

# Indiana 2027 Ambient Air Monitoring Network Plan



Indiana Department of Environmental Management  
Office of Air Quality  
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Cover photo of: Renovated Leopold Ozone site

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## Acronyms

AADT	Annual Average Daily Traffic
AERMET	American Meteorological Society / Environmental Protection Agency Regulatory Meteorology
AERMOD	American Meteorological Society / Environmental Protection Agency Regulatory Model
ANP	Annual Network Plan (this document)
APCD	Louisville Metropolitan Air Pollution Control District
AQI	Air Quality Index
AQS	Air Quality System
BAM	Beta Attenuation Monitor
CAPS	Cavity Attenuated Phase Shift
CASTNET	Clean Air Status and Trends Network
CBSA	Core Based Statistical Area
CFR	Code of Federal Regulations
CSA	Combined Statistical Area
CSN	Chemical Speciation Network
CO	Carbon Monoxide
CO <sub>2</sub>	Carbon Dioxide
DNPH	2,4-Dinitrophenylhydrazine
DRR	Data Requirement Rule
DV	Design Value
EMITS	Emission Inventory Tracking System
EMP	Enhanced Monitoring Plan
ESAT	Environmental Services Assistance Team
FEM	Federal Equivalent Method
FID	Flame Ionization Detector
FR	Federal Regulations
FRM	Federal Reference Method
GC	Gas Chromatograph
GC/MS	Gas Chromatograph / Mass Spectrometry
HPLC	High Pressure Liquid Chromatography
HVAC	Heating Ventilation Air Conditioning
ICP/MS	Inductive Coupled Plasma / Mass Spectrometry
IDEM	Indiana Department of Environmental Management
IEPA	Illinois Environmental Protection Agency
INDOT	Indiana Department of Transportation
KDAQ	Kentucky Division for Air Quality
LADCO	Lake Michigan Air Directors Consortium
mm	Millimeter
mb	millibar
MOA	Memorandum of Agreement
MSA	Metropolitan Statistical Area
NAAQS	National Ambient Air Quality Standard
NADP	National Atmospheric Deposition Program
NATTS	National Air Toxics Trends Station
NCore	National Core multi-pollutant monitoring stations
NEI	National Emissions Inventory
NH <sub>3</sub>	Ammonia
NIPSCO	Northern Indiana Public Services Company
NIST	National Institute of Standards and Technology
nm	Nanometer

NO	Nitric Oxide
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Oxides of Nitrogen
NO <sub>y</sub>	Total Reactive Nitrogen Oxides
NPAP	National Performance Audit Program
NWS	National Weather Service
O <sub>3</sub>	Ozone
OEPA	Ohio Environmental Protection Agency
PAMS	Photochemical Assessment Monitoring Station
Pb	Lead
PEP	Performance Evaluation Program
PM	Particulate matter
PM <sub>2.5</sub>	Particulate matter with a diameter less than or equal to 2.5 micrometers
PM <sub>10</sub>	Particulate matter with a diameter less than or equal to 10 micrometers
PM <sub>10-2.5</sub>	Particulate matter with a diameter less than or equal to 10 micrometers, and greater than or equal to 2.5 micrometers
ppb	parts per billion
ppm	parts per million
PQAO	Primary Quality Assurance Organization
PSD	Prevention of Significant Deterioration
PWEI	Population Weighted Emissions Index
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RTD	Resistance Temperature Detector
SASS	Speciation Air Sampling System
SHARP	Synchronized Hybrid Ambient Real-time Particulate
SIP	State Implementation Plan
SLAMS	State or Local Air Monitoring Stations
SO <sub>2</sub>	Sulfur Dioxide
SPM	Special Purpose Monitor
STN PM <sub>2.5</sub>	Speciation Trends Network
S/V	Susceptible and Vulnerable Populations
TAD	Technical Assistance Document
TO-11A	Toxic Organic Compound sampling and analysis method-Determination of carbonyl compounds in Ambient Air
TO-15	Toxic Organic Compound sampling and analysis method-Determination of VOCs in air, collected in Canisters and Analyzed by GC/MS
TPY	Tons Per Year
TRI	Toxics Release Inventory
TSA	Technical Systems Audit
TSP	Total Suspended Particulate
TEOM	Tapered Element Oscillating Microbalance
µg/m <sup>3</sup>	micrograms per cubic meter
U.S. EPA	United States Environmental Protection Agency
UV	Ultraviolet
VOC	Volatile Organic Compounds
VSCC	Very Sharp Cut Cyclone
XRF	X-Ray Fluorescence

## Introduction

In October 2006, United States Environmental Protection Agency (U.S. EPA) issued final regulations concerning state and local agency ambient air monitoring networks. These regulations in 40 CFR Part 58.10 require states to submit an annual monitoring network review to U.S. EPA. This network plan is required to provide the framework for establishment and maintenance of an air quality surveillance system and to list any changes that are proposed to take place to the current network in 2027.

## Public Review and Comment

The annual monitoring network plan must be made available for public inspection for 30 days prior to submission to U.S. EPA. Information on how to comment on the plan and any comments received are listed in Appendix A (page 81).

## Indiana's Air Monitoring Network

The Indiana Department of Environmental Management (IDEM) regulates air quality to protect public health and the environment in the State of Indiana. Air monitoring data are required by regulation and are used to determine compliance with U.S. EPA's National Ambient Air Quality Standards (NAAQS). Other important uses of the air monitoring data include, the production of a daily AQI report, daily air quality forecast report, support of short and long-term health risk assessments, identification of a localized health concern, and tracking long-term trends in air quality. Indiana monitors the six criteria pollutants which have NAAQS identified for them; CO, Pb, NO<sub>2</sub>, O<sub>3</sub>, particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), and SO<sub>2</sub>. Other pollutants which do not have ambient standards established for them are also monitored: toxics (volatile organic compounds, VOCs), metals, carbonyls, PM<sub>2.5</sub> speciated compounds, ultrafine particles, ozone precursors, and radiation. In addition, meteorological data are also collected to support the monitoring and aid in analysis of the data.

## Air Quality Data

IDEM presents two different types of air quality data, noncontinuous and continuous, on IDEM's Internet website <https://www.in.gov/idem/airmonitoring/>. Monthly and annual summary reports of pollutants collected by manual methods are available as well as hourly values from continuous monitors. The **Data Management and Display System (DMDS)** provides on-line access to Indiana's air quality monitoring data. It has been available to the public since July 2007. The DMDS offers access to near real-time data from active air monitoring sites across Indiana. This allows anyone to track pollutant and meteorological values throughout the day. In addition, past data back to 1998 are available as raw data and canned summary reports or user specified retrievals. Noncontinuous PM<sub>10</sub> and PM<sub>2.5</sub> data are available on IDEM's Internet website. Site information with site photographs can also be found at IDEM's Internet website linked above.

## Overview of Monitored Parameters

### Criteria Pollutants

#### **Carbon Monoxide (CO)**

Carbon monoxide (CO) is a colorless, odorless gas that can be harmful when inhaled in large amounts. CO is a poisonous gas that, when introduced into the bloodstream, inhibits the delivery of oxygen to body tissue. The health risk is greatest for individuals with cardiovascular disease. CO is released when something is burned. The greatest sources of CO to outdoor air are cars, trucks and other vehicles or machinery that burn fossil fuels. A variety of items in your home such as unvented kerosene and gas space heaters, leaking chimneys and furnaces, and gas stoves also release CO and can affect air quality indoors.

## **Lead (Pb)**

Lead (Pb) is a metal that is highly toxic when ingested or inhaled. It is a suspected carcinogen of the lungs and kidneys and has adverse effects on cardiovascular, nervous, and renal systems. Much of our exposure comes from human activities including the use of fossil fuels including past use of leaded gasoline, some types of industrial facilities and past use of lead-based paint in homes. Lead and lead compounds have been used in a wide variety of products found in and around our homes, including paint, ceramics, pipes and plumbing materials, solders, gasoline, batteries, ammunition, and cosmetics.

## **Nitrogen Dioxide (NO<sub>2</sub>)**

Nitrogen dioxide (NO<sub>2</sub>) is one of a group of highly reactive gases known as oxides of nitrogen or nitrogen oxides (NO<sub>x</sub>). NO<sub>2</sub> is a highly toxic, reddish-brown gas that is created primarily from fuel combustion in industrial sources and vehicles. It creates an odorous haze that causes eye and sinus irritation, blocks natural sunlight, and reduces visibility.

## **Ozone (O<sub>3</sub>)**

Ground-level ozone (O<sub>3</sub>), or photochemical smog, is not emitted into the atmosphere as ozone, but rather is formed by the reactions of other pollutants. The primary pollutants entering into this reaction, VOCs and oxides of nitrogen, create ozone in the presence of sunlight. Ozone is a strong irritant of the upper respiratory system and also causes damage to crops.

## **Particulate Matter (PM<sub>10</sub>)**

Particulate Matter (PM<sub>10</sub>) is a mixture of solid particles and liquid droplets found in the air. Particulate matter with a mean diameter of 10 microns or less (PM<sub>10</sub>) is emitted from transportation and industrial sources. Exposure to inhalable particle pollution is linked to a variety of significant health problems ranging from aggravated asthma to premature death in people with heart and lung disease.

## **Fine Particulate Matter (PM<sub>2.5</sub>)**

Fine Particulate Matter (PM<sub>2.5</sub>) is a mixture of solid particles and liquid droplets found in the air. Fine particulate matter with a diameter of 2.5 microns or less (PM<sub>2.5</sub>) is created primarily from industrial processes and fuel combustion. These particles are breathed deeply into the lungs. Exposure to particle pollution is linked to a variety of significant health problems ranging from aggravated asthma to premature death in people with heart and lung disease. Fine particles are also the main cause of reduced visibility, also known as haze.

## **Sulfur Dioxide (SO<sub>2</sub>)**

Sulfur dioxide (SO<sub>2</sub>) is a gaseous pollutant that is emitted primarily by industrial furnaces or power plants burning coal or oil containing sulfur. At high concentrations, SO<sub>2</sub> can cause breathing to be impaired. SO<sub>2</sub> and other sulfur oxides can contribute to acid rain that can harm sensitive ecosystems. SO<sub>2</sub> can damage vegetation and can also stain and damage stone and other materials such as monuments and statues. SO<sub>2</sub> and other sulfur oxides can react with other compounds in the atmosphere to form fine particles that reduce visibility (haze).

## **Non-Criteria Parameters and Networks**

### **PM<sub>2.5</sub> Speciation**

The chemical speciation monitoring program provides data regarding the makeup of the PM<sub>2.5</sub> fraction. Knowing the chemical composition of the PM<sub>2.5</sub> mix is important for determining sources of pollution and links between observed health effects. The basic objective of speciation analysis is to develop seasonal and annual chemical characterizations of ambient particulates across the nation. This speciation data will

be used to perform source attribution analyses, evaluate emission inventories and air quality models, and support health related research studies and regional haze assessments.

The speciation samplers use different inlet tubes and filters to collect the components of the PM<sub>2.5</sub> mixture. The process consists of using three different types of filters to separate out such specific compounds: sulfate, nitrate, organic and elemental carbon, ammonium, metals, and certain ions. A continuous monitor is also used to measure black carbon and organic carbon.

### **PM<sub>10-2.5</sub>**

PM<sub>10-2.5</sub> or particulate matter between 2.5 microns in size and 10 microns in size is termed as “inhalable coarse particles.” These particles are primarily generated from mechanical processes, including road dust, construction/demolition debris, industrial crushing/grinding, and agricultural operations. While the finer PM<sub>2.5</sub> penetrates deeper into the lungs, PM<sub>10-2.5</sub> particles are still inhalable, capable of entering the nose, throat and bronchial region, causing respiratory and cardiovascular issues.

### **NCORE Monitoring**

NCORE is a multi-pollutant approach to monitoring. NCORE sites are intended to support multiple objectives with a greater emphasis on assessment, research support, and accountability than the traditional SLAMS networks. NCORE provides an opportunity to address new directions in monitoring and begin to fill measurement and technological gaps that have accumulated in the networks. Indiana is required to establish and operate one urban NCORE site. These sites are required to measure PM<sub>2.5</sub>, speciated PM<sub>2.5</sub>, PM<sub>10-2.5</sub>, O<sub>3</sub>, SO<sub>2</sub>, CO, Nitrogen Oxides (NO/NO<sub>2</sub>), Total Reactive Nitrogen Oxides (NO<sub>y</sub>), and meteorology.

### **Photochemical Assessment Monitoring Station, PAMS (Ozone Precursors)**

Of the six criteria pollutants, O<sub>3</sub> is the most encompassing. The most prevalent photochemical oxidant and an important contributor to “smog”, O<sub>3</sub> is not emitted directly into the air. Instead, it results from complex chemical reactions in the atmosphere between VOCs and NO<sub>x</sub> in the presence of sunlight. There are thousands of sources of VOCs and NO<sub>x</sub> located across the country. To track and control O<sub>3</sub>, U.S. EPA is trying to create an understanding of not only the pollutant itself, but the chemicals, reactions, and conditions that contribute to its formation as well. Because of this, U.S. EPA called for improved monitoring of O<sub>3</sub> and its precursors, VOCs and NO<sub>x</sub>, to obtain more comprehensive and representative data on O<sub>3</sub> air pollution. U.S. EPA initiated the PAMS program in February 1993. The PAMS program required the establishment of an enhanced monitoring network in all O<sub>3</sub> nonattainment areas classified as serious, severe, or extreme. PAMS are now required at each NCORE site located in a CBSA with a population of 1,000,000 or more. Details of the 55 compounds sampled are found in the Parameter Networks section.

### **Toxics / Carbonyls / Metals**

Toxic air pollutants, also known as hazardous air pollutants, are those pollutants that are known or suspected to cause cancer, other serious health effects, or adverse environmental conditions. Air toxics include semi-volatile and volatile organic compounds (VOC), metals, and carbonyls.

Air toxic compounds are released from many different sources, including mobile sources (vehicles), stationary industrial sources, small area sources, indoor sources (cleaning materials, etc.), and other environmental sources (wildfires, etc.). The lifetime, transportation, and make-up of these pollutants are affected by weather and landscape. They can be transported far away from the original source or sources or be caught in rain and deposited into waterways or land.

The air toxics, carbonyls, and metals are divided into separate categories due to different sampling and analytical methodologies used for each. With all three categories combined, more than eighty different pollutants are analyzed.

## **Radiation**

The normal background level of gamma radiation in the air is measured by RadNet, a U.S. EPA nationwide network. There are 140 stationary air monitors across all 50 states continuously sampling the air for radiation. The data are used to determine background levels and to detect any fluctuations. There are two sites in Indiana. One site operates at Indianapolis – Washington Park. The other site is operated in Fort Wayne by local authorities. For more information and access to data visit <https://www.epa.gov/radnet>.

## **Meteorological Monitoring**

Any study of air pollution should include an analysis of the weather patterns (meteorology) of the local area because the fate of air pollutants is influenced by the movement and characteristics of the air mass into which they are emitted.

If the air is calm and pollutants cannot disperse, then the concentration of these pollutants will build up. Conversely, if a strong and turbulent wind is blowing, the pollutant will rapidly disperse into the atmosphere and will result in lower concentrations near the pollution source.

The measurements of wind speed and direction, outdoor temperature, relative humidity, precipitation, barometric pressure, ultraviolet radiation, solar radiation, and mixing height are important parameters used in the study of air quality monitoring results and to further understand the chemical reactions that occur in the atmosphere. Meteorological monitoring is used to predict air pollution events, high pollutant concentration days, and to simulate and predict air quality using computer models.

## **National Ambient Air Quality Standards (NAAQS)**

NAAQS are identified for the criteria pollutants; CO, Pb, NO<sub>2</sub>, O<sub>3</sub>, particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), and SO<sub>2</sub>. Measuring pollutant concentrations in outdoor air and comparing the measured concentrations to corresponding standards determines the ambient air quality status of an area as attaining or not attaining the standards.

The NAAQS are separated into primary and secondary standards. Primary standards are those established to protect public health. Secondary standards are those established to protect the public welfare from adverse pollution effects on soils, water, vegetation, manmade materials, animals, weather, visibility, property, and economy.

The scientific criteria upon which the standards are based are reviewed periodically by U.S. EPA, which may retain or change the standards according to its findings. Note that there are hundreds of compounds that are generally considered pollutants when found in ambient air but whose health and welfare effects are not well enough understood for ambient standards to be defined.

A pollutant measurement that is greater than the ambient air quality standard for its specific averaging time is called an exceedance. An exceedance is not necessarily a synonym for a violation. For each pollutant there are specific rules about how many exceedances are allowed in a given time period before a pattern of exceedances is considered a violation of the NAAQS that may result in regulatory actions to further clean up the area's air. This distinction is made to allow for certain limited exceedances of the standard that may occur during an unusual weather pattern, for example, reserving regulatory action for instances where the exceedances are too frequent.

The design value for a site is the level of pollutant concentration when the rules of the NAAQS calculations are applied to that specific pollutant. For example, the O<sub>3</sub> design value is calculated by taking the three-year average of the annual fourth highest daily 8-hour maximums. If this number is above the NAAQS for O<sub>3</sub>, then it is a violation or 'nonattainment' of the NAAQS. If the design value is below the NAAQS, then the area is in 'attainment' of the standard. Generally, nonattainment is based on the highest design value reported for a specific geographic area (usually a CBSA), and the entire area would be defined by that monitor and classified accordingly. This number basically tells you how polluted an area would be in relation to a NAAQS. A listing of the NAAQS can be found at: <https://www.epa.gov/criteria-air-pollutants/naaqs-table>

### **5-Year Network Assessment**

U.S. EPA requires a Network Assessment be performed every five (5) years, as per 40 CFR Part 58.10(d). The fourth Regional Network Assessment was published by July 1, 2025 by the Lake Michigan Air Directors Consortium (LADCO) for the states of Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. It is available at: <https://www.ladco.org/reports/monitoring-reports/>

The third Regional Network Assessment published July 1, 2020, second Regional Network Assessment published in 2015, and the first Regional Network Assessment, published July 1, 2010, by LADCO are also available on this website. Indiana uses the recommendations from the Regional Assessment as input into the Annual Network Review.

### **New U.S. EPA Monitoring Requirements**

When the NAAQS and monitoring requirements for the various pollutants are undergoing revision, even though IDEM is aware of the proposals and how they could possibly affect Indiana's monitoring network, only those requirements which have been approved and are in effect at this time are considered when modifying Indiana's current network.

### **Network Overview**

Indiana has reviewed its current ambient air quality network and has developed a proposed network to be implemented during 2027. Current NAAQS, data trends, site redundancy, siting problems, site access concerns and other identified monitoring issues all contribute to any proposed network revisions.

Indiana's air monitoring network for 2027 consists of the sites and monitors listed in Table 1. All site changes which have occurred or plan to take place in 2026 are included along with the planned network modifications for 2027. Figure 1 is an overview of Indiana's current monitoring network with population density showing the locations where monitoring takes place in 2027.

The number of monitoring locations operated by the State will decrease from 68 to 66 sites as will the number of monitored pollutant parameters decrease from 147 to 142.

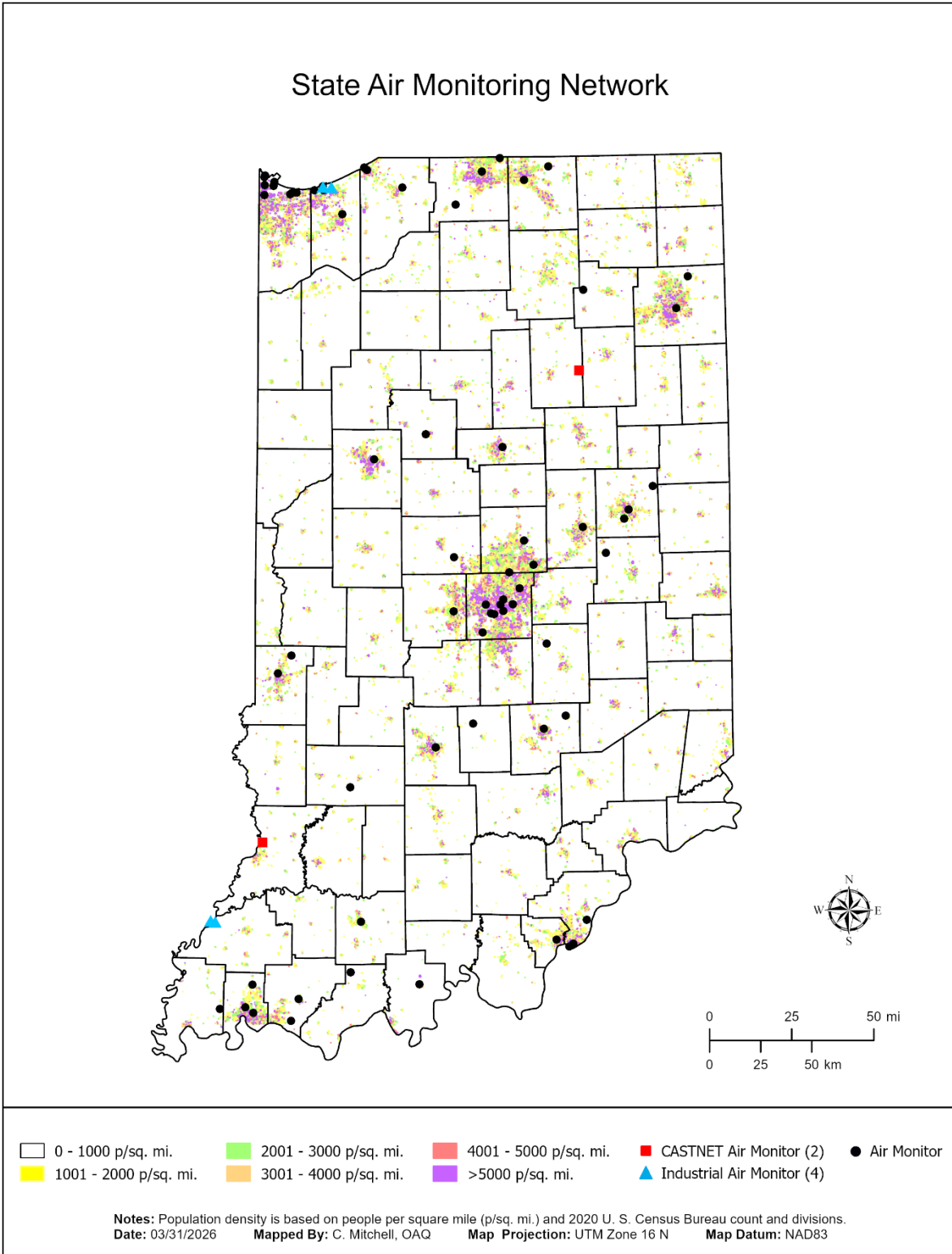
### Table 1 – State Air Monitoring Network

Indiana Ambient Air Quality Monitoring Network 2027

AQS#	COUNTY	CITY	SITE NAME	SITE ADDRESS	O <sub>3</sub>	SO <sub>2</sub>	CO / CO <sub>2</sub>	NO <sub>2</sub> / NO <sub>y</sub>	PM <sub>10</sub>	PM <sub>10-2.5</sub>	PM <sub>2.5</sub> (FRM)	PM <sub>2.5</sub> (Cont)	PM <sub>2.5</sub> (Spec)	PM <sub>2.5</sub> (Spec Cont)	LEAD	TOXICS (VOCs)	O <sub>3</sub> PREC	CARBONYLS	METALS	MET
170230001	Clark, IL	West Union, IL	West Union	416 S. Hwy 1	Disc															Disc
180030002	Allen	Leo	Leo HS	Leo HS, 14600 Amstutz Rd.	X															
180030015	Allen	Fort Wayne	Ft Wayne - Coliseum	707 N Coliseum Blvd	X							X								X
180050007	Bartholomew		Hope	Hauser Jr-Sr HS, 9404 N775 E.	X															
180050008	Bartholomew	Columbus	Columbus - Rocky Ford Rd.	3475 Trestle Dr.								X								
180110001	Boone		Whitestown	Perry-Worth Elem Sch., 3900 E. 300 S, Lebanon	X															
180130001	Brown		Helmsburg	Jackson Twp Fire Dept., 4831 Helmsburg Road, Nashville	X															
180150002	Carroll		Flora	Flora Airport, 481 S. 150 W, Flora	X															X
180190010	Clark	Jeffersonville	Jeffersonville - Bates-Bowyer Ave.	Downtown Wastewater Plant, 1420 Bates-Bowyer Ave.					X		X	X	X	B. Carbon						
180190008	Clark		Charlestown State Park	Charlestown State Park, 12500 Highway 62, Charlestown	X															X
180190009	Clark	Clarksville	Clarksville	Falls of the Ohio State Park, 201 W. Riverside Dr.												X				
180350006	Delaware	Muncie	Muncie - Central HS	801 N. Walnut St.							Disc	X								
180350009	Delaware	Muncie	Muncie - Mt. Pleasant Blvd.	2601 W. Mt. Pleasant Blvd.											X				X	
180350010	Delaware	Albany	Albany	Albany Elem. Sch., 700 W. State St.	X															
180372001	Dubois	Jasper	Jasper - Post Office	Post Office, 206 E. 6th St.					X		X	X	X							
180390007	Elkhart	Bristol	Bristol	Bristol Elem. Sch. 705 Indiana Ave.	X															
180390008	Elkhart	Elkhart	Elkhart - Prairie St.	2745 Prairie St.								X		B. Carbon - Disc						
180430008	Floyd	New Albany	New Albany - 4H Rd	4-H Floyd County Fairgrounds	X	X					X	X								
180550001	Greene		Plummer	2500 S. 275 W	X						X	X								X
180570006	Hamilton	Noblesville	Noblesville - 191st St.	Our Lady of Grace Catholic Church, 9900 E. 191st St.	X															
180570007	Hamilton	Fishers	Fishers	11775 Brooks School Road								X								
180570008	Hamilton	Carmel	Carmel - Hazel Dell Pkwy	9609 Hazel Dell Parkway							X									
180630004	Hendricks	Avon	Avon	7203 E. US Highway 36	X															
180650003	Henry		Mechanicsburg	Shenandoah HS, 7354 W. Hwy. 36, Middletown							X	X	X							X
180670004	Howard	Kokomo	Kokomo - E. Vaile Ave.	1802 E. Vaile Ave.	X							X								
180890006	Lake	East Chicago	East Chicago - Franklin Sch.	Washington (formerly Franklin) Elem. Sch, 2400 Cardinal Dr.					X		X	X				X				
180890022	Lake	Gary	Gary - IITRI	IITRI Bunker, 201 Mississippi St.	X	X		X	X		X	X	X	B. Carbon		X				X
180890031	Lake	Gary	Gary - Madison St.	Indiana American Water Co. 650 Madison St.					X		X									
180890032	Lake	Gary	Gary - 4th Ave.	Gary SouthShore RailCats, One Stadium Plaza											X				X	
180890034	Lake	East Chicago	East Chicago - Marina	East Chicago Marina, 3301 Aldis St.		X			X		X	X			X	X			X	X
180890035	Lake	Whiting	Whiting - Center St.	1500 Center St. (H.S. Admin. Bldg.)									X			X				
180890036	Lake	Hammond	Hammond - 167th St.	NIPSCO district office and maintenance facility 1313 167th St.								X								
180890037	Lake	Hammond	Hammond - E. Lakeview St.	2141 E. Lakeview St.											X				X	
180892008	Lake	Hammond	Hammond - 141st St.	1300 E. 141st St.	X	X										X				X
180910005	LaPorte	Michigan City	Michigan City - W. Michigan Blvd.	NIPSCO Gas Station, 490 W. Michigan Blvd.	X															
180910010	LaPorte	LaPorte	LaPorte - E. Lincolnway	2011 E. Lincolnway	X															
180910011	LaPorte	Michigan City	Michigan City - Marsh Elem. Sch.	400 E. Homer St.							Disc	X								



Figure 1 – State Air Monitoring Network 2027



## Review Summary

The changes proposed for the 2027 Monitoring Network are:

- Discontinuing PM2.5 BAM method at Gary – IITRI (18-089-0022) in favor of the T640 method already in place.
- Resuming PM2.5 FRM monitoring at Terre Haute – Lafayette Ave (181670018) for BAM network Quality Assurance
- Discontinuing PM2.5 FRM monitoring at Muncie – Central HS (180350006), and Michigan City – Marsh ES (180910011) in favor of the PM2.5 FEM method.
- Discontinuing CO monitoring at Evansville - Lloyd (181630022) and shutting down the site.
- Discontinuing Black Carbon monitoring at Elkhart – Prairie St (180390008) and Evansville – Buena Vista (181630021).

