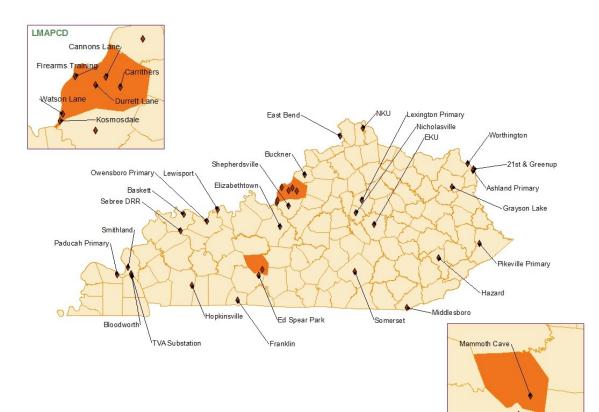
Kentucky Annual Ambient Air Monitoring Network Plan 2018





Commonwealth of Kentucky Energy & Environment Cabinet Department for Environmental Protection Division for Air Quality 300 Sower Boulevard Frankfort, Kentucky 40601



NPS

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CERTIFICATION

By the signatures below, the Kentucky Division for Air Quality certifies that the information contained in this Surveillance Network document for sampling year 2018 is complete and accurate at the time of submittal to EPA Region 4. However, due to circumstances that may arise during the sampling year, some network information may change. A notification of change and a request for approval will be submitted to EPA Region 4 at that time, following a 30-day public comment period.

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	Environmental Scientist V	5	
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	Division Director		then yould of of 10

PUBLIC NOTIFICATION AND COMMENT PERIOD

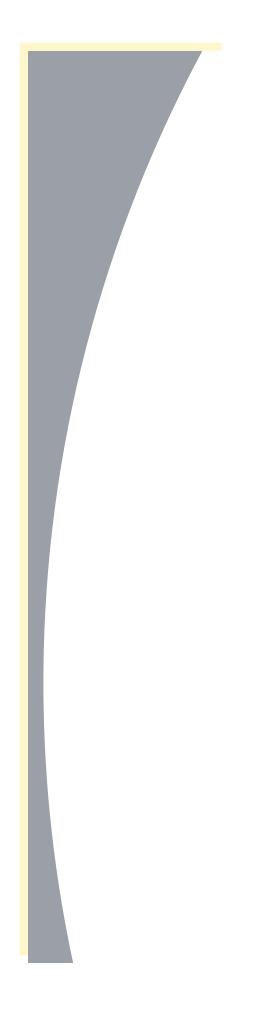
In accordance with 40 C.F.R. 58.10(a)(1), the Kentucky Energy and Environment Cabinet shall make the annual monitoring network plan available for public inspection for at least 30 days prior to submission to the US EPA. The annual monitoring network plan details the operation and location of ambient air monitors operated by the Kentucky Division for Air Quality (KDAQ), Louisville Metro Air Pollution Control District (LMAPCD), and the National Park Service (NPS).

TABLE OF CONTENTS	
INTRODUCTION	1
AIR MONITORING NETWORK SUMMARY	5
Summary of KDAQ Network Changes	6
Air Monitoring Stations Summary	7
Network Map	8
STATION DESCRIPTION FORMAT	9
AIR MONITORING STATION DESCRIPTIONS	19
METROPOLITAN STATISTICAL AREAS	
Bowling Green, KY	21
Cincinnati, OH-KY-IN	27
Clarksville, TN-KY	33
Elizabethtown-Fort Knox, KY	37
Evansville, IN-KY	41
Huntington-Ashland, WV-KY-OH Lexington-Fayette, KY	47 55
Louisville-Jefferson County, KY-IN	55 61
Owensboro, KY	81
MICROPOLITAN STATISTICAL AREAS	87
Middlesborough, KY	88
Paducah-Mayfield, KY-IN	90
Richmond-Berea, KY	96
Somerset, KY	98
NOT IN A CORE-BASED STATISTICAL AREA	101
Grayson, KY	102
Calvert City, KY	104
Hazard, KY	106
Pikeville, KY	108
Franklin, KY	110
APPENDIX A -	
KENTUCKY CORE-BASED STATISTICAL	110
AREAS AND COUNTIES MAP	113
APPENDIX B -	
MEMORANDUM OF AGREEMENT -	115
CINCINNATI, OH-KY-IN MSA	115

ACRONYMS

1	AEM – Automated Equivalent Method
5	AQI – Air Quality Index
6 7	
8	AQS – Air Quality System
9	ARM – Automated Reference Method
19	CBSA – Core-Based Statistical Area
0.1	CSA – Combined Statistical Area
21 27	CO – Carbon Monoxide
33 37	DRR – Data Requirements Rule
41 47 55	FAM – Federal Alternate Method
61 81	FEM – Federal Equivalent Method
87	FRM – Federal Reference Method
88 90 96	KDAQ – Kentucky Division for Air Quality
98	LMAPCD – Louisville Metro Air Pollution Control District
101 102 104	MSA – Metropolitan Statistical Area
104 106 108	NAAQS – National Ambient Air Quality Standards
110	NAMS – National Air Monitoring Stations
113	NAREL– National Air and Radiation Environmental Laboratory
	NATTS – National Air Toxics Trends Stations

APPENDIX C -	
MEMORANDUM OF AGREEMENT-	NIST – National Institute of
EVANSVILLE, IN-KY MSA 121	Standards and Technology
EVANSVILLE, IN-KI WSA 121	NO_2 – Nitrogen Dioxide
APPENDIX D -	NPS – National Park Service
MEMORANDA OF AGREEMENT-	O ₃ – Ozone
CLARKSVILLE, TN-KY MSA 125	PAH – Polycyclic Aromatic Hydrocarbons
APPENDIX E -	Pb – Lead
LMAPCD AMBIENT AIR MONITORING	PM – Particulate Matter
NETWORK 2018 131	PTFE-Polytetrafluoroethylene
APPENDIX F-	PWEI – Population Weighted Emissions Index
KDAQ INTENDED USE OF CONTINUOUS	RA-40 – Regional
PM2.5 FEMS 145	Administrator 40
APPENDIX G	SAMWG – Standing Air Monitoring Working Group
NEAR ROAD MONITORING 147	SLAMS – State and Local Air Monitoring Stations
APPENDIX H-	SO ₂ – Sulfur Dioxide
KENTUCKY SO2 PWEI VALUES 151	SPM – Special Purpose Monitors
	TBD – To Be Determined
APPENDIX I-	TEOM – Tapered Elemental
EPA CASTNET STATIONS IN KENTUCKY 153	Oscillating Microbalance
APPENDIX J-	U.S. EPA – United States Environmental Protection Agency
KENTUCKY EQUIPMENT INVENTORY 155	VOC – Volatile Organic
	Compounds
APPENDIX K-	
PUBLIC COMMENTS 163	
INDEX -	
KDAQ AIR MONITORING	
STATIONS BY REGIONAL OFFICE 165	



INTRODUCTION

INTRODUCTION

The Kentucky Division for Air Quality (KDAQ) has operated an air quality monitoring network in the Commonwealth since July 1967. The Louisville Metro Air Pollution Control District (LMAPCD), a local agency, has maintained a sub-network in its area of jurisdiction since January 1956. Since that time, the networks have been expanded in accordance with United States Environmental Protection Agency's (US EPA) regulations.

In October 1975, the US EPA established a work group to critically review and evaluate current air monitoring activities at that time. This group was named the Standing Air Monitoring Working Group (SAMWG). The review by the SAMWG indicated several areas where deficiencies existed which needed correction. The principal areas needing correction were: an excess of monitoring sites in some areas to assess air quality; existing regulations that did not allow for flexibility to conduct special purpose monitoring studies; and data reporting that was untimely and incomplete. These deficiencies were primarily caused by a lack of uniformity in station locations and probe siting, sampling methodology, quality assurance practices, and data handling procedures.

In August 1978, recommendations developed by SAMWG, to remedy the deficiencies in the existing monitoring activities, were combined with the new requirements of Section 319 of the Clean Air Act. Section 319 provided for the development of uniform air quality monitoring criteria and methodology; reporting of a uniform air quality index in major urban areas; and the establishment of an air quality monitoring system nationwide which utilized uniform monitoring criteria and provides for monitoring stations in major urban areas that supplement State monitoring. The combination of the recommendations and requirements were included in a proposed revision to the air monitoring regulations.

In May 1979, air monitoring regulations were finalized by the US EPA requiring certain modifications and additions to be included in the State Implementation Plan for air quality surveillance. These regulations require each state to operate a network of monitoring stations designated as State and Local Air Monitoring Stations (SLAMS) that measure ambient concentrations of air pollutants for which standards have been established. The SLAMS designation contains provisions concerning the conformity to specific siting and monitoring criteria not previously required. The regulations also provide for an annual review of the monitoring network to insure objectives are being met and to identify needed modification.

The current overall network consists of 34 air monitoring stations, operated by KDAQ, LMAPCD, and the National Park Service (NPS). The Commonwealth's SLAMS air monitoring network monitors criteria pollutants for which the National Ambient Air Quality Standards (NAAQS) have been issued. In addition to a SLAMS network, KDAQ's air monitoring network includes special purpose monitors (SPM) for air toxics and meteorological data.

The annual monitoring network description, as provided for in 40 CFR Part 58.10, *Annual monitoring network plan and periodic network assessment*, must contain the following information for each monitoring station in the network:

- 1. The Air Quality System (AQS) site identification number for existing stations.
- 2. The location, including the street address and geographical coordinates, for each monitoring station.
- 3. The sampling and analysis method used for each measured parameter.

- 4. The operating schedule for each monitor.
- 5. Any proposal to remove or move a monitoring station within a period of eighteen months following the plan submittal.
- 6. The monitoring objective and spatial scale of representativeness for each monitor.
- 7. The identification of any site that is suitable for comparison against the $PM_{2.5}$ NAAQS.
- 8. The Metropolitan Statistical Area (MSA), Core-Based Statistical Area (CBSA), Combined Statistical Area (CSA), or other area represented by the monitor.

The following document constitutes the Kentucky ambient air monitoring network description and is organized into main parts:

- 1. Station Description Format: An outline of the designations, parameters, monitoring methods, and the basis for site selection.
- 2. Network Summaries: Presenting the total number of sites and monitors in each region and for the state. Also included is a listing of all proposed changes to the current network.
- 3. Air Monitoring Station Description: Each air monitor station is described in detail as per the outline in (1) above.
- 4. Appendices: Additional information relating to the ambient air monitoring network.

Modification to the network as determined by an annual review process will be made each year to maintain a current network description document.

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AIR MONITORING NETWORK SUMMARY

SUMMARY OF KDAQ NETWORK CHANGES 2018

During the 2018-2019 monitoring year, KDAQ will operate 94 instruments, including 11 meteorological stations, located at 27 ambient air monitoring sites in 24 Kentucky counties. LMAPCD will operate an additional 33 instruments, including 6 meteorological stations, in Jefferson County. When combined with the air monitoring site operated by the National Park Service NPS at Mammoth Cave National Park, the total ambient air monitoring network will consist of 133 instruments, including 18 meteorological stations, located at 34 sites across 26 counties of the Commonwealth.

KDAQ proposes to make the changes below to the ambient air monitoring network. Changes to the LMAPCD network are detailed in Appendix E.

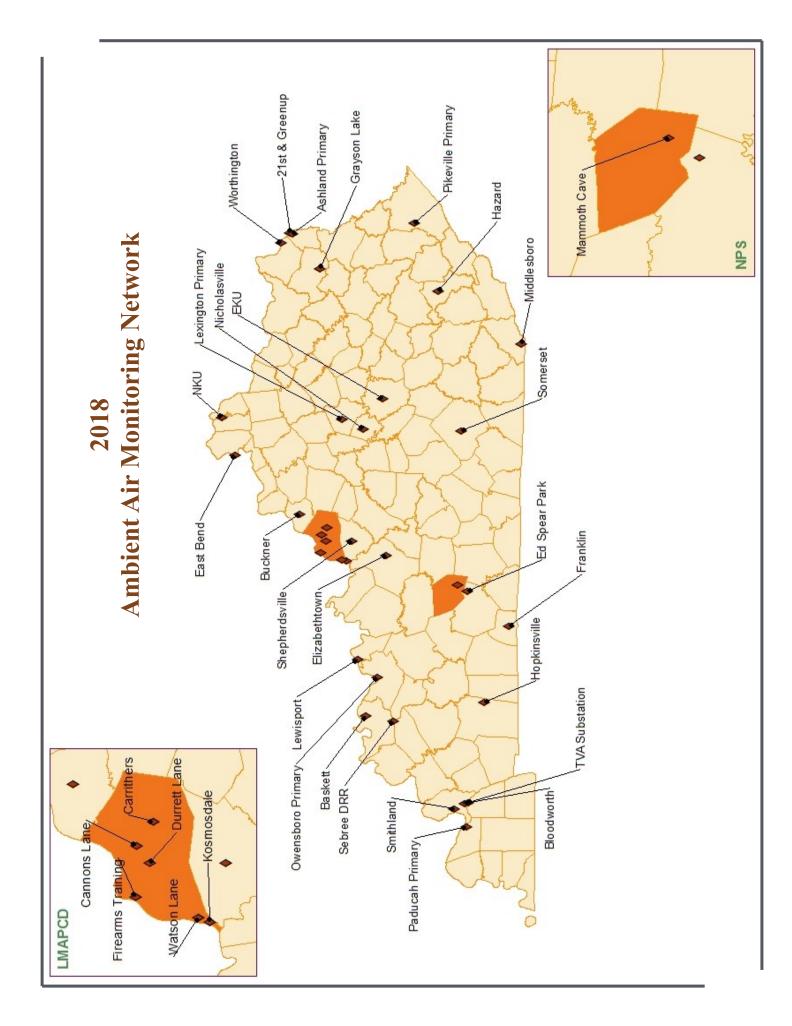
METROPOLITAN STATISTICAL AREAS (MSAs):

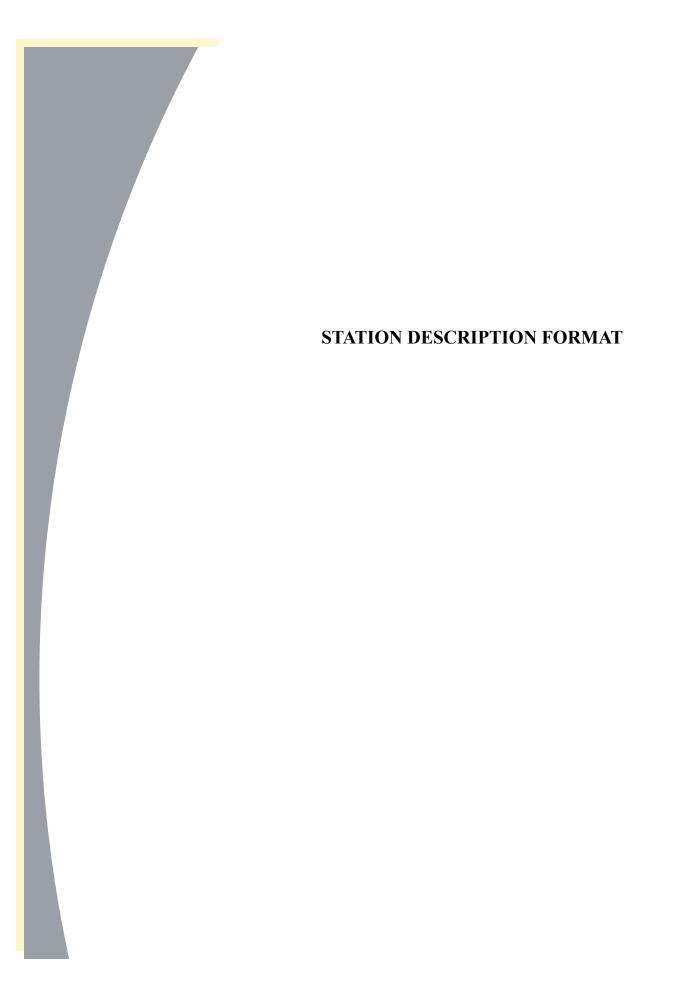
- Huntington-Ashland, WV-KY-OH:
 - Permanently discontinue special-purpose VOC sampling at the Ashland Primary site (21-019-0017); effective December 31, 2018.

2018 AIR MONITORING STATIONS SUMMARY

Bowling Green, KY 2 Cincinnati-Middletown, 2 OH-KY-IN (AQI) (PWEI) 2	¢ ک			01						,				opeciation	speciation		Met
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	2°	l ^{i,S}			1	1			2 [.]								
Clarksville, TN-KY	1 ^X								-								
Elizabethtown, KY	2 ^c								1 ^{Max}								
Evansville, IN-KY ^(PWEI) 2		1^{S}	1_11		2 DRR				1 Max								
Huntington-Ashland, WV-KY-OH (AQI) (PWEI) 3	1	l ^{i, S}	2 ^{C,m}		2 [.]				2 ^{i, Max}								1
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Louisville-Jefferson County, 8 KY-IN (AQI) (PWEI) 8	3 ^{n,C}	5 i,S		2 ^{i,,S,}	. <u>1</u> 4	2 ^{n,i}		2 ^{n,i}	5 ^{i, Max}		2 ^G			1	-	-	μL
Owensboro, KY 2	1	1 ^{i,S}			1 ⁱ	1			2 ^{i, Max}								-
Micropolitan Statistical Area																	
Paducah, KY-IL ^(PWEI) 3	-	l ^{i,S}	2 ^m		I	1,			5 [.]	-	-					-	
Somerset, KY	1								1								
Middlesboro, KY	1								1								1
Richmond-Berea, KY 1										2 ^C							
Not in a CBSA																	
Carter County 1	1 ^X		2 ^{C,m}						-		2 ^D	2 ^D	-				-
Marshall County											2 ^c						
Perry County 1	1	1							1								1
Pike County 1	-1	1^{i}							1 ⁱ								
Simpson County 1									1								1
KDAQ Totals 27	17	10	8	0	6	5	0	0	22	2	5	2		0	0	2	11
LMAPCD Totals 6	ю	5	0	2	4	7		7	Э	0	5	0	0	-1			6
NPS Totals 1	0	1	0	0	-	0	-	-	-	0	0	0	0	0	0	0	-
Total Network 34	20	16	8	2	14	7	2	3	26	2	7	2	1	1	1	3	18

Max= Maximum O₃ Concentration Site; n=Near-Road Monitor; X= Regional PM_{2.5} Transport or Background Monitor; S=Continuous PM T640; AQI=AQI Monitoring Required in CBSA; i=AQI Reported; m= PM10 Filter Analyzed for Metals; G=Continuous Auto-GC; C=Collocated Monitors; D= Duplicate Channels; DRR= SO2 Data Requirements Rule Monitor





STATION DESCRIPTION FORMAT

AQS Site Identification Information

Pertinent, specific siting information for each site and monitor is stored in the US EPA's AQS data system. This information includes the exact location of the site, local and regional population, description of the site location, monitor types, and monitoring objectives. This site and monitor information is routinely updated whenever there is a change in site characteristics or pollutants monitored.

Network Station Description

The network station descriptions contained in this document include the following information:

1. Site Description

Specific information is provided to show the location of the monitoring equipment at the site, the CBSA in which the site is located, the AQS identification number, the GPS coordinates, and the conformance of monitors and monitor-probes to siting criteria.

2. Date Established

The date that each existing monitoring station was established is shown in the description. For proposed air monitoring stations, the date that the station is expected to be in operation is included in the annual Summary of Network Changes.

3. Site Approval Status

Each monitoring station in the existing network has been reviewed with the purpose of determining whether it meets all design criteria for inclusion in the SLAMS network. Stations that do not meet the criteria will either be relocated in the immediate area or, when possible, resited at the present location. KDAQ may also seek an exemption from certain criteria from the US EPA.

4. Monitoring Objectives

The monitoring network was designed to provide information to be used as a basis for the following actions:

- (a) To determine compliance with ambient air quality standards and to plan measures in order to attain these standards.
- (b) To activate emergency control procedures in the event of an impending air pollution episode.
- (c) To observe pollution trends throughout a region including rural areas and report progress made toward meeting ambient air quality standards.
- (d) To provide a database for the evaluation of the effects of air quality on population, land use, and transportation planning; to provide a database for the development and evaluation of air dispersion models.

5. Monitoring Station Designations, Monitor Types, and Network Affiliations

The Annual Network Surveillance document must describe the types of monitors that are used to collect ambient data. Most monitors described in the air quality surveillance network are designated as SLAMS, but some monitors fulfill other requirements. Additionally, monitors may be associated with additional networks beyond the state air program or may be used to fulfill multiple network design requirements.

State and Local Air Monitoring Stations (SLAMS): Requirements for air quality surveillance systems provide for the establishment of a network of monitoring stations designated as SLAMS that measure ambient concentrations of pollutants for which standards have been established. These stations must meet requirements that relate to four major areas: quality assurance, monitoring methodology, sampling interval, and siting of instruments.

Special Purpose (SPM and SPM-Other): Not all monitors and monitoring stations in the air quality surveillance network are included in the SLAMS network. In order to allow the capability of providing monitoring for complaint studies, modeling verification and compliance status, certain monitors are reserved for short-term studies and are designated as either Special Purpose Monitors (SPM) or Other Special Purpose Monitors (SPM-Other).

NCore: NCore is a multi pollutant network that integrates several advanced measurement systems for particulates, pollutant gases and meteorology.

Air Quality Index (AQI): The AQI is a method of reporting that converts pollutant concentrations to a simple number scale of 0-500. Intervals on the AQI scale are related to potential health effects of the daily measured concentrations of major pollutants. AQI reporting is required for all metropolitan statistical areas with a population exceeding 350,000. However, KDAQ provides this service to the general public for multiple areas within the state. KDAQ prepares the index twice daily for release to the public from the pollutant data reported from the selected sites in locations across Kentucky. The ambient air data establishing the AQI is subject to quality assurance procedures and is not considered official.

Emergency Episode Monitoring (Episode): Regulations provide for the operation of at least one continuous SLAMS monitor for each major pollutant in designated locations for emergency episode monitoring. These monitors are placed in areas of worst air quality and provide continual surveillance during episode conditions.

EPA: Monitor operated by the EPA or an EPA contractor. Monitors may be eligible for comparisons against the NAAQS and are typically a part of the CASTNET network.

Non-EPA Federal: Monitors operated by Federal agencies outside of the US EPA (such as the National Park Service) are designated as Non-EPA Federal monitors. These monitors are typically used for special studies, but the data may also be eligible for comparisons against the NAAQS.

Population Weighted Emissions Index (PWEI): On June 22, 2010, the US EPA released a new SO₂ Final Rule and a set of monitoring requirements. The requirements use a Population Weighted Emissions Index (PWEI) that is calculated for each Core-Based Statistical Area (CBSA). The PWEI is calculated by multiplying the population of each CBSA and the total amount of SO₂, in tons per year, that is emitted within the CBSA based upon county level data from the National Emissions Inventory (NEI). The result is then divided by one million to

provide the PWEI value, which is expressed in a unit of million persons-tons per year. PWEI requirements technically apply to the MSA and are not monitor specific. Any SO₂ used to fulfill MSA PWEI requirements must first and foremost be designated as SLAMS.

Regional Administrator 40 (RA-40): On February 9, 2010, the US EPA released a new NO_2 Final Rule and a new set of monitoring requirements. Under the new monitoring regulations, the EPA Regional Administrator must collaborate with agencies to establish or designate 40 NO_2 monitoring locations, with a primary focus on protecting susceptible and vulnerable populations. RA-40 NO_2 monitors are SLAMS monitors foremost.

Maximum Ozone Concentration: Each Metropolitan Statistical Area (MSA) must have at least one ozone monitor designated to record maximum expected ozone concentrations. These monitors are first and foremost SLAMS (or SLAMS-like) monitors.

6. Monitoring Methods

All sampling and analytical procedures used for NAAQS compliance in the air-monitoring network conform to Federal reference (FRM), alternate (FAM), or equivalent (FEM) methods. In case there is no federal method, procedures are described in the Kentucky Air Quality Monitoring and Quality Assurance Manuals.

(a) <u>Particulate Matter 10 Microns in Size (PM₁₀)</u>

All PM_{10} samplers operated by KDAQ are certified as either FRM or FEM samplers and are operated according to the requirements set forth in 40 CFR 50 and 40 CFR 53. Intermittent samplers typically collect a 24-hour sample every sixth day on 46.2 mm PTFE filters. However, certain sites may collect samples more frequently to address local air quality concerns. Filters are sent to a contract laboratory, where they are weighed before and after a sample run. The gain in weight in relation to the volume of air sampled is calculated in micrograms per cubic meter (ug/m³). The PTFE filters are to be equilibrated before each weighing for a minimum of 24 hours at a 20-23 degrees C mean temperature and a 30-40% mean relative humidity.

LMAPCD currently operates PM_{10} BAMs, which measure PM_{10} through beta ray attenuation. After passing through an inlet designed to limit the size of particulate matter to 10 microns or less, the sample stream passes through filter tape, which is then placed in between a beta source and a scintillation detector causing an attenuation of the beta particle signal. The data is transmitted by telemetry for entry into an automated central data acquisition system. LMAPCD plans to discontinue use of PM_{10} BAMs and install Teledyne-API T640x that will measure PM 2.5, 10 and PM coarse 10-2.5. PM coarse is particulate matter with an aerodynamic diameter in the nominal range of 2.5 to 10 micrometers.

TAPI T640x monitors collect $PM_{2.5}$, PM10, and $PM_{10-2.5}$ data continuously via the principle of broadband particle-scattering spectroscopy. During sampling, ambient air is pulled into an inlet at a rate of 16.7 lpm and through a sample conditioner, prior to being introduced to a particle sensor equipped with a polychromatic (broadband) LED. Particles in the sample reflect light from the LED, which is measured by the analyzer and used to calculate the particle -mass of the sample.

(b) <u>Particulate Matter 2.5 Microns in Size (PM_{2.5})</u>

The Division currently operates continuous TEOM monitors and manual intermittent samplers

for monitoring particulate matter 2.5 microns in size ($PM_{2.5}$). The Division plans to install several more Teledyne-API (TAPI) T640 continuous $PM_{2.5}$ spectroscopy monitors in the upcoming year. With the exception of continuous TEOM monitors, all $PM_{2.5}$ samplers and monitors operated by KDAQ are certified as either reference or equivalent methods. All FRM manual intermittent samplers are operated per the requirements set forth in 40 CFR 50, Appendix L. Samples are collected on 46.2 mm PTFE filters over a 24-hour sampling period, with airflow maintained at 16.7 liters per minute. Filters are sent to a contract laboratory, where they are weighed before and after a sample run. The gain in weight in relation to the volume of air sampled is calculated in micrograms per cubic meter (ug/m^3). Samples must be retrieved within 177 hours of the end of the sample run and are kept cool (4 degrees C or cooler) during transit to the contract laboratory. The PTFE filters are to be equilibrated before each weighing for a minimum of 24 hours at a controlled atmosphere of 20-23 degrees C mean temperature and 30-40% mean relative humidity. Filters must be used within thirty days of initial weighing. Filters must be re-weighed within thirty days of the end of the sample run and must be kept at 4 degrees C or cooler.

Continuous $PM_{2.5}$ TEOM monitors provide 24-hour samples daily for AQI reporting. During sampling, ambient air passes through an inlet and very sharp cut cyclone designed to pass only particles smaller than 2.5 microns in diameter. After exiting the inlet, the sample stream is sent to a mass transducer. Inside the transducer the sample stream passes through a Teflon-coated glass fiber filter. This filter is weighed every two seconds. The difference between the current filter weight and the initial or installed weight gives the total mass of the collected particulate. The mass concentration is computed by dividing the total mass by the flow rate. Data is transmitted by telemetry for entry into the automated central data acquisition system. While usable for the AQI, $PM_{2.5}$ TEOMs are not classified as either FRM or FEM monitors; and thus, are not eligible for comparison to the NAAQS.

TAPI T640 monitors collect $PM_{2.5}$ data continuously via the principle of broadband particlescattering spectroscopy. During sampling, ambient air is pulled into an inlet at a rate of 5.0 lpm and through a sample conditioner, prior to being introduced to a particle sensor equipped with a polychromatic (broadband) LED. Particles in the sample reflect light from the LED, which is measured by the analyzer and used to calculate the particle-mass of the sample. While the TAPI T640 is designated as a FEM for $PM_{2.5}$, KDAQ is currently only using them for reporting of the AQI.

LMAPCD currently operates continuous PM_{25} BAM monitors, which measure $PM_{2.5}$ through beta ray attenuation. During sampling, ambient air passes through an inlet and a cyclone designed to pass only particles smaller than 2.5 microns in diameter. The sample is collected on filter tape as the air passes through the tape. The filter tape is then placed in between a beta source and a scintillation detector causing an attenuation of the beta particle signal. Data is transmitted by telemetry for entry into the automated central data acquisition system. LMAPCD plans to install several Teledyne-API (TAPI) T640 continuous $PM_{2.5}$ spectroscopy monitors in the upcoming year.

Continuous $PM_{2.5}$ BAMs provide 24-hour daily reporting for the AQI. The data obtained from $PM_{2.5}$ BAMs may or may not be used for comparison to the NAAQS. $PM_{2.5}$ BAMS that are operated as FEMs, and demonstrate comparability to the data obtained from manual FRM samplers, are eligible for comparisons to the NAAQS. A statement on the use of continuous FEM PM_{2.5} monitors is included in the appendices of this document.

(c) <u>PM_{2.5} Speciation and Carbon Speciation Sampling and Analysis</u>

In addition to operating $PM_{2.5}$ samplers that determine only $PM_{2.5}$ mass values, LMAPCD also operates $PM_{2.5}$ speciation samplers that collect samples that are analyzed to determine the chemical makeup of $PM_{2.5}$. Samples are collected on a set of two filters, one comprised of Teflon and one comprised of nylon, over a 24-hour sampling period. The filters are composed of either Teflon or nylon in order to collect specific types of toxic pollutants. A second instrument collects a sample on a quartz filter over a 24-hour sampling period. The quartz filter is used to collect a speciated carbon sample.

After collection, the samples are shipped in ice chests to an EPA contract laboratory for analysis. At the laboratory, the samples are analyzed using optical and electron microscopy, thermal-optical analysis, ion chromatography, and x-ray fluorescence to determine the presence and level of specific toxic compounds. Sample results are entered in the AQS data system.

(d) <u>Sulfur Dioxide (SO₂)</u>

Instruments used to continuously monitor sulfur dioxide levels in the atmosphere employ the UV fluorescence method. The continuous data output from the instrument is transmitted by telemetry for entry into an automated central data system.

