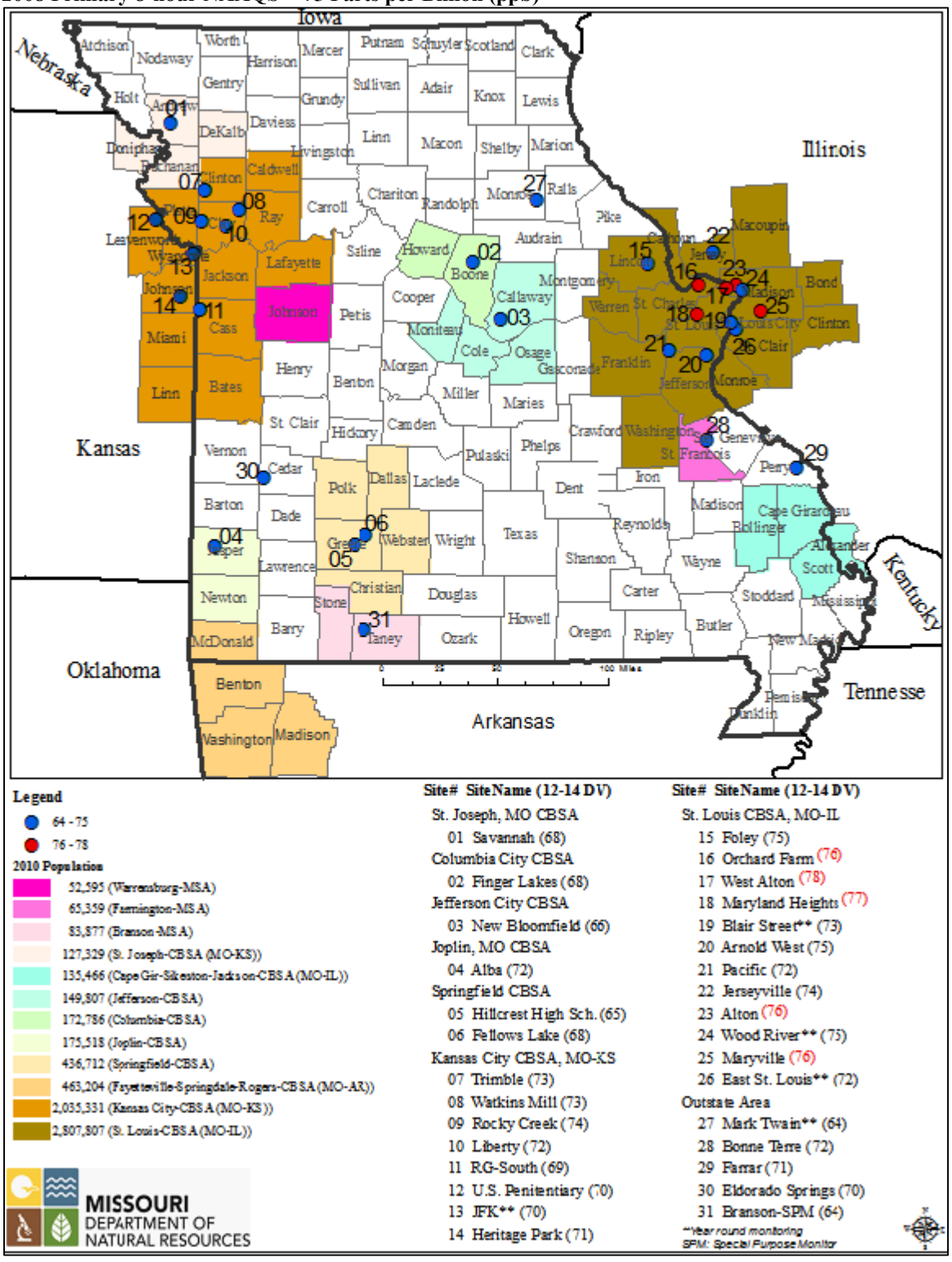
† The Branch St. Monitor is a unique middle scale impact site and not eligible for comparison to the Annual $PM_{2.5}$ NAAQS consistent with 40 CFR 58.30.

5. Ozone Monitoring Network

There are no 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.

Proposed changes to the ozone NAAQS were published in the Federal Register on December 18, 2014, with final regulations expected sometime in late 2015. The proposed changes include reduction in the level of the standard to somewhere in the range of 65 to 70 ppb, an extension of the ozone monitoring season in Missouri to include the month of March, a requirement for photochemical assessment monitoring stations (PAMS) at NCore sites in nonattainment areas starting in 2017, and a requirement for enhanced monitoring in nonattainment areas. The ozone monitoring network will be re-evaluated once these regulations are finalized.

Missouri Statewide Ozone (O_3) Monitoring Network, 2015
2008 Primary 8-hour NAAQS = 75 Parts per Billion (ppb)

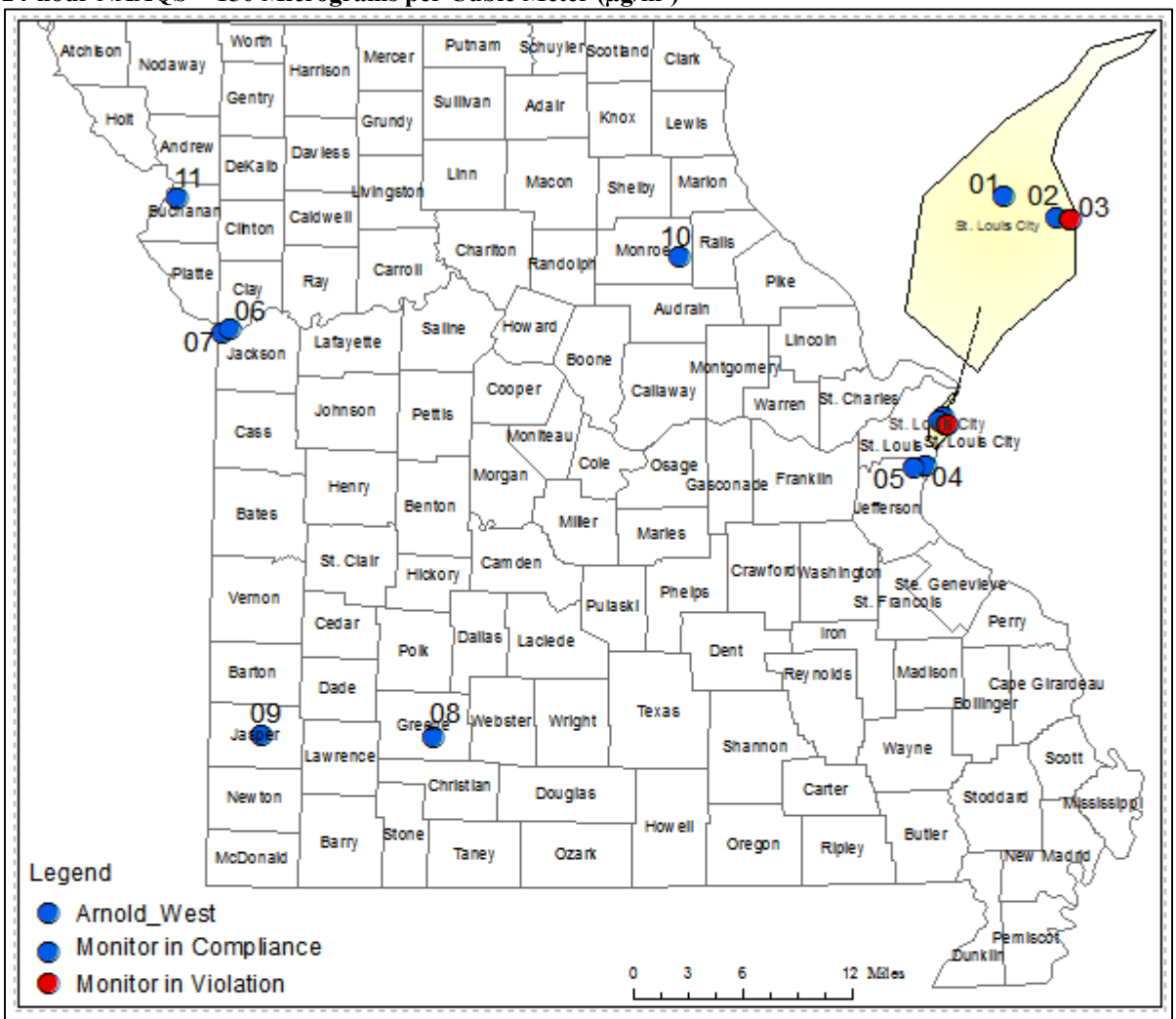


6. PM_{10} Monitoring Network

As discussed in Section 4, the TEOM-1405-DF monitor has the capability of reporting the PM_{10c} along with the $PM_{2.5}$ FEM measurements. The 1.70 firmware version was integrated into the TEOM-1405-DF samplers and the department is evaluating the performance of the samplers through data analysis. The number of continuous PM_{10} monitors comparable to the NAAQS will increase by four (4) sites to include Blair Street, Ladue, South Broadway and Forest Park, the near roadway site, in the St. Louis area. This will bolster the count toward the PM_{10} minimum monitoring requirements in this CBSA to a total count of ten (10) monitors, as specified in 40 CFR 58 Appendix D §4.6.

As discussed in Section 4 above, the $PM_{2,5}$ and PM_{10} monitor at Missouri State University in Springfield was relocated to Hillcrest High School in April 2015. As discussed in the 2014 Monitoring Network Plan, the PM_{10} monitor at Oakville will be moved to Arnold West.

Missouri Statewide PM_{10} Monitoring Network, 2015
24-hour NAAQS = 150 Micrograms per Cubic Meter ($\mu g/m^3$)



Site#	SiteName (12-14 # of Expected Exceedances*)
	St. Louis Area
01	Margaretta** (0.0)
02	Blair Street (0.0)
03	Branch Street** (2.1)
04	Oakville**~ (0.0)
05	Arnold West**(-)
	Kansas City Area
06	Front Street**(0.0)
07	Troost (0.0)

Site#	SiteName (12-14 # of Expected Exceedances*)
	Springfield Area
08	Hillcrest High School**^ (0.0)
	Outstate Area
09	Carthage** (0.9)
10	Mark Twain State Park** (0.0)
11	St. Joseph Pump Station (0.0)

Quality assured data through December 31st, 2014
^Relocated from MSU, April 2015
***Continuous monitor*
~Discontinued, the monitor relocated to Arnold West

MISSOURI DEPARTMENT OF NATURAL RESOURCES

The 24-hour standard is attained when the expected number of exceedances is less than or equal to one when averaged over 3 calendar years.

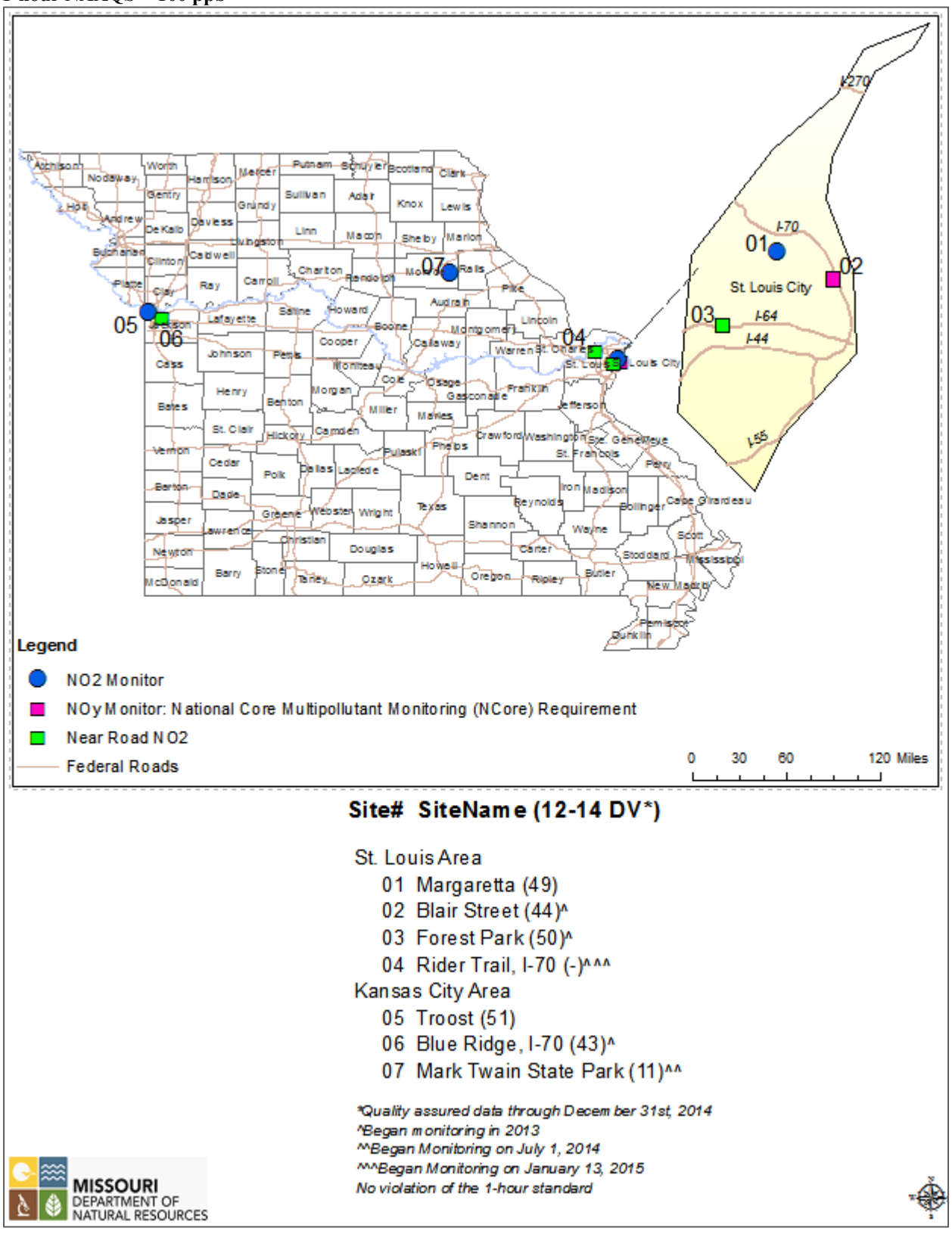
7. Nitrogen Dioxide (NO_2) Monitoring Network

The department added one near-roadway NO_2 monitor to the network in the St. Louis area at the Forest Park I-40/64 near-roadway monitoring site on January 1, 2013. A near-roadway site in the Kansas City area at the Blue Ridge I-70 site was added on July 1, 2013. On January 10, 2015 the department added a second near-roadway NO_2 monitor to the network the St. Louis area at the Rider Trail 1-70. The Community-wide monitoring network requirement of 40 CFR 58 Appendix D, 4.3.3(a) is satisfied by the existing Troost and Margaretta monitoring sites.

EPA has identified the Margaretta NO_2 site as one of the minimum of forty additional NO_2 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. This requirement is the responsibility of the respective Regional Administrators working with their respective states consistent with 40 CFR 58 Appendix D, 4.3.4(a). For additional information about this topic consult the following EPA website resource: http://www.epa.gov/ttn/amtic/svpop.html

The department added, in 2013, a photolytic NO_2 monitor at the Blair Street NCore site, St. Louis. Photolytic NO_2 monitoring is identified in EPA's long term monitoring strategy, and this monitoring, supplements the NOy monitoring being conducted at the NCore site. A photolytic NO_2 monitor is also being operated at the Forest Park near-roadway monitoring site to evaluate the differences between the tradition molybdenum converter based NO_2 method and the photolytic NO_2 method in the near-roadway monitoring environment. Also, a direct NO_2 instrument on loan from Teledyne API is being temporarily operated for evaluation at the Forest Park site.

Missouri Statewide Nitrogen Dioxide (NO_2) Monitoring Network, 2015
1-hour NAAQS = 100 ppb



Site# SiteName (12-14 DV*)

St. Louis Area
- 01 Margaretta (49)
- 02 Blair Street (44)^
- 03 Forest Park (50)^
- 04 Rider Trail, I-70 (-)^^^

Kansas City Area
- 05 Troost (51)
- 06 Blue Ridge, I-70 (43)^
- 07 Mark Twain State Park (11)^^

**Quality assured data through December 31st, 2014*
^Began monitoring in 2013
^^Began Monitoring on July 1, 2014
^^^Began Monitoring on January 13, 2015
No violation of the 1-hour standard

MISSOURI DEPARTMENT OF NATURAL RESOURCES

7.1 NO_2 Near-Roadway Monitoring

7.1.1 Near-Road Monitoring Requirements

NO_2: The final rule revising the NAAQS to add the 1-hour standard of 100 ppb (3-year average of annual 98th percentile), signed 1/22/2010 and published 2/9/2010 requires near-road NO_2 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 7/2012 air monitoring plan and begin operation by 1/1/2013. The schedule was revised in a rulemaking published in the Federal Register on March 14, 2013. The revised rule now requires that the first St. Louis area near-road site begin operation in January 2014, the Kansas City area site begin operation in January 2014, and the second St. Louis area site begin operation in January 2015. Due in large part to receipt of one-time 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 site selection process is described in the 2013 Monitoring Network Plan, http://dnr.mo.gov/env/apcp/2013monitoringnetworkplan.pdf. The second St. Louis area site was established in January 2015 as described below.

7.1.2 Analysis and Site Selection for the Second St. Louis Area Site

As described in detail in the 2013 Monitoring Network Plan, traffic count information was used to identify candidate highway segments for near-roadway monitoring. One of the identified segments was Interstate 70 just west of Interstate 270, with annual average daily traffic of approximately 161,000. The second near-roadway site in the St. Louis area, called Rider Trail S. I-70, was installed adjacent to this highway segment, on the north side of I-70, and began operation in January 2015.

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 site is adjacent to I-70, which extends across the United States from Maryland to Utah and carries more 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. US EPA Region 7 monitoring staff were apprised of the site evaluation process and visited all of the candidate monitoring sites. The location adjacent to I-70 was ranked third of five locations considered in the St. Louis area; the first-ranked location was the Forest Park site, established on 01/01/2013 as the first St. Louis area near-roadway site.

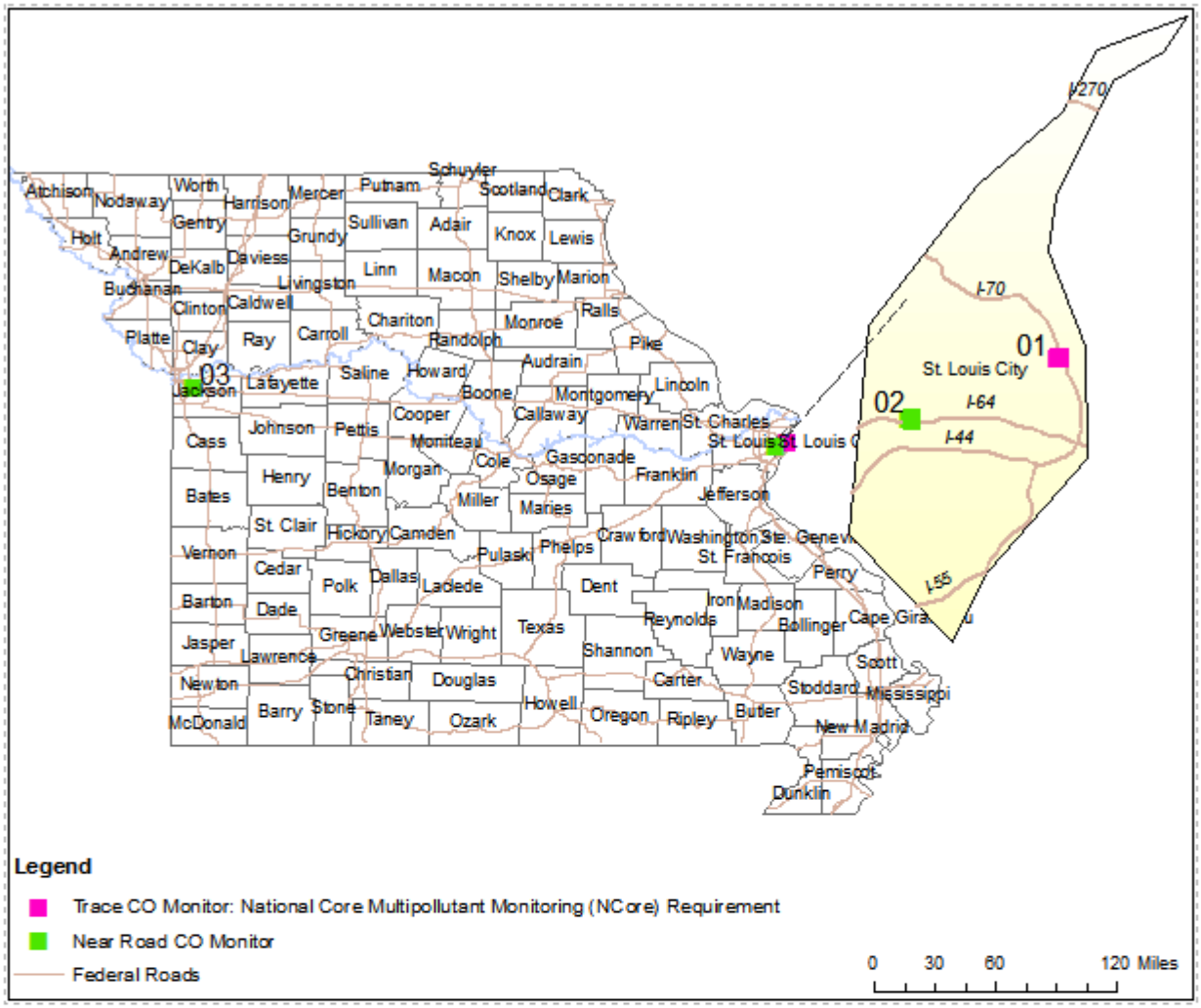
The Rider Trail, I-70 site includes monitoring of NO, NO_2, NO_x, and meteorological parameters and began operation on January 10, 2015. Figure 7.2-1 shows an aerial photograph of the approximate location of the Rider Trail, I-70 site.

Figure 7.2-1. Location of Rider Trail, I-70 near-roadway site.

8. Carbon Monoxide (CO) Monitoring Network

On August 12, 2011, the EPA issued a decision to retain the existing NAAQS for CO. A final rule published on August 31, 2013 requires near-road CO monitoring at one site in the St. Louis CBSA by 1/2015 and one site in the Kansas City CBSA by 1/2017. The department established CO monitoring sites at the same time as the NO_2 monitoring sites at the two near-roadway sites described above. The department has added near-roadway CO monitors to the network at the Forest Park I-40/64 and Blue Ridge I-70 near-roadway monitoring sites. No additional changes to the CO monitoring network are proposed in this plan.

Missouri Statewide Carbon Monoxide (CO) Monitoring Network, 2015
1-hour NAAQS = 35 ppm
8-hour NAAQS = 9 ppm



Site# SiteName (12-14 DV^: 1-hour, 8-hour Averages)

St. Louis Area

01 Blair Street (1.9, 1.0)

02 Forest Park* (1.4, 0.9)

03 Blue Ridge, I-70* (1.5, 1.1)

^Quality assured data through December 31st, 2014
**Began Sampling in 2013*
No violations of the 1-hour and 8-hour standards

MISSOURI DEPARTMENT OF NATURAL RESOURCES

9. Rural National Core

EPA has expressed interest in pursuing the installation and operation of a rural NCore site in Missouri. Department staff has suggested that EPA evaluate the Mark Twain State Park Site as a candidate for consideration of the rural NCore site due to its location and the historically low PM_{10} and SO_2 concentrations measured at the site. The department is waiting for EPA to identify specifically what funding may become available for this project before committing additional resources to the project. The department will continue to work with EPA Region VII staff to pursue this project at some time in the future.

Currently the department is conducting background monitoring for SO_2, PM_{10}, ozone, and NO, NO_2, and NO_x. Data from monitors at the Mark Twain State Park Site provide background ambient air monitoring concentrations for Prevention of Significant Deterioration (PSD) permit projects and other potential modeling purposes and other analysis.

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 database. Data includes location data such as latitude & longitude.

Air Quality System 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 Missouri Department of Natural Resources is latitude and longitude.

Air Quality Control Region

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

AQCR	AQCR Name
070	Metropolitan St. Louis
094	Metropolitan Kansas City
137	Northern Missouri
138	SE Missouri
139	SW Missouri

Core Based Statistical Area

Core Based Statistical Areas, or CBSA are defined by the U.S. Census Bureau.

CBSA Code	CBSA Name
00000	Not in a CBSA
16020	Cape Girardeau-Jackson, MO-IL
17860	Columbia, MO
27620	Jefferson City, MO
27900	Joplin, MO
28140	Kansas City, MO-KS
41140	St. Joseph, MO-KS
41180	St. Louis, MO-IL
44180	Springfield, MO

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.

Air Quality System Pollutant Code

Each pollutant has a specific numerical code to distinguish it from others.

Pollutant Code	Pollutant
14129	Lead – Local Conditions
42101	Carbon Monoxide
42401	Sulfur Dioxide
42406	Sulfur Dioxide 5-min
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 Baro Pressure
81102	PM_{10}
84313	Black Carbon
85101	PM_{10} - LC
85129	Lead PM10 LC - FRM/FEM
86101	PMCoarse - LC (FRM Diff)
86502	Acceptable PMCoarse - LC
88101	$PM_{2.5}$ FRM
88500	$PM_{2.5}$ Tot Atmospheric
88501	$PM_{2.5}$ Raw Data
88502	$PM_{2.5}$ AQI/Speciation
88503	$PM_{2.5}$ Reference
61106	Sigma Theta
62106	Temperature Difference
65102	Precipitation
84314	UV Carbon PM2.5 STP

85102	Antimony
85103	Arsenic PM10 LC
85107	Barium PM10 LC
85109	Bromine PM10 LC
85110	Cadmium PM10 LC
85111	Calcium PM10 LC
85112	Chromium PM10 LC
85113	Cobalt PM10 LC
85114	Copper PM10 LC
85126	Iron PM10 LC
85128	Lead PM10 LC
85132	Manganese PM10 LC
85136	Nickel PM10 LC
85142	Mercury PM10 LC
85154	Selenium PM10 LC
85160	Tin PM10 LC
85161	Titanium PM10 LC
85164	Vanadium PM10 LC
85166	Silver PM10 LC
85167	Zinc PM10 LC
85173	Thallium PM10 LC
85180	Potassium PM10 LC
88160	Tin PM10 LC
88305	OC CSN Unadj PM2.5 LC TOT
88307	EC CSN Unadj PM2.5 LC TOT
88312	Total Carbon PM2.5 LC TOT
88316	Optical EC PM2.5 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 PM_{10} 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 as 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 is done for all site/monitor metadata.

Code	Description
IMPROVE	IMPROVE or IMPROVE Protocol
INDEX SITE	(not currently used by MO)
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 MO)
NON-REGULATORY	Not used for NAAQS Compliance
PAMS	(not currently used by MO)
PROPOSED NCORE	
QA COLLOCATED	Collocated to Satisfy 40 CFR Part 58, Appendix A
SLAMS	State or Local Air Monitoring Station
SPECIAL PURPOSE	Special Purpose Monitoring Station (SPM or SPMS)
SUPLMNTL SPECIATION	
TRENDS SPECIATION	
TRIBAL MONITORS	(not currently used by MO)
UNOFFICIAL PAMS	(not currently used by MO)

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).

State Objective Code	Objective
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.

Unit Code	Unit Description
001	$\mu g/m^3$
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	millbars
017	degree Celsius
018	Langleys
019	percent humidity
021	inches
022	inches Mercury
025	Langleys per minute
079	$Watts/m^2$
105	$\mu g/m^3$ LC
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 of 40 CFR 58.10(a)(3).

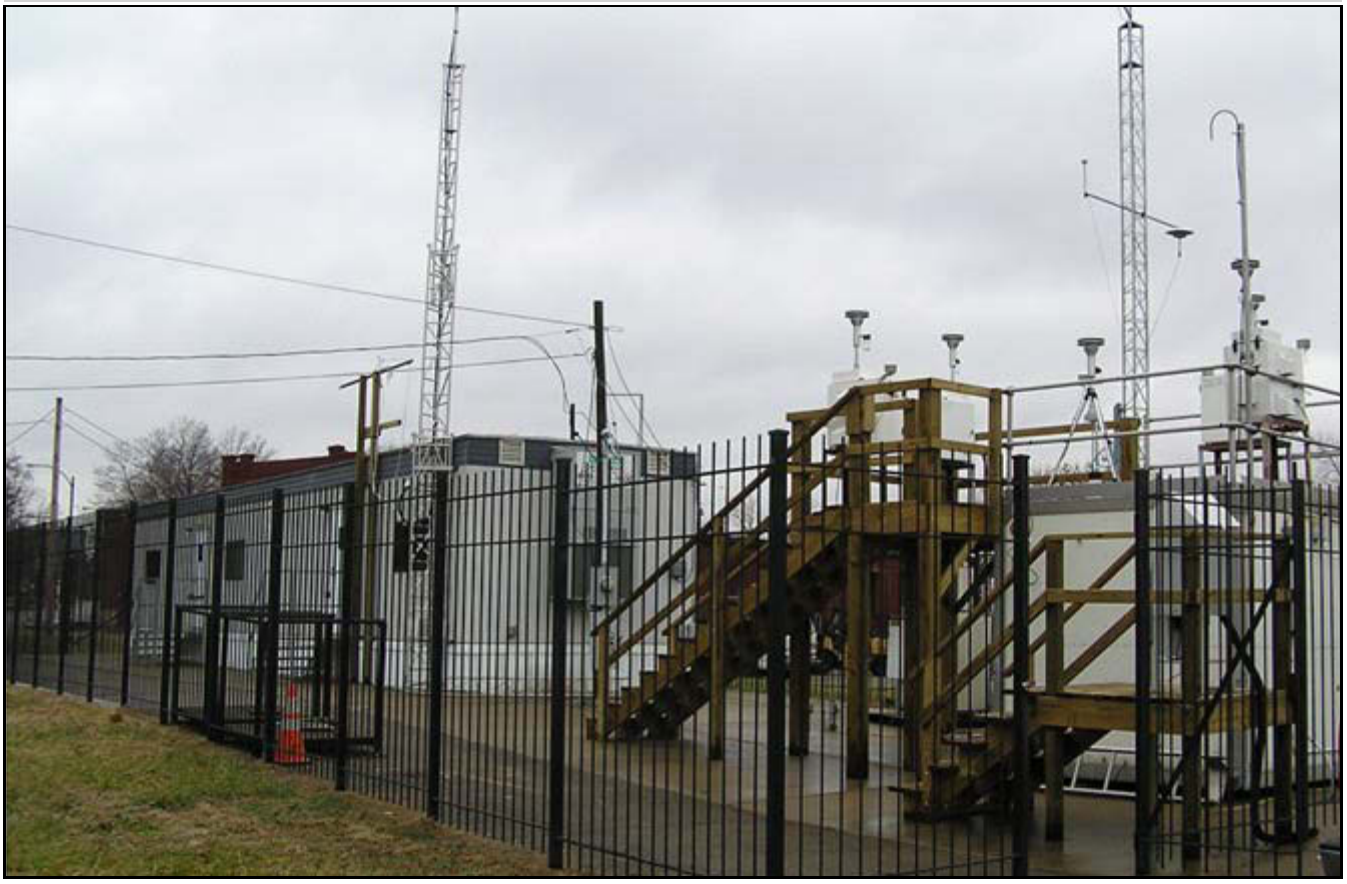
Monitoring Objective

This is the primary monitoring objective(s) for the monitoring parameter required of 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



MIC	*Microscale*	*Several meters up to about 100 meters*
MID	*Middle*	*100 meters to 0.5 kilometer*
NBR	*Neighborhood*	*0.5 to 4.0 kilometers range*
URB	*Urban*	*4 to 50 kilometers*
REG	*Regional*	*Tens to hundreds of kilometers*
COM	*NAAQS Compliance*	
MET	*Meteorological Data*	
N/A	*Not Applicable*	
NCore	*National Multi-Pollutant Monitoring Stations*	
NON-A	*Non-Ambient Site*	
NON-R	*Non-Regulatory*	
RES	*Research*	
SLAMS	*State and Local Monitoring Stations*	
SIP	*State Implementation Plan*	
SPEC	*Speciation*	
STA	*State Standard*	
SPM	*Special Purpose Monitoring*	
SPP	*Special Purpose Project*	

Buck-Up A monitor where Quality Assurance/Quality Control is being performed but no data is reported to the EPA Air Quality System database unless the primary monitor does not produce a valid measurement.