Updates on the changes made to the 2026 Monitoring Network:

- None

Unplanned changes to the 2026 Monitoring Network:

- Indianapolis School 21 site relocation has been delayed by problems with site agreements with local property owners. The site was prematurely shut down due to frequent costly vandalism.
- Sandcut (181670024) and West Union, IL (170230001) sites were condensed into one site now called Sandcut – E Rio Grande Ave (181670026) due to a property sale at the old Sandcut site.
- East Chicago – Franklin Sch. (180890006) site relocation from the rooftop delayed due to the delay in completing the new enclosure on the ground. Intermittent particulate samplers moved in April. Toxics and continuous PM monitoring to be established upon receipt of equipment.

## Network Description

As per 40 CFR Part 58.10, an annual monitoring network plan which provides for the establishment and maintenance of an air quality surveillance system consisting of the air quality monitors in the state, is required to be submitted by all states to U.S. EPA.

Specifically, §58.10 (a) requires for each existing and proposed monitoring site:

1. A statement of whether operation of each monitor meets the requirements of appendices A, B, C, D, and E of 40 CFR Part 58, where applicable.
2. Proposals for any State and Local Air Monitoring Station (SLAMS) network modifications.
3. A detailed description of the PAMS network being operated in accordance with the requirements of appendix D to 40 CFR Part 58.

§58.10 (b) requires the plan to contain the following information for each existing and proposed site:

1. The Air Quality System (AQS) site identification number.
2. The location, including street address and geographical coordinates.
3. The sampling and analysis method(s) for each measured parameter.
4. The operating schedules for each monitor.
5. Any proposals to remove or move a monitoring station within a period of 18 months following plan submittal.
6. The monitoring objective and spatial scale of representativeness for each monitor.

7. The identification of any sites that are suitable and sites that are not suitable for comparison against the annual PM<sub>2.5</sub> NAAQS as described in §58.30.
8. The Metropolitan Statistical Area (MSA), Core Based Statistical Area (CBSA), Combined Statistical Area (CSA) or other area represented by the monitor.
9. The designation of any Pb monitors as either source-oriented or non-source-oriented according to Appendix D to 40 CFR part 58.
10. Any source-oriented monitors for which a waiver has been requested or granted by the U.S. EPA Regional Administrator as allowed for under paragraph 4.5(a)(ii) of Appendix D to 40 CFR part 58.
11. Any source-oriented or non-source-oriented site for which a waiver has been requested or granted by the U.S. EPA Regional Administrator for the use of Pb-PM<sub>10</sub> monitoring in lieu of Pb-TSP monitoring as allowed for under paragraph 2.10 of Appendix C to 40 CFR part 58.
12. The identification of required NO<sub>2</sub> monitors as near-road, area-wide, or vulnerable and susceptible population monitors in accordance with Appendix D, section 4.3 of this part.
13. The identification of any PM<sub>2.5</sub> FEMs used in the monitoring agency's network where the data are not of sufficient quality such that data are not to be compared to the NAAQS. For required SLAMS where the agency identifies that the PM<sub>2.5</sub> Class III FEM does not produce data of sufficient quality for comparison to the NAAQS, the monitoring agency must ensure that an operating FRM or filter-based FEM meeting the sample frequency requirements described in §58.12 or other Class III PM<sub>2.5</sub> FEM with data of sufficient quality is operating and reporting data to meet the network design criteria described in appendix D to this part.

## Network Review Description

The following definitions represent the categories found in the Network Review. Over the years, the list of Monitor Type designations has changed. This is the current list.

**Monitor Type** – Indicates the “Administrative classification of a monitor.” Each monitor can only have one monitor type at a time. The complete list allowed is listed below with those used in Indiana’s network **underlined and in bold**:

- **SLAMS** – State or Local air monitoring station for parameters (pollutants and/or meteorological data) addressed by 40 CFR Part 58. The SLAMS make up the ambient air quality sites that are primarily needed for NAAQS comparison, but may serve other data purposes. U.S. EPA must approve all SLAMS sites.
- **TRIBAL** – Air monitoring stations operating under the authority of a federally recognized tribal agency for parameters addressed by 40 CFR Part 58.
- **SPECIAL PURPOSE (SPM)** – A monitor that an agency has designated as “Special Purpose” in its annual monitoring network plan for parameters addressed by 40 CFR Part 58. SPMs are not counted by the agency when showing compliance with the minimum network requirements for the number and siting of monitors. SPMs generally indicate a short-term monitoring project, or monitors are designated SPM for the first 24-months of monitoring to allow for ease of site movement due to unforeseen circumstances.
- **INDUSTRIAL** – A monitor that is operated by a private industry entity rather than under control of a State, Local, or Tribal government.
- **EPA** – A monitor that is operated by EPA or an EPA contractor for parameters addressed by 40 CFR Part 58.
- **NON-EPA FEDERAL** – A monitor operated by another Federal agency for parameters addressed by 40 CFR Part 58.
- **OTHER** – A monitor for a parameter not addressed by 40 CFR Part 58. This designation is not allowed for criteria pollutants or other parameters associated with a monitoring network such as NCORE, PAMS, NATTS, etc.

**Network** – The Monitor Network or Program affiliation of the monitor. A monitor may have more than one at a time or no value. Those networks in Indiana’s plan are listed:

- NCore – *National Core (NCore) Multi-pollutant Monitoring Station*: Sites that measure multiple pollutants at trace levels in order to provide support to integrated air quality management data needs. There is currently one NCore site for Indiana located in Indianapolis.
- Near-Road – Monitors at sites meeting the near road design as per 40 CFR Part 58. Typically measure near road peak hourly NO<sub>2</sub> or CO concentrations in larger urban areas. There is currently one Near-Road site for Indiana located in Indianapolis.
- CSN Supplemental – *Supplemental Speciation Station*: Any PM<sub>2.5</sub> speciation station that is used to gain supplemental data and is not dedicated as part of the speciation trends network.
- CSN STN – *Trends Speciation Station*: A PM<sub>2.5</sub> speciation station designated to be part of the speciation trends network. This network provides chemical species data of fine particulates.
- PAMS – *Photochemical Assessment Monitoring Station*: Sites established in serious and severe O<sub>3</sub> nonattainment areas in the 1990s to obtain more comprehensive data of areas with ozone pollution by also monitoring NO<sub>x</sub> and VOCs.
- CASTNET – Clean Air Status and Trends Network is a national monitoring network established to assess trends in pollutant concentrations, atmospheric deposition, and ecological effects due to changes in air pollutant emissions.

**NO<sub>2</sub> Design Criteria** – operation of a minimum number of required NO<sub>2</sub> monitoring sites.

- Near-Road - Within the NO<sub>2</sub> network, there must be one microscale near-road NO<sub>2</sub> monitoring station in each CBSA with a population of 500,000 or more persons to monitor a location of expected maximum hourly concentrations sited near a major road with high AADT counts.
- Area-Wide - Within the NO<sub>2</sub> network, there must be one monitoring station in each CBSA with a population of 1,000,000 or more persons to monitor a location of expected highest NO<sub>2</sub> concentrations representing the neighborhood or larger spatial scales.
- Regional Administrator Required Monitoring – Susceptible and vulnerable populations (S/V). The U.S. EPA Regional Administrators, in collaboration with States, must require additional NO<sub>2</sub> monitoring stations nationwide in any area, inside or outside of CBSAs, above the minimum monitoring requirements, with a primary focus on siting these monitors in locations to protect susceptible and vulnerable populations.

**Operating Schedule** – specifies how often a sample is taken.

- Continuous - operates 24 hours per day, 7 days per week; applies to gaseous analyzers, meteorological instruments, and any monitor collecting hourly or subhourly data.
- Daily - a sample is taken every day; applies to manual method particulate samplers.
- 3 - Day - Manual method particulate samplers that run every third day.
- 6 - Day - Manual method particulate, toxics, or carbonyl samplers that run every sixth day.
- 8 - Hour - Manual method carbonyl samplers that take 8-hour samples every third day during PAMS Season.

**Sampling Method** – Each ambient air monitor is classified by a specific method number. This method combines both the collection procedure along with the analysis performed on the sample. These numbers can be found in the U.S. EPA “List of Designated Reference and Equivalent Methods” (see U.S. EPA Ambient Monitoring Technology Information Center web page at:

<https://www.epa.gov/amtic/air-monitoring-methods-criteria-pollutants>

**Scale** – The specific “spatial scales of representation” describes the physical dimensions of the air parcel around the monitoring station throughout which actual pollutant concentrations are reasonably similar.

- Microscale - Areas ranging from several meters to about 100 meters,
- Middle scale - Areas ranging from 100 meters to 0.5 kilometers,

- Neighborhood - 0.5 to 4.0 kilometers, and uniform land use,
- Urban scale - 4 to 50 kilometers,
- Regional - 50 to hundreds of kilometers.

**Monitoring Objective** – Describes the purpose/objective for monitoring at a site.

- General/Background concentration – sites located to determine general background concentration levels.
- Highest concentration – sites located to determine the highest concentrations expected to occur in the area covered by the network.
- Maximum Precursor Emissions Impact – sites where the magnitude and type of precursor emissions in the area are expected to impact. These sites are suited for the monitoring of urban air toxic pollutants.
- Population exposure – sites located to measure typical concentrations in areas of high population density.
- Quality assurance – sites where two monitors of the same type are located; one used to report air quality for the site, and the other dedicated as an audit monitor.
- Regional transport – sites located to determine the extent of regional pollutant transport among populated areas, and in support of secondary standards.
- Source-oriented – sites located to determine the impact of significant sources or source categories on air quality.
- Upwind background – sites established to characterize upwind background and transported ozone and its precursor concentrations into an area.

**Waiver Required** – 40 CFR Part 58 Appendix E Section 10 allows for waiver provisions. Most sampling probes or monitors can be located so they meet the requirements of Appendix E. There may be existing sites that may not meet these requirements. The U.S. EPA will consider a written request from the State agency to waive one or more siting criteria for some monitoring sites providing that the State can adequately demonstrate the need (purpose) for monitoring or establishing a monitoring site at that location.

**NAAQS Comparable** – 40 CFR Part 58 Subpart B requires the identification of any sites that are suitable or not suitable for comparison against the PM<sub>2.5</sub> NAAQS as described in § 58.11 and §58.30. If a 'No' is present in this category the data should not be used in comparison to the NAAQS.

**Primary Monitor** – The monitor identified by the monitoring organization that provides concentration data used for comparison to the NAAQS. For any specific site, only one monitor for each pollutant can be designated in AQS as primary monitor for a given period of time. The primary monitor identifies the default data source for creating a combined site record for purposes of NAAQS comparisons.

**CBSA** – Core-Based Statistical Area is defined by the U.S. Office of Management and Budget as a statistical geographic entity consisting of the county or counties associated with at least one urbanized area/urban cluster of at least 10,000 population, plus adjacent counties having a high degree of social and economic integration. CBSA replaces the term Metropolitan Statistical Area, MSA. The term MSA continues to be used in the CFR. Several border areas are included with other counties in bordering states. Figure 2 is a map of the CBSAs in Indiana.

**CSA** – Combined Statistical Area (CSA) is defined by the U.S. Office of Management and Budget as a geographical area consisting of two or more adjacent Core Based Statistical Areas (CBSA) with employment interchange of at least 15 percent.

**Site Change Proposed** – Designates whether this particular site is being considered for some type of modification during 2026 or 2027: relocation, discontinuation, or addition.

## Monitoring Requirements

Appendix A of 40 CFR Part 58 outlines the Quality Assurance Requirements for SLAMS, and other monitor types whose data are intended to be used to determine compliance with the NAAQS. It details the calibration and auditing procedures used to collect valid air quality data, the minimum number of collocated monitoring sites, the calculation used for data quality assessments and the reporting requirements. All sites in Indiana operate following the requirements set forth in this appendix.

Appendix B of 40 CFR Part 58 specifies the Quality Assurance Requirements for the control and assessment of the quality of the ambient air monitoring data submitted to a PSD reviewing authority or the EPA by an organization operating an air monitoring station, or network of stations, operated in order to comply with Part 51 New Source Review—Prevention of Significant Deterioration (PSD).

Appendix C of 40 CFR Part 58 specifies the criteria pollutant monitoring methods which must be used in SLAMS and NCore stations. All criteria pollutant monitoring in Indiana follows the methods specified in this appendix.

Appendix D of 40 CFR Part 58 deals with the network design criteria for ambient air quality monitoring. The overall design criteria, the minimum number of sites for each parameter, the type of sites, the spatial scale of the sites, and the monitoring objectives of the sites are detailed in this appendix. In designing the air monitoring network for Indiana, the requirements of this appendix were followed. The specifics for each pollutant network are in the individual parameter chapters.

O<sub>3</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> have minimum monitoring requirements based upon the population of an MSA. Estimated 2023 population data from the U.S. Census Bureau are used in this report unless otherwise specified.

According to §2(e) of Appendix D, “The EPA recognizes that State and local agencies must consider MSA/CSA boundaries and their own political boundaries and geographical characteristics in designing their air monitoring networks. The EPA recognizes that there may be situations where the EPA Regional Administrator and the affected State or local agencies may need to augment or to divide the overall MSA/CSA monitoring responsibilities and requirements among these various agencies to achieve an effective network design. Full monitoring requirements apply separately to each affected State or local agency in the absence of an agreement between the affected agencies and the EPA Regional Administrator.” The individual tables list the data, the requirements, and the current sites for the full multi-agency MSAs or CBSAs. In instances where it is more logical or desirable to divide the monitoring requirements, Indiana has entered into an MOA, Memorandum of Agreement with some of the neighboring agencies to ensure that the minimum requirements for the MSA continue to be met and the resulting network provides adequate coverage. MOAs have been signed in the past with the Southwest Ohio Air Quality Agency (SWOQA), the Louisville Metropolitan Air Pollution Control District (APCD), and the Illinois EPA. As with every renewal, IDEM has verified with these agencies that nothing has changed and the MOA is current. Renewal MOAs are in development and will be submitted upon completion later this year.

Appendix E of 40 CFR Part 58, which deals with the placement of the monitoring probe, its spacing from obstructions and what materials the probe can be made of. All monitors operated in Indiana meet Appendix E criteria.

Most monitoring sites are visited weekly by site operators who confirm and document operations and note any potential siting problems that could cause noncompliance with Part 58.

## Quality Assurance

Quality assurance (QA) actions fall under two categories:

- **quality control** – procedures built into the sampling and analysis methodologies to ensure data quality, and
- **quality assessment** – periodic outside evaluations of the analysis methodology and data quality.

The requirement establishing a QA program is set forth in 40 CFR Part 58 Appendix A. Program management is achieved through guidance found within the Air Monitoring Branch's Quality Assurance Project Plans (QAPPs). Indiana has developed five QAPPs addressing the parameters in the network. These have been approved by EPA Region V and are reviewed and updated as necessary:

- Particulates – Volume I,
- Gases – Volume II,
- Meteorological – Volume III,
- Toxics – Volume IV, and
- Calibration, Certification, and Verification Methods of Transfer Standards – Volume V.

The technical framework for the QAPPs is based on the requirements and guidance outlined in the following documents:

- 40 CFR Part 58 Appendix A, which specifies the minimum quality system requirements applicable to SLAMS and other monitor networks (e.g., SPMs, NCore, Near-Road) whose data are used to determine compliance with the NAAQS.
- 40 CFR Part 58 Appendix C, which specifies the criteria pollutant monitoring methods (manual methods or automated analyzers) which must be used in SLAMS and NCore stations.
- 40 CFR Part 58 Appendix D, which describes monitoring objectives, spatial scales, and general criteria to be applied in establishing the required SLAMS ambient air quality monitoring stations and for choosing general locations for monitoring sites.
- 40 CFR Part 58 Appendix E, which has specific location criteria applicable to SLAMS, NCore, and PAMS ambient air quality monitoring probes, inlets, and optical paths for established stations to ensure the uniform collection of compatible and comparable air quality data.
- U.S. EPA guidance documents, primarily the QA Handbook for Air Pollution Measurement Systems: Volume II: Ambient Air Quality Monitoring Program and QA Handbook for Air Pollution Measurement Systems: Volume IV: Meteorological Measurements.
- U.S. EPA technical assistance documents and memoranda.

To further elaborate and define the information in the IDEM QAPPs, standard operating procedures (SOPs) are developed as methods in achieving consistent and accurate quality assurance of environmental data operations.

An integral part of the monitoring network design is ensuring the EPA-approved air monitoring equipment is collecting ambient air and not affected by environmental and anthropogenic influences. Siting requirements are outlined in 40 CFR Part 58 Appendices D and E, the IDEM QAPPs, and the U.S. EPA QA Handbooks. Over time, monitoring sites that initially met siting requirements may no longer conform to those requirements due to changes in the surrounding physical environment, the shelter conditions, and/or property land-use. During site visits any potential siting or safety problems may be noted and recommendations for corrections are made. On a biennial schedule (or sooner if site modifications are made), the Quality Assurance Section will visit the site to collect physical measurements, site photographs and other observations to verify each monitoring site continues to meet the siting requirements. If issues are uncovered or if a site no longer meets siting requirements, the Ambient Monitoring Sections are notified of the need for corrective actions.

Quality control (QC) procedures are necessary to ensure the instruments operate as intended and that the quality of the collected data meets acceptable limits for measurement uncertainty. For gas analyzers, automated systems for calibrations, daily span/zero checks, and weekly span/1-point quality control/zero

checks ensure the validity of the collected data. For particulate matter (PM) instruments, calibrations are performed annually, and QC checks are performed during monthly flow verification procedures. Meteorological sensors are calibrated or verified annually. The Data Management System administrator and the Ambient Monitoring Section parameter specialists review these results to find issues that may affect instrument performance and data validity. In addition, the parameter specialist can remotely review the operating performance of gas analyzers and continuous PM monitors, allowing them to identify potential issues with the instrument. Corrective action is undertaken when the one-point QC checks or the PM flow rate verifications exceed the limits prescribed in the IDEM QAPPs and Appendix D of the U.S. EPA Quality Assurance Handbook for Air Pollution Measurement System; Volume II.

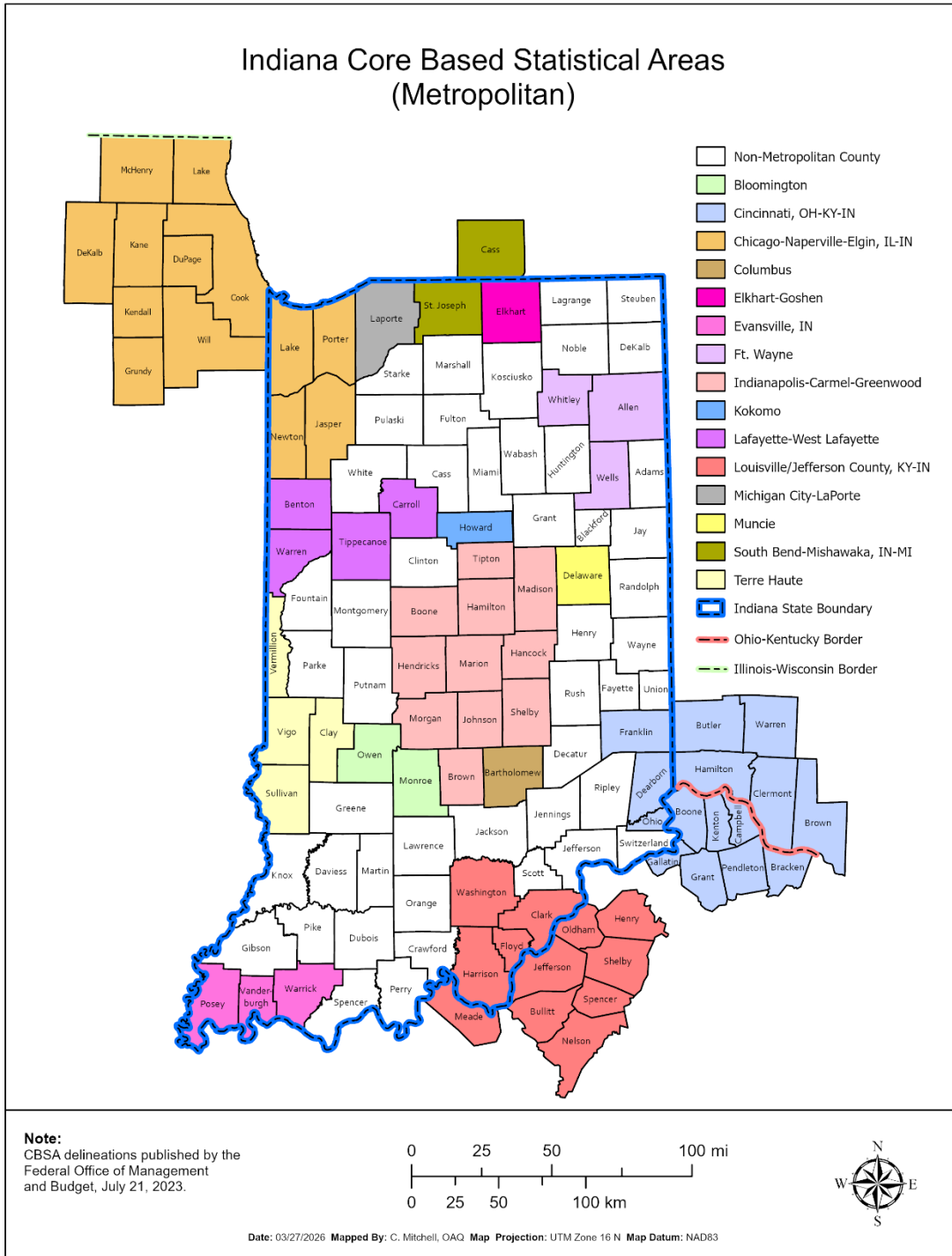
Data review is an examination of the collected data to ensure it has been recorded and processed correctly, verified, and validated. Criteria gas and continuous PM data are initially reviewed by the data acquisition system to invalidate data based on the results of calibration, QC checks, or other anomalies (power failures, communication errors). The ambient monitoring data (gas and PM) are verified by the Ambient Monitoring parameter specialists using associated audit results and other records (e.g., logbook entries, filter log sheets) to ensure the data is correct and complete. The QA Section staff confirm the verified ambient data to ensure correctness and that operational and systematic requirements are met. The validated environmental data and the associated QC/QA results are submitted to the U.S. EPA's Air Quality System (AQS) within 90 days after the end of the quarter. Annually, IDEM certifies the CO, NO<sub>2</sub>, SO<sub>2</sub>, ozone, lead, PM<sub>10</sub>, PM<sub>10-2.5</sub>, and PM<sub>2.5</sub> monitoring data collected by FRM and FEM monitors at its SLAMS and SPM monitoring stations. Certification signifies that

- (1) all the ambient data and all the quality assurance data that were collected, and that have completed and passed the data verification and validation process have been submitted to AQS, and
- (2) based on the results of all quality control checks and performance assessments, the ambient data, quality assessment and quality control data meet EPA regulatory requirements and the data quality requirements specified in the IDEM QAPPs.

Appendix A of 40 CFR Part 58 requires an independent assessment of the ambient data operations, which is provided by the Air Monitoring Branch's Quality Assurance Section. Audit equipment used by the QA Section staff is independent of that equipment used by the Ambient Monitoring sections for calibrations, QC checks, and flow verifications. The QA Section performs semi-annual audits of gas analyzers using select audit concentration levels outlined in Appendix A. For filter-based samplers, continuous PM samplers, and the CSN PM<sub>2.5</sub> monitoring network, the QA Section audits the flow rate, temperature, barometric pressure, and leak checks of those units quarterly. The QA Section has programs to compare the output of zero air generators against zero air cylinders, provide field zero air and gas checks of the Summa canister collection systems used in the Air Toxics program, and to annually audit meteorological sensors. In addition, the Quality Assurance Section operates the Air Monitoring Branch Quality Assurance standards laboratory. The standards laboratory calibrates, certifies and verifies calibration and testing equipment and verifies EPA Protocol Gas cylinder concentrations through comparison to equipment or test gas cylinders traceable to National Institute of Standards and Technology (NIST) standards.

U.S. EPA Region V staff and its Environmental Services Assistance Team (ESAT) contractor provide additional assessments of IDEM's monitoring operations and procedures. Each year the ESAT contractor conducts Performance Evaluation Program (PEP) audits on PM instruments and National Performance Audit Program (NPAP) audits on gas analyzers located at a select number of sites within the State. Every three years U.S. EPA Region V staff conducts a Technical Systems Audit (TSA) to evaluate the monitoring program, QA procedures, laboratory operations, and project documentation; the latest TSA was performed in 2024. These reviews ensure that Indiana has a monitoring program capable of collecting ambient air data that can be compared to the National Ambient Air Quality Standards (NAAQS) and is representative of the air that Hoosiers breathe. Beginning in 2025 U.S. EPA Region V conducted the first TSA regarding the operations of the PAMS program. Future PAMS TSAs are planned for every four years.

**Figure 2 – Indiana CBSAs**



## Parameter Networks

### Carbon Monoxide (CO)

#### Monitoring Requirements

40 CFR Part 58 Appendix D §4.2 details the requirements for CO monitoring. One CO monitor is required to operate collocated with one required near-road NO<sub>2</sub> monitor in CBSAs having a population of 1,000,000 or more persons. Other CO monitors may be required if deemed necessary by the Regional Administrator. In addition, 40 CFR Part 58 Appendix D §3(b) states that CO measurements will be included at the NCore multi-pollutant monitoring sites.

Microscale and middle scale measurements are useful classifications for SLAMS CO sites since most people have the potential for exposure on these scales. Maximum CO concentrations primarily occur in areas near major roadways and intersections with high traffic density and often poor atmospheric ventilation.

Middle scale CO monitoring is intended to represent areas with dimensions from 100 meters to 0.5 kilometers. In some cases, middle scale measurements may apply to areas that have a total length of several kilometers such as “Line Emission Sources.” This type of emission source area would include air quality along a commercially developed street, a shopping plaza, a freeway corridor, parking lots and feeder streets.

Microscale CO monitoring applies when air quality measurements are to be used to represent distributions within street canyons, over sidewalks and near major roadways. Microscale measurements in one location can often be considered as representative of similar locations throughout a city.

#### Monitoring Methodology

Indiana’s carbon monoxide monitoring network collects data with Teledyne Advanced Pollution Instrumentation (API) T300 (CO) analyzer using nondispersive infrared monitoring methodology. The API Model T300U Trace level/Ultra-sensitive analyzers is used to collect trace level CO data at the NCore Indianapolis – Washington Park site.

#### Monitoring Network

On January 1, 2027, Indiana proposes operating two CO monitors, as displayed in Figure 3. The details of the current network are listed in Table 2.

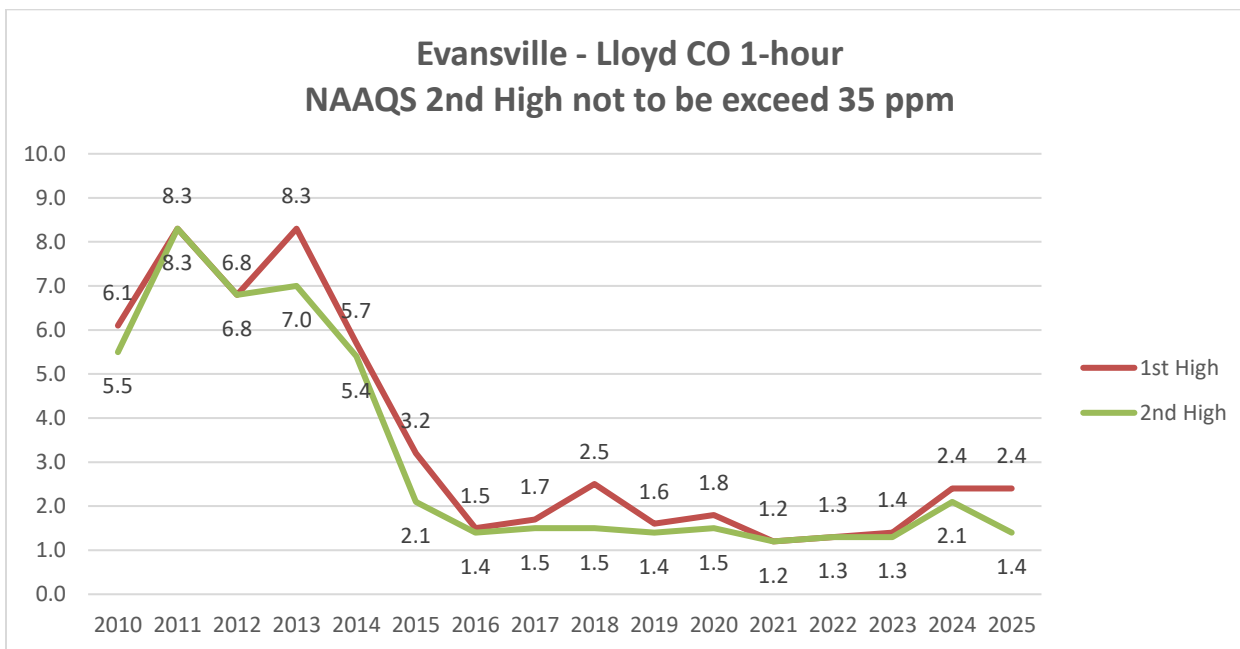
#### Network Modifications

The Evansville - Lloyd (181630022) Carbon Monoxide monitoring site is proposed to be discontinued on December 31, 2026. The monitoring site does not meet the requirement for CO monitoring in 40 CFR Part 58 Appendix 4.2. Vanderburgh County has never been designated as non-attainment area for CO.