Calibration of these instruments is done dynamically using certified gas mixtures containing a known concentration of sulfur dioxide gas. This gas is then diluted in a specially designed apparatus to give varying known concentrations of sulfur dioxide. These known concentrations are supplied to the instruments, which are adjusted so that instrument output corresponds with the specific concentrations. Calibration curves are prepared for each instrument and each data point is automatically compared to this curve before entry into the data acquisition system.

(e) <u>Carbon Monoxide (CO)</u>

Continuous monitoring for carbon monoxide is performed by use of the non-dispersive infrared correlation method. Data is transmitted by telemetry for entry in an automated central data acquisition system.

Calibration of the instrument is performed periodically by using nitrogen or zero air to establish the zero baseline and NIST or NIST traceable gas mixtures of carbon monoxide in air. The span is checked daily using a certified mixture of compressed gas containing approximately 45 parts per million carbon monoxide.

(f) <u>Ozone (O₃)</u>

Ozone is monitored using the UV photometry methods. The continuous data output from the instrument is transmitted by telemetry for entry into an automated central data acquisition system.

Monitors are calibrated routinely using an ozone generator, which is calibrated using the ultra violet photometry reference method. Calibration curves are prepared for each instrument and each data point is automatically compared to this curve before entry into the data acquisition system.

(g) <u>Nitrogen Dioxide (NO₂)</u>

KDAQ uses the chemiluminescence method for monitoring the nitrogen dioxide level in the ambient air. The continuous data output from the instrument is transmitted by telemetry for entry into an automated central data acquisition system.

LMAPCD utilizes the Cavity-Attenuated Phase-Shift (CAPS) spectroscopy method as well as chemiluminescence to measure nitrogen dioxide and total reactive nitrogen (NO/NOy) respectively.

Calibration of these instruments is done dynamically using NIST certified gas mixtures of nitric oxide. Through the use of dilution apparatus, varying concentrations are produced and supplied to the monitors, thus producing a specific calibration curve for each instrument. Each data point is automatically compared to this curve before entry into the data acquisition system.

(h) Lead (Pb)

To determine lead concentrations, KDAQ uses high volume particulate samplers, which collect samples of suspended particulates onto 8 x 10 glass fiber filters. The samplers use a brushless motor and a critical flow orifice in order to achieve a sampling flow rate between 1.10 and 1.70 cubic meters per minute (m³/min) over the course of 24 hours. Upon collection, the filters are sent to an US EPA certified laboratory for analysis. The sample filters are cut into strips, acid digested according to 40 CFR Part 50, Appendix G, and analyzed by Inductively Coupled Plasma with Mass Spectroscopy Detection (ICP-MS).

(i) <u>Air Toxics</u>

Air toxics samples are classified into four categories: metals, volatile organic compounds (VOC), polycyclic aromatic hydrocarbons (PAH), and carbonyls.

Metal samples are collected on 46.2 mm PTFE filters over a 24-hour period from the PM_{10} monitoring method. The filter is weighed before and after the sample run by a contract laboratory. The gain in weight in relation to the volume of air sampled is used to calculate the concentration in micrograms per cubic meter (ug/m³). The filter is then delivered to a separate US EPA contract laboratory for analysis by inductively coupled plasma/mass spectrometer analysis.

VOC samples are collected in a passivated vacuum canister. Ambient air is pulled into the canister over a 24-hour sampling period. The sample is shipped to an US EPA contract laboratory for analysis via gas chromatography. Additionally, LMAPCD plans to operate continuous automatic gas chromatographs, which continuously monitor for various hazardous air pollutants.

PAH samples are collected by a hi-volume air sampler over a 24-hour period. The sample is collected on a polyurethane foam filter cartridge. After sampling, the filter cartridge is packed on ice and shipped to an US EPA contract laboratory for analysis via gas chromatography/mass spectrometry.

Carbonyl samples are collected on a DNPH cartridge. An ambient air stream flows through the cartridge at a one-liter per minute flow rate for a 24-hour sampling period. The cartridge is packed on ice and shipped to an US EPA contract laboratory for high-pressure liquid chromatography analysis.

(j) <u>RadNet</u>

The US EPA RadNet fixed air station consists of a high-volume sampler that pulls ambient air through a 4-inch diameter filter at a rate of 1,000 liters per minute. Filters are collected twice each week. The instrument also consists of two radiation detectors that continuously measure gamma and beta radiation from particulates collected on the air filter. Data is recorded to the monitor's CPU and is sent hourly to the National Air and Radiation Environmental Laboratory (NAREL) for evaluation.

The RadNet network, which has stations in each State, has been used to track environmental releases of radioactivity from nuclear weapons tests and nuclear accidents. RadNet also documents the status and trends of environmental radioactivity. In general, data generated from RadNet provides the information base for making decisions necessary to ensure the protection of public health. The system helps the EPA determine whether additional sampling or other actions are needed in response to particular releases of radioactivity to the environment. RadNet can also provide supplementary information on population exposure, radiation trends, and other aspects of releases. Data is published by NAREL in a quarterly report entitled *Environmental Radiation Data*. While KDAQ and LMAPCD operate the monitors, all other aspects, including maintenance and data responsibility, are handled by the US EPA. For more information, please visit the US EPA's RadNet website: <u>http://www.epa.gov/narel/radnet/</u>.

7. Quality Assurance Status

The Division for Air Quality has an extensive quality assurance program to ensure that all air monitoring data collected is accurate and precise. Staff members audit air monitors on a scheduled basis, including those operated by the Louisville Metro Air Pollution Control District and the National Park Service, to ensure that each instrument is calibrated and operating properly. Agencies audit their data monthly and verify that the data reported by each instrument is recorded accurately in the computerized database.

8. Scale of Representativeness

Each station in the monitoring network must be described in terms of the physical dimensions of the air parcel nearest the monitoring station throughout which actual pollutant concentrations are reasonably similar. Area dimensions or scales of representativeness used in the network description are:

- (a) Microscale defines the concentration in air volumes associated with area dimensions ranging from several meters up to about 100 meters.
- (b) Middle scale defines the concentration typical of areas up to several city blocks in size with dimensions ranging from about 100 meters to 0.5 kilometers.
- (c) Neighborhood scale defines the concentrations within an extended area of a city that has relatively uniform land use with dimensions in the 0.5 to 4.0 kilometers.
- (d) Urban scale defines an overall city-sized condition with dimensions on the order of 4 to 50 kilometers.
- (e) Regional Scale defines air quality levels over areas having dimensions of 50 to hundreds of kilometers.

The scale of representativeness is closely related to the type of air monitoring site and the objectives of that site. There are six basics types of sites supported by the ambient air monitoring network:

- (a) To determine the highest concentrations expected to occur in the area covered by the network.
- (b) To determine representative concentrations in areas of high population density.
- (c) To determine the impact on ambient pollution levels of significant sources or source categories.
- (d) To determine the extent of regional transport of pollutants.
- (e) To determine general background concentration levels.
- (f) To determine impacts on visibility, vegetation damage, or other welfare-based concerns.

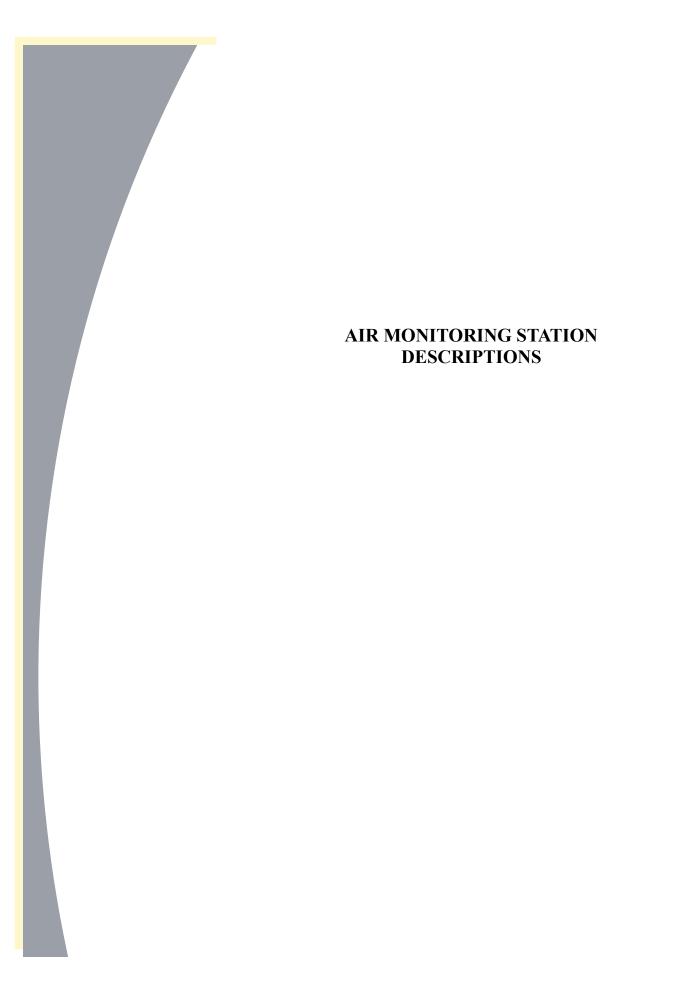
The design intent in siting stations is to correctly match the area dimensions represented by the sample of monitored air with the area dimensions most appropriate for the monitoring objective of the station. The following relationship of these six basic site type and the scale of representativeness are appropriate when siting monitoring stations:

<u>Monitoring Site Type</u> Highest Concentration Population Oriented Source Impact Regional Transport & General Background Welfare-based Impacts Scale of Representativeness Micro, Middle, Neighborhood Neighborhood, Urban Micro, Middle, Neighborhood Neighborhood, Regional Urban, Regional

Data Processing and Reporting

All ambient air quality data are stored on a server located at the main office building of Commonwealth Office of Technology at 101 Cold Harbor Drive, Frankfort, Kentucky. The server runs a full database back up every night and keeps an hourly transaction log. After each month of data has passed all quality assurance checks, the data is transmitted via telemetry to the US EPA's national data storage system known as AQS. Statistical data summaries are generated from this database and compiled to produce the Ambient Air Quality Annual Report. This report may be accessed at the KDAQ website: <u>http://air.ky.gov</u>. The report is located under <u>Resources</u>.

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Bowling Green, KY

			Ed s	Spear	Park	A start		Mamm		Cave (I	NPS)					and the second s	and a second sec	7
AQS ID / County	Site Address	PM2.5	Cont. PM2.5	PM10	Cont. PM10	SO2	NO2	NOy	СО	03	Рь	VOC	Carbonyl	РАН	PM2.5 Spec.	Carbon Spec.	RadNet	Met
21-061-0501	Alfred Cook Road		1 ^{tF}			1^{F}		1 ^F	1^{F}	1 ^{F, M}								1 ^F
21-061-0501 Edmonson	Alfred Cook Road Mammoth Cave (NPS)		1 ^{tF}			1 ^F		1 ^F	1 ^F	1 ^{F, M}								1 ^F
		2 ^C	1 ^{tF}			1 ^F		1 ^F	1 ^F	1 ^{F, M}								1 ^F
Edmonson	Mammoth Cave (NPS)	2 ^C				1 ^F		1 ^F	1 ^F									1 ^F

Tallies are equal to the actual number of monitors present. Superscripts represent additional information about the network.

F=Non-EPA Federal Monitor

t=Continuous TEOM Monitor

C=Collocated

i =AQI Reported

M=Maximum Ozone Concentration Site for MSA

CSA/MSA: Bowling Green-Glasgow, KY CSA; Bowling Green, KY MSA 401 KAR 50:020 Air Quality Region: South Central Kentucky Intrastate (105) Site Name: Mammoth Cave National Park, Houchin Meadow AQS Site ID: 21-061-0501 Location: Alfred Cook Road, Park City, KY 42160 County: Edmonson GPS Coordinates: 37.131944, -86.14778 (NAD83) Date Established: August 1, 1997 Inspection Date: December 15, 2017 Inspection By: James Plunkett



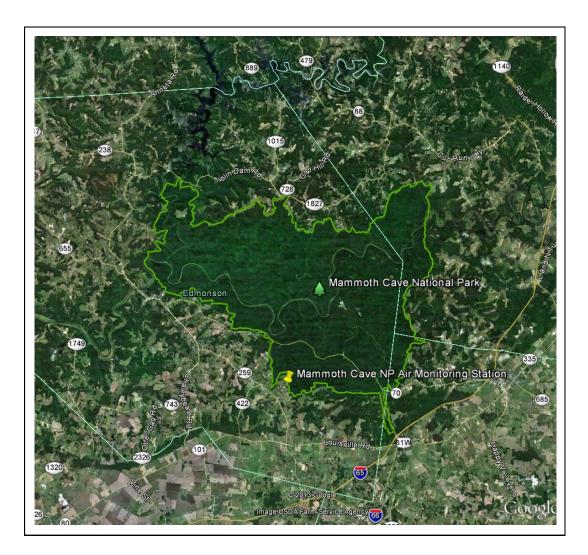
Mammoth Cave National Park was established as one of 156 mandatory Federal Class I Areas nationwide under the Clean Air Act Amendments of 1977. Class I Areas are imparted with the highest level of air quality protections, especially regarding visibility degradation (haze). The Division maintains a cooperative relationship with Mammoth Cave National Park and frequently includes the site's data in air quality analyses. Additionally, the ozone monitor is designated as the "Maximum Ozone Concentration" monitor for the Bowling Green, KY MSA. However, KDAQ does not operate the site nor certify the annual data. While the park conducts a variety of air quality studies, only certain data is reported to the EPA's AQS database.

Monitors:

Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling
AEM Ozone	10.4		Automated Equivalent Method utilizing UV photometry analysis	Continuously
Sulfur Dioxide	10.2	Non-EPA Federal	Automated Equivalent Method utilizing trace level UV fluorescence analysis	Continuously
Total Reactive Nitrogen (NO/NO _Y)	10.2	Non-EPA Federal	Automated method utilizing trace level chemiluminescence analysis	Continuously
Carbon Monoxide	10.2	Federal	Automated Reference Method utilizing trace level non-dispersive infrared analysis	Continuously

Monitors (Continued):

Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling
PM _{2.5} TEOM		Non-EPA Federal	Tapered element oscillating microbalance, gravimetric.	Continuously
Meteorological	-	Federal	AQM grade instruments for wind speed, wind direction, solar radiation, precipitation, humidity, barometric pressure, and temperature	Continuously



CSA/MSA: Bowling Green-Glasgow, KY CSA; Bowling Green, KY MSA 401 KAR 50:020 Air Quality Region: South Central Kentucky Intrastate (105) Site Name: Ed Spear Park AQS Site ID: 21-227-0009 Location: 226 Sunset Street, Smiths Grove, KY 42171 County: Warren GPS Coordinates: 37.04926, -86. 21487 (NAD83) Date Established: May 3, 2012 Inspection Date: December 15, 2017 Inspection By: James Plunkett Site Approval Status: Siting and monitor design has been approved by the EPA.



This monitoring site was established as a replacement for the Oakland (Warren County) air monitoring station (21-227-0008). In October 2010, the Oakland site was found to be sitting within the doline of a sinkhole and was discontinued. Monitoring was established at the new Ed Spear Park site in May 2012. Inspections found the sample lines and equipment to be in good condition. The sample inlets are 35.2 meters from the nearest road. The site meets the requirements of 40 CFR 58, Appendices A, C, D, E and G.

Monitoring Objective:

The monitoring objectives are to determine compliance with National Ambient Air Quality Standards. While not required for the CBSA, the site also provides levels of ozone and particulate matter for daily index reporting.

Monitors:

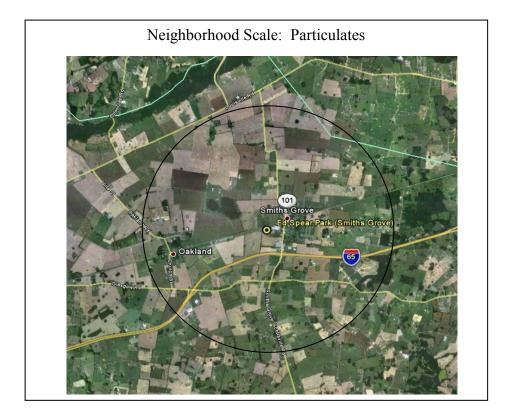
Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling
AEM Ozone	4.5	SLAMS	UV photometry	Continuously
		AQI		March 1 – October 31
PM _{2.5} TEOM	4.6	SPM AQI	Tapered element oscillating microbalance, gravimetric	Continuously
FRM PM _{2.5}	2.3	SLAMS	Gravimetric	24-hours every third day
Collocated FRM PM _{2.5}	2.3	SLAMS	Gravimetric	24-hours every sixth day

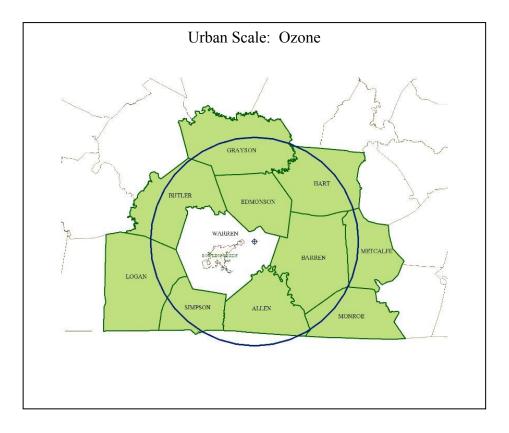
Quality Assurance Status:

All Quality Assurance procedures have been implemented in accordance with 40 CFR 58, Appendix A.

Area Representativeness:

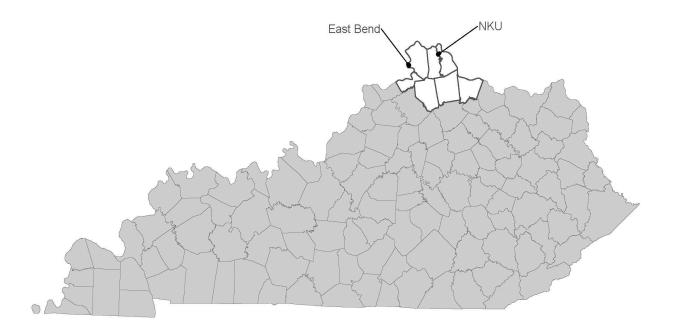
This site represents population exposure on a neighborhood scale for particulates. This site also represents population exposure on an urban scale for ozone.





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Cincinnati, OH-KY-IN



AQS ID / County	Site Address	PM2.5	Cont. PM2.5	PM10	Cont. PM10	SO2	NO2	NOy	CO	03	РЬ	VOC	Carbonyl	PAH	PM2.5 Spec.	Carbon Spec.	RadNet	Met
21-015-0003	KY338 & Lower River									1								1
Boone	Union																	
21-037-3002	524A John's Hill Rd	$2^{\rm C}$	1^{Si}			1^{iP}	1^{i}			1 ^{ei}								
Campbell	Highland Heights																	
Totals	2	2	1			1	1			2								1

Tallies are equal to the actual number of monitors present. Superscripts represent additional information about the network.

i=AQI Reported

P=PWEI Monitor

e=Emergency Episode Monitor S=Continuous PM T640 Monitor

C=Collocated Monitors

CSA/MSA: <u>Cincinnati-Wilmington-Maysville, OH-KY-IN</u> CSA; <u>Cincinnati, OH-KY-IN</u> MSA 401 KAR 50:020 Air Quality Region: Metropolitan Cincinnati (Ohio) Interstate (079) Site Name: East Bend AQS Site ID: 21-015-0003 Location: KY 338 and Lower River Road, Union, KY 41091 County: Boone GPS Coordinates: 38.918330, -84.852637 (NAD 83) Date Established: July 1, 1977 Inspection Date: November 28, 2017 Inspection By: Shauna Switzer Site Approval Status: Site and monitors meet all design criteria for the monitoring network.



The monitoring site is a stationary equipment shelter located at the intersection of KY 338 and Lower River Road near East Bend, Kentucky. The sample inlet is 15 meters from the nearest road. Upon inspection, the sample line and monitor were found to be in good condition. The site meets the requirements of 40 CFR 58, Appendices A,C, D and E.

Monitoring Objective:

The monitoring objective is to determine compliance with National Ambient Air Quality Standards.

Monitors:

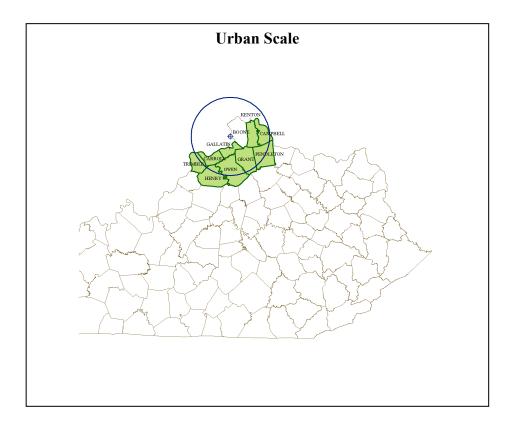
Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling
AEM Ozone	3.6	SLAMS	UV photometry	Continuously March 1 – October 31
Meteorological	5.9	Other	AQM grade instruments for wind speed, wind direction, humidity, barometric pressure and temperature	Continuously

Quality Assurance Status:

All Quality Assurance procedures have been implemented in accordance with 40 CFR 58, Appendix A.

Area Representativeness:

This site represents the upwind background levels on an urban scale for ozone.



CSA/MSA: <u>Cincinnati-Wilmington-Maysville, OH-KY-IN</u> CSA; <u>Cincinnati, OH-KY-IN</u> MSA 401 KAR 50:020 Air Quality Region: Metropolitan Cincinnati (Ohio) Interstate (079) Site Name: Northern Kentucky University (NKU) AQS Site ID: 21-037-3002 Location: 524A John's Hill Road, Highland Heights, KY 41076 County: Campbell GPS Coordinates: 39.02181, -84.47445 (NAD 83) Date Established: August 1, 2007 Inspection Date: November 28, 2017 Inspection By: Shauna Switzer Site Approval Status: Site and monitors meet all design criteria for the monitoring network.



The monitoring site is a stationary equipment shelter located on farmland owned by Northern Kentucky University in Highland Heights, Kentucky. The sample inlets are 448 meters from the nearest road, which is Interstate 275. Upon inspection, the sample lines and monitors were found to be in good condition. The site meets the requirements of 40 CFR 58, Appendices A, C, D, E and G.

Monitoring Objective:

The monitoring objectives are to determine compliance with National Ambient Air Quality Standards; to provide ozone, particulate, nitrogen dioxide, and sulfur dioxide levels for daily index reporting; and to detect elevated pollutant levels for activation of emergency control procedures for ozone.

Monitors:

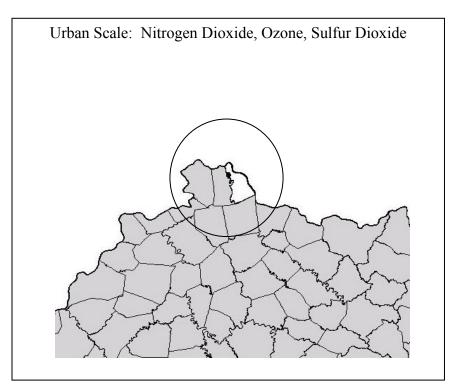
Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling
AEM Nitrogen Dioxide (NO ₂ , NO, NO _x)	3.8	SLAMS AQI	Chemiluminescence	Continuously
AEM Ozone	3.8	SLAMS AQI EPISODE	UV photometry	Continuously March 1 – October 31
FRM PM _{2.5}	4.5	SLAMS	Gravimetric	24-hours every third day
Collocated FRM PM _{2.5}	TBD	SLAMS	Gravimetric	24-hours every sixth day
PM _{2.5} Continuous	TBD (Install date 2/12/18)	SPM AQI	Broadband Spectroscopy	Continuously
AEM Sulfur Dioxide	3.8	SLAMS AQI PWEI	UV fluorescence	Continuously

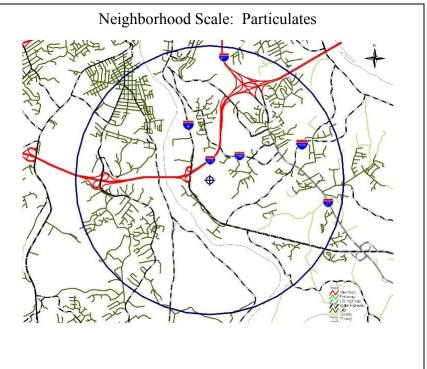
Quality Assurance Status:

All Quality Assurance procedures have been implemented in accordance with 40 CFR 58, Appendix A.

Area Representativeness:

This site represents population exposure for nitrogen dioxide, ozone, and sulfur dioxide on an urban scale. This site also represents population exposure on a neighborhood scale for particulate matter.





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Clarksville, TN-KY

ilot Rock Rd ville	1 ^x								1 1								1
lot Pock Pd	1 ^X								1								1
lress	PM2.5	Cont. PM2.5	PM10	Cont. PM10	SO2	NO2	NOy	CO	03	Pb	VOC	Carbonyl	РАН	PM2.5 Spec.	Carbon Spec.	RadNet	Met
		PM2.5	Cont. F PM2.5		Hopkir		Hopkinsville	Weight and the second s									

X=Regional Transport PM2.5 Monitor

CSA/MSA: <u>Clarksville, TN- KY</u> MSA 401 KAR 50:020 Air Quality Region: Paducah - Cairo Interstate (072) Site Name: Hopkinsville AQS Site ID: 21-047-0006 Location: 10800 Pilot Rock Road, Hopkinsville, KY 42240 County: Christian GPS Coordinates: 36.91171, -87.32337 (NAD 83) Date Established: January 1, 1999 Inspection Date: December 19, 2017 Inspection By: Shauna Switzer Site Approval Status: Site and monitors meet all design criteria for the monitoring network.



The monitoring site consists of a $PM_{2.5}$ monitoring platform and an adjacent stationary equipment shelter. The site is located in a field on the property of a private residence, located at 10800 Pilot Rock Road in Hopkinsville, Kentucky. The sample inlets are 116 meters from the nearest road. Upon inspection, the sample inlets and monitors were found to be in good condition. The site meets the requirements of 40 CFR 58, Appendices A, C, D and E.

Monitoring Objective:

The monitoring objectives are to determine compliance with National Ambient Air Quality Standards and to determine levels of interstate regional transport of fine particulate matter and ozone.

Monitors:

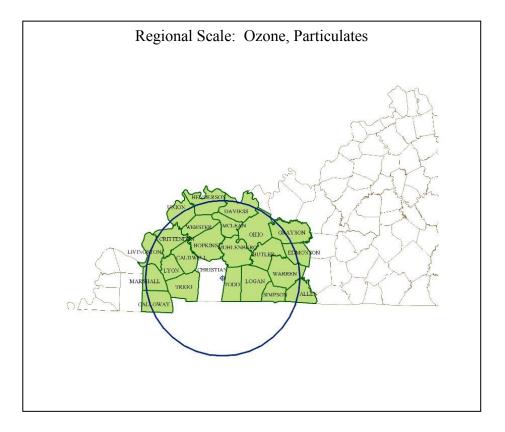
Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling
AEM Ozone	3.7	SLAMS		Continuously March 1 – October 31
FRM PM _{2.5}	2.2	SLAMS	Gravimetric	24-hours every third day
Meteorological	5.5	Other	AQM grade instruments for wind speed, wind direction, relative humidity, barometric pressure, and temperature	Continuously

Quality Assurance Status:

All Quality Assurance procedures have been implemented in accordance with 40 CFR 58, Appendix A.

Area Representativeness:

This site represents population exposure on a regional scale for ozone and $PM_{2.5}$.



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Elizabethtown-Fort Knox, KY



AQS ID / County	Site Address	PM2.5	Cont. PM2.5	PM10	Cont. PM10	SO2	NO2	NOy	CO	03	РЬ	VOC	Carbonyl	РАН	PM2.5 Spec.	Carbon Spec.	RadNet	Met
21-093-0006	801 North Miles St.	2 ^C	1^t							1^{M}								
Hardin	Elizabethtown																	
Totals	1	2	1							1								

Tallies are equal to the actual number of monitors present. Superscripts represent additional information about the network.

C=Collocated

t=Continuous TEOM Monitor

M=Maximum Ozone Concentration Site for MSA

CSA/MSA: Louisville/Jefferson County-Elizabethtown-Madison, KY-IN CSA; Elizabethtown-Fort Knox, KY MSA 401 KAR 50:020 Air Quality Region: North Central Kentucky Intrastate (104) Site Name: Elizabethtown AQS Site ID: 21-093-0006 Location: American Legion Park, 801 North Miles Street, Elizabethtown, KY 42701 County: Hardin GPS Coordinates: 37.705635, -85.852656 (NAD 83) Date Established: February 24, 2000 Inspection Date: November 22, 2017 Inspection By: Shauna Switzer Site Approval Status: Site and monitors meet all design criteria for the monitoring network.



The monitoring site is a stationary equipment shelter located near the tennis courts on the grounds of the American Legion Park in Elizabethtown, Kentucky. In 2012, the site was moved approximately 23 meters due to potential expansion of a nearby park building. From the new location, the sample inlets are approximately 44 meters from the nearest road. Upon inspection, the sample lines and monitors were found to be in good condition. The site meets the requirements of 40 CFR 58, Appendices A, C, D, and E.

Monitoring Objective:

The monitoring objectives are to determine compliance with National Ambient Air Quality Standards.

Monitors:

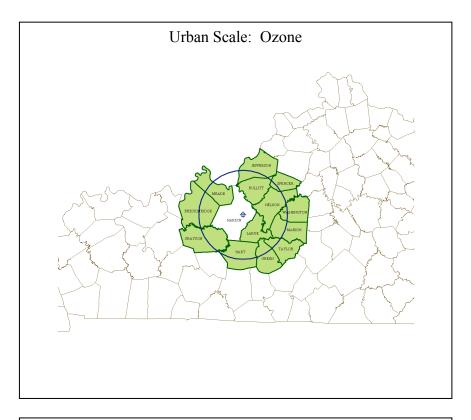
Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling
AEM Ozone	3.6	SLAMS Maximum O ₃	UV photometry	Continuously March 1 – October 31
FRM PM _{2.5}	4.6	SLAMS	Gravimetric	24-hours every third day
Collocated FRM PM _{2.5}	4.6	SLAMS	Gravimetric	24-hours every sixth day
PM _{2.5} TEOM	4.6	SPM	Tapered elemental oscillating microbalance, gravimetric	Continuously

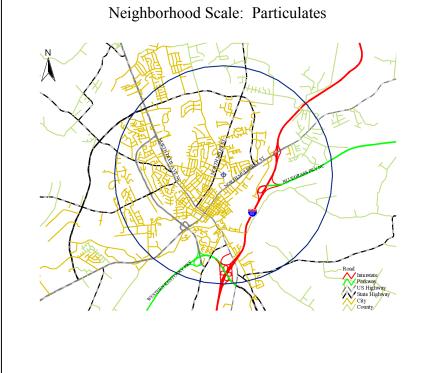
Quality Assurance Status:

All Quality Assurance procedures have been implemented in accordance with 40 CFR 58, Appendix A.