Ameren Labadie & Rush Island

Labadie, Northwest — *AQS Site Number* 29-183-9002

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

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

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

Elevation (ft): 000

Pollutant	*AQS Code*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Sulfur Dioxide	42401	SPM	1	☐	1	MID	SPP	008	ppb	100	Ultra-violet Fluorescence	SPM-Other

Labadie, Osage Ridge — *AQS Site Number* 29-183-9003

Ameren, Labadie

Latitude: 38.60586 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.9362 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 000

Pollutant	*AQS Code*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	SPM-Other (90m Probe Height)
Outdoor Temperature	62101	SPM	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	SPM-Other (56.4m 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	SPM-Other (90m - 56.4m Probe Heights)
WD - Sigma Theta (Horizontal)	61106	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	SPM-Other (90m Probe Height)

WD - Sigma Theta (Horizontal)	61106	SPM	2	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	SPM-Other (56.4m Probe Height)
WD - Sigma Theta (Vertical)	61107	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	SPM-Other (90m Probe Height)
WD - Sigma Theta (Vertical)	61107	SPM	2	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	SPM-Other (56.4m Probe Height)
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	020	Vector Summation	SPM-Other (90m Probe Height)
Wind Direction - Resultant	61104	SPM	2	☐	1	N/A	MET	014	deg	020	Vector Summation	SPM-Other (56.4m Probe Height)
Wind Direction - Scalar	61102	SPM	1	☐	1	N/A	MET	014	deg	063	Climatronics	SPM-Other (90m Probe Height)
Wind Direction - Scalar	61102	SPM	2	☐	1	N/A	MET	014	deg	063	Climatronics	SPM-Other (56.4m Probe Height)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	011	m/s	020	Vector Summation	SPM-Other (90m Probe Height)
Wind Speed - Resultant	61103	SPM	2	☐	1	N/A	MET	011	m/s	020	Vector Summation	SPM-Other (56.4m Probe Height)
Wind Speed - Scalar	61101	SPM	1	☐	1	N/A	MET	011	m/s	063	Climatronics	SPM-Other (90m Probe Height)
Wind Speed - Scalar	61101	SPM	2	☐	1	N/A	MET	011	m/s	063	Climatronics	SPM-Other (56.4m Probe Height)

Wind Speed - Vertical	61109	SPM	1	☐	1	N/A	MET	011	m/s	020	Electronic Averaging	SPM-Other (90m Probe Height)
Wind Speed - Vertical	61109	SPM	2	☐	1	N/A	MET	011	m/s	020	Electronic Averaging	SPM-Other (56.4m Probe Height)
WS - Sigma Theta (Vertical)	61110	SPM	1	☐	1	N/A	MET	011	m/s	020	Arithmetic Standard Deviation	SPM-Other (90m Probe Height)
WS - Sigma Theta (Vertical)	61110	SPM	2	☐	1	N/A	MET	011	m/s	020	Arithmetic Standard Deviation	SPM-Other (56.4m Probe Height)

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): 000

Pollutant	*AQS Code*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	016	Millbars	015	Instrumental-Barometric Press Transducer	SPM-Other
Outdoor Temperature	62101	SPM	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	SPM-Other (10m Probe Height)
Outdoor Temperature	62101	SPM	3	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	SPM-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	SPM-Other (10m - 2m Probe Heights)
Precipitation	65102	SPM	1	☐	1	N/A	MET	021	inches	014	Heated Tipping Bucket	SPM-Other

Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	061	Met One 083D	SPM-Other
Solar Radiation	63301	SPM	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	SPM-Other
Sulfur Dioxide	42401	SPM	1	☐	1	MID	SPP	008	ppb	100	Ultra-violet Fluorescence	SPM-Other
Sulfur Dioxide Max 5-min Avg	42406	SPM	1	☐	1	MID	SPP	008	ppb	100	Ultra-violet Fluorescence	SPM-Other
WD - Sigma Theta (Horizontal)	61106	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	SPM-Other (10m Tower)
WD - Sigma Theta (Vertical)	61107	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	SPM-Other (10m Tower)
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	020	Vector Summation	SPM-Other (10m Tower)
Wind Direction - Scalar	61102	SPM	1	☐	1	N/A	MET	014	deg	063	Climatronics	SPM-Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	011	m/s	020	Vector Summation	SPM-Other (10m Tower)
Wind Speed - Scalar	61101	SPM	1	☐	1	N/A	MET	011	m/s	063	Climatronics	SPM-Other (10m Tower)
Wind Speed - Vertical	61109	SPM	1	☐	1	N/A	MET	011	m/s	020	Electronic Averaging	SPM-Other (10m Tower)

WS - Sigma Theta (Vertical)	61110	SPM	1	☐	1	N/A	MET	011	m/s	020	Arithmetic Standard Deviation	SPM-Other (10m Tower)

Rush Island, Fults-Site, IL, (Not operating; under review) *AQS Site Number* **29-000-0000**

To be updated after site approval

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

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

Elevation (ft): 446

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

Sulfur Dioxide	42401	SPM	1	☐	1	N/A	SPP	008	ppb	100	Ultra-violet Fluorescence	SPM-Other
Sulfur Dioxide Max 5-min Avg	42406	SPM	1	☐	1	N/A	SPP	008	ppb	100	Ultra-violet Fluorescence	SPM-Other
WD - Sigma Theta (Horizontal)	61106	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	SPM-Other (10m Tower)
WD - Sigma Theta (Vertical)	61107	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	SPM-Other (10m Tower)
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	020	Vector Summation	SPM-Other (10m Tower)
Wind Direction - Scalar	61102	SPM	1	☐	1	N/A	MET	014	deg	063	Climatronics	SPM-Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	011	m/s	020	Vector Summation	SPM-Other (10m Tower)
Wind Speed - Scalar	61101	SPM	1	☐	1	N/A	MET	011	m/s	063	Climatronics	SPM-Other (10m Tower)
Wind Speed - Vertical	61109	SPM	1	☐	1	N/A	MET	011	m/s	020	Electronic Averaging	SPM-Other (10m Tower)
WS - Sigma Theta (Vertical)	61110	SPM	1	☐	1	N/A	MET	011	m/s	020	Arithmetic Standard Deviation	SPM-Other (10m Tower)

Rush Island, Natchez (Not Operating: under review) AQS Site Number 29-186-9003

To be updated after site approval

Latitude: 38.10525 **AQCR:** 138 SE Missouri

Longitude: -90.29842 **MSA:** 0000 Not in a MSA

Elevation (ft): 505

Pollutant	AQS Code	Monitor-Type	POC	Back-Up	Freq	Scale	State-Obj	Unit-Code	Unit	Method-Code	Method	Monitor-Objective
Sulfur Dioxide	42401	SPM	1	☐	1	MID	SPP	008	ppb	100	Ultra-violet Fluorescence	SPM-Other
Sulfur Dioxide Max 5-min Avg	42406	SPM	1	☐	1	MID	SPP	008	ppb	100	Ultra-violet Fluorescence	SPM-Other

Rush Island, Rush Tall Tower (Not Operating:under Review AQS Site Number 29-186-9002

To be updated after site approval

Latitude: 38.11999 **AQCR:** 138 SE Missouri

Longitude: -90.28214 **MSA:** 0000 Not in a MSA

Elevation (ft): 656

Pollutant	AQS Code	Monitor-Type	POC	Back-Up	Freq	Scale	State-Obj	Unit-Code	Unit	Method-Code	Method	Monitor-Objective
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	SPM-Other (90m Probe Height)
Outdoor Temperature	62101	SPM	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	SPM-Other (60m 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	SPM-Other (90m - 56.4m Probe Heights)
WD - Sigma Theta (Horizontal)	61106	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	SPM-Other (90m Probe Height)

WD - Sigma Theta (Horizontal)	61106	SPM	2	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	SPM-Other (60m Probe Height)
WD - Sigma Theta (Vertical)	61107	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	SPM-Other (90m Probe Height)
WD - Sigma Theta (Vertical)	61107	SPM	2	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	SPM-Other (60m Probe Height)
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	020	Vector Summation	SPM-Other (90m Probe Height)
Wind Direction - Resultant	61104	SPM	2	☐	1	N/A	MET	014	deg	020	Vector Summation	SPM-Other (60m Probe Height)
Wind Direction - Scalar	61102	SPM	1	☐	1	N/A	MET	014	deg	063	Climatronics	SPM-Other (90m Probe Height)
Wind Direction - Scalar	61102	SPM	2	☐	1	N/A	MET	014	deg	063	Climatronics	SPM-Other (60m Probe Height)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	011	m/s	020	Vector Summation	SPM-Other (90m Probe Height)
Wind Speed - Resultant	61103	SPM	2	☐	1	N/A	MET	011	m/s	020	Vector Summation	SPM-Other (60m Probe Height)
Wind Speed - Scalar	61101	SPM	1	☐	1	N/A	MET	011	m/s	063	Climatronics	SPM-Other (90m Probe Height)
Wind Speed - Scalar	61101	SPM	2	☐	1	N/A	MET	011	m/s	063	Climatronics	SPM-Other (60m Probe Height)

Wind Speed - Vertical	61109	SPM	1	☐	1	N/A	MET	011	m/s	020	Electronic Averaging	SPM-Other (90m Probe Height)
Wind Speed - Vertical	61109	SPM	2	☐	1	N/A	MET	011	m/s	020	Electronic Averaging	SPM-Other (60m Probe Height)
WS - Sigma Theta (Vertical)	61110	SPM	1	☐	1	N/A	MET	011	m/s	020	Arithmetic Standard Deviation	SPM-Other (90m Probe Height)
WS - Sigma Theta (Vertical)	61110	SPM	2	☐	1	N/A	MET	011	m/s	020	Arithmetic Standard Deviation	SPM-Other (60m Probe Height)

Rush Island, Weaver-AA (Not Operating: under review) *AQS Site Number* **29-186-9001**

To be updated after site approval

Latitude: 38.144972 ***AQCR:*** 138 SE Missouri

Longitude: -90.304783 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 000

Pollutant	*AQS Code*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Sulfur Dioxide	42401	SPM	1	☐	1	MID	SPP	008	ppb	100	Ultra-violet Fluorescence	SPM-Other
Sulfur Dioxide Max 5-min Avg	42406	SPM	1	☐	1	MID	SPP	008	ppb	100	Ultra-violet Fluorescence	SPM-Other

City Utilities

James River South

AQS Site Number 29-077-0037

James River South, Springfield, MO 65804

Latitude: 37.104461 ***AQCR:*** 139 SW Missouri

Longitude: -93.25339 ***MSA:*** 7920 Springfield, MO

Elevation (ft): 1227

Pollutant	AQS Code	Monitor-Type	POC	Back-Up	Freq	Scale	State-Obj	Unit-Code	Unit	Method-Code	Method	Monitor-Objective
Sulfur Dioxide	42401	Industrial	3	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	3	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented

Doe Run Buick

Doe Run Buick - Buick NE

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

347 Power Lane (Address, Elevation, Lati, and Longi to be confirmed)

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

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

Elevation (ft): 1423

Pollutant	*AQS Code*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Ambient Temperature	68105	Industrial	1	☐	1/6	N/A	COM	017	deg C	780	Instrumental-On Site Ambient Temperature	SPM-Other
Lead (TSP) - LC FRM/FEM	14129	Industrial	1	☐	1/6	MID	COM	105	ug/m^3-LC	113	Doe Run Mass Spectra ICAP	Source Oriented
Sample Barometric Pressure	68108	Industrial	1	☐	1/6	N/A	COM	059	mm (Hg)	780	Instrumental-On Site Sample Baro Pressure	SPM-Other

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):

Pollutant	*AQS Code*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Ambient Temperature	68105	Industrial	1	☐	1/6	N/A	COM	017	deg C	780	Instrumental-On Site Ambient Temperature	SPM-Other
Lead (TSP) - LC FRM/FEM	14129	Industrial	1	☐	1/6	MID	COM	105	ug/m^3-LC	113	Doe Run Mass Spectra ICAP	Source Oriented

Sample Barometric Pressure	68108	Industrial	1	☐	1/6	N/A	COM	059	mm (Hg)	780	Instrumental-On Site Sample Baro Pressure	SPM-Other

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):

Pollutant	*AQS Code*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Ambient Temperature	68105	Industrial	1	☐	1/6	N/A	SIP	017	deg C	780	Instrumental-On Site Ambient Temperature	SPM-Other
Ambient Temperature	68105	Industrial	2	☐	1/6	N/A	SIP	017	deg C	780	Instrumental-On Site Ambient Temperature	QA Collocated
Lead (TSP) - LC FRM/FEM	14129	Industrial	1	☐	1/6	MID	SIP	105	ug/m^3-LC	113	Doe Run Mass Spectra ICAP	Source Oriented
Lead (TSP) - LC FRM/FEM	14129	Industrial	2	☐	1/6	MID	SIP	105	ug/m^3-LC	113	Doe Run Mass Spectra ICAP	QA Collocated
Sample Barometric Pressure	68108	Industrial	1	☐	1/6	N/A	SIP	059	mm (Hg)	780	Instrumental-On Site Sample Baro Pressure	SPM-Other
Sample Barometric Pressure	68108	Industrial	2	☐	1/6	N/A	SIP	059	mm (Hg)	780	Instrumental-On Site Sample Baro Pressure	QA Collocated

Doe Run Glover

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

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

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

Latitude: 37.471667 ***AQCR:*** 138 SE Missouri

Longitude: -90.689444 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 927

Pollutant	*AQS Code*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Ambient Temperature	68105	Industrial	1	☐	1/6	N/A	COM	017	deg C	780	Instrumental-On Site Ambient Temperature	SPM-Other
Lead (TSP) - LC FRM/FEM	14129	Industrial	1	☐	1/6	MID	COM	105	ug/m^3-LC	189	Inter-Mountain Lab, Inc Mass Spectra ICAP	Source Oriented
Sample Barometric Pressure	68108	Industrial	1	☐	1/6	N/A	COM	059	mm (Hg)	780	Instrumental-On Site Sample Baro Pressure	SPM-Other

Doe Run Glover - Post Office #2 (NON-A)

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

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

Latitude: 37.486111 ***AQCR:*** 138 SE Missouri

Longitude: -90.69 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 927

Pollutant	*AQS Code*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Ambient Temperature	68105	Industrial	1	☐	1/6	N/A	COM	017	deg C	780	Instrumental-On Site Ambient Temperature	SPM-Other
Ambient Temperature	68105	Industrial	2	☐	1/6	N/A	COM	017	deg C	780	Instrumental-On Site Ambient Temperature	QA Collocated

Lead (TSP) - LC FRM/FEM	14129	Industrial	1	☐	1/6	MID	COM	105	ug/m^3-LC	189	Inter-Mountain Lab, Inc Mass Spectra ICAP	Source Oriented
Lead (TSP) - LC FRM/FEM	14129	Industrial	2	☐	1/6	MID	COM	105	ug/m^3-LC	189	Inter-Mountain Lab, Inc Mass Spectra ICAP	QA Collocated
Sample Barometric Pressure	68108	Industrial	1	☐	1/6	N/A	COM	059	mm (Hg)	780	Instrumental-On Site Sample Baro Pressure	SPM-Other
Sample Barometric Pressure	68108	Industrial	2	☐	1/6	N/A	COM	059	mm (Hg)	780	Instrumental-On Site Sample Baro Pressure	QA Collocated

Doe Run Herculaneum

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*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Ambient Temperature	68105	Industrial	1	☐	1/6	N/A	COM	017	deg C	780	Instrumental-On Site Ambient Temperature	SPM-Other
Ambient Temperature	68105	Industrial	2	☐	1/6	N/A	COM	017	deg C	780	Instrumental-On Site Ambient Temperature	QA Collocated
Lead (TSP) - LC FRM/FEM	14129	Industrial	1	☐	1/6	NBR	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented
Lead (TSP) - LC FRM/FEM	14129	Industrial	2	☐	1/6	NBR	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	QA Collocated
Sample Barometric Pressure	68108	Industrial	1	☐	1/6	N/A	COM	059	mm (Hg)	780	Instrumental-On Site Sample Baro Pressure	SPM-Other
Sample Barometric Pressure	68108	Industrial	2	☐	1/6	N/A	COM	059	mm (Hg)	780	Instrumental-On Site Sample Baro Pressure	QA Collocated

Herculaneum, City Hall (Mott Street) — *AQS Site Number* 29-099-0020

Mott 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*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*

Ambient Temperature	68105	Industrial	1	☐	1/1	N/A	COM	017	deg C	780	Instrumental-On Site Ambient Temperature	SPM-Other
Ambient Temperature	68105	Industrial	2	☐	1/3	N/A	COM	017	deg C	780	Instrumental-On Site Ambient Temperature	QA Collocated
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
Lead (TSP) - LC FRM/FEM	14129	Industrial	2	☐	1/3	MID	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	QA Collocated
Sample Barometric Pressure	68108	Industrial	1	☐	1/1	N/A	COM	059	mm (Hg)	780	Instrumental-On Site Sample Baro Pressure	SPM-Other
Sample Barometric Pressure	68108	Industrial	2	☐	1/3	N/A	COM	059	mm (Hg)	780	Instrumental-On Site Sample Baro Pressure	QA Collocated

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*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Ambient Temperature	68105	Industrial	1	☐	1/3	N/A	COM	017	deg C	780	Instrumental-On Site Ambient Temperature	SPM-Other
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

Sample Barometric Pressure	68108	Industrial	1	☐	1/3	N/A	COM	059	mm (Hg)	780	Instrumental-On Site Sample Baro Pressure	SPM-Other

Herculaneum, North Cross — *AQS Site Number* 29-099-0023

North Cross, Herculaneum, MO 63048

Latitude: 38.263378 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.381122 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 463

Pollutant	*AQS Code*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Ambient Temperature	68105	Industrial	1	☐	1/6	N/A	COM	017	deg C	780	Instrumental-On Site Ambient Temperature	SPM-Other
Lead (TSP) - LC FRM/FEM	14129	Industrial	1	☐	1/6	NBR	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented & Population Exposure
Sample Barometric Pressure	68108	Industrial	1	☐	1/6	N/A	COM	059	mm (Hg)	780	Instrumental-On Site Sample Baro Pressure	SPM-Other

Herculaneum, Sherman — *AQS Site Number* 29-099-9004

460 Sherman St., Herculaneum, MO, 63048

Latitude: 38.27176 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.37648 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 462

Pollutant	*AQS Code*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Ambient Temperature	68105	Industrial	1	☐	1/6	N/A	COM	017	deg C	780	Instrumental-On Site Ambient Temperature	SPM-Other
Lead (TSP) - LC FRM/FEM	14129	Industrial	1	☐	1/6	NBR	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented

Sample Barometric Pressure	68108	Industrial	1	☐	1/6	N/A	COM	059	mm (Hg)	780	Instrumental-On Site Sample Baro Pressure	SPM-Other	

Environmental Services Program (ESP)

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

Arnold West

AQS Site Number 29-099-0019

1709 Lonedell Dr., Arnold, MO 63010

Latitude: 38.448581 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.398436 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 636

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

Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	SPM-Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	SLAMS	2	☑	1	NBR	BACK-UP	007	ppm	047	Ultraviolet Photometric	-
PM10 - LC FRM/FEM	85101	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	208	FMDS-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
PM10 - STP FRM/FEM	81102	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	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 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	FMDS-Gravimetric 1405-DF	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	SPM-Other

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

Bill's Creek — *AQS Site Number* 29-179-0001

0.75 mile S. of 3229 County Rd., Boss, MO 65440

Latitude: 37.53467 ***AQCR:*** 138 SE Missouri

Longitude: -91.14857 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 996

Pollutant	*AQS Code*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Ambient Temperature	68105	SPM	1	☐	1/6	N/A	COM	017	deg C	803	Instrumental-Off Site Ambient Temperature	SPM-Other
Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/6	NBR	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented
Sample Barometric Pressure	68108	SPM	1	☐	1/6	N/A	COM	059	mm (Hg)	803	Instrumental-Off Site Sample Baro Pressure	SPM-Other

Blair Street — *AQS Site Number* 29-510-0085

3247 Blair Street, St. Louis, MO 63107

Latitude: 38.656449 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.198548 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 450

Pollutant	*AQS Code*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Ambient Temperature	68105	SLAMS	1	☐	1/1	N/A	COM	017	deg C	145	R&P 2025 Sequential w/VSCC	SPM-Other

Ambient Temperature	68105	SLAMS	2	☐	1/6	N/A	COM	017	deg C	145	R&P 2025 Sequential w/VSCC	QA Collocated
Ambient Temperature	68105	SLAMS	3	☐	1/3	N/A	COM	017	deg C	127	Lo-Vol R&P 2025 Sequential	SPM-Other
Ambient Temperature	68105	SLAMS	4	☐	1/6	N/A	COM	017	deg C	127	Lo-Vol R&P 2025 Sequential	QA Collocated
Ambient Temperature	68105	SLAMS	7	☐	1/6	N/A	COM	017	deg C	780	Instrumental-On Site Ambient Temperature	SPM-Other
Antimony	85102	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	SPM-Other
Arsenic PM10 LC	85103	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	SPM-Other
Barium PM10 LC	85107	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	SPM-Other
Barometric Pressure	64101	SLAMS	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	SPM-Other
Black Carbon PM2.5 STP	84313	SLAMS	1	☐	1	NBR	RES	001	ug/m^3	894	Magee Scientific TAPI M633 Aethalometer	Population Exposure
Bromine PM10 LC	85109	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	SPM-Other
Cadmium PM10 LC	85110	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	SPM-Other

Calcium PM10 LC	85111	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	SPM-Other
Carbon Monoxide	42101	NCORE	1	☐	1	NBR	COM	007	ppm	055	Gas Filter Corr Thermo Electron	Population Exposure
Chromium PM10 LC	85112	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	SPM-Other
Cobalt PM10 LC	85113	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	SPM-Other
Copper PM10 LC	85114	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	SPM-Other
EC CSN Unadj PM2.5 LC TOT	88307	SLAMS	1	☐	1	NBR	RES	105	ug/m^3-LC	867	Sunset Labs	Population Exposure
Indoor Temperature	62107	SLAMS	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other (Large Shelter)
Iron PM10 LC	85126	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	SPM-Other
Lead (TSP) - LC FRM/FEM	14129	NCORE	1	☐	1/6	NBR	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Population Exposure
Lead PM10 LC	85128	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	SPM-Other
Manganese PM10 LC	85132	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	SPM-Other

Mercury PM10 LC	85142	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	SPM-Other
Nickel PM10 LC	85136	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	SPM-Other
Nitric Oxide	42601	NCORE	1	☐	1	NBR	COM	008	ppb	699	Teledyne API 200 EU/501	Population Exposure
Nitric Oxide	42601	SPM	2	☐	1	NBR	COM	008	ppb	200	Teledyne API T200UP Photolytic	Population Exposure
Nitrogen Dioxide	42602	SPM	2	☐	1	NBR	COM	008	ppb	200	Teledyne API T200UP Photolytic	Population Exposure
OC CSN Unadj PM2.5 LC TOT	88305	SLAMS	1	☐	1	NBR	RES	105	ug/m^3-LC	867	Sunset Labs	Population Exposure
Optical EC PM2.5 LC TOT	88316	SLAMS	1	☐	1	NBR	RES	105	ug/m^3-LC	895	Sunset Lab	Population Exposure
Outdoor Temperature	62101	NCORE	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	SPM-Other
Oxides of Nitrogen	42603	SPM	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	BACK-UP	007	ppm	047	Ultraviolet Photometric	-

PM10 - LC FRM/FEM	85101	SLAMS	1	☐	1/3	NBR	COM	105	ug/m^3-LC	127	Lo-Vol R&P 2025 Sequential	Population Exposure
PM10 - LC FRM/FEM	85101	SLAMS	2	☐	1/6	NBR	COM	105	ug/m^3-LC	127	Lo-Vol R&P 2025 Sequential	QA Collocated
PM10 - LC FRM/FEM	85101	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	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	2	☐	1/6	NBR	COM	001	ug/m^3	127	Lo-Vol R&P 2025 Sequential	QA Collocated
PM10 - STP FRM/FEM	81102	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	Population Exposure
PM2.5 - LC FRM/FEM	88101	NCORE	1	☐	1/1	NBR	COM	105	ug/m^3-LC	145	R&P 2025 Sequential w/VSCC	Population Exposure
PM2.5 - LC FRM/FEM	88101	NCORE	2	☐	1/6	NBR	COM	105	ug/m^3-LC	145	R&P 2025 Sequential w/VSCC	QA Collocated
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 Tot Atmospheric	88500	SLAMS	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM2.5 Volatile Channel	88503	SLAMS	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure

PMCoarse - LC FRM/FEM	86101	SLAMS	1	☐	1/3	NBR	COM	105	ug/m^3-LC	176	Thermo 2025 Sequential PM10-PM2.5	Population Exposure
PMCoarse - LC FRM/FEM	86101	SLAMS	2	☐	1/6	NBR	COM	105	ug/m^3-LC	176	Thermo 2025 Sequential PM10-PM2.5	QA Collocated
PMCoarse - LC FRM/FEM	86101	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	207	FMDS-Gravimetric 1405-DF	Population Exposure
Potassium PM10 LC	85180	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	SPM-Other
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-Hygromer C94 Probe	SPM-Other
Sample Barometric Pressure	68108	SLAMS	1	☐	1/1	N/A	COM	059	mm (Hg)	145	R&P 2025 Sequential w/VSCC	SPM-Other
Sample Barometric Pressure	68108	SLAMS	2	☐	1/6	N/A	COM	059	mm (Hg)	145	R&P 2025 Sequential w/VSCC	QA Collocated
Sample Barometric Pressure	68108	SLAMS	3	☐	1/3	N/A	COM	059	mm (Hg)	127	Lo-Vol R&P 2025 Sequential	SPM-Other
Sample Barometric Pressure	68108	SLAMS	4	☐	1/6	N/A	COM	059	mm (Hg)	127	Lo-Vol R&P 2025 Sequential	QA Collocated
Sample Barometric Pressure	68108	SLAMS	7	☐	1/6	N/A	COM	059	mm (Hg)	780	Instrumental-On Site Sample Baro Pressure	SPM-Other

Selenium PM10 LC	85154	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	SPM-Other
Silver PM10 LC	85166	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	SPM-Other
Solar Radiation	63301	SLAMS	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	SPM-Other
Sulfur Dioxide	42401	NCORE	1	☐	1	NBR	COM	008	ppb	600	Ultraviolet Fluorenscence API 100 EU	Population Exposure
Sulfur Dioxide Max 5-min Avg	42406	NCORE	1	☐	1	NBR	COM	008	ppb	600	Ultraviolet Fluorenscence API 100 EU	Population Exposure
Thallium PM10 LC	85173	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	SPM-Other
Tin PM10 LC	85160	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	SPM-Other
Titanium PM10 LC	85161	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	SPM-Other
Total Carbon PM2.5 LC TOT	88312	SLAMS	1	☐	1	NBR	RES	105	ug/m^3-LC	867	Sunset Labs	Population Exposure
UV Carbon PM2.5 STP	84314	SLAMS	1	☐	1	NBR	RES	001	ug/m^3	894	Magee Scientific TAPI M633 Aethalometer	Population Exposure
Vanadium PM10 LC	85164	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	SPM-Other

WD - Sigma Theta (Horizontal)	61106	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	SPM-Other (10m Tower)
Wind Direction - Resultant	61104	NCORE	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	SPM-Other (10m Tower)
Wind Speed - Resultant	61103	NCORE	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	SPM-Other (10m Tower)
Zinc PM10 LC	85167	SPM	1	☐	1	NBR	RES	108	ng/m^3-LC	820	Cooper Environmental Service Model Xact 620	SPM-Other

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*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	SPM-Other
Black Carbon PM2.5 STP	84313	SPM	1	☐	1	MIC	COM	001	ug/m^3	894	Magee Scientific TAPI M633 Aethalometer	Source Oriented
Carbon Monoxide	42101	SPM	1	☐	1	MIC	COM	007	ppm	055	Gas Filter Corr Thermo Electron	Source Oriented
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	SPM-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	SPM-Other (4m Probe Height)
Outdoor Temperature	62101	SPM	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	SPM-Other (10m Probe Height)
Outdoor Temperature	62101	SPM	3	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	SPM-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	SPM-Other (10m - 2m Probe Height)
Oxides of Nitrogen	42603	SPM	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented
PM10 - LC FRM/FEM	85101	SLAMS	8	☐	1	MIC	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	Source Oriented
PM10 - STP FRM/FEM	81102	SLAMS	8	☐	1	MIC	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	Source Oriented
PM2.5 - LC FRM/FEM	88101	SPM	4	☐	1	MIC	COM	105	ug/m^3-LC	182	FMDS-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	FMDS-Gravimetric 1405-DF	Source Oriented
Precipitation	65102	SPM	1	☐	1	N/A	MET	021	inches	011	Bucket	SPM-Other
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	SPM-Other
Solar Radiation	63301	SPM	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	SPM-Other
UV Carbon PM2.5 STP	84314	SPM	1	☐	1	MIC	COM	001	ug/m^3	894	Magee Scientific TAPI M633 Aethalometer	Source Oriented
WD - Sigma Theta (Horizontal)	61106	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	SPM-Other (10m Tower)
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	SPM-Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	SPM-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	Monitor-Type	POC	Back-Up	Freq	Scale	State-Obj	Unit-Code	Unit	Method-Code	Method	Monitor-Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	SPM-Other
Ozone	44201	SLAMS	1	☐	1	REG	COM	007	ppm	047	Ultraviolet Photometric	Regional Transport
Ozone	44201	SLAMS	2	☑	1	REG	BACK-UP	007	ppm	047	Ultraviolet Photometric	-
Solar Radiation	63301	SPM	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	SPM-Other
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	SPM-Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	SPM-Other (5.5 meters)

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): 422

Pollutant	AQS Code	Monitor-Type	POC	Back-Up	Freq	Scale	State-Obj	Unit-Code	Unit	Method-Code	Method	Monitor-Objective

Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	SPM-Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	SPM-Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	SPM-Other
PM10 - LC FRM/FEM	85101	SLAMS	8	☐	1	MID	COM	105	ug/m^3-LC	208	FMDS-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
PM10 - STP FRM/FEM	81102	SLAMS	8	☐	1	MID	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	Source Oriented
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	MID	COM	105	ug/m^3-LC	182	FMDS-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	FMDS-Gravimetric 1405-DF	Source Oriented
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	SPM-Other

WD - Sigma Theta (Horizontal)	61106	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	SPM-Other (10m Tower)
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	SPM-Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	SPM-Other (10m Tower)

Branson — *AQS Site Number* 29-213-0004

251 SW. Outer Rd., Branson, MO 65616

Latitude: 36.70765 ***AQCR:*** 139 SW Missouri

Longitude: -93.22181 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 1052

Pollutant	*AQS Code*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	SPM-Other
Ozone	44201	SPM	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration & Population Exposure
Ozone	44201	SPM	2	☑	1	NBR	BACK-UP	007	ppm	047	Ultraviolet Photometric	-
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	SPM-Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	SPM-Other (5.5 meters)

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): 1458

Pollutant	AQS Code	Monitor-Type	POC	Back-Up	Freq	Scale	State-Obj	Unit-Code	Unit	Method-Code	Method	Monitor-Objective
Ambient Temperature	68105	SPM	1	☐	1/6	N/A	COM	017	deg C	780	Instrumental-On Site Ambient Temperature	SPM-Other
Ambient Temperature	68105	SPM	2	☐	1/6	N/A	COM	017	deg C	780	Instrumental-On Site Ambient Temperature	QA Collocated
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	SPM-Other
Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/6	MID	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented & Highest Concentration
Lead (TSP) - LC FRM/FEM	14129	SLAMS	2	☐	1/6	MID	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	QA Collocated
Sample Barometric Pressure	68108	SPM	1	☐	1/6	N/A	COM	059	mm (Hg)	780	Instrumental-On Site Sample Baro Pressure	SPM-Other
Sample Barometric Pressure	68108	SPM	2	☐	1/6	N/A	COM	059	mm (Hg)	780	Instrumental-On Site Sample Baro Pressure	QA Collocated
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	067	Instrumental: RM Young Model 05103	SPM-Other (6 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	SPM-Other (6 meters)

Carthage — *AQS Site Number* 29-097-0003

530 Juniper, Carthage, MO 64836

Latitude: 37.19822 ***AQCR:*** 139 SW Missouri

Longitude: -94.31702 ***MSA:*** 3710 Joplin, MO

Elevation (ft): 986

Pollutant	*AQS Code*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	SPM-Other
PM10 - STP FRM/FEM	81102	SLAMS	3	☐	1	MID	COM	001	ug/m^3	079	R&P SA246B TEOM	Source Oriented
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	SPM-Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	SPM-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*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	SPM-Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	SPM-Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	SPM-Other
Ozone	44201	SLAMS	1	☐	1	REG	COM	007	ppm	047	Ultraviolet Photometric	Regional Transport
Ozone	44201	SLAMS	2	☑	1	REG	BACK-UP	007	ppm	047	Ultraviolet Photometric	-
PM10 - LC FRM/FEM	85101	SLAMS	8	☐	1	REG	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	Regional Transport
PM10 - STP FRM/FEM	81102	SLAMS	8	☐	1	REG	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	Regional Transport
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	REG	COM	105	ug/m^3-LC	182	FMDS-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	FMDS-Gravimetric 1405-DF	Regional Transport
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	SPM-Other
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	SPM-Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	SPM-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*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	SPM-Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration & Extreme Downwind

Ozone	44201	SLAMS	2	☑	1	NBR	BACK-UP	007	ppm	047	Ultraviolet Photometric	-
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	SPM-Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	SPM-Other (5.5 meters)

Fellows Lake — *AQS Site Number* 29-077-0042

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

Latitude: 37.319444 ***AQCR:*** 139 SW Missouri

Longitude: -93.204444 ***MSA:*** 7920 Springfield, MO

Elevation (ft): 1346

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

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*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*

Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	SPM-Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration & Population Exposure
Ozone	44201	SLAMS	2	☑	1	NBR	BACK-UP	007	ppm	047	Ultraviolet Photometric	-

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*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Ambient Temperature	68105	SPM	1	☐	1/6	N/A	COM	017	deg C	803	Instrumental-Off Site Ambient Temperature	SPM-Other
Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/6	NBR	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented
Sample Barometric Pressure	68108	SPM	1	☐	1/6	N/A	COM	059	mm (Hg)	803	Instrumental-Off Site Sample Baro Pressure	SPM-Other

Foley — *AQS Site Number* 29-113-0003

#7 Wild Horse, Foley, MO 63347

Latitude: 39.0447 ***AQCR:*** 137 Northern Missouri

Longitude: -90.8647 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 715

Pollutant	*AQS Code*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*

Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	SPM-Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Extreme Downwind
Ozone	44201	SLAMS	2	☑	1	NBR	BACK-UP	007	ppm	047	Ultraviolet Photometric	-
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	SPM-Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	SPM-Other (5.5 meters)

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*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Ambient Temperature	68105	SPM	3	☐	1/6	N/A	COM	017	deg C	803	Instrumental-Off Site Ambient Temperature	SPM-Other
Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/6	MID	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented
Sample Barometric Pressure	68108	SPM	3	☐	1/6	N/A	COM	059	mm (Hg)	803	Instrumental-Off Site Sample Baro Pressure	SPM-Other

Forest Park — AQS Site Number 29-510-0094

5600 Clayton Avenue, St. Louis, MO 63110

Latitude: 38.631057 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.281144 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 531

Pollutant	*AQS Code*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	SPM-Other
Black Carbon PM2.5 STP	84313	SPM	1	☐	1	MIC	COM	001	ug/m^3	894	Magee Scientific TAPI M633 Aethalometer	Source Oriented
Carbon Monoxide	42101	SPM	1	☐	1	MIC	COM	007	ppm	055	Gas Filter Corr Thermo Electron	Source Oriented
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	SPM-Other
Nitric Oxide	42601	SPM	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented
Nitric Oxide	42601	SPM	2	☐	1	MIC	COM	008	ppb	200	Teledyne API T200UP Photolytic	Source Oriented
Nitrogen Dioxide	42602	SLAMS	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented
Nitrogen Dioxide	42602	SPM	2	☐	1	MIC	COM	008	ppb	200	Teledyne API T200UP Photolytic	Source Oriented

