CARE-4-AIR

SITE 2 REPORT: UNICOI COUNTY, TN

Blue Ridge Environmental Defense League

Enhanced Air Quality Monitoring for Communities

EPA-OAR-OAQPS-22-01
Grant ID: 5X02D46123

Therese Vick and
Mark Barker

January 2026

A1: Title and Preparer Page

Project Name: CARE-4-AIR: BREDL Air Guardians

Effective Date of Plan: July 1, 2023

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A2: Executive Summary

Between June and October 2025, the Blue Ridge Environmental Defense League (BREDL) deployed the BREDL Environmental Air Sampling Trailer (BEAST) to Site 2 to evaluate local ambient air quality. The primary objective was to characterize pollutant concentrations in a community situated near industrial emission sources and to screen this primary data against regional agency monitors to determine the adequacy of the existing monitoring network. The primary focus was the Summers-Taylor Asphalt plant. However, there are other local and regional influences on air quality.

Technical Highlights and Operations:

The project utilized a suite of EPA-approved Federal Equivalent Method (FEM) and Federal Reference Method (FRM) instruments, housed within a secure, mobile monitoring trailer. This ensured accuracy and reliability of the data. Instrumentation included:

- Teledyne API Model T640 PM Mass Monitor: This FEM instrument measured Particulate Matter (PM), specifically PM2.5 (fine particles, 2.5 micrometers or less in diameter) and PM10 (inhalable particles, 10 micrometers or less). The T640 provides near real-time, highly accurate measurements using dual-channel technology.
- Teledyne API Model T200 Nitrogen Oxides Analyzer: An FRM instrument used to measure Nitric Oxide (NO), Nitrogen Dioxide (NO2), and total Nitrogen Oxides (NOx). These are common pollutants often associated with combustion processes.
- Aeroqual AQS-1 VOC Monitor: This device measured Total Volatile Organic Compounds (VOCs), which are a group of chemicals that can include known carcinogens and contribute to ground-level ozone formation. The report notes that this monitor provided a general measure of total VOCs rather than individual compound identification. The AQS-1 uses “near reference” to EPA-approved monitoring.

Meteorological Correlation: High-resolution wind and pollution rose diagrams were generated using Vaisala WXT 530 data to correlate pollutant spikes with wind direction, specifically focusing on the Summers-Taylor Asphalt Plant as a potential point source.

Quality Control & Maintenance: To ensure instrument accuracy and baseline stability, the team performed a "Hot Swap" of the VOC module for factory recalibration. Corrective actions were also taken to address PM mass monitor pump degradation and a manual system reboot following a three-hour utility power interruption.

Data Integrity: The project successfully maintained a data recovery rate exceeding the 75% required EPA completeness threshold. Data was reviewed by the Project Quality Assurance Manager (QAM). The validated data from Site 2 was screened against National Ambient Air Quality Standards (NAAQS) and will be released to the public to inform local remediation efforts and agency policy decisions.

Community Advocacy:

Training was provided to the Unicoi Clear chapter on trailer operations and data interpretation.

We will also be sharing a fact sheet related to this site.

Recommendations and Future Actions

Based on the preliminary analysis of the monitoring data and the technical challenges encountered during the Site 2 deployment, BREDL proposes the following actions:

- **Long-Term Community Monitoring:** Given that the nearest agency monitors may not capture localized "spikes" identified by the BEAST, BREDL recommends that state and federal agencies evaluate the need for a permanent, continuous monitoring station in Unicoi County to better protect underserved residential areas near industrial point sources.

BREDL wishes to express our appreciation to the site host and chapter members.

A3: Email Distribution List

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A4: Table of Contents

A5: Glossary[1]

AQI - The EPA AQI (Air Quality Index) is a tool used by the EPA to communicate daily air quality to the public. It provides a scale (0-500) that indicates how polluted the air is, with higher values representing greater pollution and health concerns. The AQI is based on the levels of five major pollutants: ground-level ozone, particle pollution, carbon monoxide, nitrogen dioxide, and sulfur dioxide.

Criteria pollutant – EPA, as required by the Clean Air Act, has listed six commonly found air pollutants as criteria air pollutants. These six are ozone, particulate matter, carbon monoxide, lead, sulfur dioxide, and nitrogen dioxide.

Data Acquisition System – The DAS is an essential tool that collects and processes data from various sources.

NAAQS - The Clean Air Act requires EPA to set National Ambient Air Quality Standards for six principal pollutants ("criteria" air pollutants) which can be harmful to public health and the environment.

NO - Nitric oxide is a colorless gas with the formula NO. It is one of the principal oxides of nitrogen. Nitric oxide is a free radical: it has an unpaired electron. An important intermediate in industrial chemistry, nitric oxide forms in combustion systems and can be generated by lightning in thunderstorms.

NO2 - Nitrogen dioxide (NO2) is a reddish-brown, pungent gas that is a key component of air pollution, particularly in urban areas. It's a member of the nitrogen oxides family (NOx) and forms when nitrogen and oxygen react, often during combustion processes like burning fossil fuels. NO2 is a highly reactive gas that contributes to the formation of smog, acid rain, and other air pollutants, and it can also irritate the respiratory system.

NOx - NOx is shorthand for nitric oxide (NO) and nitrogen dioxide (NO2), the nitrogen oxides that are most relevant for air pollution. These gases contribute to the formation of smog and acid rain, as well as affecting tropospheric ozone. NOx gases are usually produced from the reaction between nitrogen and oxygen during combustion of fuels, such as hydrocarbons, in air; especially at high temperatures, such as in car engines. In areas of high motor vehicle traffic,

[1] Definitions provided by a combination of sources: U.S. EPA, Google AI, and Wikipedia

such as in large cities, the nitrogen oxides emitted can be a significant source of air pollution. NOx gases are also produced naturally by lightning.

PM 2.5 - Particulate matter, or PM, is the term for particles found in the air, including dust, dirt, soot, smoke, and liquid droplets. Particles less than 2.5 micrometers in diameter (PM2.5) are referred to as "fine" particles and are believed to pose the greatest health risks among particulates. Because of their small size (approximately 1/30th the average width of a human hair), fine particles can lodge deeply into the lungs.

PM 10 - Particulate matter, or PM, is the term for particles found in the air, including dust, dirt, soot, smoke, and liquid droplets. PM10 describes inhalable particles, with diameters that are generally 10 micrometers and smaller. PM10 is referred to as coarse particulates. PM10 and PM2.5 often derive from different emissions sources, and also have different chemical compositions.

Pollution Rose - A pollution rose is a diagram that illustrates how wind direction correlates with pollutant concentrations at a specific location. It's similar to a wind rose, but instead of showing wind speed, it depicts pollutant levels associated with different wind directions. This helps visualize the impact of wind on pollutant dispersion and identify potential source directions. In this report, all pollution rose directions indicate the direction the wind is blowing from.

Prescribed Burn - The practice of intentionally setting a fire to change the assemblage of vegetation and decaying material in a landscape for forest management, ecological restoration, land clearing, or wildfire fuel management purposes.

QAPP – The Quality Assurance Project Plan is a required EPA technical document. The QAPP is a formal planning document which describes how environmental information operations are planned, implemented, documented, and assessed during the life cycle of a project.

SOP - Each air monitoring unit requires Standard Operating Procedures. The SOP document outlines step by step procedures for various equipment functions.

VOC - VOC is an abbreviation for volatile organic compounds. They are carbon-based substances that readily evaporate under normal air pressure and are commonly found in indoor and outdoor environments. These compounds can be harmful to human health and contribute to air pollution, particularly smog formation.

Wind Rose - A wind rose gives a diagram view of how wind speed and direction are typically distributed at a particular location. Presented in a circular format, the wind rose shows the frequency of winds blowing from particular directions. In this report, all wind roses directions indicate the direction the wind is blowing from.

A6: Thanks

BREDL would like to thank the following for their assistance during this project:

- North Carolina Department of Environmental Quality
- North Carolina Department of Environmental Quality Division of Air Quality
- U.S. Environmental Protection Agency
- Zuber Farooqui, PhD, California Air Resources Board
- Wilbur Technical Services
- Our trailer site host
- Our chapter Unicoi Clear
- BREDL Executive Director and staff
- BREDL chapters, members and friends
- BREDL Board of Directors

A7: About

CARE-4-AIR Project

CARE-4-AIR is conducting monitoring of nitric oxide (NO), nitrogen dioxide (NO2), nitrogen oxides (NOx), particulate matter (PM2.5 and PM10), and volatile organic compounds (VOCs) as requested by our chapter organizations at six sites in Tennessee, North Carolina, South Carolina, Georgia, and Virginia. These sites are all currently subject to significant sources of air pollution, including: coal-burning power generation, wood-burning biomass gasification, industrial landfill, biochar production, wood pellet manufacturing, railroad operation, biomass plant operation, coal ash deposition, natural gas compressor stations, prescribed forest burning, and asphalt plants. Many of the affected communities are experiencing possible health impacts associated with air pollution generated by these industrial operations.