Area Representativeness:

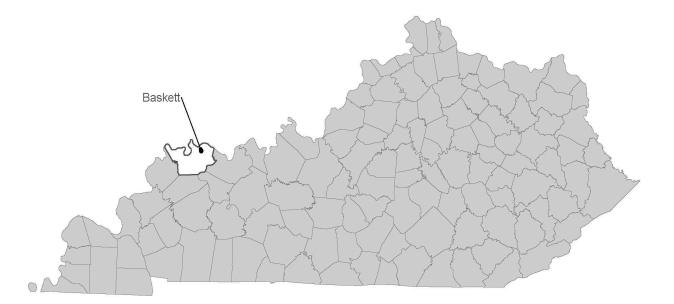
This site represents population exposure on a neighborhood scale for particulates and population exposure on an urban scale for ozone.





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Evansville, IN-KY



AQS ID / County	Site Address	PM2.5	Cont. PM2.5	PM10	Cont. PM10	SO2	NO2	NOy	C0	03	Рь	VOC	Carbonyl	РАН	PM2.5 Spec.	Carbon Spec.	RadNet	Met
21-101-0014	7492 Dr. Hodge Rd.	1	1^{S}	1 ^m		1 ^P				1^{M}								
Henderson	Baskett																	
21-101-1011	Alcan Aluminum Rd.				1	DRR												
	Robards, KY 42452																	
Totals	2	1	1	1		2				1								

Tallies are equal to the actual number of monitors present. Superscripts represent additional information about the network.

S=Continuous PM T640 Monitor

m=PM10 Filter Analyzed for Metals

M=Maximum Ozone Concentration Site for MSA

DRR = SO2 Data Requirements Rule Monitor

P = PWEI Monitor

CSA/MSA: Evansville, IN-KY MSA 401 KAR 50:020 Air Quality Region: Evansville-Owensboro-Henderson Interstate (077) Site Name: Baskett AQS Site ID: 21-101-0014 Location: Baskett Fire Department, 7492 Dr. Hodge Road, Henderson, KY 42420 County: Henderson GPS Coordinates: 37.87120, -87.46375 (NAD 83) Date Established: February 27, 1992 Inspection Date: December 20, 2017 Inspection By: Shauna Switzer Site Approval Status: Site and monitors meet design criteria for the monitoring network.



The monitoring site is a stationary equipment shelter located on the grounds of the Baskett Fire Department in Baskett, Kentucky. Upon inspection, the sample lines and monitors were found to be in good condition. The sample inlets are 5.7 meters from the nearest road, which is closer than the allowable-distances stated by CFR. Due to the small traffic count of the street and the unlikely influence of vehicles on data, KDAQ has received EPA-approval for a waiver from the required road-distances stated by 40 CFR 58, Appendix E. Otherwise, the site meets the requirements of 40 CFR 58, Appendices A, C, D, and E.

Monitoring Objective:

The monitoring objectives are to determine compliance with National Ambient Air Quality Standards.

Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling
AEM Ozone	3.9	SLAMS	UV photometry	Continuously
		Maximum O ₃		March 1 – October 31
FRM PM _{2.5}	4.7	SLAMS	Gravimetric	24-hours every third day
PM _{2.5} Continuous	TBD (Install date 2/19/18)	SPM AQI	Broadband Spectroscopy	Continuously
FRM PM ₁₀	4.5	SLAMS	Gravimetric	24-hours every sixth day
- PM ₁₀ Metals		SPM-Other	Determined from the PM ₁₀ sample using EPA method IO 3.5	Same as PM ₁₀
AEM Sulfur Dioxide	3.8	SLAMS PWEI	UV fluorescence	Continuously

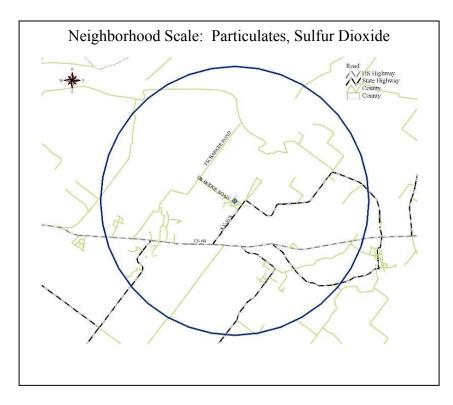
Monitors:

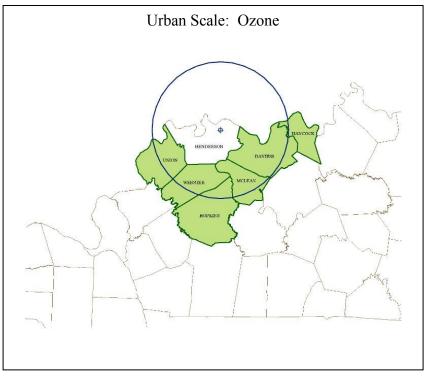
Quality Assurance Status:

All Quality Assurance procedures have been implemented in accordance with 40 CFR 58, Appendix A.

Area Representativeness:

This site represents maximum concentrations on an urban scale for ozone. This site also represents population exposure on a neighborhood scale for particulates and sulfur dioxide.





CSA/MSA: Evansville, IN-KY MSA 401 KAR 50:020 Air Quality Region: Evansville-Owensboro-Henderson Interstate (077) Site Name: Sebree SO₂ DRR Site AQS Site ID: 21-101-1011 Location: Alcan Aluminum Road County: Henderson GPS Coordinates: Date Established: January 1, 2017 Inspection Date: December 20, 2017 Inspection By: Shauna Switzer Site Approval Status: Site and monitor meet design criteria for the monitoring network.



On August 10, 2015, the EPA finalized requirements in 40 CFR 51, Subpart BB requiring air pollution control agencies to monitor ambient sulfur dioxide (SO₂) concentrations in areas with large sources of sulfur dioxide emissions in order to assist in the implementation for the one-hour SO₂ National Ambient Air Quality Standard (NAAQS). Known as the "Data Requirements Rule (DRR)," this action established that, at a minimum, agencies must characterize air quality around sources that emit 2,000 tons per year (tpy) or more of sulfur dioxide. The site meets the requirements of 40 CFR 58, Appendices A, C, D, and E.

As allowed by the DRR, an ambient air monitoring site has been established near Sebree, Kentucky, to characterize maximum hourly sulfur dioxide concentrations in the immediate vicinity of the Big Rivers Electric Corporation and Century Aluminum Sebree, LLC facilities. The site is located at the intersection of Alcan Aluminum Road and a facility coal-truck access road, approximately 1/2 mile south of State Route 2678.

Monitoring Objective:

The monitoring objectives are to determine compliance with National Ambient Air Quality Standards.

Monitors:

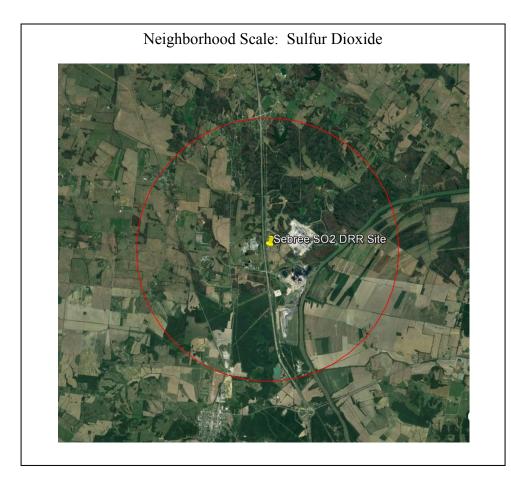
Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling
AEM Sulfur Dioxide	3.8	SLAMS	UV fluorescence	Continuously

Quality Assurance Status:

All Quality Assurance procedures have been implemented in accordance with 40 CFR 58, Appendix A.

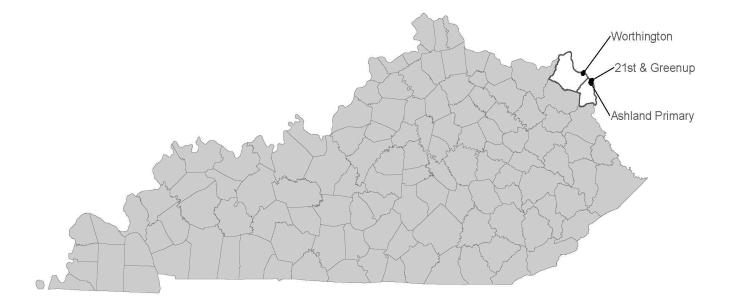
Area Representativeness:

This site also represents population exposure on a neighborhood scale for sulfur dioxide.



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Huntington-Ashland, WV-KY-OH



AQS ID / County	Site Address	PM2.5	Cont. PM2.5	PM10	Cont. PM10	SO2	NO2	NOy	СО	03	Рb	VOC	Carbonyl	РАН	PM2.5 Spec.	Carbon Spec.	RadNet	Met
21-019-0002	122 22nd Street			2^{Cm}														
Boyd	Ashland																	
21-019-0017	2924 Holt Street	1	1^{Si}			1 ^{eiP}	1 ^{ei}			1 ^{eiM}								1
Boyd	Ashland																	
21-089-0007	Scott St. & Center Ave.					1 ^e				1 ^e								
Greenup	Worthington																	
Totals	3	1	1	2		2	1			2								1

m=PM10 Filter Analyzed for Metals

e=Emergency Episode Monitor

P = PWEI Monitor

Tallies are equal to the actual number of monitors present. Superscripts represent additional information about the network.

i=AQI Reported

C=Collocated

S=Continuous T640 Monitor

M=Maximum Ozone Concentration Site for MSA

CSA/MSA: <u>Charleston-Huntington-Ashland, WV-OH-KY</u>CSA; <u>Huntington-Ashland, WV-KY-OH</u>MSA 401 KAR 50:020 Air Quality Region: Huntington (WV)-Ashland (KY)-Portsmouth-Ironton (OH) Interstate (103) Site Name: 21st and Greenup AQS Site ID: 21-019-0002 Location: 122 22nd Street, Ashland, KY 41101 County: Boyd GPS Coordinates: 38.47676, -82.63137 (NAD 83) Date Established: April 2, 1978 Inspection Date: December 4, 2017 Inspection By: Shauna Switzer Site Approval Status: Site and monitors meet all design criteria for the monitoring network.



The monitoring site is located on the west end of the roof of the Valvoline Oil complex building in Ashland, Kentucky. The building is one story tall. The sample inlets are 75 meters from the nearest road. Upon inspection, the sample inlets and monitors were found to be in good condition. The site meets the requirements of 40 CFR 58, Appendices A, C, D and E.

Monitoring Objective:

The monitoring objectives are to determine compliance with National Ambient Air Quality Standards and to measure concentrations of a sub-group of air toxics.

Monitors:

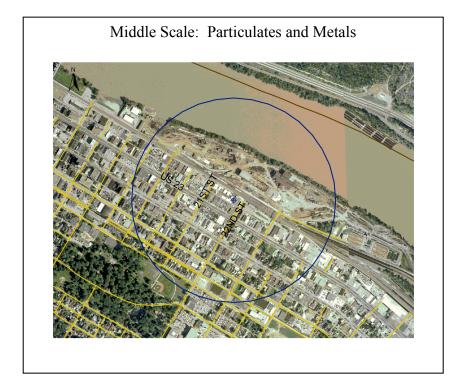
Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling
FEM PM ₁₀	6.8	SLAMS	Gravimetric	24-hours every sixth day
- Metals PM ₁₀		SPM-Other	Determined from the PM ₁₀ sample using EPA method IO 3.5	Same as PM ₁₀
Collocated FEM PM ₁₀	6.8	SLAMS	Gravimetric	24-hours every twelfth day
- Collocated Metals PM ₁₀		SPM-Other	Determined from the PM ₁₀ sample using EPA method IO 3.5	24-hours; six samples per year

Quality Assurance Status:

All Quality Assurance procedures have been implemented in accordance with 40 CFR 58, Appendix A.

Area Representativeness:

The site represents maximum concentration on a middle scale for particulates and metals.



CSA/MSA: <u>Charleston-Huntington-Ashland, WV-OH-KY</u>CSA; <u>Huntington-Ashland, WV-KY-OH</u>MSA

401 KAR 50:020 Air Quality Region: Huntington (WV)-Ashland (KY)-Portsmouth-Ironton (OH) Interstate (103)
Site Name: Ashland Primary (FIVCO)
AQS Site ID: 21-019-0017
Location: FIVCO Health Department, 2924 Holt Street, Ashland, KY 41101
County: Boyd
GPS Coordinates: 38.45934, -82.64041 (NAD 83)
Date Established: January 1, 1999
Inspection Date: December 4, 2017
Inspection By: Shauna Switzer
Site Approval Status: Site and monitors meet all design criteria for the monitoring network.



The monitoring site is a stationary equipment shelter located on the grounds of the health department building in Ashland, Kentucky. The sample inlets are 70 meters from the nearest road. Upon inspection, the sample lines and monitors were found to be in good condition.

Previously, airflow at the site was partially obstructed by tall trees. However, KDAQ and the FIVCO Health Department invested in significant tree removal in November 2016, alleviating siting criteria concerns. The site is operated in accordance with all criteria required by 40 CFR 58, Appendices A, C, D, E, and G.

Monitoring Objective:

The monitoring objectives are to determine compliance with National Ambient Air Quality Standards; to detect elevated pollutant levels for activation of emergency control procedures for nitrogen dioxide, ozone, and sulfur dioxide; and to provide pollutant levels for daily air quality index reporting.

Monitors:

Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling
AEM Nitrogen Dioxide (NO ₂ , NO, NO _x)			Chemiluminescence	Continuously
AEM Sulfur Dioxide	3.8	SLAMS AQI EPISODE PWEI	UV fluorescence	Continuously
AEM Ozone	3.8	SLAMS AQI EPISODE Maximum O ³	UV photometry	Continuously March 1 – October 31
FRM PM _{2.5}	4.7	SLAMS	Gravimetric	24-hours every third day
PM _{2.5} Continuous	4.7	SPM AQI	Broadband spectroscopy	Continuously

Meteorological	5.8	Other	AQM grade instruments for wind	Continuously
			speed, wind direction, humidity,	
			barometric pressure, and temperature	

Quality Assurance Status:

All Quality Assurance procedures have been implemented in accordance with 40 CFR 58, Appendix A.

Area Representativeness:

This site represents population exposure on a neighborhood scale for air toxics, ozone, and sulfur dioxide. This site also represents maximum concentrations on a middle scale for particulates, as well as an urban scale for nitrogen dioxide.



CSA/MSA: <u>Charleston-Huntington-Ashland</u>, WV-OH-KY CSA; <u>Huntington-Ashland</u>, WV-KY-OH MSA

401 KAR 50:020 Air Quality Region: Huntington (WV)-Ashland (KY)-Portsmouth-Ironton (OH) Interstate (103)
Site Name: Worthington
AQS Site ID: 21-089-0007
Location: Scott Street & Center Avenue, Worthington, KY 41183
County: Greenup
GPS Coordinates: 38.548136, -82.731163 (NAD 83)
Date Established: October 12, 1980
Inspection Date: December 4, 2017
Inspection By: Shauna Switzer
Site Approval Status: Site and monitors meet all design criteria for the monitoring network.



The monitoring site is a stationary equipment shelter located on the grounds of a water tower near the intersection of Scott Street and Center Avenue in Worthington, Kentucky. The sample inlets are 16.2 meters from the nearest road. Upon inspection, the sample lines and monitors were found to be in good condition. The site meets the requirements of 40 CFR 58, Appendices A, C, D, and E.

Monitoring Objective:

The monitoring objectives are to determine compliance with National Ambient Air Quality Standards; to detect elevated pollutant levels for activation of emergency control procedures for ozone and sulfur dioxide.

Monitors:

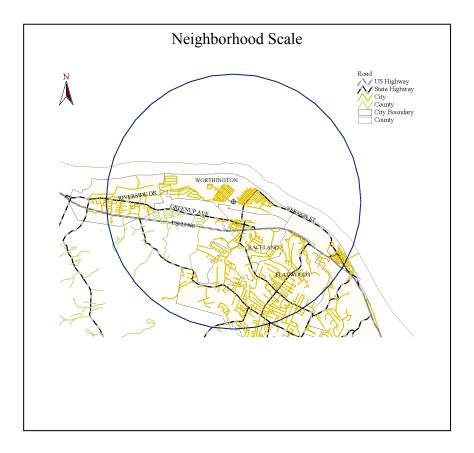
Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling
AEM Ozone	4.2	SLAMS EPISODE	UV photometry	Continuously March 1 – October 31
AEM Sulfur Dioxide	4.2	SPM EPISODE	UV fluorescence	Continuously

Quality Assurance Status:

All Quality Assurance procedures have been implemented in accordance with 40 CFR 58, Appendix A.

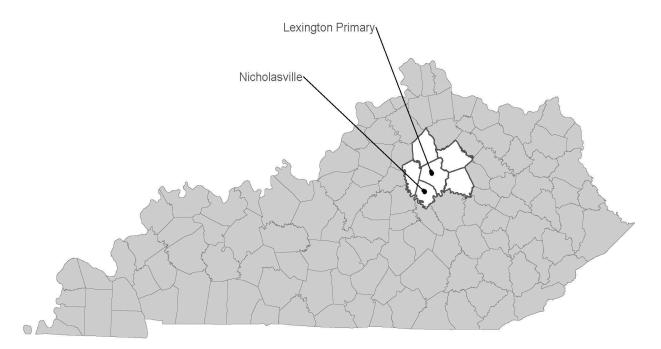
Area Representativeness:

This site represents population exposure on a neighborhood scale for ozone and sulfur dioxide.



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Lexington-Fayette, KY



AQS ID / County	Site Address	PM2.5	Cont. PM2.5	PM10	Cont. PM10	SO2	NO2	NOy	CO	03	Pb	VOC	Carbonyl	РАН	PM2.5 Spec.	Carbon Spec.	RadNet	Met
21-067-0012	650 Newtown Pike	1	1^{ti}	1 ^m		1 ^{ieP}	1 ^{ier}			1^{ieM}		1					1	
Fayette	Lexington																	
21-113-0001	260 Wilson Drive					1				1								1
Jessamine	Nicholasville																	
Totals	2	1	1	1		2	1			2		1					1	1

Tallies are equal to the actual number of monitors present. Superscripts represent additional information about the network.

PWEI SO₂ monitor required in CBSA.

i =AQI

r=RA-40 Monitor

m=PM10 Filter Analyzed for Metals

e=Emergency Episode Monitor

t=Continuous TEOM Monitor

M=Maximum Ozone Concentration Site for MSA

CSA/MSA: Lexington-Fayette-Richmond-Frankfort, KY CSA; Lexington-Fayette, KY MSA 401 KAR 50:020 Air Quality Region: Bluegrass Intrastate (102)
Site Name: Lexington Primary
AQS Site ID: 21-067-0012
Location: Fayette County Health Department, 650 Newtown Pike, Lexington, KY 40508
County: Fayette
GPS Coordinates: 38.06503, -84.49761 (NAD 83)
Date Established: November 8, 1979
Inspection Date: November 17, 2017
Inspection By: Shauna Switzer
Site Approval Status: Site and monitors meet all design criteria for the monitoring network.



The monitoring site is a stationary equipment shelter located on the grounds of the Fayette County Health Department building in Lexington, Kentucky. The sample inlets are 118 meters from the nearest road. Upon inspection, the sample lines and monitors were found to be in good condition. The site meets the requirements of 40 CFR 58, Appendices A, C, D, E and G.

Monitoring Objective:

The monitoring objectives are to determine compliance with National Ambient Air Quality Standards; to detect elevated pollutant levels for activation of emergency control procedures for nitrogen dioxide, ozone, particulates, and sulfur dioxide; and to provide pollutant levels for daily air quality index reporting.

Additionally, the nitrogen dioxide monitor has been approved as a RA-40 monitor. According to CFR, each EPA Regional Administrator is required to collaborate with agencies to establish or designate 40 NO₂ monitoring locations, with a primary focus on protecting susceptible and vulnerable populations.

Monitor Type Inlet Height (meters)		Designation	Analysis Method	Frequency of Sampling				
AEM Ozone	3.8 SLAMS AQI EPISODE Maximum O ³		UV photometry	Continuously March 1 – October 31				
AEM Nitrogen Dioxide (NO ₂ , NO, NO _x)	4.0	SLAMS (RA-40) AQI EPISODE	Chemiluminescence	Continuously				
AEM Sulfur Dioxide	3.5	SLAMS AQI EPISODE	UV fluorescence	Continuously				
PM _{2.5} TEOM		SPM AQI	Tapered element oscillating microbalance, gravimetric	Continuously				

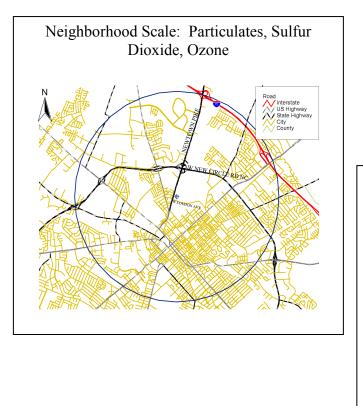
FRM PM _{2.5}	2.3	SLAMS	Gravimetric	24-hours every third day		
PM ₁₀	2.3	SLAMS	Gravimetric	24-hours every sixth day		
- PM ₁₀ Metals		SPM-Other	Determined from the PM_{10} sample using EPA method IO 3.5	Same as PM ₁₀		
Radiation	liation 1.2 RadNet		RadNet fixed stationary monitor, manual and automated methods	Continuously & 2 weekly filters		

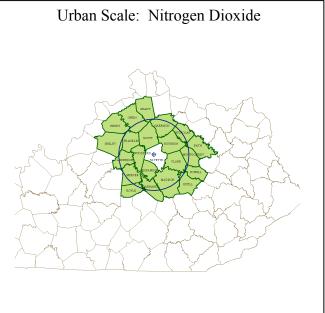
Quality Assurance Status:

All quality assurance procedures have been implemented in accordance with 40 CFR 58, Appendix A.

Area Representativeness:

This site represents population exposure on a neighborhood scale for particulates, sulfur dioxide and ozone. This site also represents population exposure on an urban scale for nitrogen dioxide.





CSA/MSA: Lexington-Fayette-Richmond-Frankfort, KY CSA; Lexington-Fayette, KY MSA 401 KAR 50:020 Air Quality Region: Bluegrass Intrastate (102) Site Name: Nicholasville AQS Site ID: 21-113-0001 Location: KYTC Maintenance Garage, 260 Wilson Drive, Nicholasville, KY 40356 County: Jessamine GPS Coordinates: 37.89147, -84.58825 (NAD 83) Date Established: August 1, 1991 Inspection Date: November 22, 2017 Inspection By: Shauna Switzer Site Approval Status: Site and monitors meet all design criteria for the monitoring network.



The monitoring site is a stationary equipment shelter located on the grounds of the Kentucky Transportation Cabinet garage in Nicholasville, Kentucky. The sample inlets are 112.3 meters from the nearest road. Upon inspection, the sample inlets and monitors were found to be in good condition. The site meets the requirements of 40 CFR 58, Appendices A, C, D, and E.

Monitoring Objective:

The monitoring objectives are to determine compliance with National Ambient Air Quality Standards and to provide ozone data upwind of the Lexington area.

Monitors:

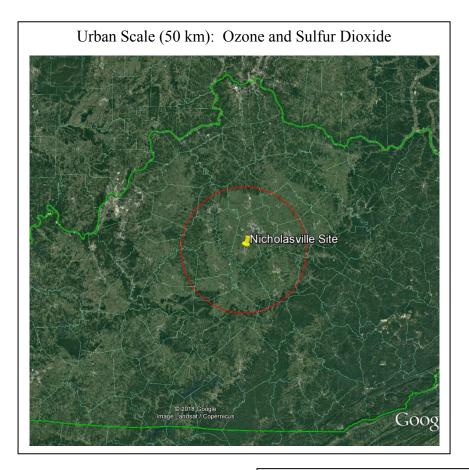
Monitor Type	Monitor Type Inlet D Height (meters)		Analysis Method	Frequency of Sampling			
AEM Ozone	3.8	SLAMS	UV photometry	Continuously			
				March 1 – October 31			
AEM Sulfur Dioxide	3.9	SPM	UV fluorescence	Continuously			
Meteorological	5.6	Other	AQM grade instruments for wind speed, wind direction, temperature, and barometric pressure	Continuously			

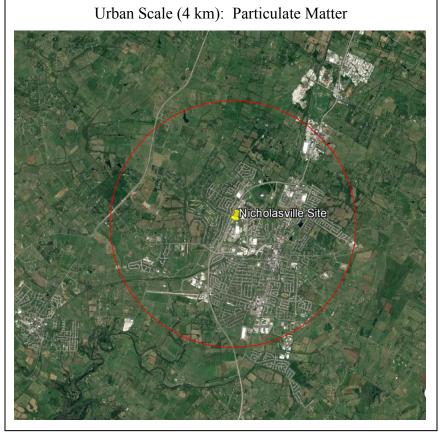
Quality Assurance Status:

All Quality Assurance procedures have been implemented in accordance with 40 CFR 58, Appendix A.

Area Representativeness:

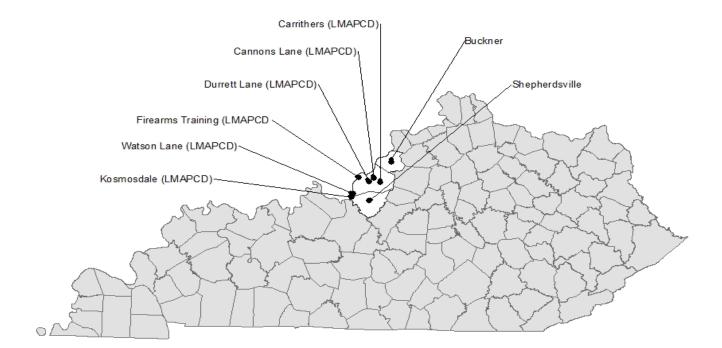
This site represents population exposure on an urban scale.





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Louisville/Jefferson County, KY-IN



AQS ID / County	Site Address	PM2.5	Cont. PM2.5	PM10	Cont. PM10	SO2	NO2	NOy	CO	03	Рь	VOC	Carbonyl	РАН	PM2.5 Spec.	Carbon Spec.	RadNet	Met
21-029-0006	2nd & Carpenter St									1								
Bullitt	Shepherdsville																	
21-185-0004	1601 South Hwy 393									1^{M}								1
Oldham	LaGrange																	
21-111-0051	7201 Watson Ln		$1^{i,S,*}$			1^{i}				1^{i}								1
Jefferson	Louisville (LMAPCD)																	
21-111-0065	15501R Dixie Hwy					1^{i}												1
Jefferson	Louisville (LMAPCD)																	
21-111-0067	2730 Cannons Ln	2 ^C	$1^{i,S,*}$		$1^{i,B}$	1 ⁱ	1^{i}	1	1 ⁱ	1^{i}		1^{G}			1	1	1	1
Jefferson	Louisville (LMAPCD)																	
21-111-0075	1517 Durrett Ln	1^n	$1^{S,n}$				1 ⁿ		1 ⁿ									1^n
Jefferson	Louisville (LMAPCD)																	
21-111-0080	4320 Billtown Rd		1 ⁱ							1^{i}								1
Jefferson	Louisville (LMAPCD)																	
21-111-1041	4201 Algonquin Pkwy		1 ^{i,S,*}		$1^{i,S}$	1^i						1^{G}						1
Jefferson	Louisville (LMAPCD)																	
Totals	8	3	5		2	4	2	1	2	5		2			1	1	1	7

Tallies are equal to the actual number of monitors present. Superscripts represent additional information about the network.

C=Collocated

G =Auto GC i =AQI Reported

n=Near-Road Monitor

S =Continuous T640 Monitor *=Eligible for PM2.5 NAAQS Comparisons

M=Maximum Ozone Concentration Site for MSA

CSA/MSA: Louisville/Jefferson County-Elizabethtown-Madison, KY-IN CSA; Louisville/Jefferson County, KY-IN MSA 401 KAR 50:020 Air Quality Region: North Central Kentucky Intrastate (104) Site Name: Shepherdsville AQS Site ID: 21-029-0006 Location: East Joe B. Hall Avenue & Carpenter Streets, Shepherdsville, KY 40165 County: Bullitt GPS Coordinates: 37.98629, -85.71192 (NAD 83) Date Established: January 30, 1992 Inspection Date: November 22, 2017 Inspection By: Shauna Switzer Site Approval Status: Site and monitors meet all design criteria for the monitoring network.



The monitoring site is a stationary equipment shelter located in a fenced-in area near the intersection of Second and Carpenter Streets in Shepherdsville, Kentucky. The sample inlets are 58 meters from the nearest road. Upon inspection, the sample lines and monitors were found to be in good condition. The site meets the requirements of 40 CFR 58, Appendices A, C, D, and E.

Monitoring Objective:

The monitoring objectives are to determine compliance with National Ambient Air Quality Standards.

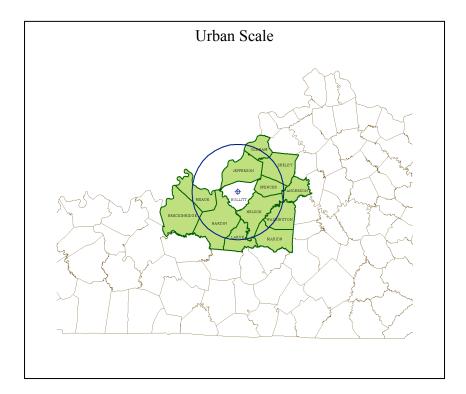
Monitors:

Monitor Type	Inlet Designation Height (meters)		Analysis Method	Frequency of Sampling			
AEM Ozone	4.0	SLAMS	1	Continuously March 1 – October 31			

Quality Assurance Status:

All Quality Assurance procedures have been implemented in accordance with 40 CFR 58, Appendix A.

Area Representativeness: This site represents population exposure on an urban scale for ozone.