Nitrogen Dioxide	42602	SPM	3	☐	1	MIC	COM	008	ppb	212	Teledyne Model T500U-Direct NO2	Source Oriented
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	SPM-Other (4m Probe Height)
Outdoor Temperature	62101	SPM	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	SPM-Other (10m Probe Height)
Outdoor Temperature	62101	SPM	3	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	SPM-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	SPM-Other (10m - 2m Probe Height)
Oxides of Nitrogen	42603	SPM	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented
Oxides of Nitrogen	42603	SPM	2	☐	1	MIC	COM	008	ppb	200	Teledyne API T200UP Photolytic	Source Oriented
PM10 - LC FRM/FEM	85101	SLAMS	8	☐	1	MIC	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	Source Oriented
PM10 - STP FRM/FEM	81102	SLAMS	8	☐	1	MIC	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	Source Oriented
PM2.5 - LC FRM/FEM	88101	SPM	4	☐	1	MIC	COM	105	ug/m^3-LC	182	FMDS-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	FMDS-Gravimetric 1405-DF	Source Oriented
Precipitation	65102	SPM	1	☐	1	N/A	MET	021	inches	011	Bucket	SPM-Other
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	SPM-Other
Solar Radiation	63301	SLAMS	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	SPM-Other
UV Carbon PM2.5 STP	84314	SPM	1	☐	1	MIC	COM	001	ug/m^3	894	Magee Scientific TAPI M633 Aethalometer	Source Oriented
WD - Sigma Theta (Horizontal)	61106	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	SPM-Other (10m Tower)
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	SPM-Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	SPM-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	Monitor-Type	POC	Back-Up	Freq	Scale	State-Obj	Unit-Code	Unit	Method-Code	Method	Monitor-Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	SPM-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

AQS Site Number 29-093-0033

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

Latitude: 37.48964 ***AQCR:*** 138 SE Missouri

Longitude: -90.69247 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 881

Pollutant	AQS Code	Monitor-Type	POC	Back-Up	Freq	Scale	State-Obj	Unit-Code	Unit	Method-Code	Method	Monitor-Objective
Ambient Temperature	68105	SPM	1	☐	1/6	N/A	COM	017	deg C	803	Instrumental-Off Site Ambient Temperature	SPM-Other
Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/6	NBR	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented
Sample Barometric Pressure	68108	SPM	1	☐	1/6	N/A	COM	059	mm (Hg)	803	Instrumental-Off Site Sample Baro Pressure	SPM-Other

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	Monitor-Type	POC	Back-Up	Freq	Scale	State-Obj	Unit-Code	Unit	Method-Code	Method	Monitor-Objective
Ambient Temperature	68105	SPM	1	☐	1/3	N/A	COM	017	deg C	780	Instrumental-On Site Ambient Temperature	SPM-Other
Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/3	NBR	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented & Population Exposure
Sample Barometric Pressure	68108	SPM	1	☐	1/3	N/A	COM	059	mm (Hg)	780	Instrumental-On Site Sample Baro Pressure	SPM-Other

Herculaneum, Mott Street

AQS Site Number 29-099-0027

Mott 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	Monitor-Type	POC	Back-Up	Freq	Scale	State-Obj	Unit-Code	Unit	Method-Code	Method	Monitor-Objective
Ambient Temperature	68105	SPM	1	☐	1/1	N/A	COM	017	deg C	780	Instrumental-On Site Ambient Temperature	SPM-Other
Ambient Temperature	68105	SPM	2	☐	1/2	N/A	COM	017	deg C	780	Instrumental-On Site Ambient Temperature	QA Collocated
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	SPM-Other

Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/1	MID	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented & Highest Concentration
Lead (TSP) - LC FRM/FEM	14129	SLAMS	2	☐	1/2	MID	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	QA Collocated
Sample Barometric Pressure	68108	SPM	1	☐	1/1	N/A	COM	059	mm (Hg)	780	Instrumental-On Site Sample Baro Pressure	SPM-Other
Sample Barometric Pressure	68108	SPM	2	☐	1/2	N/A	COM	059	mm (Hg)	780	Instrumental-On Site Sample Baro Pressure	QA Collocated
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	SPM-Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	SPM-Other (5.5 meters)

Herculaneum, Sherman — *AQS Site Number* **29-099-0013**

460 Sherman St., Herculaneum, MO, 63048

Latitude: 38.27176 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.37648 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 462

Pollutant	*AQS Code*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Ambient Temperature	68105	SPM	1	☐	1/3	N/A	COM	017	deg C	780	Instrumental-On Site Ambient Temperature	SPM-Other

Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/3	NBR	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented
Sample Barometric Pressure	68108	SPM	1	☐	1/3	N/A	COM	059	mm (Hg)	780	Instrumental-On Site Sample Baro Pressure	SPM-Other

Hillcrest High School — *AQS Site Number* 29-077-0036

3319 N. Grant, Springfield, MO 65803

Latitude: 37.256069 ***AQCR:*** 139 SW Missouri

Longitude: -93.299692 ***MSA:*** 7920 Springfield, MO

Elevation (ft): 1321

Pollutant	*AQS Code*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	SPM-Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	SPM-Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	SPM-Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	SPM-Other
Ozone	44201	SLAMS	1	☐	1	URB	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	SLAMS	2	☑	1	URB	BACK-UP	007	ppm	047	Ultraviolet Photometric	-

PM10 - LC FRM/FEM	85101	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	208	FMDS-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
PM10 - STP FRM/FEM	81102	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	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 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	FMDS-Gravimetric 1405-DF	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	SPM-Other

Ladue — *AQS Site Number* 29-189-3001

73 Hunter Ave., Ladue, MO 63124

Latitude: 38.65021 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.35036 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 528

Pollutant	*AQS Code*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*

Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	SPM-Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	SPM-Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	SPM-Other
PM10 - LC FRM/FEM	85101	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	Population Exposure
PM10 - STP FRM/FEM	81102	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	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 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	FMDS-Gravimetric 1405-DF	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	SPM-Other
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	SPM-Other (10m Tower)

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

Liberty — *AQS Site Number* 29-047-0005

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

Latitude: 39.303056 ***AQCR:*** 094 Metropolitan Kansas City

Longitude: -94.376389 ***MSA:*** 3760 Kansas City, MO-KS

Elevation (ft): 930

Pollutant	*AQS Code*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	SPM-Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	SPM-Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	SPM-Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	SLAMS	2	☑	1	NBR	BACK-UP	007	ppm	047	Ultraviolet Photometric	-
PM10 - LC FRM/FEM	85101	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	Population Exposure
PM10 - STP FRM/FEM	81102	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	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 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	FMDS-Gravimetric 1405-DF	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	SPM-Other
Solar Radiation	63301	SPM	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	SPM-Other
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	SPM-Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	SPM-Other (5.5 meters)

Margaretta *AQS Site Number* **29-510-0086**

4520 Margaretta, St. Louis, MO 63105

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

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

Elevation (ft): 514

Pollutant	*AQS Code*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*

Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	SPM-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., Stoutville, MO 65283

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

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

Elevation (ft): 710

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

Nitric Oxide	42601	SPM	1	☐	1	REG	COM	008	ppb	074	Chemiluminescence	General/Background
Nitrogen Dioxide	42602	SLAMS	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	BACK-UP	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	NBR	COM	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	067	Instrumental: RM Young Model 05103	SPM-Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	SPM-Other (10m Tower)

Maryland Heights — AQS Site Number 29-189-0014

13044 Marine Ave., Maryland Heights, MO 63146

Latitude: 38.7109 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.4759 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 633

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

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

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	Monitor-Type	POC	Back-Up	Freq	Scale	State-Obj	Unit-Code	Unit	Method-Code	Method	Monitor-Objective
Ambient Temperature	68105	SPM	1	☐	1/6	N/A	COM	017	deg C	803	Instrumental-Off Site Ambient Temperature	SPM-Other
Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/6	NBR	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented
Sample Barometric Pressure	68108	SPM	1	☐	1/6	N/A	COM	059	mm (Hg)	803	Instrumental-Off Site Sample Baro Pressure	SPM-Other

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

Pacific — AQS Site Number 29-189-0005

18701 Old Highway 66, Pacific, MO 63039

Latitude: 38.4902 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.7052 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 524

Pollutant	AQS Code	Monitor-Type	POC	Back-Up	Freq	Scale	State-Obj	Unit-Code	Unit	Method-Code	Method	Monitor-Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	SPM-Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	SPM-Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	SLAMS	2	☑	1	NBR	BACK-UP	007	ppm	047	Ultraviolet Photometric	-
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	SPM-Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	SPM-Other (5.5 meters)

Pevely — AQS Site Number 29-099-0009

500 Dow Industrial Dr., Pevely, MO 63070

Latitude: 38.2861 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.38094 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 409

Pollutant	AQS Code	Monitor-Type	POC	Back-Up	Freq	Scale	State-Obj	Unit-Code	Unit	Method-Code	Method	Monitor-Objective

Ambient Temperature	68105	SPM	1	☐	1/6	N/A	COM	017	deg C	780	Instrumental-On Site Ambient Temperature	SPM-Other
Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/6	NBR	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented
Sample Barometric Pressure	68108	SPM	1	☐	1/6	N/A	COM	059	mm (Hg)	780	Instrumental-On Site Sample Baro Pressure	SPM-Other

Pevely North — *AQS Site Number* 29-099-0026

Tiarre at the Abbey, Station 150N, Christine Drive, Pevely, MO 63070

Latitude: 38.296 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.393 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 582

Pollutant	*AQS Code*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Ambient Temperature	68105	SPM	1	☐	1/6	N/A	COM	017	deg C	780	Instrumental-On Site Ambient Temperature	SPM-Other
Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/6	NBR	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented
Sample Barometric Pressure	68108	SPM	1	☐	1/6	N/A	COM	059	mm (Hg)	780	Instrumental-On Site Sample Baro Pressure	SPM-Other

Richards Gebaur - South — *AQS Site Number* 29-037-0003

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

Latitude: 38.75976 ***AQCR:*** 094 Metropolitan Kansas City

Longitude: -94.57997 ***MSA:*** 3760 Kansas City, MO-KS

Elevation (ft): 1031

Pollutant	*AQS Code*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*

Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	SPM-Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	SPM-Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	SPM-Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	SLAMS	2	☑	1	NBR	BACK-UP	007	ppm	047	Ultraviolet Photometric	-
PM10 - LC FRM/FEM	85101	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	Population Exposure
PM10 - STP FRM/FEM	81102	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	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 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	FMDS-Gravimetric 1405-DF	Population Exposure

Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	SPM-Other
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	SPM-Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	SPM-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): 488

Pollutant	*AQS Code*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	SPM-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	SPM-Other (10m Probe Height)
Outdoor Temperature	62101	SPM	3	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	SPM-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	SPM-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	011	Bucket	SPM-Other
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	SPM-Other
Solar Radiation	63301	SPM	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	SPM-Other
WD - Sigma Theta (Horizontal)	61106	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	SPM-Other (10m Tower)
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	SPM-Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	SPM-Other (10m Tower)

Rocky Creek *AQS Site Number* **29-047-0006**

13131 Highway 169 NE., Smithville, MO 64089

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

Longitude: -94.5806 ***MSA:*** 3760 Kansas City, MO-KS

Elevation (ft): 993

Pollutant	*AQS Code*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*

Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	SPM-Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	SLAMS	2	☑	1	NBR	BACK-UP	007	ppm	047	Ultraviolet Photometric	-

Savannah — *AQS Site Number* 29-003-0001

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

South Broadway — *AQS Site Number* 29-510-0007

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*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*

Barometric Pressure	64101	SLAMS	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	SPM-Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	SPM-Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	SPM-Other
PM10 - LC FRM/FEM	85101	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	Population Exposure
PM10 - STP FRM/FEM	81102	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	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 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	FMDS-Gravimetric 1405-DF	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	SPM-Other

South Charleston

AQS Site Number 29-077-0026

5012 S. Charleston, Springfield, MO 65804

Latitude: 37.122561 ***AQCR:*** 139 SW Missouri

Longitude: -93.263161 ***MSA:*** 7920 Springfield, MO

Elevation (ft): 1234

Pollutant	AQS Code	Monitor-Type	POC	Back-Up	Freq	Scale	State-Obj	Unit-Code	Unit	Method-Code	Method	Monitor-Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	SPM-Other
Sulfur Dioxide	42401	SLAMS	1	☐	1	NBR	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	SLAMS	1	☐	1	NBR	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented

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	Monitor-Type	POC	Back-Up	Freq	Scale	State-Obj	Unit-Code	Unit	Method-Code	Method	Monitor-Objective
Ambient Temperature	68105	SPM	3	☐	1/3	N/A	COM	017	deg C	127	Lo-Vol R&P 2025 Sequential	SPM-Other
Ambient Temperature	68105	SPM	4	☐	1/6	N/A	COM	017	deg C	127	Lo-Vol R&P 2025 Sequential	QA Collocated
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	SPM-Other

Barometric Pressure	64101	SPM	2	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	SPM-Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	SPM-Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	SPM-Other
Outdoor Temperature	62101	SPM	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	QA Collocated
PM10 - LC FRM/FEM	85101	SPM	1	☐	1/3	NBR	COM	105	ug/m^3-LC	127	Lo-Vol R&P 2025 Sequential	Population Exposure
PM10 - LC FRM/FEM	85101	SPM	2	☐	1/6	NBR	COM	105	ug/m^3-LC	127	Lo-Vol R&P 2025 Sequential	QA Collocated
PM10 - LC FRM/FEM	85101	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	Population Exposure
PM10 - LC FRM/FEM	85101	SLAMS	9	☐	1	NBR	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	QA Collocated
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	2	☐	1/6	NBR	COM	001	ug/m^3	127	Lo-Vol R&P 2025 Sequential	QA Collocated
PM10 - STP FRM/FEM	81102	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	Population Exposure

PM10 - STP FRM/FEM	81102	SLAMS	9	☐	1	NBR	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	QA Collocated
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	QA Collocated
PM2.5 Tot Atmospheric	88500	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM2.5 Tot Atmospheric	88500	SPM	2	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	QA Collocated
PM2.5 Volatile Channel	88503	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM2.5 Volatile Channel	88503	SPM	2	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	QA Collocated
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	QA Collocated
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	SPM-Other
Relative Humidity	62201	SPM	2	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	QA Collocated

Sample Barometric Pressure	68108	SPM	3	☐	1/3	N/A	COM	059	mm (Hg)	127	Lo-Vol R&P 2025 Sequential	SPM-Other
Sample Barometric Pressure	68108	SPM	4	☐	1/6	N/A	COM	059	mm (Hg)	127	Lo-Vol R&P 2025 Sequential	QA Collocated
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	SPM-Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	067	Instrumental: RM Young Model 05103	SPM-Other (5.5 meters)

Trimble — *AQS Site Number* 29-049-0001

7536 SW. O Highway, Trimble, MO 64492

Latitude: 39.5306 ***AQCR:*** 137 Northern Missouri

Longitude: -94.556 ***MSA:*** 3760 Kansas City, MO-KS

Elevation (ft): 955

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

Troost — AQS Site Number 29-095-0034

724 Troost (Rear), Kansas City, MO 64106

Latitude: 39.104722 ***AQCR:*** 094 Metropolitan Kansas City

Longitude: -94.570556 ***MSA:*** 3760 Kansas City, MO-KS

Elevation (ft): 971

Pollutant	*AQS Code*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Ambient Temperature	68105	SPM	1	☐	1/3	N/A	COM	017	deg C	145	R&P 2025 Sequential w/VSCC	SPM-Other
Ambient Temperature	68105	SPM	3	☐	1/6	N/A	COM	017	deg C	127	Lo-Vol R&P 2025 Sequential	SPM-Other
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	SPM-Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	SPM-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	SPM-Other
Oxides of Nitrogen	42603	SPM	1	☐	1	URB	COM	008	ppb	074	Chemiluminescence	Population Exposure

PM10 - LC FRM/FEM	85101	SPM	1	☐	1/6	NBR	COM	105	ug/m^3-LC	127	Lo-Vol R&P 2025 Sequential	Population Exposure
PM10 - LC FRM/FEM	85101	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	Population Exposure
PM10 - STP FRM/FEM	81102	SLAMS	1	☐	1/6	NBR	COM	001	ug/m^3	127	Lo-Vol R&P 2025 Sequential	Population Exposure
PM10 - STP FRM/FEM	81102	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	208	FMDS-Gravimetric 1405-DF	Population Exposure
PM2.5 - LC FRM/FEM	88101	SLAMS	1	☐	1/3	NBR	COM	105	ug/m^3-LC	145	R&P 2025 Sequential w/VSCC	QA Collocated
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 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	FMDS-Gravimetric 1405-DF	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	SPM-Other
Sample Barometric Pressure	68108	SPM	1	☐	1/3	N/A	COM	059	mm (Hg)	145	R&P 2025 Sequential w/VSCC	SPM-Other

Sample Barometric Pressure	68108	SPM	3	☐	1/6	N/A	COM	059	mm (Hg)	127	Lo-Vol R&P 2025 Sequential	SPM-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 Number* 29-099-0025

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*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Ambient Temperature	68105	SPM	1	☐	1/6	N/A	COM	017	deg C	780	Instrumental-On Site Ambient Temperature	SPM-Other
Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/6	NBR	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented & Upwind Background
Sample Barometric Pressure	68108	SPM	1	☐	1/6	N/A	COM	059	mm (Hg)	780	Instrumental-On Site Sample Baro Pressure	SPM-Other

Watkins Mill State Park — *AQS Site Number* 29-047-0003

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*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*

Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	SPM-Other
Ozone	44201	SLAMS	1	☐	1	URB	COM	007	ppm	047	Ultraviolet Photometric	Extreme Downwind
Ozone	44201	SLAMS	2	☑	1	URB	BACK-UP	007	ppm	047	Ultraviolet Photometric	-

West Alton — *AQS Site Number* 29-183-1002

General Elecric 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*	*Monitor-Type*	*POC*	*Back-Up*	*Freq*	*Scale*	*State-Obj*	*Unit-Code*	*Unit*	*Method-Code*	*Method*	*Monitor-Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	SPM-Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	SPM-Other
Ozone	44201	SLAMS	1	☐	1	URB	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration & Population Exposure
Ozone	44201	SLAMS	2	☑	1	URB	BACK-UP	007	ppm	047	Ultraviolet Photometric	-
Solar Radiation	63301	SPM	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	SPM-Other
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	067	Instrumental: RM Young Model 05103	SPM-Other (10m Tower)

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

APPENDIX 2

Ameren, Labadie Meteorology and SO_2 Monitoring Sites Methodology Document

Discussion of the Methodology for Selection of SO2 and Meteorological Monitoring Stations around Ameren Missouri's Labadie Energy Center

Proposed Ambient Monitor Station Locations and Parameters

Ameren Missouri is proposing to install and operate three ambient air quality monitoring stations in the vicinity of the Ameren Missouri Labadie Energy Center located in Franklin County Missouri in the Missouri River Valley. The plant is situated in a section of the Missouri River valley which is oriented from northeast to southwest. Terrain elevations in the area range from in the valley around 470' above MSL to over 800' in the surrounding hills just few kilometers from the Labadie Energy Center. We believe that the local meteorology under certain synoptic conditions is affected significantly by the presence of this valley where the meteorology measured in the valley may differ significantly from that measured on the surrounding elevated terrain. Therefore, Ameren Missouri is proposing to install two separate meteorological monitoring stations; one located in the river valley and one on the surrounding elevated terrain. Figure 1 shows the location of the proposed monitoring stations and the overall layout of the area. The proposed stations will include the measured parameters shown in Table 1 below for the Nw and Ne monitoring stations. The tower station will have two instrumented levels as shown in Table 2.

.

Table 1 – Proposed Instrumentation for Nw and Ne Stations

Monitored Parameter	Sensor Height Above Ground Level	Measurement Range	Locations
Horizontal Wind Speed	10m	0-125 mph	Ne Site
Horizontal Wind Direction	10m	0° to 360°	Ne Site
Sigma Theta (Standard Deviation of Wind Direction)	10m	0° to 104°	Ne Site
Vertical Wind Speed	10m	-25 to +25 mph	Ne Site
Sigma Phi (Standard Deviation of Vertical Wind Speed; precursor value for Sigma ω)	10m	0 to 25 mph	Ne Site
Ambient air temperature	2m	-22 to +122 °F	Ne Site
Temperature Difference	10m (referenced to 2m probe)	-22 to +22 °F	Ne Site
Relative Humidity	10m	0% to 100%	Ne Site
Barometric Pressure	2m	900mb to 1100mb	Ne Site

Precipitation	1m	0 to Unlimited Inches	Ne Site
Global Solar Radiation	2m	0-1495 W/m²	Ne Site
SO2 Analyzer	-	Ambient: 0-500 ppm	Both Sites

Figure 1
Monitor Locations

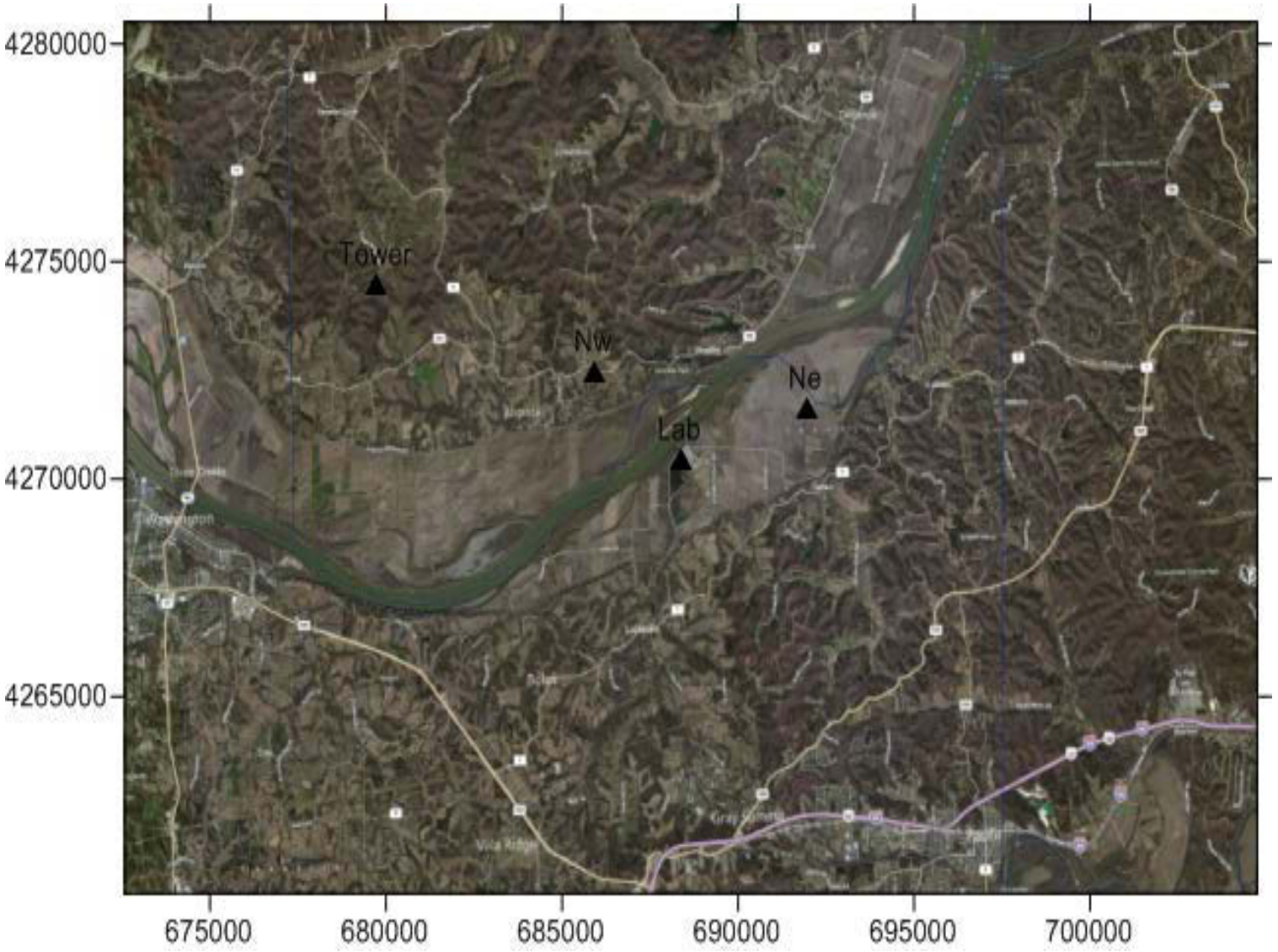


Table 2

Proposed Instrumentation for Tower Station

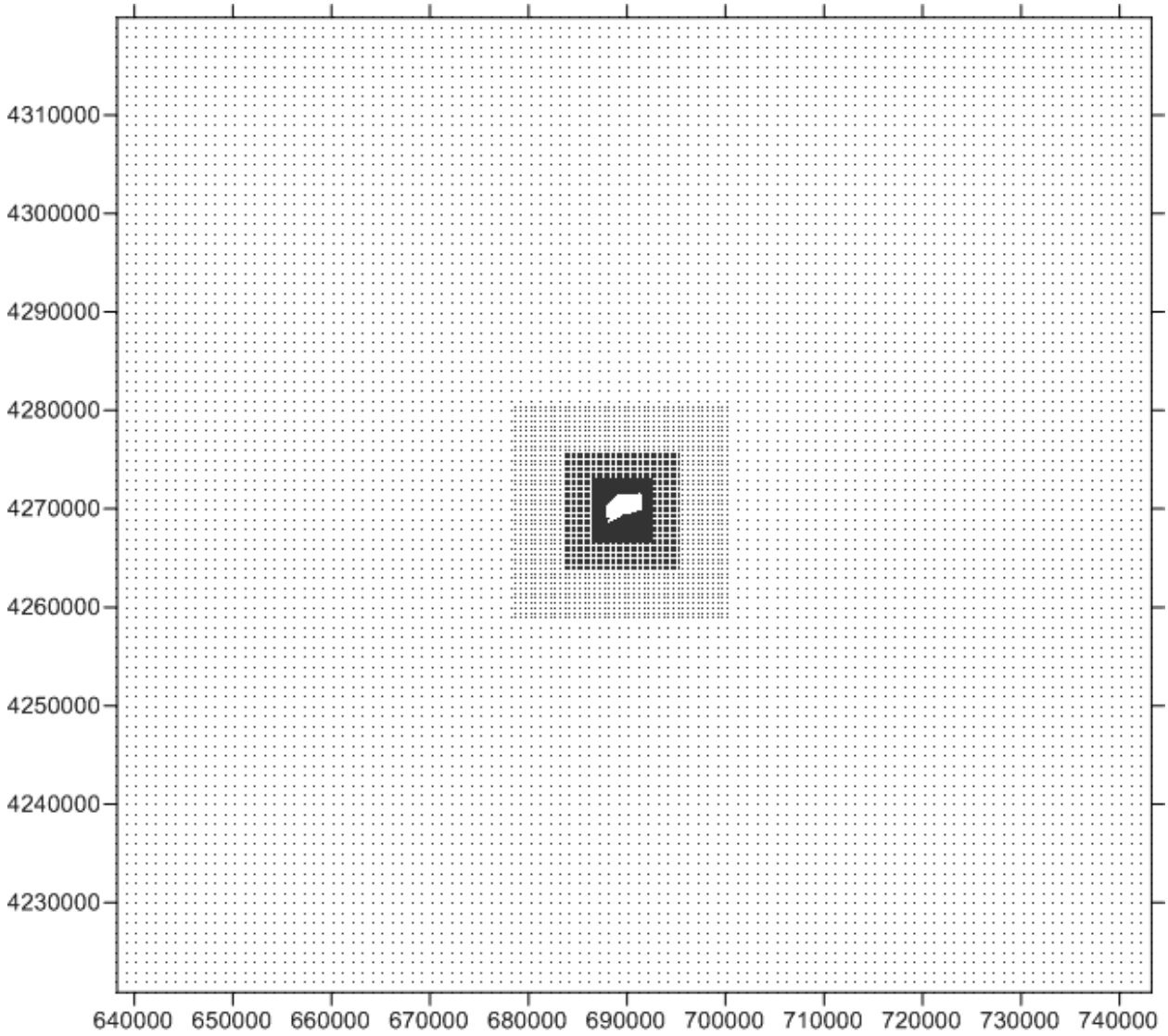
Monitored Parameter	Sensor Height Above Ground Level	Measurement Range
Horizontal Wind Speed	56.4m & 90m	0-125 mph
Horizontal Wind Direction	56.4m & 90m	0° to 360°
Sigma Theta (Standard Deviation of Wind Direction)	56.4m & 90m	0° to 104°
Vertical Wind Speed	56.4m & 90m	-25 to +25 mph
Sigma Phi (Standard Deviation of Vertical Wind Speed; precursor value for Sigma ω)	56.4m & 90m	0 to 25 mph
Ambient air temperature	56.4m & 90m	-22 to +122 °F
Temperature Difference	90m (referenced to 56.4m probe)	-22 to +22 °F

SO_2 Monitoring Station Location Justification:

In order to determine the best locations for the SO_2 monitoring sites, air quality modeling was performed using data supplied by The Missouri Department of Natural Resources, Air Program (DNR). The meteorological data selected by the DNR was Jefferson City, MO surface data from the local airport and Lincoln, IL upper air for the years 2005-2009. The DNR processed the meteorological and ground cover data using EPA models AERMET (Version 11059) and AERSURFACE (Version 08009). With Labadie building height information supplied by Ameren the DNR used BPIP to develop inputs for determining building downwash. In addition the DNR developed a receptor grid shown in Figure 2 below. This receptor grid contains fence line receptors around the Labadie Energy Center spaced at 50 m as well gradated gridded receptors starting with a 100 m resolution out to ~3.0 km from the center of the plant property; from ~3.0 km to ~5.7km with a 250 m resolution; from ~5.7 km to ~11.2 km with a 500 m resolution; and from ~11.2 km to ~51.2 km with a 1000 m resolution.

Figure 2

DNR Labadie Receptor Locations[1]



[1] UTM coordinates- Zone 15

The EPA AERMOD air quality model (Version 12060) was used for this evaluation using the DNR developed inputs discussed above and the stack parameter information shown in Table 3. While an updated version of AERMOD (Version 14134) is currently available, AERMOD was not rerun as the changes made to AERMOD would not effectively change the analysis. This is because actual ambient concentrations based on real time emissions are not required for selecting monitoring sites and the additional functionality in the updated AERMOD was not necessary. An example AERMOD input file for the year 2005 is shown in Appendix A.

The AERMOD air quality model was executed for years 2005-2009 extracting the 4th highest SO_2 concentration from the highest 1-hour daily SO_2 concentration at each receptor for each year. A modeled design value for each receptor shown in Figure 2 was then calculated by averaging the five yearly 4th highest concentrations for each receptor.

In order to determine appropriate locations for the SO_2 monitoring sites, two separate sets of data were considered.

1) The results of the AERMOD modeling and,
2) Wind rose information for various sites in eastern Missouri and the 2005-2009 modeled meteorological data.

AERMOD Modeling:

The results of the AERMOD modeling were used to determine

1) Location of highest modeled SO_2 design values
2) Modeled high concentration locations that were frequently affected by the Labadie plume

Figure 3 shows the areas around the Labadie Energy Center where modeled SO_2 design values were greater than 75% of the maximum modeled concentration as well as the proposed monitoring station locations and the maximum modeled SO_2 design value (208.2 ug/m^3). As noted above, both the Nw and Ne sites will monitor SO_2 with meteorological information being monitored at the Ne and Tower sites. As shown in Figure 3, the Nw site is very near the maximum modeled concentration in a field of modeled levels from 90% to 100 % of the modeled maximum design value. The Ne site, while not located at the precise modeled maximum for this area, is in a field of modeled design values predicted to be 80 % to 90% of the maximum modeled design value as shown in Figure 4. Because the location of the higher modeled values in the area northeast of the Labadie Energy Center is located the middle of an actively farmed area, physical access is almost impossible without building additional infrastructure to allow access as well as electric power was not available. However, as

explained later, the selected site location is appropriate for measuring the highest SO_2 levels in the valley area and is an optimal for site for meteorological instrumentation.

Further review of Figures 3 and 4 indicate that maximum modeled concentrations occur for receptors between 3-5 Km from the Labadie Energy Center. The proposed monitor site locations are ideally located in this range.

Table 3

Labadie Stack Parameters

Unit	SO_2 Rate (lb/hr)*	SO_2 Rate (g/s)	Stack Height (m)	Stack Diameter (m)	Stack Temp (^oK)	Stack Velocity (m/s)
1	3091.5	389.53	213.36	6.25	443.06	34.72
2	3091.5	389.53	213.36	6.25	442.49	35.56
3	3053.5	384.74	213.36	6.25	433.20	34.52
4	3053.5	384.74	213.36	6.25	441.71	34.95

*Note the SO_2 rate was selected to produce rational ambient levels to be used for establishing monitoring locations and does not reflect actual emissions.

An ideal monitor location should be near maximum modeled levels and in an area where elevated SO_2 levels occur more frequently than other areas. Utilizing the modeling results we looked at the number of times[2] receptors exceeded 50% and 75% of the maximum modeled design value. The receptor field for this analysis included only receptors with design values greater than 50% of the maximum modeled design value. Figures 5 and 6 illustrate the number of daily max modeled concentrations that exceeded 50% and 75% of the maximum design value, respectively. As can be seen from these figures the proposed Nw site area is the most often impacted area. The proposed Ne site, especially for the modeled concentrations higher than 75% of the maximum design value, is also located in an area where the number of elevated modeled levels is high. An area to the southeast of Labadie Energy Center also shows a large number of elevated modeled levels but is considerably less in both count and areal extent compared to the Nw site area. Note that we are not proposing to install a monitoring site southeast of the Labadie Energy Center even though some higher concentrations and a relatively high number of daily max concentrations are being modeled in this area. As mentioned earlier, two distinct terrain elevation regimes exist around the Labadie Energy Center; an area of elevated terrain and the valley area. Since the area northwest of the Labadie Energy Center exhibited the highest modeled levels, was most frequently impacted with higher

[2] Number of times the maximum modeled daily 1-hour SO_2 concentrations exceeded a particular value for the years 2005-2009.

concentrations, and a site that met the siting requirements was available, it was believed that an additional elevated terrain site was not necessary (i.e. the area to the southeast). As described below, we believe that the elevated concentrations and elevated frequencies of occurrence in the area southeast of the Labadie Energy Center is an artifact of the Jefferson City, MO Airport meteorology.