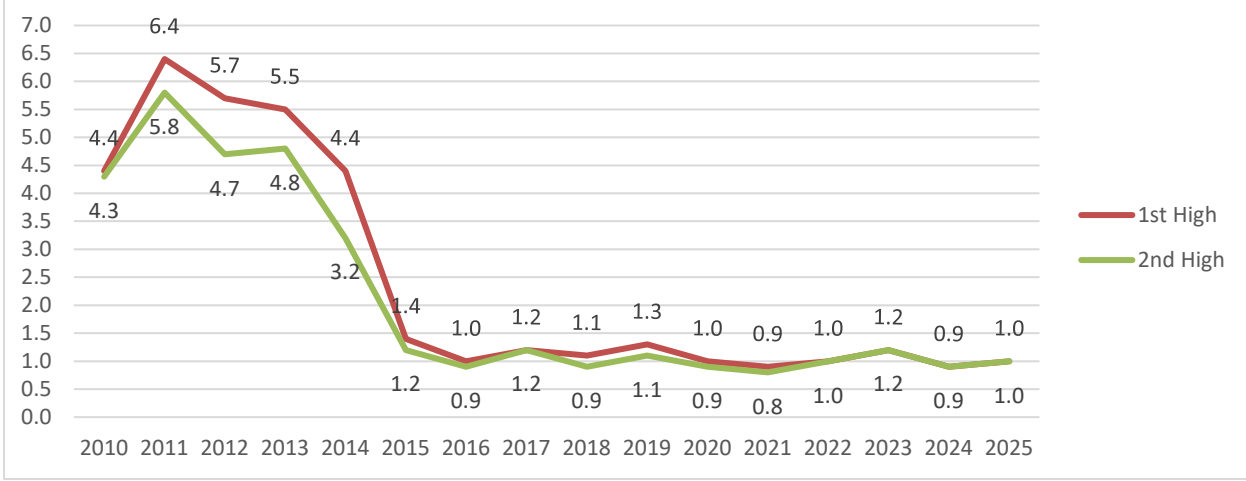
The Evansville - Lloyd (181630022) monitoring site measured CO from September 2009 to present on Lloyd Expressway in downtown Evansville. The CO concentrations measured at this site have been well below the primary 1-hour NAAQS of 35 ppm and the 8-hour 9 ppm as shown in the following table and graphs.

**Evansville – Lloyd Carbon Monoxide**

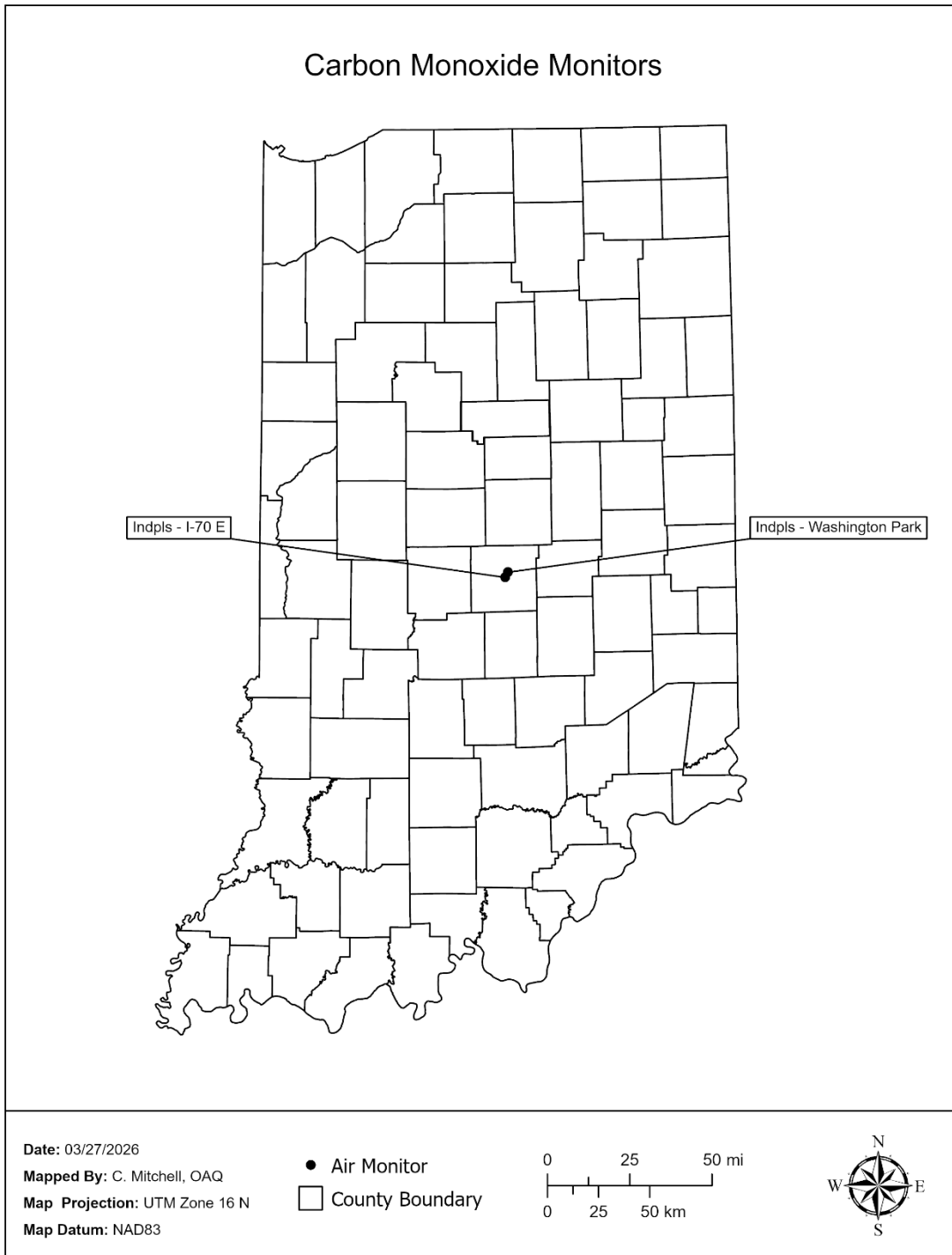
Year	1-hour (ppm)		8-hour (ppm)	
	1st High	2nd High	1st High	2nd High
2010	6.1	5.5	4.4	4.3
2011	8.3	8.3	6.4	5.8
2012	6.8	6.8	5.7	4.7
2013	8.3	7.0	5.5	4.8
2014	5.7	5.4	4.4	3.2
2015	3.2	2.1	1.4	1.2
2016	1.5	1.4	1.0	0.9
2017	1.7	1.5	1.2	1.2
2018	2.5	1.5	1.1	0.9
2019	1.6	1.4	1.3	1.1
2020	1.8	1.5	1.0	0.9
2021	1.2	1.2	0.9	0.8
2022	1.3	1.3	1.0	1.0
2023	1.4	1.3	1.2	1.2
2024	2.4	2.1	0.9	0.9
2025	2.4	1.4	1.0	1.0



### Evansville - Lloyd CO 8-hour NAAQS 2nd High not to be exceed 9 ppm



**Figure 3 – Carbon Monoxide Monitoring Network**



**Table 2 – Carbon Monoxide Monitoring Network**

Parameter Code: 42101, 42102      CO - Carbon Monoxide														
Site ID	Site Name	County	City	Address	Monitor Type (Network)	Start Date	Operating Schedule	Monitoring Method	Scale	Monitoring Objective	Latitude	Longitude	CBSA	Site Change Proposed?
180970078	Indpls - Washington Park	Marion	Indianapolis	Washington Park, 3120 E. 30th St	SLAMS (NCORE)	01/01/10	Continuous	593	Neigh	Pop Exp	39.810833	-86.114444	Indianapolis-Carmel-Anderson	No
180970087	Indpls - I-70 E	Marion	Indianapolis	1650 Ludlow Ave.	SLAMS (NEAR ROAD)	05/01/14	Continuous	093	Micro	Highest Conc	39.787933	-86.130880	Indianapolis-Carmel-Anderson	No
181630022	Evansville - Lloyd	Vanderburgh	Evansville	10 S. 11th Ave	SLAMS	09/28/09	Continuous	093	Micro	Highest Conc	37.977680	-87.596836	Evansville, IN-KY	Discontinue
<p><i>CO MONITORING METHOD: 093 - TELEDYNE API T300 593 - TELEDYNE API 300EU, T300EU TRACE-LEVEL</i></p>														

## Lead (Pb)

### Monitoring Requirements

The lead NAAQS final rule of November 12, 2008, states that the primary and secondary standards for lead are not to exceed 0.15 µg/m<sup>3</sup> averaged over a rolling 3-month time period. 40 CFR Part 58 Appendix D §4.5 specifies that Pb monitoring must be conducted taking into account Pb sources which are expected to or have been shown to contribute to a maximum Pb concentration in ambient air in excess of the NAAQS, taking into account the logistics and potential for population exposure. At a minimum there must be one source-oriented SLAMS site located to measure the maximum Pb concentration in ambient air resulting from each Pb source which emits 0.5 or more tons per year (TPY). Annually IDEM works with U.S. EPA in reviewing the latest emissions inventories to determine if additional sources warrant monitoring. These emissions inventories include the most recent versions of the National Emissions Inventory (NEI), Toxics Release Inventory (TRI), and Indiana's Emission Inventory Tracking System (EMITS). IDEM reviewed the current emissions inventories and determined no new sources exceed the 0.5 TPY threshold, so no new Pb monitoring is required.

Waivers may be granted if the state can demonstrate the Pb source will not contribute to a maximum Pb concentration in ambient air in excess of 50% of the NAAQS, per 40 CFR Part 58 App. D Section 4.5 The waivers must be renewed once every 5 years as part of this ANP.

Collocated samplers are required at 15% of the sites operated by a Primary Quality Assurance Organization (PQAO) or a minimum of one per network. Indiana is required to operate one collocated site.

### Monitoring Scale

The appropriate scales for the source-oriented sites are either microscale (up to 100 meters) or middle scale (100 to 500 meters). The neighborhood scale (0.5 – 4.0 kilometers) is the appropriate scale for population-oriented monitoring.

### Monitoring Methodology

Indiana utilizes TSP filter sampling with inductively coupled plasma mass spectrometry analysis to generate ambient Pb concentrations from the monitoring sites.

### Monitoring Network

A waiver renewal was granted for ALCOA Warrick Power Plant AGC Div of AI in Newburgh, IN in 2026.

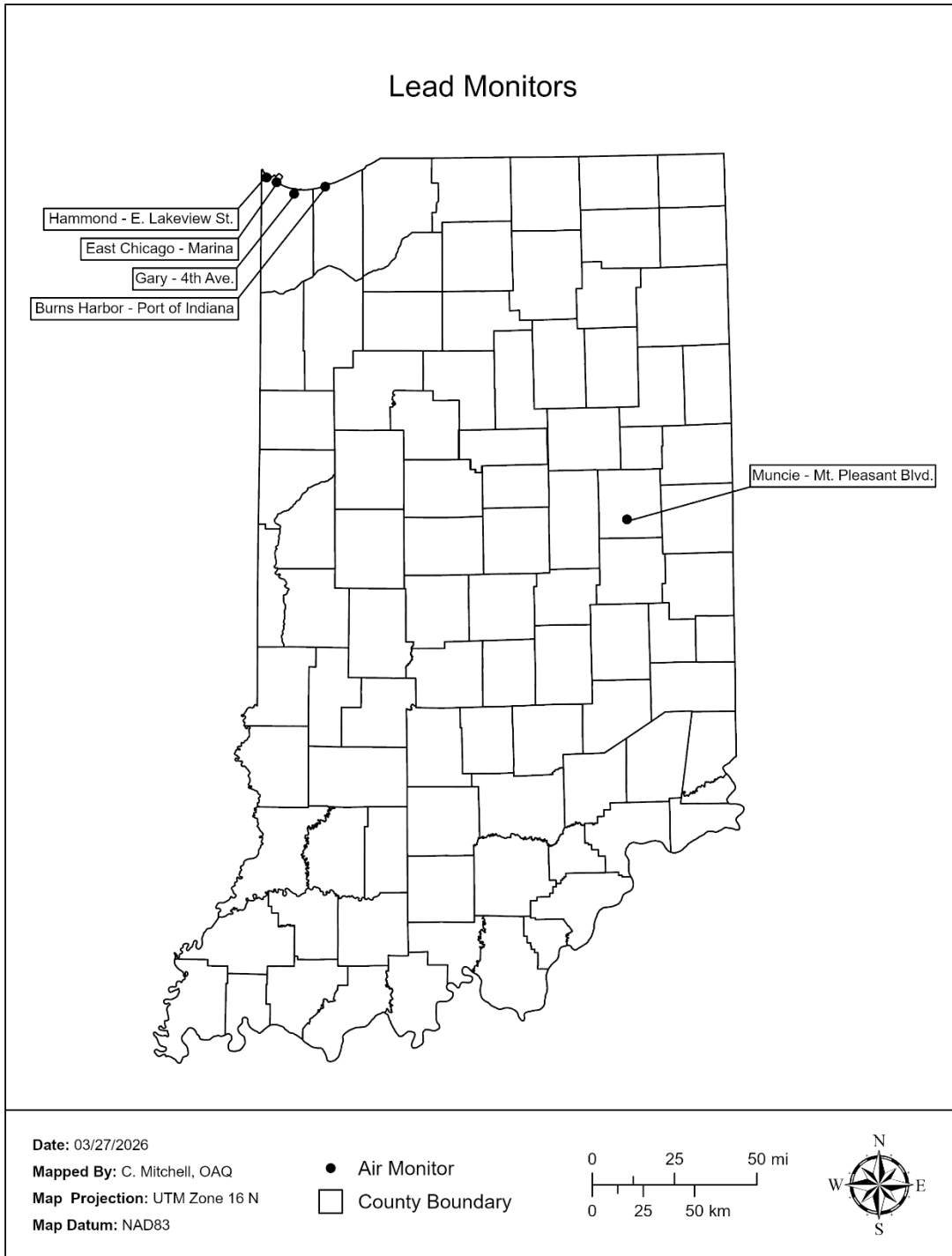
A waiver renewal is requested for Crane Army Ammunition Activity Area in Martin County. No monitoring will be necessary. Appendix B details this request.

The Pb monitoring network in Indiana in 2027 will consist of five sites. These sites are displayed in Figure 4 and detailed in Table 3.

### Network Modifications

There are no planned network modifications for 2027.

**Figure 4 – Lead Monitoring Network**



**Table 3 – Lead Monitoring Network**

Parameter Code: 14129 Pb - Lead															
Site ID	Site Name	County	City	Address	Monitor Type (Network)	Start Date	Operating Schedule	Monitoring Method	Scale	Monitoring Objective	Latitude	Longitude	CBSA	Source Oriented?	Site Change Proposed?
180350009	Muncie - Mt. Pleasant Blvd.	Delaware	Muncie	2601 W. Mt. Pleasant Blvd.	SLAMS	01/14/10	6-Day	192	Middle	Source Oriented	40.158417	-85.415021	Muncie	Yes Exide	No
180350009	Muncie - Mt. Pleasant Blvd.	Delaware	Muncie	2601 W. Mt. Pleasant Blvd.	SLAMS	05/19/13	6-Day	192	Middle	Quality Assurance	40.158417	-85.415021	Muncie	Yes Exide	No
180890032	Gary - 4th. Ave	Lake	Gary	Gary SouthShore RailCats, One Stadium Plaza	SLAMS	01/08/10	6-Day	192	Middle	Source Oriented	41.603582	-87.332658	Chicago-Naperville-Elgin, IL-IN-WI	Yes US Steel	No
180890034	East Chicago-Marina	Lake	East Chicago	East Chicago Marina, 3301 Aldis St.	SLAMS	10/25/12	3-Day	192	Middle	Source Oriented	41.653446	-87.435435	Chicago-Naperville-Elgin, IL-IN-WI	Yes Cleveland Cliffs - Indiana Harbor	No
180890037	Hammond - E. Lakeview St.	Lake	Hammond	2141 E. Lakeview St.	SLAMS	07/31/18	6-Day	192	Middle	Source Oriented	41.674278	-87.494981	Chicago-Naperville-Elgin, IL-IN-WI	Yes Whiting Metals	No
180890037	Hammond - E. Lakeview St.	Lake	Hammond	2141 E. Lakeview St.	SLAMS	08/03/18	6-Day	192	Middle	Quality Assurance	41.674278	-87.494981	Chicago-Naperville-Elgin, IL-IN-WI	Yes Whiting Metals	No
181270027	Burns Harbor-Port of Indiana	Porter		E. Boundary Rd	SLAMS	08/25/11	6-Day	192	Middle	Source Oriented	41.635161	-87.150376	Chicago-Naperville-Elgin, IL-IN-WI	Yes Cleveland Cliffs - Burns Harbor	No
<i>MONITORING METHOD: 192 - HI-VOL SAMPLER / ANALYSIS METHOD: ICP MASS SPEC (ICPMS) with GLASS FILTERS</i>															

## Oxides of Nitrogen (NO, NO<sub>2</sub>, NO<sub>y</sub>)

### Monitoring Requirements

On February 9, 2010, the Federal Register amended 40 CFR Parts 50 and 58 establishing a new NO<sub>2</sub> NAAQS for 1-hour concentrations and new monitoring requirements to be implemented by January 1, 2014.

One near-road NO<sub>2</sub> monitor is required for CBSAs with a population of 1,000,000 or more persons and were to be operational by January 1, 2014. An additional near-road NO<sub>2</sub> monitoring station is required for any CBSA with a population of 2,500,000 or more persons or with a population of 1,000,000 or more persons plus one or more roadway segments having annual average daily traffic counts of 250,000 or more. These were to be operational by January 1, 2015. For Indiana, only one near-road site is required for the Indianapolis-Carmel-Anderson CBSA. Additionally, sites are required for the Cincinnati, OH-KY-IN CBSA, the Louisville/Jefferson County, KY-IN CBSA, and the Chicago-Naperville-Elgin, IN-IL-WI CBSA. These cross-state requirements are addressed in agreements being reviewed by the appropriate neighboring agencies and should be signed shortly.

One area-wide NO<sub>2</sub> monitoring station must also be located in each CBSA with a population greater than 1,000,000 people and was required to be installed by January 1, 2013. Each area listed above also requires an area-wide monitor.

Gary – IITRI (180890022) has been designated a Regional Administrator Required Monitor by the U.S. EPA. 40 CFR Part 58 Appendix D §4.3.4(a) states: "The Regional Administrators, in collaboration with States, must require a minimum of forty additional NO<sub>2</sub> monitoring stations nationwide in any area, inside or outside of CBSAs, above the minimum monitoring requirements, with a primary focus on siting these monitors in locations to protect susceptible and vulnerable populations." Susceptible and vulnerable populations include asthmatics and disproportionately exposed groups at particular risk of NO<sub>2</sub>-related health effects, both because of increased exposure and because these groups have a higher prevalence of asthma and higher hospitalization rates for asthma. These monitors were to be designated by January 1, 2013.

Indianapolis - Washington Park serves as the NCore/PAMS monitoring site for Indiana. 40 CFR Part 58 Appendix D §3(b) and 40 CFR Part 58 Appendix D §4.3 state that direct NO<sub>2</sub> and NO/NO<sub>y</sub> measurements should be included at the NCore multi-pollutant monitoring sites and in the PAMS program. NO/NO<sub>y</sub> monitors are used at these sites because it is important to collect data on total reactive nitrogen species to better understand O<sub>3</sub> photochemistry.

### Monitoring Methodology

The NO<sub>2</sub> network uses Teledyne Model T500U Cavity Attenuated Phase Shift (CAPS) NO<sub>2</sub> analyzers to collect data. The CAPS NO<sub>2</sub> analyzer measures NO<sub>2</sub> directly unlike the traditional chemiluminescence monitors that measure NO<sub>2</sub> by subtracting NO from NO<sub>x</sub>. The API Model T200U NO<sub>y</sub> Trace level/Ultra-sensitive analyzer is used to collect NO and NO<sub>y</sub> data at the Indianapolis – Washington Park NCore/PAMS site (180970078).

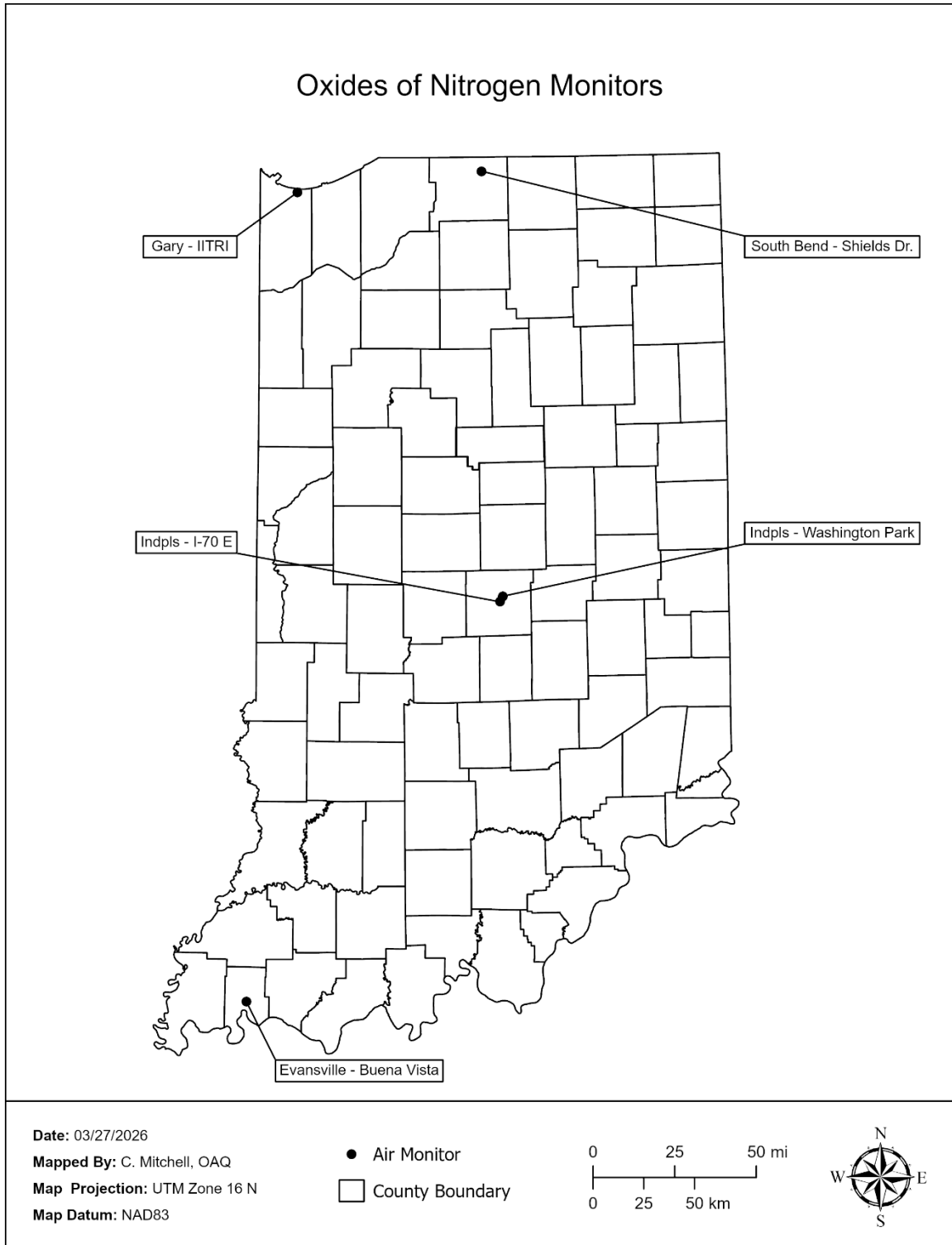
### Monitoring Network

Indiana operates five CAPS NO<sub>2</sub> monitors and one trace level NO<sub>y</sub> monitor as displayed in Figure 5. The current network, along with any changes planned in 2027, is listed in Table 4.

## **Network Modifications**

There are no network modifications planned for 2027.

**Figure 5 – Oxides of Nitrogen Monitoring Network**



**Table 4 – Oxides of Nitrogen (NO, NO<sub>2</sub>, NO<sub>y</sub>) Monitoring Network**

Parameter Code: 42601, 42602, 42600		NO, NO <sub>2</sub> , NO <sub>y</sub> - Oxides of Nitrogen													
Site ID	Site Name	County	City	Address	Monitor Type (Network)	NO <sub>x</sub> Design Criteria	Start Date	Operating Schedule	Monitoring Method	Scale	Monitoring Objective	Latitude	Longitude	CBSA	Site Change Proposed?
180890022	Gary - IITRI	Lake	Gary	IITRI Bunker, 201 Mississippi St.	SLAMS	S/V	06/27/95	Continuous	212	Neigh	Highest Conc	41.606563	-87.305015	Chicago-Naperville-Elgin, IL-IN-WI	No
180970078	Indpls - Washington Park	Marion	Indianapolis	Washington Park, 3120 E. 30th St	SLAMS (NCORE/PAMS)	Area-Wide	01/01/13	Continuous	212	Neigh	Pop Exp	39.810833	-86.114444	Indianapolis-Carmel-Anderson	No
180970078	Indpls - Washington Park	Marion	Indianapolis	Washington Park, 3120 E. 30th St	SLAMS (NCORE/PAMS)		01/01/11	Continuous	699	Neigh	Pop Exp	39.810833	-86.114444	Indianapolis-Carmel-Anderson	No
180970087	Indpls - I-70 E	Marion	Indianapolis	1650 Ludlow Ave.	SLAMS (NEAR ROAD)	Near-Road	02/07/14	Continuous	212	Micro	Pop Exp	39.787933	-86.130880	Indianapolis-Carmel-Anderson	No
181410015	South Bend - Shields Dr.	St Joseph	South Bend	2335 Shields Dr.	SLAMS		06/01/06	Continuous	212	Neigh	Pop Exp	41.696667	-86.214722	South Bend-Mishawaka, IN-MI	No
181630021	Evansville - Buena Vista	Vanderburgh	Evansville	1110 W. Buena Vista Rd	SLAMS		07/08/09	Continuous	212	Neigh	Pop Exp	38.013250	-87.577923	Evansville, IN-KY	No

NO<sub>2</sub> MONITORING METHOD: 212-TELEDYNE API T500U CAPS  
 NO<sub>y</sub> MONITORING METHOD: 699-TELEDYNE API 200EU NO<sub>y</sub> TRACE-LEVEL

## Ozone (O<sub>3</sub>)

### Monitoring Requirements

Table D-2 in 40 CFR Part 58 Appendix D details the number of O<sub>3</sub> sites required in each CBSA. The number of sites is based on the population of a CBSA and if the design value exceeds 85% of the standard, or 0.060 ppm, for that area. Table 5 lists the requirements stated in Part 58. Table 6 lists the requirements as they relate to Indiana. There are four CBSAs which cross state lines. Except for the Cincinnati, OH-KY-IN CBSA, Indiana meets the requirement for all CBSAs, including multi-agency CBSAs. In the absence of an agreement, Indiana would be required to operate two sites in the Cincinnati, OH-KY-IN CBSA. A new MOA is under review by the involved monitoring agencies; Ohio Environmental Protection Agency (OEPA), Kentucky Division for Air Quality (KDAQ), and IDEM and should be signed shortly.

### Monitoring Season

Table D-3 of Appendix D of Part 58 defines the O<sub>3</sub> monitoring season for all of the states. Indiana's monitoring season is from March 1 to October 31 which is the same as all surrounding states.

Indianapolis – Washington Park (180970078) is Indiana's NCore site and Indianapolis – I-70 E (180970087) is Indiana's near-road site. They are both required to collect data all year. Indiana elected to conduct year-round O<sub>3</sub> monitoring at all sites starting on January 1, 2018 due to the extension of the O<sub>3</sub> season by two months in 2017. The previous benefits of being able to turn equipment off for six months to save wear and expendables were lessened with the longer season.