CSA/MSA: Louisville/Jefferson County-Elizabethtown-Madison, KY-IN CSA; Louisville/Jefferson County, KY-IN MSA 401 KAR 50:020 Air Quality Region: North Central Kentucky Intrastate (104) Site Name: Buckner AQS Site ID: 21-185-0004 Location: KYTC Maintenance Facility, 1601 South Hwy 393, LaGrange, KY 40031 County: Oldham GPS Coordinates: 38.40020, -85.44428 (NAD 83) Date Established: May 1, 1981 Inspection Date: November 22, 2017 Inspection By: Shauna Switzer Site Approval Status: Site and monitor meet all design criteria for the monitoring network.



The monitoring site is a stationary equipment shelter located on the grounds of the Kentucky Transportation Cabinet Highway garage in Buckner, Kentucky. The sample inlet is 51 meters from the nearest road. Upon inspection, the sample line and monitor were found to be in good condition. The site meets the requirements of 40 CFR 58, Appendices C, D, and E.

Monitoring Objective:

The monitoring objectives are to determine compliance with National Ambient Air Quality Standards.

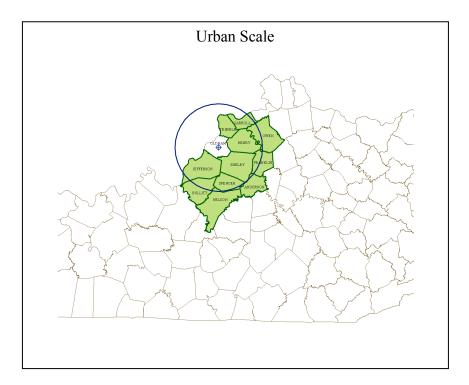
Monitors:

Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling			
AEM Ozone		SLAMS Maximum O ³	1 2	Continuously March 1 – October 31			
Meteorological	5.6		AQM grad instruments for wind speed, wind direction, humidity, barometric pressure, and temperature	Continuously			

Quality Assurance Status:

All Quality Assurance procedures have been implemented in accordance with 40 CFR 58, Appendix A.

Area Representativeness: This site represents maximum concentrations on an urban scale.



CSA/MSA: Louisville/Jefferson County-Elizabethtown-Madison, KY-IN CSA; Louisville/Jefferson County, KY-IN MSA 401 KAR 50:020 Air Quality Region: Louisville Interstate (078) Site Name: Watson Lane AQS Site ID: 21-111-0051 Location: 7201 Watson Lane, Louisville, KY 40272 County: Jefferson GPS Coordinates: 38.06091, -85.89804 (NAD 83) Date Established: July 16, 1992 Inspection Date: December 15, 2017 Inspection By: Shauna Switzer Site Approval Status: Site and monitors meet all design criteria for the monitoring network.



The monitoring site is a stationary equipment shelter located on the grounds of the Watson Lane Elementary School in Louisville, Kentucky. The sample inlets are 4 meters above ground level and 30.3 meters from the nearest road. Upon inspection, the sample lines and monitors were found to be in good condition. The air monitoring site meets the criteria established by 40 CFR Part 58, Appendices C, D, E and G.

Monitoring Objective:

The monitoring objectives are to determine compliance with National Ambient Air Quality Standards and to provide pollution levels for daily index reporting.

Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling
AEM Ozone	4.0	SLAMS	UV photometry	Continuously
		AQI		March 1 – October 31
PM2.5 Continuous	4.6	SLAMS AQI	Broadband Spectroscopy	Continuously
AEM Sulfur Dioxide	4.0	SLAMS	UV fluorescence	Continuously
Meteorological	4.6	Other	AQM grade instruments for wind speed and wind direction. Not reported to AQS.	Continuously

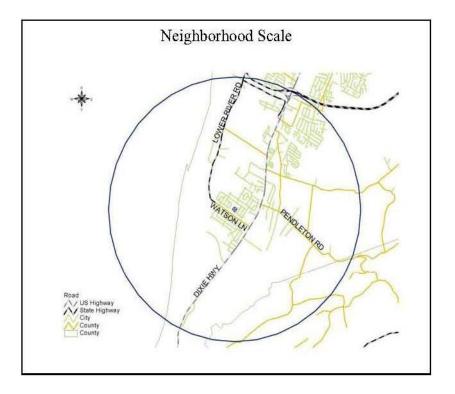
Monitors:

Quality Assurance Status:

All Quality Assurance procedures have been implemented in accordance with 40 CFR 58, Appendix A.

Area Representativeness:

This site represents population exposure on a neighborhood scale for ozone and particulates. This site also represents maximum concentrations on a neighborhood scale for SO_2 .



CSA/MSA: Louisville/Jefferson County-Elizabethtown-Madison, KY-IN CSA; Louisville/Jefferson County, KY-IN MSA 401 KAR 50:020 Air Quality Region: Louisville Interstate (078) Site Name: Kosmosdale AQS Site ID: 21-111-0065 Location: 15501R Dixie Highway, Louisville, KY 40272 County: Jefferson GPS Coordinates: 38.0296139, -85.911389 (NAD 83) Date Established: TBD Inspection Date: TBD Inspection By: TBD Site Approval Status: TBD



Due to the need for additional characterization of ambient air quality in the vicinity of the Jefferson County SO_2 nonattainment area in southwestern Jefferson County, a new site will be established. This site, named Kosmosdale, will be located approximately ¹/₄ mile south-southwest of the Kosmos Cement Co. facility and approximately one mile south of the Jefferson County SO_2 nonattainment area. The operational date for this site has been delayed due to delays in the SIP submittal for the Southwest Jefferson County SO_2 non-attainment area.

Monitoring Objective:

The monitoring objectives are to determine compliance with National Ambient Air Quality Standards and to provide pollution levels for daily index reporting.

Monitors:

Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling
AEM Sulfur Dioxide	TBD	SLAMS	UV fluorescence	Continuously
Meteorological	TBD		AQM grade instruments for wind speed, wind direction, temperature, and humidity. Not reported to AQS; thus, there is no designation.	Continuously

Quality Assurance Status:

All Quality Assurance procedures will be implemented in accordance with 40 CFR 58, Appendix A.

Area Representativeness:

This site will represent population exposure on a neighborhood scale for sulfur dioxide.



Neighborhood Scale: Sulfur Dioxide

CSA/MSA: Louisville/Jefferson County-Elizabethtown-Madison, KY-IN CSA; Louisville/Jefferson County, KY-IN MSA 401 KAR 50:020 Air Quality Region: Louisville Interstate (078) Site Name: Cannons Lane AQS Site ID: 21-111-0067 Location: Bowman Field, 2730 Cannons Lane, Louisville, KY 40204 County: Jefferson GPS Coordinates: 38.2288760, -85.654520 (NAD 83) Date Established: July 1, 2008 Inspection Date: December 15, 2017 Inspection By: Shauna Switzer Site Approval Status: EPA SLAMS approval on December 22, 2008; EPA NCore approval on October 30, 2009.



The station is located on property leased by The site is located in the NE quadrant of LMAPCD. Jefferson County and is approximately 9 km from the urban core of Metro Louisville. The site was originally established as a SLAMS site in 2008 and became a NCore site in 2009. In December 2010, a solar electric array designed to produce approximately 6,336 kWh per year was installed. The array provides over 50% of the power used by the air monitoring station. Upon inspection, the sample lines and monitors were found to be in good condition. The air monitoring site meets the criteria of 40 CFR Part 58, Appendices A, C, D, E and G.

Monitoring Objective:

The NCore Network addresses the following monitoring objectives:

- timely reporting of data to the public through AIRNow, air quality forecasting, and other public reporting mechanisms
- support development of emission strategies through air quality model evaluation and other observational methods
- accountability of emission strategy progress through tracking long-term trends of criteria and non-criteria pollutants and their precursors
- support long-term health assessments that contribute to ongoing reviews of the National Ambient Air Quality Standards (NAAQS)
- compliance through establishing nonattainment/attainment areas by comparison with the NAAQS
- support multiple disciplines of scientific research, including public health, atmospheric, and ecological.

Monitors:

Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling				
Carbon Monoxide	4.3	NCore SLAMS AQI	Automated Reference Method utilizing trace level non-dispersive infrared analysis.	Continuously				
Nitrogen Dioxide (NO ₂)	4.3	NCore SLAMS AQI	Cavity Attenuated Phase Shift Spectrometry	Continuously				
Total Reactive Nitrogen (NO/NO _y)	10.0	NCore PAMS	Automated method utilizing trace level chemiluminescence analysis.	Continuously				
Ozone	4.3	NCore PAMS SLAMS AQI	Automated Equivalent Method utilizing UV photometry analysis.	Continuously				
Sulfur Dioxide	4.3	NCore SLAMS AQI	Automated Equivalent Method utilizing trace level UV fluorescence analysis.	Continuously				
$\begin{array}{c} PM_{2.5} \text{ and } PM_{10} \\ Continuous \\ \text{-} PM_{Coarse} \\ (PM_{10}\text{-}PM_{2.5}) \end{array}$	TBD	NCore SLAMS AQI	Broadband Spectroscopy	Continuously				
PM _{2.5} Speciation	2.2	NCore SLAMS	Multi-Species manual collection method utilizing thermal optical ion chromatography, gravimetric, and X- ray fluorescence.	24-hours every third day				
PM _{2.5} Carbon Speciation	2.4	NCore SLAMS	Multi-species manual collection method utilizing thermal optical and gravimetric analyses.	24-hours every third day				
FRM PM _{2.5}	2.4	NCore SLAMS	Manual reference method utilizing gravimetric analysis	24-hours every third day				
FRM PM _{2.5} Collocated	TBD (Install 2019)	NCore SLAMS QA Collocated	Manual reference method utilizing gravimetric analysis	24-hours every sixth day				
Volatile Organic Compounds	TBD (Install 2019)	PAMS	Automatic gas chromatograph with flame ionization detection	Continuously				

Monitors (continued):

Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling
Meteorological	9.3	NCore PAMS	Air Quality Measurements approved instrumentation for wind speed, wind direction, humidity, and temperature	Continuously
-Ceilometer	TBD (Install 2019)	PAMS	Pulsed diode laser light detection and ranging (LIDAR)	Continuously
-Solar Radiation	5.0	NCore PAMS	Air Quality Measurements approved instrumentation for solar radiation	Continuously
-Rain Gauge	1.8	NCore PAMS	Air Quality Measurements approved instrumentation for precipitation	Continuously
Radiation	1.5	RadNet	RadNet fixed station air monitor, manual and automated methods	Continuously + 2 weekly filters

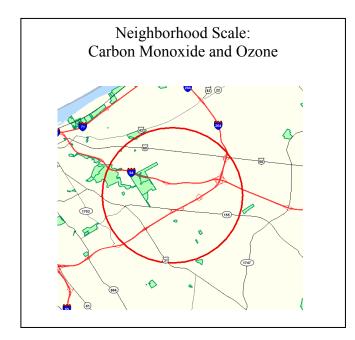
Quality Assurance Status:

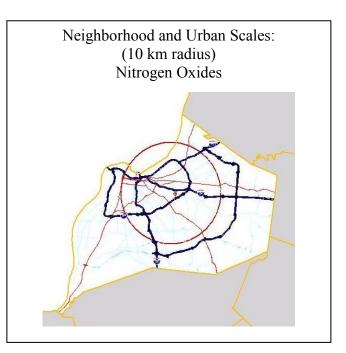
All Quality Assurance procedures have been implemented in accordance with 40 CFR 58, Appendix A. The District's current Quality Assurance Project Plan covers trace-level O_3 , NO_x , SO_2 , and CO, as well as $PM_{2.5}$ speciation, lead, and meteorological measurements. Standard operating procedures for trace-level CO, NO_x , NO_y , SO_2 , O_3 , $PM_{2.5}$, and meteorological measurements have been developed. Additional standard operating procedures manuals will be adopted or developed for new instrumentation.

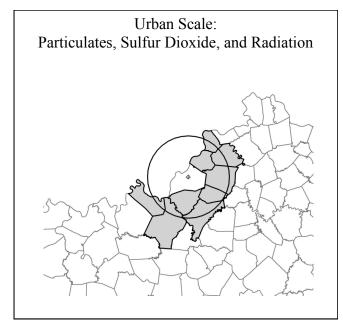
Area Representativeness:

The air monitoring equipment at the Cannon's Lane NCore station is specifically located at the urban and neighborhood scales. These scales are generally the most representative of the expected population exposures that occur throughout metropolitan areas.

Pollutant	Spatial Scale	Comments
Ozone	Neighborhood	
NO _x /NO _y	Neighborhood and Urban Scale	10 km radius
Carbon Monoxide	Neighborhood Scale	4 km radius
SO ₂	Urban Scale	50 km radius
Particulates	Urban	50 km radius
Radiation	Urban	50 km radius







CSA/MSA: Louisville/Jefferson County-Elizabethtown-Madison, KY-IN CSA; Louisville/Jefferson County, KY-IN MSA 401 KAR 50:020 Air Quality Region: Louisville Interstate (078) Site Name: Durrett Lane (Near-Road Site) AQS Site ID: 21-111-0075 Location: 1517 Durrett Lane, Louisville, KY 40213 County: Jefferson GPS Coordinates: 38.193632, -85.711950 (NAD 83) Date Established: January 1, 2014 Inspection Date: December 15, 2017 Inspection By: Shauna Switzer Site Approval Status: Site and monitors meet all design criteria for the monitoring network.



On February 9, 2010, the EPA released a new NO₂ Final Rule and a new set of monitoring requirements. Under the new monitoring requirements, State and Local agencies are required to establish near-road monitoring stations based upon core based statistical area (CBSA) populations and traffic metrics. The Louisville/Jefferson County, KY-IN MSA is required to establish not only a near-road nitrogen dioxide monitor, but also near-road PM25 and carbon monoxide monitors. In response, LMAPCD has established multi-pollutant near-road site that includes а instrumentation to measure nitrogen dioxide, PM_{2.5}, carbon monoxide, and meteorology. The specific site was chosen following the development of a formal site proposal and a 30-day comment public period in April 2013. Data collection at the site began in January 2014. More information regarding near-road monitoring can be found in the appendices of this Annual Network Plan.

Monitoring Objective:

The monitoring objective will be to determine compliance with National Ambient Air Quality Standards for nitrogen dioxide, carbon monoxide, and particulate matter.

Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling				
AEM Nitrogen Dioxide (NO ₂)	4.2	SLAMS	Cavity Attenuated Phase Shift Spec- troscopy	Continuously				
Carbon Monoxide	4.2	Continuously						
FRM PM _{2.5}	4.7	SLAMS	Manual Reference Method utilizing gravimetric analysis	One sample every third day				
Meteorological	•		AQM grade instruments for wind speed, wind direction, humidity, and temperature	-				
PM2.5 Continuous	TBD (Install 2019)	SPM	Broadband Spectroscopy	Continuously				

Monitors:

Quality Assurance Status:

All Quality Assurance procedures will be implemented in accordance with 40 CFR 58, Appendix A.

Area Representativeness:

The site represents maximum concentrations on a middle scale.



CSA/MSA: Louisville/Jefferson County-Elizabethtown-Madison, KY-IN CSA; Louisville/Jefferson County, KY-IN MSA 401 KAR 50:020 Air Quality Region: Louisville Interstate (078) Site Name: Carrithers Middle School AQS Site ID: 21-111-0080 Location: 4320 Billtown Road, Louisville, KY 40291 County: Jefferson GPS Coordinates: 38.182511, -85.574167 (NAD 83) Date Established: January 9, 2018 Inspection Date: TBD Inspection By: TBD Site Approval Status: TBD



Due to Jefferson County Public School's plan for significant modification to the Bates Elementary property, the Bates site was retired in early 2018. A new site was established on the ground of Carrithers Middle School, which is located three miles to the north of the Bates Elementary School site. The instrumentation from Bates was transferred to Carrithers and the new site became operational on 1/9/2018.

Monitoring Objective:

The monitoring objectives are to determine compliance with National Ambient Air Quality Standards and to provide pollution levels for daily index reporting.

Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling				
AEM Ozone	TBD	SLAMS AQI	UV photometry	Continuously March 1 – October 31				
PM _{2.5} Continuous	TBD	SPM AQI	Broadband Spectroscopy	Continuously				
Meteorological	TBD	Other	AQM grade instruments for wind speed, wind direction, temperature, and humidity. Not reported to AQS; thus, there is no designation.	Continuously				

Monitors:

Quality Assurance Status:

All Quality Assurance procedures will be implemented in accordance with 40 CFR 58, Appendix A.

Area Representativeness:

This site also represents population exposure on a neighborhood scale for ozone and fine particulates.



Neighborhood Scale: Particulates and Ozone

CSA/MSA: Louisville/Jefferson County-Elizabethtown-Madison, KY-IN CSA; Louisville/Jefferson County, KY-IN MSA 401 KAR 50:020 Air Quality Region: Louisville Interstate (078) Site Name: Firearms Training AQS Site ID: 21-111-1041 Location: 4201 Algonquin Parkway, Louisville, KY 40211 County: Jefferson GPS Coordinates: 38.23158, -85.82675 (NAD 83) Date Established: April 13, 1978 Inspection Date: December 15, 2017 Inspection By: Shauna Switzer Site Approval Status: Site and monitor meet all design criteria for the monitoring network.



The monitoring site is a stationary equipment shelter located on the grounds of the Firearms Training Center in Louisville, Kentucky. The sample inlet is 4.5 meters above ground level and 53.5 meters from the nearest road. Upon inspection, the sample lines and monitors were found to be in good condition. The air monitoring site meets the criteria established by 40 CFR Part 58, Appendices C, D, E and G.

LMAPCD replaced the existing shelter with a new, larger shelter in September, 2017 to house a continuous Toxics Monitor (Auto GC). Particulate instruments were transferred from Southwick Community Center site to the Firearms Training site. The particulate transfer was completed by January 1, 2018.

Monitoring Objective:

The monitoring objectives are to determine compliance with National Ambient Air Quality Standards and to detect episode levels for the activation of emergency control procedures.

Monitors:

Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling
PM _{2.5} & PM ₁₀ Contin- uous	TBD	SLAMS AQI	Broadband Spectroscopy (TAPI T640x)	Continuously
AEM Sulfur Dioxide	4.0	SLAMS	UV Fluorescence	Continuously
Volatile Organic Car- bon	TBD	SPM	Automatic gas chromatograph with flame ionization detection	Continuously
Meteorological	TBD	Other	AQM grade instruments for wind speed, wind direction, temperature, barometric pressure, and humidity.	Continuously

Quality Assurance Status:

All Quality Assurance procedures have been implemented in accordance with 40 CFR 58, Appendix A.

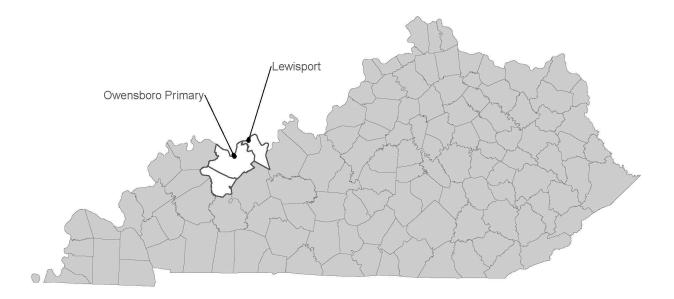
Area Representativeness:

This site represents population exposure on a neighborhood scale.



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Owensboro, KY



AQS ID / County	Site Address	PM2.5	Cont. PM2.5	PM10	Cont. PM10	SO2	NO2	NOy	co	03	Pb	VOC	Carbonyl	PAH	PM2.5 Spec.	Carbon Spec.	RadNet	Met
21-059-0005	716 Pleasant Valley Rd.	1	1 ^{Sei}			1 ^{ei}	1 ^{ei}			1 ^{ei}								1
Daviess	Owensboro																	
21-091-0012	Second & Caroline St.									1^{M}								
Hancock	Lewisport																	
Totals	2	1	1			1	1			2								1

Tallies are equal to the actual number of monitors present. Superscripts represent additional information about the network.

e=Emergency Episode Monitor

S=Continuous T640 Monitor

i =AQI Reported

M=Maximum Ozone Concentration Site for MSA

CSA/MSA: <u>Owensboro, KY</u> MSA
401 KAR 50:020 Air Quality Region: Evansville-Owensboro-Henderson Interstate (077)
Site Name: Owensboro Primary
AQS Site ID: 21-059-0005
Location: 716 Pleasant Valley Road, Owensboro, KY 42303
County: Daviess
GPS Coordinates: 37.780776, -87.075307 (NAD 83)
Date Established: December 1, 1970
Inspection Date: December 20, 2017
Inspection By: Shauna Switzer
Site Approval Status: Site and monitors meet all design criteria for the monitoring network.



The monitoring site is a stationary equipment shelter located on the grounds behind the Wyndall's Shopping Center in Owensboro, Kentucky. The sample inlets are 48.5 meters from the nearest road. Upon inspection, the sample lines and monitors were found to be in good condition. The site meets the requirements of 40 CFR 58, Appendices A, C, D, E and G.

Monitoring Objective:

The monitoring objectives are to determine compliance with National Ambient Air Quality Standards; to detect emergency pollution levels of criteria pollutants for activation of emergency control procedures. While not required for the CBSA, the site also provide levels of pollutants for daily index reporting.

Monitors:

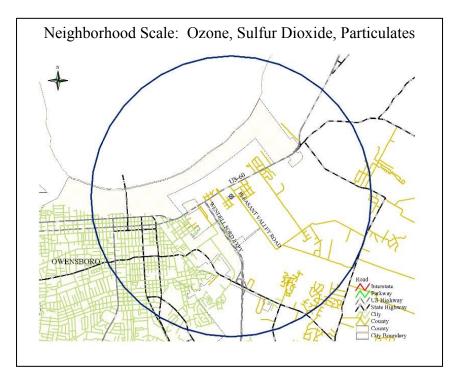
Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling
AEM Nitrogen Dioxide (NO ₂ , NO, NO _x)	3.5	SLAMS EPISODE AQI	Chemiluminescence	Continuously
AEM Ozone	3.5	SLAMS EPISODE AQI	UV photometry	Continuously March 1 – October 31
FRM PM _{2.5}	2.2	SLAMS	Gravimetric	24-hours every third day
PM _{2.5} Continuous	4.6	SPM EPISODE AQI	Broadband Spectroscopy	Continuously
AEM Sulfur Dioxide	3.5	SLAMS PWEI EPISODE AQI	UV fluorescence	Continuously
Meteorological 5.4 Other			AQM grade instruments for wind speed, wind direction, humidity, barometric pressure and temperature	Continuously

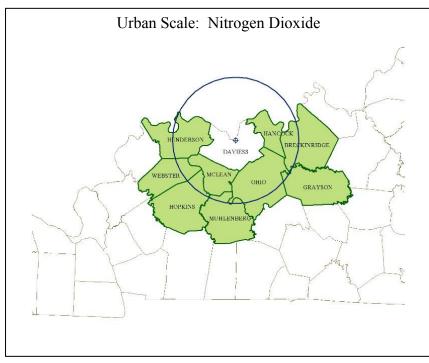
Quality Assurance Status:

All Quality Assurance procedures have been implemented in accordance with 40 CFR 58, Appendix A.

Area Representativeness:

This site represents population exposure on a neighborhood scale for particulates, ozone, and sulfur dioxide. This site also represents population exposure on an urban scale for nitrogen dioxide.





CSA/MSA: Owensboro, KY MSA
401 KAR 50:020 Air Quality Region: Evansville-Owensboro-Henderson Interstate (077)
Site Name: Lewisport
AQS Site ID: 21-091-0012
Location: Community Center Drive & First Street, Lewisport, KY 42351
County: Hancock
GPS Coordinates: 37.93829, -86.89719 (NAD 83)
Date Established: September 5, 1980
Inspection Date: December 20, 2017
Inspection By: Shauna Switzer
Site Approval Status: Site and monitor meet all design criteria for the monitoring network.



The monitoring site is a stationary equipment shelter located on the athletic fields of the former Lewisport Consolidated Elementary School in Lewisport, Kentucky. The sample inlet is 55.3 meters from the nearest road. Upon inspection, the sample line and monitor were found to be in good condition. The site meets the requirements of 40 CFR 58, Appendices A, C, D, and E.

Monitoring Objective:

The monitoring objectives are to determine compliance with National Ambient Air Quality Standards.

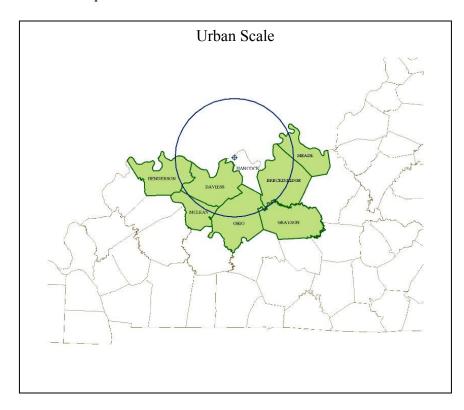
Monitors:

Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling				
AEM Ozone	3.7	SLAMS	UV photometry	Continuously				
		Maximum O ₃		March 1 – October 31				

Quality Assurance Status:

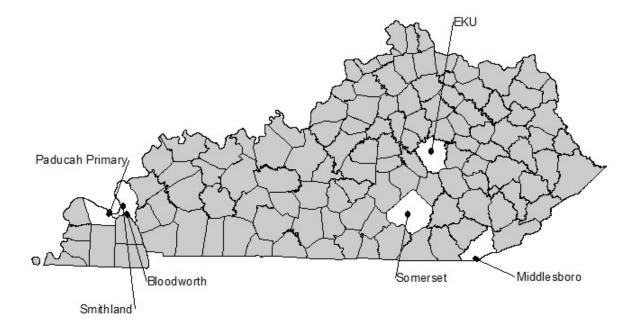
All Quality Assurance procedures have been implemented in accordance with 40 CFR 58, Appendix A.

Area Representativeness: This site represents maximum concentrations on an urban scale.



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Micropolitan Statistical Areas



AQS ID / County	Site Address	PM2.5	Cont. PM2.5	PM10	Cont. PM10	SO2	NO2	NOy	CO	03	Ph	VOC	Carbonyl	РАН	PM2.5 Spec.	Carbon Spec.	RadNet	Met
21-013-0002	1420 Dorchester Ave.	1								1								1
Bell	Middlesboro																	
21-139-0003	706 State Drive									1							1	
Livingston	Smithland																	
21-139-0004	763 Bloodworth Road			1^{m}								1						1
Livingston	Smithland																	
21-145-1024	2901 Powell Street	1	1^{Si}	1		1 ^{Pei}	1 ^{ei}			1 ^{ei}								
McCracken	Paducah																	
21-151-0005	Van Hoose Drive										$2^{\rm C}$							
Madison	Richmond																	
21-199-0003	305 Clifty Street	1								1								
Pulaski	Somerset																	
Totals	6	3	1	2		1	1			4	2	1					1	2

Tallies are equal to the actual number of monitors present. Superscripts represent additional information about the network.

P= PWEI SO2 monitor required in CBSA.

C=Collocated

P=PWEI Monitor

S=Continuous T640 Monitor

m =PM10 Filter Analyzed for Metals e =Emergency Episode Monitor i=AQI Reported

Rev. 5/1/16

CSA/MSA: <u>Middlesborough, KY</u> Micropolitan Statistical Area
401 KAR 50:020 Air Quality Region: Appalachian Intrastate (101)
Site Name: Middlesboro
AQS Site ID: 21-013-0002
Location: Middlesboro Airport, 1420 Dorchester Avenue, Middlesboro, KY 40965
County: Bell
GPS Coordinates: 36.60843, -83.73694 (NAD 83)
Date Established: February 14, 1992
Inspection Date: December 5, 2017
Inspection By: Shauna Switzer
Site Approval Status: Site and monitors meet all design criteria for the monitoring network.



The monitoring site is a stationary equipment shelter located on the grounds of the Middlesboro Airport in Middlesboro, Kentucky. The sample inlets are 93.5 meters from the nearest road. Upon inspection the sample lines and monitors were found to be in good condition. The site meets the requirements of 40 CFR 58, Appendices A, C, D, and E.

Monitoring Objective:

The monitoring objectives are to determine compliance with National Ambient Air Quality Standards and to provide information on the transport of ozone into the region.

Monitors:

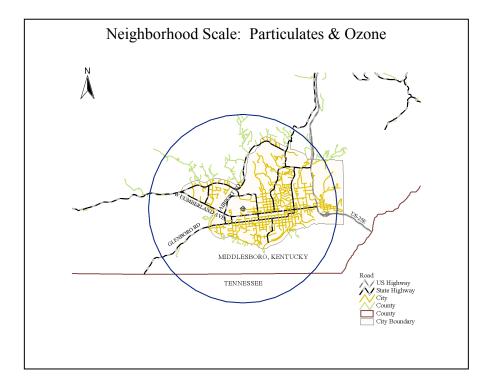
Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling
AEM Ozone	3.8	SPM	UV photometry	Continuously March 1 – October 31
FRM PM _{2.5}	5.0	SPM	Gravimetric	24-hours every sixth day
Meteorological	5.8	Other	AQM grade instruments for wind speed, wind direction, humidity, barometric pressure and temperature	Continuously

Quality Assurance Status:

All Quality Assurance procedures have been implemented in accordance with 40 CFR 58, Appendix A.

Area Representativeness:

The site represents population exposure on a neighborhood scale for particulates and ozone.



CSA/MSA: <u>Paducah-Mayfield, KY-IL</u>CSA; <u>Paducah, KY-IL</u> Micropolitan Statistical Area 401 KAR 50:020 Air Quality Region: Paducah-Cairo Interstate (072) Site Name: Smithland AQS Site ID: 21-139-0003 Location: Livingston County Road Dept., 730 State Drive, Smithland, KY 42081 County: Livingston GPS Coordinates: 37.155392, -88.394024 (NAD 83) Date Established: April 1, 1988 Inspection Date: December 19, 2017 Inspection By: Shauna Switzer Site Approval Status: Site and monitors meet all design criteria for the monitoring network.



The monitoring site is a stationary equipment shelter located on the grounds of the Livingston County Road Dept. facility in Smithland, Kentucky. The sample inlets are 178.9 meters from the nearest road. Upon inspection, the sample lines and monitors were found to be in good condition. The site meets the requirements of 40 CFR 58, Appendices A, C, D, and E.

Monitoring Objective:

The monitoring objective is to determine compliance with National Ambient Air Quality Standards.