BREDL, through our technical contractor Wilbur Technical Services (WTS), is using a set of EPA-approved Federal Equivalent Method (FEM) air monitoring instruments including Teledyne API Model T640 PM Mass Monitor and the EPA-approved Federal Reference Method (FRM) Teledyne API Model T200 nitrogen oxides analyzer. We are also using the Aeroqual AQS-1 VOC monitor for total VOCs. Several units will work in conjunction with the pollutant analyzers. These include: Teledyne units T700U Gas Dilution Calibrator, T701H Zero Air Generator, Vaisala WXT 530 meteorological sensor and DR DAS Envidas Ultimate Data Acquisitions System.

These instruments are mounted inside a Pro-Line aluminum utility trailer. Two BREDL staff will analyze the data generated by this system and share the data and their analyses with participating BREDL chapters. BREDL staff will collaborate actively with the chapters in the planning and implementation of a broad spectrum of actions to seek remediation of air pollution found to be significant by CARE-4-AIR, including: public education campaigns; active participation in public commenting opportunities for permit applications, zoning appeals, and other administrative proceedings; active communication with local, state, and federal government agencies whose mission is the safekeeping of the environment and public health; and public demonstrations.

Funding for this project has been provided by U.S. Environmental Protection Agency and Blue Ridge Environmental Defense League.

Community Site Assessment

CARE-4-AIR will serve our selected chapter organizations in the southeastern U.S., providing on-site, real-time air quality monitoring and assistance with data storage, data interpretation, data analysis, and the design, organization, and implementation of environmental protection campaigns to ameliorate the air quality problems identified through the use of the Wilbur Technical Services designed trailer. BREDL's chapter organizations are community-based grassroots organizations located in areas affected by large-scale industrial projects which threaten the communities' air, water, soil, natural environment, and quality of life.

BREDL has been working with our chapter partners since January 2022 on securing the sampling locations for our CARE-4-AIR monitoring project. With one possible exception, BREDL is working with community-based organizations who are also chapters of the BREDL 501(C)3 nonprofit organization.

Originally, we planned to include up to 12 host sites for our project. EPA concerns regarding the timespan of data collection at each site has reduced the number of host sites to six. Non-selected sites will be placed on a waiting list.

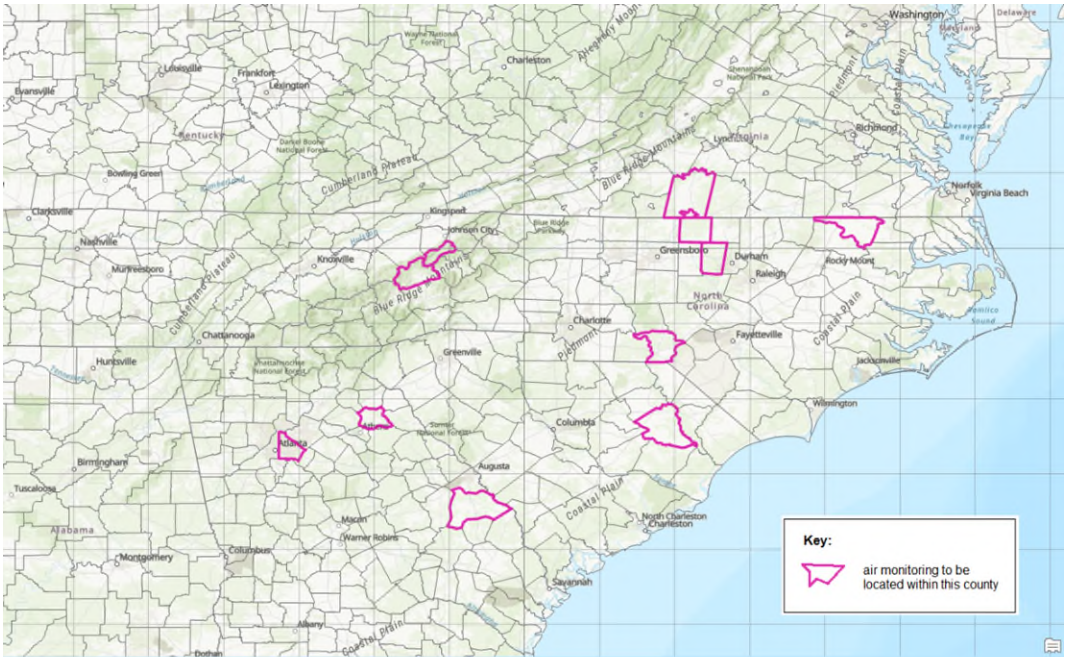


Figure A7-1: Potential locations for air monitoring

Air Monitoring Trailer

The BREDL CARE-4-Air project utilizes a Pro-Line 8’ long x 7’ wide x 7’ tall, flat front mobile aluminum cargo trailer containing state of the art air monitoring equipment to collect ambient air concentrations of PM2.5, PM10, NO_2, NO, NOx, and total VOCs. The equipment is powered by a standard RV 30-amp receptacle. The trailer includes surge protection and a UPS battery backup for the onboard computer. Trailer equipment will automatically reboot in case of power interruption. The installation of insulation, electrical wiring, equipment racks, equipment and associated tubing was overseen or completed by Wilbur Technical Services in New Hampshire.

A sampling inlet is located on the trailer’s roof to allow ambient air to flow into the air monitoring equipment inside the trailer.

Air Monitoring Equipment

The ambient air is analyzed by a Teledyne API Model T200 nitrogen oxides analyzer, designated as US EPA Federal Reference Method (FRM) for determining compliance with NO_2 National Ambient Air Quality Standards (NAAQS), a Teledyne API Model T640 PM Mass Monitor, designated as US EPA Federal Equivalent Method (FEM) for determining compliance with particulate matter mass concentration NAAQS, and an Aeroqual AQS-1 VOC module, which the manufacturer states can deliver data with very strong correlation to EPA-approved monitors – ‘Near Reference’. The Teledyne API Model T200 nitrogen oxides analyzer is officially designated as US EPA Federal Reference Method (FRM), Designation Number RFNA-1194-099. The Teledyne API Model T640 PM Mass Monitor is officially designated as US EPA Federal Equivalent Method (FEM) for determining compliance with particulate matter mass concentration National Ambient Air Quality Standards (NAAQS). The US EPA designation number for 5.0 LPM Model T640 monitor (PM2.5) is EQPM-0516-236. Note that T640 is FEM for PM 2.5 only. The T640 PM 10 measurement is not FEM.

The Teledyne API T200 measures the amount of NO present in a gas by detecting the chemiluminescence which occurs when nitrogen oxide (NO) is exposed to ozone (O3). This reaction is a two-step process. In the first step, one molecule of NO and one molecule of O3 collide and chemically react to produce one molecule of oxygen (O2) and one molecule of nitrogen dioxide (NO2). Some of the NO2 molecules created by this reaction retain excess energy from the collision and exist in an excited state, where one of the electrons of the NO2 molecule resides in a higher energy state than normal. This chemical reaction is illustrated by the following equation:

Where:

$$NO + O3 \rightarrow NO2 + O2 + hv$$

hv = emitted photon energy

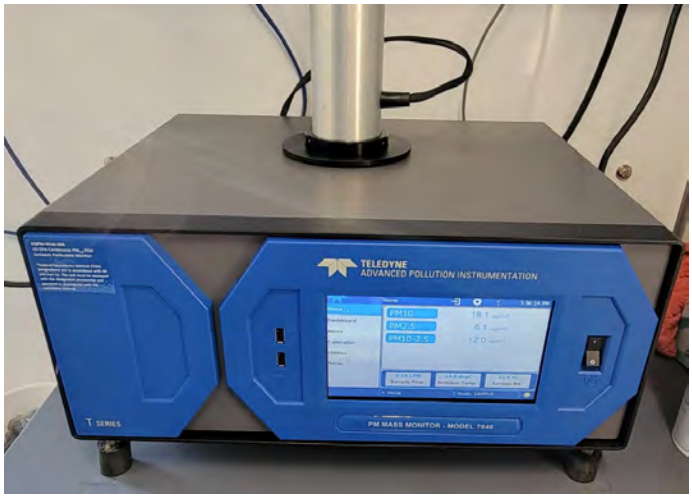
The reaction results in electronically excited NO2 molecules which revert to their ground state, resulting in an emission of light or chemiluminescence.