Enhanced ozone monitoring occurs in Lake and Porter Counties in NW Indiana as part of the Chicago non-attainment area for the 2015 standard. These monitors run year-round and data is submitted for the entire calendar year.

### Data

The design value for an area, usually a county or a CBSA, is determined by the 3-year average of the 4<sup>th</sup> highest daily 8-hour maximum from the highest site in the area. If this value is greater than 0.070 ppm, the area is considered to be in violation of the NAAQS and could potentially be designated as a nonattainment area. If the air quality improves and the design value is 0.070 ppm or less, the area may be reclassified as a maintenance area.

The design values for all sites for the most recent sampling period (2023 – 2025) along with the 2008 and 2015 8-hour nonattainment areas are illustrated in Figure 6. The following sites design values exceeded the 2015 NAAQS of 0.070 ppm: Gary – IITRI (180890022) 0.072 ppm, Michigan City – W. Michigan Blvd. (180910005) 0.073 ppm, Indianapolis. – Washington Park (180970078) 0.071 ppm, and Ogden Dunes (181270024) 0.074 ppm. All other sites had design values for the most recent sampling period (2023 – 2025) that meet the current 2015 NAAQS of 0.070 ppm.

### Monitoring Methodology

Monitoring sites in Indiana use Federal Equivalent Method O<sub>3</sub> analyzers from Thermo Scientific; Models 49c, 49i or 49iQ (Method Code 047), or monitors from API, Model T400 (Method Code 087). These monitors use ultraviolet absorption photometry. Ambient air is drawn through a sample cell through which ultraviolet light (254 nm wavelength) passes. Any O<sub>3</sub> in the ambient air absorbed by the UV light is directly related to the O<sub>3</sub> concentration as described by the Beer-Lambert Law. The State also operates one chemiluminescence O<sub>3</sub> analyzer from API, Model

T265 (Method Code 199) that uses gas-phase titration of excess NO gas to determine the O<sub>3</sub> concentration.

### Monitoring Network

In 2027 there will be 38 monitoring sites in Indiana’s O<sub>3</sub> monitoring network as displayed in Figure 7. As part of the Enhanced Monitoring plan for the Chicago MSA, Indiana is committed to running ozone monitors year-round in Indiana’s portion of the MSA. Also, the number of monitors that Indiana operates is greater than the minimum required for the entire MSA.

In addition, CASTNET operates two O<sub>3</sub> analyzers in Indiana at Vincennes (180839991) and Salamonie Reservoir (181699991). CASTNET’s Annual Network Plan can be found at:

<https://www.epa.gov/castnet/documents-reports>

Indiana’s O<sub>3</sub> monitoring network with proposed changes for 2027 is in Table 7.

### Network Modifications

There are no network modifications planned for 2027.

**Table 5 – SLAMS Minimum O<sub>3</sub> Monitoring Requirement**

<b># of Sites Required per Population and Design Value</b>		
<b>MSA Population</b>	<b>3 yr. Design Value ≥ 85% of NAAQS (0.060 ppm)</b>	<b>3 yr. Design Value &lt; 85% of NAAQS (0.060 ppm)</b>
>10 million	4	2
4-10 million	3	1
350,000 - 4 million	2	1
50,000 - 350,000	1	0

**Table 6 – SLAMS O<sub>3</sub> Sites Required for Indiana**

Indiana MSAs	MSA Population (Est 2023) <sup>1</sup>	Design Value (ppm) (2023-2025)	# of Sites Required per CFR	2026 No. of Sites	2027 No. of Sites
Bloomington	160,874	0.062	1	1 <sup>4</sup>	1 <sup>4</sup>
Chicago-Naperville-Elgin, IL-IN-WI (total MSA)	9,262,825	0.076 <sup>2</sup>	3	21 <sup>2</sup>	-
Chicago-Naperville-Elgin, IL-IN-WI (IN only)	9,262,825	0.073 <sup>3</sup>	3	4 <sup>3</sup>	4
Cincinnati, OH-KY-IN (total MSA)	2,271,479	0.070 <sup>2</sup>	2	10 <sup>2</sup>	-
Cincinnati, OH-KY-IN (IN only)	2,271,479	No Data <sup>3</sup>	2	0 <sup>3</sup>	0
Columbus	84,003	0.068	1	1	1
Elkhart-Goshen	206,409	0.067	1	1	1
Evansville, IN	270,717	0.069	1	4	4
Fort Wayne	457,842	0.069	2	2	2
Indianapolis-Carmel-Anderson	2,138,468	0.070	2	9 <sup>4</sup>	9 <sup>4</sup>
Kokomo	83,831	0.070	1	1	1
Lafayette-West Lafayette	226,564	0.069	1	1	1
Louisville/Jefferson County, KY-IN (total MSA)	1,365,557	0.073 <sup>2</sup>	2	7 <sup>2</sup>	-
Louisville/Jefferson County, KY-IN (IN only)	1,365,557	0.071 <sup>3</sup>	2	2 <sup>3</sup>	2
Michigan City-LaPorte	111,706	0.073	1	2	2
Muncie	112,321	0.068	1	1	1
South Bend-Mishaw aka, IN-MI (total MSA)	324,490	0.070 <sup>2</sup>	1	4 <sup>2</sup>	-
South Bend-Mishaw aka, IN-MI (IN only)	324,490	0.070 <sup>3</sup>	1	3 <sup>3</sup>	3
Terre Haute	168,787	0.065	1	2	2
Non MSA					
Plummer - Greene Co. <sup>3</sup>		0.068		1	1
Leopold - Perry Co.		0.065		1	1
		DV exceeds NAAQS			
		DV ≥ 85% of NAAQS			
# of sites needed if Indiana meets all multi-state MSA requirements			21		
		<b>Sites in Indiana Network</b>		<b>37</b>	<b>37</b>
<sup>1</sup> Population estimated from US Census Bureau					
<sup>2</sup> Information for full MSA.					
<sup>3</sup> Information for Indiana's portion of MSA.					
<sup>4</sup> Bloomington MSA impact site is located in Brown County, part of Indianapolis-Carmel-Anderson MSA.					

Figure 6 – O<sub>3</sub> Design Values (2023 – 2025)

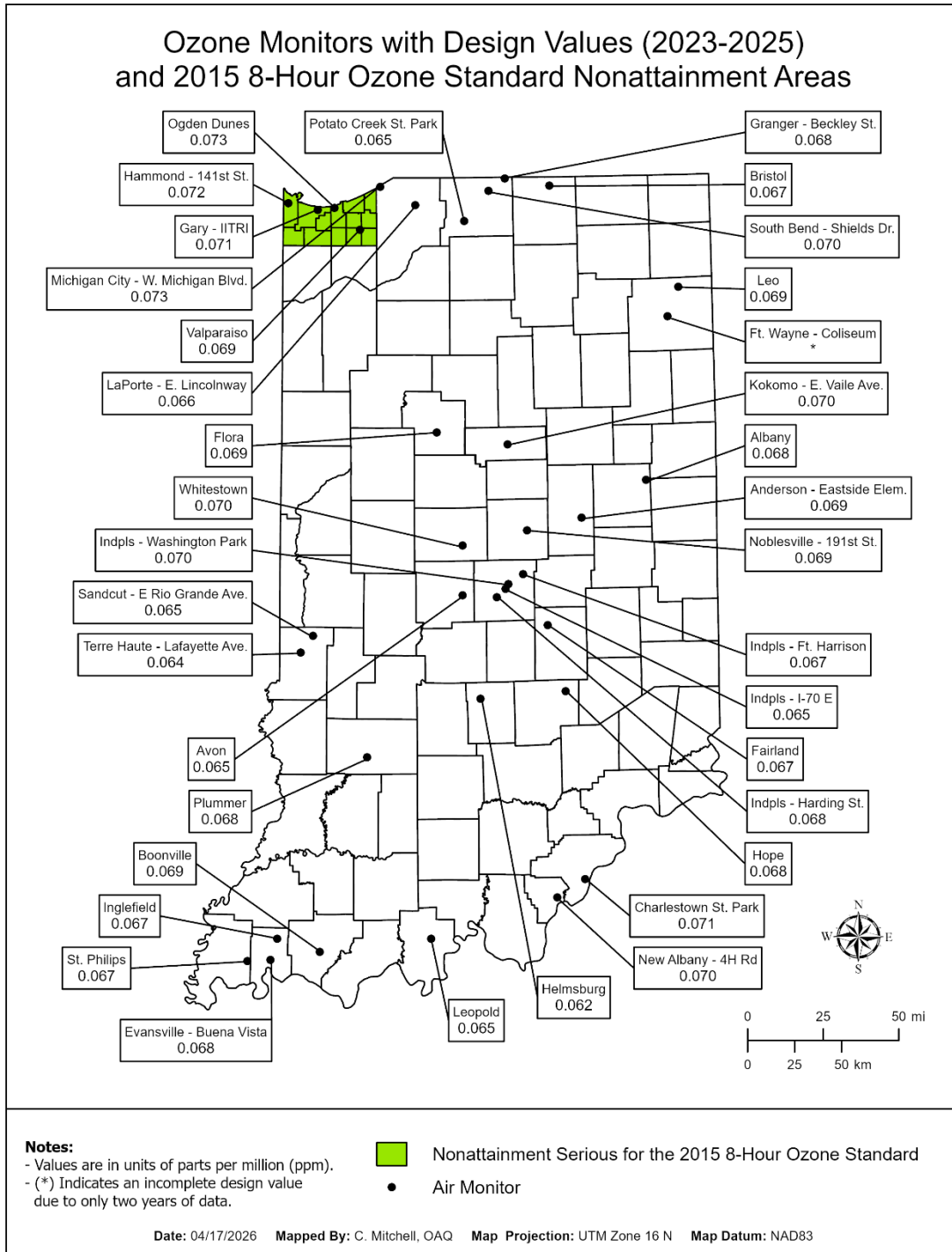
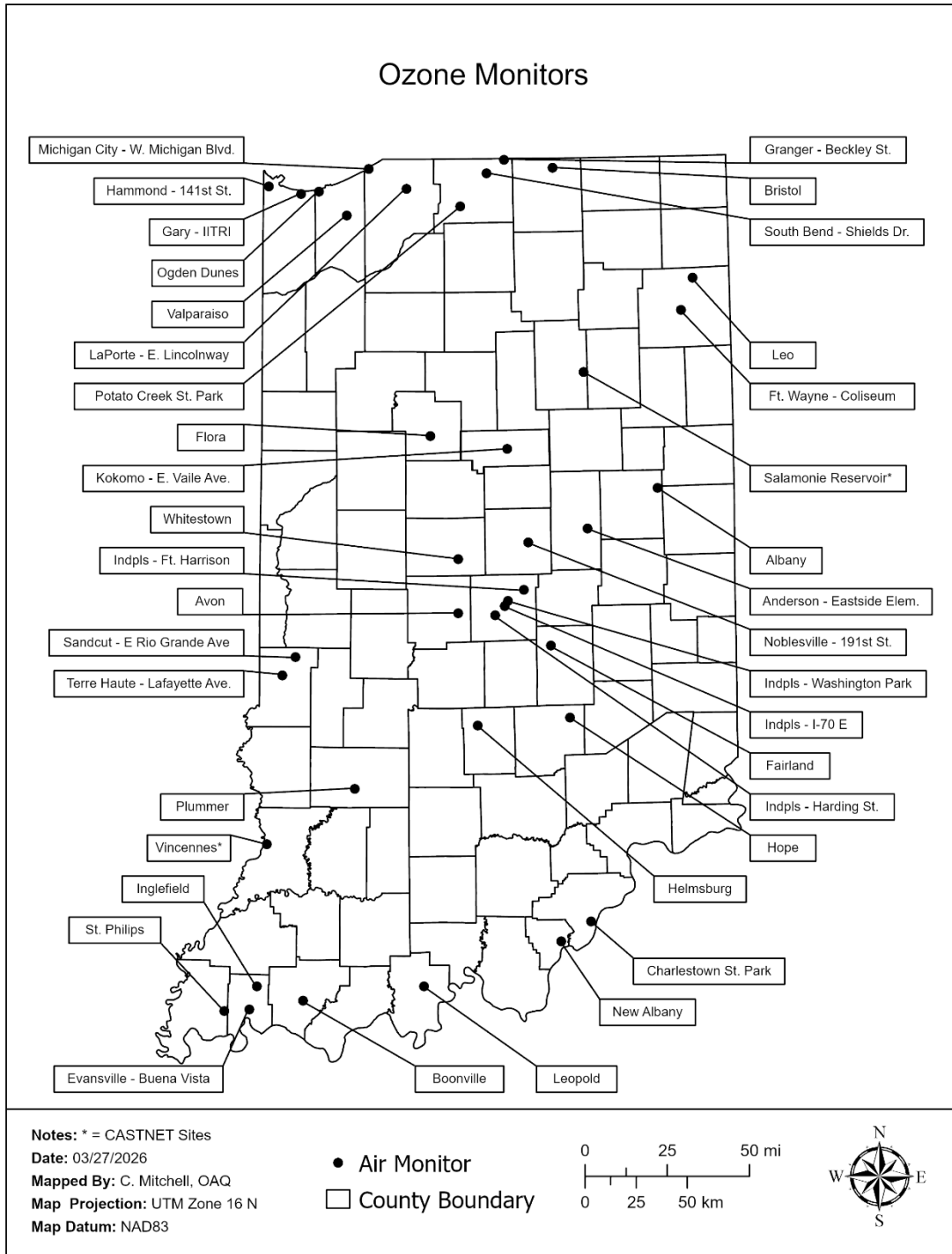


Figure 7 – O<sub>3</sub> Monitoring Network



**Table 7 – Ozone Monitoring Network**

Parameter Code: 44201		O <sub>3</sub> - Ozone												
Site ID	Site Name	County	City	Address	Monitor Type (Network)	Start Date	Operating Schedule	Monitoring Method	Scale	Monitoring Objective	Latitude	Longitude	CBSA	Site Change Proposed?
170230001	West Union	Clark, IL		416 S. Hwy 1, West Union, IL	SLAMS	04/01/01	Continuous	087	Urban	General Bkgrd	39.210857	-87.668297	Non-MSA County	Discontinue
180030002	Leo HS	Allen	Leo	Leo HS, 14600 Amstutz Rd.	SLAMS	04/01/86	Continuous	087	Urban	Highest Conc	41.221418	-85.016821	Ft. Wayne	No
180030015	Fort Wayne - Coliseum	Allen	Fort Wayne	707 N. Coliseum	SLAMS	10/13/23	Continuous	087	Neigh	Pop Exp	41.081864	-85.088313	Ft. Wayne	No
180050007	Hope	Bartholomew		Hauser Jr-Sr HS, 9404 N775 E.	SLAMS	06/01/13	Continuous	047	Urban	Pop Exp	39.294322	-85.766846	Columbus	No
180110001	Whitestown	Boone		Perry - Worth Elem Sch., 3900 E. 300 S, Lebanon	SLAMS	04/01/00	Continuous	047	Urban	Highest Conc	39.997773	-86.395394	Indianapolis-Carmel-Anderson	No
180130001	Helmsburg	Brown		Jackson Twp Fire Dept. 4831 Helmsburg Road, Nashville	SLAMS	05/14/14	Continuous	047	Urban	Highest Conc	39.263914	-86.292261	Indianapolis-Carmel-Anderson	No
180150002	Flora	Carroll		Flora Airport, 481 S. 150 W., Flora	SLAMS	04/01/01	Continuous	047	Urban	Pop Exp	40.540455	-86.553035	Lafayette-West Lafayette	No
180190008	Charlestown State Park	Clark		Charlestown State Park, 12500 Hwy 62, Charlestown	SLAMS	05/01/07	Continuous	047	Urban	Highest Conc	38.393823	-85.664118	Louisville/Jefferson County, KY-IN	No
180350010	Albany	Delaware	Albany	Albany Elem. Sch., 700 W. State St.	SLAMS	04/01/01	Continuous	047	Urban	Pop Exp	40.300385	-85.245862	Muncie	No
180390007	Bristol	Elkhart	Bristol	Bristol Elem Sch., 705 Indiana Ave.	SLAMS	04/01/02	Continuous	047	Urban	Pop Exp	41.716959	-85.824696	Elkhart-Goshen	No
180430008	New Albany	Floyd	New Albany	Floyd County 4-H Fairgrounds	SLAMS	01/01/23	Continuous	047	Neigh	Pop Exp	38.317800	-85.833300	Louisville/Jefferson County, KY-IN	No
180550001	Plummer	Greene		2500 S. 275 W Our Lady of Grace Catholic Church,	SLAMS	04/03/00	Continuous	087	Regional	Upwind Bkgrd	38.985556	-86.990000	Non-MSA County	No
180570006	Noblesville - 191st St.	Hamilton	Noblesville	9900 E. 191st St.	SLAMS	05/14/10	Continuous	047	Urban	Highest Conc	40.068297	-85.992451	Indianapolis-Carmel-Anderson	No
180630004	Avon	Hendricks	Avon	7203 E. US 36, Avon	SLAMS	04/01/00	Continuous	047	Urban	Pop Exp	39.758889	-86.398611	Indianapolis-Carmel-Anderson	No
180670004	Kokomo - E. Vaile Ave.	Howard	Kokomo	1802 E. Vaile Ave.	SLAMS	01/01/18	Continuous	087	Urban	Pop Exp	40.481347	-86.109688	Kokomo	No
180839991	Vincennes	Knox		Southwest Purdue Agricultural Center	EPA (CASTNET)	04/01/11	Continuous	047	Regional	Highest Conc	38.740792	-87.484923	Non-MSA County	No
180890022	Gary - IITRI	Lake	Gary	IITRI Bunker, 201 Mississippi St.	SLAMS	06/22/95	Continuous	087	Neigh	Pop Exp	41.606563	-87.305015	Chicago-Naperville-Elgin, IL-IN-WI	No
180892008	Hammond - 141st St.	Lake	Hammond	1300 E. 141st St.	SLAMS	01/01/76	Continuous	047	Neigh	Pop Exp	41.639444	-87.493611	Chicago-Naperville-Elgin, IL-IN-WI	No
180910005	Michigan City - W. Michigan Blvd.	La Porte	Michigan City	NIPSCO Gas Station, 490 W. Michigan Blvd.	SLAMS	05/24/90	Continuous	199	Urban	Pop Exp	41.717762	-86.907786	Michigan City-LaPorte	No
180910010	LaPorte - E. Lincolnway	La Porte	La Porte	2011 E. Lincolnway	SLAMS	05/07/97	Continuous	087	Urban	Pop Exp	41.629167	-86.684444	Michigan City-LaPorte	No

Site ID	Site Name	County	City	Address	Monitor Type (Network)	Start Date	Operating Schedule	Monitoring Method	Scale	Monitoring Objective	Latitude	Longitude	CBSA	Site Change Proposed?
180950011	Anderson - Eastside Elem.	Madison	Anderson	Eastside Elementary Sch., 844 N. Scatterfield Rd.	SLAMS	01/01/21	Continuous	087	Urban	Pop Exp	40.125690	-85.652127	Indianapolis-Carmel-Anderson	No
180970050	Indpls - Ft Harrison	Marion	Indianapolis	5753 Glenn Rd	SLAMS	12/01/79	Continuous	047	Urban	Highest Conc	39.858889	-86.021389	Indianapolis-Carmel-Anderson	No
180970057	Indpls - Harding St.	Marion	Indianapolis	1321 S. Harding St.	SLAMS	03/01/82	Continuous	047	Neigh	Pop Exp	39.749027	-86.186269	Indianapolis-Carmel-Anderson	No
180970078	Indpls - Washington Park	Marion	Indianapolis	Washington Park, 3120 E. 30th St	SLAMS (NCORE/PAMS)	04/01/09	Continuous	047	Neigh	Pop Exp	39.810833	-86.114444	Indianapolis-Carmel-Anderson	No
180970087	Indpls - I-70 E	Marion	Indianapolis	1650 Ludlow Ave.	SLAMS (NEAR ROAD)	05/14/14	Continuous	047	Neigh	Pop Exp	39.787933	-86.130880	Indianapolis-Carmel-Anderson	No
181230009	Leopold	Perry		Perry Central HS, 18797 Old St Rd 37, Leopold	SLAMS	04/01/04	Continuous	087	Urban	Highest Conc	38.115152	-86.603250	Non-MSA County	No
181270024	Ogden Dunes	Porter	Ogden Dunes	Water Treatment Plant, 84 Diana Rd	SLAMS	11/01/83	Continuous	047	Urban	Highest Conc	41.617814	-87.199533	Chicago-Naperville-Elgin, IL-IN-WI	No
181270026	Valparaiso	Porter	Valparaiso	Valpo Water Department, 1000 Wesley St.	SLAMS	04/01/98	Continuous	047	Urban	Pop Exp	41.512118	-87.036236	Chicago-Naperville-Elgin, IL-IN-WI	No
181290003	St Philips	Posey		2027 South St. Phillips Rd., Evansville	SLAMS	07/01/96	Continuous	047	Urban	Upwind Bkgrd	38.006414	-87.718414	Evansville, IN-KY	No
181410010	Potato Creek State Park	St Joseph		Potato Creek St. Park, 25601 St. Rd 4, North Liberty	SLAMS	04/24/91	Continuous	047	Urban	Upwind Bkgrd	41.551667	-86.370556	South Bend-Mishawaka, IN-MI	No
181410015	South Bend-Shields Dr.	St Joseph	South Bend	2335 Shields Dr.	SLAMS	06/01/06	Continuous	087	Neigh	Pop Exp	41.696667	-86.214722	South Bend-Mishawaka, IN-MI	No
181410016	Granger-Beckley St.	St Joseph	Granger	12441 Beckley St., Granger	SLAMS	04/01/12	Continuous	047	Urban	Highest Conc	41.754722	-86.110000	South Bend-Mishawaka, IN-MI	No
181450001	Fairland	Shelby		Triton Central MS, 4740 W. 600N , Fairland	SLAMS	04/01/00	Continuous	047	Urban	General Bkgrd	39.613367	-85.870669	Indianapolis-Carmel-Anderson	No
181630013	Inglefield	Vanderburgh		Scott School, 14940 Old State Road	SLAMS	05/01/80	Continuous	047	Urban	Highest Conc	38.113889	-87.536667	Evansville, IN-KY	No
181630021	Evansville - Buena Vista	Vanderburgh	Evansville	1110 W. Buena Vista Rd	SLAMS	07/08/09	Continuous	047	Neigh	Pop Exp	38.013250	-87.577923	Evansville, IN-KY	No
181670018	Terre Haute - Lafayette Ave.	Vigo	Terre Haute	961 N. Lafayette Ave.	SLAMS	07/01/83	Continuous	087	Neigh	Pop Exp	39.485987	-87.401312	Terre Haute	No
181670026	Sandcut - E Rio Grande Ave	Vigo		5880 E. Rio Grande Ave., Terre Haute	SLAMS	04/01/01	Continuous	047	Urban	Pop Exp	39.566500	-87.326500	Terre Haute	No
181699991	Salamonie Reservoir	Wabash		Hamilton Rd., Largo	EPA (CASTNET)	06/01/11	Continuous	047	Regional	Highest Conc	40.816038	-85.661407	Non-MSA County	No
181730008	Boonville	Warrick	Boonville	Boonville HS, 300 N. 1st St.	SLAMS	04/16/91	Continuous	047	Urban	Highest Conc	38.052416	-87.281502	Evansville, IN-KY	No
<p>O3 MONITORING METHOD: 047 - THERMO ELECTRON 49C, 49i 087 - TELEDYNE API T400 199 - TELEDYNE API T265</p>														

## Particulate Matter (PM<sub>10</sub>)

### Monitoring Requirements

The requirements for the design of the PM<sub>10</sub> monitoring network are listed in 40 CFR Part 58 Appendix D §4.6. Indiana must operate the minimum number of sites as defined by the CBSA population and the ambient PM<sub>10</sub> data of the area. Table 8 lists the sites required per CBSA along with the highest monitored PM<sub>10</sub> value in the proper category for each CBSA. The current and proposed networks are also listed. There are three CBSAs which cross state lines and have requirements for PM<sub>10</sub> monitoring. IDEM currently has agreements under review with the agencies involved with monitoring in the Cincinnati, OH-KY-IN CBSA, the Louisville/Jefferson County, KY-IN CBSA, and the Chicago-Naperville-Elgin, IL-IN CBSA. The MOAs should be signed shortly.

Collocated samplers are required at 15% of the sites in the network to determine monitoring precision. IDEM is required to operate one collocated sampler.

### Monitoring Methodology

Noncontinuous PM<sub>10</sub> samples are collected on a pre-weighed 46.2 mm diameter Teflon™ filter. Air is drawn through an inlet designed to pass only particles smaller than 10 microns in diameter and across the filter for 24 hours. The filter is then removed and weighed again. Concentrations are calculated by dividing the weight gain by the volume of air that passed through the filter.

Continuous PM<sub>10</sub> concentrations are obtained by using two different methods. A Thermo Scientific Model 1405 (EQPM-1090-079) collects the particulate on a filter attached to an oscillating glass rod. The concentration of the particulate is proportional to the change in oscillating frequency. A second monitor method used is the Teledyne API T640X (EQPM-0516-239). The T640X is a real-time, continuous PM mass monitor that uses scattered light spectrometry for measurement.

Continuous and noncontinuous PM<sub>10-2.5</sub> inhalable coarse particles are obtained by a mathematical difference between a PM<sub>10</sub> method and fine particle PM<sub>2.5</sub> method. This data is reported at Washington Park (180970078) NCore site as well as the Jasper – Post Office (180372001), Gary – IITRI (180890022), and Evansville – Buena Vista (181630021) SLAMS sites.

### Monitoring Network

Indiana currently operates 10 monitoring sites in the State. The 2027 network is displayed in Figure 8. All sites continue to meet the NAAQS although two sites did record values above 150 µg/m<sup>3</sup> in 2025: Gary - IITRI (180890022) and Portage – Hwy 12 (181270023). The high concentrations for both sites are considered by the State to be anomalous. The March 15, 2025, data will be investigated for an Exceptional Event. The State seeks a waiver from EPA Region 5 to not increase the number of monitor sites in the MSA to the minimum required of 6 for a High Concentration MSA. Table 9 details the current PM<sub>10</sub> network.

### Network Modifications

No changes are planned for 2027.