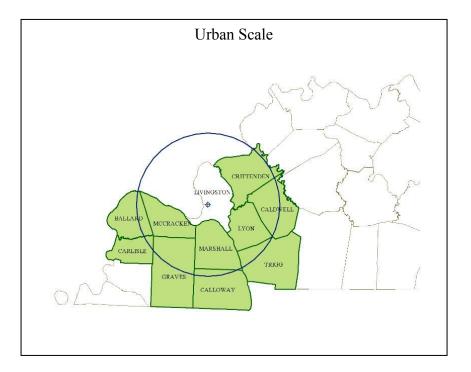
Monitors:

Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling			
AEM Ozone	3.8	SLAMS	UV photometry	Continuously			
Radiation	1.3		RadNet fixed stationary monitor, manual and automated methods	Continuously & 2 weekly filters			

Quality Assurance Status:

All Quality Assurance procedures have been implemented in accordance with 40 CFR 58, Appendix A.

Area Representativeness: This site represents maximum concentrations on an urban scale.



CSA/MSA: <u>Paducah-Mayfield, KY-IL</u>CSA; <u>Paducah, KY-IL</u> Micropolitan Statistical Area 401 KAR 50:020 Air Quality Region: Paducah-Cairo Interstate (072) Site Name: Bloodworth AQS Site ID: 21-139-0004 Location: 763 Bloodworth Road, Smithland, KY 42081 County: Livingston GPS Coordinates: 37.07151, -88.33389 (NAD 83) Date Established: September 15, 1986 Inspection Date: December 19, 2017 Inspection By: Shauna Switzer Site Approval Status: Site and monitors meet all design criteria for the monitoring network.



The monitoring site is a stationary equipment shelter located at the residence of 763 Bloodworth Road in Livingston County, Kentucky. The sample inlets are 8 meters from the nearest road, which is an access road for a residence. Upon inspection, the inlet and sampler were found to be in good condition. The site meets the requirements of 40 CFR 58, Appendices A, C, D, and E.

Monitoring Objective:

The monitoring objective is to determine compliance with National Ambient Air Quality Standards for PM_{10} and to detect and quantify air toxics in ambient air.

Monitors:

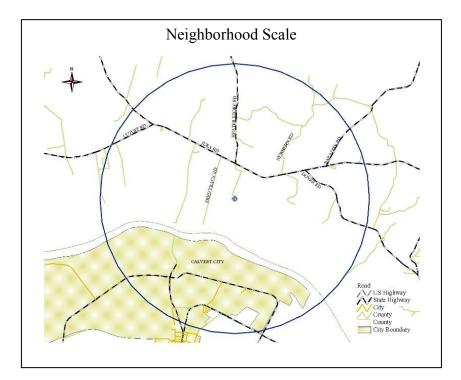
Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling				
Volatile Organic Compounds	4.3	SPM-Other	EPA method TO-15	24-hours every sixth day				
FRM PM ₁₀	4.4	SPM	Gravimetric	24-hours every sixth day				
- Metals PM ₁₀		SPM-Other	Determined from the PM ₁₀ sample using EPA method IO 3.5	Same as PM ₁₀				
Meteorological	5.6	Other	AQM grade instruments for wind speed, wind direction, humidity, barometric pressure and temperature	Continuously				

Quality Assurance Status:

All Quality Assurance procedures have been implemented in accordance with 40 CFR 58, Appendix A.

Area Representativeness:

The site represents source impacts on a neighborhood scale.



CSA/MSA: <u>Paducah-Mayfield, KY-IL</u> CSA; <u>Paducah, KY-IL</u> Micropolitan Statistical Area
401 KAR 50:020 Air Quality Region: Paducah-Cairo Interstate (072)
Site Name: Jackson Purchase-Paducah Primary
AQS Site ID: 21-145-1024
Location: Jackson Purchase RECC, 2901 Powell Street, Paducah, KY 42003
County: McCracken
GPS Coordinates: 37.05822, -88.57251 (NAD 83)
Date Established: August 15, 1980
Inspection Date: December 19, 2017
Inspection By: Shauna Switzer
Site Approval Status: Site and monitors meet design criteria for the monitoring network.



The monitoring site is a stationary equipment shelter located on the grounds of the Jackson Purchase RECC in Paducah, Kentucky. While the site meets most of the requirements established by 40 CFR 58, Appendices C, D, E and G, the sample inlets are only 9.1 meters from the nearest road, which is closer than the distances allowed by 40 CFR 58, Appendix E. Due to the small traffic count of the street and the unlikely influence of vehicle-exhaust on data, KDAQ has received EPA-approval for a waiver from the minimum allowable road-distances for all monitors at the site.

Monitoring Objective:

The monitoring objectives are to determine compliance with National Ambient Air Quality Standards and to detect elevated pollutant levels for activation of emergency control procedures for nitrogen dioxide, ozone, and sulfur dioxide. While not required for the CBSA, the site also provides pollutant levels for daily air quality index reporting.

Monitors:

Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling
AEM Nitrogen Dioxide (NO ₂ , NO, NO _x)	3.6	SLAMS EPISODE AQI	Chemiluminescence	Continuously
AEM Sulfur Dioxide	3.6	SLAMS AQI EPISODE	UV fluorescence	Continuously
AEM Ozone	3.6	SLAMS AQI EPISODE	UV photometry	Continuously March 1 – October 31

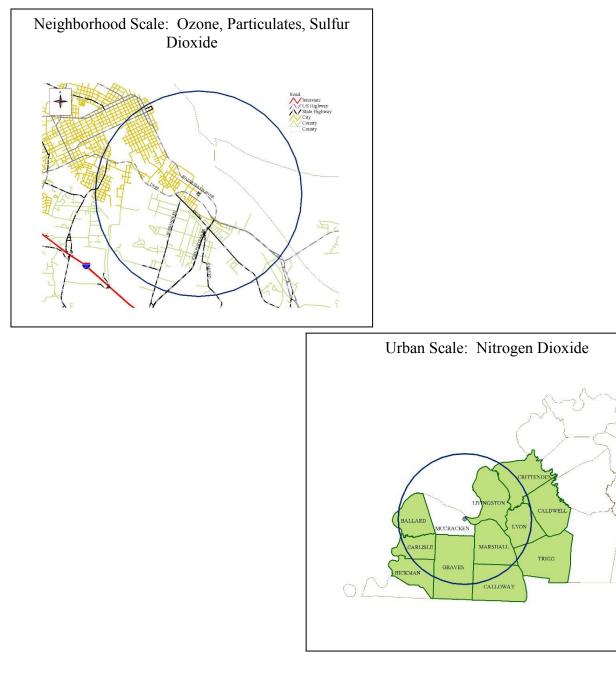
Monitors (continued):

PM _{2.5} Continuous	4.7	SPM AQI	Broadband Spectroscopy	Continuously			
FRM PM _{2.5}	4.7	SLAMS	Gravimetric	24-hours every third day			
FEM PM ₁₀	4.5	SLAMS	Gravimetric	24-hours every sixth day			

Quality Assurance Status:

Area Representativeness:

This site represents population exposure on a neighborhood scale for ozone, particulates, and sulfur dioxide. This site also represents population exposure on an urban scale for nitrogen dioxide.



CSA/MSA: Lexington-Fayette-Richmond-Frankfort KY CSA; Richmond-Berea, KY Micropolitan Statistical Area 401 KAR 50:020 Air Quality Region: Bluegrass Intrastate (102) Site Name: EKU AQS Site ID: 21-151-0005 Location: Eastern Kentucky University, Van Hoose Drive, Richmond, KY 40475 County: Madison GPS Coordinates: 37.73635, -84.29169 (NAD 83) Date Established: November 17, 2017 Inspection Date: June 30, 2016 Inspection By: Shauna Switzer Site Approval Status: Site and monitors meet all design criteria for the monitoring network.



The site is located behind the Gentry Facilities Services building and is adjacent to Eastern Kentucky University's athletic fields. The sample inlets are 2.9 meters from the nearest road. Upon inspection, the sample inlet and monitor were found to be in good condition. The site meets the requirements of 40 CFR 58, Appendices A, C, D and E.

Monitoring Objective:

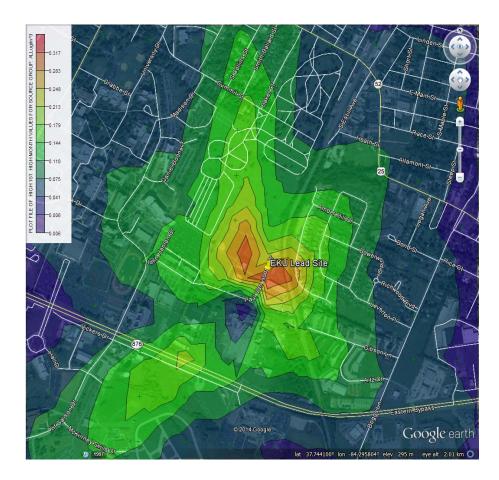
The monitoring objectives are to determine compliance with National Ambient Air Quality Standards.

Monitors:

Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling
FRM Lead	2.2		High volume air sampler. Analysis via ICP-MS.	24-hours every sixth day
Collocated FRM Lead	2.3	SLAMS	High volume air sampler. Analysis via ICP-MS.	24-hours every twelfth day

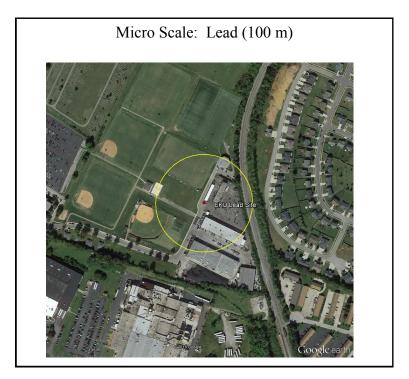
Quality Assurance Status:

All Quality Assurance procedures have been implemented in accordance with 40 CFR 58, Appendix A.



Area Representativeness:

This site represents source impacts on a micro scale for lead.



CSA/MSA: Somerset, KY Micropolitan Statistical Area
401 KAR 50:020 Air Quality Control Region: South Central Kentucky Intrastate (105)
Site Name: Somerset
AQS Site ID: 21-199-0003
Location: Somerset Gas Company Warehouse, 305 Clifty Street, Somerset, KY 42501
County: Pulaski
GPS Coordinates: 37.09798, -84.61152 (NAD 83)
Date Established: February 14, 1992
Inspection Date: December 12, 2017
Inspection By: Shauna Switzer
Site Approval Status: Site and monitors meet all design criteria for the monitoring network.



The monitoring site is a stationary equipment shelter located on the grounds of the Somerset Gas Company Warehouse on Clifty Street in Somerset, KY. The sample inlets are 10 meters from the nearest road, which is a dead-end street with little traffic. Upon inspection the sample line and monitors were found to be in good condition. The site meets the requirements of 40 CFR 58, Appendices A, C, D, and E.

Monitoring Objective:

The monitoring objectives are to determine compliance with National Ambient Air Quality Standards.

Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling					
AEM Ozone	4.2	SPM		Continuously March 1 – October 31					
FRM PM _{2.5}	4.5	SPM	Gravimetric	24-hours every third day					

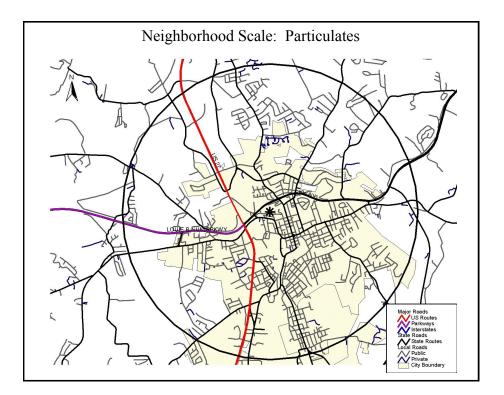
Monitors:

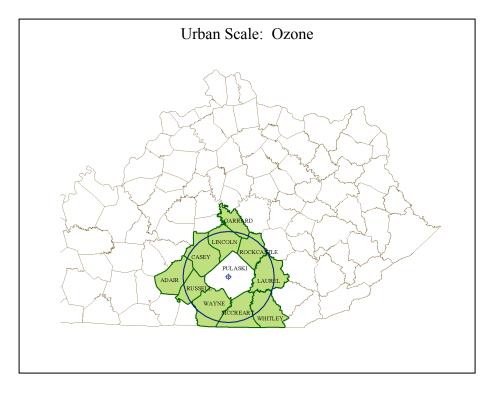
Quality Assurance Status:

All Quality Assurance procedures have been implemented in accordance with 40 CFR 58, Appendix A.

Area Representativeness:

The site represents population exposure on an urban scale for ozone. This site also represents population exposure on a neighborhood scale for particulates.





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Not in a Metropolitan or Micropolitan Statistical Area



Pikeville Primary

AQS ID / County	Site Address	PM2.5	Cont. PM2.5	PM10	Cont. PM10	SO2	NO2	NOy	CO	03	Pb	VOC	Carbonyl	РАН	PM2.5 Spec.	Carbon Spec.	RadNet	Met
21-043-0500	1486 Camp Webb Road	1^X		2^{Cm}						1		2 ^D	2 ^D	1				1
Carter	Grayson																	
21-157-0014	Industrial Parkway											2 ^C						
Marshall	Calvert City																	
21-193-0003	354 Perry Park Road	1	1^t							1 ^e								1
Perry	Hazard																	
21-195-0002	109 Loraine Street	1	$1^{S,i}$							1^{i}								
Pike	Pikeville																	
21-213-0004	573 Harding Road									1								1
Simpson	Franklin																	
Totals	5	3	2	2						4		4	2	1				3

Tallies are equal to the actual number of monitors present. Superscripts represent additional information about the network.

D=Duplicate C=Collocated m=PM10 Filter Analyzed for Metals i=AQI Reported

X=Regional Background PM2.5 Monitor

t=Continuous TEOM Monitor

S=Continuous PM T640

Rev. 5/1/16

CSA/MSA: Not in a MSA - Rural 401 KAR 50:020 Air Quality Region: Huntington (WV)-Ashland (KY)-Portsmouth-Ironton (OH) Interstate (103) Site Name: Grayson Lake AQS Site ID: 21-043-0500 Location: Camp Robert Webb, 1486 Camp Webb Road, Grayson Lake, KY 41143 County: Carter GPS Coordinates: 38.23887, -82.98810 (NAD 83) Date Established: May 13, 1983 Inspection Date: December 4, 2017 Inspection By: Shauna Switzer Site Approval Status: Site and monitors meet all design criteria for the monitoring network.



The monitoring site is a stationary equipment shelter in a fenced area located in a remote section of Camp Webb in Grayson, Kentucky. The nearest road is a service road to the site and is 108 meters from the site. Upon inspection, the sample lines and monitors were found to be in good condition. The site meets the requirements of 40 CFR 58, Appendices A, C, D, and E.

Monitoring Objective:

The monitoring objectives are to determine compliance with National Ambient Air Quality Standards; to determine background levels of $PM_{2.5}$ and PM_{10} ; to provide ozone data upwind of the Ashland area; and to measure rural concentrations of a sub-group of air toxics for use in a national air toxics assessment.

Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling				
AEM Ozone	3.7	SPM	UV photometry	Continuously March 1 – October 31				
FRM PM ₁₀	2.1	SLAMS	Gravimetric	24-hours every sixth day				
- Metals PM ₁₀		NATTS SPM-Other	Determined from the PM ₁₀ samples using EPA method IO 3.5	Same as PM ₁₀				
Collocated PM ₁₀	2.1	SLAMS	Gravimetric	24-hours every twelfth day				
- Collocated metals PM_{10}		NATTS SPM-Other	Determined from the PM ₁₀ samples using EPA method IO 3.5	24-hours; six samples per year				

Monitors:

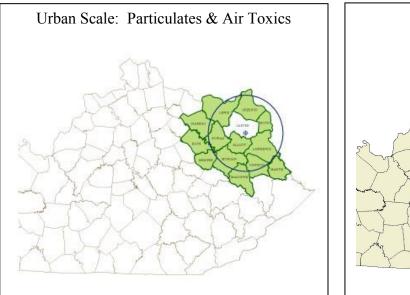
FRM PM _{2.5}	2.3	SLAMS	Gravimetric	24-hours every third day
Volatile Organic Compounds	3.7	NATTS SPM-Other	EPA method TO-15.	24-hours every sixth day
- Duplicate Volatile Organic Compounds		NATTS SPM-Other	EPA method TO-15. Collected via same sampling system as primary VOCs.	24-hours; six samples per year
Polycyclic Aromatic Hydrocarbons	2.1	NATTS SPM-Other	EPA method TO-13A	24-hours every sixth day
Carbonyls	4.0	NATTS SPM-Other	EPA method TO-11A	24-hours every sixth day
- Duplicate Carbonyls		NATTS SPM-Other	EPA method TO-11A. Collected via same sampling system as primary carbonyls.	24-hours; six samples per year
Meteorological	11.75	Other	AQM grade instruments for wind speed, wind direction, relative humidity, and temperature	Continuously

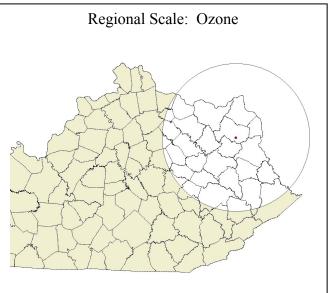
Quality Assurance Status:

All Quality Assurance procedures have been implemented in accordance with 40 CFR 58, Appendix A.

Area Representativeness:

The site represents background levels on an urban scale for particulates and air toxics. This site also represents upwind/background levels on an regional scale for ozone.





CSA/MSA: Not in a MSA - Rural 401 KAR 50:020 Air Quality Control Region: Paducah – Cairo Interstate (072) Site Name: TVA Substation AQS Site ID: 21-157-0014 Location: Plant Cutoff Road & Industrial Parkway, Calvert City, KY 42029 County: Marshall GPS Coordinates: 37.04520, -88.33087 (NAD 83) Date Established: January 1, 2005 Inspection Date: December 19, 2017 Inspection By: Shauna Switzer Site Approval Status: Site and monitors meet all design criteria for the monitoring network.



The monitoring site is located off Ballpark Road in Calvert City, Kentucky. The inlets are approximately 231.6 meters from the nearest road. Upon inspection, the sample inlets and monitors were found to be in good condition.

Due to expansion of the fenced-compound of the TVA electrical substation, the samplers were relocated in June 2013. The new location is approximately 20 meters northwest from the original location and is still along the fence-line of the compound.

Monitoring Objective:

The monitoring objectives are to detect and quantify air toxic pollutants.

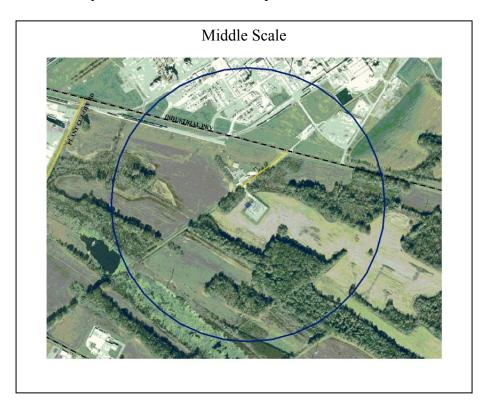
Monitors:

Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling
Volatile Organic Compounds	2.0	SPM-Other	EPA method TO-15	24-hours every sixth day
Collocated Volatile Organic Compounds	1.9	SPM-Other	EPA method TO-15	24-hours every twelfth day

Quality Assurance Status:

All Quality Assurance procedures have been implemented in accordance with 40 CFR 58, Appendix A.

Area Representativeness: This site represents source oriented exposure on a middle scale.



CSA/MSA: Not in a MSA - Rural 401 KAR 50:020 Air Quality Control Region: Appalachian Intrastate (101) Site Name: Hazard AQS Site ID: 21-193-0003 Location: Perry County Horse Park, 354 Perry Park Road, Hazard, KY 41701 County: Perry GPS Coordinates: 37.28329, -83.20932 (NAD 83) Date Established: April 1, 2000 Inspection Date: December 5, 2017 Inspection By: Shauna Switzer Site Approval Status: Site and monitors meet all design criteria for the monitoring network.



The monitoring site is a stationary equipment shelter located on the grounds of the Perry County Horse Park in Hazard, Kentucky. The sample inlets 29.2 meters from the nearest road. Upon inspection the sample lines and monitors were found to be in good condition. This site meets the requirements of 40 CFR 58, Appendices A, C, D, and E.

Monitoring Objective:

The monitoring objectives are to determine compliance with National Ambient Air Quality Standards and to detect elevated pollutant levels for activation of emergency control procedures for ozone.

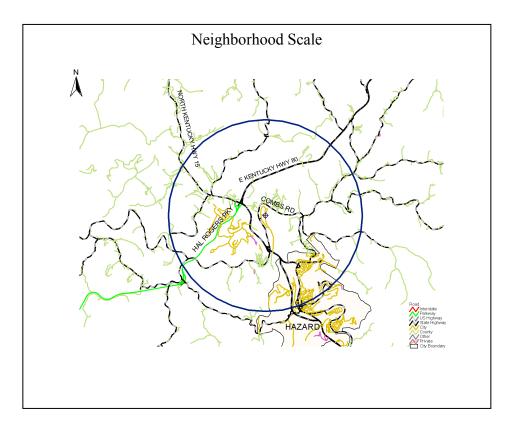
Monitors:

Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling
AEM Ozone	3.7	SPM EPISODE	UV photometry	Continuously March 1 – October 31
FRM PM _{2.5}	2.3	SPM	Gravimetric	24-hours every sixth day
PM _{2.5} TEOM	4.6	SPM	Tapered element oscillating microbalance, gravimetric	Continuously
Meteorological	5.6	Other	AQM grade instruments for wind speed, wind direction, relative humidity, barometric pressure, and temperature	Continuously

Quality Assurance Status:

All Quality Assurance procedures have been implemented in accordance with 40 CFR 58, Appendix A.

Area Representativeness: The site represents population exposure on a neighborhood scale.



CSA/MSA: Not in a MSA - Rural 401 KAR 50:020 Air Quality Control Region: Appalachian Intrastate (101) Site Name: Pikeville Primary AQS Site ID: 21-195-0002 Location: KYTC District Office, 109 Loraine Street, Pikeville, KY 41501 County: Pike GPS Coordinates: 37.48260, -82.53532 (NAD 83) Date Established: May 1, 1994 Inspection Date: December 5, 2017 Inspection By: Shauna Switzer Site Approval Status: Site and monitors meet all design criteria for the monitoring network.



The monitoring site is a stationary equipment shelter located behind the KYTC District Office building in Pikeville, KY. The sample inlets are 91.1 meters from the nearest road. Upon inspection the sample lines and monitors were found to be in good condition. This site meets the requirements of 40 CFR 58, Appendices A, C, D, E and G.

Monitoring Objective:

The monitoring objectives are to determine compliance with National Ambient Air Quality Standards. While not required, the site also provides pollutant levels for daily air quality index reporting.

Monitors:

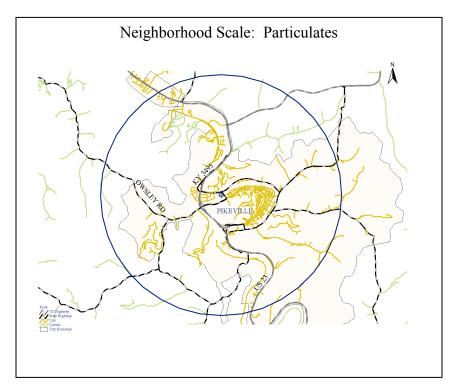
Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling
AEM Ozone	3.6	SPM AQI	UV photometry	Continuously March 1 – October 31
FRM PM _{2.5}	4.6	SLAMS	Gravimetric	24-hours every third day
PM _{2.5} Continuous		SPM AQI	Broadband Spectroscopy	Continuously

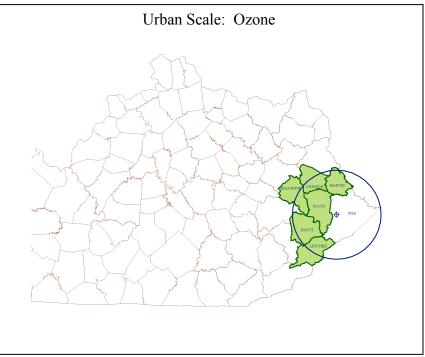
Quality Assurance Status:

All Quality Assurance procedures have been implemented in accordance with 40 CFR 58, Appendix A.

Area Representativeness:

The site represents population exposure on a neighborhood scale for particulates. This site also represents population exposure on an urban scale for ozone.





CSA/MSA: Not in a MSA - Rural 401 KAR 50:020 Air Quality Control Region: South Central Kentucky Intrastate (105) Site Name: Franklin AQS Site ID: 21-213-0004 Location: KYTC Maintenance Facility, 573 Harding Road (KY1008), Franklin, KY 42134 County: Simpson GPS Coordinates: 36.708607, -86.566284 (NAD 83) Date Established: June 19, 1991 Inspection Date: December 15, 2017 Inspection By: James Plunkett Site Approval Status: Site and monitors meet all design criteria for the monitoring network.



The monitoring site is a stationary equipment shelter located on the grounds of the KYTC Garage on Harding Road (KY1008) in Franklin, Kentucky. The sample inlet is 41.5 meters from the nearest road. Upon inspection, the sample line and monitor were found to be in good condition. The site meets the requirements of 40 CFR 58, Appendices A, C, D, and E.

Monitoring Objective:

The monitoring objectives are to determine compliance with National Ambient Air Quality Standards; to measure ozone levels upwind of Bowling Green; and to provide data on interstate ozone transport.

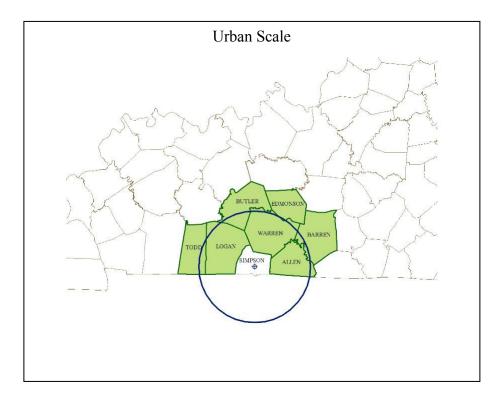
Monitors:

Monitor Type	Inlet Height (meters)	Designation	Analysis Method	Frequency of Sampling
AEM Ozone	4.4	SPM	UV photometry	Continuously March 1 – October 31
Meteorological	5.8		AQM grade instruments for wind speed, wind direction, relative humidity, barometric pressure, and temperature	Continuously

Quality Assurance Status:

All Quality Assurance procedures have been implemented in accordance with 40 CFR 58, Appendix A.

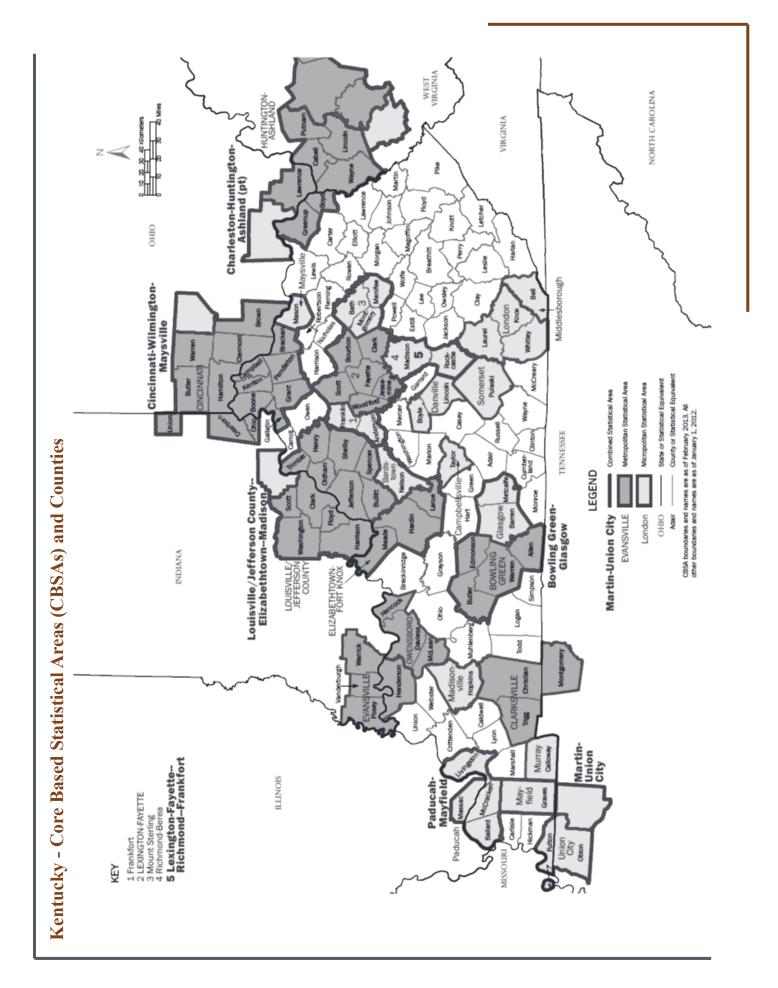
Area Representativeness: The site represents population exposure on an urban scale.



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APPENDIX A

KENTUCKY CORE-BASED STATISTICAL AREAS AND COUNTIES MAP



APPENDIX B

MEMORANDUM OF AGREEMENT CINCINNATI, OH-KY-IN MSA

MEMORANDUM OF AGREEMENT ON AIR QUALITY MONITORING FOR CRITERIA POLLUTANTS FOR THE CINCINNATI OH-KY-IN METROPOLITAN STATISTICAL AREA (MSA)

Participating Agencies:

Kentucky Department for Environmental Protection (KDEP) Division for Air Quality (DAQ)

Hamilton County Department of Environmental Services (HCDOES)

Indiana Department of Environmental Management (IDEM) Office of Air Quality (OAQ)

PURPOSE/OBJECTIVES/GOALS

The purpose of this Memorandum of Agreement (MOA) is to establish the Cincinnati OH-KY-IN Metropolitan Statistical Area (MSA) Criteria Pollutant Air Quality Monitoring Agreement among KDEP, IDEM, and HCDOES to collectively meet United States Environmental Protection Agency (EPA) minimum monitoring requirements for particles of an aerodynamic diameter of 10 micrometers and less (PM10), particles of an aerodynamic diameter of 2.5 micrometers and less (PM2.5), and ozone; as well as other criteria pollutant air quality monitoring deemed necessary to meet the needs of the MSA as determined reasonable by all parties. According to 40 CFR Part 58, Appendix D, the Cincinnati OH-KY-IN MSA minimum monitoring requirements (based on a population of 2,172,000) are (2) ozone monitors, (2-4) PM-10 monitors, (3) FRM PM-2.5 monitors, and (2) collocated continuous PM-2.5 monitors with the FRM PM-2.5 monitors. This MOA will formalize and reaffirm the collective agreement in order to provide adequate criteria pollutant monitoring for the Cincinnati OH-KY-IN MSA as required by 40 CFR 58 Appendix D, Section 2(e).