To determine the concentration of NO, the sample gas is blended with O3 in a reaction chamber causing the reaction to occur. The chemiluminescence that results from the reaction is monitored by an optically filtered high-sensitivity photomultiplier. The optical filter and photomultiplier respond to light in a narrow-wavelength band unique to the NO and O3 reaction. The electronic signal produced in the photomultiplier is proportional to the NO concentration.

The only gas that is actually measured by the T200 is NO. NO2, and therefore NOx (which is defined here as the sum of NO and NO2 in the sample gas), contained in the gas is not detected because NO2 does not react with O3 to create chemiluminescence. To measure the concentration of NO2, and therefore the concentration of NOx, the T200 periodically switches the sample gas stream so that the pump pulls it through a special converter cartridge filled with molybdenum (Mo, “moly”) chips that are heated to a temperature of 315°C.[2]

[2] Preceding related paragraphs were copied or paraphrased from 083730200B DCN8137, Teledyne API, User Manual, Models T200 and T200 U, NO/NO2/NOx Analyzers, June 17, 2019

The Teledyne API Model T640 is a real-time, continuous particulate matter (PM) mass monitor that uses scattered light spectrometry for measurement; specifically, it employs broadband spectroscopy using 90° white-light scattering with a polychromatic light-emitting diode (LED).



The Model T640 PM Mass Monitor is an optical aerosol spectrometer that converts optical measurements to mass measurements by determining sampled particle size via scattered light at the single particle level according to Lorenz-Mie Theory. In brief, the sampling head draws a representative sample of ambient aerosol at a flow rate of 5 lpm. The aspirated particles are then dried (i.e., brought below 35% RH) with the Aerosol Sample Conditioner (ASC) and moved into the optical particle sensor where scattered light intensity is measured to determine particle size diameter. The particles move separately into the T-aperture through an optically differentiated measurement volume that is homogeneously illuminated with polychromatic light. The polychromatic light source, an LED, combined with a 90° scattered light detection, achieves a precise and unambiguous calibration curve in the Mie range, resulting in a large size resolution.

Each particle generates a scattered light impulse that is detected at an 85° to 95° angle where amplitude (height) and signal length are measured; the amplitude of the scattered light impulse is directly related to the particle size diameter. The T-aperture and simultaneous signal length measurements eliminate border zone error, which is characterized by the partial illumination of particles at the border of the measurement range.[3]

The Aeroqual AQS-1 VOC analyzer module continuously measures volatile organic compounds (VOCs) and gases in ambient air.

[3] Preceding related paragraphs were copied or paraphrased from 08354C DCN8394, Teledyne API, User Manual, Model T640, PM Mass Monitor, April 20, 2021

Air is actively sampled by pump and travels through a glass and Teflon coated inlet system to the analyzer module. This module incorporates photo-ionization detector (PID) sensor technology. A long-life 10.6 eV deep UV lamp breaks VOCs down into positive and negative ions. The detector measures the current of the ionized gas, which is proportional to detectable VOCs. Automatic Baseline Correction promotes a stable zero and removes humidity effects. The VOC module is sensitive to a wide range of VOCs, including benzene and toluene.[4]

A Vaisala WXT 530 meteorological weather station is included in the air monitoring trailer. The measurement parameters include: Wind Speed and Direction, Pressure, Temperature, and Relative Humidity.

The transmitters use Vaisala WINDCAP sensor technology for wind measurement. The wind sensor has an array of three equally spaced ultrasonic transducers on a horizontal plane. The unit determines wind speed and wind directions by measuring the time it takes the ultrasound to travel from one transducer to the other two.

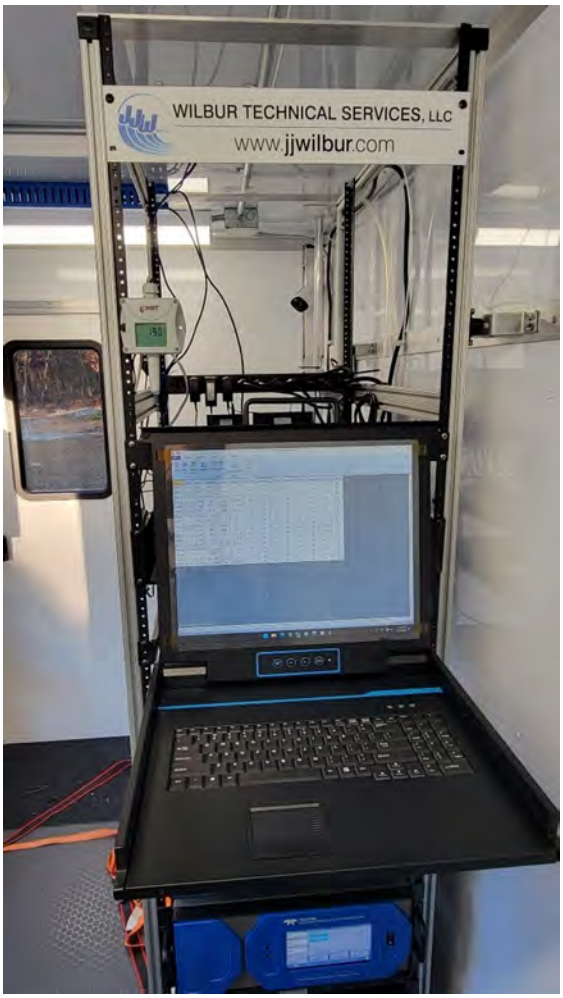
The wind sensor measures the transit time (in both directions) along the three paths established by the array of transducers. The transit time depends on the wind speed along the ultrasonic path. For zero wind speed, both the forward and reverse transit times are the same. With wind along the sound path, the up-wind direction transit time increases and the down-wind transit time decreases.

The Vaisala PTU module contains separate sensors for pressure, temperature, and humidity measurement.[5]

[4] Preceding related paragraphs were copied or paraphrased from MRK-D-0048 V4, Aeroqual, Dust Sentry/Pro/AQS User Guide, February 2019

[5] Preceding related paragraphs were copied or paraphrased from M211840EN-F, User Guide, Vaisala Weather Transmitter, WXT530 Series, 2022

Data Acquisition System



Data from the air monitoring equipment and weather station feed into a Dr. DAS ENVIDAS Ultimate central computer Data Acquisition System (DAS) for automatic logging. ENVIDAS is an intelligent, multi-function, high-performance state-of-the-air data acquisition and reporting system. Collected data is stored onboard the trailer in its central DAS computer and daily data reports are emailed via cellular phone data to a BREDL email address specifically setup to receive daily data and alerts for this project. The DR Envidas DAS system calculates hourly averages based on the minute readings. Daily data and reports, and any alerts, are emailed to a dedicated BREDL email address with emails stored on Purehost (now iPage after they purchased Purehost) servers. Emails are automatically forwarded to the project co-managers, which also serves as data backup. Data may also be viewed and collected manually either onsite or remotely. Data may be backed up on a flash drive during site visits. Remote access is via cellular phone network. Access to the computer and cellular phone account logins are restricted to Wilbur Technical Services, our contracted technical support, and CARE-4-Air project co-managers, Therese Vick and Mark Barker.

Primary Data

Appropriate protocols, as outlined throughout our QAPP and included SOPs, are followed to ensure the air monitoring trailer primary data integrity. Mark Barker, Project Operations Manager, oversees trailer maintenance and on-site responsibilities. Therese Vick, Project

Quality Assurance Manager, oversees data quality control. Collected raw data reports and alerts sent to our project's central email account are viewed by both Therese and Mark, as well as the current site chapter.

Existing Data

We have mapped the current EPA/State air monitors using ArcGIS. We determine the existing, permanent PM 2.5, PM 10 and NO_2 monitors that are nearest to our trailer site location for each of our selected sites. We download the hourly data for each monitor for the length of time the trailer is at that site. Using VBScripts we extract the data for the appropriate monitor and combine the hourly data into one spreadsheet. The existing data is screened with primary data.