**Table 8 – PM<sub>10</sub> Site Requirements**

CFR Requirement	MSA Population		High Conc. <sup>1</sup>	Medium Conc. <sup>2</sup>	Low Conc. <sup>3</sup>		
	> 1,000,000		# of Required Sites =>	6-10	4-8	2-4	
	MSA	Population	MSA Highest Value			# of Sites 2026	# of Sites 2027
	Chicago-Naperville-Elgin, IL-IN-WI	9,262,825	228 <sup>4,6</sup>			9	-
	Chicago-Naperville-Elgin, IL-IN-WI	9,262,825	228 <sup>4,7</sup>			5	5
	Cincinnati, OH-KY-IN	2,271,479			89 <sup>6</sup>	4	-
	Cincinnati, OH-KY-IN	2,271,479			No Data <sup>7</sup>	0	0
	Indianapolis-Carmel-Anderson	2,138,468			108	2	2
	Louisville-Jefferson County, KY-IN	1,365,557			82 <sup>6</sup>	3	-
	Louisville-Jefferson County, KY-IN	1,365,557			54 <sup>7</sup>	1	1

CFR Requirement	MSA Population		High Conc. <sup>1</sup>	Medium Conc. <sup>2</sup>	Low Conc. <sup>3</sup>		
	500,000 - 1,000,000		# of Required Sites =>	4-8	2-4	1-2	
	MSA	Population	MSA Highest Value			# of Sites 2026	# of Sites 2027
	No MSAs in this category						

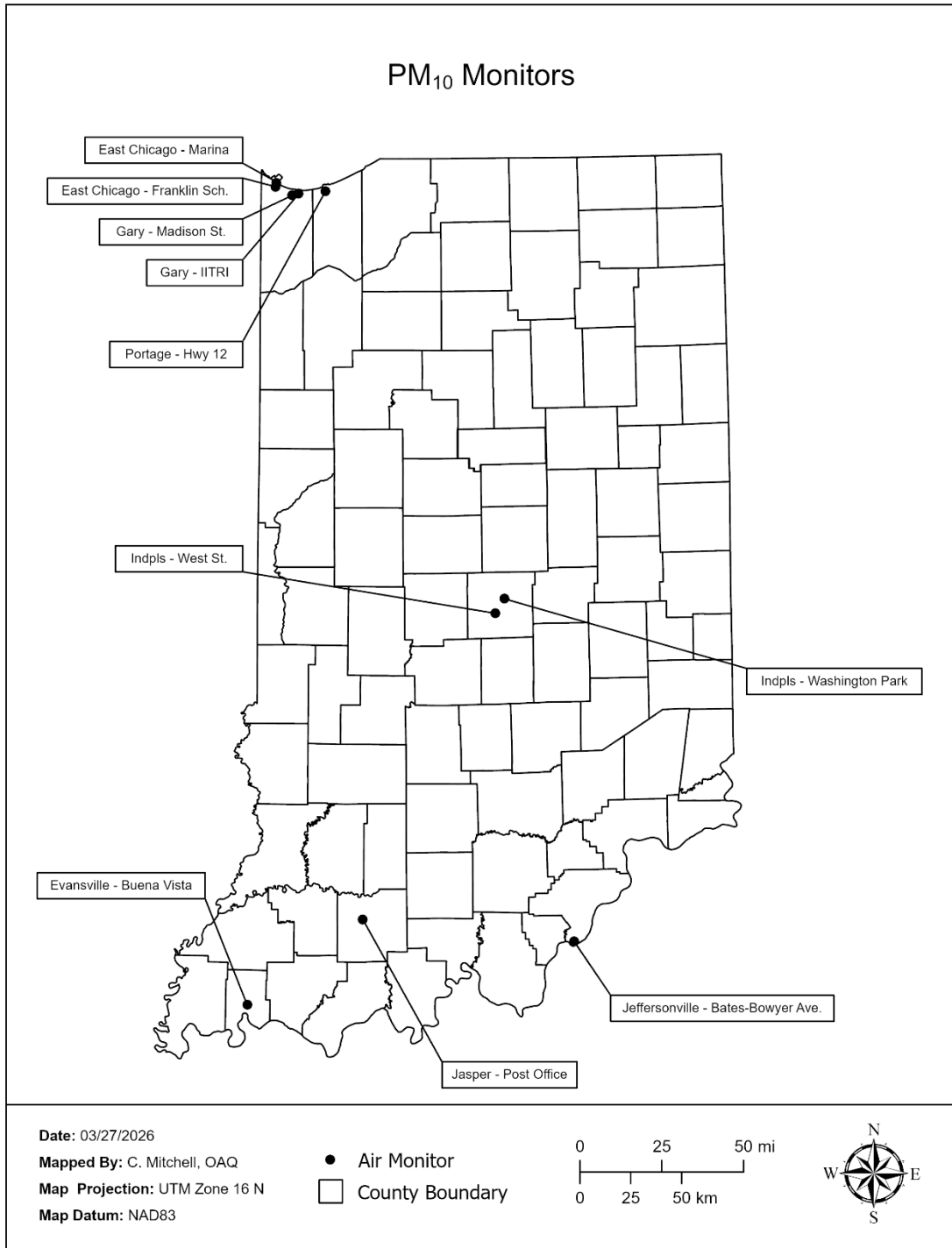
CFR Requirement	MSA Population		High Conc. <sup>1</sup>	Medium Conc. <sup>2</sup>	Low Conc. <sup>3</sup>		
	250,000 - 500,000		# of Required Sites =>	3-4	1-2	0-1	
	MSA	Population	MSA Highest Value			# of Sites 2026	# of Sites 2027
	Evansville, IN	270,717			96	1	1
	Fort Wayne	457,842			No Data	0	0
	South Bend-Mishawaka, IN-MI	324,490			No Data	0	0

CFR Requirement	MSA Population		High Conc. <sup>1</sup>	Medium Conc. <sup>2</sup>	Low Conc. <sup>3</sup>		
	100,000 - 250,000		# of Required Sites =>	1-2	0-1	0	
	MSA	Population	MSA Highest Value			# of Sites 2026	# of Sites 2027
	Bloomington	160,874			No Data	0	0
	Elkhart-Goshen	206,409			No Data	0	0
	Lafayette-West Lafayette	226,564			No Data	0	0
	Michigan City-LaPorte	111,706			No Data	0	0
	Muncie	112,321			No Data	0	0
	Terre Haute	168,787			No Data	0	0
	Non MSA		Highest Value			# of Sites 2026	# of Sites 2027
	Jasper - Dubois Co.	43,546			56	1	1
	Sites in Indiana Network					10	10

<sup>1</sup> Exceeds NAAQS by 20% (180 µg/m<sup>3</sup>).  
<sup>2</sup> Exceeds 80% of NAAQS (120 µg/m<sup>3</sup>).  
<sup>3</sup> <80% of NAAQS (120 µg/m<sup>3</sup>).  
<sup>4</sup> Highest value from source oriented site (not indicative of entire MSA).  
<sup>5</sup> Highest value from population oriented sites.  
<sup>6</sup> Information for full MSA.  
<sup>7</sup> Information for Indiana's portion of MSA  
Population from estimated 2023 US Census Bureau

**Figure 8 – PM<sub>10</sub> Monitoring Network**



**Table 9 – PM<sub>10</sub> Monitoring Network**

Parameter Code: 81102 PM <sub>10</sub> - Particulate Matter															
Site ID	Site Name	County	City	Address	Monitor Type (Network)	Start Date	Operating Schedule	Monitoring Method	Scale	Monitoring Objective	Latitude	Longitude	NAAQS Comparable (2025)	CBSA	Site Change Proposed?
180190010	Jeffersonville - Bates-Bowyer Ave.	Clark	Jeffersonville	Downtown Wastewater Plant, 1420 Bates-Bowyer Ave.	SLAMS	05/21/19	6-Day	127	Neigh	Pop Exp	38.288191	-85.741337	Primary	Louisville/Jefferson County, KY-IN	No
180372001	Jasper - Post Office	Dubois	Jasper	Jasper Post Office, 206 E. 6th St.	SLAMS	07/01/23	Continuous	639	Neigh	Highest Conc	38.391799	-86.929668	Primary	Non-MSA County	No
180890006	East Chicago - Franklin Sch.	Lake	East Chicago	Washington (formerly Franklin) School, Alder & 142nd St.	SLAMS	04/01/85	6-Day	127	Middle	Highest Conc	41.636675	-87.441143	Primary	Chicago-Naperville-Elgin, IL-IN-WI	No
180890022	Gary - IITRI	Lake	Gary	IITRI Bunker, 201 Mississippi St.	SLAMS	05/29/25	Continuous	639	Middle	Source Oriented	41.606563	-87.305015	Primary	Chicago-Naperville-Elgin, IL-IN-WI	No
180890031	Gary - Madison St.	Lake	Gary	Indiana American Water Co., 650 Madison St.	SLAMS	07/01/05	6-Day	127	Neigh	Pop Exp	41.598456	-87.342972	Primary	Chicago-Naperville-Elgin, IL-IN-WI	No
180890034	East Chicago-Marina	Lake	East Chicago	East Chicago Marina, 3301 Aldis St.	SLAMS	10/25/12	6-Day	127	Middle	Source Oriented	41.653446	-87.435435	Primary	Chicago-Naperville-Elgin, IL-IN-WI	No
180970043	Indpls - West St.	Marion	Indianapolis	1735 S. West St.	SLAMS	10/29/86	6-Day	127	Middle	Highest Conc	39.744957	-86.166496	Primary	Indianapolis-Carmel-Anderson	No
180970043	Indpls - West St.	Marion	Indianapolis	1735 S. West St.	SLAMS	01/01/13	6-Day	127	Middle	Quality Assurance	39.744957	-86.166496	Secondary	Indianapolis-Carmel-Anderson	No
180970078	Indpls - Washington Park	Marion	Indianapolis	Washington Park, 3120 E. 30th St.	SLAMS	07/01/10	3-Day	127	Neigh	Pop Exp	39.810833	-86.114444	Primary	Indianapolis-Carmel-Anderson	No
180970078	Indpls - Washington Park	Marion	Indianapolis	Washington Park, 3120 E. 30th St.	SLAMS	07/21/11	Continuous	639	Neigh	Pop Exp	39.810833	-86.114444	Primary	Indianapolis-Carmel-Anderson	No
181270023	Portage - Hwy 12	Porter	Portage	Bethlehem Steel Waste Lagoon, Hwy 12	SLAMS	10/01/95	Continuous	079	Neigh	Highest Conc	41.616561	-87.146921	Primary	Chicago-Naperville-Elgin, IL-IN-WI	No
181630021	Evansville - Buena Vista	Vanderburgh	Evansville	1110 W. Buena Vista Rd	SLAMS	10/05/20	Continuous	639	Neigh	Pop Exp	38.013250	-87.577923	Primary	Evansville, IN-KY	No

PM10 MONITORING METHODS: 079 - THERMO SCIENTIFIC 1405  
 127 - R&P 2025A or 2025B SEQUENTIAL  
 639 - TELEDYNE T640X

## Fine Particulate Matter (PM<sub>2.5</sub>)

### Monitoring Requirements

40 CFR Part 58, Appendix D §4.7 details the number of PM<sub>2.5</sub> sites required in each CBSA. The number of sites is based on the population of a CBSA and if the design value for that area is greater or less than 85% of either NAAQS. Table 10 (table D-5 to Appendix D) lists the minimum requirements as stated in Part 58. Table 11 lists the requirements as they relate to Indiana.

In addition, 40 CFR, Appendix D §4.7.2 states that “The State, or where appropriate, local agencies must operate continuous PM<sub>2.5</sub> analyzers equal to at least one-half (round up) the minimum required sites listed in table D-5 to this appendix. At least one required continuous analyzer in each MSA must be collocated with one of the required FRM/FEM monitors, unless at least one of the required FRM/FEM monitors is itself a continuous FEM monitor in which case no collocation requirement applies.”

Indiana meets the minimum number of sites for each CBSA within Indiana’s boundaries. There are four CBSAs which cross state lines. Except for the Cincinnati, OH-KY-IN CBSA, Indiana meets the requirement for the number of sites for the full CBSA in the multi-agency CBSAs. An agreement between the Ohio Environmental Protection Agency (OEPA), the Kentucky Department of Air Quality (KDAQ) and IDEM specifies that the PM<sub>2.5</sub> monitoring requirements will be met in the Cincinnati, OH-KY-IN CBSA is currently under review and should be signed shortly.

Collocated samplers are required at 15% of the FRM/FEM sites operated by each PQAQ. IDEM is the sole PQAQ for Indiana and in 2027 will operate 33 sites requiring the operation of five collocated samplers. For the filter-based method (145), there are three collocated samplers located at some of the highest concentration sites: Gary-Madison St. (180890031), Indianapolis – W. 18<sup>th</sup> St (180970081), and New Albany – 4H Rd (180430008). For continuous method 170, there is only the FRM/FEM collocation site at Gary IITRI (180890022). For continuous method 636, two collocation sites are at the Hammond – 167<sup>th</sup> St (180890036) site which tends to be a higher concentration area and the Kokomo – E Vaile Ave (180670004) due to site issues at some of the other higher concentration sites.

**Table 10 – SLAMS Minimum PM<sub>2.5</sub> Monitoring Site Requirements**

Number of Sites per MSA and Design Value		
MSA Population	3 yr DV >= 85% of either NAAQS	3 yr DV < 85% of either NAAQS
> 1,000,000	3	2
500,000 - 1,000,000	2	1
50,000 - 500,000	1	0
	also	
	Statewide Background Site	1
	Statewide Transport Site	1
85% of 24-hour NAAQS (35) = 29.75 µg/m <sup>3</sup>		
85% of Annual NAAQS (9) = 7.6 µg/m <sup>3</sup>		

### Monitoring Methodology

Noncontinuous PM<sub>2.5</sub> is sampled by drawing air through a specially designed inlet that excludes particles larger than 2.5 microns in diameter. The remaining particles are collected on a 46.2 mm diameter Teflon™ Microfiber filter that is weighed before and after the sampling period to determine the particulate mass. Indiana uses the R&P or Thermo Scientific Model 2025A/B/i

Sequential Samplers (EQPM-0202-145) to collect noncontinuous data. A VSCC is used instead of the original WINS impactor to remove particles larger than 2.5 microns from the sample stream. This modified setup was originally classified as an FEM in 2002 but was designated as an FRM in December 2006.

The normal sampling schedule varies, as determined by the regulations. Reporting monitors sample every third day. Collocated monitors used for assessing data precision operate on a one-in-six-day schedule.

Continuous data is collected using one of the following monitors: Met One BAM 1020 PM<sub>2.5</sub> (FEM) (EQPM-0308-170) or Teledyne Models T640 or T640X PM Mass Monitor (EQPM-0516-636 and EQPM-0516-638) with data alignment. The BAM 1020 collects fine particulate through a sampling inlet onto a filter tape, using a beta ray transmission to measure the amount of particulate concentration collected during a specific sampling period. The Teledyne API Model T640 and Model T640X are real-time, continuous PM-mass monitors that use scattered light spectrometry for measurement.

**Table 11 – Number of SLAMS PM<sub>2.5</sub> Monitoring Sites Required for Indiana**

MSA	MSA Population (Est 2023) <sup>1</sup>	Annual Design Value (µg/m3) (2023-2025)	Daily Design Value (µg/m3) (2023-2025)	# of Sites Required per CFR	2026 # of Sites	2027 # of Sites (IN)	2026 # of Cont. Mont.	2027 # of Cont. Mont. (IN)
Bloomington	160,874	7.4	19	1	1	1	1	1
Chicago-Naperville-Egin, IL-IN-WI (total MSA)	9,262,825	10.8 <sup>2</sup>	27 <sup>2</sup>	3	24 <sup>2</sup>	-	9 <sup>2</sup>	-
Chicago-Naperville-Egin, IL-IN-WI (IN only)	9,262,825	9.1 <sup>3</sup>	26 <sup>3</sup>	3	6 <sup>3</sup>	6	5 <sup>3</sup>	5
Cincinnati, OH-KY-IN (total MSA)	2,271,479	10.7 <sup>2</sup>	29 <sup>2</sup>	3	11 <sup>2</sup>	-	8 <sup>2</sup>	-
Cincinnati, OH-KY-IN (IN only)	2,271,479	No Data <sup>3</sup>	No Data <sup>3</sup>	3	0 <sup>3</sup>	0	0 <sup>3</sup>	0
Columbus	84,003	7.3	18	1	1	1	1	1
Elkhart-Goshen	206,409	8.9	26	1	1	1	1	1
Evansville, IN	270,717	8.7	22	1	2 <sup>3</sup>	2	2 <sup>3</sup>	2
Fort Wayne	457,842	8.3	25	1	2	2	2	2
Indianapolis-Carmel-Anderson	2,138,468	11.5	32	3	8	8	6	6
Kokomo	83,831	7.4	18	1	1	1	1	1
Lafayette-West Lafayette	226,564	8.0	20	1	1	1	1	1
Louisville-Jefferson County, KY-IN (total MSA)	1,365,557	8.8 <sup>2</sup>	23 <sup>2</sup>	3	7 <sup>2</sup>	-	5 <sup>2</sup>	-
Louisville-Jefferson County, KY-IN (IN only)	1,365,557	8.7 <sup>3</sup>	23 <sup>3</sup>	3	2 <sup>3</sup>	2	2 <sup>3</sup>	2
Michigan City-LaPorte	111,706	8.1	22	1	1	1	1	1
Muncie	112,321	7.8	21	1	1	1	0	0
South Bend-Mishaw aka, IN-MI (total MSA)	324,490	8.2 <sup>2</sup>	26 <sup>2</sup>	1	1 <sup>2</sup>	-	1 <sup>2</sup>	-
South Bend-Mishaw aka, IN-MI (IN only)	324,490	8.2 <sup>3</sup>	26 <sup>3</sup>	1	1 <sup>3</sup>	1	1 <sup>3</sup>	1
Terre Haute	168,787	9.0	22	1	1	1	1	1
Other Requirements								
State Background Site - Green Co.		7.4	19	1	1	1	1	1
State Transport Site - Henry Co.		7.7	24	1	1	1	1	1
Non MSAs								
Jasper - Dubois Co.		7.9	19		1	1	1	1
Dale - Spencer Co.		8.0 <sup>4</sup>	20 <sup>4</sup>		1	1	1	1
		Values above NAAQS						
		DV ≥ 85% of NAAQS						
# of sites needed if Indiana meets all multi-state MSA requirements				25				
# of continuous monitors required (1/2 of the required sites )(rounded up)				13				
<b>Sites in Indiana Network</b>					<b>33</b>	<b>33</b>	<b>29</b>	<b>29</b>
<sup>1</sup> Population from estimated 2023 US Census Bureau								
<sup>2</sup> Information for full MSA.								
<sup>3</sup> Information for Indiana's portion of MSA.								
<sup>4</sup> Less than 2 full years of data.								

## Data / Design Value

The data collected from continuous FEM monitors with more than two years of data are generally considered the primary monitor and the data is eligible for comparison to the NAAQS. At sites with less than two years of continuous FEM data, the intermittent FRM is considered the primary monitor.

A site's annual design value is determined by first calculating the quarterly average concentrations, then calculating the weighted annual concentration by averaging the quarterly values and then averaging the three consecutive annual averages. The highest site design value in a CBSA is generally determined to be the design value for the area. It is compared to the annual NAAQS of 9.0  $\mu\text{g}/\text{m}^3$  to determine attainment/nonattainment for the area. Similarly, a site's 24-hour design value is obtained by averaging the 98<sup>th</sup> percentile value from three consecutive years. This value is then compared to the 24-hour NAAQS, 35  $\mu\text{g}/\text{m}^3$ , to determine attainment/nonattainment of the 24-hour standard.

The design values (as of March 28, 2026) for all sites for the most recent sampling period (2023 - 2025), along with the designation status of areas for  $\text{PM}_{2.5}$  are shown in Figure 9. Currently, all counties in Indiana meet the 24-hour, and 2012 annual NAAQS for  $\text{PM}_{2.5}$ . Designations are pending for the 2024 annual NAAQS for  $\text{PM}_{2.5}$ .

## **Unplanned Changes to the Network Plan**

The Indianapolis School 21 site (180970084) was discontinued due to repeated vandalism at the site. A replacement site is still being sought.

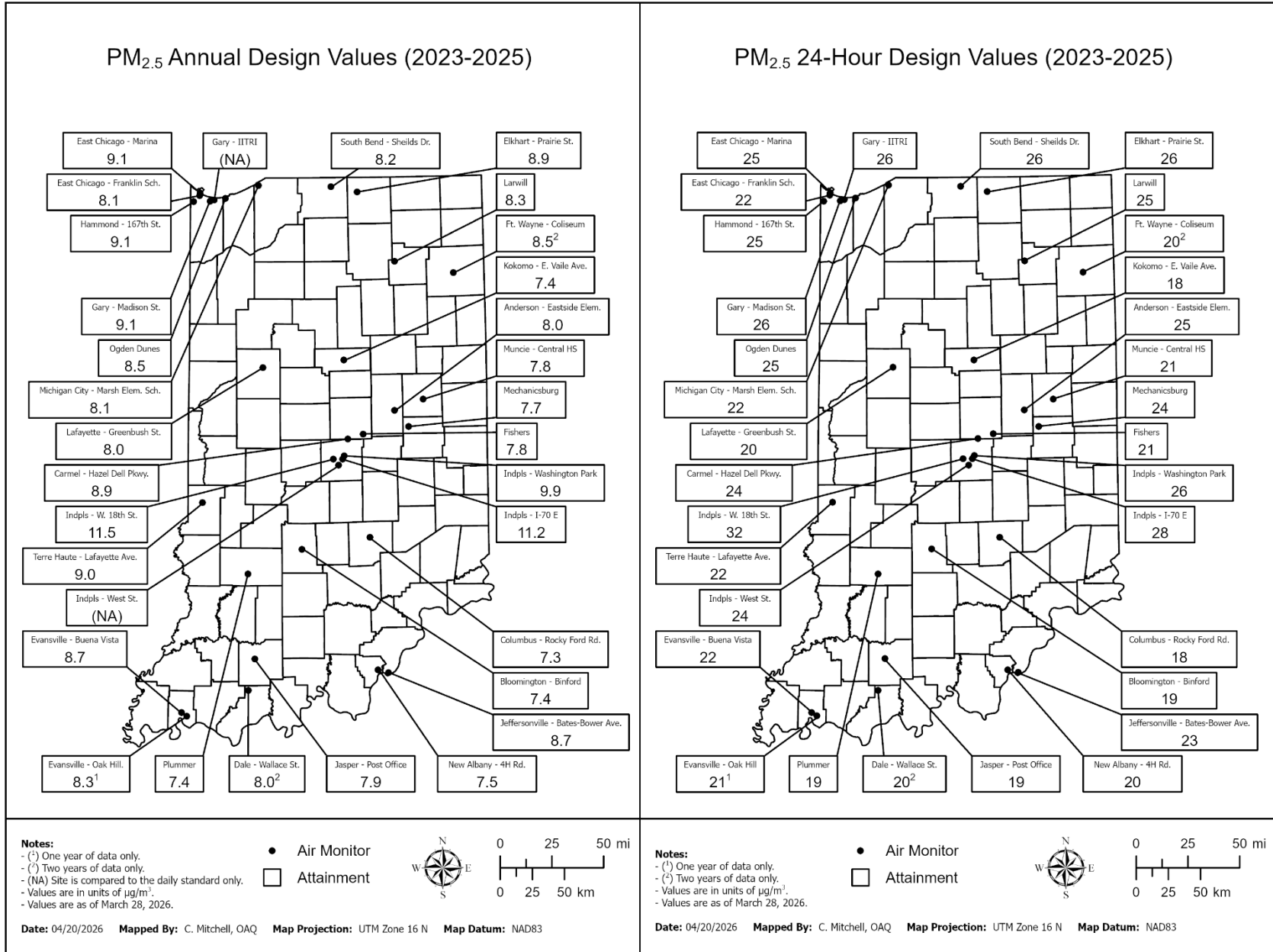
## **Network Modifications**

In 2027, the Indiana  $\text{PM}_{2.5}$  monitoring network will consist of 32 monitoring sites. Continuous monitors will be collecting data at 29 site locations. The  $\text{PM}_{2.5}$  monitoring network with the changes proposed for 2027 is shown in Table 12. A map of the 2027 network is shown in Figure 10.

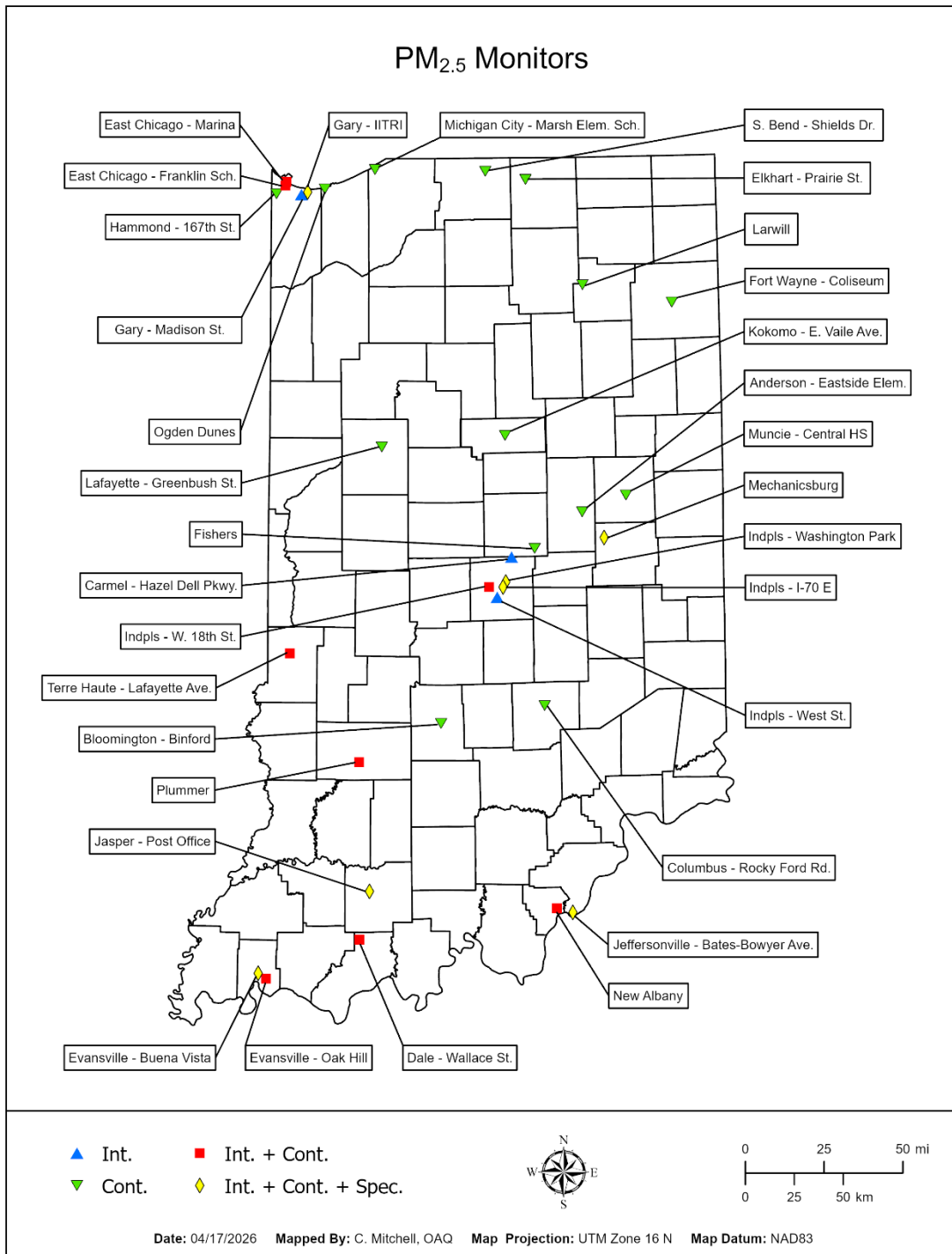
$\text{PM}_{2.5}$  FRM monitoring will resume at Terre Haute – Lafayette Ave (181670018) to fulfill the Quality Assurance objectives of the MetOne BAM FEM network. The BAM will be discontinued at Gary – IITRI (180890022) in favor of the T640 FEM method already present at the site.

Muncie – Central HS (180350006) and Michigan City – Marsh ES (180910011)  $\text{PM}_{2.5}$  FRM monitors will be discontinued in 2027 in favor of the T640 FEM method.