Wind Rose Climatology:

Another criterion to consider is the representativeness of the actual meteorological data used in the modeling simulations. Monitors are generally placed downwind of the plant for the dominant wind directions. In the St. Louis area typical wind roses generally have significant wind direction components from the Southwest to East as is illustrated in Figure 7. This is also noted in Figures 8 and 9 which are additional sites located in eastern Missouri. While the wind roses for these sites are not identical due to local influences, they do show a significant wind direction contribution from southeasterly to southwesterly.

Figure 10 shows a tabulated average wind rose developed from the 2005-2009 meteorological data from Jefferson City, MO used in the modeling analysis. Figure 11[3] shows a wind rose from the Jefferson City, MO Airport for the years 1996-2000, 2001-2005. While these wind roses are for different time periods the wind roses are quite similar showing predominant wind directions from the northwest and southeast. The Jefferson City observation station is located at the airport which sits alongside the Missouri River. The local Missouri river valley in this area is oriented from northwest to southeast (See Figure 12). It appears considering the relative dominant directions shown in the wind roses for the Jefferson City, MO Airport that the river valley is exerting some influence on the local wind direction as noted by the distinct northwest – southeast dominance.

The Labadie Energy Center is located in the Missouri River valley where the river valley is oriented from southwest to northeast. In the absence of strong synoptic forcing one would expect that the local orientation of the valley (as noted for the Jefferson City, MO airport site) would have an influence on the wind flows. As noted above and seen in Figures 10 and 11 for Jefferson City, MO airport, the southwest and northeast directions are considerably less prevalent than the other directions. However, despite this low bias of the southwest wind direction, modeling produced relatively high SO_2 concentrations northeast of the plant. In light of the discussion of typical wind roses for eastern Missouri discussed above (Figures 7-9) we would expect the actual measured meteorology in the Labadie plant area to reveal a larger contribution of winds from the southwest than those from Jefferson City, MO airport. With this

[3] Reproduced from University of Missouri Extension Commercial Agriculture Program – Missouri Agricultural Weather Wind Information and Resources.

increased contribution of winds from the southwest we would expect more opportunities to measure above background SO_2 concentrations northeast of the Labadie Energy Center in the vicinity of the location of the Ne proposed monitoring site location. Similarly for the Nw monitoring site location, again considering the wind roses in Figures 7-9 and the elevated terrain, we would expect to see a significant number of measured SO_2 concentrations above background levels in the vicinity of the Nw monitor proposed location.

Conversely, because of the expectation that the meteorology in the Labadie area will be similar to that of eastern Missouri and the effect of the Missouri river valley orientation we would expect a lower frequency of winds from the northwest than that contained in the Jefferson City meteorology. Thus we would expect a lower frequency of monitored SO_2 concentrations greater than background southeast of the plant than that demonstrated in the modeling discussed above.

Meteorological Tower Locations:

As mentioned above and shown in Figure 1, the Labadie Energy Center is located in the Missouri River valley oriented southwest to northeast and is surrounded by elevated terrain (approximately 400' elevation difference). Being located in a river valley means that there will be periods when the physical shape of the valley will influence the meteorology, especially during lower wind speed conditions, wind channeling, or during surface inversion conditions. A meteorological monitor located in the valley, depending on the depth of the wind field, may not always be representative of the meteorological conditions being experienced by the physical plume located much higher in the atmosphere. In an attempt to help characterize the meteorology in this area Ameren is proposing to install two meteorological stations; one located in the valley at the Ne site and the other at the Tower site on a tall tower located in elevated terrain (See Figure 1). The valley station will be composed of a 10m tower and instrumented as described in Table 1. The second station will be composed of a 105m tower instrumented as described in Table 2 and will help characterize the meteorology closer to actual plume height. These two meteorological sites will better allow Ameren to characterize the meteorological regime in the vicinity of the Labadie Energy Center.

Conclusions:

Based on the modeling results discussed above and the wind direction climatology in the Labadie area the selection of the two SO_2 monitoring locations and the two meteorological tower locations appear to be strategically placed. Missouri DNR personnel have inspected these 3 sites and agree that they meet all of the siting criteria for both the meteorological instrumentation as well as the SO_2 monitors. These monitor locations, based on the above

analysis, are in the expected highest SO_2 impact areas and, from a meteorological point of view, representative of the meteorological forcing being experienced by the Labadie Energy Center.

Figure 3

Receptors Greater Than or Equal to 75%
of Max Modeled Design Value

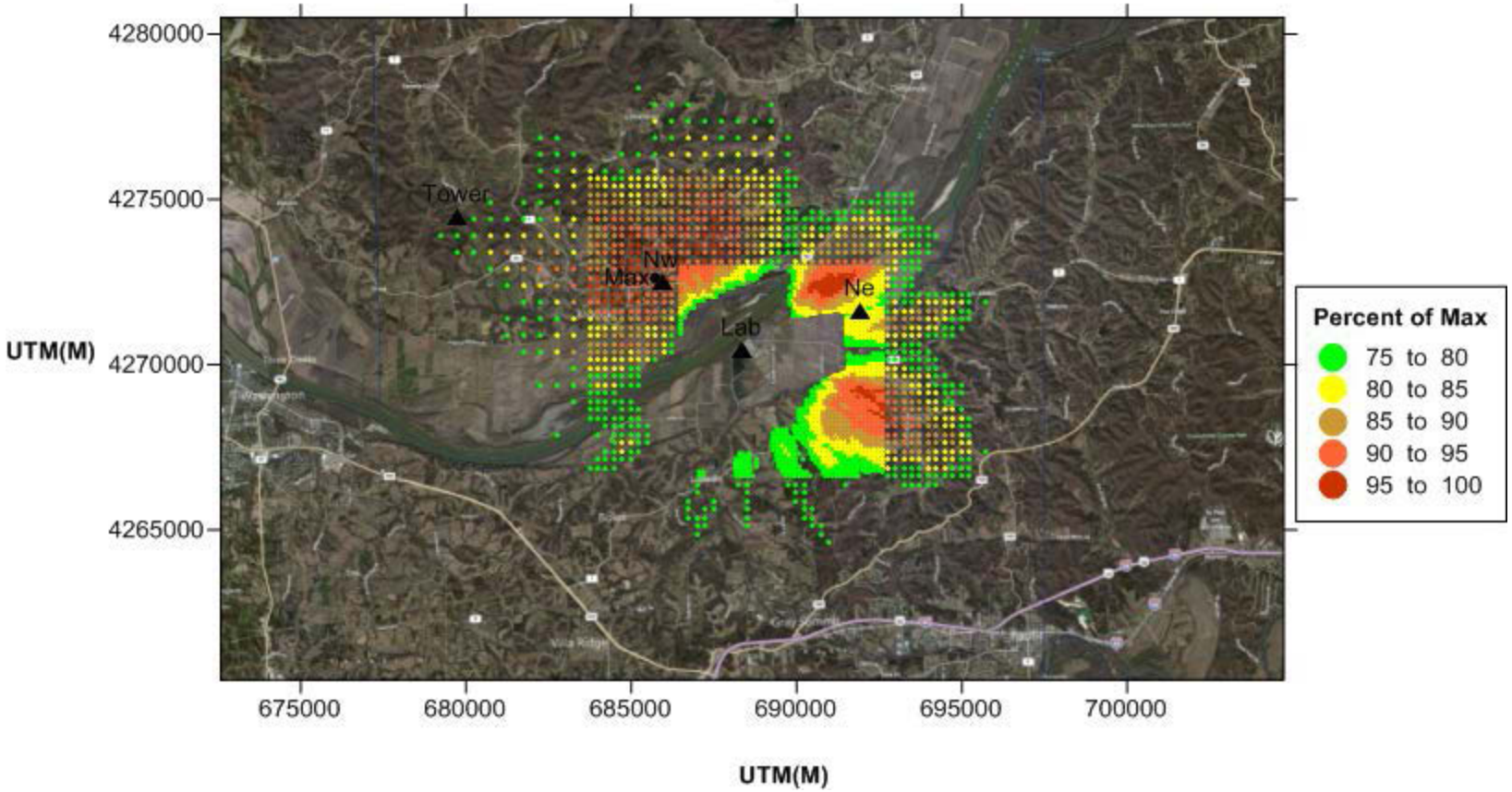


Figure 4

Receptors Greater Than or Equal to 50%
of Max Modeled Design Value

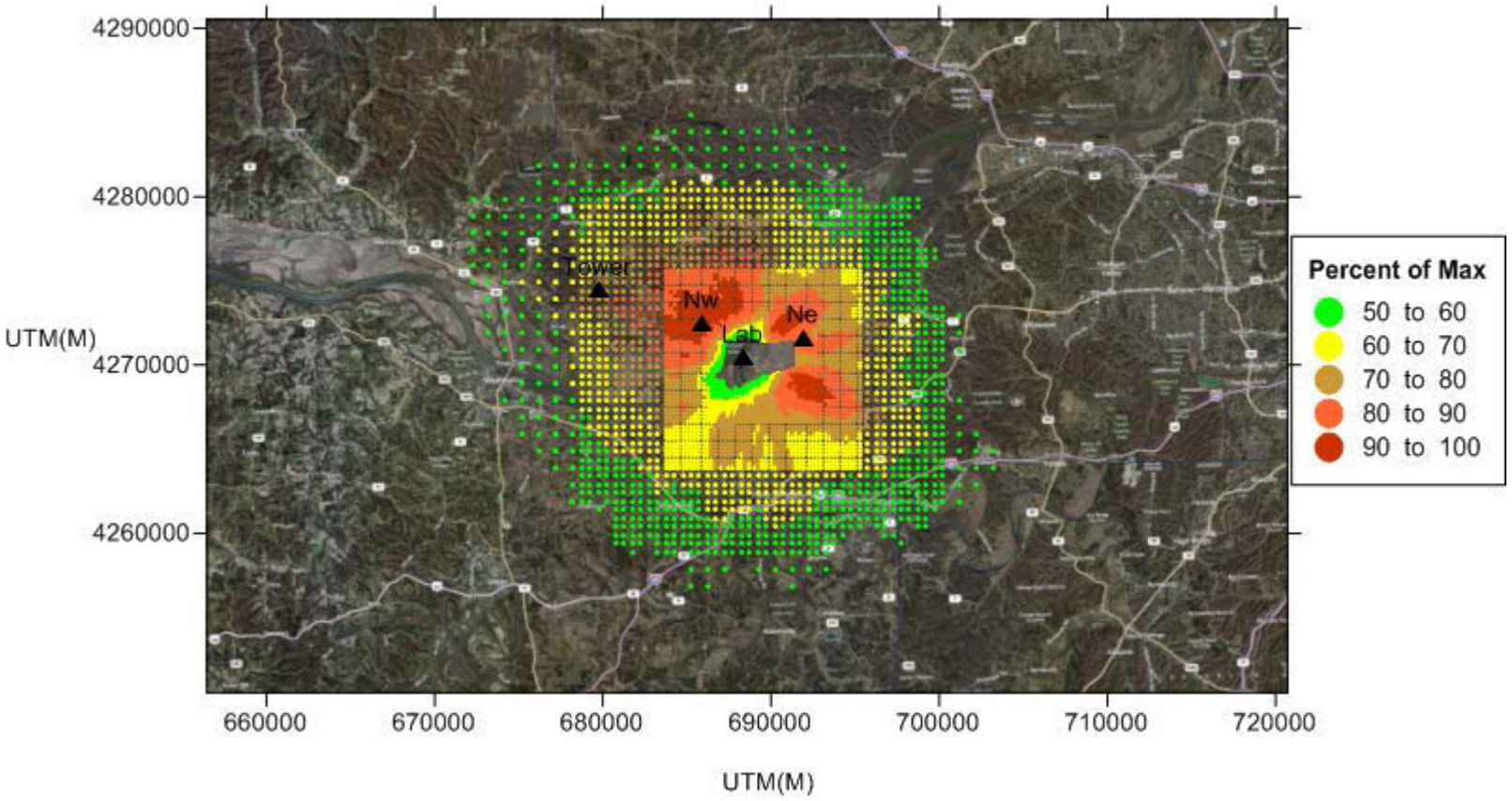
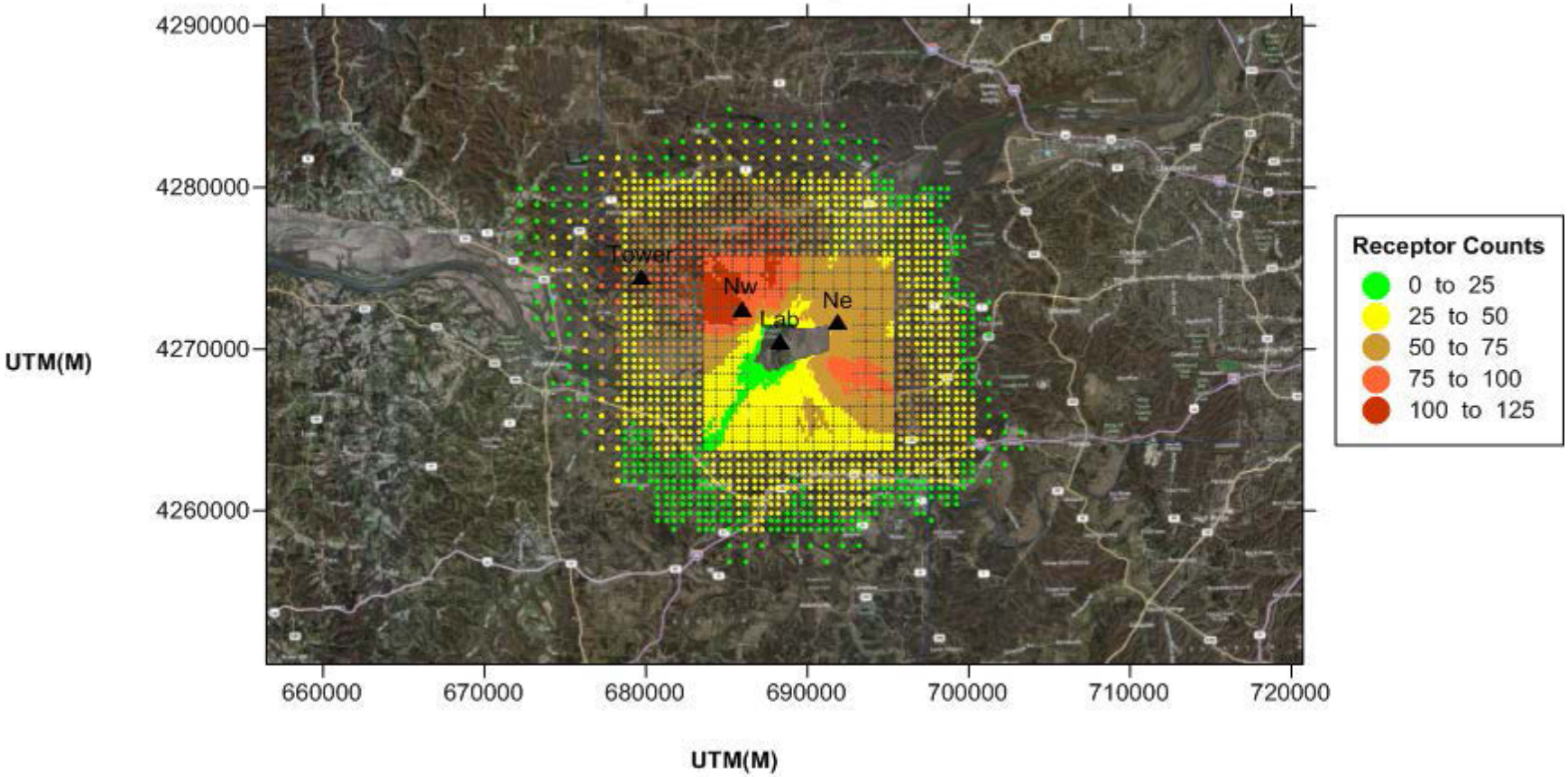


Figure 5

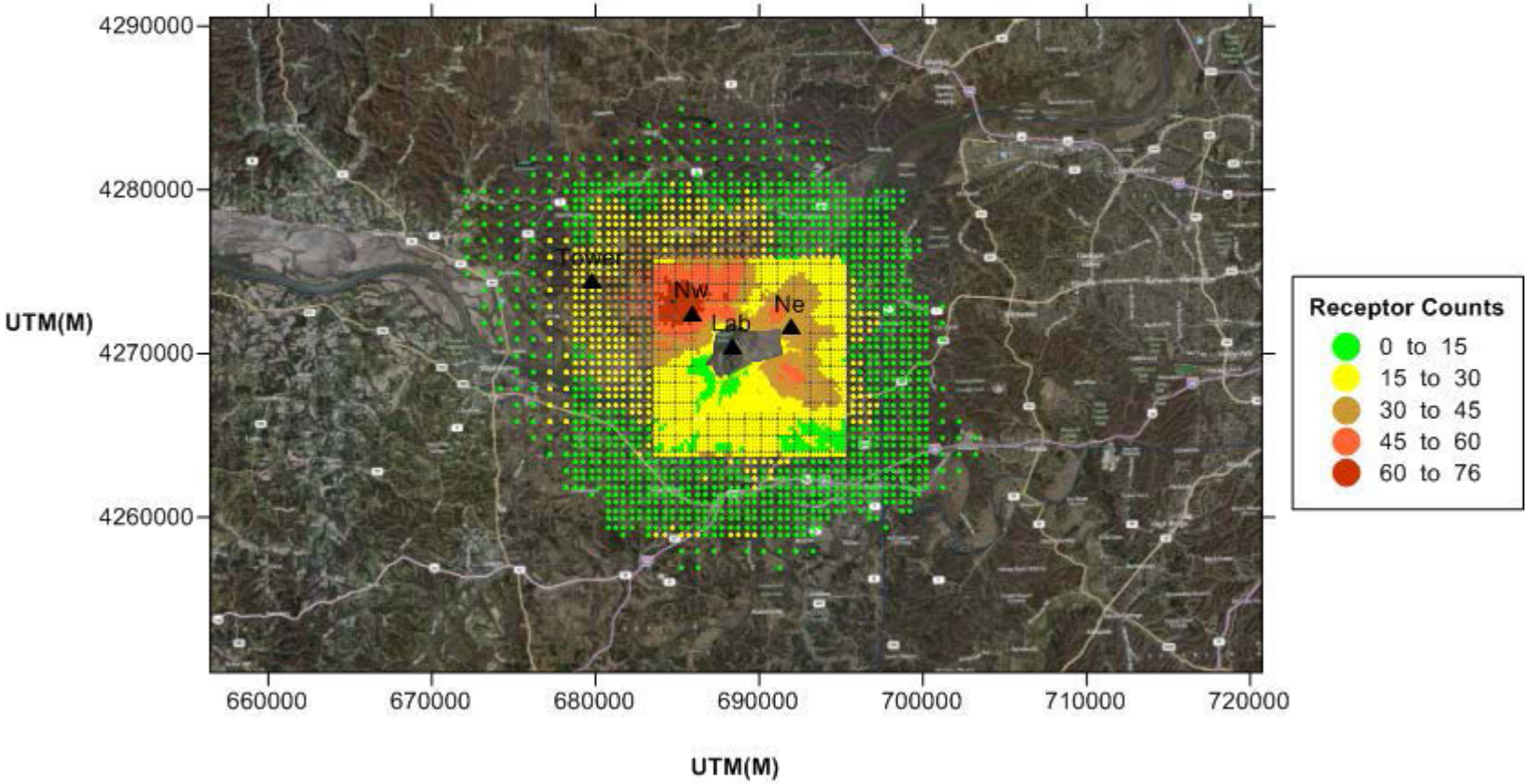
Counts of Max Daily 1-hour Concentrations
Greater Than 50% of the Max Modeled Design Value*
(Years 2005-2009)



*For Receptors With Design Values Greater Than or Equal to 50% of Max Modeled Concentration

Figure 6

Counts of Max Daily 1-Hour Concentrations
Greater Than 75% of the Max Modeled Design Value*
(Years 2005-2009)



*For Receptors With Design Values Greater Than or Equal to 50% of Max Modeled Concentration

Figure 7

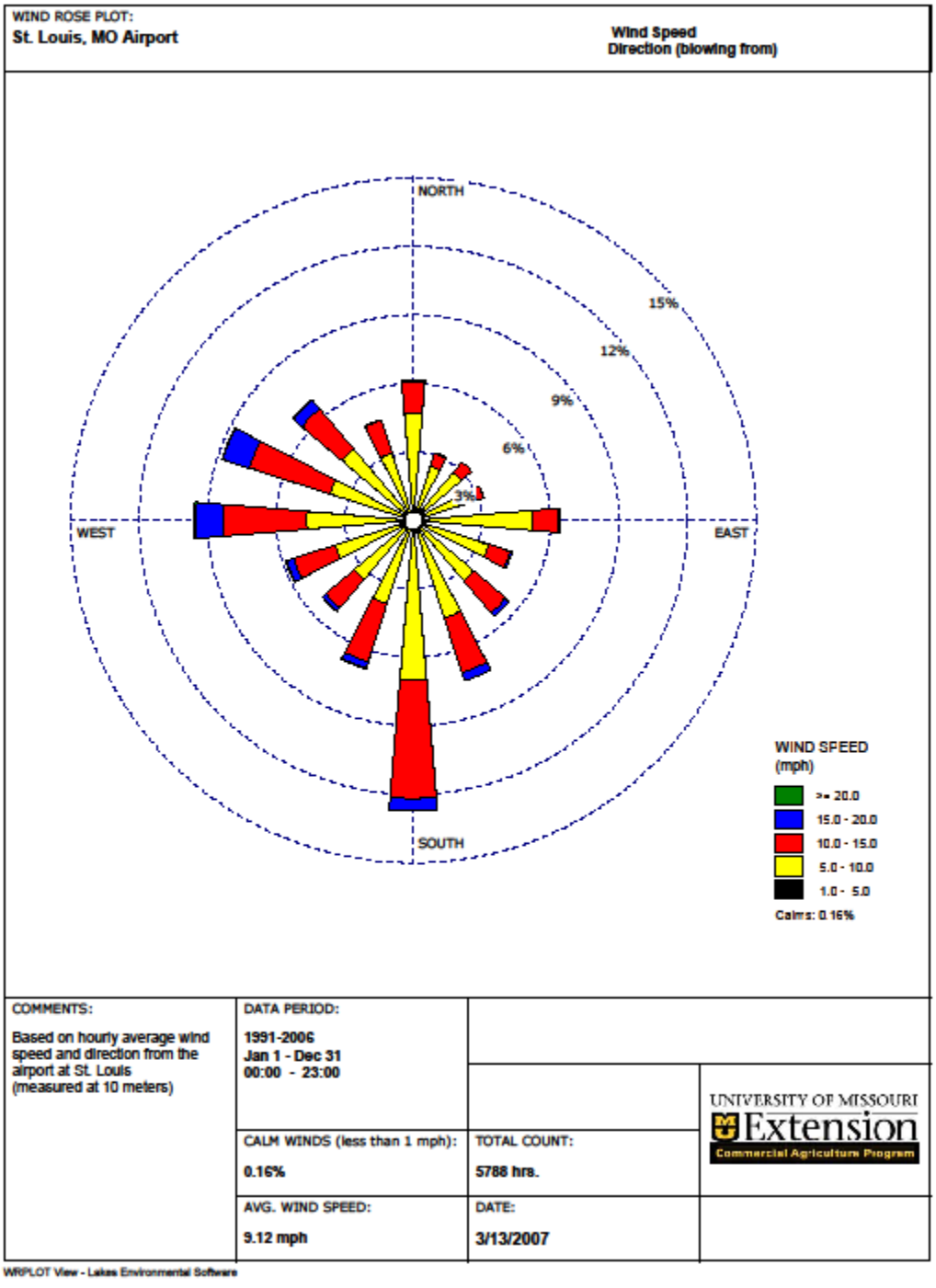

WIND ROSE PLOT:
St. Louis, MO Airport
Wind Speed
Direction (blowing from)
NORTH
EAST
SOUTH
WEST
3%
6%
9%
12%
15%
WIND SPEED
(mph)
>= 20.0
15.0 - 20.0
10.0 - 15.0
5.0 - 10.0
1.0 - 5.0
Calms: 0.16%
COMMENTS:
Based on hourly average wind speed and direction from the airport at St. Louis (measured at 10 meters)
DATA PERIOD:
1991-2006
Jan 1 - Dec 31
00:00 - 23:00
CALM WINDS (less than 1 mph):
0.16%
TOTAL COUNT:
5788 hrs.
AVG. WIND SPEED:
9.12 mph
DATE:
3/13/2007
UNIVERSITY OF MISSOURI
Extension
Commercial Agriculture Program
WRPLOT View - Lakes Environmental Software

Figure 8

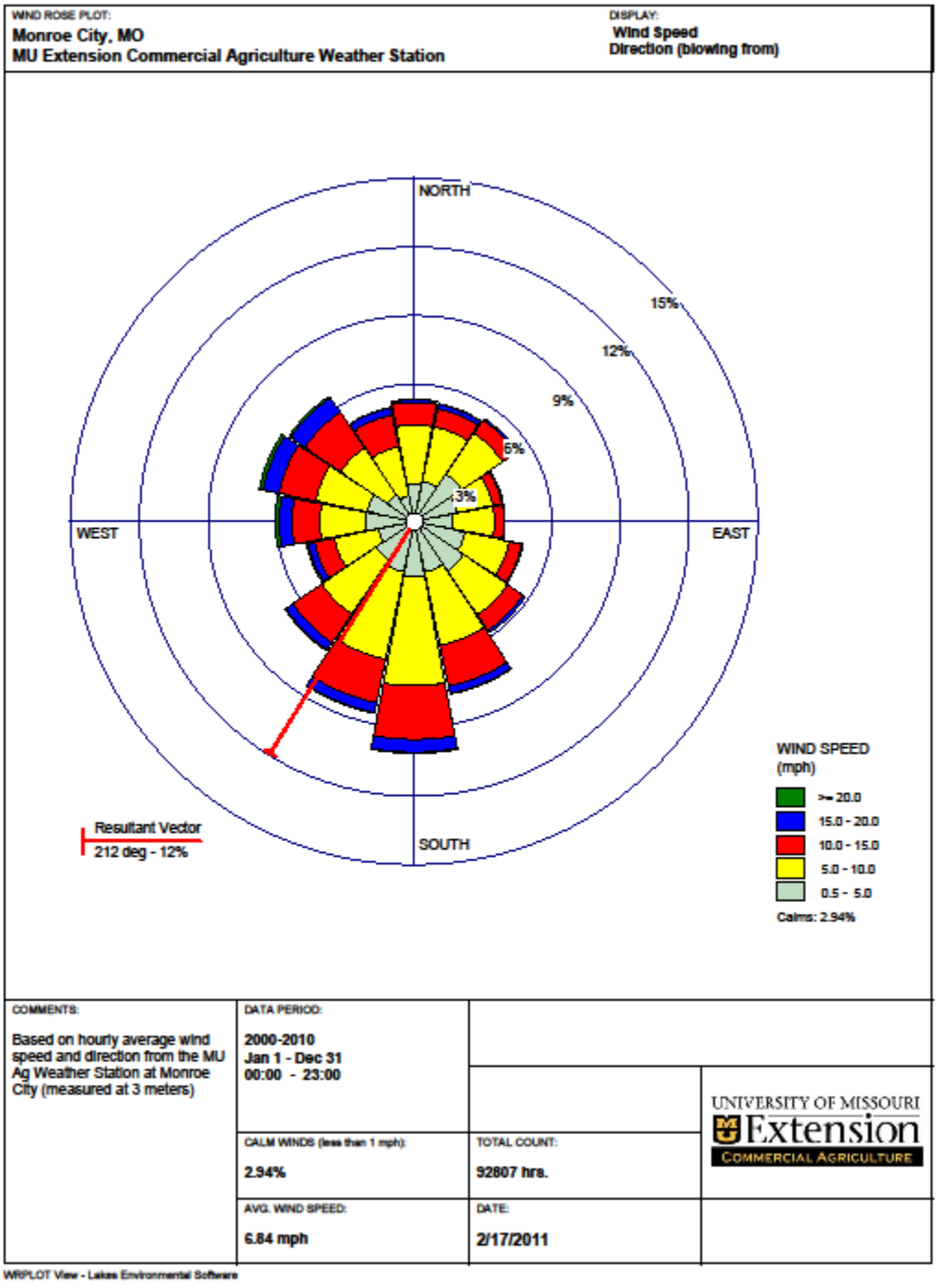
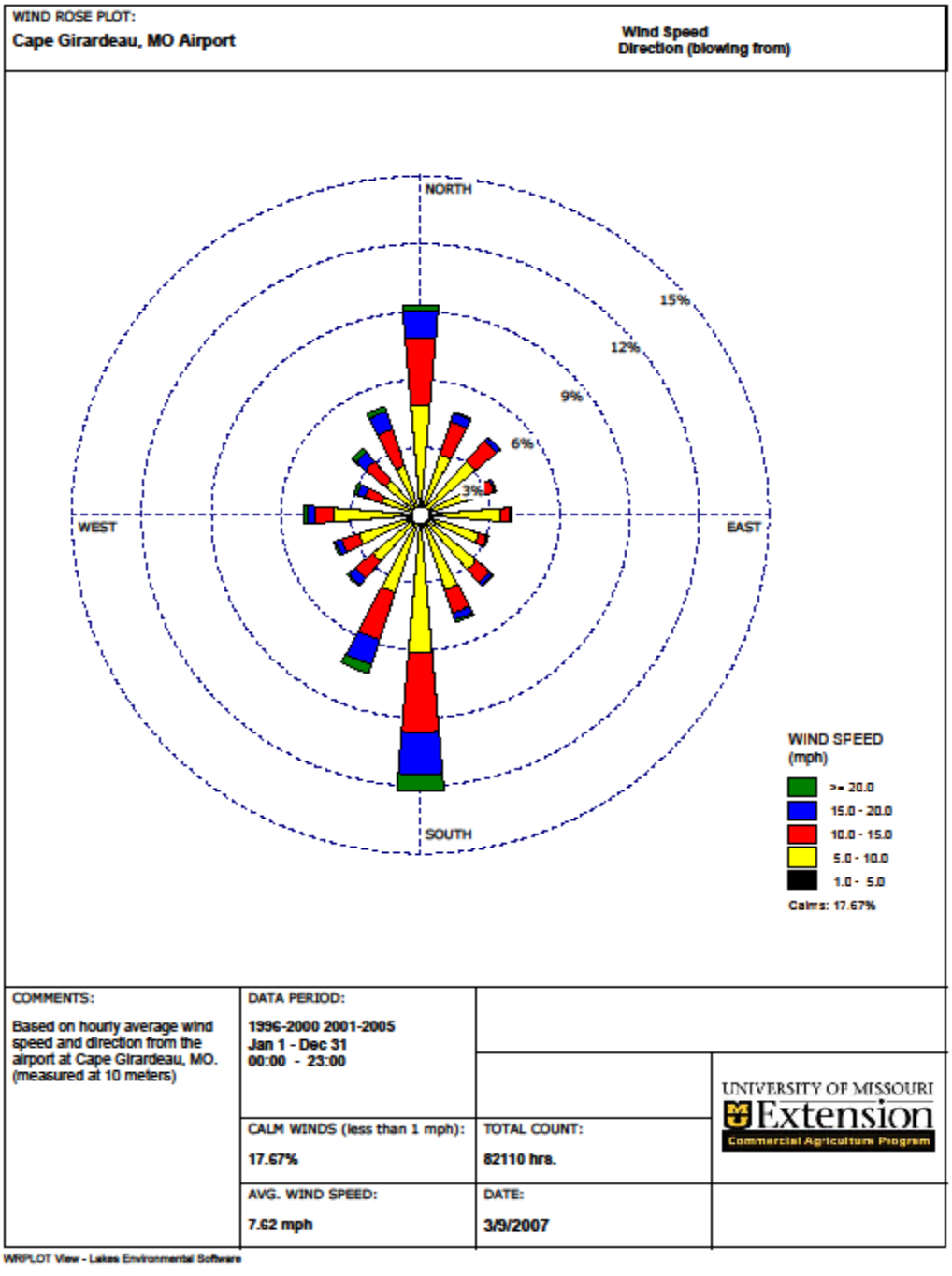

WIND ROSE PLOT:
Monroe City, MO
MU Extension Commercial Agriculture Weather Station
DISPLAY:
Wind Speed
Direction (blowing from)
NORTH
EAST
SOUTH
WEST
3%
6%
9%
12%
15%
Resultant Vector
212 deg - 12%
WIND SPEED
(mph)
>= 20.0
15.0 - 20.0
10.0 - 15.0
5.0 - 10.0
0.5 - 5.0
Calms: 2.94%
COMMENTS:
Based on hourly average wind speed and direction from the MU Ag Weather Station at Monroe City (measured at 3 meters)
DATA PERIOD:
2000-2010
Jan 1 - Dec 31
00:00 - 23:00
CALM WINDS (less than 1 mph):
2.94%
TOTAL COUNT:
92807 hrs.
AVG. WIND SPEED:
6.84 mph
DATE:
2/17/2011
UNIVERSITY OF MISSOURI
Extension
COMMERCIAL AGRICULTURE
WRPLOT View - Lakes Environmental Software

Figure 9


WIND ROSE PLOT:
Cape Girardeau, MO Airport
Wind Speed
Direction (blowing from)
NORTH
EAST
SOUTH
WEST
3%
6%
9%
12%
15%
WIND SPEED
(mph)
>= 20.0
15.0 - 20.0
10.0 - 15.0
5.0 - 10.0
1.0 - 5.0
Calms: 17.67%
COMMENTS:
Based on hourly average wind speed and direction from the airport at Cape Girardeau, MO. (measured at 10 meters)
DATA PERIOD:
1996-2000 2001-2005
Jan 1 - Dec 31
00:00 - 23:00
CALM WINDS (less than 1 mph):
17.67%
TOTAL COUNT:
82110 hrs.
AVG. WIND SPEED:
7.62 mph
DATE:
3/9/2007
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Extension
Commercial Agriculture Program
WRPLOT View - Lakes Environmental Software