Community Outreach

For each site, the raw data is emailed to a central BREDL email address housed on the Purehost.com servers. Those emails are automatically forwarded to those on the email address' forward list. This includes Therese Vick, Project QAM, Mark Barker, Project Ops Manager, and the site chapter representative. Raw data is not shared with the public. Verified data is data that has gone through quality control checks and will be made public once available. The data may be presented to the public at community meetings, through the press, and on our website. Per our EPA grant requirements, data must be released to the public.

Standing Operating Procedures

The equipment Standard Operating Procedures (SOPs) will be updated, as needed, by Mark Barker. Our SOPs are incorporated into our QAPP. Current approved printed copies of the QAPP and SOPs are stored on our air monitoring trailer for quick access. Electronic copies of our QAPP and SOPS, as well as equipment user manuals, are stored on a Google Drive for remote or field access as needed. They are also stored on the QAM and Ops Manager

computers. We have SOPs for Nitrogen Dioxide, Particulate Matter, Volatile Organic Compounds, Zero Air Generator, and Calibrator.

Equipment Maintenance, Calibrations, Quality Checks

Air monitoring trailer equipment maintenance is completed by the Ops Manager under the supervision of Wilbur Technical Services.

Remote calibrations are conducted by WTS. Onsite calibrations are conducted by the Ops Manager. The VOC "hot swap" factory calibration is completed by Aeroqual.

Quality checks are conducted by WTS, Ops Manager and QAM as outlined throughout our QAPP.

WTS uses programmed email alerts for percent error failure of an automated check. Upon failure, WTS performs a remote calibration of the equipment utilizing Numaview Remote program from Teledyne API.

Figure A7-2: Panoramic view inside our air monitoring trailer

The objective and goals of CARE-4-AIR

Objective

BREDL community-based chapters have been concerned about air quality issues related to facilities operating in their neighborhoods. We are focusing on particulates, nitrogen dioxide and total Volatile Organic Compounds (VOCs) as these pollutants are common with all the facilities and have well-documented adverse health impacts. These pollutants often have emission limits stated in air permits. Chapters want to increase community awareness and use the data to inform local, state, and federal agencies to improve the air quality in affected communities. High quality air monitoring instruments will be installed in a mobile trailer, which will operate for 4 to 5 months at each site selected for air monitoring. The instruments will measure PM 2.5, PM 10, NO2, NOx, NO and total VOCs.

Short-term Goals

- Identify contributing sources of air pollution, including particulates, nitrogen dioxide and VOCs, in our communities selected for air monitoring.
- Determine the extent to which the monitored pollutants reach unhealthy levels in communities in which air monitoring occurs.
- If the data results indicate potential impacts to air quality, BREDL will engage with air quality agencies, including EPA, and state and local governments to investigate and evaluate next steps.
- Compare air quality data with nearby air monitors for the same time period. The air monitor for each monitored criteria pollutant that is the closest in proximity to each of our sites will be used for data comparison. These agency monitors may be too far away to determine impacts to local ambient air. Data may indicate: (a) need for permanent air quality monitors in underserved communities; (b) need for change in background concentrations used for agency air modeling; and (c) potential need to enhance the EPA Air Now coverage in affected communities.
- Create educational fact sheets for the monitored pollutants and their health impacts on the local community.

- Bring attention to communities who may feel that their air quality concerns have been ignored by holding community meetings, press events, and agency meetings as warranted by monitoring results.
- Increase community participation in air quality decisions by attendance at local and state meetings and hearings. Additionally, help communities understand the complicated processes that may impact them such as zoning and permit actions. This can take many forms such as providing written comments on pending permits and policy decisions and speaking at public hearings.
- BREDL and our chapters will obtain a better understanding of air monitoring, data, analysis, and impacts, which will empower community members to become confident and involved with air quality issues in their area.
- Engage in community organizing to strengthen facility air permits.

Long-term Goals

- Reduction of air pollutant emissions, ambient air concentrations of pollution, and human exposure to air pollutants. This could be measured by better air pollution controls or less production throughput in air permits.
- Increase in the number of monitors used in the EPA/State air monitoring network to reach underserved communities.

A8: Time Period

BREDL began collecting data at Site 2 at 5 PM EST on June 9, 2025 and concluded at 8 AM EST on October 22, 2025 for about a 4.5 month period.

A9: Location

Site 2 Location: Unicoi County, Tennessee

There were multiple facilities of concern in the Unicoi County, Tennessee area. For this map, we chose to focus on the Summers-Taylor Asphalt Plant as the anchor point as indicated by the symbol in the center of the circle in Figure A9:1. Our air monitoring trailer was located within the highlighted circle.

Please note that references to site host names and specific site locations are redacted to protect the privacy of participants, security of the trailer and its equipment, and integrity of this project.

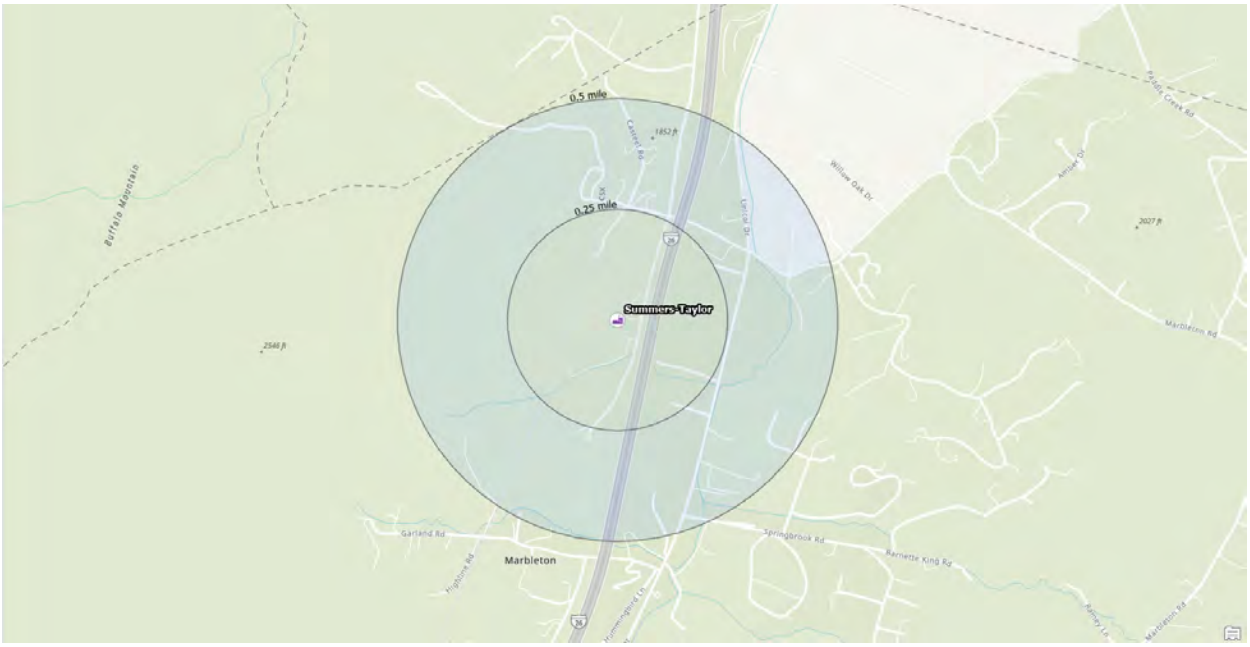


Figure A9:1: Our air monitoring trailer was located within the outer light blue ring

B1: Pollutants

Our BREDL Environmental Air Sampling Trailer (BEAST) is equipped to measure VOCs, PM 2.5, PM 10, NO2, NO, and NOx. Three of the six pollutants, which we monitored, are designated as criteria pollutants by U.S. EPA. PM 2.5, PM 10, and NO2 are criteria pollutants. According to the EPA, "criteria pollutants" are the six most common air pollutants for which National Ambient Air Quality Standards (NAAQS) are set by the agency to protect public health and welfare. These pollutants are: carbon monoxide, lead, ground-level ozone, nitrogen dioxide, particulate matter, and sulfur dioxide. The EPA regulates these pollutants by developing science-based guidelines (criteria) for setting permissible levels in the air.

Pollutant Regulatory Standards

Collected data for NO2, PM 2.5 and PM 10 will be screened for NAAQS comparison and to identify trends. VOC data will be used to identify trends and readings associated with specific sources – based on wind parameters.