Figure 9 – PM<sub>2.5</sub> Site Design Values (2023 – 2025)



**Figure 10 – PM<sub>2.5</sub> Monitoring Network**



**Table 12 – PM<sub>2.5</sub> Monitoring Network**

Parameter Code: 81101															
PM <sub>2.5</sub> - Particulate Matter															
Site ID	Site Name	County	City	Address	Monitor Type (Network)	Start Date	Operating Schedule	Monitoring Method	Scale	Monitoring Objective	Latitude	Longitude	NAAQS Comparable (2026)	CBSA	Site Change Proposed?
180030015	Fort Wayne - Coliseum	Allen	Fort Wayne	707 N. Coliseum	SLAMS	10/12/23	Continuous	636	Neigh	Pop Exp	41.081864	-85.088313	Primary	Ft. Wayne	No
180050008	Columbus - Rocky Ford Rd.	Bartholomew	Columbus	3475 Trestle Dr.	SLAMS	07/24/14	Continuous	170	Neigh	Pop Exp	39.237457	-85.891332	Primary	Columbus	No
180190010	Jeffersonville - Bates-Bowyer Ave.	Clark	Jeffersonville	Downtown Wastewater Plant, 1420 Bates-Bowyer Ave.	SLAMS	05/21/19	3-Day	145	Neigh	Pop Exp	38.288191	-85.741337	Secondary	Louisville/Jefferson County, KY-IN	No
180190010	Jeffersonville - Bates-Bowyer Ave.	Clark	Jeffersonville	Downtown Wastewater Plant, 1420 Bates-Bowyer Ave.	SLAMS	06/13/19	Continuous	636	Neigh	Pop Exp	38.288191	-85.741337	Primary	Louisville/Jefferson County, KY-IN	No
180350006	Muncie - Central HS	Delaware	Muncie	Muncie Central HS, 801 N. Walnut St.	SLAMS	10/15/99	3-Day	145	Neigh	Pop Exp	40.203338	-85.387818	Primary	Muncie	Discontinue
180350006	Muncie - Central HS	Delaware	Muncie	Muncie Central HS, 801 N. Walnut St.	SLAMS	01/01/24	Continuous	636	Neigh	Pop Exp	40.203338	-85.387818	Primary	Muncie	No
180372001	Jasper - Post Office	Dubois	Jasper	Post Office, 206 E. 6th St.	SLAMS	01/01/00	3-Day	145	Neigh	Pop Exp	38.391799	-86.929668	Primary	Non-MSA County	No
180372001	Jasper - Post Office	Dubois	Jasper	Post Office, 206 E. 6th St.	SLAMS	07/01/23	Continuous	638	Neigh	Pop Exp	38.391799	-86.929668	Secondary	Non-MSA County	No
180390008	Elkhart - Prairie St.	Elkhart	Elkhart	2745 Prairie St.	SLAMS	11/23/10	Continuous	170	Neigh	Pop Exp	41.657155	-85.968446	Primary	Elkhart-Goshen	No
180430008	New Albany	Floyd	New Albany	Floyd County 4-H Fairgrounds	SLAMS	01/11/23	3-Day	145	Neigh	Pop Exp	38.317800	-85.833300	Primary	Louisville/Jefferson County, KY-IN	No
180430008	New Albany	Floyd	New Albany	Floyd County 4-H Fairgrounds	SLAMS	01/11/23	6-Day	145	Neigh	Quality Assurance	38.317800	-85.833300	No	Louisville/Jefferson County, KY-IN	No
180430008	New Albany	Floyd	New Albany	Floyd County 4-H Fairgrounds	SLAMS	01/11/23	Continuous	636	Neigh	Pop Exp	38.317800	-85.833300	Secondary	Louisville/Jefferson County, KY-IN	No
180550001	Plummer	Greene		2500 S. 275 W	SLAMS	01/01/12	3-Day	145	Regional	Upwind Bkgrd	38.985556	-86.990000	Primary	Non-MSA County	No
180550001	Plummer	Greene		2500 S. 275 W	SLAMS	02/07/23	Continuous	636	Regional	Upwind Bkgrd	38.985556	-86.990000	Secondary	Non-MSA County	No
180570007	Fishers	Hamilton	Fishers	11775 Brooks School Rd.	SLAMS	01/01/14	Continuous	170	Urban	Pop Exp	39.960884	-85.939546	Primary	Indianapolis-Carmel- Anderson	No
180570008	Carmel - Hazel Dell Pkwy	Hamilton	Carmel	9609 Hazel Dell Parkway	SLAMS	01/10/19	3-Day	145	Middle	Source & Pop Exp	39.928790	-86.078795	Primary	Indianapolis-Carmel- Anderson	No
180650003	Mechanicsburg	Henry		Shenandoah HS, 7354 W. Hwy. 36, Pendleton	SLAMS	09/26/00	3-Day	145	Regional	Regional Transport	40.009544	-85.523470	Primary	Non-MSA County	No
180650003	Mechanicsburg	Henry		Shenandoah HS, 7354 W. Hwy. 36, Pendleton	SLAMS	01/25/23	Continuous	636	Regional	Regional Transport	40.009544	-85.523470	Secondary	Non-MSA County	No
180670004	Kokomo - E. Vaile Ave.	Howard	Kokomo	1802 E. Vaile Ave.	SLAMS	04/01/14	Continuous	170	Urban	Pop Exp	40.481347	-86.109688	Primary	Kokomo	No
180670004	Kokomo - E. Vaile Ave.	Howard	Kokomo	1802 E. Vaile Ave.	SLAMS	01/31/23	Continuous	170	Urban	Quality Assurance	40.481347	-86.109688	Secondary	Kokomo	No
180890006	East Chicago - Franklin Sch.	Lake	East Chicago	Washington (formerly Franklin) School, Alder & 142nd St.	SLAMS	01/27/99	3-Day	145	Neigh	Pop Exp	41.636675	-87.441143	Primary	Chicago-Naperville-Elgin, IL-IN-WI	No
180890006	East Chicago - Franklin Sch.	Lake	East Chicago	Washington (formerly Franklin) School, Alder & 142nd St.	SLAMS	07/01/26	Continuous	638	Neigh	Pop Exp	41.636675	-87.441143	Secondary	Chicago-Naperville-Elgin, IL-IN-WI	No

Site ID	Site Name	County	City	Address	Monitor Type (Network)	Start Date	Operating Schedule	Monitoring Method	Scale	Monitoring Objective	Latitude	Longitude	NAAQS Comparable (2025)	CBSA	Site Change Proposed?
180890022	Gary - IITRI	Lake	Gary	IITRI Bunker, 201 Mississippi St.	SLAMS	03/04/99	3-Day	145	Middle	Source & Pop Exp	41.606563	-87.305015	Primary	Chicago-Naperville-Elgin, IL-IN-WI	No
180890022	Gary - IITRI	Lake	Gary	IITRI Bunker, 201 Mississippi St.	SLAMS	10/08/09	Continuous	170	Middle	Source & Pop Exp	41.606563	-87.305015	Secondary	Chicago-Naperville-Elgin, IL-IN-WI	Discontinue
180890022	Gary - IITRI	Lake	Gary	IITRI Bunker, 201 Mississippi St.	SLAMS	06/01/25	Continuous	638	Middle	Source & Pop Exp	41.606563	-87.305015	Secondary	Chicago-Naperville-Elgin, IL-IN-WI	No
180890031	Gary - Madison St.	Lake	Gary	Indiana American Water Co., 650 Madison St.	SLAMS	07/01/05	3-Day	145	Neigh	Pop Exp	41.598456	-87.342972	Primary	Chicago-Naperville-Elgin, IL-IN-WI	No
180890031	Gary - Madison St.	Lake	Gary	Indiana American Water Co., 650 Madison St.	SLAMS	07/01/05	6-Day	145	Neigh	Quality Assurance	41.598456	-87.342972	No		No
180890034	East Chicago-Marina	Lake	East Chicago	East Chicago Marina, 3301 Aldis St.	SLAMS	10/24/19	3-Day	145	Middle	Source Oriented	41.653446	-87.435435	Secondary	Chicago-Naperville-Elgin, IL-IN-WI	No
180890034	East Chicago-Marina	Lake	East Chicago	East Chicago Marina, 3301 Aldis St.	SLAMS	11/01/19	Continuous	636	Middle	Source Oriented	41.653446	-87.435435	Primary	Chicago-Naperville-Elgin, IL-IN-WI	No
180890036	Hammond - 167th St.	Lake	Hammond	NIPSCO maintenance facility 1313 167th St.	SLAMS	02/01/18	Continuous	636	Neigh	Pop Exp	41.594427	-87.495044	Primary	Chicago-Naperville-Elgin, IL-IN-WI	No
180890036	Hammond - 167th St.	Lake	Hammond	NIPSCO maintenance facility 1313 167th St.	SLAMS	09/13/21	Continuous	636	Neigh	Quality Assurance	41.594427	-87.495044	Secondary	Chicago-Naperville-Elgin, IL-IN-WI	No
180910011	Michigan City - Marsh Elem. Sch.	La Porte	Michigan City	Marsh Elem. Sch., 400 E. Homer St.	SLAMS	12/17/99	3-Day	145	Neigh	Pop Exp	41.706944	-86.891111	Primary	Michigan City-LaPorte	Discontinue
180910011	Michigan City - Marsh Elem. Sch.	La Porte	Michigan City	Marsh Elem. Sch., 400 E. Homer St.	SLAMS	04/09/24	Continuous	636	Neigh	Pop Exp	41.706944	-86.891111	Primary	Michigan City-LaPorte	No
180950011	Anderson - Eastside Elem.	Madison	Anderson	Eastside Elementary Sch., 844 N. Scatterfield Rd.	SLAMS	07/12/10	Continuous	636	Middle	Pop Exp	40.125690	-85.652127	Primary	Indianapolis-Carmel-Anderson	No
180970043	Indpls - West St.	Marion	Indianapolis	1735 South West Street	SLAMS	01/24/99	3-Day	145	Middle	Pop Exp	39.744957	-86.166496	Primary	Indianapolis-Carmel-Anderson	No
180970078	Indpls - Washington Park	Marion	Indianapolis	Washington Park, 3120 E. 30th St	SLAMS (NCORE)	03/07/99	3-Day	145	Neigh	Pop Exp	39.810833	-86.114444	Secondary	Indianapolis-Carmel-Anderson	No
180970078	Indpls - Washington Park	Marion	Indianapolis	Washington Park, 3120 E. 30th St	SLAMS (NCORE)	01/04/10	Continuous	638	Neigh	Pop Exp	39.810833	-86.114444	Primary	Indianapolis-Carmel-Anderson	No
180970081	Indpls - W. 18th St.	Marion	Indianapolis	Ernie Pyle Sch 90, 3351 W. 18th St.	SLAMS	01/22/99	3-Day	145	Neigh	Pop Exp	39.788889	-86.214722	Primary	Indianapolis-Carmel-Anderson	No
180970081	Indpls - W. 18th St.	Marion	Indianapolis	Ernie Pyle Sch 90, 3351 W. 18th St.	SLAMS	02/11/99	6-Day	145	Neigh	Quality Assurance	39.788889	-86.214722	No		No
180970081	Indpls - W. 18th St.	Marion	Indianapolis	Ernie Pyle Sch 90, 3351 W. 18th St.	SLAMS	10/01/09	Continuous	636	Neigh	Pop Exp	39.788889	-86.214722	Secondary	Indianapolis-Carmel-Anderson	No
180970087	Indpls - I-70 E	Marion	Indianapolis	1650 Ludlow Ave.	SLAMS (NEAR ROAD)	01/01/14	3-Day	145	Middle	Highest Conc	39.787933	-86.130880	Primary	Indianapolis-Carmel-Anderson	No
180970087	Indpls - I-70 E	Marion	Indianapolis	1650 Ludlow Ave.	SLAMS (NEAR ROAD)	01/01/16	Continuous	636	Middle	Highest Conc	39.787933	-86.130880	Secondary	Indianapolis-Carmel-Anderson	No
181050003	Bloomington - Binford	Monroe	Bloomington	Binford Elementary Sch, 2300 E. 2nd St.	SLAMS	06/04/18	Continuous	636	Neigh	Pop Exp	39.159372	-86.504747	Primary	Bloomington	No
181270024	Ogden Dunes	Porter	Ogden Dunes	Water Treatment Plant, 84 Diana Rd	SLAMS	10/08/09	Continuous	170	Neigh	Pop Exp	41.617814	-87.199533	Primary	Chicago-Naperville-Elgin, IL-IN-WI	No

Site ID	Site Name	County	City	Address	Monitor Type (Network)	Start Date	Operating Schedule	Monitoring Method	Scale	Monitoring Objective	Latitude	Longitude	NAAQS Comparable (2025)	CBSA	Site Change Proposed?
181410015	South Bend - Shields Dr.	St Joseph	South Bend	2335 Shields Dr.	SLAMS	10/15/08	Continuous	636	Neigh	Pop Exp	41.696667	-86.214722	Primary	South Bend-Mishawaka, IN-MI	No
181470011	Dale - Wallace St	Spencer	Dale	103 N Wallace St	SLAMS	10/01/24	3-Day	145	Urban	Regional Trans	38.170064	-86.987260	Primary	Non-MSA County	No
181470011	Dale - Wallace St	Spencer	Dale	103 N Wallace St	SLAMS	10/01/24	Continuous	636	Urban	Regional Trans	38.170064	-86.987260	Secondary	Non-MSA County	No
181570008	Lafayette - Greenbush St.	Tippecanoe	Lafayette	Cinergy Substation, 3401 Greenbush St	SLAMS	11/06/09	Continuous	170	Neigh	Pop Exp	40.431667	-86.852500	Primary	Lafayette-West Lafayette	No
181630024	Evansville - Oak Hill	Vanderburgh	Evansville	1400 E Virginia St	SLAMS	03/01/25	3-Day	145	Neigh	Pop Exp	37.988696	-87.531434	Primary	Evansville, IN-KY	No
181630024	Evansville - Oak Hill	Vanderburgh	Evansville	1400 E Virginia St	SLAMS	03/01/25	Continuous	636	Neigh	Pop Exp	37.988696	-87.531434	Secondary	Evansville, IN-KY	No
181630021	Evansville - Buena Vista	Vanderburgh	Evansville	1110 W. Buena Vista Rd	SLAMS	07/08/09	6-Day	145	Neigh	Pop Exp	38.013250	-87.577923	Secondary	Evansville, IN-KY	No
181630021	Evansville - Buena Vista	Vanderburgh	Evansville	1110 W. Buena Vista Rd	SLAMS	10/21/09	Continuous	638	Neigh	Pop Exp	38.013250	-87.577923	Primary	Evansville, IN-KY	No
181670018	Terre Haute - Lafayette Ave.	Vigo	Terre Haute	961 N. Lafayette Ave.	SLAMS	01/01/27	3-Day	145	Neigh	Quality Assurance	39.485987	-87.401312	No	Terre Haute	Add
181670018	Terre Haute - Lafayette Ave.	Vigo	Terre Haute	961 N. Lafayette Ave.	SLAMS	12/03/09	Continuous	170	Neigh	Pop Exp	39.485987	-87.401312	Primary	Terre Haute	No
181830003	Larwill	Whitley	Larwill	Whitko Middle School, 710 N. State Rd. 5	SLAMS	06/08/21	Continuous	636	Regional	Regional Transport	41.169722	-85.629444	Primary	Ft. Wayne	No

MONITORING METHODS: 145 - R&P 2025A or B or THERMO 2025i  
170 - MET ONE BAM - FEM  
636 - TELEDYNE T640 with data alignment  
638 - TELEDYNE T640X with data alignment

## Sulfur Dioxide (SO<sub>2</sub>)

### Monitoring Requirements

The monitoring requirements for SO<sub>2</sub> are detailed in 40 CFR Part 58 Appendix D §4.4. Section 4.4.2 of the Appendix lists the number of monitors to be located in a CBSA based on the Population Weighted Emissions Index, PWEI. The PWEI combines the population of the area and the SO<sub>2</sub> emissions from the 2020 NEI for each county. The 2023 population estimates from the U.S. Census Bureau is multiplied by the emissions and divided by one million. The PWEI dictates the number of sites required:

PWEI	# of Sites
>1,000,000	3
100,000 to 1,000,000	2
5,000 to 100,000	1
<5,000	0

As depicted in Table 13, the CBSAs in Indiana which require monitoring sites are the Indianapolis-Carmel-Greenwood, IN CBSA, the Chicago-Naperville-Elgin, IL-IN-WI CBSA, the Cincinnati, OH-KY-IN CBSA, and the Louisville/Jefferson County, KY-IN CBSA. Indiana meets the monitoring requirements in three of the four areas which require monitors. For the Cincinnati, OH-KY-IN CBSA, an MOA with the Kentucky Department of Air Quality (KDAQ), the Ohio Environmental Protection Agency (OEPA), and IDEM specifies the monitoring requirement will be met for the CBSA. The MOA is currently under review and should be signed shortly.

### Industrial Monitoring

Many industries with large sources of SO<sub>2</sub> emissions were required to operate ambient SO<sub>2</sub> monitoring sites due to Indiana's "SO<sub>2</sub> Rule," (Rule 3. Ambient Monitoring of Article 7. SULFUR DIOXIDE RULES of Title 326 of the Indiana Administrative Code (326 IAC 7-3)). As emissions and ambient concentrations decreased over the years, nearly all the ambient monitoring networks were allowed to discontinue operations. Duke Energy continues to operate two SO<sub>2</sub> monitors, one in Gibson County and the other across the state line in Wabash County, Illinois to monitor the air around the Gibson Station power plant. In addition, a meteorological station is located at the Wabash County site.

U.S. EPA published its final Data Requirements Rule (DRR) for the 2010 1-hour SO<sub>2</sub> NAAQS (<https://www.gpo.gov/fdsys/pkg/FR-2015-08-21/pdf/2015-20367.pdf>) on August 21, 2015. This rule directed states to provide data to U.S. EPA to identify maximum 1-hour SO<sub>2</sub> concentrations in ambient air for areas with large sources of SO<sub>2</sub> emissions. The DRR required states to indicate the approach used for each listed source to characterize spatial air quality at the site: air quality characterization through air quality modeling or ambient monitoring, or establishment of a federally enforceable emission limit (or facility shut down). As required by the DRR, IDEM identified to U.S. EPA the approach it used to characterize the air quality in each of the areas identified under the DRR.

In Indiana, one source –Cleveland-Cliffs Burns Harbor – characterized the air quality around its facilities using ambient monitoring. A monitoring site location was selected based on modeling conducted in accordance with U.S. EPA's SO<sub>2</sub> NAAQS Monitoring Technical Assistance Document and in consultation with U.S. EPA. As required by the DRR, this monitor was installed and operational by January 1, 2017. To provide additional information in support of the DRR, Cleveland-Cliffs assumed the operation of the former NIPSCO – Dunes Acres meteorological station.

All industrial facilities monitoring for SO<sub>2</sub> are their own PQAQO operating similar to the IDEM SO<sub>2</sub> monitoring sites and their data is NAAQS comparable.

**Table 13 – Number of SO<sub>2</sub> Sites Required by CFR**

CBSA Name - Required Areas	2020 NEI Data (tons/year)	2023 Pop. Estimate <sup>1</sup>	PWE Values	PWE Required Sites	Current No. of Sites	2027 No. of Sites
Chicago-Naperville-Elgin, IL-IN-WI (total CBSA)	29,902	9,262,825	276,977	2	6	-
Chicago-Naperville-Elgin, IL-IN-WI (IN only)					3	3
Cincinnati, OH-KY-IN (total CBSA)	34,128	2,271,479	77,521	1	6	-
Cincinnati, OH-KY-IN (IN only)					0	0
Indianapolis-Carmel-Anderson, IN	6,836	2,138,468	14,619	1	1	1
Evansville, IN	14,196	270,717	3,843	0	2	2
Louisville-Jefferson County, KY-IN (total CBSA)	5,800	1,365,557	7,920	1	4	-
Louisville-Jefferson County, KY-IN (IN only)					1	1
Terre Haute, IN	4,281	168,787	723	0	1	1
# of sites needed to meet full CBSA requirements				4		
<b>Sites in Indiana Network</b>					<b>8</b>	<b>8</b>

<sup>1</sup> Population estimates from US Census Bureau

### Monitoring Methodology

Indiana’s SO<sub>2</sub> monitoring network collects data with Thermo Scientific Model 43i and 43iQ using pulsed ultra-violet fluorescence monitoring methodology. A Thermo Scientific Model 43i Trace Level-Enhanced is used to collect trace level SO<sub>2</sub> data at the NCore, Indianapolis – Washington Park site (180970078).

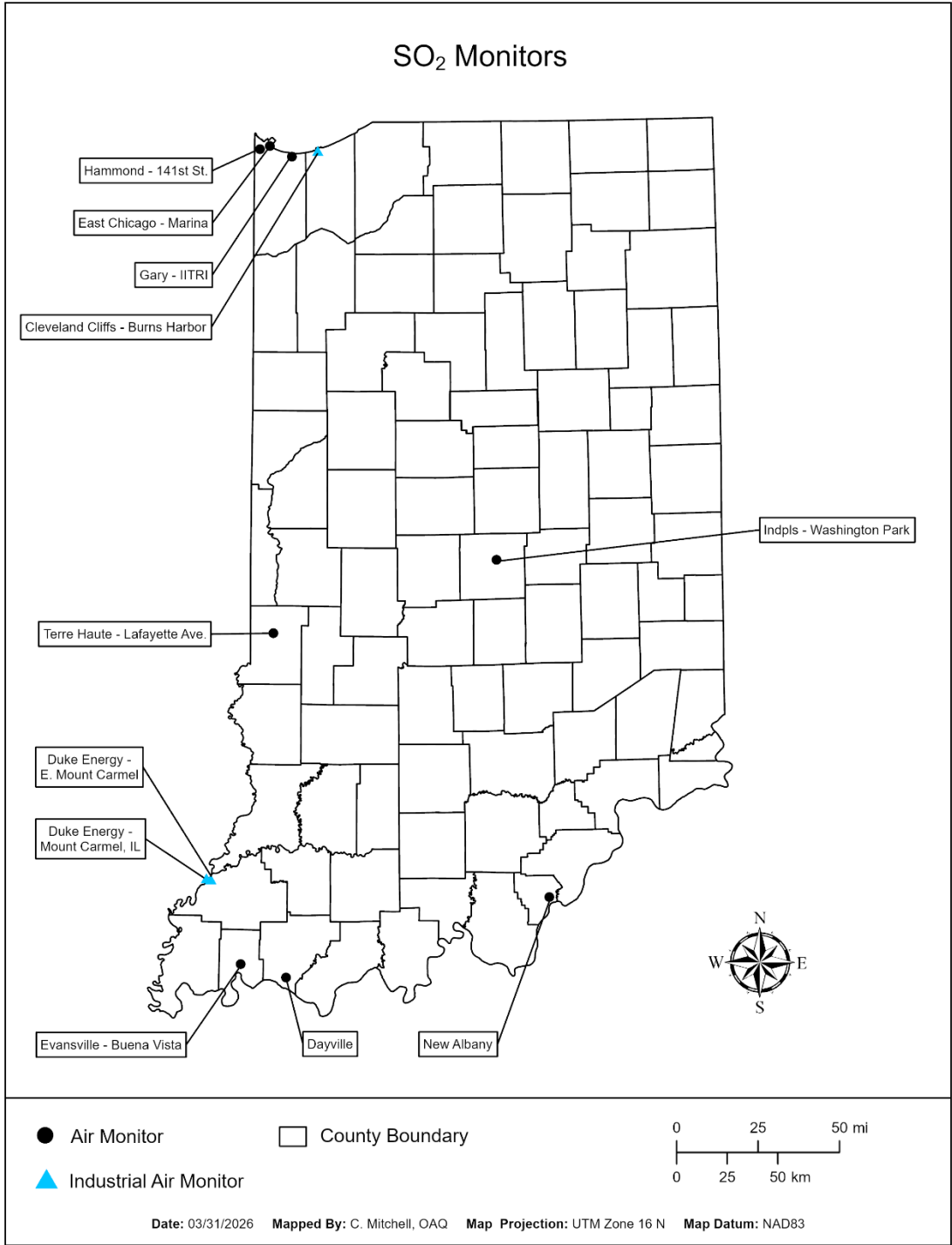
### Monitoring Network

Monitoring of SO<sub>2</sub> is also required at the NCore sites as per 40 CFR Part 58 Appendix D, 4.4.5. Indiana operates eight SO<sub>2</sub> monitors located throughout the state, as displayed in Figure 11. This Figure includes one township designated nonattainment for SO<sub>2</sub>. The current network is listed in Table 14 and includes the Industrial network.

### Network Modifications

There are no changes planned for 2027.

Figure 11 – SO<sub>2</sub> Monitoring Network



**Table 14 – SO<sub>2</sub> Monitoring Network**

Parameter Code: 42401															SO <sub>2</sub> - Sulfur Dioxide														
PQAO: 0520 REPORTING AGENCY: Indiana Department of Environmental Management																													
Site ID	Site Name	County	City	Address	Monitor Type (Network)	Start Date	Operating Schedule	Monitoring Method	Scale	Monitoring Objective	Latitude	Longitude	CBSA	Site Change Proposed?															
180430008	New Albany	Floyd	New Albany	Floyd County 4-H Fairgrounds	SLAMS	01/11/23	Continuous	060	Neigh	Pop Exp	38.317800	-85.833300	Louisville/Jefferson County, KY-IN	No															
180890022	Gary - IITRI	Lake	Gary	IITRI Bunker, 201 Mississippi St.	SLAMS	06/12/97	Continuous	060	Neigh	Pop Exp	41.606563	-87.305015	Chicago-Naperville-Elgin, IL-IN-WI	No															
180890034	East Chicago-Marina	Lake	East Chicago	East Chicago Marina, 3301 Aldis St.	SLAMS	11/01/19	Continuous	060	Middle	Source Oriented	41.653446	-87.435435	Chicago-Naperville-Elgin, IL-IN-WI	No															
180892008	Hammond - 141st St.	Lake	Hammond	1300 E. 141st St.	SLAMS	08/01/75	Continuous	060	Neigh	Highest Conc	41.639444	-87.493611	Chicago-Naperville-Elgin, IL-IN-WI	No															
180970078	Indpls - Washington Park	Marion	Indianapolis	Washington Park, 3120 E. 30th St	SLAMS (NCORE)	12/20/10	Continuous	560	Neigh	Pop Exp	39.810833	-86.114444	Indianapolis-Carmel-Anderson	No															
181630021	Evansville - Buena Vista	Vanderburgh	Evansville	1110 W. Buena Vista Rd	SLAMS	07/08/09	Continuous	060	Neigh	Pop Exp	38.013250	-87.577923	Evansville, IN-KY	No															
181670018	Terre Haute - Lafayette Ave.	Vigo	Terre Haute	961 N. Lafayette Ave.	SLAMS	07/01/83	Continuous	060	Neigh	Pop Exp	39.485987	-87.401312	Terre Haute	No															
181730011	Dayville	Warrick		3488 Eble Rd., Newburgh	SPM	01/01/21	Continuous	060	Neigh	Pop Exp	37.954444	-87.321667	Evansville, IN-KY	No															
PQAO: 1324 REPORTING AGENCY: Duke Energy																													
171850001	Duke Energy - Mount Carmel	Wabash, IL		Division St.	Industrial	01/01/79	Continuous	060	Middle	Source Oriented	38.397789	-87.773853	Non-MSA County	No															
180510002	Duke Energy - E. Mount Carmel	Gibson		Gibson Coal Road	Industrial	01/01/81	Continuous	060	Middle	Source Oriented	38.392887	-87.748341	Non-MSA County	No															
PQAO: 0235 REPORTING AGENCY: Cleveland Cliffs																													
181270028	Cleveland Cliffs - Burns Harbor	Porter		E. Boundary Rd	Industrial	01/01/17	Continuous	560	Middle	Source Oriented	41.635404	-87.150567	Chicago-Naperville-Elgin, IL-IN-WI	No															
<p>MONITORING METHOD: 060 - THERMO ELECTRON 43i, 43iQ SO<sub>2</sub>                      560 - THERMO ELECTRON 43i TRACE LEVEL SO<sub>2</sub></p>																													

## PM<sub>2.5</sub> Speciation

### Monitoring Requirements

Monitoring requirements in 40 CFR Part 58 Appendix D §4.7.4 states that “each state shall continue to conduct chemical speciation monitoring and analyses at sites designated to be part of the STN PM<sub>2.5</sub>.” The STN PM<sub>2.5</sub> is part of the CSN.

### Monitoring Methodology

Noncontinuous speciation samples are collected on three different filter mediums, each for a specific analysis and list of compounds. A Teflon™ filter, using the Energy Dispersive X-ray Fluorescence analysis methodology, is used to target 33 trace metals. A nylon filter, using Ion Chromatography for an analytical method, is used to target sulfates, nitrates, and three cations (ammonium, potassium, and sodium). A quartz fiber filter, using Thermal Optical Analysis, is used to target organic, elemental, and total carbon.

The Met One SASS and SuperSASS are used to collect PM<sub>2.5</sub>, trace elements, Cations-PM<sub>2.5</sub>, Nitrate-PM<sub>2.5</sub>, and Sulfate-PM<sub>2.5</sub> data. The URG-3000N sampler is used to collect organic and elemental carbon data. Samples are collected on a 1/6 day sampling frequency at all sites except the Indianapolis – Washington Park (180970078) site, which samples every third day.

Indiana also operates continuous speciation monitors at six different locations. A MetOne BC 1060 Black Carbon Monitor, using optical absorption analysis methodology, is used for sampling black carbon under local ambient conditions at the Indianapolis – Washington Park, Gary – IITRI (180890022), Evansville – Buena Vista (181630021) and Elkhart – Prairie St. (180390008) sites. A Teledyne API 633 Aethalometer, using optical adsorption analysis methodology, is used for sampling black carbon under local ambient conditions at the Indianapolis – I-70 E. (180970087) and Jeffersonville – Bates-Bowyer Ave. (180190010) sites.