Figure 10

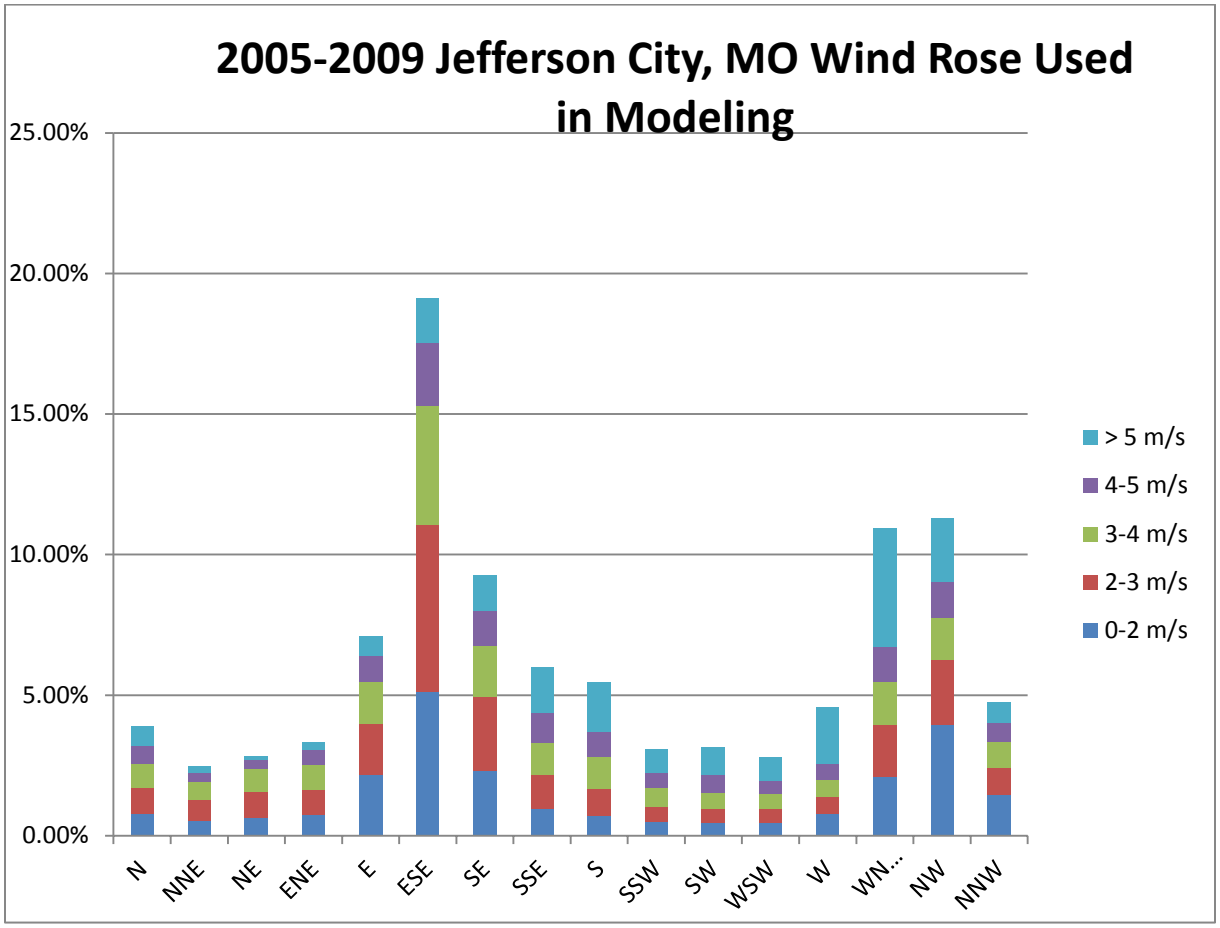

2005-2009 Jefferson City, MO Wind Rose Used in Modeling
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WN...
NW
NNW
> 5 m/s
4-5 m/s
3-4 m/s
2-3 m/s
0-2 m/s

Figure 11
Jefferson City, MO Airport Wind Rose

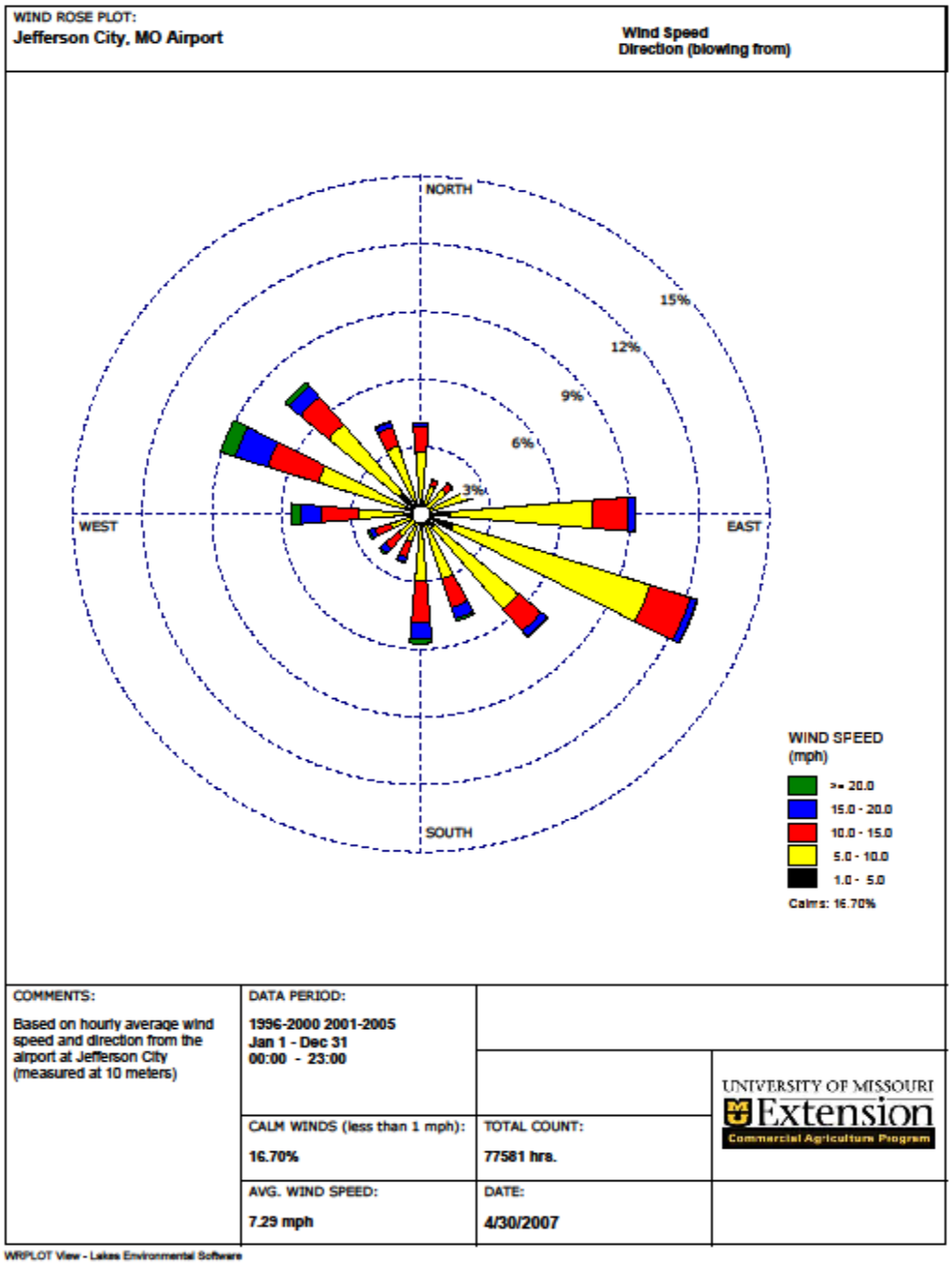
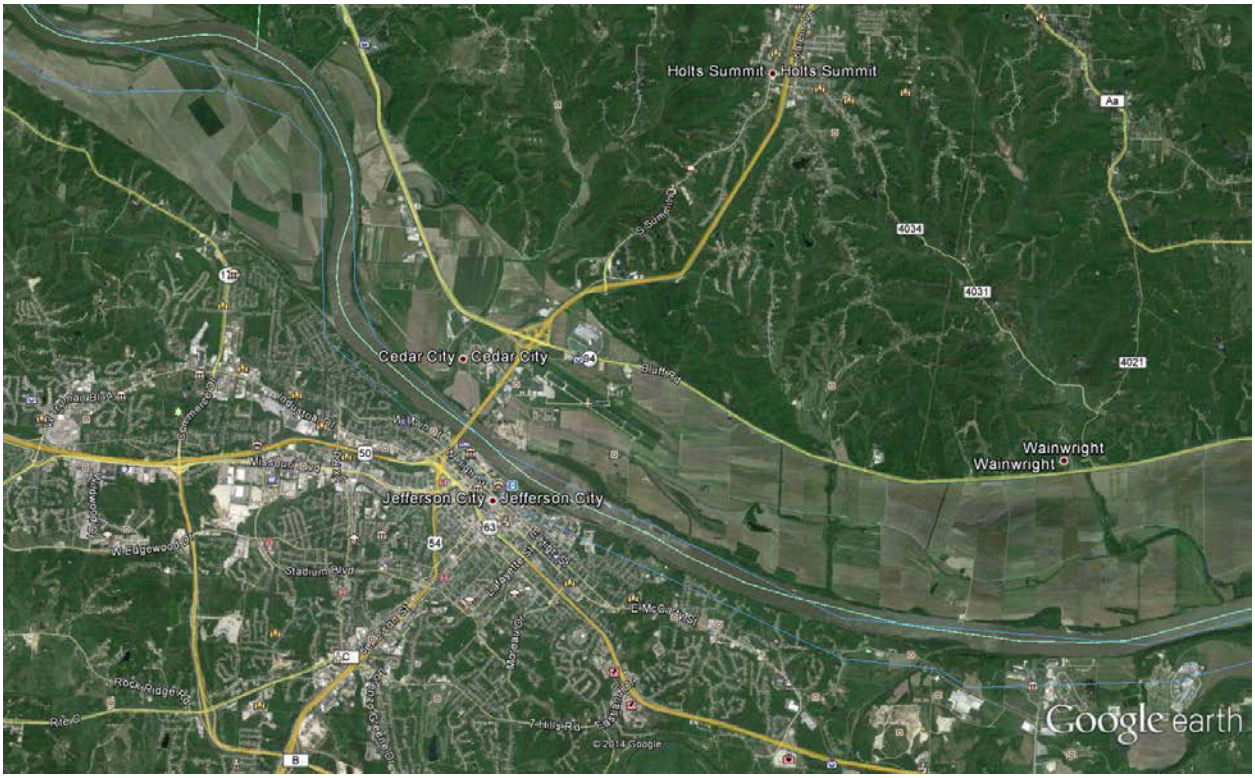


Figure 12
Jefferson City, MO Airport Location



Note: North is up (Courtesy of Google Earth)

Appendix A

AERMOD Input File for

Year 2005

```
CO STARTING
CO TITLEONE Ameren Missouri Labadie Facility Actual Base Run
CO TITLETWO NAD83 Z15 MDNR SO2 SIP Analysis February 28, 2012
CO MODELOPT DFAULT CONC
CO AVERTIME 1
CO POLLUTID SO2
CO RUNORNOT RUN
CO FINISHED

SO STARTING
SO ELEVUNIT METERS

**100%Load
**All Four Base Load Stacks Were Constructed Prior to December 31, 1970
**Based Upon 52.21(h) GEP Stack Height = Actual Stack Height
**Equivalent Stack Diameters for Boiler #3 and Boiler #4 Updated to Reflect Facility Data
**See Ameren Email to MDNR Dated February 23, 2012

**Original Assumptions
**Maximum 1-Hour Emission Rate Based Upon 0.5 Lbs SO2 Per mmBTU
**Four Base Load Units with Two Emergency Generators
**Generators Not Included In Base Run 1, Intermittent Source

**100% Load
**Boiler 1
SO LOCATION B1 Point 688352.17  4270445.59  149.66

**Boiler 2
SO LOCATION B2 Point 688387.01  4270400.40  149.66

**Boiler 3
SO LOCATION B3 Point 688435.47  4270332.33  149.66

**Boiler 4
SO LOCATION B4 Point 688439.28  4270327.43  149.66

SO SRCPARAM B1 389.53   213.36   443.06    34.72   6.25
SO SRCPARAM B2 389.53   213.36   442.49    35.56   6.25
SO SRCPARAM B3 384.74   213.36   433.20    34.52   6.25
SO SRCPARAM B4 384.74   213.35   441.71    34.95   6.25


**BPIP Outputs Dated January 11, 2012
SO BUILDHGT B1      78.44  78.44  78.44  78.44  78.44  78.44
SO BUILDHGT B1      78.44  78.44  78.44  78.44  78.44  78.44
SO BUILDHGT B1      78.44  25.37  27.71  78.44  78.44  78.44
SO BUILDHGT B1      78.44  78.44  78.44  78.44  78.44  78.44
SO BUILDHGT B1      78.44  78.44  78.44  78.44  78.44  78.44
```

SO BUILDHGT B1 78.44 25.37 27.71 78.44 78.44 78.44
SO BUILDWID B1 195.26 212.09 222.49 226.12 222.88 222.69
SO BUILDWID B1 220.81 212.22 197.19 176.16 149.79 118.86
SO BUILDWID B1 84.32 43.39 61.83 112.08 144.48 172.49
SO BUILDWID B1 195.26 212.09 222.49 226.12 222.88 222.69
SO BUILDWID B1 220.81 212.22 197.19 176.16 149.79 118.86
SO BUILDWID B1 84.32 43.39 61.83 112.08 144.48 172.49
SO BUILDLEN B1 176.16 149.79 118.86 84.32 47.21 76.28
SO BUILDLEN B1 112.08 144.48 172.49 195.26 212.09 222.49
SO BUILDLEN B1 226.12 220.00 229.51 220.81 212.22 197.19
SO BUILDLEN B1 176.16 149.79 118.86 84.32 47.21 76.28
SO BUILDLEN B1 112.08 144.48 172.49 195.26 212.09 222.49
SO BUILDLEN B1 226.12 220.00 229.51 220.81 212.22 197.19
SO XBADJ B1 -88.14 -56.63 -23.40 10.55 44.17 41.54
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SO YBADJ B1 -105.39 -104.07 -99.60 -92.09 -81.79 -67.87
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SO SRCGROUP B1 B1
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SO SRCGROUP B4 B4
SO SRCGROUP ALL

SO FINISHED

RE STARTING
**AERMAP Outputs Dated January 11, 2012
** AERMAP - VERSION 11103                    01/11/12
**                                  06:36:24
**  Ameren Missouri Labadie Plant ELEVATION EXTRACTION
**  MDNR January 10, 2012
** A total of     19  NED files were used
** A total of   16783  receptors were processed
** DOMAINXY 634731 4213961 15 750639 4327012 15
** ANCHORXY 689985 4270485 689985 4270485 15 4
** Terrain heights were extracted by default