"The Clean Air Act identifies two types of national ambient air quality standards. Primary standards provide public health protection, including protecting the health of 'sensitive' populations such as asthmatics, children, and the elderly. Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings."[6]

The newly revised 2024 primary PM 2.5 health standard[7] will be emphasized during this project. While the 24-hour standard remained the same at 35 ug/m^3, the annual standard became more stringent, changing from 12.0 ug/m^3 to 9.0 ug/m^3. The EPA Air Quality Index[8] (AQI) has also been adjusted for this new standard. The new PM 2.5 primary standard went into effect on May 6, 2024. Since we will be limited by remaining at site locations for less than a year, we will focus on the short-term Averaging Time NAAQS, not the annual NAAQS.

[6] https://www.epa.gov/criteria-air-pollutants/naaqs-table
[7] Ibid.
[8] https://www.airnow.gov/aqi-and-health/

Figure B1-1: NAAQS Table[9] for Project's Monitored Pollutants

Pollutant		Primary/Secondary	Averaging Time	Level	Form
Nitrogen Dioxide (NO2)		primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		primary and secondary	1 year	53 ppb	Annual Mean
Particle Pollution (PM)	PM2.5	primary	1 year	9.0 µg/m3	annual mean, averaged over 3 years
		secondary	1 year	15.0 µg/m3	annual mean, averaged over 3 years
		primary and secondary	24 hours	35 µg/m3	98th percentile, averaged over 3 years
	PM10	primary and secondary	24 hours	150 µg/m3	Not to be exceeded more than once per year on average over 3 years

Figure B1-2: Short-term Averaging Time NAAQS[10]

Pollutant	Type	Averaging Time	Concentration Level
NO_2	Primary	1-Hour	100 ppb
PM 2.5	Primary	24-Hour	35 ug/m^3
PM 10	Primary	24-Hour	150 ug/m^3

[9] https://www.epa.gov/criteria-air-pollutants/naaqs-table
[10] Ibid.

PM 2.5

Particulate matter, or PM, is the term for particles found in the air, including dust, dirt, soot, smoke, and liquid droplets. Particles less than 2.5 micrometers in diameter (PM2.5) are referred to as "fine" particles and are believed to pose the greatest health risks among particulates. Because of their small size (approximately 1/30th the average width of a human hair), fine particles can lodge deeply into the lungs.

PM 2.5 Health Impacts:

- *increased hospital admissions*
- *aggravated asthma Increases in respiratory symptoms (coughing, difficult/painful breathing)*
- *chronic bronchitis*
- *decreased lung function*
- *premature death*
- *increases dementia risk*
- *risks for heart attacks, heart disease, strokes, irregular heartbeat*
- *increases premature births*

Sources of fine particles include all types of combustion activities (motor vehicles, power plants, wood burning, fires, etc.) and certain industrial processes. The primary chemical constituents of outdoor particles are sulfate, nitrate, and organic and black carbon.

PM 10

Particulate matter, or PM, is the term for particles found in the air, including dust, dirt, soot, smoke, and liquid droplets. PM10 describes inhalable particles, with diameters that are generally 10 micrometers and smaller. PM10 is referred to as coarse particulates. PM10 and PM2.5 often derive from different emissions sources, and also have different chemical compositions.

PM 10 Health Impacts:

Short-term exposure:

- *difficulty breathing*
- *coughing*
- *eye, nose, and throat irritation*
- *chest tightness and pain*
- *fatigue*
- *general respiratory discomfort*

Long-term exposure:

- *lung tissue damage*
- *asthma*
- *heart failure*
- *cancer*
- *adverse birth outcomes*
- *chronic obstructive pulmonary disease (COPD)*
- *premature death*

PM10 sources include combustion of gasoline, oil, diesel fuel and wood, dust from construction sites, crushing and grinding operations, landfills and agriculture, wildfires and brush/waste burning, industrial sources, wind-blown dust from open lands, pollen, mold and fragments of bacteria.

VOC

VOC is an abbreviation for volatile organic compounds. They are carbon-based substances that readily evaporate under normal air pressure and are commonly found in indoor and outdoor environments. These compounds can be harmful to human health and contribute to air pollution, particularly smog formation.

VOC Health Impacts:

- *eye, nose, and throat irritation*
- *headaches*
- *nausea*
- *difficulty breathing*
- *loss of coordination*
- *damage to the central nervous system*
- *damage to liver and kidneys*
- *Some VOCs are also carcinogens*

VOCs can be found in both indoor and outdoor environments, with sources ranging from household products to industrial processes and even natural sources. Outdoor sources include vehicle exhaust, fossil fuel burning, wood burning, industrial emissions, and natural sources (plants).

Examples of VOCs include: benzene, toluene, xylene, 1,3-butadiene, and formaldehyde.

NO

Nitric oxide is a colorless gas with the formula NO. It is one of the principal oxides of nitrogen. Nitric oxide is a free radical: it has an unpaired electron. An important intermediate in industrial chemistry, nitric oxide forms in combustion systems. Sources include combustion of fossil fuels and certain industrial processes. NO can be generated by lightning in thunderstorms.

NO Health Impacts:

- *contact can irritate skin and eyes*
- *irritate nose and throat*
- *irritate the lungs*
- *shortness of breath*
- *headaches*
- *fatigue*
- *dizziness*
- *nausea*

NO2

Nitrogen dioxide (NO2) is a reddish-brown, pungent gas that is a key component of air pollution, particularly in urban areas. It's a member of the nitrogen oxides family (NOx) and forms when nitrogen and oxygen react, often during combustion processes like burning fossil fuels. NO2 is a highly reactive gas that contributes to the formation of smog, acid rain, and other air pollutants, and it can also irritate the respiratory system.

NO2 Health Impacts:

- *can irritate airways in the human respiratory system.*
- *can aggravate respiratory diseases, particularly asthma, leading to respiratory symptoms (such as coughing, wheezing or difficulty breathing),*
- *can increase hospital admissions and visits to emergency rooms.*
- *longer exposures may contribute to the development of asthma and potentially increase susceptibility to respiratory infections.*
- *Increased risk of death*

Sources of NO2 include emissions from vehicles, fossil fuel combustion, industrial processes, and natural sources such as lightning and forest fires. The burning of fuel is the primary source of emissions.

NOx

NOx is shorthand for nitric oxide (NO) and nitrogen dioxide (NO2), the nitrogen oxides that are most relevant for air pollution. These gases contribute to the formation of smog and acid rain, as well as affecting tropospheric ozone. NOx gases are usually produced in the air from the reaction between nitrogen and oxygen during combustion of fuels, such as hydrocarbons, and especially at high temperatures, such as in car engines. In areas of high motor vehicle traffic, such as in large cities, the nitrogen oxides emitted can be a significant source of air pollution. NOx gases are also produced naturally by lightning. Biomass burning is also a source of NOx.

NOx Health Impacts:

- *can irritate the respiratory system, leading to coughing, wheezing, shortness of breath, and difficulty breathing*
- *headaches*
- *nausea*
- *abdominal pain*
- *in some cases, reduce the body's ability to utilize oxygen*
- *long-term exposure can worsen asthma symptoms and may even contribute to the development of the condition.*
- *can exacerbate existing respiratory diseases, such as asthma, and can also worsen heart conditions*

B2: Local Emissions

There are several major emissions sources of our monitored pollutants in the Unicoi County, Tennessee area. All of these sources emit PM 2.5, PM 10, NO2, and VOCs.