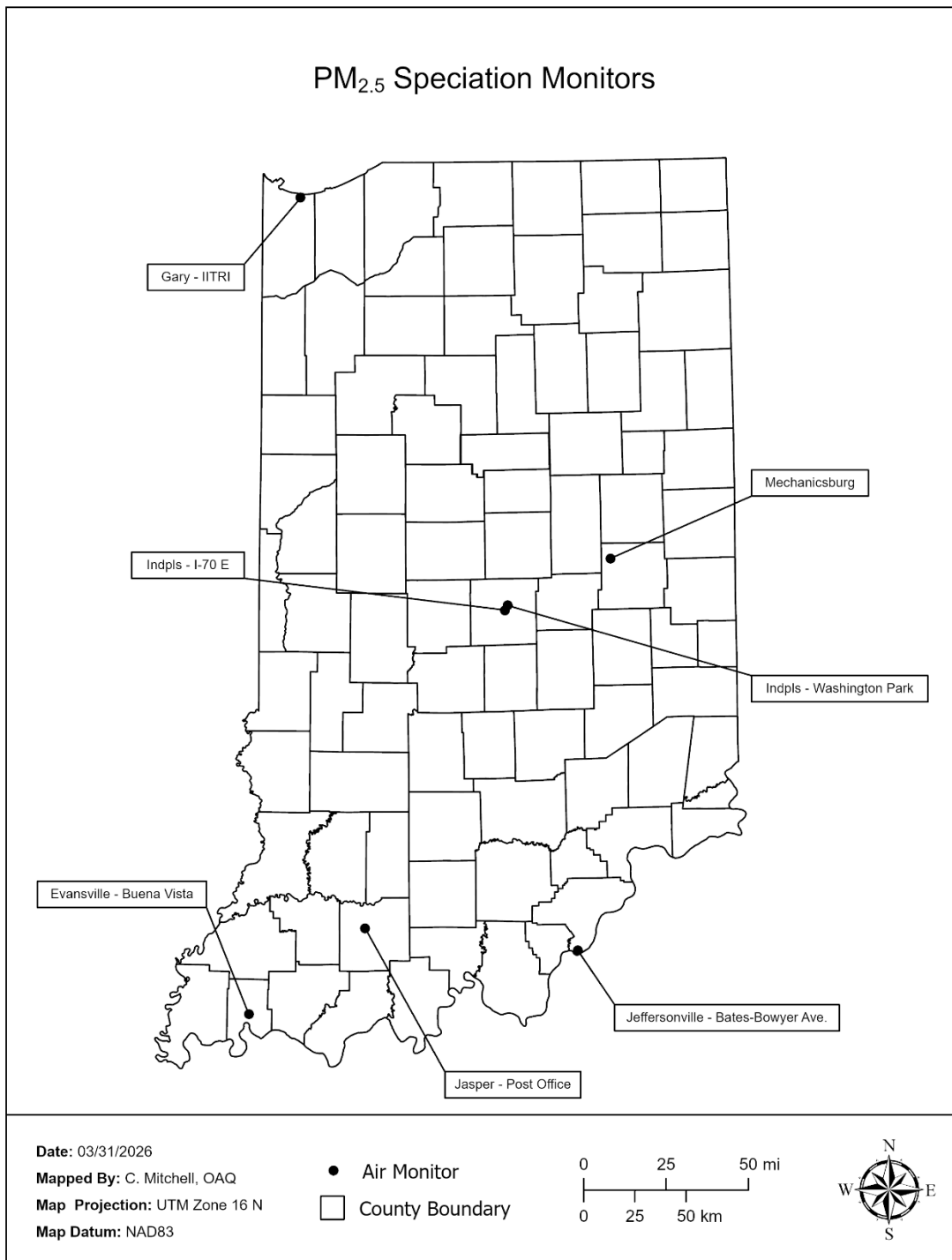
### Monitoring Network

Currently the Indiana speciation network consists of six STN PM<sub>2.5</sub> and six continuous monitors across the state. The current network, along with any changes planned for 2027, is listed in Table 15 and displayed in Figure 12.

### Network Modifications

Indiana proposes discontinuing continuous speciation monitoring (black carbon) at the Evansville – Buena Vista (181630021) and Elkhart – Prairie St. (180390008) sites.

Figure 12 – Speciation Monitoring Network



**Table 15 – PM<sub>2.5</sub> Speciation Monitoring Network**

PM2.5 Speciation (Sulfate, Nitrate, Carbon, etc.)														
Site ID	Site Name	County	City	Address	Monitor Type (Network)	Start Date	Operating Schedule	Monitoring Method	Scale	Monitoring Objective	Latitude	Longitude	CBSA	Site Change Proposed?
180190010	Jeffersonville - Bates-Bowyer Ave.	Clark	Jeffersonville	Downtown Wastewater Plant, 1420 Bates-Bowyer Ave.	SLAMS (CSN SUPPLEMENTAL)	05/21/19	6-Day	810,811,812,826,831,838,839,840,841,842	Neigh	Pop Exp	38.288191	-85.741337	Louisville/Jefferson County, KY-IN	No
180190010	Jeffersonville - Bates-Bowyer Ave.	Clark	Jeffersonville	Downtown Wastewater Plant, 1420 Bates-Bowyer Ave.	SLAMS (CSN SUPPLEMENTAL)	04/13/21	Continuous Black Carbon	894	Neigh	Pop Exp	38.288191	-85.741337	Louisville/Jefferson County, KY-IN	No
180372001	Jasper - Post Office	Dubois	Jasper	Post Office, 206 E. 6th St	SLAMS (CSN SUPPLEMENTAL)	01/04/05	6-Day	810,811,812,826,831,838,839,840,841,842	Neigh	Pop Exp	38.391799	-86.929668	Non-MSA County	No
180390008	Elkhart - Prairie St.	Elkhart	Elkhart	2745 Prairie St.	SLAMS (CSN SUPPLEMENTAL)	08/10/22	Continuous Black Carbon	879	Neigh	Pop Exp	41.657155	-85.968446	Elkhart-Goshen	Discontinue
180650003	Mechanicsburg	Henry		Shenandoah HS, 7354 W. Hwy. 36	SLAMS (CSN SUPPLEMENTAL)	02/01/02	6-Day	810,811,812,826,831,838,839,840,841,842	Regional	Regional Trans	40.009544	-85.523470	Non-MSA County	No
180890022	Gary - IITRI	Lake	Gary	IITRI Bunker, 201 Mississippi St.	SLAMS (CSN SUPPLEMENTAL)	04/03/03	6-Day	810,811,812,826,831,838,839,840,841,842	Middle	Pop Exp	41.606563	-87.305015	Chicago-Naperville-Elgin, IL-IN-WI	No
180890022	Gary - IITRI	Lake	Gary	IITRI Bunker, 201 Mississippi St.	SLAMS (CSN SUPPLEMENTAL)	01/01/21	Continuous Black Carbon	879	Middle	Pop Exp	41.606563	-87.305015	Chicago-Naperville-Elgin, IL-IN-WI	No
180970078	Indpls - Washington Park	Marion	Indianapolis	Washington Park, 3120 E. 30th St	SLAMS (CSN STN) (NCORE)	12/13/00	3-Day	810,811,812,826,831,838,839,840,841,842	Neigh	Pop Exp	39.810833	-86.114444	Indianapolis-Carmel-Anderson	No
180970078	Indpls - Washington Park	Marion	Indianapolis	Washington Park, 3120 E. 30th St	SLAMS (CSN STN) (NCORE)	01/01/21	Continuous Black Carbon	879	Neigh	Pop Exp	39.810833	-86.114444	Indianapolis-Carmel-Anderson	No
180970087	Indpls - I-70 E	Marion	Indianapolis	1650 Ludlow Ave.	SLAMS (NEAR ROAD)	03/02/21	Continuous Black Carbon	894	Middle	Source Oriented	39.787933	-86.130880	Indianapolis-Carmel-Anderson	No
181630021	Evansville - Buena Vista	Vanderburgh	Evansville	1110 W. Buena Vista Rd	SLAMS (CSN SUPPLEMENTAL)	07/12/09	6-Day	810,811,812,826,831,838,839,840,841,842	Neigh	Pop Exp	38.013250	-87.577923	Evansville, IN-KY	No
181630021	Evansville - Buena Vista	Vanderburgh	Evansville	1110 W. Buena Vista Rd	SLAMS (CSN SUPPLEMENTAL)	01/01/21	Continuous Black Carbon	879	Neigh	Pop Exp	38.013250	-87.577923	Evansville, IN-KY	Discontinue

**MONITORING METHOD:** 810 - MET ONE SASS NYLON / GRAVIMETRIC  
 811 - MET ONE SASS TEFLON / ANALYSIS METHOD: ENERGY DISPERSIVE XRF  
 812 - MET ONE SASS NYLON / ANALYSIS METHOD: ION CHROMATOGRAPHY  
 826 - URG 3000 w. PALL QUARTZ FILTER AND CYCLONE INLET / IMPROVE\_A TOT  
 831 - URG 3000 w. PALL QUARTZ FILTER AND CYCLONE INLET / EC1+EC2+EC3-(OP(TOR))  
 838 - URG 3000 w. PALL QUARTZ FILTER AND CYCLONE INLET / IMPROVE TOT  
 839 - URG 3000 w. PALL QUARTZ FILTER AND CYCLONE INLET/OC1+OC2+OC3+OC4+(OP(TOT))  
 840 - URG 3000 w. PALL QUARTZ FILTER AND CYCLONE INLET / EC1+EC2+EC3-(OP(TOT))  
 841 - URG 3000N w. PALL QUARTZ FILTER AND CYCLONE INLET / IMPROVE\_A  
 842 - URG 3000N w. PALL QUARTZ FILTER AND CYCLONE INLET / IMPROVE\_A TOR  
 879 - MET ONE 1060 / ANALYSIS METHOD: OPTICAL ABSORPTION  
 894 - TELEDYNE API MODEL 633 AETHALOMETER / ANALYSIS METHOD: OPTICAL ABSORPTION

## **NCore/PAMS**

### **Monitoring Requirements**

40 CFR Part 58 Appendix D §3 requires each state to operate at least one NCore site and lists the minimum parameters which must be measured at that site. Currently the required parameters are continuous and noncontinuous PM<sub>2.5</sub>, PM<sub>2.5</sub> speciation, PM<sub>10-2.5</sub> particle mass, CO, O<sub>3</sub>, SO<sub>2</sub>, NO/NO<sub>y</sub>, wind speed, wind direction, relative humidity, and ambient temperature.

40 CFR Part 58 Appendix D §5 requires ozone precursor monitoring as part of the PAMS program. PAMS measurements are required at each NCore site located in a CBSA with a population of 1,000,000 or more, based on the latest available census figures. The required measurements include: hourly averaged speciated VOCs; three 8-hour averaged carbonyl samples per day on one-in-three day schedule; hourly averaged O<sub>3</sub>; hourly averaged NO, true NO<sub>2</sub>, and NO<sub>y</sub>; hourly averaged outdoor temperature; hourly vector-averaged wind direction; hourly vector-averaged wind speed; hourly averaged barometric pressure; hourly averaged relative humidity; hourly precipitation; hourly averaged mixing-height; hourly averaged solar radiation; and hourly averaged ultraviolet radiation.

This section deals with speciated VOCs. The other parameters are addressed in their own area.

### **Monitoring Methodology**

Ozone precursor VOCs are collected continuously using a Markes Unity-XR Thermal Desorber and Agilent 7890B GC with dual FID with a Kori-xr Water Management Device and a CIA Advantage autosampler. The PAMS target compounds are shown in Table 16.

Carbonyl data are collected using Method TO-11A of the U.S. EPA's Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air Compendium of Method. Currently Indiana uses the ATEC 8000 for carbonyl sampling at the Indianapolis – Washington Park (180970078) site. Three eight-hour samples are collected on a one-in-three-day schedule June-August (PAMS Season) and one 24-hour sample on a one-in-six-day schedule the rest of the year. Samples are collected by drawing a known volume of air through a cartridge filled with silica gel coated with activated DNPH. These samples are analyzed by an EPA contract laboratory using HPLC with a UV absorption detector.

**Table 16 – PAMS Target Compounds**

Priority Compounds				Optional Compounds			
1	1,2,3-trimethylbenzene	21	o-xylene	1	1,3 Butadiene <sup>c</sup>	21	Carbon Tetrachloride <sup>c</sup>
2	1,2,4-trimethylbenzene	22	p-ethyltoluene	2	1,3,5-trimethylbenzene	22	cyclohexane
3	1-butene	23	Propane	3	1-pentene	23	cyclopentane
4	2,2,4-trimethylpentane	24	Propylene	4	2,2-dimethylbutane	24	Ethanol <sup>c</sup>
5	acetaldehyde <sup>a</sup>	25	styrene	5	2,3,4-trimethylpentane	25	isopropylbenzene
6	benzene	26	TNMOC	6	2,3-dimethylbutane	26	m-diethylbenzene
7	c-2-butene	27	toluene	7	2,3-dimethylpentane	27	Methylcyclohexane <sup>c</sup>
8	ethane	28	t-2-butene	8	2,4-dimethylpentane	28	methylcyclopentane
9	ethylbenzene			9	2-methylheptane	29	n-decane
10	Ethylene			10	2-methylhexane	30	n-heptane
11	formaldehyde <sup>a</sup>			11	2-methylpentane	31	n-nonane
12	Isobutane			12	3-methylheptane	32	n-octane
13	Isopentane			13	3-methylhexane	33	n-propylbenzene
14	Isoprene			14	3-methylpentane	34	n-undecane
15	m&p-xylenes			15	acetone <sup>a</sup>	35	p-diethylbenzene
16	m-ethyltoluene			16	Acetylene	36	Tetrachloroethylene <sup>c</sup>
17	n-butane			17	Alpha Pinene <sup>c</sup>	37	t-2-pentene
18	n-hexane			18	Benzaldehyde <sup>a</sup>		
19	n-pentane			19	Beta Pinene <sup>c</sup>		
20	o-ethyltoluene			20	c-2-pentene		
<b>Other Compounds</b>				1	n-dodecane <sup>b</sup>	2	1-hexene <sup>b</sup>

<sup>a</sup> Carbonyl compounds, measured using Method TO-11a

<sup>b</sup> Compounds measured and reported, not required for regulatory purposes

<sup>c</sup> Optional Compounds on U.S. EPA Target List that will not be measured, as missing from calibration standard

## Monitoring Network

As shown in Figure 13, Indiana's NCore site is Indianapolis – Washington Park (180970078). The details for all the NCore parameters are listed in Table 17. Except for PM<sub>10-2.5</sub>, parameters are also listed in the individual parameter sections.

Indiana operates a PAMS monitoring site collecting ozone precursor VOCs at Indianapolis – Washington Park NCore for the Indianapolis-Carmel-Anderson CBSA. The normal PAMS monitoring season is June, July, and August, but Indiana collects data year-round to observe values outside the season as well. The PAMS location is shown in Figure 13 and site details are in Tables 17 & 18.

## Network Modifications

There are no planned network modifications for 2027.

**Table 17 – NCore/PAMS Required Parameters**

Parameter	Monitor Type	Start Date	Sampler or Monitor	Method Code	Analysis Method	Sample Frequency	Requirement	
							NCore	PAMS
CO – trace level	SLAM S	1/1/2010	Teledyne API 300E U	593	Automated reference method utilizing trace level non-dispersive infrared analysis.	Continuous	X	
NO	SLAM S	3/10/2010	Teledyne API 200E U	699	Automated reference method utilizing chemiluminescence analysis.	Continuous	X	X
NO <sub>y</sub>	SLAM S	3/10/2010	Teledyne API 200E U	699	Automated reference method utilizing chemiluminescence analysis.	Continuous	X	X
O <sub>3</sub>	SLAM S	4/1/2009	Thermo Scientific 49i	047	Automated equivalent method utilizing uv photometry analysis.	Continuous	X	X
SO <sub>2</sub> – trace level	SLAM S	1/1/2010	Thermo Scientific 43i TLE	560	Automated equivalent method utilizing Trace Level UV Fluorescence Analysis	Continuous	X	
Intermittent PM <sub>2.5</sub>	SLAM S	3/7/1999	Thermo Scientific 2025	145	Manual reference method utilizing gravimetric analysis.	1/3 day	X	
Continuous PM <sub>2.5</sub>	SLAM S	1/1/2004	Teledyne API T640X	238	Automated equivalent method utilizing broadband spectroscopy	Continuous	X	
Intermittent PM <sub>10,2.5</sub>	SLAM S	7/1/2010	Thermo Scientific Partisol-Plus Model 2025 Sequential sampler pair	176	Manual reference method utilizing gravimetric analysis.	1/3 day	X	
Continuous PM <sub>10,2.5</sub>	SLAM S	7/22/2011	Teledyne API T640X	240	Automated equivalent method utilizing broadband spectroscopy	Continuous	X	
PM <sub>2.5</sub> Speciation	SLAM S	12/13/2000	Met One SASS & URG 3000N	811 / 812 / 833	Multi-species manual collection method utilizing thermal optical, ion chromatography, gravimetric, and x-ray fluorescence analyses.	1/3 day	X	
WS/WD	SLAM S	10/11/2009	RM Young 86004-39	020	Air quality measurements approved instrumentation for wind speed and wind direction	Continuous	X	X
OT/RH	SLAM S	10/11/2009	RM Young 41372VF	040 / 020	Air quality measurements approved instrumentation for humidity and temperature	Continuous	X	X
PAM S	SLAM S	7/1/2011	Markes/Agilent 7890B Gas Chromatograph	128	Cryogenic Preconcentration GC/FID Detection	Continuous	X	X
Mixing Height	SLAM S	6/1/2018	Vaisala CL51 Ceilometer	128	Optical scattering pulsed diode laser LIDAR (Light Detection And Ranging)	Continuous	X	X
Carboynls	SLAM S	4/18/1999	ATEC 8000-2-4	102	Silica DNPH cartridge w/KI O <sub>3</sub> scrubber with HPLC (TO-11A)	1/6 day 1/3 day Jun-Aug	X	X
NO <sub>2</sub>	SLAM S	1/1/2013	Teledyne API T500U	212	Direct-read Cavity Attenuated Phase Shift (CAPS)	Continuous	X	X
Precipitation	OTHER	10/11/2009	RM Young 52202E	014	Air quality measurements approved instrumentation for rain fall	Continuous	X	X
BP	OTHER	10/11/2009	Met One 092	011	Air quality measurements approved instrumentation for barometric pressure	Continuous	X	X
Solar Radiation	OTHER	1/1/2013	Eppley Precision Spectral Pyranometer	011	First Class Radiometer	Continuous	X	X
Ultraviolet Radiation	OTHER	1/1/2013	Eppley Total Ultraviolet Radiometer	011	Hermetically sealed selenium barrier-layer cell	Continuous	X	X
Intermittent PM <sub>10</sub>	SLAM S	7/1/2010	Thermo Scientific 2025	127	Manual reference method utilizing gravimetric analysis.	1/3 day		
Continuous PM <sub>10</sub>	SLAM S	8/2/2011	Teledyne API T640X	239	Automated equivalent method utilizing broadband spectroscopy	Continuous		

**Figure 13 – NCore / Ozone Precursors Network**



**Table 18 – Ozone Precursor Monitoring Network**

Ozone Precursors														
Site ID	Site Name	County	City	Address	Monitor Type (Network)	Start Date	Operating Schedule	Monitoring Method	Scale	Monitoring Objective	Latitude	Longitude	CBSA	Site Change Proposed?
180970078	Indpls - Washington Park	Marion	Indianapolis	Washington Park, 3120 E. 30th St	SLAMS (NCORE/PAMS)	07/01/11	Continuous	231	Middle	Max Prec. Em. Impact	39.810833	-86.114444	Indianapolis-Carmel-Anderson	No
<p>MONITORING METHOD: 128 - AUTO GC; SUBAMBIENT - DUAL FID 231- Markes Unity TD/Agilent GC dual FID</p>														

## Near-Road

### Monitoring Requirements

40 CFR Part 58 Appendix D § 4.3.2 promulgated new NO<sub>2</sub> monitoring requirements. These included the requirement for establishing near-road NO<sub>2</sub> monitoring stations to be operational by January 1, 2014. The requirements for the near-road site as they apply to Indiana are as follows:

- (a) Within the NO<sub>2</sub> network, there must be one microscale near-road NO<sub>2</sub> monitoring station in each CBSA with a population of 1,000,000 or more persons to monitor a location of expected maximum hourly concentrations sited near a major road with high AADT counts as specified in paragraph 4.3.2(a)(1) of this appendix. An additional near-road NO<sub>2</sub> monitoring station is required for any CBSA with a population of 2,500,000 persons or more, or in any CBSA with a population of 1,000,000 or more persons that has one or more roadway segments with 250,000 or greater AADT counts to monitor a second location of expected maximum hourly concentrations. CBSA populations shall be based on the latest available census figures.
- (1) The near-road NO<sub>2</sub> monitoring sites shall be selected by ranking all road segments within a CBSA by AADT and then identifying a location or locations adjacent to those highest ranked road segments, considering fleet mix, roadway design, congestion patterns, terrain, and meteorology, where maximum hourly NO<sub>2</sub> concentrations are expected to occur and siting criteria can be met in accordance with appendix E of this part. Where a state or local air monitoring agency identifies multiple acceptable candidate sites where maximum hourly NO<sub>2</sub> concentrations are expected to occur, the monitoring agency shall consider the potential for population exposure in the criteria utilized to select the final site location. Where one CBSA is required to have two near-road NO<sub>2</sub> monitoring stations, the sites shall be differentiated from each other by one or more of the following factors: fleet mix; congestion patterns; terrain; geographic area within the CBSA; or different route, interstate, or freeway designation.

From the most recent census data from 2023 for Indiana's CBSAs there are four CBSAs which have more than 1,000,000 persons:

<u>CBSA</u>	<u>Population</u>
Chicago-Naperville-Elgin, IL-IN-WI	9,262,825
Cincinnati, OH-KY-IN	2,271,479
Indianapolis-Carmel-Anderson, IN	2,138,468
Louisville-Jefferson County, KY-IN	1,365,557

Indiana has draft MOAs under review with the surrounding state with regard to how the monitoring requirements are shared in the multi-state CBSAs. The near-road monitoring in these areas will be the responsibility of the adjoining states. Indiana will be responsible for and deploy the near-road site in the Indianapolis-Carmel-Anderson CBSA.

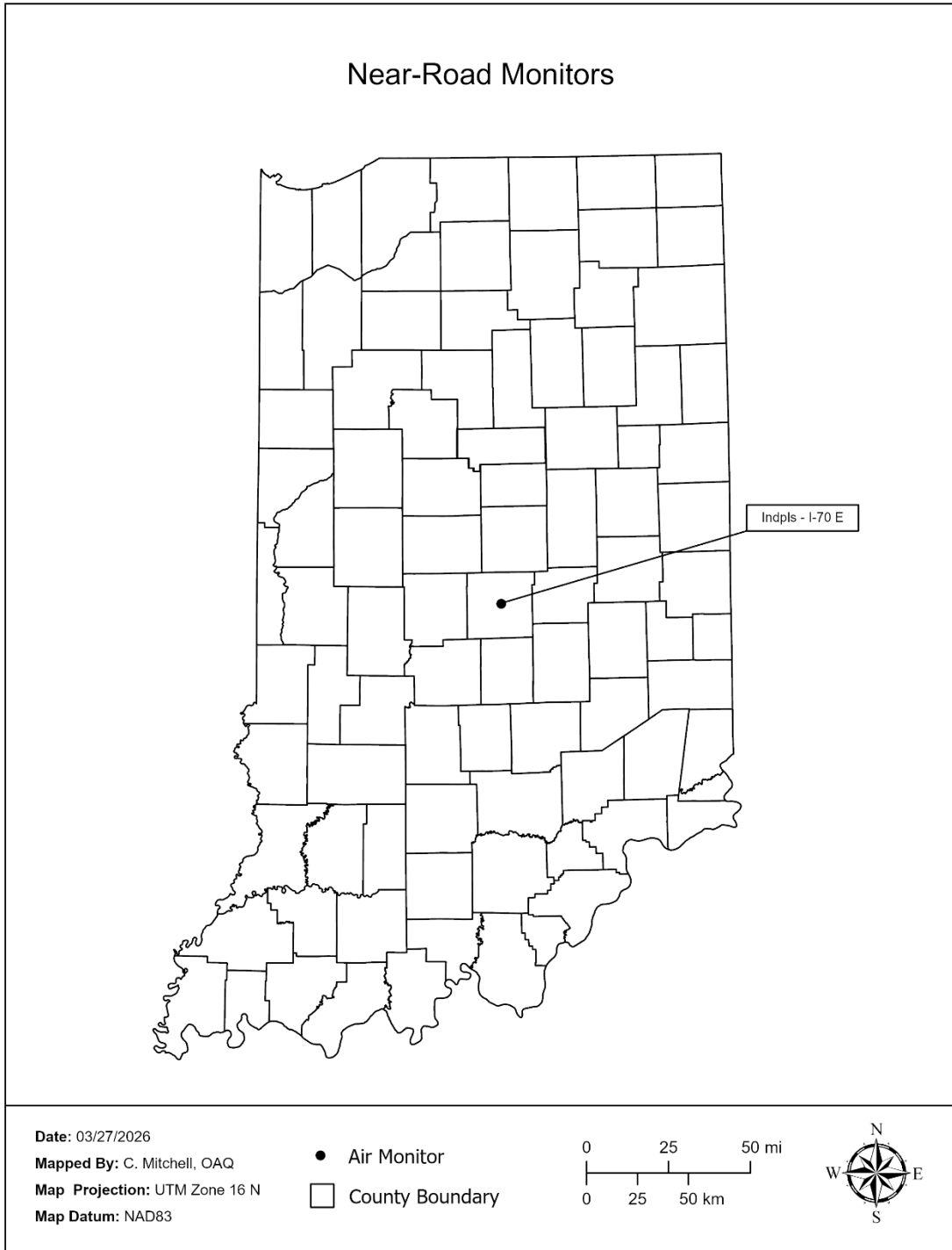
### Monitoring Network

IDEM worked with INDOT to obtain a location for this site along Interstate 70, between the northeast interchange of I-70 and I-65 and the Keystone Ave. exit. As shown in Figure 14, Indiana's near-road site is Indianapolis – I-70 E. (180970087). Monitors at the site include NO<sub>2</sub>, CO, O<sub>3</sub>, wind speed, wind direction, ambient temperature, relative humidity, black carbon, air toxics, PM<sub>2.5</sub>, and PM<sub>1</sub>. These parameters are also listed in the individual parameter sections.

### Network Modifications

There are no modifications planned for 2027.

**Figure 14 – Near-Road Monitoring Network**



## **Toxics (VOCs)**

### **Monitoring Requirements**

There are no requirements for toxics monitoring listed in 40 CFR Part 58.

### **Monitoring Methodology**

Indiana uses a modification of the TO-15 method to collect toxics VOC data. TO-15 is part of U.S. EPA's Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air and consists of guidance for the sampling and analysis of VOCs in air. Ambient air is collected in a stainless steel canister in the field using either the Meriter MCS-1-R or the ATEC 2200 Air Toxic Samplers and analyzed using an Agilent 8890 GC/5977 MS to determine the concentration of the compounds found in the sample obtained. Samples are collected for 24 hours on a one-in-six-day sampling schedule. Table 19 lists the 62 different VOCs, and an aggregate currently being analyzed and reported.