RE ELEVUNIT METERS
```

Receptors left out for brevity

RE FINISHED

ME STARTING
**AERMET Outputs Dated January 4, 2012
ME SURFFILE ../met/JEFILX05_AERMINUTE.SFC FREE
ME PROFFILE ../met/JEFILX05_AERMINUTE.PFL
ME SURFDATA 03963 2005 Jefferson_City,MO
ME UAIRDATA 04833 2005 Lincoln, Ill
ME PROFBASE 167 Meters
ME FINISHED

OU STARTING
OU RECTABLE ALLAVE 4
OU MXDYBYYR All Ameren_Labadie_Only_SO2_1HR_NAQ_Actual_0p5_Load100_05.DAT
OU SUMMFILE Ameren_Labadie_Only_SO2_1HR_Summary_Actual_0p5_Load100_05.SUM
OU PLOTFILE 1 ALL 4 Ameren_Labadie_Only_SO2_1HR_NAQ_Actual_0p5_Load100_05.PLT
OU FINISHED

APPENDIX 3

2015 Ameren Missouri and Missouri Department of Natural Resources Consent Agreement

BEFORE THE MISSOURI DEPARTMENT OF NATURAL RESOURCES

IN THE MATTER OF:	)	
Union Electric Company d/b/a Ameren Missouri	)	**No. APCP-2015-034**

CONSENT AGREEMENT

The issuance of this Consent Agreement No. APCP-2015-034 ("Consent Agreement" or "Agreement") by the Missouri Department of Natural Resources ("Department") is a formal administrative action taken by the State of Missouri after conference with Ameren Missouri ("Ameren"). The parties agree this Consent Agreement is being issued to administer, implement, and enforce the purposes of the Missouri Air Conservation Law, Chapter 643, RSMo, and its implementing regulations. The parties agree that this Agreement is being issued as an administrative order under 643.060(4), RSMo. Ameren further agrees that a failure to comply with this Agreement is a violation of the Missouri Air Conservation Law under Section 643.151, RSMo.

BACKGROUND

In June 2010, the Environmental Protection Agency ("EPA") promulgated the 1-hour Sulfur Dioxide (SO_2) primary National Ambient Air Quality Standard of 75 parts per billion (ppb) ("2010 SO_2 NAAQS"). The Department measures air quality through a network of ambient air quality monitors throughout Missouri. One monitor, known as the "Mott Street Monitor," measured SO_2 values above the 2010 SO_2 NAAQS. These values were primarily attributable to the Doe Run Herculaneum primary Lead smelter, which was located in close proximity to the Mott Street Monitor. In August 2013, an area in Jefferson County, Missouri, around the Mott Street Monitor was designated a Non-Attainment Area. In accordance with the federal Clean Air

Act, 42 U.S.C. § 7410, et seq., as amended, the Department must develop a State Implementation Plan regarding the 2010 SO_2 NAAQS. In December 2013, the Doe Run Herculaneum primary Lead smelter ceased operations pursuant to a federally enforceable consent decree. Since the closure of this smelter, the monitored values at the Mott Street Monitor have been significantly lower and are expected to remain below the 2010 SO_2 NAAQS of 75 ppb. In 2014, the one-hour daily maximum measured SO_2 concentration value at the Mott Street Monitor was 23 ppb, significantly below the 2010 SO_2 NAAQS of 75 ppb. Although the main control strategy for the Non-Attainment Area (i.e. the closure of the smelter) has already been implemented, under the Clean Air Act, Missouri must still address the modeled impact from other SO_2 emission sources in and around the Jefferson County Non-Attainment Area in order to ensure that the area will attain the standard. In particular, Ameren's Rush Island Energy Center is located within the geographical boundaries of the Jefferson County Non-Attainment Area. Additionally, Ameren's Meramec Energy Center and Labadie Energy Center are located outside of the geographical boundaries of the Jefferson County Non-Attainment Area, but are close enough to the Jefferson County Non-Attainment Area to also have modeled impacts. Therefore, the Department and Ameren enter into this Consent Agreement whereby Ameren agrees to accept lower SO_2 emissions limits at the three energy centers mentioned above and install and operate an SO_2 monitoring network around the Rush Island Energy Center within the time schedules as set forth in this Consent Agreement.

In consideration of Ameren's agreement herein, the Department agrees to accept the implementation of the agreed to limits and commitment to monitoring around Rush Island Energy Center as sufficient under current information and belief, to demonstrate attainment and maintenance of the 2010 SO_2 NAAQS, as specified in 40 C.F.R. § 50.17, relating to the Jefferson

County Non-Attainment Area. The Department reserves the right to re-assess this conclusion as additional monitoring data becomes available.

AGREEMENT

1. **SO_2 Emission Limits.** The parties agree that no later than January 1, 2017, Ameren shall limit SO_2 emissions as specified below in Table 1. The Department is currently pursuing a rulemaking action which will promulgate the Table 1 emissions limits. The parties agree that upon the date that the proposed rule (proposed at 10 CSR 10-6.261) containing the emissions limits in Table 1, is adopted by EPA as a State Implementation Plan revision, this paragraph and Table 1 will automatically terminate and the state regulation will control.

Table 1—SO_2 Emissions Limits

Source	Source ID	Emission Limit per Source/Unit (Pounds SO_2 per Hour)	Averaging Time
Ameren Missouri—Labadie Energy Center	071003	40,837	24 hour block average
Ameren Missouri—Meramec Energy Center	1890010	7,371	24 hour block average
Ameren Missouri—Rush Island Energy Center	0990016	13,600	24 hour block average

2. **Reservation of Rights Regarding Adjustment of Table 1 Emission Limits.** The parties agree that nothing herein shall preclude the Department from taking regulatory action, including but not limited to a rulemaking, to seek additional emission reductions for 2010 SO2 NAAQS Jefferson County attainment purposes beyond the SO_2 emission limits set

forth in Table 1, currently proposed in 10 CSR 10-6.261. Ameren reserves all rights to oppose, challenge, or contest such future regulatory action.

3. **Monitoring Network and Meteorological Data Requirements at Rush Island Energy Center**. With respect to the Rush Island Energy Center, the parties agree that Ameren will voluntarily install, operate, and maintain, at its expense, ambient SO_2 air quality monitors, at locations representative of Rush Island Energy Center's SO_2 air quality impact, and meteorological (MET) monitoring station(s) (hereafter referred to together as "SO_2 Monitoring Network"). The SO_2 monitoring network installed shall begin operation on or before December 31, 2015, and shall operate for a minimum of 12 consecutive quarters. Ameren shall use its best efforts to promptly submit SO_2 monitoring network site locations and the Department shall use its best efforts to promptly review all SO_2 monitoring network site locations. The SO_2 Monitoring Network shall be installed, operated, and maintained in accordance with a Department approved Quality Assurance Project Plan ("QAPP") as detailed more fully in Appendix A.

4. **Ambient Air Quality Analysis Requirements.** The parties agree that for any ambient air quality analysis conducted pursuant to this Consent Agreement, such analysis shall be conducted using the most current version of the USEPA approved air quality dispersion models [i.e. AERMOD, AERMAP, and AERMET] and default modeling options unless Ameren demonstrates from data collected from SO_2 and meteorological monitors that other methodologies are more appropriate, as detailed more fully in Appendix 2.

5. **Compliance and Enforcement Requirements**

a. **Reporting Elevated Monitoring Values**: The parties agree that for the purposes of this Consent Agreement, an elevated monitoring value shall mean one occurrence of a measured SO_2 concentration that exceeds 75 ppb for one hour. When an elevated monitoring value at one of the monitoring locations of the SO_2 Monitoring Network is **greater than** 75 (ppb), Ameren shall report the monitored information (the beginning and ending date and time, and the value for the applicable standard time period, and the corresponding meteorological data) within 10 days of the event to the Department. The Department recognizes that at the time of submission, the data will not yet be fully quality assured. Furthermore, the parties agree that Ameren will submit an analysis of the monitored information and any relevant operational information to the Department in accordance with the following schedule:

i. For values **less than** 86 ppb, Ameren shall submit such analysis on a *quarterly basis* in accordance with the normal data submittal as defined in the QAPP.

ii. For values **greater than or equal to** 86 ppb, Ameren shall submit such analysis within *30 calendar days* of the event using quality assured data.

b. **Requirements for Monitored SO_2 Monitoring Network Values Above 75 ppb**:

i. If the annual 4th high monitored value is less than 86 ppb and is greater than 75 ppb, Ameren shall submit an ambient air quality analysis within 45 days of the collection of twelve (12) months of preliminary monitored data and corresponding MET data. The parties shall then meet and confer to discuss

the ambient air quality analysis. In the event that the parties agree that Rush Island's generating units are a cause of such monitored values, within 10 days of agreement, Ameren shall submit to the Department for consideration: proposed potential mitigation measures, SO_2 emissions limitations, and a schedule that provides for compliance with the 2010 SO_2 NAAQS within 6 months of the date of submittal. In the event that the parties do not reach an agreement, the parties' rights are reserved pursuant to paragraph 2.

ii. If the annual 4th high monitored value or if the 4th high monitored daily value for the year to date, is greater than or equal to 86 ppb, Ameren shall submit an ambient air quality analysis within 45 days of the collection of six (6) months of preliminary monitored data and corresponding MET data. The parties shall then meet and confer to discuss the ambient air quality analysis. In the event that the parties agree that Rush Island's generating units are a cause of such monitored values, within 10 days of agreement, Ameren shall submit to the Department for consideration: proposed potential mitigation measures, SO_2 emissions limitations, and a schedule that provides for compliance with the 2010 SO_2 NAAQS within 6 months of the date of submittal. In the event that the parties do not reach an agreement, the parties' rights are reserved pursuant to paragraph 2.

c. The parties agree that any SO_2 emission limits or operating conditions identified as a result of an ambient air quality analysis performed under this Consent Agreement shall be based on quality assured ambient and emissions data.

d. If the SO_2 Monitoring Network required by this Consent Agreement is not installed and operational by December 31, 2015, Ameren shall submit to the Department an ambient air quality analysis conducted pursuant to paragraph 4. The parties shall meet and confer to discuss the analysis and SO_2 emission limits that provide for attainment of the 2010 SO_2 NAAQS by January 1, 2017. In the event that the parties do not reach an agreement regarding SO_2 emissions limits, the parties' rights are reserved pursuant to paragraph 2.

e. Any additional reporting of monitoring and MET data required in response to the elevated monitored values described above is in addition to regular reporting requirements as specified in the approved QAPP.

OTHER PROVISIONS

6. The parties agree that this Consent Agreement will be submitted to the EPA as part of a State Implementation Plan revision, as required in 42 U.S.C. § 7401, et seq., to demonstrate attainment and maintenance of the 2010 SO_2 NAAQS, and will become federally enforceable upon EPA approval.

7. The parties agree that this Consent Order will be enforced according to the terms herein, as provided by law, notwithstanding any pending rulemakings or legislation.

8. The parties agree that this Consent Agreement shall not be construed as a waiver or a modification of any requirements of the Missouri Air Conservation Law and regulations or any other source of law, including but not limited to any Missouri law for affected sources located in undesignated areas that have elected to use monitoring to evaluate ambient air

quality, and that this Consent Agreement does not resolve any claims based on any failure by Ameren to meet the requirements of this Consent Agreement, or claims for past, present, or future violations of any statutes or regulations.

9. Nothing in this Consent Agreement is intended to constitute an admission or statement by Ameren that the Rush island Energy Center or any other Ameren generating unit has adversely impacted or has the potential to adversely impact the 2010 SO_2 NAAQS in the Jefferson County Nonattainment Area. Rather, this Consent Agreement is intended to facilitate the voluntary collection of data so as to assist the State of Missouri with assessing the existing air quality within and around the currently designated non-attainment area in the vicinity of Rush Island based upon accurate and representative data.

10. The provisions of this Consent Agreement shall apply to and be binding upon the parties executing this Consent Agreement, their agents, subsidiaries, successors, assigns, affiliates, and lessees, including the officers, agents, servants, corporations and any persons acting under, through, or for the parties agreeing hereto. Any changes in ownership or corporate status, including but not limited to any transfer of assets or real or personal property, shall not affect the responsibilities of Ameren under this Consent Agreement. If Ameren sells or otherwise transfers its business or the real estate that is the situs of the Energy Centers referenced in this Consent Agreement, then Ameren shall cause as a condition of such sale or transfer, that the buyer will assume the obligations of Ameren under this Consent Agreement in writing. In such event, Ameren shall provide thirty (30) days prior written notice of such assumption to the Department.

11. For any plan or submittal that is required and/or subject to Department approval under this Consent Agreement, Ameren shall submit such in writing, either by electronic mail, United States Postal Service or other carrier service. The Department may approve, disapprove, require revisions, or otherwise modify any such plan or submittal. Any such Department decision shall be conveyed in writing to Ameren. Disapproval may result in orders or pursuit of other forms of relief by the Department. If the Department requires revisions, Ameren shall submit a revised version of the plan or submittal within 10 business days after receiving notice of the Department's required revisions, or within such other timeframe as the Department may specify. If the Department approves or modifies in writing such plan or submittal, it shall become enforceable under this Consent Agreement, and Ameren shall commence work and implement such approved or modified plan in accordance with the schedule and provisions contained therein. Notwithstanding, the Department recognizes that timeframes within the Consent Agreement may be dependent on timely approval, disapproval or modification by the Department and Ameren reserves the right to request an extension of any of the timeframes by mutual agreement of the Department. The Department reserves the right to reasonably deny any such request.

12. This Consent Agreement shall be construed and enforced according to the laws of the State of Missouri, and the terms stated herein shall constitute the entire and exclusive agreement of the parties hereto with respect to the matters addressed herein. The parties agree that the enforceability of this Consent Agreement shall be subject to the procedures for enforcement of orders granted to the Department. The terms of this Consent Agreement supersede all previous memoranda of understanding, notes, conversations, and agreement.

13. If any provision of this Consent Agreement is found to be unenforceable in any respect, the validity, legality, and enforceability of the remaining provisions shall not in any way be affected or impaired.

14. Nothing in this Consent Agreement excuses Ameren for any future non-compliance with the laws of the State of Missouri, and the Department expressly reserves the right to address future noncompliance in any manner authorized by law.

15. This Consent Agreement will become final, effective, and fully enforceable by the Department once it is executed by each of the parties. The Department shall send a fully executed copy of this Consent Agreement to Ameren.

CORRESPONDENCE AND DOCUMENTATION

Correspondence or documentation with regard to this Consent Agreement shall be directed to the following persons, subject to change upon written notification from either party:

For the Department:

Kyra Moore
Air Pollution Control Program
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, Missouri 65102-0176

For Ameren:

Chris Iselin
Senior Vice President - Power Operations and Energy Management
1901 Chouteau Avenue
Mail Code 601
St. Louis, MO 63103

RIGHT OF APPEAL

Notwithstanding the rights reserved in paragraph 2, by signing this Consent Agreement, Ameren waives any right to appeal, seek judicial review, or otherwise challenge this Consent Agreement pursuant to Sections 643.130, 643.085, or 621.250 RSMo, Chapters 536, 643, or 640 RSMo, 10 CSR 10-1.030, or any other source of law.

Agreed to:

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Kyra L Moore

Kyra L. Moore, Director
Air Pollution Control Program

Date: 3/23/15

AMEREN MISSOURI

C.A. Iselin

Chris Iselin, Senior Vice President
Power Operations and Energy Management

Date: 3/23/15

Appendix 1

Additional QAPP Components

Ameren shall develop a Quality Assurance Plan and a Standard Operating Plan [specific to the SO_2 Monitoring Network] for Department approval. Quality Assurance (QA) protocols must be at least as stringent as the QA requirements of 40 CFR Part 58 and the Quality Assurance Handbook for Air Pollution Measurement Systems. Ameren shall maintain a log of all quality assurance activities performed and reported as required in the QAPP on all SO_2 monitors and meteorological monitoring stations. Ameren shall provide the Department with adequate notice and opportunity to observe or audit such quality assurance activities. The parties further agree that the QAPP shall contain or otherwise address the following:

a. Operation of the ambient SO_2 monitoring network shall commence as soon as practical following approval by the Department but no later than December 31, 2015. So as to facilitate the Department's timely approval of the monitoring network, Ameren shall:

    i. Submit final network site recommendations to the Department, which shall be subject to Department approval, no later than **May 1, 2015** At a minimum, Ameren's recommendation shall include:

        1. The date that sampling is expected to commence. The parties agree that sampling will begin no later than the commencement of operation of the SO_2 monitoring network;

        2. A list of the information to be reported (e.g. hourly concentrations); and

        3. Justification for monitoring area site selections/recommendations.

    ii. Within 60 days of approval of the monitoring site locations, Ameren shall submit a Quality Assurance Project Plan ("QAPP") to the Department, which shall be subject to Department approval. Ameren shall use the Air Pollution Control Program's QAPP template and QAPP review checklist to prepare the QAPP submittal satisfying this Consent Order.

    iii. Notify the Department that network site shelters and structures, as appropriate, are operational. This notification shall also confirm that network equipment and instrumentation are both installed and calibrated, no later than **December 31, 2015.** The Department shall be notified and be present during initial calibration of the monitoring stations.

    iv. Notify the Department that the approved network is reporting valid data no later than **December 31, 2015.**

b. The parties agree that the number and location of SO_2 monitors and meteorological station(s) shall ensure that the approved SO_2 monitoring network represents ambient air quality in areas of maximum SO_2 impact from the Rush Island Energy Center. Requirements specific to SO_2 monitoring and MET monitoring station(s) located in the state of Illinois shall be prescribed per an approved QAPP.

c. The parties agree that Ameren shall provide the Department access to a database to review preliminary data as soon as practicable and report to the Department quality assured data collected in accordance with the reporting schedule outlined in the Department-approved QAPP.

d. Following monitor installation, Ameren shall be responsible for monitor maintenance and quality assurance activities. Ameren shall provide the Department with adequate notice and opportunity to observe or audit such quality assurance activities.

e. In conjunction with the requirements of the Department-approved SO_2 Monitoring Network, the parties agree that Ameren shall keep records of the daily hours of operation and the amount of SO_2 emissions emitted from each emission unit at Rush Island Energy Center. Ameren shall record this information for the duration of the SO_2 monitoring program. Ameren shall submit this information to the Department with the SO_2 monitoring network data as specified by the Department-approved QAPP.

f. The parties agree that prior to removal of any part of the SO_2 Monitoring Network, Ameren must submit and the Department must approve a formal request to discontinue all or part of the Department-approved SO_2 Monitoring Network. The complete SO_2 Monitoring Network shall remain in operation until approval for discontinuation has been granted. The parties agree that Ameren's formal request shall contain at a minimum:

    i. A comparison of the monitored data [specifically data representing typical operations] versus SO_2 operational parameters data collected at Rush Island Energy Center. The parties agree that the Department retains approval authority regarding any emission data substitution methods and/or data substitution models to address missing data and/or data completeness criteria, such as but not limited to data substitution specific to maximum potential SO_2 concentrations and substitution methods allowed per 40 CFR Part 75;

    ii. An analysis of the ambient monitored data with respect to the 2010 SO_2 NAAQS standard; and

    iii. A detailed technical discussion of Rush Island Energy Center's impact on the monitored data that meets the following specifications:

        1. Data collection from SO_2 monitors shall satisfy a minimum seventy-five percent (75%) data completeness requirement. Data collection from on-site meteorological stations shall satisfy a minimum ninety percent (90%) data completeness requirement. If both of these data

requirements are not satisfied, monitoring must continue until these minimum requirements are met; and

2. The monitors only record annual 4th highest SO_2 concentrations less than eighty-five percent (85%) of the standard for a period of at least three (3) consecutive years. As part of this request, Ameren will submit to the Department an analysis of ambient concentrations and SO_2 emissions information evaluating the relationship of Rush Island Energy Center's SO_2 emissions to the measured ambient SO_2 data.

Appendix 2

Model Performance Analysis

This Appendix shall apply if default modeling options [as prescribed by the most current USEPA AERMOD guidance documents] are not used when an ambient air quality analysis is conducted. Any deviation from default modeling options per the most current version of the EPA approved air quality dispersion models [i.e., AERMOD , AERMAP and AERMET] shall be addressed according to the following model performance analysis requirements. Pursuant to Department review and approval, such non-default options shall be used to reconcile modeled impacts that do not coincide with monitored values.

a. Ameren shall conduct a study to compare SO_2 modeled and monitored concentrations at the Rush Island Energy Center. The purpose of the study is to collect data and to use the data to evaluate the performance of the AERMOD model at predicting air quality concentrations in the area surrounding the Rush Island Energy Center.
b. Ameren shall submit a model performance analysis protocol to the Department 45 days prior to conducting the ambient air quality analysis. Subject to Department review and approval, the model performance analysis protocol shall contain, at a minimum, an evaluation:
    i. To determine if the model is overestimating or underestimating the measured concentrations.
    ii. To measure the accuracy of the model in estimating the observed concentrations on a paired in time and space basis.
    iii. To determine the viability of the model in estimating the upper percentile concentrations regardless of time and space (non-paired), i.e., predicting the peak concentrations.
    iv. To resolve discrepancies between the modeled and observed concentrations (e.g. use of beta options).

APPENDIX 4

Ameren, Rush Island Meteorology and SO_2 Monitoring Sites Methodology Document

Analysis of SO_2 and Meteorological Monitoring Stations around Ameren Missouri's Rush Island Energy Center

Proposed Ambient Monitor Station Locations and Parameters:

Ameren Missouri proposes to install and operate three ambient monitoring stations in the vicinity of the Ameren Missouri Rush Island Energy Center located in Jefferson County Missouri in the Mississippi River Valley. The Energy Center is located in a section of the Mississippi River valley which is oriented from southeast to northwest. Terrain elevations in the area range from approximately 370 feet in the valley to over 750 feet in the surrounding hills just a few kilometers from the Rush Island Energy Center. Local meteorology under certain synoptic conditions can be affected significantly by the presence of this valley. For example, the meteorology measured in the valley may differ significantly from that measured on the elevated terrain under certain meteorological conditions. Therefore, Ameren Missouri is proposing to install two separate meteorological monitoring stations; one located in the river valley and one on the surrounding elevated terrain. Figure 1 shows the approximate locations of the proposed monitoring stations and the overall layout of the area. The proposed Fults monitoring station will include the measured meteorological parameters shown in Table 1 below as well as SO_2 while the Natchez monitoring station southwest of the Rush Island Energy Center and the Weaver-AA site northwest of the Rush Island Energy Center will only monitor ambient SO_2 concentrations. The Tall Tower station will have two instrumented levels as shown in Table 2 and may require duplicate wind instruments (one either side of the tower) due to the width of the tower at the 60 and 90 meter levels.

Table 1
Proposed Instrumentation for Fults, Weaver-AA and Natchez Stations

Monitored Parameter	Sensor Height Above Ground Level	Measurement Range	Locations
Horizontal Wind Speed	10m	0-125 mph	Fults Site
Horizontal Wind Direction	10m	0° to 360°	Fults Site
Sigma Theta (Standard Deviation of Wind Direction)	10m	0° to 104°	Fults Site
Vertical Wind Speed	10m	-25 to +25 mph	Fults Site
Sigma Phi (Standard Deviation of Vertical Wind Speed; precursor value for Sigma ω)	10m	0 to 25 mph	Fults Site
Ambient air temperature	2m	-22 to +122 °F	Fults Site
Temperature Difference	10m (referenced to 2m probe)	-22 to +22 °F	Fults Site
Relative Humidity	10m	0% to 100%	Fults Site
Barometric Pressure	2m	900mb to 1100mb	Fults Site
Precipitation	1m	0 to Unlimited Inches	Fults Site
Global Solar Radiation	2m	0-1495 W/m²	Fults Site
SO_2 Analyzer	-	Ambient: 0-500 ppm	All Three Sites

Figure 1
Proposed Locations for Fults, Weaver, Natchez and the Tall Tower Monitoring Sites

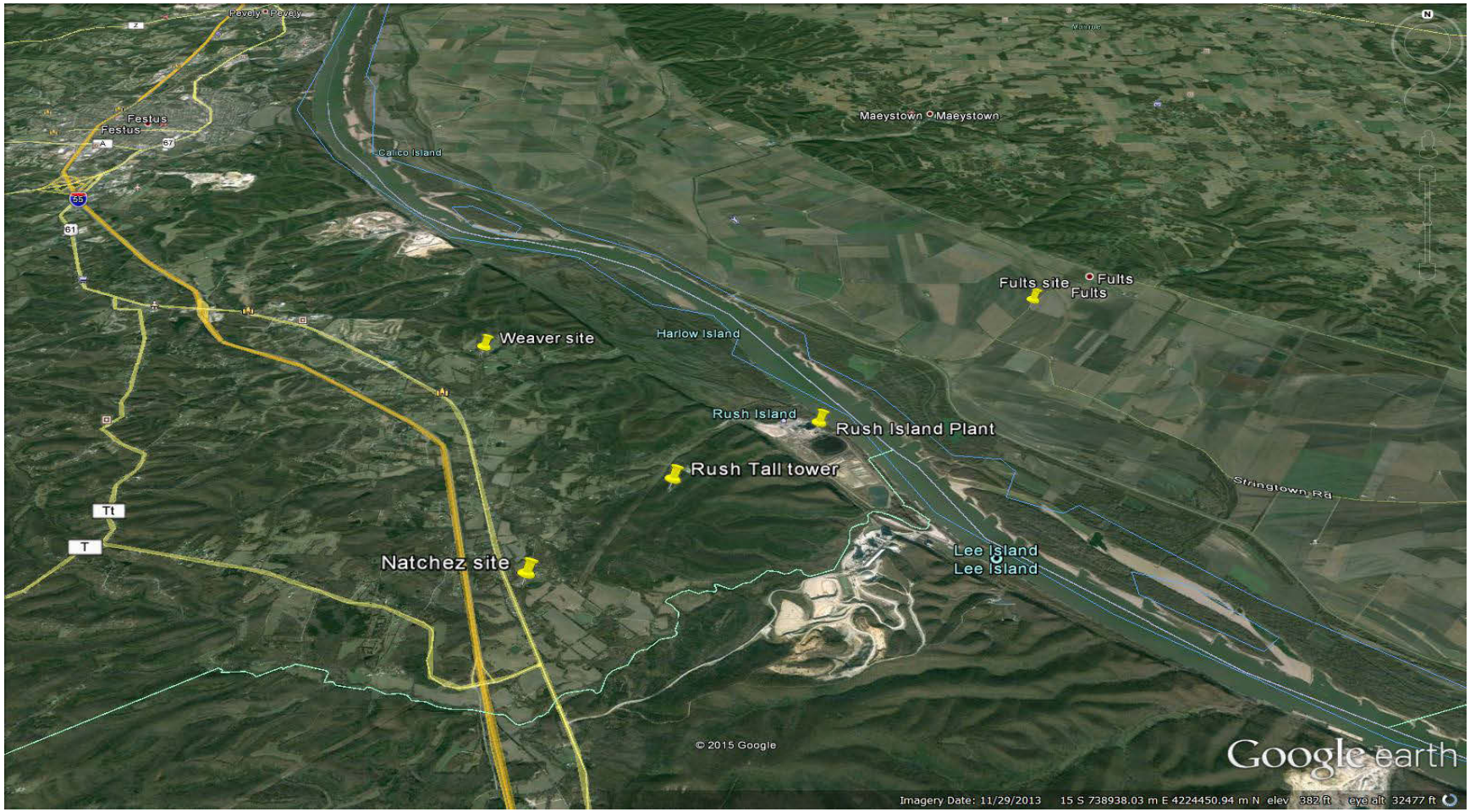


Table 2

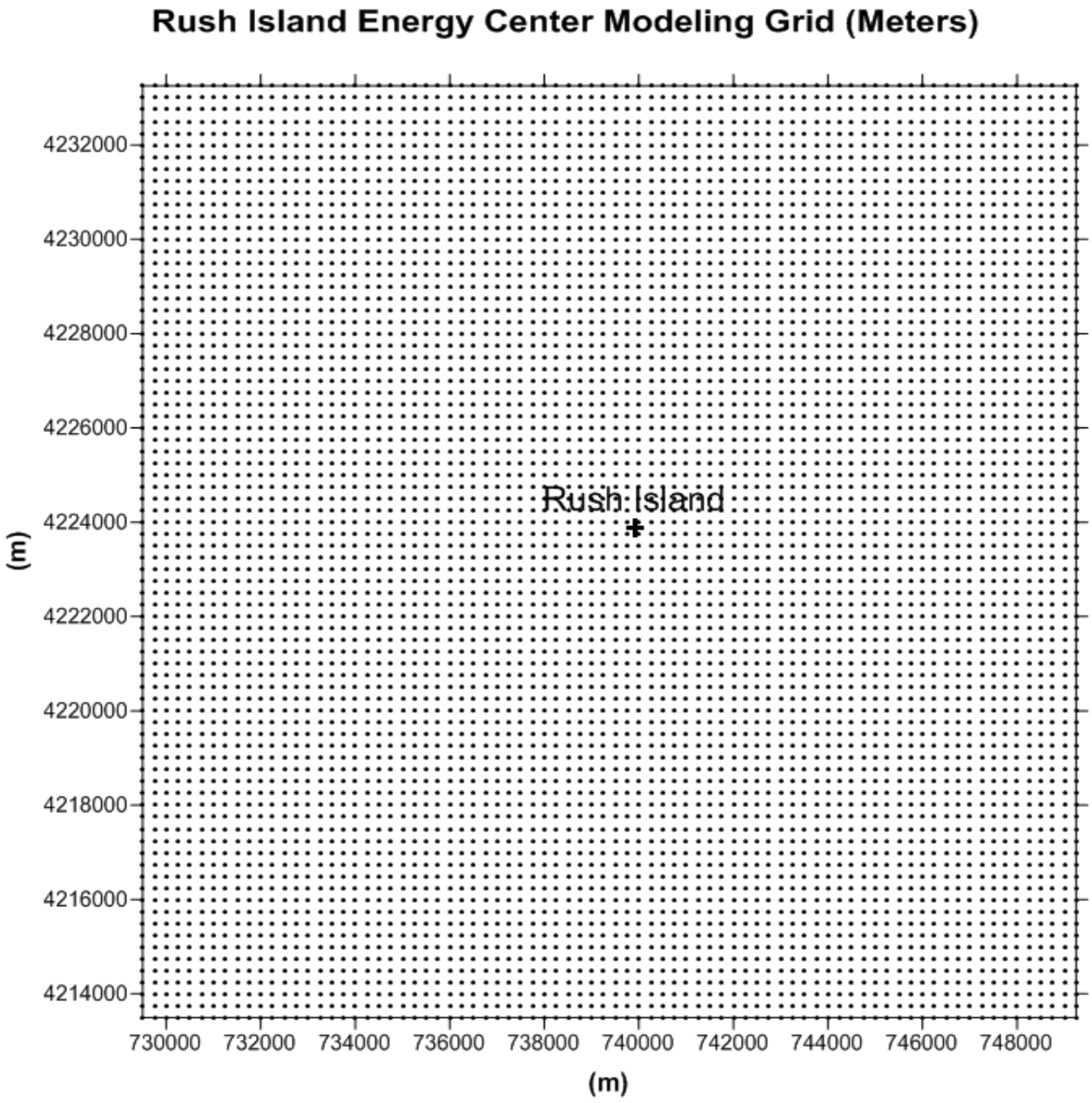
Proposed Instrumentation for Tower Station

Monitored Parameter	Sensor Height Above Ground Level	Measurement Range
Horizontal Wind Speed	60m & 90m	0-125 mph
Horizontal Wind Direction	60m & 90m	0° to 360°
Sigma Theta (Standard Deviation of Wind Direction)	60m & 90m	0° to 104°
Vertical Wind Speed	60m & 90m	-25 to +25 mph
Sigma Phi (Standard Deviation of Vertical Wind Speed; precursor value for Sigma ω)	60m & 90m	0 to 25 mph
Ambient air temperature	60m & 90m	-22 to +122 °F
Temperature Difference	90m (referenced to 60m probe)	-22 to +22 °F

SO_2 Monitoring Station Location Justification:

In order to determine the best locations for these sites, air quality modeling was performed for the area around Rush Island. The meteorological data selected was Cahokia, IL surface data from the local airport and Lincoln, IL upper air for the years 2009-2013. The meteorological and ground cover data was processed using EPA models AERMET (Version 14134) and AERSURFACE (Version 08009). Using Rush Island building height information supplied by Ameren, the DNR used BPIP to develop inputs used in determining building downwash. The gridded receptor grid shown in Figure 2 below was used to locate areas of higher SO_2 concentrations. This receptor grid consists of an 80x80 grid with 250-m grid spacing. This resulted in modeling SO_2 concentrations out to 10 km from the Rush Island Energy Center. As further explained below, maximum concentrations occurred generally within 5 km of Rush Island. This grid spacing is of sufficient density to delineate areas where maximum concentrations are expected to occur for this type of source and thus where SO_2 monitoring systems should be placed.

Figure 2[1]



The EPA AERMOD air quality model (Version 14134) was used for this evaluation using the inputs discussed above and the stack parameter information shown in Table 3. The default SO_2

[1] UTM coordinates- Zone 15

emission rate shown in Table 3 does not reflect actual emissions from Rush Island. However, actual emissions are not required for selecting monitoring sites as the model is used to only determine areas where higher concentrations are expected to occur to aid in SO_2 monitor siting. An example AERMOD input file for the years 2009-2013 run is shown in Appendix A.

In order to determine appropriate locations for the SO_2 monitoring sites, two separate sets of data were considered.

1) The results of the AERMOD modeling and,
2) Wind rose information for various sites in eastern Missouri and the 2009-2013 modeled meteorological data.

AERMOD Modeling:

The results of the AERMOD modeling were used to determine:

1) Location of highest modeled design (i.e. 4^{th} highest daily) SO_2 concentrations;
2) Modeled high concentration locations that were frequently affected by the Rush Island plume.

The AERMOD air quality model was executed for years 2009-2013 extracting the 4^{th} highest, 6^{th} highest, 8^{th} highest and 10^{th} highest SO_2 concentration from the highest 1-hour daily SO_2 concentration at each receptor for the 5-year period. The modeled design values for the 4^{th}, 6^{th}, 8^{th} and 10^{th} highest for each receptor as well as the proposed monitoring station locations are shown in Figures 3-6. As evident from these figures, as you progress from the 4^{th} to the 10^{th} highest concentrations, three (3) areas emerge where the most persistent and higher SO_2 concentrations occur:

(1) An area to the northeast of Rush Island (Fults);
(2) An area south and southwest of Rush Island (Natchez) and;
(3) An area to the northwest of Rush Island (Weaver-AA).

In further delineation, Figures 7 and 8 reflect the areas around the Rush Island Energy Center where the modeled SO_2 4^{th} highest design values were greater than 50% and 75% of the maximum modeled concentration, respectively, as well as the proposed monitoring station locations and the maximum modeled SO_2 design value (146.1 ug/m^3). As noted above, the Natchez, Weaver-AA and Fults sites will monitor SO_2 with meteorological information being monitored at the Fults and Tall Tower sites. As shown in Figure 7, all three proposed SO_2 monitoring locations are in, or very near areas of higher modeled SO_2 concentrations. (There is an area located to the south of the Rush Island Energy Center where the maximum modeled SO_2 concentration occurred; however, this area is on an existing industrial plant property with

existing SO_2 sources. Monitor locations in this area were not accessible.) The Fults site however is located where modeled SO_2 concentrations exceeded 90% of the maximum modeled concentrations and the Natchez site near modeled SO_2 concentrations that exceed 80% of the maximum.

As depicted in Figures 3 thru 8, maximum modeled concentrations occur for receptors generally between 3-5 Km from the Rush Island Energy Center. The proposed monitor site locations are ideally located in this range.

Table 3

Rush Island Stack Parameters

Unit	SO_2 Rate (lb/hr)*	SO_2 Rate (g/s)	Stack Height (m)	Stack Diameter (m)	Stack Temp (^oK)	Stack Velocity (m/s)
1	3968.25	500.0	204.97	6.31	428.72	33.02
2	3968.25	500.0	204.97	6.31	436.11	32.97
Aux Blr	70.0	8.82	84.58	1.52	577.59	10.06

*Note the SO_2 rate was selected to produce rational ambient levels to be used for establishing monitoring locations and does not reflect actual emissions.

An ideal monitor location should be near maximum modeled levels and in an area where elevated SO_2 levels occur more frequently than other areas. Utilizing the modeling results, we developed an analysis of the number of times[2] receptors exceeded 50% and 75% of the maximum modeled design value. The receptor field for this analysis included all receptors. Figures 9 and 10 illustrate, respectively, the number of daily maximum modeled concentrations that exceeded 50% and 75% of the maximum modeled SO_2 concentrations. As can be seen from these figures, the proposed SO_2 monitoring sites are located in areas most often impacted. For greater than 50% of the maximum modeled concentration, all three SO_2 monitoring sites are located where counts were greater than 70 over the 5-year period. For greater than 75% of the maximum modeled concentration, the Natchez and Weaver-AA sites are located in areas with over 20 counts and the Fults site is in an area with over 35 counts over the 5-year period. Due to access issues, it is not possible to install a monitoring site south of the Rush Island Energy Center where some higher concentrations and higher counts have been modeled.

[2] Number of times the maximum modeled daily 1-hour SO_2 concentrations exceeded a particular value for the years 2009-2013.

Wind Rose Climatology:

Another criterion to consider is the representativeness of the actual meteorological data used in the modeling simulations. Monitors are generally placed downwind of the plant for the dominant wind directions. In the St. Louis area, typical wind roses generally have significant wind direction components from the southwest to east as is illustrated in Figure 11. This is also noted in Figure 12 (Cape Girardeau, MO) for a meteorological station located in southeastern Missouri. While the wind roses for these sites are not identical due to local influences, they do show a significant wind direction contribution for the southeasterly to southwesterly wind direction sectors.

Figure 13 shows a tabulated average wind rose developed from the 2009-2013 meteorological data from the Cahokia, IL airport used in the modeling analysis. This wind rose shows similar direction tendencies with those of the Figures 11 and 12 with a dominance of wind directions from southwest to southeast and with lesser tendencies from the east and west.

The Rush Island Energy Center is located in the Mississippi River valley where the river valley is oriented from southeast to northwest as illustrated in Figure 1. In the absence of strong synoptic forcing, one would typically expect that the local orientation of the valley would have an influence on the wind flows. In light of the discussion of typical wind roses for eastern Missouri discussed above (Figures 11-12), we would expect the actual measured meteorology in the Rush Island Energy Center area to exhibit a strong contribution of winds from the southeast quite similar to those of the Cahokia, IL airport. With this contribution of winds from the southeast, we would expect significant opportunities to measure above-background SO_2 concentrations northwest of the Rush Island Energy Center in the vicinity of the location of the Weaver-AA proposed monitor location. Similarly, for the Fults monitor location, again considering the wind roses in Figures 11-12 (representing eastern Missouri wind roses), we expect a significant number of measured SO_2 concentrations above background levels in the vicinity of the proposed Fults monitor location. While the wind roses discussed above show a lesser directional contribution from the northeast, based on the modeling discussed above, the meteorological conditions with a northeasterly flow are conducive to higher SO_2 concentrations in the vicinity of the Natchez monitoring site.

Meteorological Tower Locations:

The Rush Island Energy Center is located in the Mississippi River valley oriented southeast to northwest and is surrounded by elevated terrain (approximately 380' elevation difference). Being located in a river valley means that there will be periods when the physical shape of the valley will influence the meteorology especially during lower wind speed conditions, wind channeling or surface inversion conditions. Accordingly, depending on the depth and vertical

shear of the wind field, a meteorological monitor located in the valley may not be representative of the meteorological conditions being experienced by the physical plume which is located much higher in the atmosphere.

Due to land constraints in the valley that prevent a tall meteorological tower installation near the plant, and in order to characterize the meteorology in this area, Ameren is proposing to install two meteorological stations; one located in the valley at the Fults site and the other at the Tall Tower site on a tall (>90 meters) tower located in elevated terrain (see Figure 1). The Fults monitoring station will be composed of a 10 meter tower and instrumented as described in Table 1. The second station will be composed of a 90 meter plus tower instrumented as described in Table 2 and will help characterize the meteorology closer to actual plume height. These two meteorological sites will allow Ameren to improve the characterization of the meteorological regime in the vicinity of the Rush Island Energy Center.

The suggested approach for AERMOD modeling with the two meteorological stations will be to use the 10-m data from the Fults station, supplemented by the upper levels from the Tall Tower site, with anemometer heights adjusted for height above the valley. This adjustment is consistent with EPA's recommendations[3] for AERMOD modeling with a tall meteorological tower similarly sited for the Portland Generating Station in eastern Pennsylvania, for which EPA recommended that the effective heights of the upper level winds should be increased to account for their height above the valley.

Conclusions:

Based on the modeling results discussed above and the wind direction climatology in the Rush Island area, the selection of the three (3) SO_2 monitoring locations and the two (2) meteorological tower locations appear to be strategically placed. These monitor locations based on the above analysis are in the expected areas of highest SO_2 impact and from a meteorological point of view, representative of the meteorological forcing being experienced by the Rush Island Energy Center.

[3] http://www.epa.gov/scram001/reports/EPA-HQ-OAR-2011-0081-0161.pdf, see pages 8-10.

Figure 3

SO_2 Forth Highest Concentration by Receptor

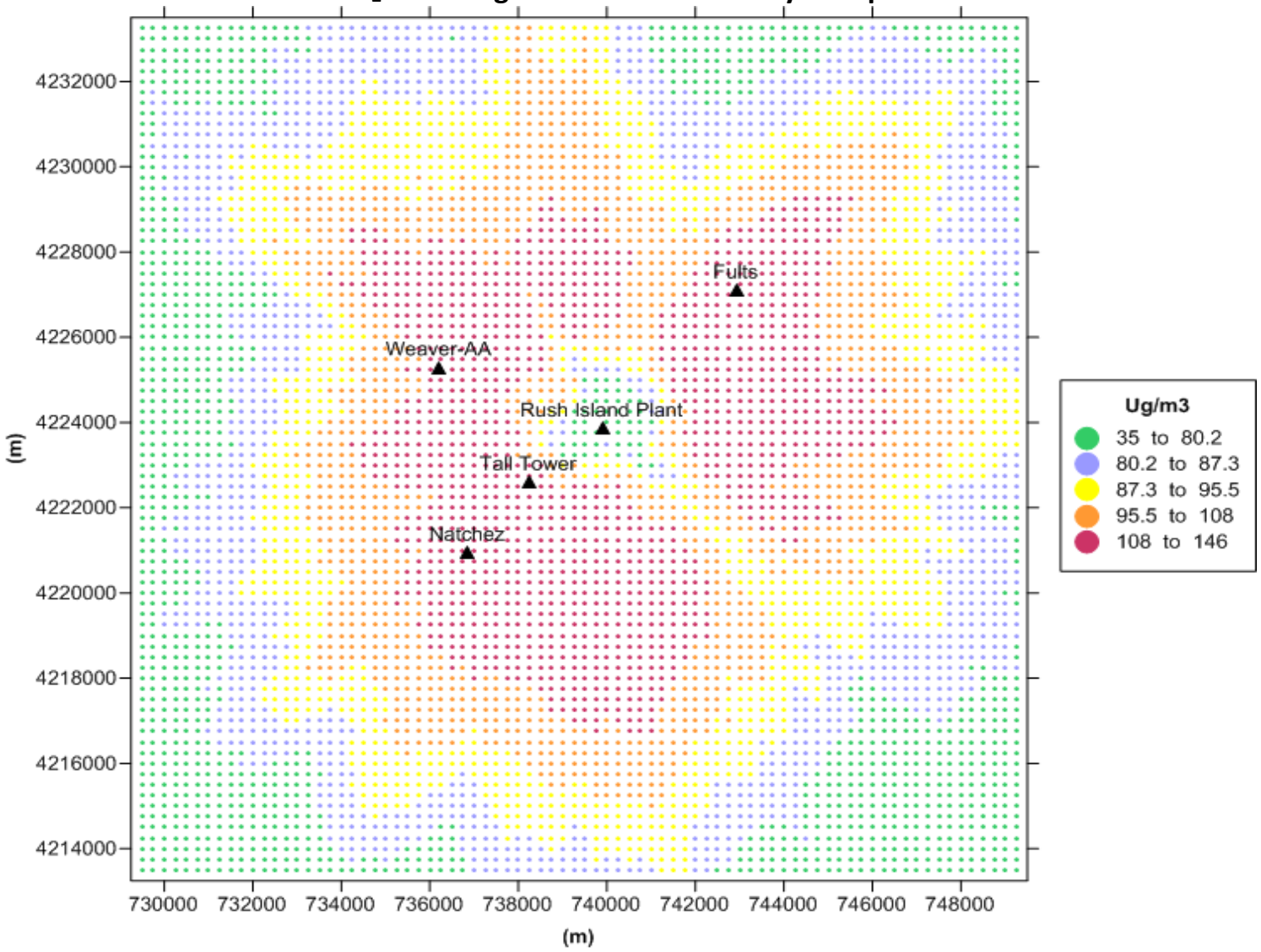


Figure 4

SO_2 Sixth Highest Concentration by Receptor

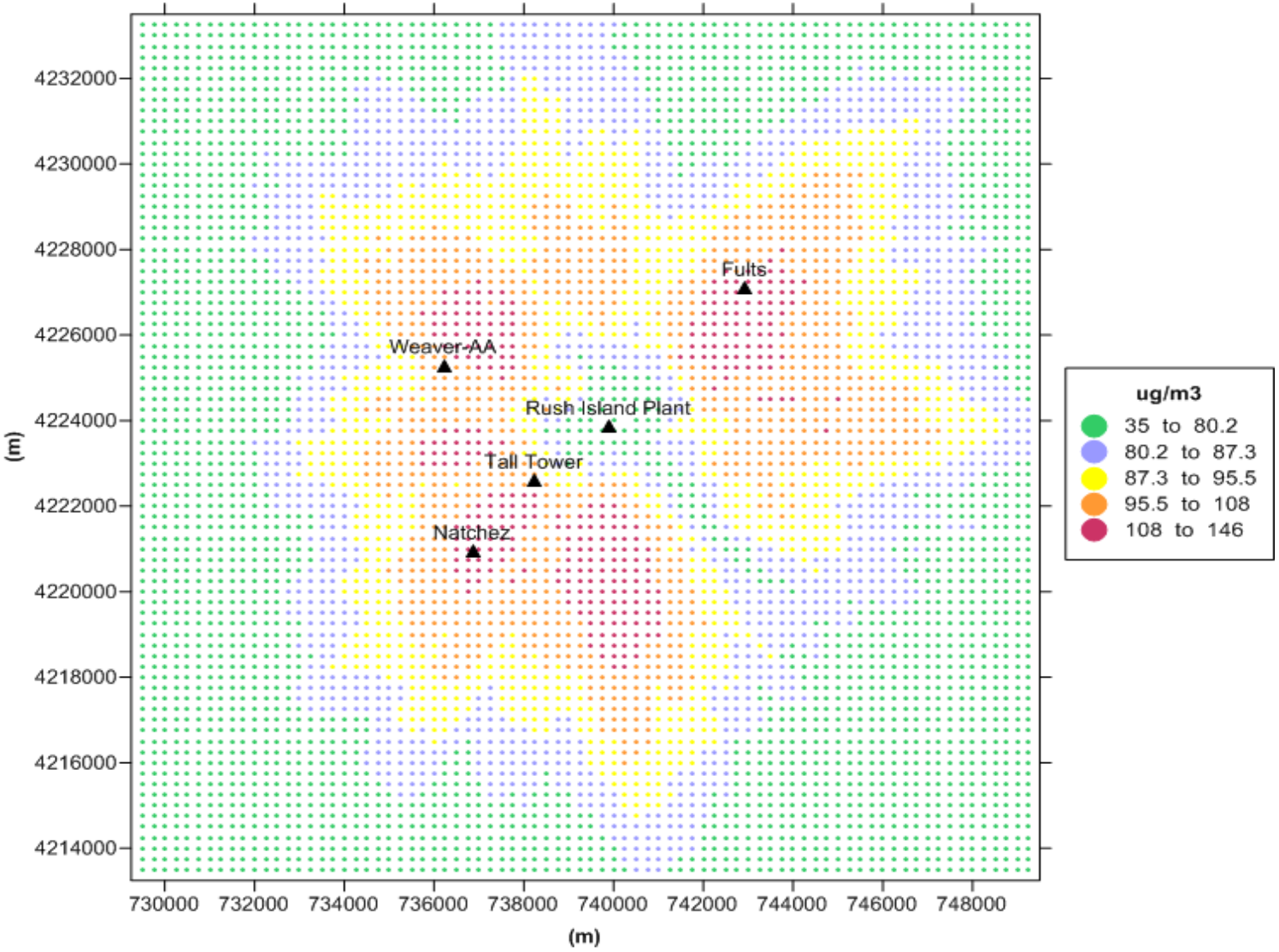


Figure 5
SO_2 Eighth Highest Concentration by Receptor

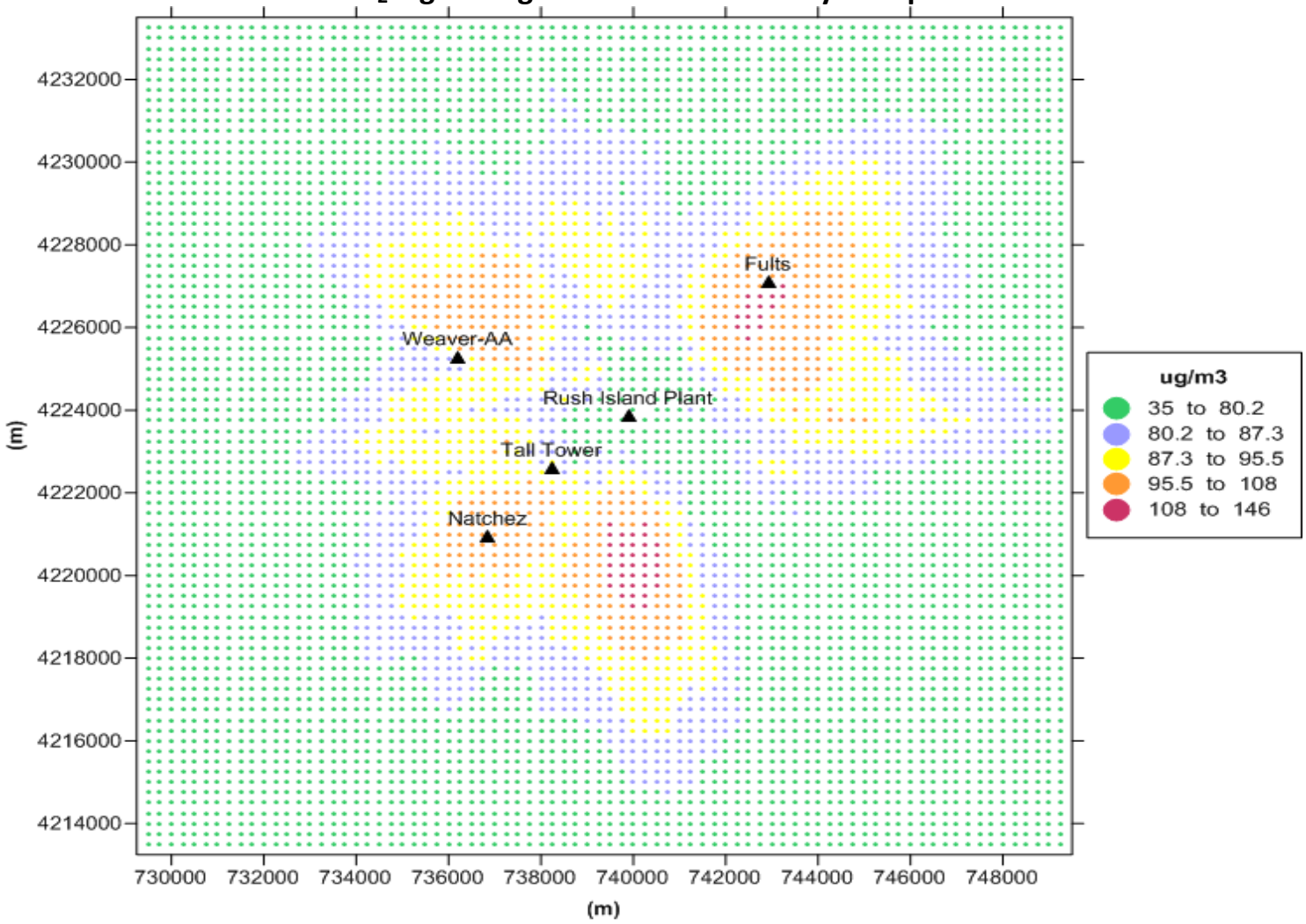


Figure 6

SO_2 Tenth Highest Concentration by Receptor

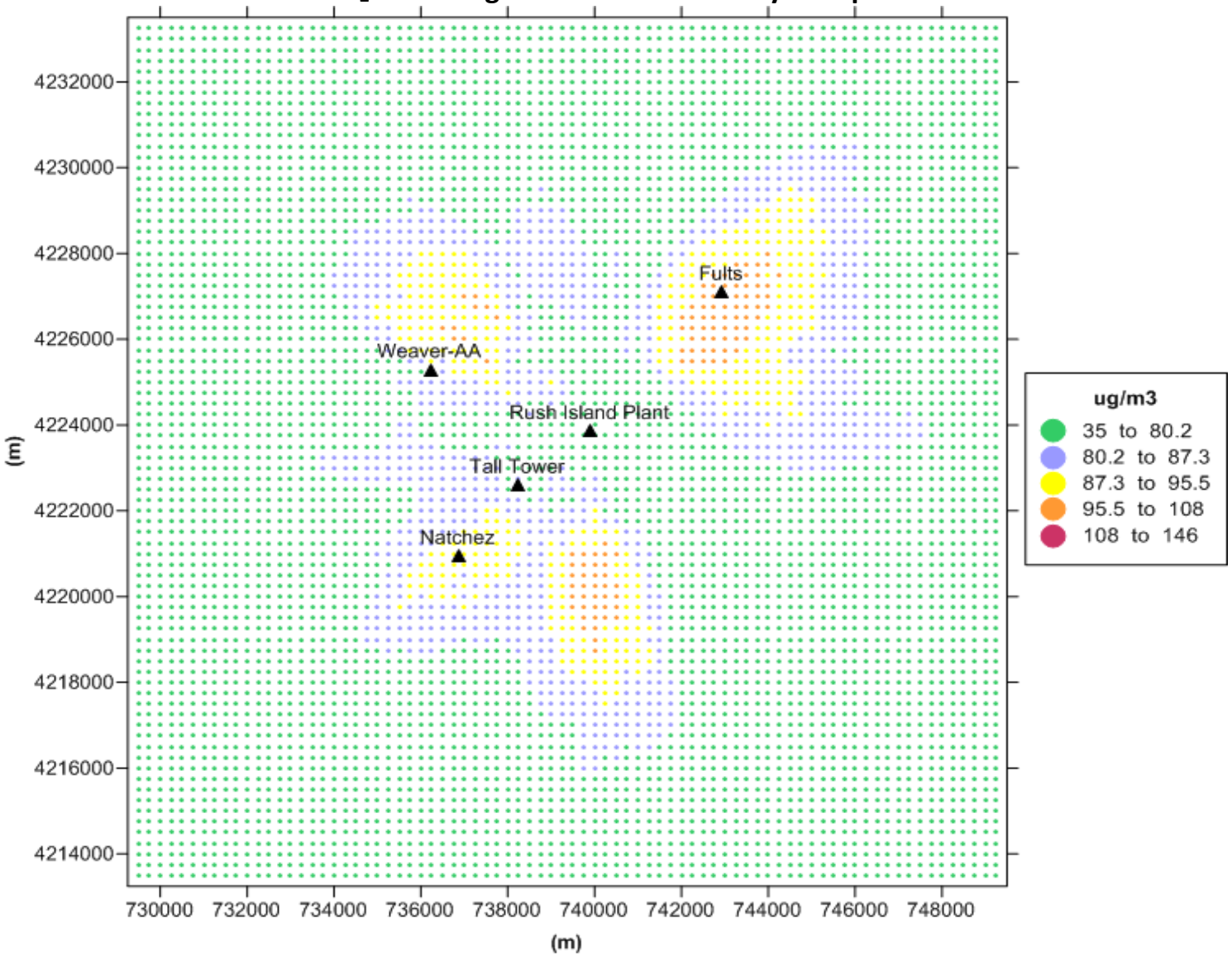


Figure 7
Receptors Greater Than or Equal to 50%
Of Max Modeled Design Value

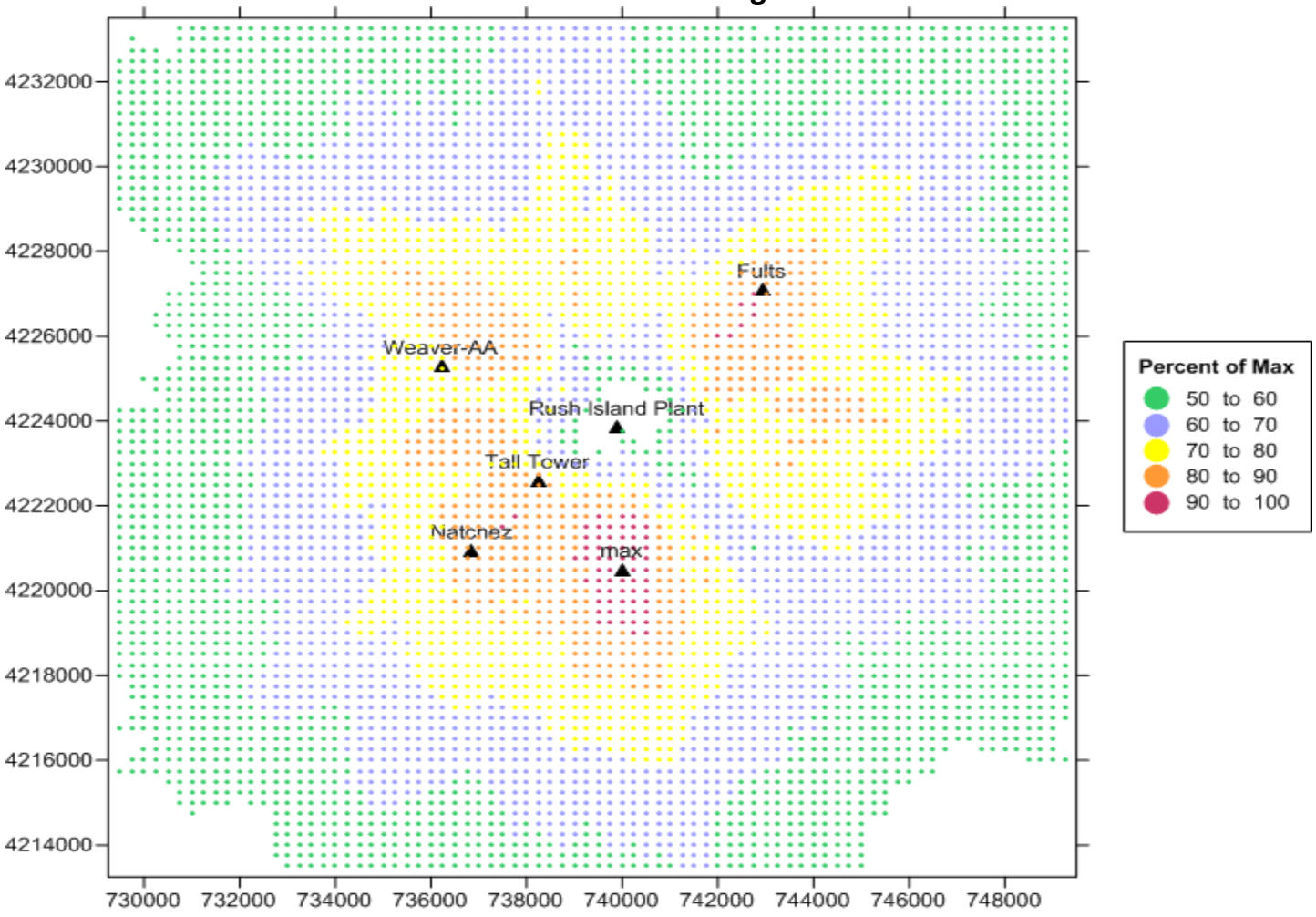


Figure 8
Receptors Greater Than or Equal to 75%
Of Max Modeled Design Value

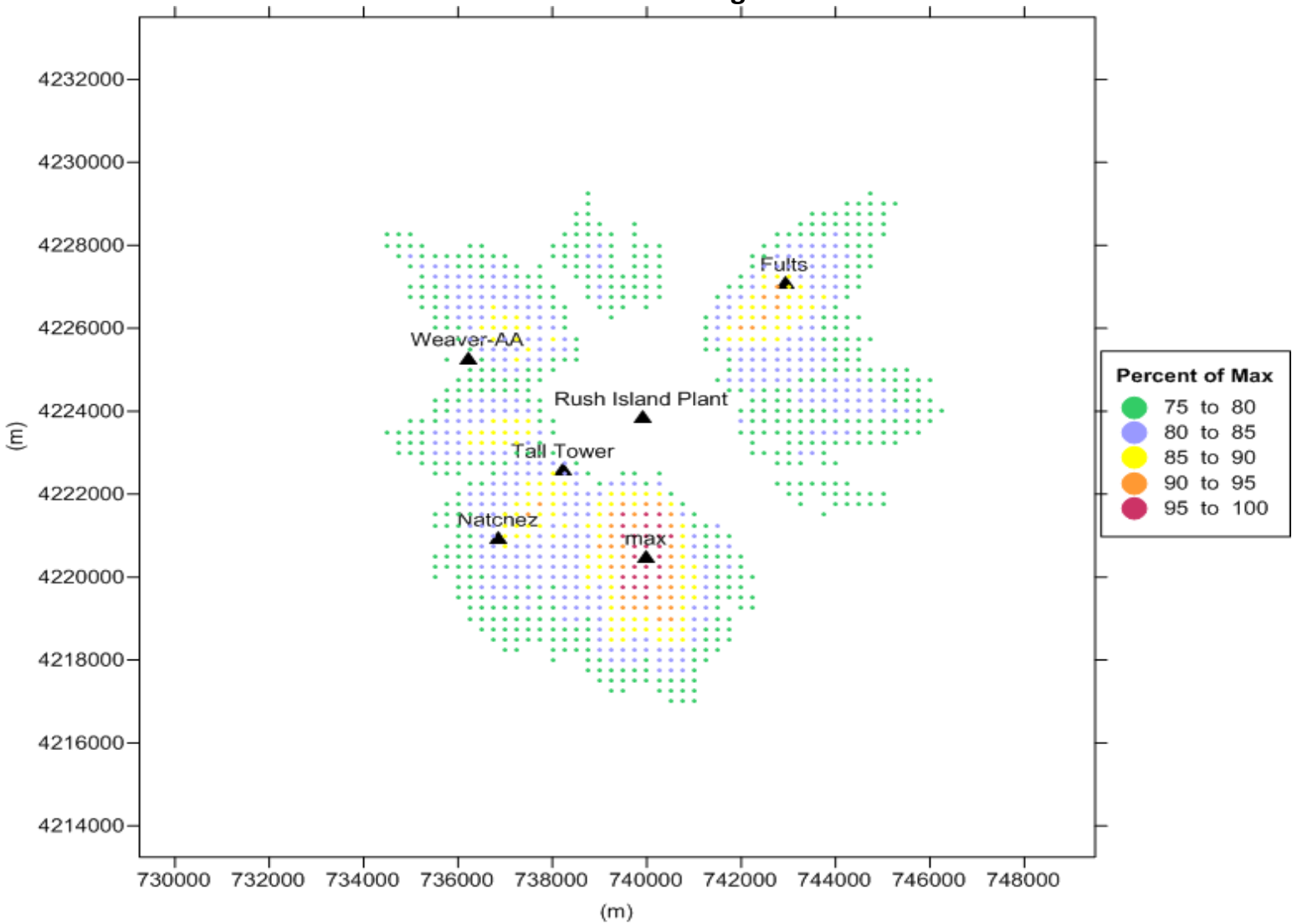


Figure 9
Counts of Daily 1-hr Max Concentrations Greater Than 50% of Max Modeled Design Value – All Receptors (Years 2009-2013)

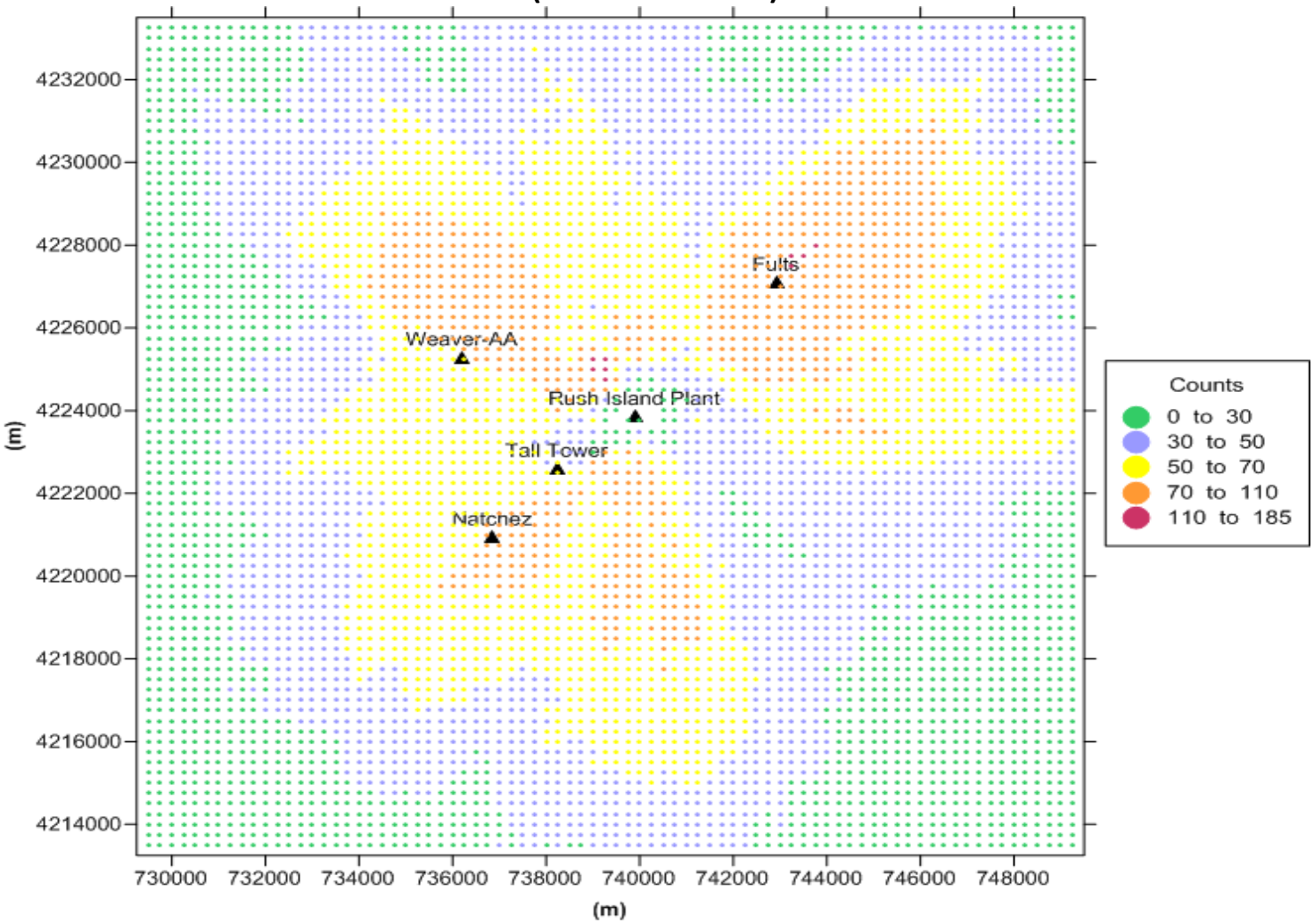


Figure 10
Counts of Daily 1-hr Max Concentrations Greater Than 75% of Max Modeled Design Value – All Receptors (Years 2009-2013)

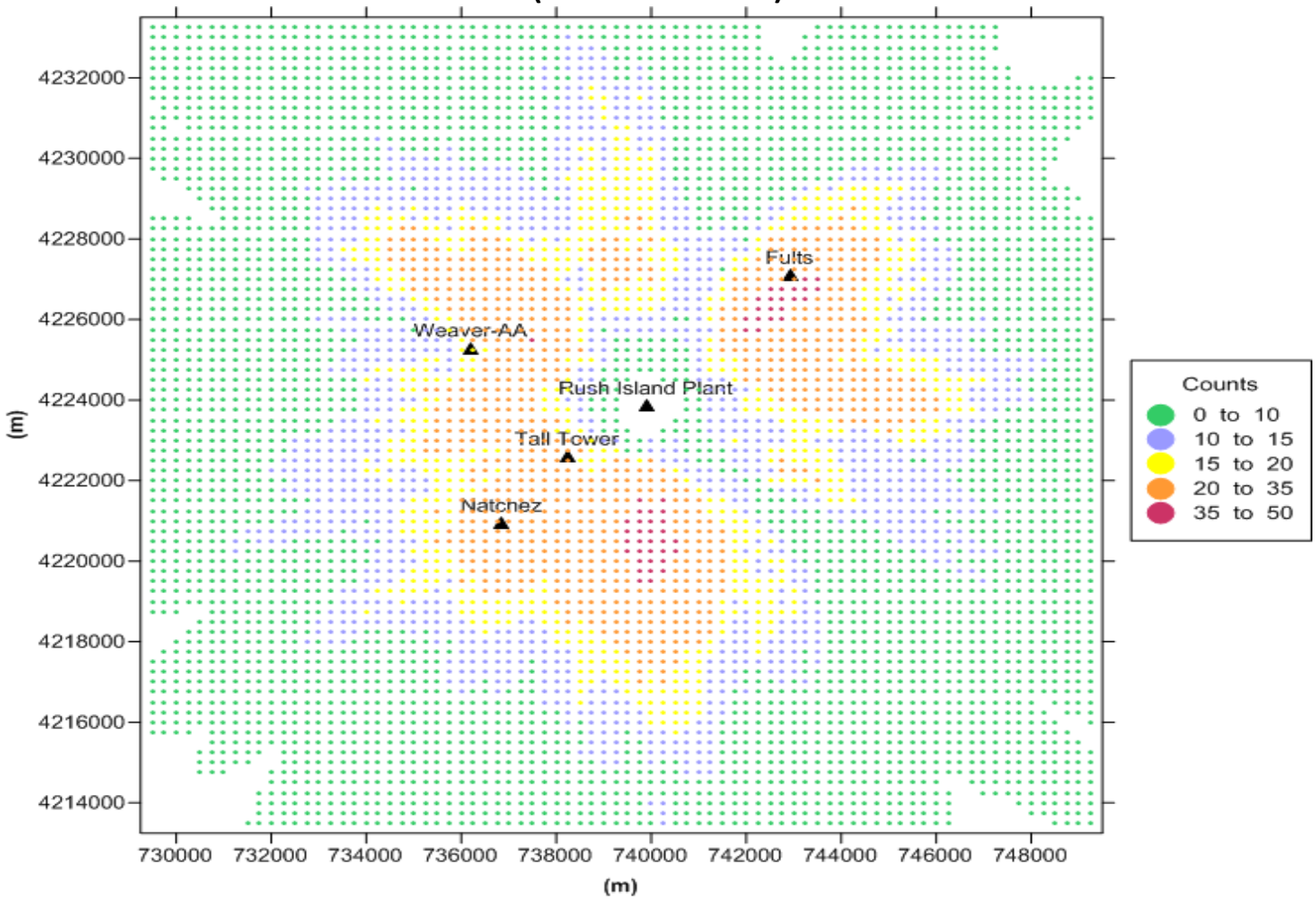


Figure 11

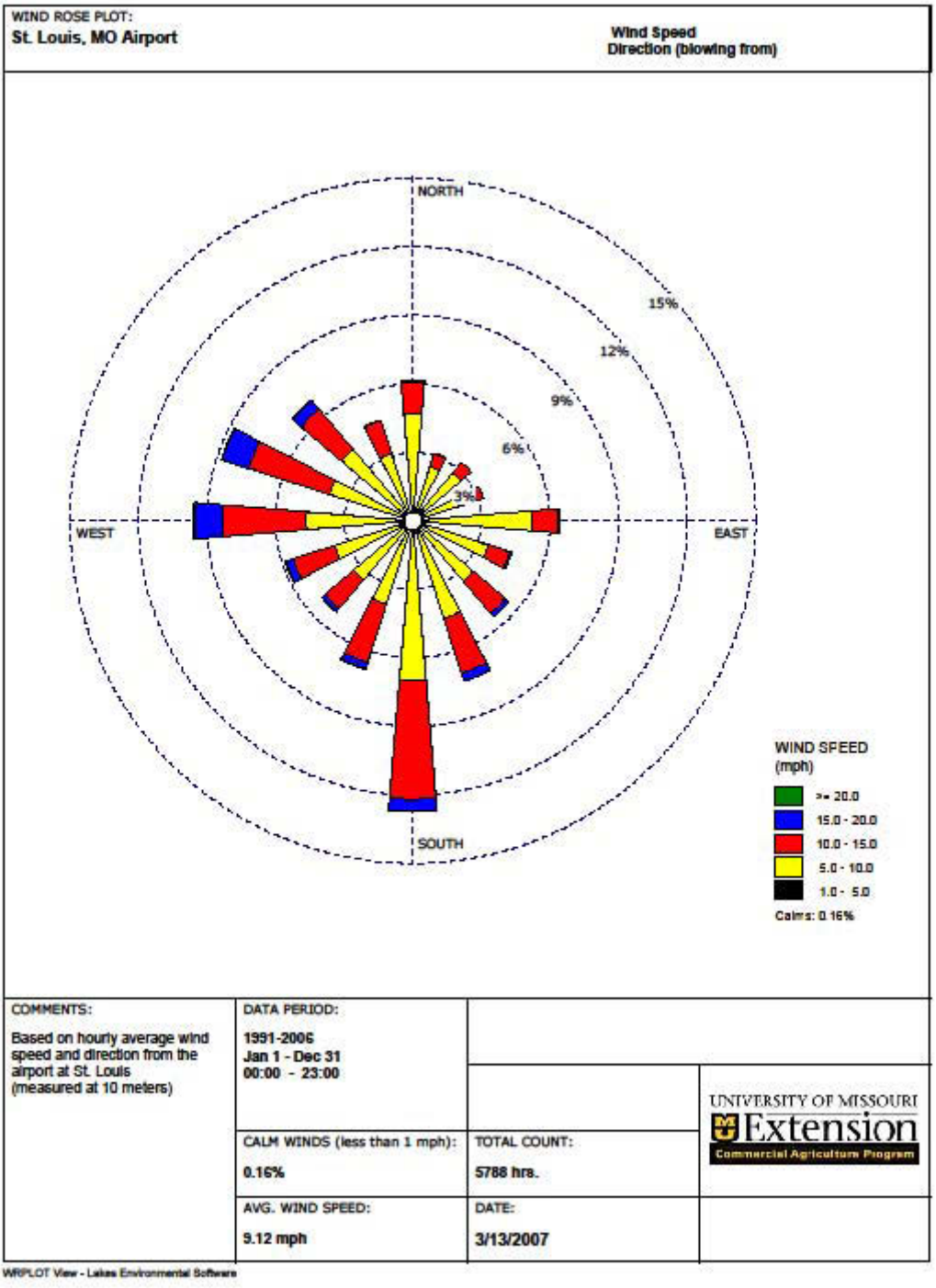

WIND ROSE PLOT:
St. Louis, MO Airport
Wind Speed
Direction (blowing from)
NORTH
EAST
SOUTH
WEST
15%
12%
9%
6%
3%
WIND SPEED
(mph)
>= 20.0
15.0 - 20.0
10.0 - 15.0
5.0 - 10.0
1.0 - 5.0
Calms: 0.16%
COMMENTS:
Based on hourly average wind speed and direction from the airport at St. Louis (measured at 10 meters)
DATA PERIOD:
1991-2006
Jan 1 - Dec 31
00:00 - 23:00
CALM WINDS (less than 1 mph):
0.16%
TOTAL COUNT:
5788 hrs.
AVG. WIND SPEED:
9.12 mph
DATE:
3/13/2007
UNIVERSITY OF MISSOURI
Extension
Commercial Agriculture Program
WRPLOT View - Lakes Environmental Software

Figure 12
Cape Girardeau, MO Airport Wind Rose

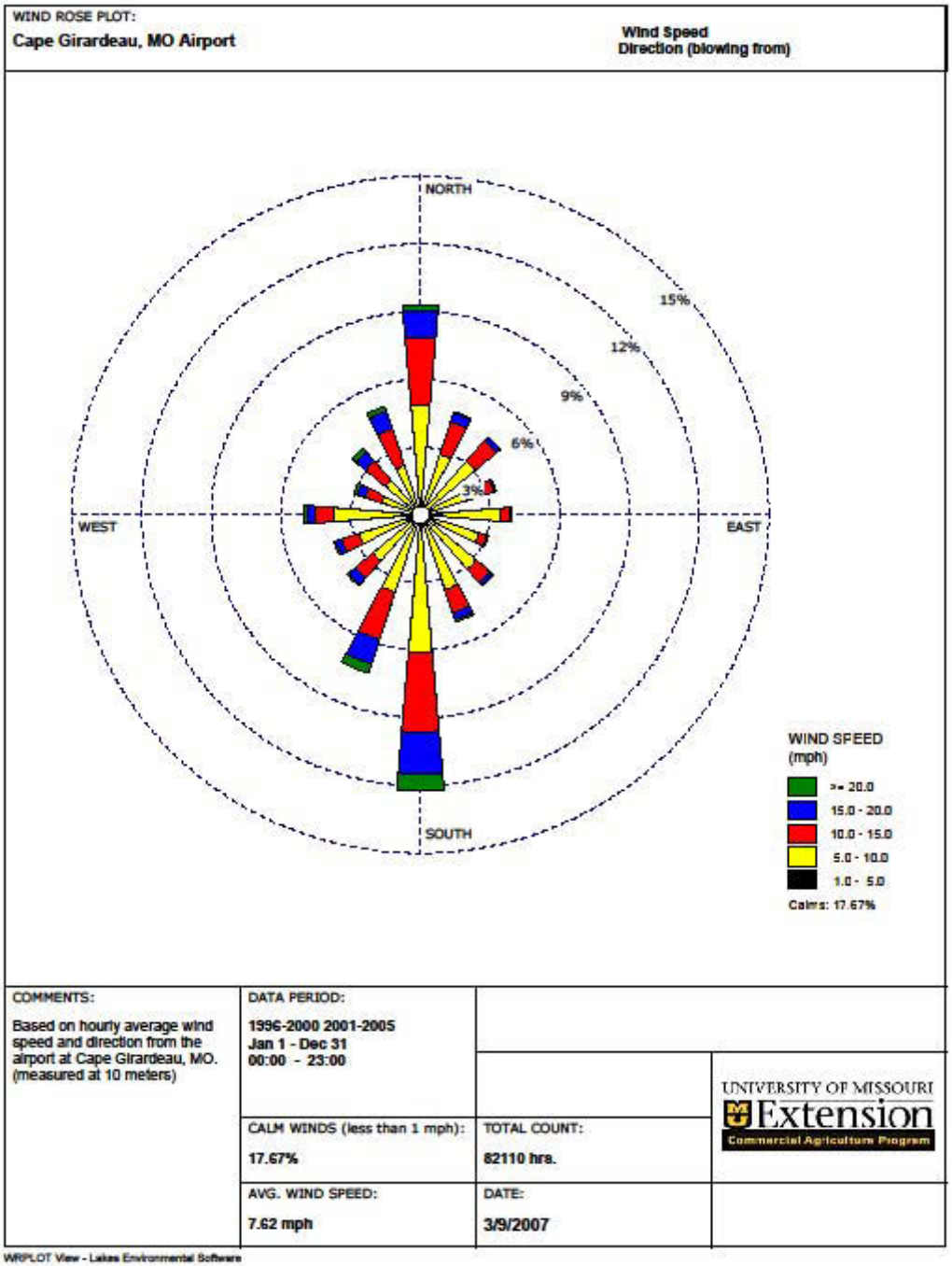
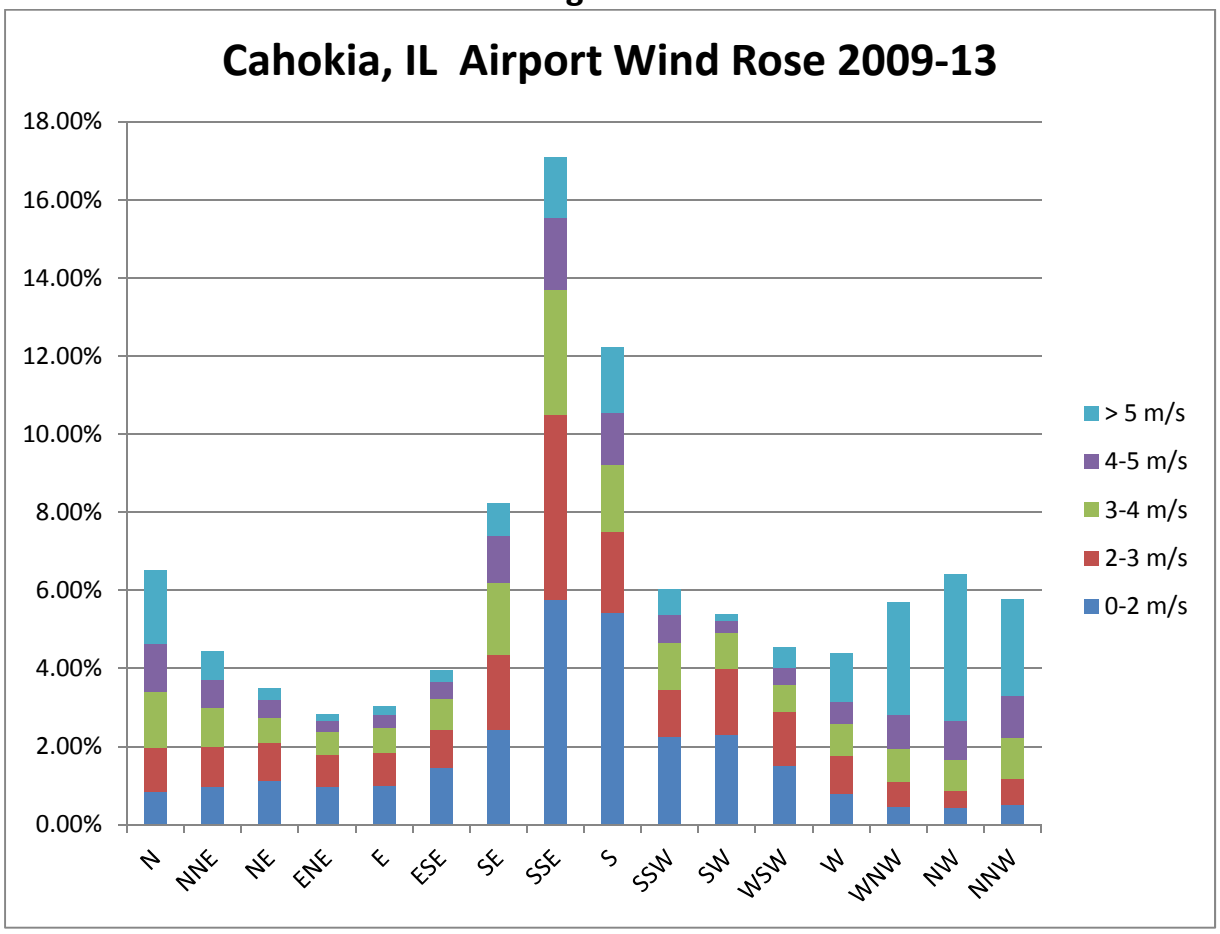


Figure 13


Cahokia, IL Airport Wind Rose 2009-13
18.00%
16.00%
14.00%
12.00%
10.00%
8.00%
6.00%
4.00%
2.00%
0.00%
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
> 5 m/s
4-5 m/s
3-4 m/s
2-3 m/s
0-2 m/s

Appendix A

AERMOD Sample Input File for

Years 2009-2013