- Summers-Taylor Asphalt Plant
- Martin Marietta Materials Quarry
- I-26

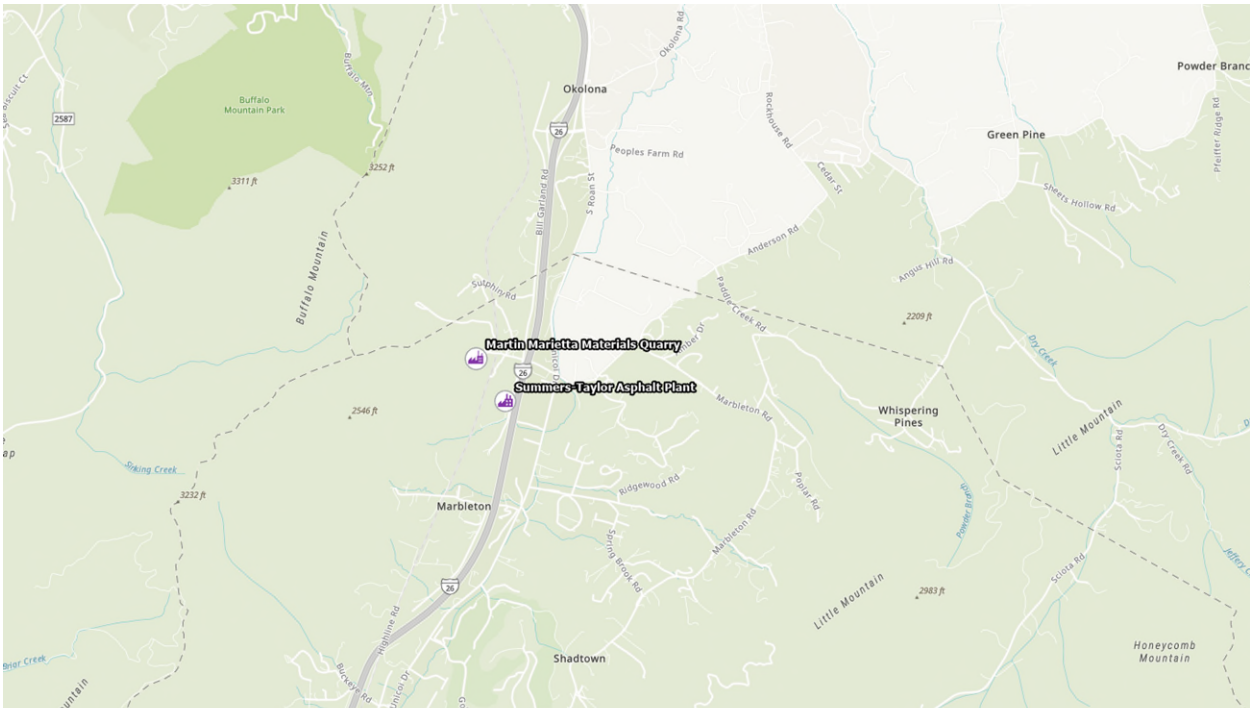


Figure B2-1: Map of Unicoi County area major sources of emissions

In addition, there are other sources of these pollutants in the area including additional highways and various manufacturing operations.

Both the asphalt plant and the quarry did not fully operate during our air monitoring at Site 2.

The quarry was operational at the start of Site 2 air monitoring. However, our site host noted that the trucks had stopped hauling from the quarry in mid-July. [11]

The asphalt plant was not operating at the start of our air monitoring. In mid-May, Summers-Taylor had indicated their Unicoi plant crew had been temporarily assigned to Kingsport for 30 to 60 days.[12] By late July, our site host noted the asphalt plant had begun operating.[13] In addition, correspondence between Summers-Taylor and the Tennessee Department of Environment and Conservation referenced start-up of mobile rock crushing operation on August 4, 2025.[14]

I-26 Annual Average Daily Traffic

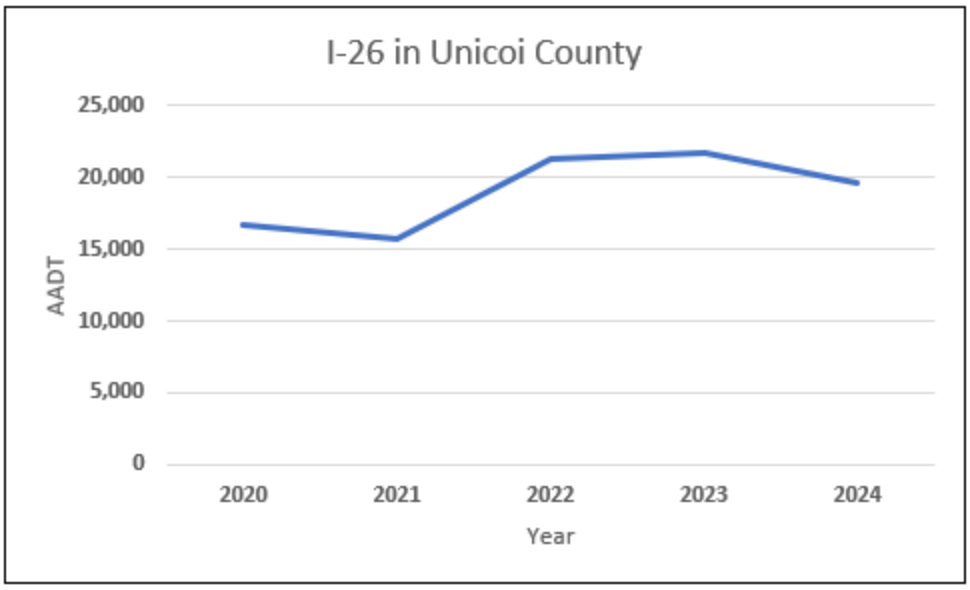


Figure B2-2: Chart compiled from TDOT annual average daily traffic data

Note: The 2024 dip in traffic is most likely a result of the impacts that Hurricane Helene had on I-26.

[11] Site 2 Host Event Log
[12] Summers-Taylor email to TN Dept. of Environment and Conservation, May 15, 2025
[13] Site 2 Host Event Log
[14] Summers-Taylor email to TN Dept. of Environment and Conservation, Startup Certification, August 15, 2025

Photos

Photo B2-3: Smoke on August 22, 2025 from asphalt plant near quarry. Photo courtesy Unicoi Clear

Photo B2-4: Smoke in 2024 from asphalt plant. Photo courtesy Unicoi Clear

B3: Local Terrain

Our Site 2 location was in a valley between mountain ranges and along I-26. This was essentially a wind tunnel with prevalent north and south winds. This is indicative in our pollution and wind roses.

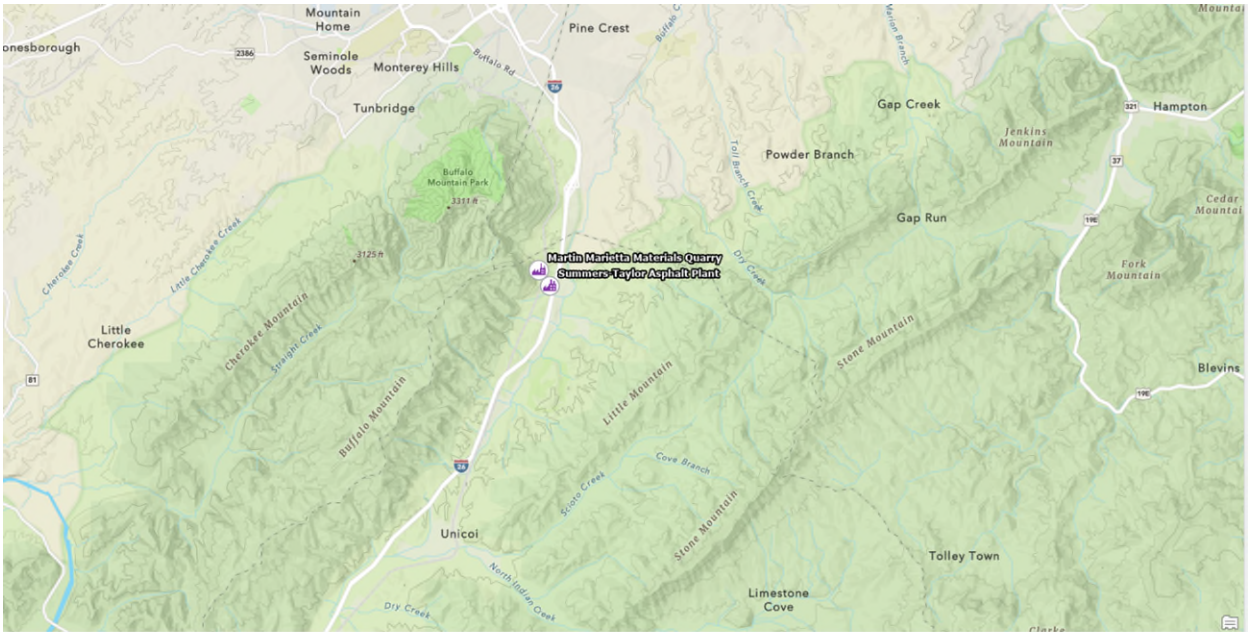


Figure B3-1: Map displaying mountain ranges near facilities of concern

C1: Findings

Key findings from our Site 2 data collection.