PM2.5 MSA monitoring network includes:

County	Federal Reference Method PM2.5	Continuous PM2.5	Speciation PM2.5	Collocated PM2.5
Campbell County, KY KDEP	1	1	0	0
Boone County, KY KDEP	0	0	0	0
Hamilton County, OH HCDOES	. 4	2	1	1
Butler County, OH HCDOES	2	0	0	1
Clermont County, OH HCDOES	1	· 1	0	0
Warren County, OH HCDOES	1	1	0	0
Franklin County, IN IDEM	0	0	0 .	0
Dearborn County, IN IDEM	0	`0	0	0
Ohio County, IN IDEM	0	0	0	0

.....

Criteria Air Pollutant MSA monitoring network includes:

County	PMIG	O ₁	NO ₂ /NO/NO2	сø	\$02
Campbell County, KY	0	1	1	0	1
KDEP					
Boone County, KY	0	1	0	0	0
KDEP				Į	
Hamilton County, OH	3	3	1	1	1
HCDOES					
Butler County, OH	2	2	0 -	0	0
HCDOES				1	
Clermont County, OH	0	1	0.	0	0
HCDOES		· · ,			
Warren County, OH	0	1	<u>0</u> .	0	0
HCDOES					
Franklin County, IN	0	0	0	0	0
IDEM					
Dearborn County, IN	0	.0	0	0	0
IDEM			· ·		
Ohio County, IN	0	0	0	0	0
IDEM					

RESPONSIBLITIES/ACTIONS

Each of the parties to this Agreement is responsible for ensuring that its obligations under the MOA are met. As conditions warrant, the affected agencies may conduct telephone conference calls, meetings, or other communications to discuss monitoring activities for the MSA. Each affected agency shall inform the other affected agencies via telephone or email of any monitoring changes occurring within its jurisdiction of the MSA at its earliest convenience, after learning of the need for the change or making the changes. Such unforeseen changes may include evictions from monitoring sites, destruction of monitoring sites due to natural disasters, or any occurrences that result in an extended (greater than one quarter) or permanent change in the monitoring network.

LIMITATIONS

- All commitments made in this MOA are subject to the availability of appropriated funds and each agency's budget priorities. Nothing in this MOA obligates KDEP, IDEM, or HCDOES to expend appropriations or to enter into any contract, assistance agreement, interagency agreement or other financial obligation.
- This MOA is neither a fiscal nor a funds obligation document. Any endeavor involving reimbursement or contribution of funds between parties to this agreement will be handled in accordance with applicable laws, regulations, and procedures, and will be subject to separate agreements that will be affected in writing by representatives of the parties.
- This MOA does not create any right or benefit enforceable by law or equity against KDEP, IDEM, or HCDOES, their officers or employees, or any other person. This MOA does not apply to any entity outside KDEP, IDEM, or HCDOES.

 No proprietary information or intellectual property is anticipated to arise out of this MOA.

TERMINATION

This Memorandum of Agreement may be revised upon the mutual consent of KDEP, IDEM, and HCDOES. Each party reserves the right to terminate this MOA. A thirty (30) day written notice must be given prior to the date of termination.

APPROVALS

We agree with the provisions outlined in this Memorandum of Agreement and commit our agencies to implement them in a spirit of cooperation and mutual support.

Kentucky Department for Environmental Protection Division for Air Quality
BY: John Lyons John S. Lyons
TITLE: Director, Division for Air Quality
DATE: 5/13/10
Hamilton County Department of Provincemental Services
Hamilton County Department of Environmental Services
Hamilton County Department of Environmental Services BY: <u>Cory Chadwick</u> Chry R. Church With
BY: <u>Cory Chadwick</u> Cary R. Chudi June TITLE: <u>Director</u>
BY: Cory Chadwick Cory R. Church Jush

Indiana Department of Environmental Management Office of Air Quality

BY:	Keith Baugues	- Keith	Banons
		- • ·	8

TITLE: Assistant Commissioner, Office of Air Quality

DATE: 5/14 10

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APPENDIX C

MEMORANDUM OF AGREEMENT EVANSVILLE, IN-KY MSA

MEMORANDUM OF AGREEMENT ON AIR QUALITY MONITORING FOR CRITERIA POLLUTANTS FOR THE EVANSVILLE, IN-HENDERSON, KY METROPOLITAN STATISTICAL AREA (MSA)

Participating Agencies:

Kentucky Department for Environmental Protection (KDEP) Division for Air Quality (DAQ)

Indiana Department of Environmental Management (IDEM) Office of Air Quality (OAQ)

PURPOSE/OBJECTIVES/GOALS

The purpose of this Memorandum of Agreement (MOA) is to establish the Evansville, IN-Henderson, KY Metropolitan Statistical Area (MSA) Criteria Pollutant Air Quality Monitoring Agreement among KDEP and IDEM to collectively meet United States Environmental Protection Agency (EPA) minimum monitoring requirements for particles of an aerodynamic diameter of 10 micrometers and less (PM 10), particles of an aerodynamic diameter of 2.5 micrometers and less (PM2.5), and ozone; as well as other criteria pollutant air quality monitoring deemed necessary to meet the needs of the MSA as determined reasonable by all parties. According to 40 CFR Part 58, Appendix D, the Evansville, IN-Henderson, KY MSA minimum monitoring requirements (based on a population of 350,000) are (2) ozone monitors, (0-1) PM-10 monitors, (1) FRM PM-2.5 monitor, and (1) collocated continuous PM-2.5 monitor with the FRM pm-2.5 monitor. This MOA will formalize and reaffirm the collective agreement in order to provide adequate criteria pollutant monitoring for the Evansville, IN-Henderson, KY MSA as required by 40 CFR 58 Appendix D, Section 2, (e).

County	Rederat Reference Method PM2-5	Continuous PM2/S	Speciation PM2.5	Collocated PM2.5
Henderson County, KY KDEP	1	1	0	0
Vanderburgh County, IN IDEM	3	. 1	1	1

PM 2.5 MSA monitoring network includes:

Criteria Air Pollutant MSA monitoring network includes:

er County	PATIO	O ₃	NOX/NO/NO2	CO.	-\$0,
	1	1	0	0	1
Henderson County, KY KDEP					
Vanderburgh County, IN IDEM	1 ·	2	1	1	1

RESPONSIBLITIES/ACTIONS

Each of the parties to this Agreement is responsible for ensuring that its obligations under the MOA are met. As conditions warrant, the affected agencies may conduct telephone conference calls, meetings, or other communications to discuss monitoring activities for the MSA. Each affected agency shall inform the other affected agencies via telephone or email of any monitoring changes occurring within its jurisdiction of the MSA at its earliest convenience, after learning of the need for the change or making the changes. Such unforeseen changes may include evictions from monitoring sites, destruction of monitoring sites due to natural disasters, or any occurrences that result in an extended (greater than one quarter) or permanent change in the monitoring network.

LIMITATIONS

- All commitments made in this MOA are subject to the availability of appropriated funds and each agency's budget priorities. Nothing in this MOA obligates KDEP or IODEM to expend appropriations or to enter into any contract, assistance agreement, interagency agreement or other financial obligation.
- This MOA is neither a fiscal nor a funds obligation document. Any endeavor involving reimbursement or contribution of funds between parties to this agreement will be handled in accordance with applicable laws, regulations, and procedures, and will be subject to separate agreements that will be affected in writing by representatives of the parties.
- This MOA does not create any right or benefit enforceable by law or equity against KDEP or IDEM, their officers or employees, or any other person. This MOA does not apply to any entity outside KDEP or IDEM.
- No proprietary information or intellectual property is anticipated to arise out of this MOA.

TERMINATION

This Memorandum of Agreement may be revised upon the mutual consent of KDEP and IDEM. Each party reserves the right to terminate this MOA. A thirty (30) day written notice must be given prior to the date of termination.

APPROVALS

We agree with the provisions outlined in this Memorandum of Agreement and commit our agencies to implement them in a spirit of cooperation and mutual support.

Kentucky Department for Environmental Protection Division for Air Quality	
BY: John. S. Lyons Noh L- hyper	
TITLE: Director, Division for Air Quality	
DATE: 5/14/10	

Indiana Department of Environmental Management Office of Air Quality

BY: _	Keith Baugues	Keith	Bang	لوريد	
TITLE	Assistant Commissi	oner, Office o	() of Air Qual	lity	
DATE:	5/24/10				

APPENDIX D

MEMORANDA OF AGREEMENT CLARKSVILLE, TN-KY MSA





STATE OF TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION

Division of Air Pollution Control William R. Snodgrass TN Tower 312 Rosa L. Parks Ave., 15th Floor Nashville, Tennessee 37243

July 1, 2014

Sean Alteri, Director Kentucky Division for Air Quality Kentucky Department for Environmental Protection 200 Fair Oaks Lane Frankfort, KY 40601

Dear Mr. Alteri:

The United States Environmental Protection Agency (EPA) revised monitoring regulations found in 40 CFR Part 58, Appendix D states in part: "The EPA recognizes that there may be situations where the EPA Regional Administrator and the affected State or local agencies may need to augment or to divide the overall MSA/CSA monitoring responsibilities and requirements among these various agencies to achieve an effective network design. Full monitoring requirements apply separately to each affected State or local agency in the absence of an agreement between the affected agencies and the EPA Regional Administrator." This revision of the CFR also describes the minimum monitoring requirements for the NAAQS pollutants, including continuous PM 2.5 as it applies to MSA areas where the population is sufficient to warrant monitoring for that pollutant. Tennessee and Kentucky share the Clarksville, TN-KY MSA, which is comprised of Trigg and Christian counties in Kentucky and Montgomery county in Tennessee. The US Census Bureau lists this area as containing a population in excess of 260,000.

CBSA	Geographic	Legal/statistical	July 1, 2013	2010
Code	area	Area description	Estimate	Census
17300	Clarksville,	Metropolitan Statistical	272,579	260,625
	TN-KY	Area		

The Tennessee Division of Air Pollution Control (TDAPC) currently operates one (1) PM 2.5 FRM monitor and one (1) continuous PM 2.5 monitor in this area. The TDAPC believes the operation of the existing PM 2.5 monitors; (FRM and continuous), are sufficient to properly characterize the particulate air quality in the entire Clarksville, TN-KY MSA and comply with the requirements for both population and concentration based monitoring identified in the revised monitoring regulations as found at 40 CFR58,AppD. The TDAPC would like to invite the

Sean Alteri July 2, 2014 Page 2

Kentucky Division for Air Quality to participate in Tennessee's annual ambient air monitoring network review. Tennessee commits to sharing with Kentucky any and all quality assured ambient air monitoring data collected in the Tennessee portion of the Clarksville, TN-KY MSA. Tennessee also will notify Kentucky in advance of the intent to relocate or shutdown any of the PM 2.5 monitors referenced above so that adequate monitoring arrangements can be made to meet the entire MSA monitoring requirements for PM 2.5.

Sincerely,

Barry R. Stephens, PE Director, Air Pollution Control Division

BRS/lb Cc: Heather McTeer-Toney, US EPA Region IV Steven L. Beshear Governor



Leonard K. Peters Secretary

Energy and Environment Cabinet Department for Environmental Protection Division for Air Quality 200 Fair Oaks Lane, 1st Floor Frankfort, Kentucky 40601-1403

Web site: air.ky.gov

May 15, 2015

Mr. Barry R. Stephens, PE Director Tennessee Division of Air Pollution Control 312 Rosa L. Parks Avenue, 15th Floor Nashville, TN 37243

Dear Mr. Stephens:

In a letter from your office dated July 1, 2014, the Tennessee Division of Air Pollution Control (TDAPC) agreed to operate a continuous $PM_{2.5}$ monitor and an intermittent FRM $PM_{2.5}$ sampler, to meet the minimum network design requirements stated in 40 CFR 58, Appendix D for the Clarksville, TN-KY metropolitan statistical area (MSA). The Kentucky Division for Air Quality (Division) appreciates TDAPC's cooperation and looks forward to participating in TDAPC's annual air monitoring network review.

The Division currently operates one (1) intermittent FRM $PM_{2.5}$ sampler and one (1) continuous ozone monitor at the Hopkinsville site (21-047-0006) in Christian County. In accordance with Table D-2 of 40 CFR 58, Appendix D, one (1) ozone monitor is required to be operated in the Clarksville, TN-KY MSA, based upon the most current population estimates from the US Census Bureau, as well as 2012-2014 ozone design values.

Geographic Area	Area Description	2014 USCB Population Estimate	2014 Three-Year Ozone DV (ppm)
Christian County, KY	County	74,250	0.067
Trigg County, KY	County	14,142	0.069 (CASTNET)
Montgomery County, TN	County	189,961	N/A
Clarksville, TN-KY	MSA	278,353	0.069

To satisfy the regulatory requirement, the Division agrees to operate one ozone monitor at the Hopkinsville site. Also, the Division agrees to notify TDAPC in the event that shutdown or relocation of the ozone monitor is necessary.

Despite the fact that 2012-2014 design values show that no FRM $PM_{2.5}$ samplers are required in the Clarksville MSA, the Division will continue to operate the $PM_{2.5}$ sampler at

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Kentua

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Mr. Barry Stephens May 15, 2015 Page 2

Hopkinsville. The Division also agrees to notify TDAPC in the event that the Hopkinsville FRM $PM_{2.5}$ sampler must be shutdown or relocated, as it is the design value monitor for the MSA.

The Division commits to sharing with TDAPC any and all quality-assured ambient monitoring data collected in the Kentucky portion of the Clarksville, TN-KY MSA. The Division also welcomes TDAPC participation in Kentucky's annual network review process. If you have any questions or concerns, please contact me at 502-564-3999.

Sincerely,

Sean Alteri, Director

SA/jfm

c: -Heather McTeer Toney, USEPA Region IV -Daniel Garver, USEPA Region IV

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APPENDIX E

LMAPCD AMBIENT AIR MONITORING NETWORK 2018

<u>Appendix E - Part A</u> LMAPCD Proposed Network Changes



Louisville Metro Air Pollution Control District's Proposed Changes to the Ambient Air Quality Monitoring Network

May, 2018

Table of Contents

LMAPCD Proposed Network Changes – Overview 2	
Particulate Matter Instrument Proposed Changes2	
LMAPCD Intended Use of Continuous PM2.5 Monitors	
Photochemical Assessment Monitoring Station (PAMS)4	ļ
Kosmosdale SO2 Site4	ļ
Conclusion4	ļ

LMAPCD Proposed Network Changes - Overview

The Louisville Metro Air Pollution Control District (LMAPCD) is proposing some changes to the ambient monitoring network during the 2018 Network Planning period (July 2018 through June 2019). The main changes being proposed for LMAPCD's ambient monitoring network include changes to the methodology for collecting and reporting particulate matter measurements (both PM₁₀ and PM_{2.5}) and the installation of additional equipment at the Cannons Lane NCore station for the required Photochemical Assessment Monitoring Station (PAMS) implementation. LMAPCD anticipates implementing a new site in southwestern Jefferson County for measurements of SO₂ in an area identified outside the Southwest Jefferson County SO₂ Nonattainment area. The details concerning these proposed changes are presented below.

Particulate Matter Instrument Proposed Changes

Per the 2017 Network Plan, LMAPCD is currently evaluating the API Teledyne T640 particulate analyzer. The analyzer ran for a period of time in LMAPCD's shop area and was installed at the Firearms Training site as a special purpose monitor in the Spring of 2018. The API T640 analyzer is operating alongside a Met One BAM1020 PM₁₀ and PM_{2.5} instrument, as well as collocated FRM Partisol 2025i instruments. If the evaluation of the API T640 particulate analyzer proves to be successful both from an operational and data comparability standpoint, the following changes are expected for calendar year 2019:

- Watson Lane
 - Install API T640 PM_{2.5} analyzer to replace the existing PM_{2.5} BAM1020.
 - Request removal of PM₁₀ BAM1020.
- Firearms Training
 - Install API T640x system to measure PM₂₅ and PM₁₀ to replace the existing PM₂₅ and PM₁₀ BAM1020s instruments.
 - Additionally, remove the PM_{2.5} FRM 2025i primary and collocated samplers.
- Cannons Lane
 - Install API T640x system to measure PM_{2.5}, PM₁₀, and PM₆ to replace the existing PM_{2.5} / PM₁₀ BAM pair PM₆ system.
 - Additionally, install a PM₂₅ FRM 2025i collocated sampler for PM₂₅ FRM collocation.
- Carrithers Middle School
 - Install API T640 PM_{2.5} analyzer to replace the existing PM_{2.5} BAM1020. Upon installation of the API T640 analyzer, the PM_{2.5} monitor will remain a SPM, and LMAPCD is requesting that the PM_{2.5} data not be subject to the PM_{2.5} NAAQS.
- Durrett Lane
 - Install API T640 PM_{2.5} analyzer as a special purpose monitor to evaluate against the existing PM_{2.5} FRM 2025i sampler. The API T640 PM_{2.5} SPM would be in place for one year with PM_{2.5} FRM to assess optical measurement in the near road environment. Some research has indicated that optical measurements of PM may not be accurate in depicting ultrafine particles; therefore this special evaluation period is warranted at the Durrett Lane Near Road site due to the unique emissions characteristics at this site.

Based on discussions with other monitoring agencies, LMAPCD expects the evaluation to result in a switchover from BAM1020 instruments to APIT640 instruments. The evaluation period will also allow

LMAPCD Proposed Network Changes (Continued)

for LMAPCD staff to develop standard operating procedures and become more familiar with the instrument before officially implementing throughout the network. The official replacement of BAM1020 instruments with APIT640s will likely occur during the 1st quarter of 2019.

LMAPCD Intended Use of Continuous PM2.5 Monitors

Through the remainder of calendar year 2018, LMAPCD will continue to operate BAM1020s for collection of PM₂₅ and PM₁₀ data. All PM₂₅ data collected with these BAM instruments are subjected to the PM₂₅ NAAQS with the exception of the Carrithers Middle School PM₂₅ BAM as it utilizes a sharp cut cyclone, instead of the FEM approved very sharp cut cyclone. As discussed above, LMAPCD plans to replace BAM1020 instruments with APIT T640 or T640x analyzers in 2019. The switch is not intended to result in any changes to the PM₂₅ NAAQS comparability. While the Carrithers Middle School PM₂₅ monitor will become an FEM with the installation of the APIT640, the monitor will still be considered a Special Purpose Monitor and *LMAPCD is requesting that the data not be subject to NAAQS comparison*. Similarly, the installation of an APIT640 instrument at LMAPCD's near road site at Durrett Lane will result in a continuous FEM monitor at that site, but *LMAPCD is requesting that the data not be subject to NAAQS comparison*. Table 1 and Table 2 serve to clarify the intended use of PM₂₅ data for calendar years 2018 and 2019, respectively.

	Continu	ous PM _{2.5} Mo	nitors (Operated by	y LMAPCD – O	Current (2018)	
Site Name	AQS ID	Parameter	POC	Monitor	Method	Primary	Compare to	Eligible
		Code		Туре		Monitor?	NAAQS?	for AQI?
Watson Lane	21-111-0051	88101	3	SLAMS	BAM1020 w/VSCC	Yes	Yes	Yes
Cannons Lane	21-111-0067	88101	3	SLAMS	BAM1020 w/VSCC	No – FRM	Yes	Yes
Carrithers Middle School	21-111-0080	88501	3	SPM	BAM1020 w/SCC	Yes	No	Yes
Firearms Training	21-111-1041	88101	3	SLAMS	BAM1020 w/VSCC	No – FRM	Yes	Yes
Firearms Training	21-111-1041	88101	4	SPM	APIT640	No – FRM	No	No

Table 1 - List of LMAPCD continuous PM2.5 monitors that are currently in place and will remain in place through 2018. Green shading shows those monitors intended for PM2.5 NAAQS comparison with light red shading showing those monitors not intended for PM2.5 NAAQS comparison.

	Continuo	us PM2.5 Mor	nitors O	perated by	LMAPCD - PI	roposed (201	9)	
Site Name	AQS ID	Parameter	POC	Monitor	Method	Primary	Compare to	Eligible
		Code		Туре		Monitor?	NAAQS?	for AQI?
Watson Lane	21-111-0051	88101	3	SLAMS	APIT640	Yes	Yes	Yes
Cannons Lane	21-111-0067	88101	3	SLAMS	APIT640x	No – FRM	Yes	Yes
Durrett Lane	21-111-0075	88101	3	SPM	APIT640	No – FRM	No	Yes
(Near Road)								
Carrithers	21-111-0080	88101	3	SPM	APIT640	Yes	No	Yes
Middle School								
Firearms	21-111-1041	88101	3	SLAMS	APIT640x	Yes	Yes	Yes
Training								

Table 2 – A proposed list of LMAPCD continuous PM2.5 monitors expected to be in place for 2019. Green shading shows those monitors intended for PM2.5 NAAQS comparison with light red shading showing those monitors not intended for PM2.5 NAAQS comparison.

Photochemical Assessment Monitoring Station (PAMS)

Per EPA requirements, PAMS monitoring is required for the Louisville MSA and shall be conducted at the Cannons Lane NCore monitoring station. Per PAMS requirements, the following <u>additional</u> parameters are required to be installed at the Cannons Lane NCore station by June 1, 2019:

- Continuous VOCs via Auto GC
- Ultra Violet Solar Radiation
- Mixing Height data via Ceilometer
- Barometric Pressure
- Carbonyls

In order to accommodate the new instrumentation for PAMS, it is likely that an additional shelter will be needed at the Cannons Lane site. Due to funding limitations, the EPA is not able to provide funding for all equipment at one time. Instead, the funding will likely be provided over a multi-year period. As such, it is unlikely that all of the required instrumentation will be operational by the June 1, 2019 deadline. APCD plans to purchase the additional PAMS instrumentation in the following order of priority:

- 1.) Install new shelter to house new equipment
- 2.) Install Auto GC at CLAMS with goal of being operational by 6/1/19
- 3.) Install a ceilometer at CLAMS with goal of being operational by 6/1/19
- 4.) Install a barometric pressure sensor at CLAMS with goal of being operational by 6/1/19
- 5.) Install an Ultra Violet pyranometer at CLAMS with goal of being operational by 6/1/20
- 6.) Install instrumentation to measure Carbonyls at CLAMS with goal of being operational by 6/1/20

LMAPCD will work as diligently as possible to install and operate the new PAMS instrumentation so that meaningful, valid data can be collected and reported to EPA's AQS database. Funding constraints may limit the amount of time that LMAPCD staff have to become familiar with the new instrumentation. As such, LMAPCD does not plan to report these PAMS data to EPA's database until there is adequate confidence in the data being collected.

Kosmosdale SO₂ Site

APCD has received approval from EPA for the installation of an additional site for monitoring SO₂ concentrations in an area outside the Southwest Jefferson County SO₂ Nonattainment area. Although installation and operation of the new site was anticipated by January 1, 2018, delays in approval of the SIP submittal for the nearby Southwest Jefferson County SO₂ Nonattainment area by EPA have delayed the project. APCD will continue to work with EPA, KYDAQ, and permitted facilities to install the site and monitoring equipment in a timely manner.

Conclusion

The majority of the changes being proposed for the Network Planning period (July 2018 – June 2019) do not significantly alter LMAPCD's criteria pollutant network. Most of the changes involve altering the methodology for collecting and reporting PM_{2.5} and PM₁₀ data. The most substantial change to LMAPCD's network will be the installation of several pieces of equipment at the Cannons Lane NCore station to meet PAMS requirements. The PAMS instrumentation is new to most state, local, and tribal

LMAPCD Proposed Network Changes (Continued)

agencies, and as such, additional effort will likely be needed to make sure that the instrumentation is producing meaningful, valid data. In an effort to ensure that the Louisville Metropolitan Statistical Area (MSA) continues to meet minimum monitoring requirements, Table 3 provides a summary of the number of ambient air quality monitoring sites in operation for each pollutant group within the Louisville MSA. The following changes are noted between the current and proposed changes:

- Increase of one PM_{2.5} site is result of Carrithers PM_{2.5} non-FEM BAM being converted to the FEM approved T640. While LMAPCD is requesting that the Carrithers PM_{2.5} T640 not be comparable to the PM_{2.5} NAAQS, it is listed in Table 3 since it is a PM_{2.5} FEM.
- Decrease of one PM₁₀ site is result of removing Watson Lane PM₁₀BAM from operation
- Increase of one SO₂ site is result of proposed addition of the Kosmosdale site
- Increase of one PAMS site is result of proposed addition of PAMS instrumentation at Cannons Lane

As can be seen in Table 3, the Louisville MSA continues to meet the EPA minimum monitoring requirements through the collective efforts of the Indiana Department of Environmental Management (IDEM), Kentucky Division for Air Quality (KDAQ), and the LMAPCD. It should also be noted that the operation of ambient air quality monitors by the LMAPCD alone meets the EPA minimum monitoring requirements.

Louisville / Jefferson County MSA Monitoring Requirements									
O3 PM2.5 PM10 PMc SO2 NO2 CO Toxics PAMS							PAMS		
# Sites Required by CFR	2	3	2-4	1	1	2	2	0	1
# Sites Before proposed Changes	7 (3)	7 (4)	4 (3)	1 (1)	4 (3)	2 (2)	2 (2)	1 (1)	0 (0)
# Sites After proposed Changes	7 (3)	8 (5)	3 (2)	1 (1)	5 (4)	2 (2)	2 (2)	1 (1)	1 (1)

Table 3 - Summary of monitoring requirements in Louisville / Jefferson County MSA compared to number of monitors / sites before and after network changes. Numbers in parenthesis represents number of sites that APCD operates (versus total number in MSA).

<u>Appendix E - Part B</u> LMAPCD Equipment Inventory

Location	Instrument Type	Manufacturer	Model	Serial Number	Condition	Status
Carrithers	Calibrator	API	T703	255	Good	In Use
Carrithers	Datalogger	ESC Agilaire LLC	8832	4411	Fair	In Use
Carrithers	O3 Analyzer	API	T400	315	Good	In Use
Carrithers	PM	Met One	BAM	T18984	Good	In Use
Carrithers	RH/Temp Probe	RM Young	41382	n/a	Good	In Use
Carrithers	RH/Temp Sensor	Vaisala	HMW93D	n/a	Good	In Use
Carrithers	Shelter	EKTO Mfg.	81012	4234-1	Fair	In Use
Carrithers	Wind Monitor	RM Young	05103VM-42	n/a	Good	In Use
CLAMS	Anemometer	RM Young	85000	UB00002568	Good	In Use
CLAMS	Calibrator	API	T700U	107	Good	In Use
CLAMS	CO Analyzer	Thermo	48i-TLE	0814429-062	Fair	In Use
CLAMS	Datalogger	ESC Agilaire LLC	8832	4410	Good	In Use
CLAMS	Meteorology Tower	Aluma Tower	T-35H	AP-29071-U-4	Good	In Use
CLAMS	NO2 Analyzer	API	T500U	169	Good	In Use
CLAMS	Noy Analyzer	Thermo	42i-Y	0814428-734	Fair	In Use
CLAMS	O3 Analyzer	API	T400	1467	Good	In Use
CLAMS	PM	Met One	Super SASS	1046	Good	In Use
CLAMS	PM	Thermo	2025i	20607	Good	In Use
CLAMS	PM	Met One	SASS	3567	Fair	In Use
CLAMS	PM	Met One	SASS	6079	Fair	In Use
CLAMS	PM	URG	3000N	BN-251	Fair	In Use
CLAMS	PM	URG	3000N	BN-933	Fair	In Use
CLAMS	PM	Met One	BAM	K19862	Fair	In Use
CLAMS	PM	Met One	BAM	K19863	Fair	In Use
CLAMS	Pyranometer	Met One	394	34257	Good	In Use
CLAMS	RadNet	HI-Q	HVP-4004BRL-S	17603	Fair	In Use
CLAMS	Rain	Met One	370	U10772	Good	In Use
CLAMS	RH/Temp Probe	RM Young	41382	TS-14425	Good	In Use
CLAMS	RH/Temp Sensor	Vaisala	HMW93D	H05200002	Good	In Use
CLAMS	Shelter	Modular Connections	MCP-296	MC2519	Good	In Use
CLAMS	SO2 Analyzer	API	T100U	276	Good	In Use

		-	uipment Inventory ntinued)								
	Louisville Air Pollution Control District Ambient Monitoring Group Instrument & Equipment Inventory - May, 2018										
Location	Instrument Type	Manufacturer	Model	Serial Number	Condition	Statu					
CLAMS	TEOM Shelter	EKTO Mfg.	432-SP	3200-7	Poor	In Use					
CLAMS	TEOM Shelter	EKTO Mfg.	432-SP	3535-6	Good	In Use					
CLAMS	Wind Monitor	RM Young	5305AQ	n/a	Good	In Use					
CLAMS	Zero Air	API	T701H	773	Fair	In Use					
FireArms	Anemometer	RM Young	85000	UB3773	Good	In Use					
FireArms	Auto GC Air generator	Chromatotec	airmoPure D	56430717	Good	In Use					
FireArms	Auto GC C3-C6	Chromatotec	airmoVOC A21022	56410717	Good	In Use					
FireArms	Auto GC C6-C12	Chromatotec	airmoVOC C6-C12 A21022	26400717	Good	In Use					
FireArms	Auto GC Calibrator	Chromatotec	airmoCal	56440717	Good	In Use					
FireArms	Calibrator	API	T700	289	Good	In Use					
FireArms	Datalogger	ESC Agilaire LLC	8832	4294	Fair	In Use					
FireArms	Datalogger	ESC Agilaire LLC	8872	n/a	Good	In Use					
FireArms	PM	API	T640	151	Good	In Use					
FireArms	PM	Thermo	2025i	20612	Good	In Use					
FireArms	PM	Thermo	2025i	20614	Good	In Use					
FireArms	PM	Met One	BAM	N2946	Fair	In Use					
FireArms	PM	Met One	BAM	T18981	Good	In Use					
FireArms	RH/Temp Sensor	Vaisala	HMW93D	n/a	Good	In Use					
FireArms	Shelter	EKTO Mfg.	8812	4222	Good	In Use					
FireArms	SO2 Analyzer	API	T100	1322	Good	In Use					
FireArms	Zero Air	API	T701M	647	Good	In Use					
Near Road	Anemometer	RM Young	85000	4675	Fair	In Use					
Near Road	Calibrator	API	T700U	106	Good	In Use					
Near Road	CO Analyzer	API	T300U	155	Fair	In Use					
Near Road	Datalogger	ESC Agilaire LLC	8832	4293	Fair	In Use					
Near Road	Meteorology Tower	Aluma Tower	T-135	AT-213072-Y-6-1	Good	In Use					
Near Road	NO2 Analyzer	API	T500U	168	Good	In Use					
Near Road	PM	Thermo	2025i	20608	Good	In Use					
Near Road	RH/Temp Probe	RM Young	41382	25029	Fair	In Use					
Near Road	RH/Temp Sensor	Vaisala	HMW93D	n/a	Good	In Use					
Near Road	Shelter	CAS	CAS	3200-7	Good	In Use					