```
CO STARTING
CO TITLEONE Ameren Missouri kcps 2009-13
CO TITLETWO NAD83 Z15 MDNR SO2 SIP Analysis
CO MODELOPT DFAULT CONC
CO AVERTIME 1
CO POLLUTID SO2
CO RUNORNOT RUN
CO FINISHED

SO STARTING
SO ELEVUNIT METERS

**100% LOAD
**met kcps minute data 2009-13
**Rush Island
**

**100% Load

**NAA SOURCES
**Boiler #1 Rush Island
SO LOCATION RB1 POINT 739918.06  4223889.95 125.27
**Boiler #2
SO LOCATION RB2 POINT 739922.42  4223893.92 125.27
**Auxilary Boiler
SO LOCATION RB3 POINT 739890.00  4224000.00 125.27

**
** source params
SO SRCPARAM RB1 500.0   204.97 428.72 33.02 6.31
SO SRCPARAM RB2 500.0   204.97 436.11 32.97 6.31
SO SRCPARAM RB3  8.82 84.58  577.59 10.06 1.52

**BPIP Outputs Dated January 23, 2012 - Rush Island
SO BUILDHGT RB1       81.99   81.99   27.93   27.93   27.93   27.93
SO BUILDHGT RB1       27.93   27.93   81.99   81.99   81.99   81.99
SO BUILDHGT RB1       81.99   81.99   81.99   81.99   81.99   81.99
SO BUILDHGT RB1       81.99   81.99   27.93   27.93   27.93   27.93
SO BUILDHGT RB1       27.93   27.93   81.99   81.99   81.99   81.99
SO BUILDHGT RB1       81.99   81.99   81.99   81.99   81.99   81.99
SO BUILDWID RB1       92.65   83.82   85.03   81.01   74.53   79.12
SO BUILDWID RB1       83.63   85.61   89.11   96.27  100.50  101.68
SO BUILDWID RB1       99.77   94.83   98.46  101.62  101.69   98.67
SO BUILDWID RB1       92.65   83.82   85.03   81.01   74.53   79.12
SO BUILDWID RB1       83.63   85.61   89.11   96.27  100.50  101.68
SO BUILDWID RB1       99.77   94.83   98.46  101.62  101.69   98.67
SO BUILDLEN RB1       96.27  100.50   69.62   63.81   56.06   62.70
SO BUILDLEN RB1       69.55   75.23   98.67   92.65   83.82   72.44
```

SO BUILDLEN RB1 58.86 45.72 55.29 68.14 79.24 89.11
SO BUILDLEN RB1 96.27 100.50 69.62 63.81 56.06 62.70
SO BUILDLEN RB1 69.55 75.23 98.67 92.65 83.82 72.44
SO BUILDLEN RB1 58.86 45.72 55.29 68.14 79.24 89.11
SO XBADJ RB1 19.30 3.72 -39.43 -46.66 -52.47 -61.55
SO XBADJ RB1 -69.39 -76.06 -108.43 -118.27 -124.52 -126.99
SO XBADJ RB1 -125.60 -122.61 -126.65 -128.87 -127.48 -123.40
SO XBADJ RB1 -115.57 -104.22 -30.20 -17.16 -3.60 -1.15
SO XBADJ RB1 -0.16 0.83 9.76 25.62 40.70 54.55
SO XBADJ RB1 66.74 76.90 71.37 60.73 48.24 34.29
SO YBADJ RB1 71.95 82.61 46.79 45.37 42.58 38.29
SO YBADJ RB1 33.10 26.90 78.84 67.43 53.97 38.87
SO YBADJ RB1 22.58 5.61 -11.59 -28.45 -44.45 -59.10
SO YBADJ RB1 -71.95 -82.61 -46.79 -45.37 -42.58 -38.29
SO YBADJ RB1 -33.10 -26.90 -78.84 -67.43 -53.97 -38.87
SO YBADJ RB1 -22.58 -5.61 11.59 28.45 44.45 59.10

SO BUILDHGT RB2 81.99 27.93 27.93 27.93 27.93 27.93
SO BUILDHGT RB2 27.93 27.93 81.99 81.99 81.99 81.99
SO BUILDHGT RB2 81.99 81.99 81.99 81.99 81.99 81.99
SO BUILDHGT RB2 81.99 27.93 27.93 27.93 27.93 27.93
SO BUILDHGT RB2 27.93 27.93 81.99 81.99 81.99 81.99
SO BUILDHGT RB2 81.99 81.99 81.99 81.99 81.99 81.99
SO BUILDWID RB2 92.65 86.47 85.03 81.01 74.53 79.12
SO BUILDWID RB2 83.63 85.61 89.11 96.27 100.50 101.68
SO BUILDWID RB2 99.77 94.83 98.46 101.62 101.69 98.67
SO BUILDWID RB2 92.65 86.47 85.03 81.01 74.53 79.12
SO BUILDWID RB2 83.63 85.61 89.11 96.27 100.50 101.68
SO BUILDWID RB2 99.77 94.83 98.46 101.62 101.69 98.67
SO BUILDLEN RB2 96.27 76.08 69.62 63.81 56.06 62.70
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SO BUILDLEN RB2 58.86 45.72 55.29 68.14 79.24 89.11
SO BUILDLEN RB2 96.27 76.08 69.62 63.81 56.06 62.70
SO BUILDLEN RB2 69.55 75.23 98.67 92.65 83.82 72.44
SO BUILDLEN RB2 58.86 45.72 55.29 68.14 79.24 89.11
SO XBADJ RB2 14.63 -38.98 -45.04 -52.50 -58.36 -67.31
SO XBADJ RB2 -74.85 -81.04 -112.79 -121.88 -127.26 -128.78
SO XBADJ RB2 -126.38 -122.37 -125.39 -126.63 -124.33 -119.43
SO XBADJ RB2 -110.90 -37.10 -24.58 -11.31 2.30 4.61
SO XBADJ RB2 5.29 5.81 14.12 29.22 43.44 56.34
SO XBADJ RB2 67.52 76.66 70.11 58.49 45.09 30.32
SO YBADJ RB2 75.55 49.52 48.58 46.16 42.34 37.03
SO YBADJ RB2 30.86 23.75 74.87 62.76 48.75 33.25
SO YBADJ RB2 16.74 -0.28 -17.35 -33.90 -49.43 -63.46
SO YBADJ RB2 -75.55 -49.52 -48.58 -46.16 -42.34 -37.03
SO YBADJ RB2 -30.86 -23.75 -74.87 -62.76 -48.75 -33.25
SO YBADJ RB2 -16.74 0.28 17.35 33.90 49.43 63.46