- There were no exceedances of the EPA health standards for PM 2.5 (35 ug/m3 for a 24-hour averaging time), PM 10 (150 ug/m3 for a 24-hour averaging time), and NO2 (100 ppb for a 1-hour averaging time) during our Site 2 data collection.
- Most of our spikes and higher concentrations during our collection were probably from regional sources. Local sources may have, on occasion, contributed although we were unable to determine that.
- Our Site 2 location was in a valley between mountain ranges and along I-26. This was essentially a wind tunnel with prevalent north and south winds.
- Overall, VOC concentrations were low and often non-detectable.
- Only 15.20% of minute readings at Site 2 indicated a VOC concentration.
- Only 25.18% of hourly averages at Site 2 indicated a VOC concentration.
- Overnight and early morning hours were the most prevalent time periods for VOCs.
- Spikes and higher concentrations of VOCs, when present, were usually short-lived ranging from under 5 minutes to around 30 minutes.
- The highest recorded VOC concentration was 814.6 ppb at 12:45 PM on July 26, 2025. There were only five minute readings that were at least 100 ppb. All five occurred from 12:44 PM – 12:48 PM on July 26, 2025.
- The highest hourly VOC average was 40.0 ppb at 12:00 PM on July 25, 2025. The second highest hourly VOC average was 23.0 ppb at 6:00 AM on October 15, 2025.
- There was no significant difference in PM 2.5 levels for various times of the day.
- There was no significant difference in PM 2.5 levels for various days of the week, although early in the week levels were slightly lower.
- 84 percent of PM 2.5 hourly averages fell within the AQI good air quality range.
- Our highest one-minute PM 2.5 reading was 52.4 ug/m3 at 12:47 PM on July 25, 2025.
- Our highest one-hour average PM 2.5 was 26.0 ug/m3 at 7 PM on June 11, 2025.
- Our highest 24-hour average PM 2.5 was 18.7 ug/m3 on June 11, 2025, equivalent to 69 AQI, which is a medium moderate yellow AQI code.
- Not surprising, particulate matter increased during the evening on July Fourth as fireworks were set off throughout the area.
- There was no significant difference in PM 10 levels for various times of the day.

- There was no significant difference in PM 10 levels for various days of the week, although early in the week levels were slightly lower.
- Nearly 100 percent of PM 10 hourly averages fell within the AQI good air quality range.
- Our highest one-minute PM 10 reading was 184.4 ug/m3 at 2:02 PM on July 5, 2025.
- Our highest one-hour average PM 10 was 48.8 ug/m3 at 5 AM on June 27, 2025.
- Our highest 24-hour average PM 10 was 28.5 ug/m3 on June 11, 2025, equivalent to 26 AQI, which is a medium good green AQI code.
- Nitric Oxide levels were higher during the day from 5 AM to 8 AM.
- Albeit small concentrations, Nitric Oxide levels were lower during the weekend.
- Our highest one-minute Nitric Oxide concentration was 220.5 ppb at 8:11 AM on October 20, 2025.
- Our highest one-hour average for Nitric Oxide was 7.5 ppb at 7 AM on October 6, 2025.
- Just over 40% of minute readings recorded a concentration of 0 or a negative number. Nearly 47% of hourly averages were a concentration of 0 or a negative number. Note: This instrument may record negative numbers which meet EPA reporting protocol.
- All daily hourly average highs for NO2 were good air quality, code green for the day.
- NO2 levels were lower during the day from 9 AM to 4 PM.
- NO2 concentrations were lower on the weekend.
- Just over 40% of minute readings for NO2 recorded a concentration of 0 or a negative number. Note: This instrument may record negative numbers which meet EPA reporting protocol.
- The highest one-minute NO2 reading was 75.3 ppb on July 5, 2025 at 2:01 PM. The second highest one-minute NO2 reading was 40.4 ppb on September 13, 2025 at 5:34 PM.
- The highest one-hour NO2 average was 15 ppb on October 15, 2025.
- NOx concentrations were lower during the day from 9 AM to 4 PM.
- NOx levels were lower over the weekend.
- The highest one-minute NOx reading was 224.5 ppb at 8:11 AM on October 20, 2025. The second highest one-minute NOx reading was 97 ppb at 2:01 PM on July 5, 2025.
- The highest one-hour NOx average was 16.5 ppb at 6 PM on October 15, 2025. The second highest one-hour NOx average was 15.4 ppb at 6 PM on October 20, 2025.
- Nearly 37% of minute NOx readings recorded a concentration of 0 or a negative number. Nearly 35% of hourly NOx averages were a concentration of 0 or a negative number. Note: This instrument may record negative numbers which meet EPA reporting protocol.

- ❖ Regional agency air monitors were located 20 to 110 miles from where the BEAST gathered data. We screened three PM 2.5 monitors, two NO2 monitors, and one PM 10 monitor.
- ❖ The Kingsport PM 2.5 monitor was the nearest regional monitor that had data which was the closest to the BEAST data. 59% of daily 24-hour averages were within 1 ug/m3 of the BEAST. Nearly 80% of the daily 24-hour averages were within 2 ug/m3 of the BEAST. Nearly 94% were within 3 ug/m3.
- ❖ There was only one regional PM 10 monitor close enough for screening with the BEAST. The BDEB PM 10 monitor daily 24-hour average was within 1 ug/m3 of the BEAST data nearly 35% of the time. The BDEB monitor was within 2 ug/m3 of the BEAST nearly 63% of the time. Nearly 81% of the time, the BDEB fell within 3 ug/m3 of the BEAST.
- ❖ Neither of the two regional NO2 monitors were a good indication of the local community's air quality. In this case, the BEAST registered lower NO2 concentrations during our 4.5 months of air monitoring. When screening data, the Greenville monitor was closer to the BEAST than Remount.

Recommendations and Future Actions

Based on the preliminary analysis of the monitoring data and the technical challenges encountered during the Site 2 deployment, BREDL proposes the following actions:

- **Long-Term Community Monitoring:** Given that the nearest agency monitors may not capture localized "spikes" identified by the BEAST, BREDL recommends that state and federal agencies evaluate the need for a permanent, continuous monitoring station in Unicoi County to better protect underserved residential areas near industrial point sources.

C2: Limitations

- BREDL is limited to 4 to 4.5 months of monitoring at our locations. Pollution levels may vary depending on the time of year.
- While limitations will exist for an annual set of data, the short-term data will still provide insight on impacts to air quality issues. It will help to identify trends.
- Facility emissions may be higher or lower depending on seasonal operations.
- VOC data is limited to total VOCs, which does not include all types of VOCs.
- There are limitations of both funding and technical requirements that restrict how much air monitoring equipment we can utilize during this project. Our EPA grant funding only covers the air monitoring equipment that was approved by EPA. However, there may additional equipment needs in the future.
- BREDL's Air Monitoring Project utilizes FRM, FEM and "near reference" level equipment. However, our project's purpose and objectives are not tied to the EPA Air Now or NAAQS air monitoring network. BREDL is gathering data for screening levels and identifying trends for NO2, PM, and VOCs. Regulatory requirements for EPA's Air Now and NAAQS air monitoring network, such as annual performance audits and recommended procedures, are not deemed necessary for the successful completion of the CARE-4-Air project. Therefore, these more stringent requirements and recommendations are not listed in our QAPP requirements.
- While we strive to have the best possible site for the trailer, there are many limitations: willing site host, proximity to sources, proximity to interference, availability of power, and availability of cellular service.
- For protection of site host privacy, BREDL will not be publishing the exact location of our BEAST sites. This will limit some of our data presentations. For example, we will not publish pollution roses indicating the exact location of our BEAST showing the pollution concentrations in relation to wind direction.

C3: Challenges

These are the main challenges we encountered at our second site.

1: PM Pump high reading and Flow Slope Error

During our June 9, 2025 Site 2 operational startup the PM Pump produced a flow slope error and reading increased from 38% to over 62%. After three flow rate calibrations and conversations with Wilbur Technical Services (WTS), we could not clear the flow slope error. During the next three weeks, the PM Pump generally remained in the 62% - 72% range.

On June 30,2025 we installed a new PM Pump. A re-calibration of flow rate and slope cleared the flow slope error. In addition, the PM Pump readings were in the 30% area, good operational range.

2: PM Mass Monitor internal pump performance

A new PM Pump (# H61-697) was installed on June 30, 2025. Two weeks later on July 14, we noticed that PM pump performance increased from low 30s to low-mid 50s. Normal performance ranges from 40% to 80%. Ops Manager emailed WTS. On July 23, PM Pump performance increased into 60s. Per WTS, Ops Manager shipped previous 2 used pumps (# LKZ-2221 and # C7W-146) to WTS for analysis. One pump (# LKZ-2221) was determined to have a busted diaphragm and was no longer usable. The other pump (# C7W-146) was determined to be “possibly good”. With the current, in-use, pump (# H61-697) showing decreasing performance, WTS instructed us to re-install pump # C7W-145 during our September 25, 2025 monthly maintenance visit. While pump # C7W-145 did indicate better performance than pump # H61-697, the re-installed pump operated at a weak performance over the 80% threshold. On October 2, 2025, WTS informed us that they suspect an issue with the PM Flow Sensor. The Flow Sensor is still under warranty.