Landing Instrument Tune Manufactures Medal Casial Number Condition Charter									
Location	Instrument Type	Manufacturer	Model	Serial Number	Condition	Statu			
Near Road	Wind Monitor	RM Young	05305V	128356	Fair	In Use			
Near Road	Zero Air	API	T701M	839	Good	In Use			
Southwick	Baro Pressure	RM Young	61302V	BPA1240	Good	In Use			
Southwick	Meteorology Tower	Aluma Tower	Meteorology Tower	n/a	Good	In Use			
Southwick	PM	Thermo	2025B	20450	Fair	In Use			
Southwick	PM	Thermo	2025B	21665	Fair	In Use			
Southwick	PM	Met One	BAM	T18983	Good	In Use			
Southwick	Rain	Met One	0.1 Rain Gauge	E5009	Good	In Use			
Southwick	RH/Temp Probe	RM Young	41372VC	Y490092	Fair	In Use			
Southwick	Shelter	Met One	BAM Shelter	n/a	Good	In Use			
Southwick	TEOM Shelter	EKTO Mfg.	432-SP	3408-6	Good	In Use			
Southwick	TEOM Shelter	EKTO Mfg.	432-SP	3408-7	Good	In Use			
Watson	Anemometer	RM Young	85000	n/a	Good	In Use			
Watson	Calibrator	API	1700	1620	Good	In Use			
Watson	Datalogger	ESC Agilaire LLC	8832	4291	Fair	In Use			
Watson	O3 Analyzer	API	T400	1468	Good	In Use			
Watson	PM	Met One	BAM	N3593	Fair	In Use			
Watson	PM	Met One	BAM	T18977	Good	In Use			
Watson	RH/Temp Probe	RM Young	41382	n/a	Good	In Use			
Watson	RH/Temp Sensor	Vaisala	HMW93D	J0871073	Good	In Use			
Watson	Shelter	EKTO Mfg.	8812	3728-1	Good	In Use			
Watson	SO2 Analyzer	API	T100	1321	Good	In Use			
Watson	Zero Air	API	T701M	648	Good	In Use			
Shop	Air Toxics FTIR	IMACC	M-ZSE12-180	M0015	Good	Spare			
Shop	Air Toxics Sampler	Thermo	Miran Saphire	79545411	Good	Spare			
Shop	Anemometer	Met One	50.5	B-1031	Poor	Spare			
Shop	Anemometer	RM Young	85000	UB-1309	Good	Spare			
Shop	Anemometer	RM Young	5305AQ	VW101749	Good	Spare			
Shop	Anemometer	Met One	50.5	Y3338	Good	Spare			
Shop	Calibrator	API	T750	054	Good	In Use			
Shop	Calibrator	API	T700E	1038	Good	In Use			

Location	Instrument Type	Manufacturer	Model	Serial Number	Condition	Statu
Shop	Calibrator	API	T700	1619	Good	In Use
Shop	Calibrator	API	T700U	174	Good	In Use
Shop	Calibrator	API	T700	290	Good	In Use
Shop	CO Analyzer	API	T300U	281	Good	In Use
Shop	Datalogger	ESC Agilaire LLC	8832	2713K	Fair	In Use
Shop	Datalogger	ESC Agilaire LLC	8832	4691K	Fair	In Use
Shop	Flow Standard	MesaLab	Bios Dry Cal	105393	Fair	In Use
Shop	Flow Standard	AliCat	FP-25	148162	Good	In Use
Shop	Flow Standard	Chinook	SLP	170606	Good	In Use
Shop	Flow Standard	Chinook	SLP	170607	Good	In Use
Shop	Flow Standard	Fluke	Fluke	2213	Good	In Use
Shop	Flow Standard	MesaLab	Delta Cal	465	Fair	In Use
Shop	Flow Standard	MesaLab	Delta Cal	466	Fair	In Use
Shop	Flow Standard	Chinook	SLP	M41005	Fair	In Use
Shop	Flow Standard	Chinook	SLP	M41006	Fair	In Use
Shop	Flow Standard	Chinook	SLP	M41007	Fair	In Use
Shop	Flow Standard	Chinook	SLP	M70204	Fair	In Use
Shop	Lab Fridge	Thermo	REL1204A	155472601160526	Good	In Use
Shop	Met Station	Met One	Portable	5876	Fair	Spare
Shop	Met Station	Met One	Portable	E5678	Good	Spare
Shop	NO2 Analyzer	API	T500U	170	Good	Spare
Shop	Noy Analyzer	API	T200U	316	Good	Spare
Shop	O3 Analyzer	API	T400	316	Good	In Use
Shop	O3 Analyzer	Thermo	49C	413906-381	Poor	Spare
Shop	O3 Analyzer	Thermo	49C	417007-061	Poor	Spare
Shop	O3 Analyzer	Thermo	49iPS	617817-229	Good	In Use
Shop	O3 Analyzer	Thermo	49i	617817-230	Fair	Spare
Shop	O3 Analyzer	Thermo	49C	70020-364	Good	In Use
Shop	O3 Analyzer	Thermo	49C	74462-376	Poor	Spare
Shop	PM	URG	3000N	1045	Fair	Spare
Shop	PM	Thermo	2025B	22560	Fair	Parts

Location	Instrument Type	Manufacturer	Model	Serial Number	Condition	Status
Shop	PM	Met One	SASS	6080	Fair	Spare
Shop	PM	Met One	BAM	H1710	Fair	Spare
Shop	Pump	Rocker	Rocker	B001	Fair	Spare
Shop	Pump	Rocker	Rocker	B002	Fair	In Use
Shop	Pump	Rocker	Rocker	C031	Fair	Spare
Shop	Pump	Rocker	Rocker	H005	Fair	In Use
Shop	Pyranometer	Met One	394	33927	Good	Spare
Shop	Pyranometer	Met One	PSP	33927F3	Fair	Spare
Shop	Pyranometer	Met One	PSP	34257F3	Good	Spare
Shop	Rain	RM Young	52202	TB03206	Good	Spare
Shop	RH/Temp Probe	RM Young	41382	21011	Good	Spare
Shop	RH/Temp Sensor	Vaisala	HMW93D	n/a	Good	Spare
Shop	RH/Temp Sensor	Vaisala	HMW93D	N1540017	Fair	In Use
Shop	RH/Temp Standard	Vaisala	HPM	10013	Fair	In Use
Shop	RH/Temp Standard	Vaisala	HPM	J0871073	Fair	In Use
Shop	RH/Temp Transmitter	Vaisala	HMW71Y	W3650008	Fair	Spare
Shop	RH/Temp Transmitter	Vaisala	HMW71Y	X0840020	Fair	Spare
Shop	SO2 Analyzer	API	T100U	081	Fair	In Use
Shop	SO2 Analyzer	Thermo	43i-TLE	814428-732	Fair	Spare
Shop	Temp Probe	RM Young	41342VF	41376A	Fair	Spare
Shop	Temp Probe	RM Young	41342VF	TS05123	Good	Spare
Shop	Vehicle	Ford	F250	1268	Good	In Use
Shop	Vehicle	Ford	Focus	1706	Good	In Use
Shop	Vehicle	Ford	Transit	2116	Good	In Use
Shop	Vehicle	Ford	F350	2966	Poor	In Use
Shop	Vehicle	Ford	Ranger	3114	Poor	In Use
Shop	Vehicle	Ford	Explorer	3500	Fair	In Use
Shop	Vehicle	Ford	Escape	3700	Fair	In Use
Shop	Wind Monitor	RM Young	05103VM	WM101749	Spare	Spare
Shop	Wind Monitor	RM Young	05103VM	WM47808	Spare	Spare
Shop	Zero Air	API	T701M	604	Good	In Use

Location	Instrument Type	Manufacturer	Model	Serial Number	Condition	Status
Shop	Zero Air	API	1751	62	Good	In Use
Shop	Zero Air	API	T701M	801	Good	In Use
Shop	Zero Air	API	T701M	802	Good	Spare
Warehouse	Air Toxics UV	IMACC	Air Toxics UV	Air Toxics UV	Fair	Not In Us
Warehouse	Analyzer	EcoTech	300	1586	Poor	Not In Us
Warehouse	Calibrator	Thermo	146C	0417007-062	Poor	Not In Us
Warehouse	Calibrator	Thermo	146i	0814428-735	Fair	Not In Us
Narehouse	Calibrator	Thermo	146C	382	Poor	Not In Us
Narehouse	Calibrator	EcoTech	6100	4012	Poor	Not In Us
Warehouse	Calibrator	Thermo	146C	70386-365	Poor	Not In Us
Warehouse	CO Analyzer	Thermo	48C	351	Poor	Not In Us
Warehouse	CO Analyzer	Thermo	48C	417007-060	Poor	Not In Us
Varehouse	CO Analyzer	Thermo	48i-TLE	617817-228	Fair	Not In Us
Narehouse	CO Analyzer	Thermo	48C	67474-356	Poor	Not In Us
Warehouse	CO Analyzer	Thermo	48C	68840-361	Poor	Not In Us
Narehouse	Datalogger	ESC Agilaire LLC	8816	1917	Fair	Not In Us
Warehouse	Datalogger	ESC Agilaire LLC	8816	1971	Fair	Not In Us
Narehouse	Datalogger	ESC Agilaire LLC	8816	1972	Fair	Not In Us
Narehouse	Datalogger	ESC Agilaire LLC	8816	1973	Fair	Not In Us
Warehouse	Datalogger	ESC Agilaire LLC	8816	2423	Fair	Not In Us
Narehouse	Datalogger	ESC Agilaire LLC	8816	2764	Fair	Not In Us
Narehouse	Datalogger	ESC Agilaire LLC	8816	3303	Poor	Not In Us
Narehouse	Datalogger	ESC Agilaire LLC	8816	3304	Poor	Not In Us
Varehouse	Datalogger	ESC Agilaire LLC	8816	3305	Poor	Not In Us
Varehouse	Datalogger	ESC Agilaire LLC	8816	3306	Fair	Not In Us
Varehouse	Datalogger	ESC Agilaire LLC	8816	3307	Fair	Not In Us
Varehouse	Datalogger	ESC Agilaire LLC	8816	3308	Fair	Not In Us
Warehouse	Datalogger	ESC Agilaire LLC	8816	3801	Good	Not In Us
Narehouse	Datalogger	ESC Agilaire LLC	8832	4291	Fair	Not In Us
Warehouse	Datalogger	ESC Agilaire LLC	8816	4422	Fair	Not in Us
Warehouse	Datalogger	ESC Agilaire LLC	8816	4423	Fair	Not In Us

Location	Instrument Type	Manufacturer	Model	Serial Number	Condition	Status
Warehouse	Datalogger	ESC Agilaire LLC	8816	4424	Fair	Not In Use
Warehouse	Datalogger	ESC Agilaire LLC	8832	5058	Poor	Not In Use
Warehouse	Datalogger	ESC Agilaire LLC	8832	A1014	Good	Not In Use
Warehouse	Meteorology Tower	Aluma Tower	Meteorology Tower	n/a	Good	Not In Use
Warehouse	NO2 Analyzer	Thermo	42C	070415-365	Poor	Not In Use
Narehouse	NO2 Analyzer	API	T200UP	085	Good	Not In Use
Narehouse	NO2 Analyzer	API	T200	341	Fair	Not In Use
Narehouse	NO2 Analyzer	EcoTech	Ecotech Serinus	40-10-51	Poor	Not In Use
Narehouse	NO2 Analyzer	Thermo	42C	70979-367	Poor	Not In Use
Narehouse	O3 Analyzer	Thermo	49C	43374-269	Poor	Not In Use
Narehouse	O3 Analyzer	Thermo	49C	47646-280	Poor	Not In Use
Narehouse	O3 Analyzer	Thermo	49C	64282-342	Poor	Not In Use
Varehouse	PM	Thermo	2025B	21310	Fair	Not in Use
Narehouse	PM	Thermo	2025B	21656	Fair	Not In Use
Warehouse	PM	Thermo	2025B	21666	Fair	Not In Use
Narehouse	PM	Met One	SASS	3565	Fair	Not In Use
Narehouse	PM	Met One	BAM	N3596	Fair	Not in Use
Narehouse	Shelter	EKTO Mfg.	8812	3876-1	Poor	Not In Use
Narehouse	SO2 Analyzer	Thermo	43C	436610-205	Poor	Not in Use
Narehouse	SO2 Analyzer	Thermo	43C	518612-095	Poor	Not In Use
Narehouse	SO2 Analyzer	Thermo	43C	69873-364	Poor	Not in Use
Varehouse	TEOM	R&P	1400a	230750005	Poor	Not In Use
Narehouse	TEOM	R&P	1400a	23746	Poor	Not In Use
Varehouse	TEOM	R&P	1400a	23748	Poor	Not In Use
Varehouse	TEOM	R&P	1400ab	24059	Poor	Not in Use
Varehouse	TEOM	R&P	1400ab	24097	Poor	Not in Use
Varehouse	TEOM	R&P	1400a	24601	Poor	Not in Use
Varehouse	TEOM	R&P	1400ab	24885	Poor	Not in Use
Varehouse	TEOM	R&P	1400ab	24926	Poor	Not in Use
Warehouse	TEOM Shelter	EKTO Mfg.	432-SP	3278-10	Good	Not In Use
Warehouse	TEOM Shelter	EKTO Mfg.	432-SP	3278-9	Good	Not In Use

La	Louisville Air Pollution Control District Ambient Monitoring Group Instrument & Equipment Inventory - May, 2018								
Location	Location Instrument Type Manufacturer Model Serial Number Condition Status								
Warehouse	Warehouse Zero Air API T701M 835 Poor Not In Use								
Warehouse	Varehouse Zero Air API T701M 837 Poor Not In Use								

APPENDIX F

KDAQ INTENDED USE OF CONTINUOUS PM_{2.5} FEMS

<u>Appendix F</u> KDAQ Intended Use of Continuous PM_{2.5} FEMs

Historically, continuous $PM_{2.5}$ monitors that are designated as Federal Equivalent Methods (FEMs) have been excluded from comparisons to the $PM_{2.5}$ NAAQS, as long as these monitors were specified as special-purpose monitors (SPMs). Data from these monitors was used for reporting of the AQI. Monitors could remain designated as SPMs for a period of two years of operation at each site. However, after that two-year period, the data was eligible for comparison to the NAAQS, regardless of monitor-type designation.

In December 2012, a new PM NAAQS and set of monitoring rules were finalized. These new monitoring rules amended the previous requirement to compare all data from FEMs collected after a period of two-years to the NAAQS. Instead, agencies could operate a continuous $PM_{2.5}$ FEM for longer than two years and could elect to exclude the data from NAAQS-comparisons, provided that the monitor did not meet certain performance specifications. Data from monitors established for less than two years and designated as SPM remain ineligible for attainment decisions. Specifically, the final rule allows certain continuous $PM_{2.5}$ FEM data to be excluded if:

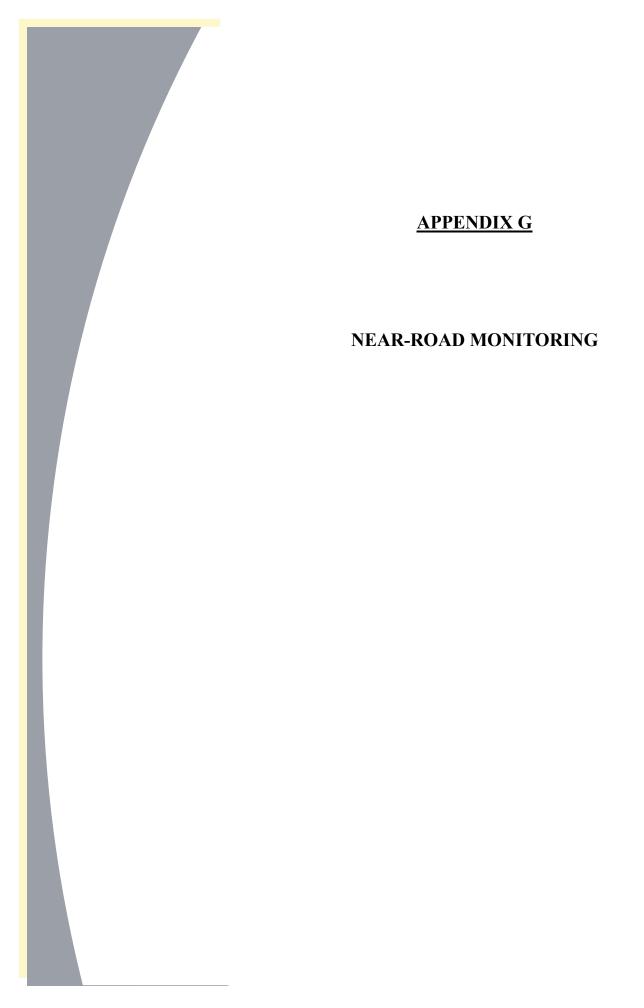
- the monitor does not meet performance criteria when compared to the data collected from collocated Federal Reference Methods (FRMs);
- the monitoring agency requests exclusion of data; and,
- the EPA Regional Office approves exclusion of the data.

Regardless of whether an exclusion is sought, each agency must address the use of all continuous $PM_{2.5}$ FEMs in the network. Each monitor must be properly referenced by a set of parameter codes, primary monitor designations, and monitor-types.

During the upcoming monitoring year, KDAQ plans to install FEM Teledyne-API model T640 $PM_{2.5}$ mass monitors at four sites: Elizabethtown, Hazard, Lexington Primary, and Ed Spear Park (Smiths Grove) sites. KDAQ intends to eventually replace all non-FEM TEOMs with FEM T640s within the next few years. As such, T640s may be installed at additional sites, as resources allow. KDAQ requests EPA-approval to exclude data collected from all FEM T640 monitors from NAAQS comparisons for the allowable two-year comparability studies.

The monitor designations for Teledyne-API T640 continuous $PM_{2.5}$ FEMs that will be operated by KDAQ are summarized in the chart below:

	Elizabethtown (21-093-0006); Hazard (21-193-0003); Lexington Primary(21-067-0012); Ed Spear Park (21-227-0009)								
Scenario Parameter Occurrence Monitor Monitor Information For							Eligible for AQI?		
PM2.5 Continuous FEM is being tested and is less than 24 old; FRM is retained as the Primary monitor.	PM2.5 Local	88101	3	SPM & Non- Regula- tory	FRM	No	No	Yes	



<u>Appendix G</u> Part A - Near-Road Monitoring

On February 9, 2010, the EPA released a new NO_2 Final Rule and a new set of monitoring requirements. Under the new monitoring requirements, State and Local agencies are required to establish NO_2 near-road monitoring stations based upon core based statistical area (CBSA) populations and traffic metrics.

Specifically, the final rule required:

- 1 near-road monitor in CBSAs with populations greater than or equal to 500,000; and
- 2 near-road monitors in CBSAs with populations greater than or equal to 2,500,000.

Additionally, the final rule required:

• 2 near-road monitors for any road segment that has an annual average daily traffic (AADT) count of 250,000 or more.

Similarly, the EPA revised the $PM_{2.5}$ NAAQS and monitoring rule on December 14, 2012, and the CO monitoring rule on August 31, 2011. Together, these rules require CO and $PM_{2.5}$ monitoring to be established at near-road sites for any CBSA with a population of one-million or greater. Ultimately, near -road sites are intended to be multi-pollutant sites. These sites are used to characterize the impacts vehicle exhaust and traffic patterns on public health.

In March 2013, the EPA finalized the use of a "phased" approach for establishing NO_2 near-road monitoring sites across the Nation. The phased approach necessitates:

- Phase 1: One required near-road monitor in CBSAs with a population of 1,000,000 or more must be established by January 1, 2014.
- Phase 2: Any second required near-road monitor in CBSAs that have a population greater than 2,500,000, or have a population of 500,000 or greater and have a traffic segment with an AADT of 250,000 or more, must be established by January 1, 2015.
- Phase 3: Required sites in remaining CBSAs with populations of 500,000 or more must be established by January 1, 2017.

Based upon population estimates and AADT counts, near-road monitors were required to be established in the following CBSAs during the implementation of Phase 1. No Phase 2 monitors are required in Kentucky.

CBSA Name (500,000 or more people)	2015 CBSA Population Estimate*	Highest Road Segment 2-Way AADT for CBSA**	Number of Monitors Required in CBSA
Cincinnati-Middletown, OH-KY-IN	2,128,603	193,399	1
Louisville-Jefferson County, KY-IN	1,251,351	166,432	1

*Source: US Census Bureau, 2015 Population Estimates (Last accessed: April 5, 2016)

**Source: KYTC Traffic Database. http://datamart.business.transportation.ky.gov/EDSB_SOLUTIONS/CTS/. Last accessed: June 2015

The determination of the final locations of near-road monitoring locations within these CBSAs was a cooperative effort between multiple State and Local Agencies. The exact location of each site was determined using the following criteria:

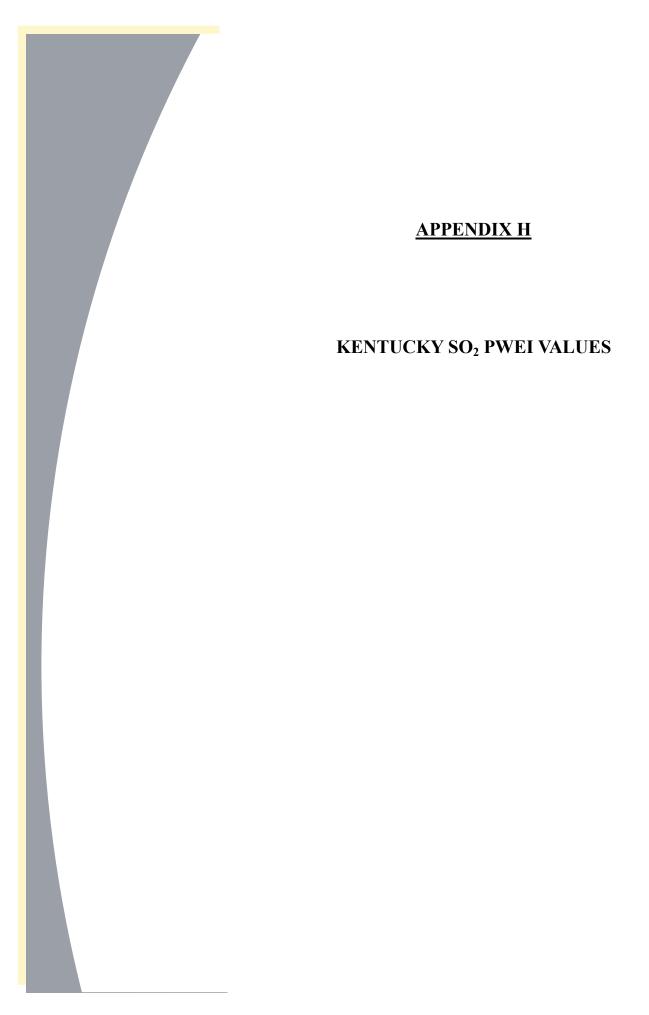
- Fleet mix
- Roadway design
- Traffic congestion patterns
- Local topography

- Meteorology
- Population exposure
- Employee and public safety
- Site logistics

The requirement for a near-road site in the Cincinnati, OH-KY-IN MSA is fulfilled by a Memorandum of Agreement (MOA). The site is located in Ohio and is operated by the Southwest Ohio Air Quality Agency.

The near-road site in the Louisville-Jefferson County, KY-IN MSA has been established and is operated by the Louisville Metro Air Pollution Control District (LMAPCD). Specifics regarding this site are included in the site detail pages of this Annual Network Plan.

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<u>Appendix H</u> Kentucky SO₂ PWEI Values

40 CFR 58, Appendix D, requires that a minimum number of SO_2 monitors be operated based upon a Population Weighted Emissions Index (PWEI) values. This index, which is calculated for each Core Based Statistical Area (CBSA), is calculated by multiplying the population of each CBSA and the total amount of SO_2 , in tons per year, that is emitted within the CBSA, based upon aggregated county level emissions data from the National Emissions Inventory (NEI). The result is then divided by one million to provide the PWEI value, which is expressed in a unit of million persons-tons per year.

The minimum number of monitors required are:

- 3 monitors in CBSAs with index values of 1,000,000 or more;
- 2 monitors in CBSAs with index values less than 1,000,000 but greater than 100,000; and
- 1 monitor in CBSAs with index values greater than 5,000.

Additionally, the EPA Regional Administrator may, at their discretion, require additional monitors beyond the minimum required by PWEI calculations. However, Kentucky currently does not have any Regional Administrator required SO₂ monitors.

Kentucky CBSAs	2015 PWEI* (million persons-tons per year)	Number of SO ₂ Monitors Required	Number of SO ₂ Monitors Present	Kentucky Site Name	Kentucky AQS ID
Cincinnati, OH-KY-IN	380,617	2	6**	NKU	21-037-3002
Evansville, IN-KY	7,771	1	1	Baskett	21-101-0014
Huntington-Ashland, WV-KY-	4,553	1	2	Ashland Primary	21-019-0017
ОН	ч,355	1	2	Worthington	21-089-0007
Lovington Fougtto VV	2 522	1	2	Lexington Primary	21-067-0012
Lexington-Fayette, KY	3,522	1	2	Nicholasville	21-113-0001
				Watson Lane	21-111-0051
Louisville-Jefferson County, KY-IN	60,030	1	3***	Cannons Lane	21-111-0067
K I -IIN				Firearms Training	21-111-1041
Paducah, KY-IL	5,514	1	1	Jackson Purchase	21-145-1024

Based upon Kentucky's calculated PWEI values, the following CBSAs require SO₂ monitors:

* 2015 PWEI calculated from 2013 USCB Population Estimates and 2011 NEI.

** Additional monitors operated by SWOAQA in Ohio.

***Monitors operated by the Louisville Metro Air Pollution Control District

<u>APPENDIX I</u>

EPA CASTNET STATIONS IN KENTUCKY

<u>Appendix I</u> EPA CASTNET Stations in Kentucky

The Clean Air Status and Trends Network (CASTNET) is a nation-wide, long-term monitoring network designed to measure acidic pollutants and ambient ozone concentrations in rural areas. CASTNET is managed collaboratively by the Environmental Protection Agency – Clean Air Markets Division (EPA), the National Park Service – Air Resources Division (NPS), and the Bureau of Land Management – Wyoming State Office (BLM-WSO). In addition to EPA, NPS, and BLM-WSO, numerous other participants provide network support including tribes, other federal agencies, States, private land owners, and universities. More information about CAST-NET can be found at: <u>https://www.epa.gov/castnet</u>

KDAQ does not operate nor serve as the Primary Quality Assurance Organization for any site in the CASTNET network. However, KDAQ does maintain a cooperative relationship with the staff of Mammoth Cave National Park. At the request of KDAQ, the NPS has designated the ozone monitor as the "Maximum O₃ Concentration" site for the Bowling Green, KY MSA. More information about the Mammoth Cave site can be found in the site detail pages of the Annual Network Plan.

KDAQ requested that EPA designate the CASTNET ozone monitor at the Cadiz site (21-221-9991) as the "Maximum O₃ Concentration" site for the Clarksville, TN-KY MSA. EPA agreed to the change and has since updated the metadata for the monitor in AQS.