```
SO BUILDHGT RB3       81.99  81.99  81.99  81.99  81.99  81.99
SO BUILDHGT RB3       81.99  81.99  81.99  81.99  81.99  81.99
SO BUILDHGT RB3       81.99  81.99  81.99  81.99  81.99  81.99
SO BUILDHGT RB3       81.99  81.99  81.99  81.99  81.99  81.99
SO BUILDHGT RB3       81.99  81.99  81.99  81.99  81.99  81.99
SO BUILDHGT RB3       81.99  81.99  81.99  81.99  81.99  81.99
SO BUILDWID RB3       92.65  83.82  72.44  58.86  45.72  55.29
SO BUILDWID RB3       68.14  79.24  89.11  96.27 100.50 101.68
SO BUILDWID RB3       99.77  94.83  98.46 101.62 101.69  98.67
SO BUILDWID RB3       92.65  83.82  72.44  58.86  45.72  55.29
SO BUILDWID RB3       68.14  79.24  89.11  96.27 100.50 101.68
SO BUILDWID RB3       99.77  94.83  98.46 101.62 101.69  98.67
SO BUILDLEN RB3       96.27 100.50 101.68  99.77  94.83  98.46
SO BUILDLEN RB3      101.62 101.69  98.67  92.65  83.82  72.44
SO BUILDLEN RB3       58.86  45.72  55.29  68.14  79.24  89.11
SO BUILDLEN RB3       96.27 100.50 101.68  99.77  94.83  98.46
SO BUILDLEN RB3      101.62 101.69  98.67  92.65  83.82  72.44
SO BUILDLEN RB3       58.86  45.72  55.29  68.14  79.24  89.11
SO XBADJ    RB3      -84.21 -90.10 -93.25 -93.57 -91.04 -91.54
SO XBADJ    RB3      -90.53 -86.77 -80.37 -71.53 -60.52 -47.66
SO XBADJ    RB3      -33.36 -20.27 -17.32 -15.86 -14.23 -13.35
SO XBADJ    RB3      -12.06 -10.40  -8.43  -6.20  -3.79  -6.92
SO XBADJ    RB3      -11.09 -14.92 -18.30 -21.12 -23.30 -24.78
SO XBADJ    RB3      -25.50 -25.44 -37.97 -52.28 -65.01 -75.76
SO YBADJ    RB3       25.20  18.61  11.44   3.93  -2.59 -10.33
SO YBADJ    RB3      -18.21 -25.39 -31.21 -36.07 -39.85 -42.41
SO YBADJ    RB3      -43.68 -43.63 -42.31 -39.72 -35.92 -31.03
SO YBADJ    RB3      -25.20 -18.61 -11.44  -3.93   2.59  10.33
SO YBADJ    RB3       18.21  25.39  31.21  36.07  39.85  42.41
SO YBADJ    RB3       43.68  43.63  42.31  39.72  35.92  31.03
**----------End Rush Island

SO SRCGROUP RB1 RB1
SO SRCGROUP RB2 RB2
SO SRCGROUP RBAX RB3
SO SRCGROUP ALL

SO FINISHED
** AERMAP - VERSION 11103                    08/01/14
**                                          13:41:09
**  Ameren Rush Island area ELEVATION EXTRACTION
**  Ameren AUG 1, 2014
** A total of      1  NED files were used
** A total of    6400  receptors were processed
** DOMAINXY 710000 4210000 15 750000 4255000 15
** ANCHORXY 722000 4225000 722000 4225000 15 4
```

** Terrain heights were extracted by default

```
RE STARTING
RE ELEVUNIT METERS
RE GRIDCART RSH250 STA
RE GRIDCART RSH250 XYINC 729500. 80 250. 4213500. 80  250.
  GRIDCART RSH250   ELEV   1   266.6   254.8   240.9   246.5   229.8   242.8
  GRIDCART RSH250   ELEV   1   220.4   249.4   233.0   252.6   252.4   255.2
  GRIDCART RSH250   ELEV   1   255.9   256.7   241.1   259.4   255.6   248.2
  GRIDCART RSH250   ELEV   1   242.5   229.0   212.9   211.6   198.1   204.4
  GRIDCART RSH250   ELEV   1   197.0   204.8   210.5   211.2   210.8   196.6
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  GRIDCART RSH250   ELEV   1   162.1   158.1   163.3   193.8   193.3   174.1
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  GRIDCART RSH250   ELEV   1   130.5   115.4   176.5   181.7   155.9   124.2
  GRIDCART RSH250   ELEV   1   171.2   131.7
  .
  .
  .
  .
  GRIDCART RSH250   HILL   80   133.8   128.4   169.6   260.5   260.5   260.5
  GRIDCART RSH250   HILL   80   260.5   260.5   260.5   260.5   260.5   260.5
  GRIDCART RSH250   HILL   80   119.8   118.6   119.7   123.9   119.6   118.7
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  GRIDCART RSH250   HILL   80   117.1   116.4   118.6   116.9   117.2   117.0
  GRIDCART RSH250   HILL   80   119.4   119.0   119.8   120.3   120.4   121.2
  GRIDCART RSH250   HILL   80   122.2   123.8   196.5   196.7   221.5   221.5
  GRIDCART RSH250   HILL   80   226.2   226.2   226.2   226.2   214.8   193.4
  GRIDCART RSH250   HILL   80   196.8   185.9   185.9   196.0   181.7   183.9
  GRIDCART RSH250   HILL   80   184.2   183.2   184.8   188.2   193.1   200.0
  GRIDCART RSH250   HILL   80   206.6   206.6   215.1   214.2   217.8   225.7
  GRIDCART RSH250   HILL   80   225.4   219.3   219.5   222.3   220.2   213.3
  GRIDCART RSH250   HILL   80   213.3   214.2   206.6   209.6   210.4   206.6
  GRIDCART RSH250   HILL   80   209.7   209.1
RE GRIDCART RSH250 END

RE FINISHED

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ME SURFFILE ../metdata/KCPSILX-MIN-2009-13.SFC FREE
ME PROFFILE ../metdata/KCPSILX-MIN-2009-13.PFL
ME SURFDATA  03960 2009 Columbia, Ill
ME UAIRDATA  04833 2009 Lincoln, Ill
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ME PROFBASE 126 Meters
ME FINISHED

OU STARTING
OU RECTABLE 1 4th
Ameren_hercu_Meramec_Only_SO2_1HR_Daily_Max_Base_Actual_Load100_05.DAT
OU SUMMFILE Ameren_rushonly_SO2_1HR_Summary_Load100_kcps09-13.SUM
OU MAXDCONT ALL 4 4 maxdaily_SO2_cont_rushonly_kcps09-13.txt
OU PLOTFILE 1 ALL 4 Ameren_rushonly_SO2_Load100_kcps09-13.PLT
OU FINISHED

APPENDIX 5

Review of proposed SO_2 and meteorological monitoring stations around Ameren Missouri's Rush Island Energy Center

Project #2010-SO_2-3
Date: 06-10-2015

Review of proposed SO_2 and meteorological monitoring stations around Ameren Missouri's Rush Island Energy Center

Introduction

The purpose of this review is to evaluate the proposed selection of SO_2 and meteorological monitoring sites around Rush Island Energy Center through air dispersion modeling. The intention is to determine if the proposed sites will adequately represent 1) Rush Island Energy Center's SO_2 air quality impact and 2) the meteorological conditions surrounding the Rush Island facility. It should be noted that the evaluation of siting criteria under 40 CFR Part 51 is conducted separately through the Air Quality Analysis Section of the Air Pollution Control Program (APCP).

Rush Island Energy Center is a coal-fired power station owned and operated by Ameren near Festus, Missouri. The energy center is located on the west side of the Mississippi River valley floodplain oriented from southeast to northwest, next to the Missouri side of the river bluff. Ameren is required to install separate meteorological and SO_2 monitors at Rush Island to characterize their impact on air quality around the facility per a 2015 Consent Agreement entered into by the Missouri Department of Natural Resources and Ameren Missouri on March 23, 2015[1]. Ameren is proposing to install three ambient monitors and two meteorological stations. An analysis of the proposed monitor locations was submitted to the APCP on April 29, 2015[2].

Technical Analysis of Site selection

SO_2 Emission sources

Rush Island has two base load units (boiler 1 and boiler 2), one auxiliary boiler, one emergency fire pump engine and one emergency generator. The two base load units are the major SO_2 emission sources. In the APCP modeling input file, hourly Continuous Emission Monitoring System (CEMS) data collected from EPA's Clean Air Markets Division (CAMD) database for the years 2011-2013 for boiler 1 and boiler 2 was used. The auxiliary boiler was also included as a point emission source with a constant emission rate of 0.067 g/s (provided by Rush Island and as submitted to the Missouri Emissions Inventory System (MoEIS) for the year 2012). It should be noted that Ameren's analysis did not use actual emissions to establish monitoring locations but used a static representative emission rate for the boilers. Therefore, the concentration values between these two analyses are different. No interactive sources were included in this evaluation.

[1] Consent Agreement No. APCP-2015-034 between Ameren Missouri and the Missouri Department of Natural Resources

[2] Document submitted on April 29, 2015 by Ameren Missouri entitled "Analysis of SO_2 and Meteorological Monitoring Stations around Ameren Missouri's Rush Island Energy Center"

Meteorological data and Geographic influence

Understanding the influence of meteorology on an SO_2 source is critical. Meteorological inputs to the dispersion modeling influence how SO_2 emissions are dispersed and affects the location or locations of maximum ground-level concentrations. APCP's staff meteorologist evaluated the terrain surrounding the Rush Island Energy Center and meteorological data from nearby National Weather Service (NWS) stations and made recommendations on: 1) the meteorological data sets to be used in air dispersion modeling, and 2) the locations of meteorological monitoring sites for the collection of data that accurately depict meteorological conditions around the Rush Island Energy Center.

Representative Meteorological Data (dispersion modeling)

Representative NWS data was chosen for the dispersion modeling exercise since on-site meteorological data will not be available at Rush Island until the new meteorological stations have been in operation for some time. Surface elevation meteorological data from the downtown St. Louis Airport (Cahokia IL, KCPS) and upper air meteorological data from Lincoln, IL (KILX) were chosen as the most representative datasets for Rush Island[3].

Meteorological Tower Locations (monitor placement)

Meteorological (Met) towers should be located within 3 to 5 km of the Rush Island Energy Center to meet proximity guidelines. The energy center should be visible from the meteorological tower(s) location and share as many common ground cover characteristics as possible with the Rush Island 1km radius. At least one meteorological tower should be located within the Mississippi River floodplain to capture surface meteorological data, preferably at a location at least 2,000 feet from the river bluffs on the Missouri side of the river. To capture higher elevation meteorological data at heights near the top of the Rush Island stack, either a tall tower (100m or at stack height, whichever is lower) or an elevated terrain monitor could be used. Siting of an elevated terrain monitor should be near the highest terrain elevation but away from the crest of the bluffs (more than 10 meters/30 feet in elevation lower than the nearest ridge top).

Based on the technical analysis of terrain, exposure, surface characteristics, etc., three possible locations were identified to capture on-site meteorological data for Rush Island. Figure 1 shows the geographical position of these possible areas. They are (not listed in order of preference)[4]:

1) Missouri side of the Mississippi River valley and close to the energy center (Truman Access),
2) Elevated terrain along the immediate ridges west of Rush Island Energy Center,
3) Illinois side of the Mississippi River floodplain.

[3] Memorandum from the meteorologist in APCP to file entitled "Recommendation for representative meteorological data set for Rush Island Power Plant" (dated May 12, 2015).

[4] Memorandum from the meteorologist in APCP to file entitled "Recommendation for meteorological tower locations near the Rush Island Power Plant" (dated May 29, 2015).

Ameren's proposed meteorological monitoring sites are within the areas shown in Figure 1 and are expected to provide representative surface meteorological data for the area immediately surrounding the Rush Island Energy Center.

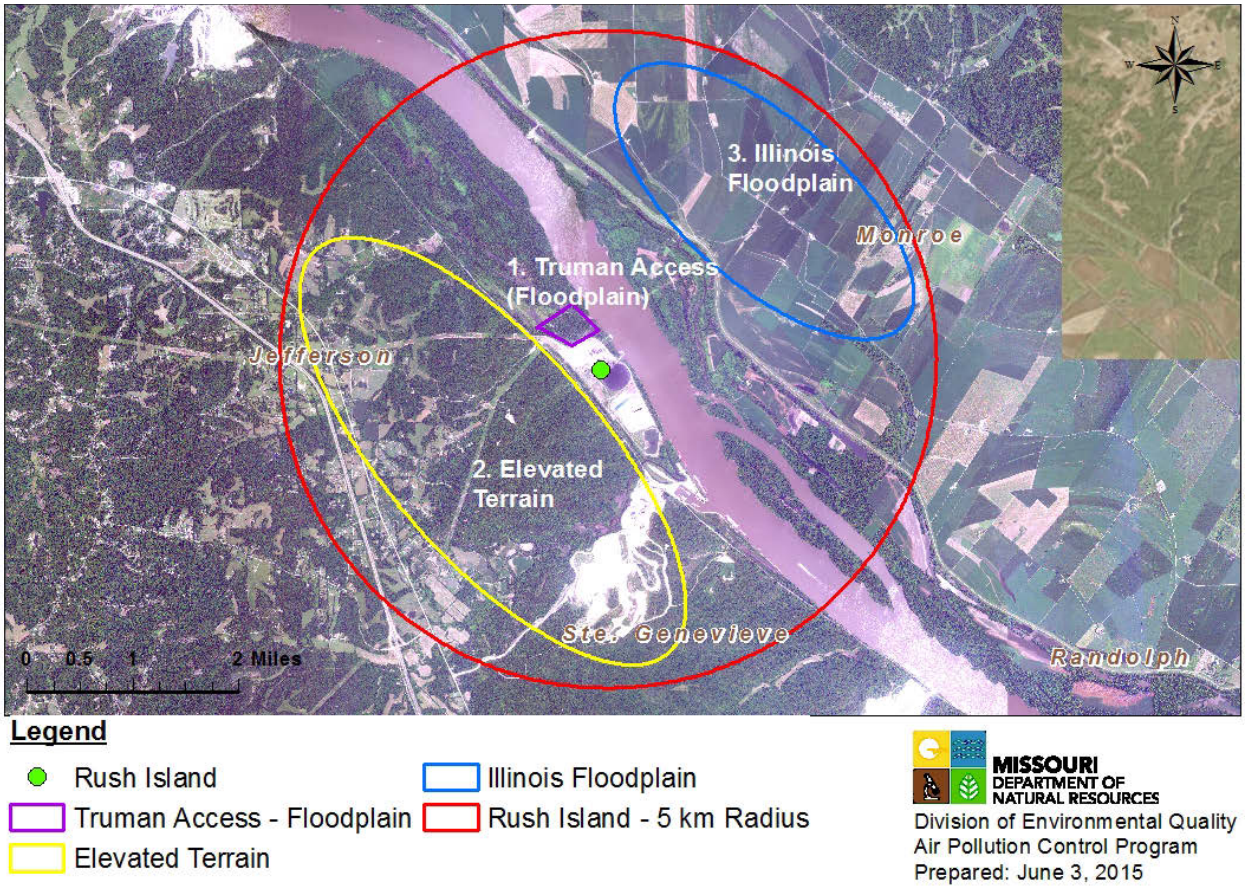

Figure 1. Schematic of Ameren Rush Island onsite meteorological monitoring recommended siting areas

Air dispersion modeling

The location and number of ambient air quality monitors are dependent on several factors including topography and meteorology, which affect where areas of high concentration will be observed and how often those high concentrations will occur. Air dispersion modeling was used to account for these factors and determine the appropriateness of locations for possible monitor site locations.

The AERMOD model (version 14134) was executed using the meteorological and CEMS datasets for the years of 2011-2013. The resulting 4th highest hourly SO_2 concentration at each receptor was evaluated. The modeling results were plotted to determine the areas of high

concentration as shown in Figure 2. The results indicate several areas of frequently higher concentrations about 2 to 3 miles away from the facility center. These areas are indicated by several polygons numbered from 1 to 5 as marked in Figure 2. The polygons were established by including all receptors greater than 90 μg/m^3. The range of modeled concentrations and the frequency of those concentrations for each area are listed in Table 1.

Table 1. Distribution of receptor concentrations in the five polygons

Polygon Identifier	1	2	3	4	5
# of receptors with concentrations > 90 μg/m^3	10	18	45	4	8
# of receptors with concentrations of 75-90 μg/m^3	57	23	22	25	5
Total number	67	41	67	29	13

Among these polygons, we can rank the polygons in order by the magnitude of the number of receptors with concentrations greater than 90 μg/m^3. From areas of highest to lowest concentrations, the polygons are ranked as follows: 3>2>1>5 >4. We can also rank the polygons in order by the frequency of receptors with concentrations greater than 75 μg/m^3. From most to least number of receptors, the polygons are ranked as follows: 3≈1>2>4>> 5. From Figure 2 and Table 1, polygons 3 and 2 contain the most and second-most high concentration receptors. Polygon 3 is located northeast of the energy center in Illinois and polygon 2 is to the northwest. These areas are identified as areas of maximum concentration and are candidates for the location of SO_2 monitors.

It is more complicated to determine whether SO_2 monitors could be installed within the parameters of polygon 1, 4 or 5 because the order of concentration and frequency of these areas are not the same. Reviewing the wind rose plot for Cahokia airport (see Figure 3) reveals the dominant wind sector blows from the southeast direction, which would more often blow emissions away from polygons 4 and 5, and blow toward 1, 2, and 3. With the highest level of faster wind speeds blowing from the north, SO_2 emissions are more likely to be driven to areas within polygon 4 than to areas within polygon 5. This means that areas within polygons 1 and 4 are more likely to be impacted based on the discussed meteorological influences. Also, areas within polygons 4 and 1 have a greater frequency of high concentrations than areas within polygon 5. Thus, because of the lower frequency of high concentrations and lower probability of influence by the mentioned meteorological conditions, areas within polygon 5 are not as favorable as areas within polygons 1 and 4 for the placement of a SO_2 monitor.

For the remaining two areas, both have a similar distribution of receptors based on the frequency of high concentrations. However, compared to the area within polygon 4, the area within polygon 1 has a higher number of receptors with high concentrations. Therefore, polygon 1 is deemed a better candidate over polygon 4 for the placement of a SO_2 monitor. The predominant wind direction also supports the monitor being placed in polygon 1 rather than polygon 4. In addition, the area within polygon 4, located south of Rush Island Energy Center, mainly consists of property occupied by Holcim Inc.

Based on the modeling results and the best available meteorological data, monitors placed in the three areas, marked 1, 2, and 3 (see Figure 2) are the best options to represent Rush Island Energy Center's SO_2 air quality impacts.

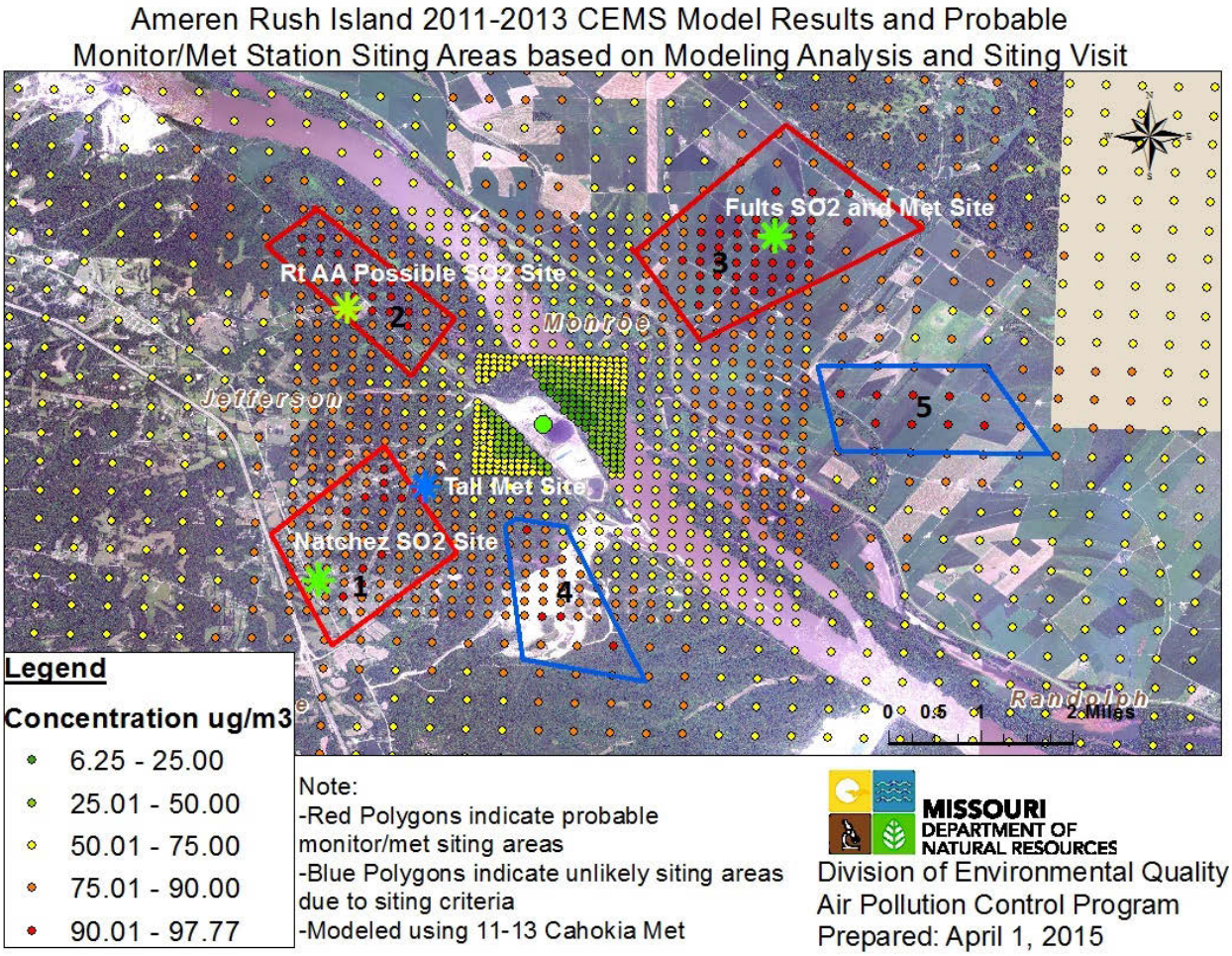

Figure 2. High impact areas and probable SO_2/Meteorological (Met) station siting areas based on dispersion modeling and siting visit

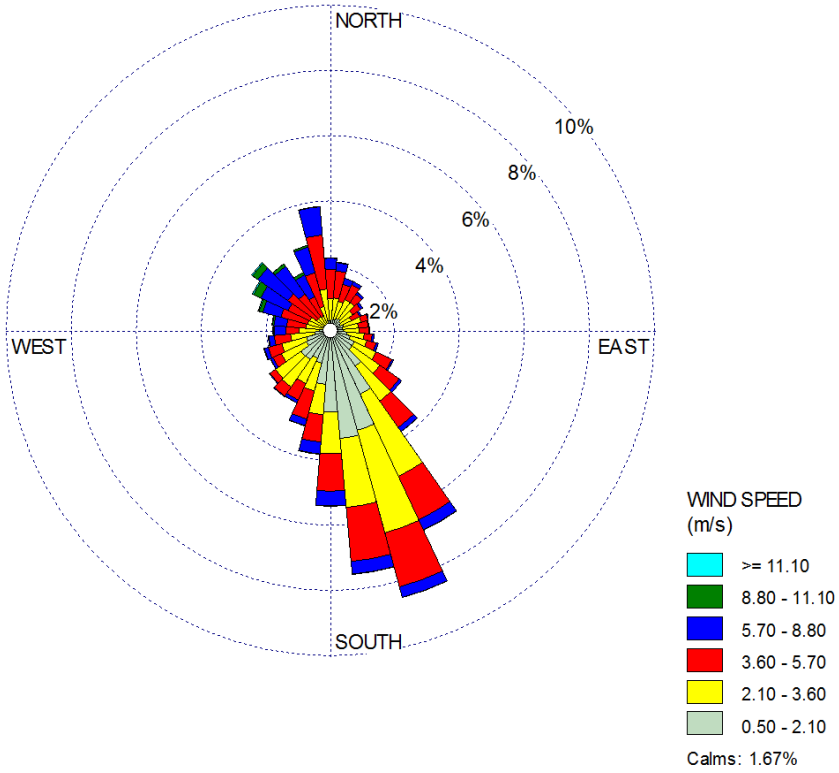

Figure 3. Wind rose for St. Louis downtown airport (Cahokia, IL)

Ameren's proposed site selection

Based on the modeling results and availability of locations and monitoring utilities, Ameren proposed the following sites as shown in Figure 4.

1) SO_2 monitoring sites
   - Natchez Trace Drive Site

   This proposed ambient air sulfur dioxide monitoring site is in the Natchez Trace subdivision which is east of Highway 61 in Jefferson County. The site is located on Natchez Trace Drive, east of its intersection with Highway 61.
   - Rt. AA-Weaver Rd. Site

   This proposed ambient air sulfur dioxide monitoring site is near Rt. AA and Weaver Rd. This area is near a river bed and is under risk of floods during flooding season. Ameren has proposed this site based on land availability.
   - Fults SO_2 Site

   This proposed ambient air sulfur dioxide monitoring site is in Monroe County, Illinois near the village of Fults. It is on Ivy Road near its intersection with Bluff Road.

2) Meteorological data monitoring sites
   - Tall Met Tower

   This meteorological site is located at the Arch Johnston Quarry which is on Johnston Road, south of its intersection with Big Hollow Road, in Jefferson County. It is currently used for the Jefferson County 911 dispatch service.
   - Fults (surface) Met Tower

   This proposed meteorological tower site is in Monroe County, Illinois near the village of Fults. It is on Ivy Road near its intersection with Bluff Road. It will be co-located with the SO_2 monitoring site.

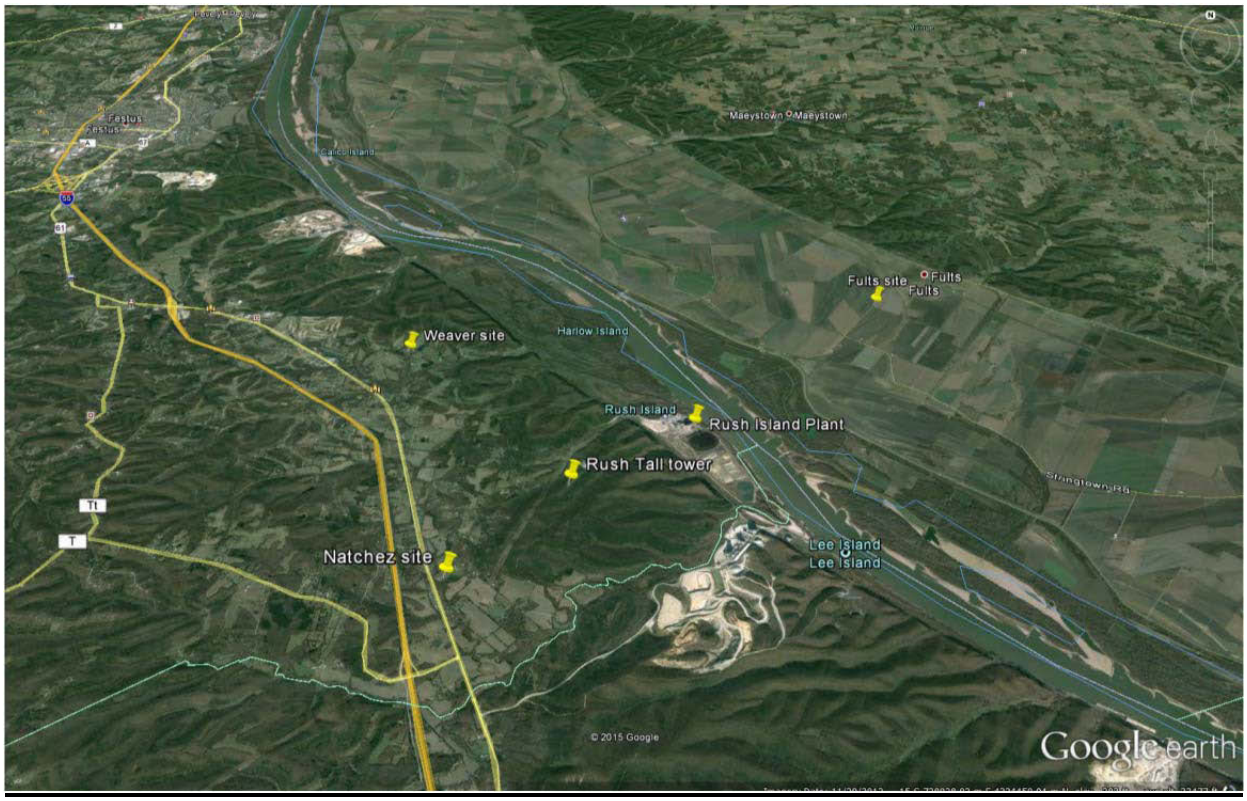

Figure 4. Schematic of Ameren's proposed monitoring sites

Conclusions

From the analysis and evaluation discussed above, the regions noted as red polygons in Figure 2 will provide the greatest opportunity to monitor the highest concentrations of SO_2 emitted by the Ameren Missouri Rush Island Energy Center. The SO_2 monitoring sites proposed by Ameren are within these areas predicted to have the highest and most frequent modeled impacts. In addition, Ameren's proposed meteorological monitoring sites are within the areas shown in Figure 1 that will provide representative surface meteorological data for the area immediately surrounding the Rush Island Energy Center.

Based on the evaluation described in this document, the sites proposed by Ameren are reasonable and are in agreement with the APCP's analysis.

References:

1. Consent Agreement No. APCP-2015-034 between Ameren Missouri and the Missouri Department of Natural Resources
2. Document submitted on April 29, 2015 by Ameren Missouri entitled "Analysis of SO_2 and Meteorological Monitoring Stations around Ameren Missouri's Rush Island Energy Center"
3. Memorandum from the meteorologist in APCP to file entitled "Recommendation for representative meteorological data set for Rush Island Power Plant" (dated May 12, 2015)
4. Memorandum from the meteorologist in APCP to file entitled "Recommendation for meteorological tower locations near the Rush Island Power Plant" (dated May 29, 2015)

Technical observations on Ameren's analysis report:
The following observations were noted on Ameren's documentation titled "Analysis of SO_2 and Meteorological Monitoring Stations around Ameren Missouri's Rush Island Energy Center":

- Table 1: The height of the relative humidity sensors should be adjusted from 10 m to 2 m. This was suggested by the monitoring staff upon inspection and seconded by APCP staff.
- Some parameters (e.g. SO_2 rate) in the proposal list imperial units (lb/hr). APCP will recommend metric units (g/s) in the QAPP for the met parameters and consistent with the *Quality Assurance Handbook for Air Pollution Measurement Systems, Volume IV: Meteorological Measurements Version 2.0 (Final) (EPA-454/D-06-001)*.
- Page 8: 3rd paragraph. At this point, APCP has no comments on the treatment of the collected data from the two proposed meteorological stations in future Aermod modeling.
- Page 21, source parameters. Good engineering practice (GEP) heights were used in the modeling submitted by Ameren. For determining monitor placement, actual stack heights were used in APCP modeling along with actual emissions data.
- Page 24: The AERMOD output indicates that ME SURFDATA is from Columbia, Ill. This is believed to be an error in the document. The modeling input files submitted with the analysis appear to use Cahokia, IL data which match the Cahokia airport code.

APPENDIX 6

Changes from Rev. 0 to Rev. 1

The following changes were made from Rev. 0 to Rev. 1 of this plan: Errors in the Augusta Quarry data in Figure 2.3 were corrected, and the network table (Appendix 1) was revised to correct an error in the site number for one of the monitoring sites near the Labadie Energy Center.