**Table 19 – VOCs**

Propene	Freon-12	Chloromethane	Freon-114
Vinyl Chloride	1,3-Butadiene	Bromomethane	Chloroethane
Ethanol	Acrolein	Acetone	Freon-11
Isopropanol	Vinylidene Chloride	Dichloromethane	Carbon Disulfide
Freon-113	t-1,2-Dichloroethene	1,1-Dichloroethane	Methyl Tert-Butyl Ether
Vinyl acetate	Methyl Ethyl Ketone	c-1,2-Dichloroethene	Hexane
Ethyl Acetate	Chloroform	Tetrahydro-Furan	1,2-Dichloroethane
1,1,1-Trichloroethane	Benzene	Carbon Tetrachloride	Cyclohexane
1,2-Dichloropropane	Bromodichloromethane	Trichloroethene	1,4-dioxane
Heptane	c-1,3-Dichloropropene	Methyl Isobutyl Ketone	t-1,3-Dichloropropene
1,1,2-Trichloroethane	Toluene	Methyl Butyl Ketone	Dibromochloromethane
1,2-Dibromoethane	Tetrachloroethene	Chlorobenzene	Ethylbenzene
m+p-Xylenes	Bromoform	Styrene	1,1,2,2-Tetrachloroethane
o-Xylene	p-Ethyltoluene	1,3,5-Trimethylbenzene	1,2,4-Trimethylbenzene
Benzyl Chloride	m-Dichlorobenzene	p-Dichlorobenzene	o-Dichlorobenzene
1,2,4-Trichlorobenzene	Hexachloro-1,3-butadiene	Total NMOC	

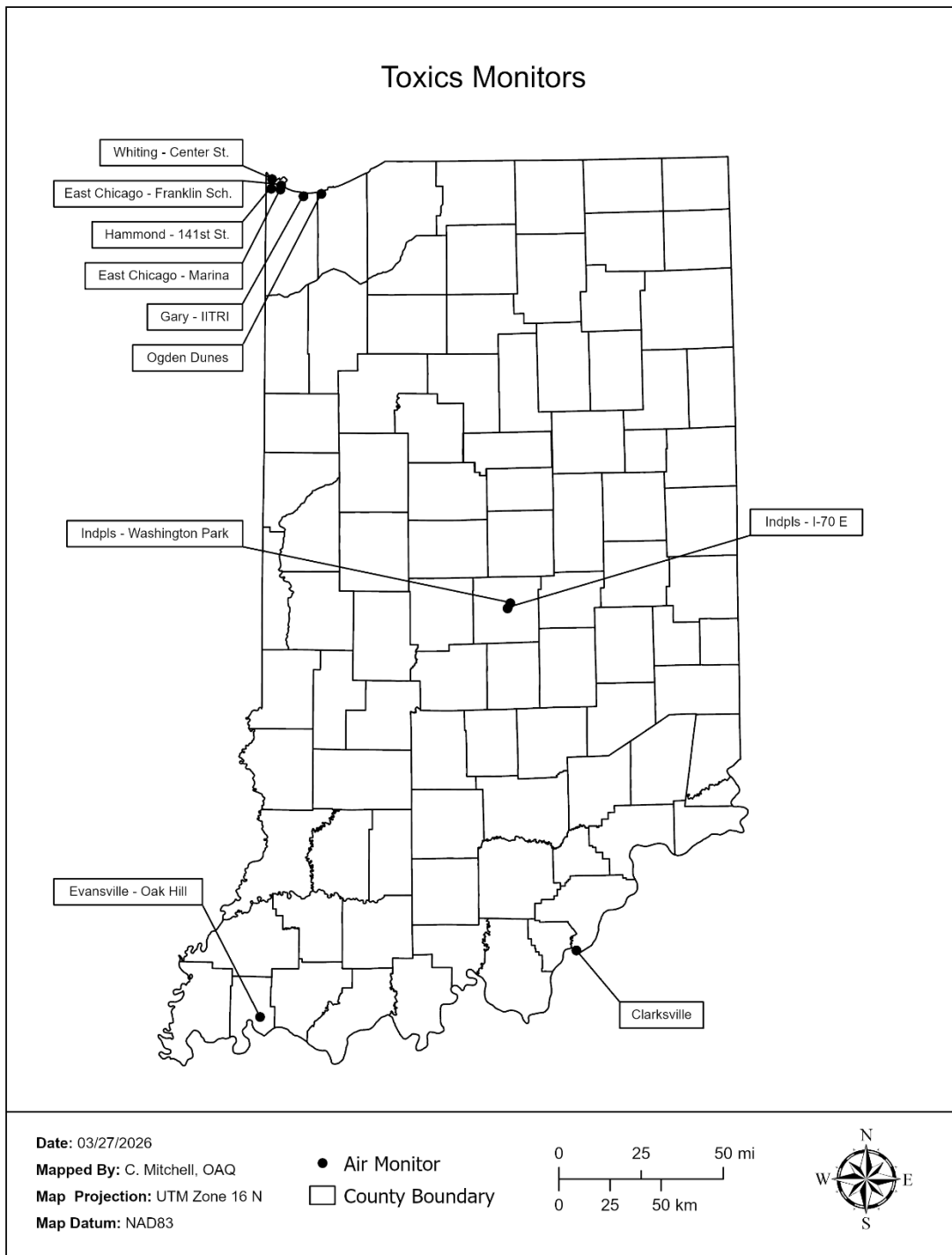
### Monitoring Network

In 2027 Indiana will operate 10 toxics sites. The current network along with any changes planned in 2027, is listed in Table 20 and shown in Figure 15.

### Network Modifications

There are no modifications planned for 2027.

Figure 15 – Toxics Monitoring Network



**Table 20 – Toxics Monitoring Network**

Toxics - VOC														
Site ID	Site Name	County	City	Address	Monitor Type (Network)	Start Date	Operating Schedule	Monitoring Method	Scale	Monitoring Objective	Latitude	Longitude	CBSA	Site Change Proposed?
180190009	Clarksville	Clark	Clarksville	Falls of the Ohio SP, 201 W. Riverside Dr.	OTHER	03/05/08	6-Day	126,150	Neigh	Pop Exp	38.276557	-85.763791	Louisville/Jefferson County, KY-IN	No
180890006	East Chicago - Franklin Sch.	Lake	East Chicago	Washington (formerly Franklin) School, Alder & 142nd St.	OTHER	07/01/26	6-Day	126,150	Neigh	Pop Exp	41.636675	-87.441143	Chicago-Naperville-Elgin, IL-IN-WI	No
180890022	Gary - IITRI	Lake	Gary	IITRI Bunker, 201 Mississippi St.	OTHER	01/01/99	6-Day	126,150	Middle	Pop Exp	41.606563	-87.305015	Chicago-Naperville-Elgin, IL-IN-WI	No
180890034	East Chicago-Marina	Lake	East Chicago	East Chicago Marina, 3301 Aldis St.	OTHER	10/25/12	6-Day	126,150	Neigh	Pop Exp	41.653446	-87.435435	Chicago-Naperville-Elgin, IL-IN-WI	No
180890034	East Chicago-Marina	Lake	East Chicago	East Chicago Marina, 3301 Aldis St.	OTHER	1/1/2021	1-Hour Benzene	134	Neigh	Pop Exp	41.653446	-87.435435	Chicago-Naperville-Elgin, IL-IN-WI	No
180890035	Whiting - Center St.	Lake	Whiting	1500 Center St. (H.S. Admin. Bldg.)	OTHER	01/01/16	6-Day	126,150	Neigh	Pop Exp	41.681393	-87.490233	Chicago-Naperville-Elgin, IL-IN-WI	No
180892008	Hammond - 141st St.	Lake	Hammond	1300 E. 141st St.	OTHER	02/01/89	6-Day	126,150	Neigh	Pop Exp	41.639444	-87.493611	Chicago-Naperville-Elgin, IL-IN-WI	No
180970078	Indpls - Washington Park	Marion	Indianapolis	Washington Park, 3120 E. 30th St.	OTHER	04/18/99	6-Day	126,150	Neigh	Pop Exp	39.810833	-86.114444	Indianapolis-Carmel-Anderson	No
180970078	Indpls - Washington Park	Marion	Indianapolis	Washington Park, 3120 E. 30th St.	OTHER SLAMS (NEAR ROAD)	01/01/22	6-Day	126,150	Neigh	Quality Assurance	39.810833	-86.114444	Indianapolis-Carmel-Anderson	No
180970087	Indpls - I-70 E	Marion	Indianapolis	1650 Ludlow Ave.	OTHER SLAMS (NEAR ROAD)	01/01/16	6-Day	126,150	Middle	Source Oriented	39.787933	-86.130880	Indianapolis-Carmel-Anderson	No
181270024	Ogden Dunes	Porter	Ogden Dunes	Water Treatment Plant, 84 Diana Rd.	OTHER	08/15/98	6-Day	126,150	Neigh	Pop Exp	41.617814	-87.199533	Chicago-Naperville-Elgin, IL-IN-WI	No
181630024	Evansville - Oak Hill	Vanderburgh	Evansville	1400 E Virginia St	OTHER	03/01/25	6-Day	126,150	Neigh	Pop Exp	37.988696	-87.531434	Evansville, IN-KY	No

*MONITORING METHOD: 126 - CRYOGENIC PRECONCENTRATION GC/FID DETECTION  
 134 - SEMI-CONTINUOUS ANALYZER GC/PID  
 150 - CRYOGENIC PRECONCENTRATION GC/MS*

## **Metals**

### **Monitoring Requirements**

There are no requirements for metals monitoring listed in 40 CFR Part 58.

### **Monitoring Methodology**

Metals data are collected using a TSP sampler. The samples are collected on high purity glass microfiber filters for a 24-hour period according to an every-sixth-day sampling schedule. Filters are analyzed using the ICP/MS method.

### **Monitoring Network**

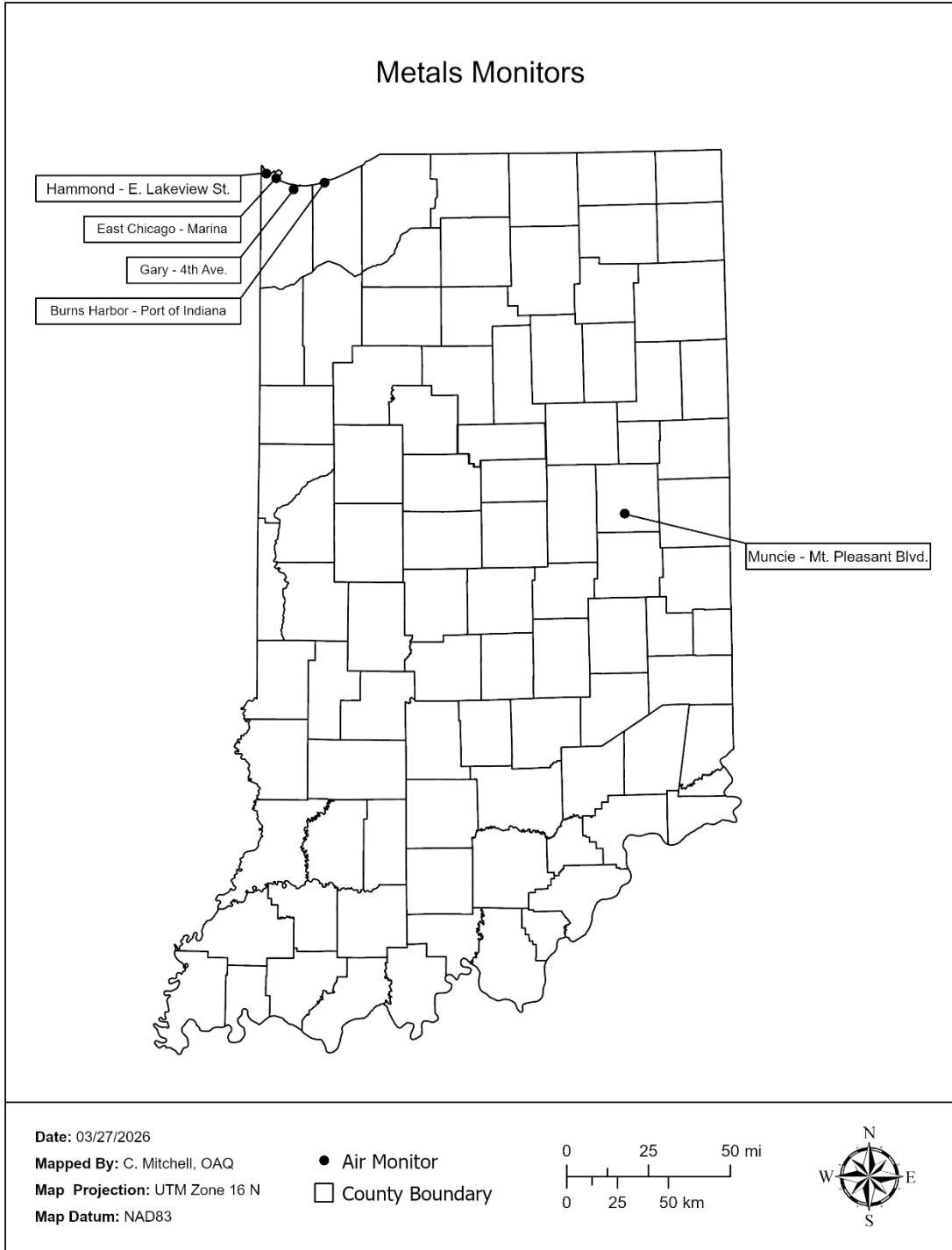
All the metal's sites will be analyzed for the following metals: arsenic, aluminum, beryllium, cadmium, chromium, manganese, and nickel.

The metals sites are detailed in Table 21 and shown in Figure 16.

### **Network Modifications**

There are no planned network modifications for 2027.

Figure 16 – Metals Monitoring Network





## Meteorological Monitoring

### Monitoring Requirements

Meteorological monitoring is generally not required for SLAMS, however meteorological monitoring data support the suitability of the site along with other data sets. Many factors determine the amount and types of meteorological data that are collected in Indiana. Some of the factors include the intended use of the data and the availability of representative meteorological data that is already being collected by the National Weather Service in any given area of interest. Meteorological monitoring is required at two types of sites: NCore and PAMS. 40 CFR Part 58 Appendix D §3(b) specifies that at a minimum wind speed, wind direction, relative humidity, and outdoor temperature be measured at NCore sites. Meteorology measurements are required at PAMS according to 40 CFR Appendix D §5. The required meteorological measurements are as follows; hourly averaged outdoor temperature, hourly vector-averaged wind direction, hourly vector-averaged wind speed, hourly average barometric pressure, hourly averaged relative humidity, hourly precipitation, hourly averaged mixing height, hourly averaged solar radiation and hourly averaged ultraviolet radiation.

The near-road NO<sub>2</sub> monitoring sites do not require meteorological monitoring according to 40 CFR Part 58. However, meteorological monitoring is listed as a recommended Primary Priority in the Near-Road NO<sub>2</sub> Monitoring TAD. U.S. EPA suggests (at a minimum) to monitor wind speed, wind direction, outdoor temperature and relative humidity. If possible, other measurements such as precipitation, solar radiation and barometric pressure (among others) should be considered as well.

### Monitoring Methodology

Monitoring sites in Indiana use a number of different sensors to record meteorological conditions. For wind data collection there are four sites with RM Young 3D Ultrasonic wind units. These sites are Gary – IITRI (180890022), Mechanicsburg (180650003), Indianapolis – I-70 E (180970087) and St. Philips (181290003). The remainder of sites collect wind data with RM Young 2D Ultrasonic wind units.

One instrument collects both Outdoor Temperature and Relative Humidity data at each site where these parameters are collected. The RM Young model 41372VF is currently in use. It uses platinum RTD for temperature and a Rotronic Hygromer® for humidity detection.

There are several different types of Barometric Pressure sensors deployed throughout the network. The manufacturers are Novalynx, Met One and RM Young but the technology used in each is a similar electronic barometer with a lower level of 500 millibars and an upper level of 1100 millibars.

Solar Radiation data are collected at two sites in Indiana with one type of precision spectral pyranometer, model PSP, manufactured by The Eppley Laboratory, Inc. Ultraviolet Radiation data are also collected at the same two sites with one type of Total Ultraviolet Radiometer, model TUVR, also manufactured by The Eppley Laboratory, Inc.

Precipitation data are collected at two sites in Indiana with one type of tipping bucket rain gauge, model 52202-E, manufactured by RM Young.

Mixing height is collected with a Vaisala CL51 at Indianapolis – Washington Park (180970078) PAMS. U.S. EPA is ensuring that the mixing height data is extracted properly from the ceilometer data files and reported to AQS.

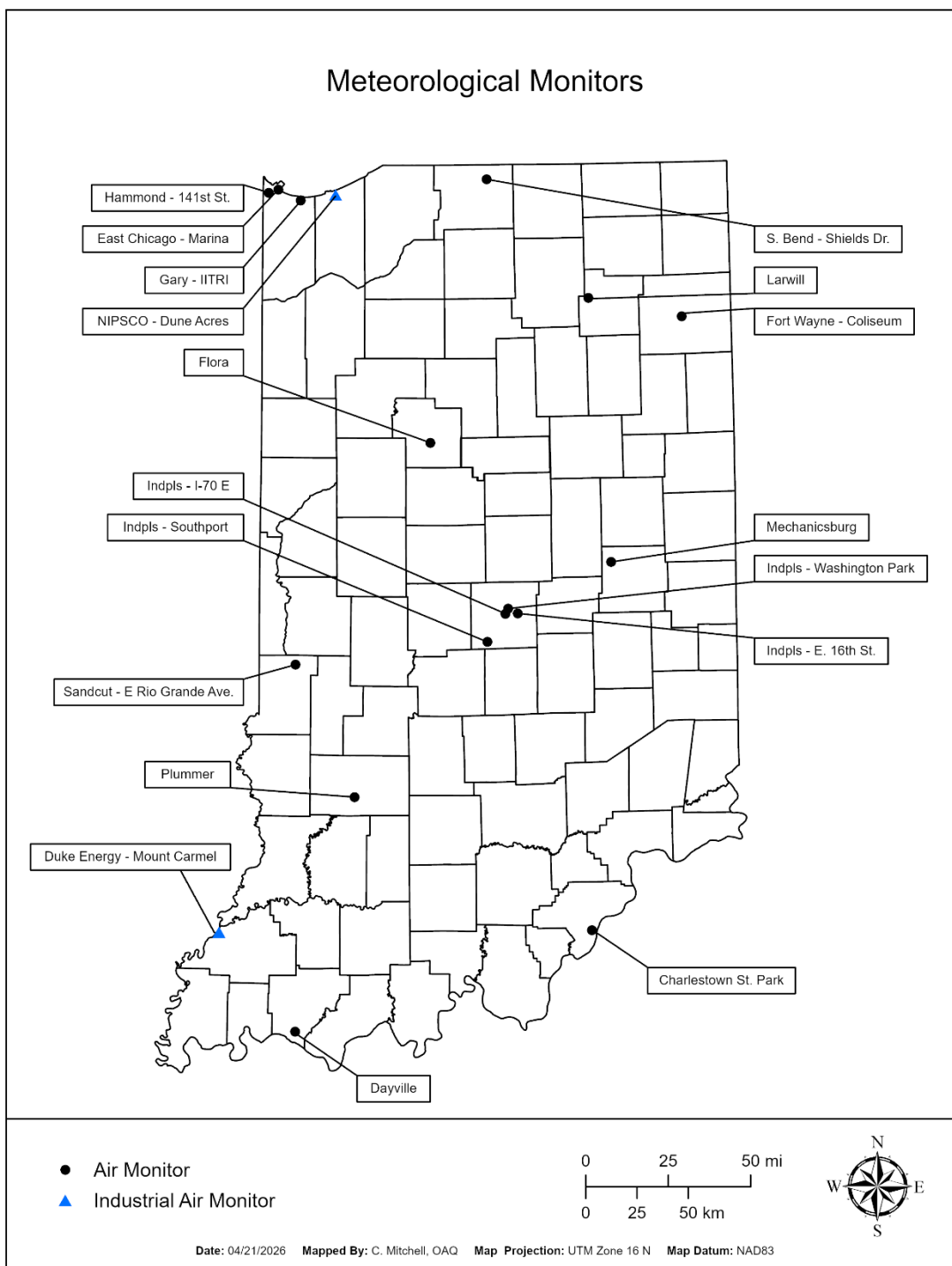
## **Monitoring Network**

Figure 17 shows meteorological data are to be collected at 17 sites across Indiana in 2027. Sites are established to provide coverage in all areas of the state where pollutant monitoring is conducted. Table 22 details the meteorological sites and the parameters collected. Included in Table 22 are two Industrial meteorological sites in support of SO<sub>2</sub> monitoring.

## **Network Modifications**

There are no network changes proposed in 2027.

**Figure 17 – Meteorological Monitoring Network**



**Table 22 – Meteorological Monitoring Network**

Meteorological Parameters by Site																
PQAO: 0520 REPORTING AGENCY: Indiana Department of Environmental Management																
Site ID	Site Name	County	City	Address	Monitor Type (Network)	Latitude	Longitude	61103/ 61104	62201	64101	62101	63302	63301	65102	61301	
								WS / WD	RH	Baro Press	Outside Temp	UV Rad	Solar Rad	Precip	Ceilmeter Mixing Height	Site Change Proposed?
170230001	West Union	Clark Co., IL	West Union	416 S. St. Hwy 1	OTHER	39.210857	-87.668297	■	■	■	■					No
180030015	Fort Wayne - Coliseum	Allen	Fort Wayne	707 N. Coliseum	OTHER	41.081864	-85.088313	■	■	■	■					No
180150002	Flora	Carroll		Flora Airport, 481 S. 150 W	OTHER	40.540455	-86.553035	■	■	■	■					No
180190008	Charlestown State Park	Clark		Charlestown State Park, 12500 Hwy 62	OTHER	38.393823	-85.664118	■	■	■	■					No
180550001	Plummer	Greene		2500 S. 275 W	OTHER	38.985556	-86.990000	■	■	■	■					No
180650003	Mechanicsburg	Henry		Shenandoah HS, 7354 W. Hwy. 36	OTHER	40.009544	-85.523470	■	■	■	■					No
180890022	Gary - IITRI	Lake	Gary	IITRI Bunker, 201 Mississippi St.	SLAMS	41.606563	-87.305015	■	■	■	■	■	■	■		No
180890034	East Chicago-Marina	Lake	East Chicago	East Chicago Marina, 3301 Aldis St.	OTHER	41.653446	-87.435435	■	■	■	■					No
180892008	Hammond - 141st St.	Lake	Hammond	1300 E. 141st St.	OTHER	41.639444	-87.493611	■	■	■	■					No
180970073	Indpls - E. 16th St.	Marion	Indianapolis	6125 E. 16th St.	OTHER	39.789167	-86.060833	■								No
180970078	Indpls - Washington Park	Marion	Indianapolis	Washington Park, 3120 E. 30th St	SLAMS (NCORE/PAMS)	39.810833	-86.114444	■	■	■	■	■	■	■	■	No
180970086	Indpls - Southport	Marion	Indianapolis	Southport Wastewater Treatment Plant, 3800 W. Southport Rd	OTHER	39.664498	-86.234898	■								No
180970087	Indpls - I-70 E	Marion	Indianapolis	1650 Ludlow Ave.	SLAMS (NEAR ROAD)	39.787933	-86.130880	■	■	■	■					No
181410015	South Bend - Shields Dr.	St Joseph	South Bend	2335 Shields Dr.	OTHER	41.696667	-86.214722	■	■	■	■					No
181730011	Dayville	Warrick		3488 Eble Rd., Newburgh	OTHER	37.954444	-87.321667	■	■	■	■					No
181830003	Larwill	Whitley		Whito Middle School, 710 N. State Rd. 5	OTHER	41.169722	-85.629444	■	■	■	■					No
PQAO: 1324 REPORTING AGENCY: Duke Energy																
171850001	Duke Energy - Mount Carmel	Wabash, IL		Division St.	INDUSTRIAL	38.397789	-87.773853	■								No
PQAO: 0235 REPORTING AGENCY: Cleveland Cliffs																
181270011	NIPSCO - Dune Acres	Porter	Dunes Acres	246 Bailey Station Rd.	INDUSTRIAL	41.634104	-87.101452	■	■		■					No

## Appendix A - Comment Submittal Information

The 2027 Ambient Air Monitoring Network Plan is posted on the IDEM website at <https://www.in.gov/idem/airmonitoring/indianas-ambient-air-monitoring-network/> for review and comment for thirty (30) days. The Plan will be posted from May 22 to June 21, 2026.

Comments should be emailed to:

Neil Deardorff ([ndeardor@idem.IN.gov](mailto:ndeardor@idem.IN.gov))

Or mailed to:

Neil Deardorff  
IDEM/OAQ/AMB  
2525 North Shadeland Avenue  
Ste 100  
Indianapolis, IN 46219

Or faxed to: (317) 308-3239

## Appendix B

### Air Quality Analysis

## Lead Monitoring Waiver Modeling for Crane Crane, Indiana (Martin County)

### Purpose

This study is a periodic evaluation of Crane Division, Naval Surface Warfare Center (Crane) air quality impact upon the Lead (Pb) National Ambient Air Quality Standard (NAAQS of 0.15 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) based on a rolling three-month average. Air dispersion modeling will determine whether the maximum modeled Pb impacts would trigger the need for ambient air lead monitoring. Historically, Crane's reported Pb emissions were above 0.5 tons per year (TPY) and air dispersion modeling was conducted to determine Pb impacts in the area. Those previous modeling results indicated modeled impacts were below the Pb NAAQS and no monitoring was required.

Crane is located at 300 Highway 361 near Crane, Martin County, IN, (Source ID 101-00005), a stationary military base where ammunition, rockets and other military ordnance are manufactured, stored and disposed of. This facility covers 62,460 acres, consisting of seven sources of lead on the property.

Monitoring waivers may be granted if the state can demonstrate the source will not contribute to a maximum Pb concentration in ambient air in excess of 50% of the NAAQS, per 40 Code of Federal Register (CFR) Part 58 Appendix D, Section 4.5. The Office of Air Quality (OAQ) conducted dispersion modeling to make this demonstration and found the maximum modeled impacts to be less than 50% of the Lead NAAQS of 0.15  $\mu\text{g}/\text{m}^3$  for a 3-month rolling average.

### Air Quality Impact Objectives

The purpose of the air quality impact analysis is to accomplish the following objectives. Each objective is individually addressed in this document in each section outlined below.

- A. Provide analysis of the meteorological data used, a description of the model used in the analysis, and the receptor grid utilized for the analyses.
- B. Establish the maximum modeled impacts from Crane on the 3-month rolling average Lead NAAQS to determine whether ambient air lead monitoring is required or not.

### Air Quality Modeling Parameters

#### Air Dispersion Model

OAQ used the most recent version of American Meteorological Society Environmental Protection Agency Regulatory Model (AERMOD) (Version 24142) for its review of the air quality analysis to determine maximum off-property impacts for Lead. AERMOD is U.S. EPA's preferred near field dispersion model. OAQ utilized all regulatory default options in the U.S. EPA approved model, as listed in the 40 CFR Part 51, Appendix W "Revision to the Guideline on Air Quality Models", dated November 20, 2024, otherwise known as Appendix W.

## Receptor Grid

A 25 kilometer receptor grid was placed over the stationary military base with more fine receptor placement along the property boundary for this air quality analysis. Ground-level concentrations were calculated within the grid and discrete Cartesian receptors to determine the location of the maximum estimated impacts of Pb from reported emissions from Crane.

## Treatment of Terrain

Receptor terrain elevation inputs were interpolated from National Elevation Dataset (NED) data obtained from the U.S. Geological Survey (USGS). NED terrain data was preprocessed using AERMAP. The area surrounding Crane is considered rural as terrain is predominantly hilly and forested surrounded by a mixture of undeveloped land, residences, and farmland.

## Meteorological Data

Meteorological data used for the air quality analysis for lead waiver modeling consisted of surface meteorological data from the Evansville Airport National Weather Service (NWS) Automated Surface Observing System (ASOS) station merged with the upper air data from the Lincoln, Illinois NWS station from 2020 through 2024. Additionally, the 1-minute ASOS wind speed and wind direction data were processed with the AERMINUTE preprocessor version 15272. OAQ preprocessed all meteorological data with regulatory defaults into an AERMOD ready format using U.S. EPA's meteorological preprocessor, AERMET Version 24142.

## Modeling Analysis and Results

An air quality analysis was conducted for Lead, expressed in micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ), from the Crane facility to determine if Pb ambient monitoring is necessary. Emissions from each applicable emission units were modeled over the most current 5 years of processed meteorological data in order to match the highest emissions with the hourly meteorological conditions. Lead emissions from facilities of a sufficient size are reviewed for air quality impacts every 5 years. The lead emissions for the Crane facility are displayed below in Table 1. These emissions represent actual reported lead emissions from 2024 and were allocated based on the source's 2024 emission statement and the source's most recent permit.

**TABLE 1**  
**Crane Modeled Emission Rates for Lead**

SOURCE	EMISSION POINT	SOURCE EMISSION RATE (T/yr)
Crane	Furnaces/Boilers (CONDETCH)	0.0001
	Open Burning/Open Detonation (MPTS)	0.2975
	Hazardous Waste Combustor (INCINP03)	0.0002
	Ordinance Demolition (OD)	0.2975
	Ammunition Burning Ground (ABR)	0.2975
	Old Rifle Range (ORR)	0.2975
	Propellant Recovery Line (PROPRECLINE)	0.0203
	<b>Total</b>	<b>1.21</b>

In determining the maximum modeled impacts, the highest 1<sup>st</sup> high concentration for Lead at a monthly averaging time period was calculated for each year for a conservative estimate of the modeled impacts. Table 2 shows the monthly averaged concentrations that are compared to the Lead NAAQS of 0.15 µg/m<sup>3</sup>, calculated on a rolling 3-month averaging period. Cranes's highest monthly impact for the five-year modeled period was 0.0098 µg/m<sup>3</sup> in 2024. A 3-month rolling average impact would be lower than the monthly impact, therefore the monthly impacts are considered conservative in nature and protective of the Lead NAAQS.

**TABLE 2**  
**Lead Modeling Impacts**

Modelled Year	TIME AVERAGING PERIOD	MAXIMUM MONTHLY MODELED IMPACTS (µg/m <sup>3</sup> )	Percent of Lead Standard
2020	1-month	0.00629	4.2%
2021	1-month	0.00746	5.0%
2022	1-month	0.00737	4.9%
2023	1-month	0.00701	4.7%
2024	1-month	0.00984	6.6%

### Summary of Results

Crane Division, Naval Surface Warfare Center (Crane) is a stationary military base where ammunition, rockets and other military ordnance are manufactured, stored and disposed. Crane is located at 300 Highway 361 near Crane, Martin County, Indiana. Air dispersion modeling conducted with the 2024 reported Pb emissions from Crane resulted in maximum impacts that were 6.6% or lower than the Pb NAAQS of 0.15 µg/m<sup>3</sup>. Since the modeled impacts from lead emissions from the Crane facility did not exceed 50% of the Lead NAAQS, per 40 CFR Part 58 Appendix D, Section 4.5, no further evaluation is necessary. Therefore, IDEM is requesting that U.S. EPA grant the lead monitoring waiver from the requirement to monitor Pb near Crane to characterize air quality in the surrounding area.