Clean Air	Status &	Trends	Network	(CASTNET)
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Monitor ID	Monitor Name	County/ Metropolitan Statistical Area	Designation	Monitoring Scale
21-061-0501	Mammoth Cave National Park	Edmonson/ Bowling Green, KY MSA	CASTNET Non-EPA Federal Maximum O ₃ Concentration*	Regional
21-175-9991	Crockett	Morgan/ Not in a MSA	CASTNET EPA	Regional
21-221-9991	Cadiz	Trigg/ Clarksville, TN-KY MSA	CASTNET EPA Maximum O ₃ Concentration**	Regional
21-229-9991	Mackville (POC 1)	Washington/ Not in a MSA	CASTNET EPA	Regional
21-229-9991	Mackville Collocated (POC 2)	Washington/ Not in a MSA	CASTNET- QA Collocated*** EPA	Regional

Kentucky Ozone Monitors

* Maximum Ozone Concentration Site for the Bowling Green, KY MSA

** Maximum Ozone Concentration site for the Clarksville, TN-KY MSA

***Not usable for NAAQS comparisons

KDAQ EQUIPMENT INVENTORY

APPENDIX J

Appendix J KDAQ Equipment Inventory						
Location	Item	Description	Condition	Comments		
21st & Greenup	PM2.5 Sampler	Partisol Plus 2025 Sequential	Good	In Use		
21st & Greenup	PM2.5 Sampler	Partisol Plus 2025 Sequential	Fair	In Use		
Baskett	Calibrator	Teledyne-API 700 E	Fair	In Use		
Baskett	O3 Monitor	Teledyne-API T400	Good	In Use		
Baskett	PM10 Sampler	Partisol 2000	Good	In Use		
Baskett	PM2.5 Continuous	Teledyne API T640	Good	In Use		
Baskett	PM2.5 Sampler	Partisol Plus 2025i Sequential	Good	In Use		
Baskett	Zero Air Unit	Teledyne-API 701E Zero Air	Good	In Use		
Baskett	SO2 Monitor	API100E	Good	In Use		
Baskett	Datalogger	Agilaire 8872 Data Logger	Good	In Use		
Bloodworth	Air Toxics- VOCs	Xontech 911a	Good	In Use		
Bloodworth	PM10 Sampler	Partisol 2000	Good	In Use		
Buckner	Datalogger	ESC 8832 Data Logger	Good	In Use		
Buckner	O3 Monitor	Teledyne-API T400	Good	In Use		
Buckner	Photometer	Teledyne-API 703E	Good	In Use		
Buckner	Zero Air Unit	Teledyne-API 701 Zero Air	Fair	In Use		
ast Bend	Datalogger	ESC Model 8832	Good	In Use		
ast Bend	Meteorological- Probe	41372VC RH/Temp	Fair	In Use		
ast Bend	O3 Monitor	Teledyne-API T400	Good	In Use		
ast Bend	Photometer	Teledyne-API 703E	Good	In Use		
ast Bend	Zero Air Unit	Teledyne-API 701 Zero Air	Fair	In Use		
KU	Lead Sampler- TSP	Tisch Model TE-5170DV-BL TSP	Good	In Use		
KU	Lead Sampler- TSP	Tisch Model TE-5170DV-BL TSP	Good	In Use		
-town	Datalogger	ESC Model 8832	Good	In Use		
-town	O3 Monitor	Teledyne-API T400	Good	In Use		
-town	Photometer	Teledyne-API 703E	Good	In Use		
-town	PM2.5 Continuous	Thermo Scientific TEOM 1405	Good	In Use		
-town	PM2.5 Sampler	Partisol Plus 2025 Sequential	Good	In Use		
-town	PM2.5 Sampler	Partisol Plus 2025 Sequential	Good	In Use		
-town	Zero Air Unit	Teledyne-API 701 Zero Air	Good	In Use		
IVCO	Air Toxics- VOCs/Carbonyls	ATEC 2200	Fair	In Use		
IVCO	Calibrator	Teledyne-API T700	Good	In Use		
IVCO	O3 Monitor	Teledyne-API T400	Good	In Use		
IVCO	Datalogger	Agilaire 8872 Data Logger	Good	In Use		
IVCO	Meteorological- Probe	41372VC RH/Temp	Fair	In Use		
IVCO	NOx Monitor	Teledyne-API 200E	Good	In Use		
IVCO	PM2.5 Continuous	Teledyne API T640	Good	In Use		
IVCO	PM2.5 Sampler	Partisol Plus 2025 Sequential	Good	In Use		
IVCO	SO2 Monitor	Teledyne-API T100	Good	In Use		
IVCO	Zero Air Unit	Teledyne-API 701 Zero Air	Good	In Use		
ranklin	Datalogger	ESC Model 8832	Fair	In Use		
ranklin	Meteorological- Probe	41372VC RH/Temp	Fair	In Use		
ranklin	Photometer	Teledyne-API 703E	Good	In Use		
ranklin	Zero Air Unit	Teledyne-API 701 Zero Air	Good	In Use		
Grayson Lake	Air Toxics- PAHs	PUF Air Sampler, Brushless	Good	In Use		
Grayson Lake	Air Toxics- VOCs/Carbonyls	ATEC 2200-2, Dual Channel	Good	In Use		
Grayson Lake	Datalogger	ESC Model 8832	Good	In Use		
irayson Lake	Meteorological- Pressure	Barometric Pressure 61202V	Fair	In Use		
Grayson Lake	Meteorological- Probe	41372VC RH/Temp	Fair	In Use		
irayson Lake	O3 Monitor	Teledyne-API T400	Good	In Use		
Grayson Lake	Photometer	Teledyne-API 703E	Good	In Use		
Grayson Lake	PM10 Sampler	Partisol 2000	Good	In Use		
irayson Lake	PM10 Sampler	Partisol 2000	Good	In Use		
Grayson Lake	PM2.5 Sampler	Partisol Plus 2025i Sequential	Good	In Use		
Grayson Lake	Zero Air Unit	Teledyne-API 701 Zero Air	Good	In Use		

Appendix J KDAQ Equipment Inventory (Continued)				
Location	ltem	Description	Condition	Comments
Hazard	Datalogger	ESC Model 8832	Fair	In Use
Hazard	O3 Monitor	Teledyne-API 400E	Good	In Use
Hazard	PM2.5 Continuous	Thermo Scientific TEOM 1405	Good	In Use
Hazard	Zero Air Unit	Teledyne_API 701 Zero Air	Good	In Use
Hazard	PM2.5 Sampler	Partisol Plus 2025i Sequential	Good	In Use
Hazard	Photometer	Teledyne-API 703E	Good	In Use
Hopkinsville	Datalogger	ESC Model 8832	Fair	In Use
Hopkinsville	Photometer	Teledyne-API 703E	Good	In Use
Hopkinsville	PM2.5 Sampler	Partisol Plus 2025 Sequential	Good	In Use
Hopkinsville	Zero Air Unit	Teledyne-API 701 Zero Air	Good	In Use
Hopkinsville	O3 Monitor	Teledyne-API 400E	Good	In Use
IPRECC	Calibrator	Teledyne-API 700 E	Good	In Use
IPRECC	Datalogger	Agilaire 8872 Data Logger	Good	In Use
PRECC	NOx Monitor	Teledyne-API 200E	Good	In Use
IPRECC	O3 Monitor	Teledyne-API T400	Fair	Backup/Spare
IPRECC	O3 Monitor	Teledyne-API T400	Good	In Use
IPRECC		Partisol 2000	Good	In Use
	PM10 Sampler			
IPRECC IPRECC	PM2.5 Continuous	Teledyne API T640	Good Fair	In Use In Use
	PM2.5 Sampler	Partisol Plus 2025 Sequential		
IPRECC	SO2 Monitor	Teledyne-API T100	Good	In Use
Lewisport	Datalogger	ESC Model 8832	Fair	In Use
Lewisport	O3 Monitor	Teledyne-API T400	Good	In Use
Lewisport	Photometer	Teledyne-API 703E	Good	In Use
Lewisport	Zero Air Unit	Teledyne-API 701 Zero Air	Good	In Use
Lexington Primary	Calibrator	Teledyne-API 700 E	Good	In Use
Lexington Primary	Datalogger	ESC Model 8832	Good	In Use
Lexington Primary	NOx Monitor	Teledyne-API 200E	Good	In Use
Lexington Primary	O3 Monitor	Teledyne-API T400	Good	In Use
Lexington Primary	PM10 Sampler	Partisol 2000	Good	In Use
Lexington Primary	PM2.5 Continuous	Thermo Scientific TEOM 1405	Good	In Use
Lexington Primary	PM2.5 Sampler	Partisol Plus 2025 Sequential	Good	In Use
Lexington Primary	SO2 Monitor	Teledyne-API T100	Good	In Use
Lexington Primary	Zero Air Unit	Teledyne-API 701 Zero Air	Good	In Use
Lexington Primary	Zero Air Unit	Teledyne-API 701E Zero Air	Good	In Use
Middlesboro	Datalogger	ESC Model 8832	Good	In Use
Middlesboro	Meteorological- Probe	41372VC RH/Temp	Fair	In Use
Middlesboro	O3 Monitor	Teledyne-API T400	Good	In Use
Middlesboro	Photometer	Teledyne-API 703E	Good	In Use
Middlesboro	PM2.5 Sampler	Partisol Plus 2025i Sequential	Good	In Use
Middlesboro	Zero Air Unit	Teledyne-API 701 Zero Air	Good	In Use
Nicholasville	Calibrator	Teledyne-API 700 E	Fair	In Use
Nicholasville	Meteorological- Probe	Humidity and Temperature	Fair	In Use
Nicholasville	O3 Monitor	Teledyne-API T400	Good	In Use
Nicholasville	SO2 Monitor	Teledyne-API T100	Good	In Use
Nicholasville	Zero Air Unit	Teledyne-API 701 Zero Air	Good	In Use
Nicholasville	Datalogger	Agilaire 8872 Data Logger	Good	In Use
NKU	Calibrator	Teledyne-API T700	Good	In Use
NKU	Datalogger	Agilaire 8872 Data Logger	Good	In Use
NKU	NOx Monitor	Teledyne-API 200E	Good	In Use
NKU	O3 Monitor	Teledyne-API T400	Good	In Use
NKU	PM2.5 Continuous	Teledyne API T640	New	In Use
NKU	PM2.5 Sampler	Partisol Plus 2025 Sequential	Good	In Use
NKU	SO2 Monitor	Teledyne-API T104	Good	In Use
Owensboro Primary	Calibrator	Teledyne-API T700	Good	In Use
Dwensboro Primary	Datalogger	Agilaire 8872 Data Logger	Good	In Use
Owensboro Primary	NOx Monitor	Teledyne-API 200E	Good	In Use
	O3 Monitor	Teledyne-API 7400	Good	In Use

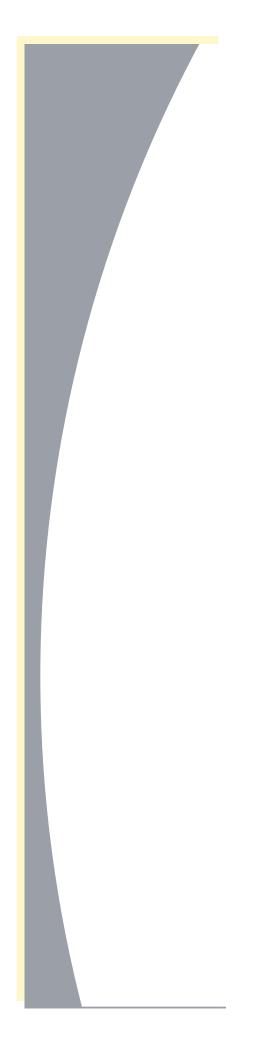
	Appendix J KDAQ Equipment Inventory (Continued)					
Location	Item	Description	Condition	Comments		
Owensboro Primary	PM2.5 Continuous	Teledyne API T640	Good	In Use		
Owensboro Primary	PM2.5 Sampler	Partisol Plus 2025 Sequential	Good	In Use		
Owensboro Primary	PM2.5 Sampler	Partisol Plus 2025i Sequential	Good	In Use		
Owensboro Primary	SO2 Monitor	Teledyne-API T101	Good	In Use		
Owensboro Primary	Zero Air Unit	Teledyne-API 701 Zero Air	Good	In Use		
Paducah Regional Office	O3 Monitor	Teledyne-API T400	Good	Backup/Spare		
Pikeville	Datalogger	Agilaire 8872 Data Logger	Fair	In Use		
Pikeville	O3 Monitor	Teledyne-API T400	Good	In Use		
Pikeville	Photometer	Teledyne-API 703E	Good	In Use		
Pikeville	PM2.5 Continuous	Teledyne API T640	Good	In Use		
Pikeville	PM2.5 Sampler	Partisol Plus 2025 Sequential	Good	In Use		
Pikeville	Zero Air Unit	Teledyne-API 701E Zero Air	Good	In Use		
Pikeville	PM2.5 Sampler	Partisol Plus 2025 Sequential	Good	Spare		
Sebree	Datalogger	ESC Model 8832	Good	In Use		
Sebree	SO2 Monitor	Teledyne-API T100	Good	In Use		
Sebree	Zero Air Unit	Teledyne-API 701 Zero Air	Fair	In Use		
Sebree	Calibrator	Teledyne-API 700 E	Good	In Use		
Shepherdsville	Datalogger	Agilaire 8872 Data Logger	Fair	In Use		
Shepherdsville	Photometer	Teledyne-API 703E	Good	In Use		
Shepherdsville	Zero Air Unit	Teledyne-API 701 Zero Air	Fair	In Use		
Smithland	Datalogger	ESC Model 8832	Good	In Use		
Smithland	O3 Monitor	Teledyne-API T400	Good	In Use		
Smithland	Photometer	Teledyne-API 703E	Good	In Use		
Smithland	Zero Air Unit	Teledyne-API 701 Zero Air	Good	In Use		
Smiths Grove	Datalogger	ESC Model 8832	Fair	In Use		
Smiths Grove	O3 Monitor	Teledyne-API T400	Good	Backup/Spare		
Smiths Grove	O3 Monitor	Teledyne-API T400	Good	In Use		
Smiths Grove	Photometer	Teledyne-API 703E	Good	In Use		
Smiths Grove	PM2.5 Continuous	Thermo Scientific TEOM 1405	Good	In Use		
Smiths Grove	PM2.5 Sampler	Partisol Plus 2025i Sequential	Good	In Use		
Smiths Grove	PM2.5 Sampler	Partisol Plus 2025 Sequential	Good	In Use		
Smiths Grove	Zero Air Unit	Teledyne-API 701 Zero Air	Fair	In Use		
Somerset	Datalogger	ESC Model 8832	Fair	In Use		
Somerset	O3 Monitor	Teledyne-API T400	Good	In Use		
Somerset	Photometer	Teledyne-API 703E	Good	In Use		
Somerset	PM2.5 Sampler	Partisol Plus 2025i Sequential	Good	In Use		
Somerset	Zero Air Unit	Teledyne-API 701 Zero Air	Good	In Use		
TSB- Technical Support Shop	Air Toxics- VOCs	Xontech 911a	Good	Spare		
TSB- Technical Support Shop			Fair			
	Air Toxics- VOCs/Carbonyls	ATEC 2200		Spare		
TSB- Technical Support Shop	Air Toxics- VOCs/Carbonyls	ATEC 2200	Fair	Spare		
TSB- Technical Support Shop	Air Toxics- VOCs/Carbonyls	ATEC 2200	Fair	Spare		
TSB- Technical Support Shop	Air Toxics- VOCs/Carbonyls	ATEC 2200-2, Dual Channel	Good	Spare		
TSB- Technical Support Shop	Air Toxics- VOCs/Carbonyls	ATEC 2200-2, Dual Channel	Good	Spare		
TSB- Technical Support Shop	Air Toxics- VOCs/Carbonyls	ATEC 2200-2, Dual Channel	Fair	Spare		
TSB- Technical Support Shop	Air Toxics- VOCs/Carbonyls	ATEC 2200-2, Dual Channel	Good	Spare		
TSB- Technical Support Shop	Air Toxics- VOCs/Carbonyls	ATEC 2200-2, Dual Channel	Good	Spare		
TSB- Technical Support Shop	Calibrator	Teledyne-API 700 E	Good	Spare		
TSB- Technical Support Shop	Calibrator	Teledyne-API 700 E	Good	Spare		
TSB- Technical Support Shop	Calibrator	Teledyne-API 700 E	Good	Spare		
TSB- Technical Support Shop	Calibrator	Teledyne-API 700 E	Good	Spare		
TSB- Technical Support Shop	Calibrator	Teledyne-API 700 E	Good	Spare		
TSB- Technical Support Shop	Calibrator	Teledyne-API 700 E	Good	Spare		
TSB- Technical Support Shop	Calibrator	Teledyne-API 700 E	Fair	Spare		
TSB- Technical Support Shop	Calibrator	Teledyne-API T700	Good	Spare		
TSB- Technical Support Shop	Calibrator	Teledyne-API T700	Good	Spare		
TSB- Technical Support Shop	Calibrator	Teledyne-API T700	Good	Spare		
TSB- Technical Support Shop	Calibrator	Teledyne-API T700	Good	Spare		
TSB- Technical Support Shop	Calibrator	Teledyne-API T700	Good	Spare		

Appendix J KDAQ Equipment Inventory (Continued)				
Location	Item	Description	Condition	Comments
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Fair	Spare
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Fair	Spare
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Fair	Spare
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Fair	Spare
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Fair	Spare
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Fair	Spare
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Fair	Spare
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Fair	Spare
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Fair	Spare
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Fair	Spare
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Fair	Spare
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Good	Spare
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Fair	Spare
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Fair	Spare
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Fair	Spare
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Fair	Spare
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Good	Spare
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Fair	Spare
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Good	Spare
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Fair	Spare
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Good	Spare
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Fair	Spare
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Fair	Spare
TSB- Technical Support Shop	Datalogger	Agilaire Model 8872	Good	New
TSB- Technical Support Shop	Datalogger	Agilaire Model 8872	Good	New
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Good	Spare
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Good	Spare
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Good	Spare
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Good	Spare
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Good	Spare
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Good	Spare
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Good	Spare
TSB- Technical Support Shop	Datalogger	ESC Model 8832	Good	Spare
TSB- Technical Support Shop	Lead Sampler- TSP	Tisch Model TE-5170DV-BL TSP	Good	Spare
TSB- Technical Support Shop	Lead Sampler- TSP	Tisch Model TE-5170DV-BL TSP	Good	Spare
TSB- Technical Support Shop	Lead Sampler- TSP	Tisch Model TE-5170DV-BL TSP	Good	Spare
TSB- Technical Support Shop	Lead Sampler- TSP	Tisch Model TE-5170DV-BL TSP	Good	Spare
TSB- Technical Support Shop	Meteorological- Pressure	Barometric Pressure 61202V	Fair	Spare
TSB- Technical Support Shop	Meteorological- Probe	Humidity and Temperature 41382VC	Fair	Spare
TSB- Technical Support Shop	Meteorological- Solar	Solar Radiation CMP4	Fair	Spare
TSB- Technical Support Shop	NOx Monitor	Teledyne-API 200E	Good	Spare
TSB- Technical Support Shop	NOx Monitor	Teledyne-API 200E	Fair	Spare
TSB- Technical Support Shop	NOx Monitor	Teledyne-API 200E	Fair	Spare
TSB- Technical Support Shop	NOx Monitor	Teledyne-API 200E	Fair	Spare
TSB- Technical Support Shop	NOx Monitor	Teledyne-API 200E	Fair	Spare
TSB- Technical Support Shop	NOx Monitor	Teledyne-API 200E	Fair	Spare
TSB- Technical Support Shop	NOx Monitor	Teledyne-API 200E	Fair	Spare
TSB- Technical Support Shop	NOx Monitor	Teledyne-API 200E	Fair	Spare
TSB- Technical Support Shop	NOx Monitor	Teledyne-API 200E	Fair	Spare
TSB- Technical Support Shop	O3 Monitor	Teledyne-API 400E	Fair	Spare
TSB- Technical Support Shop	O3 Monitor	Teledyne-API 400E	Fair	Spare
TSB- Technical Support Shop	O3 Monitor	Teledyne-API 400E	Fair	Spare
TSB- Technical Support Shop	O3 Monitor	Teledyne-API 400E	Fair	Spare
TSB- Technical Support Shop	O3 Monitor	Teledyne-API 400E	Fair	Spare
TSB- Technical Support Shop	O3 Monitor	Teledyne-API 400E	Fair	Spare
TSB- Technical Support Shop	O3 Monitor	Teledyne-API 400E	Fair	Spare
TSB- Technical Support Shop	O3 Monitor	Teledyne-API 400E	Fair	Spare
TSB- Technical Support Shop	O3 Monitor	Teledyne-API 400E	Fair	Spare
TSB- Technical Support Shop	O3 Monitor	Teledyne-API 400E	Fair	Spare

Appendix J KDAQ Equipment Inventory (Continued)				
Location	Item	Description	Condition	Comments
TSB- Technical Support Shop	O3 Monitor	Teledyne-API T400	Good	Spare
TSB- Technical Support Shop	O3 Monitor	Teledyne-API T400	Good	Spare
TSB- Technical Support Shop	O3 Monitor	Teledyne-API T400	Good	Spare
TSB- Technical Support Shop	O3 Monitor	Teledyne-API T400	Good	Spare
TSB- Technical Support Shop	O3 Monitor	Teledyne-API T400	Good	Spare
TSB- Technical Support Shop	O3 Monitor	Teledyne-API T400	Good	Spare
TSB- Technical Support Shop	O3 Monitor	Teledyne-API T400	Good	Spare
TSB- Technical Support Shop	O3 Monitor	Teledyne-API T400	Good	Spare
TSB- Technical Support Shop	O3 Monitor	Teledyne-API T400	Good	Spare
TSB- Technical Support Shop	O3 Monitor	Teledyne-API T400	Good	Spare
TSB- Technical Support Shop	Photometer	Teledyne-API 703E	Good	Spare
TSB- Technical Support Shop	Photometer	Teledyne-API 703E	Good	Spare
TSB- Technical Support Shop	PM10 Sampler	Partisol 2000	Poor	Spare
TSB- Technical Support Shop	PM10 Sampler	Partisol 2000	Poor	Spare
TSB- Technical Support Shop	PM10 Sampler	Partisol 2000	Good	Spare
TSB- Technical Support Shop	PM10 Sampler	Partisol 2000	Good	Spare
TSB- Technical Support Shop	PM10 Sampler	Partisol 2000	Good	Spare
TSB- Technical Support Shop	PM10 Sampler	Partisol 2000	Good	Spare
TSB- Technical Support Shop	PM10 Sampler	Partisol 2000	Good	Spare
TSB- Technical Support Shop	PM10 Sampler	Partisol 2000	Good	Spare
TSB- Technical Support Shop	PM10 Sampler	Partisol 2000	Good	Spare
TSB- Technical Support Shop	PM2.5 Continuous	Thermo Scientific TEOM 1405	New	Spare
TSB- Technical Support Shop	PM2.5 Continuous	Thermo Scientific TEOM 1405	New	Spare
TSB- Technical Support Shop	PM2.5 Continuous	Thermo Scientific TEOM 1405	Good	Spare
TSB- Technical Support Shop	PM2.5 Continuous	Thermo Scientific TEOM 1400	Good	Spare
TSB- Technical Support Shop	PM2.5 Continuous	Thermo Scientific TEOM 1400	Good	Spare
TSB- Technical Support Shop	PM2.5 Continuous	Thermo Scientific TEOM 1400	Good	Spare
TSB- Technical Support Shop	PM2.5 Continuous	Thermo Scientific TEOM 1400	Good	Spare
TSB- Technical Support Shop	PM2.5 Continuous	Thermo Scientific TEOM 1400	Good	Spare
TSB- Technical Support Shop	PM2.5 Continuous	Thermo Scientific TEOM 1400	Good	Spare
TSB- Technical Support Shop	PM2.5 Continuous	Thermo Scientific TEOM 1400	Good	Spare
TSB- Technical Support Shop	PM2.5 Continuous	Thermo Scientific TEOM 1400	Good	Spare
TSB- Technical Support Shop	PM2.5 Continuous	Thermo Scientific TEOM 1405	Good	Spare
TSB- Technical Support Shop	PM2.5 Continuous	Thermo Scientific TEOM 1405	Good	Spare
TSB- Technical Support Shop	PM2.5 Sampler	Partisol Plus 2025i Sequential	Good	Spare
TSB- Technical Support Shop	PM2.5 Sampler	Partisol Plus 2025 Sequential	Good	Spare
TSB- Technical Support Shop	PM2.5 Sampler	Partisol Plus 2025 Sequential	Good	Spare
TSB- Technical Support Shop	PM2.5 Sampler	Partisol Plus 2025 Sequential	Good	Spare
TSB- Technical Support Shop	PM2.5 Sampler	Partisol Plus 2025i Sequential	Good	Spare
TSB- Technical Support Shop	PM2.5 Sampler	Partisol Plus 2025 Sequential	Good	Spare
TSB- Technical Support Shop	PM2.5 Sampler	Partisol Plus 2025 Sequential	Good	Spare
TSB- Technical Support Shop	PM2.5 Sampler	Partisol Plus 2025 Sequential	Good	Spare
TSB- Technical Support Shop	PM2.5 Sampler	Partisol Plus 2025 Sequential	Good	Spare
TSB- Technical Support Shop	PM2.5 Sampler	Partisol Plus 2025 Sequential	Good	Spare
TSB- Technical Support Shop	PM2.5 Sampler	Partisol Plus 2025 Sequential	Good	Spare
TSB- Technical Support Shop	PM2.5 Sampler	Partisol Plus 2025 Sequential	Good	Spare
TSB- Technical Support Shop	PM2.5 Sampler	Partisol Plus 2025 Sequential	Good	Spare
TSB- Technical Support Shop	PM2.5 Sampler	Partisol Plus 2025 Sequential	Good	Spare
TSB- Technical Support Shop	PM2.5 Sampler	Partisol Plus 2025 Sequential	Good	Spare
TSB- Technical Support Shop	PM2.5 Sampler	Partisol Plus 2025i Sequential	Good	Spare
TSB- Technical Support Shop	SO2 Monitor	Teledyne-API 100E	Fair	Spare
TSB- Technical Support Shop	SO2 Monitor	Teledyne-API 100E	Fair	Spare
TSB- Technical Support Shop	SO2 Monitor	Teledyne-API 100E	Fair	Spare
TSB- Technical Support Shop	SO2 Monitor	Teledyne-API 100E	Fair	Spare
TSB- Technical Support Shop	SO2 Monitor	Teledyne-API 100E	Fair	Spare
TSB- Technical Support Shop	SO2 Monitor	Teledyne-API T100	Good	Spare
TSB- Technical Support Shop	SO2 Monitor	Teledyne-API T100	Good	Spare
TSB- Technical Support Shop	SO2 Monitor	Teledyne-API T100	Good	Spare
TSB- Technical Support Shop	SO2 Monitor	Teledyne-API T100	Good	Spare
TSB- Technical Support Shop	SO2 Monitor	Teledyne-API T100	Good	Spare
TSB- Technical Support Shop	SO2 Monitor	Teledyne-API T100	Good	Spare

Appendix J KDAQ Equipment Inventory (Continued)				
Location	Item	Description	Condition	Comments
TSB- Technical Support Shop	Zero Air Unit	Teledyne-API 701 Zero Air	Good	Spare
TSB- Technical Support Shop	Zero Air Unit	Teledyne-API 701 Zero Air	Good	Spare
TSB- Technical Support Shop	Zero Air Unit	Teledyne-API 701 Zero Air	Good	Spare
TSB- Technical Support Shop	Zero Air Unit	Teledyne-API 701E Zero Air	Good	Spare
TSB- Technical Support Shop	Zero Air Unit	Teledyne-API 701 Zero Air	Good	Spare
TSB- Technical Support Shop	Zero Air Unit	Teledyne-API 701 Zero Air	Good	Spare
TSB- Technical Support Shop	Zero Air Unit	Teledyne-API 701 Zero Air	Fair	Spare
TSB- Technical Support Shop	Zero Air Unit	Teledyne-API 701 Zero Air	Fair	Spare
TSB- Technical Support Shop	Zero Air Unit	Teledyne-API 701 Zero Air	Fair	Spare
TSB- Technical Support Shop	Zero Air Unit	Teledyne-API 701 Zero Air	Fair	Spare
TSB- Technical Support Shop	Zero Air Unit	Teledyne-API 701 Zero Air	Fair	Spare
TSB-Quality Assurance Shop	Audit Calibrator	Environics 6103	Fair	In Use
TSB-Quality Assurance Shop	Audit Calibrator	Environics 6100	Fair	In Use
TSB-Quality Assurance Shop	Audit Calibrator	Environics 6100	Fair	In Use
TSB-Quality Assurance Shop	Audit Calibrator	Environics 6103	Fair	In Use
TSB-Quality Assurance Shop	Audit Calibrator	Environics Multigas & Ozone Trans- fer Std	Good	In Use
TSB-Quality Assurance Shop	Audit Calibrator	Environics Multigas & Ozone Trans- fer Std	Good	In Use
TSB-Quality Assurance Shop	Audit Calibrator	Environics Multigas & Ozone Trans- fer Std	Good	In Use
TSB-Quality Assurance Shop	Audit Calibrator	Environics Multigas & Ozone Trans- fer Std	Good	In Use
TSB-Quality Assurance Shop	Zero Air Unit	Teledyne-API Model 751H Zero Air	Good	In Use
TSB-Quality Assurance Shop	Zero Air Unit	Teledyne-API Model 751H Zero Air	Good	In Use
TSB-Quality Assurance Shop	Zero Air Unit	Teledyne-API Model 751H Zero Air	Good	In Use
TSB-Quality Assurance Shop	Zero Air Unit	Teledyne-API Model S7000 Zero Air	Fair	In Use
TSB-Quality Assurance Shop	Zero Air Unit	Teledyne-API Model S7000 Zero Air	Fair	In Use
TSB-Quality Assurance Shop	Zero Air Unit	Teledyne-API Model 751H Zero Air	Good	In Use
TVA	Air Toxics- VOCs	Xontech 911a	Good	In Use
TVA	Air Toxics- VOCs	Xontech 911a	Good	In Use
Worthington	Calibrator	Teledyne-API 700 E	Good	In Use
Worthington	Datalogger	Agilaire 8872 Data Logger	Fair	In Use
Worthington	O3 Monitor	Teledyne-API T400	Good	In Use
Worthington	SO2 Monitor	Teledyne-API T100	Good	In Use
Worthington	Zero Air Unit	Teledyne-API 701E Zero Air	Good	In Use

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<u>APPENDIX K</u>

PUBLIC COMMENTS

KENTUCKY DIVISION FOR AIR QUALITY AMBIENT AIR MONITORING NETWORK Comments Received 6/25/2018

Energy and Environment Cabinet Department for Environmental Protection Division for Air Quality

A public comment period on the KENTUCKY DIVISION FOR AIR QUALITY AMBIENT AIR MONITOR-ING NETWORK PLAN 2018 was held from May 24, 2018 through June 23, 2018.

INDEX

KDAQ AIR MONITORING STATIONS BY REGIONAL OFFICE

2018 KDAQ MONITORING STATIONS BY REGIONAL OFFICE

AQS ID	SITE NAME	COUNTY	PAGE NUMBER			
Region 1 - Hazard Regional Office						
21-193-0003	Hazard Perry		106			
21-195-0002	Pikeville Primary	Pike	108			
Region 2 - Frankfort Regional Office (Bluegrass Area)						
21-067-0012	Lexington Primary	Fayette	56			
21-113-0001	Nicholasville	Jessamine	58			
21-151-0005	EKU	Madison	96			
	Region 3 - Florence Regiona	al Office				
21-015-0003	East Bend	Boone	28			
21-037-3002	NKU	Campbell	30			
	Region 4 - Owensboro Region	nal Office				
21-059-0005	Owensboro Primary	Daviess	82			
21-091-0012	Lewisport	Hancock	84			
21-101-0014	Baskett	Henderson	42			
21-101-1011	Sebree SO ₂ DRR	Henderson	44			
	Region 5 - Ashland Regiona	al Office				
21-019-0017	Ashland Primary (FIVCO)	Boyd	50			
21-019-0002	21st & Greenup	Boyd	48			
21-043-0500	Grayson Lake	Carter	102			
21-089-0007	Worthington	Greenup	52			
	Region 7 - Frankfort Regional Office (N	North Central Are	ea)			
21-029-0006	Shepherdsville	Bullitt	62			
21-093-0006	Elizabethtown	Hardin	38			
21-185-0004	Buckner	Oldham	64			
	Region 8 - Paducah Regiona	al Office				
21-047-0006	Hopkinsville	Christian	34			
21-139-0003	Smithland	Livingston	90			
21-139-0004	Bloodworth	Livingston	92			
21-145-1024	Paducah Primary (Jackson Purchase)	McCracken	94			
21-157-0014	TVA Substation	Marshall	104			
	Region 9 - Bowling Green Regional Office					
21-213-0004	Franklin	Simpson	110			
21-227-0009	Ed Spear Park (Smiths Grove)	Warren	24			
	Region 10 - London Regional Office					
21-013-0002	Middlesboro	Bell	88			
21-199-0003	Somerset	Pulaski	98			