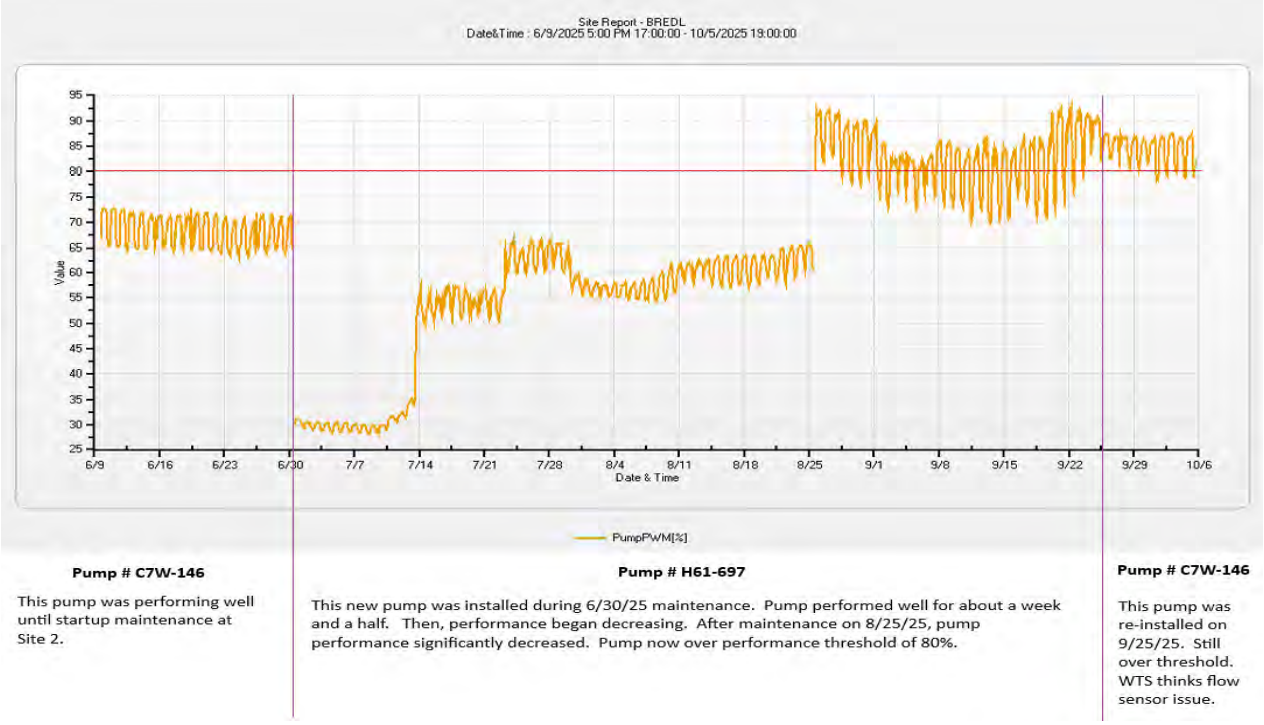


Figure C3-1: PM Pump Performance

3: NO/NO2/NOx calibration

On July 28, 2025 the NO/NO2/NOx calibration failed. WTS adjusted sequence. They re-ran calibration and it passed. Auto calibrations have run fine after the adjustment.

4: VOC flow rate test

On July 29, 2025 the Alicat Whisper VOC flow rate test indicated the Alicat reading was off by a decimal point. Later we discovered that the ferrule had fallen off the tube used for testing. We contacted WTS. WTS shipped us extra ferrule parts. On August 25, we fixed the tube ferrule and the flow rate was okay at 0.0580 – within the parameter. No adjustment was made.

5: PM Monitor Span Dust test, Flow Rate, PM Pump

On August 25, 2025 the PMT verification span dust test was outside the parameter. Bottle is 10.9 and monitor was at 10.1. Per WTS, we increased span dust and re ran test. We adjusted

and calibrated the unit. Afterwards, monitor indicated 10.8, within the parameter. After test, we performed an Optical Chamber cleaning.

We re-ran the flow rate check and readings were outside the parameter. We adjusted/calibrated unit. Afterwards monitor unit was at 5.00 and Alicat at 4.90, within the parameter. We waited a few minutes and repeated the test. We received similar results. However, after this maintenance our PM Pump performance suffered and increased into the low 90s. The pump became stable shortly after and we left the site with pump at 79%, just below the warning threshold. We notified WTS.

6: Power outage, reboot

There was an extended power outage on October 19, 2025 from 3:50 PM to 7:41 PM. Once power was restored, the PM monitor did not reboot correctly. It displayed 0 concentration. WTS was able to reboot the PM monitor remotely. Readings returned to normal at 7:50 AM on October 20. The other equipment was not affected.

D1: Data

Quality Control Data was gathered beginning at 5 PM on June 9, 2025 and concluding at 8 AM on October 22, 2025.

We take a reading for each pollutant and weather parameter every minute. Thus, we collect 60 data readings per hour, 1440 per day.

The hour average time reflects the start of collection for the period. For Example, a 10:00 PM reading reflects the average of minute readings from 10:00 PM – 10:59 PM.

All times reflect eastern standard time. In keeping with EPA policy[15], times during daylight saving time are not adjusted for the time change – times will still reflect eastern standard time.

[15] AIRS User's Guide Volume AQ2: Air Quality Data Coding, EPA-454/B-94-006, February 1994, section 7.2.3, page 7-19

D2: Data – Volatile Organic Compounds

Our Aeroqual VOC module contains a PID (Photoionization Detector) sensor. This PID sensor detects a very wide range of VOCs, including aromatic hydrocarbons; however, it does not detect formaldehyde, methane, ethane, propane, and low molecular weight alcohols (such as ethanol, propanol, and butanol). The detected VOCs are measured as total VOCs.

VOCs Findings

- Overall, VOC levels were low and often non-detectable.
- Only 15.20% of minute readings at Site 2 indicated a VOC concentration. 0.35% of readings were at least 10 ppb or greater. 14.85% of readings were between 0.01 – 9.9 ppb. 84.80% of readings indicated concentrations of 0 ppb, which were non-detectable levels.
- Overnight and evening hours were the most prevalent time periods for VOCs.
- Spikes and higher concentrations of VOCs, when present, were usually short-lived ranging from under 5 minutes to under an hour.
- No definitive correlation could be determined if local or regional sources caused the spikes in observed VOCs concentrations.
- The highest recorded VOC concentration was 814.6 ppb at 12:45 PM on July 26, 2025. There were only five minute readings that were at least 100 ppb. All five occurred from 12:44 PM – 12:48 PM on July 26, 2025.
- There were only eight minute VOC readings between 50-99 ppb.
- The highest hourly average was 40.0 ppb at 12:00 PM on July 25, 2025. The second highest hourly average was 23.0 ppb at 6:00 AM on October 15, 2025.
- The following two tables reflect the percentages of each range of concentrations recorded. Volatile Organic Compounds are not an EPA criteria pollutant; therefore, there is no Air Quality Index reference.

Percentage of Minute Readings
Concentration Range in ppb

Range	Percentage
0 -	84.80%
0.1 - 9.9	14.85%
10 - 24.9	0.31%
25 - 49.9	0.03%
50 - 99.9	0.004%
100 +	0.003%

Percentage of Hourly Averages
Concentration Range in ppb

Range	Percentage
0 -	74.82%
0.1 - 9.9	24.96%
10 - 24.9	0.19%
25 - 49.9	0.03%
50 - 99.9	0.00%
100 +	0.00%

Data Presentations

BREDL data presentations for VOCs include hour averages (the average of 60 one-minute readings). Wind and pollution roses use the one minute readings (1440 per day).

Time of day bar graphs are used to examine time periods of the day. For example, is there one part of the day where the pollution registered higher or lower? We also examined pollution levels by day of the week. Was there a particular day where the pollution was higher or lower?

Figures D2-1 – D2-6 plot hour averages for the entire collection period and for each month. These averages take the 60 one-minute readings for each hour and average them for the hour average.

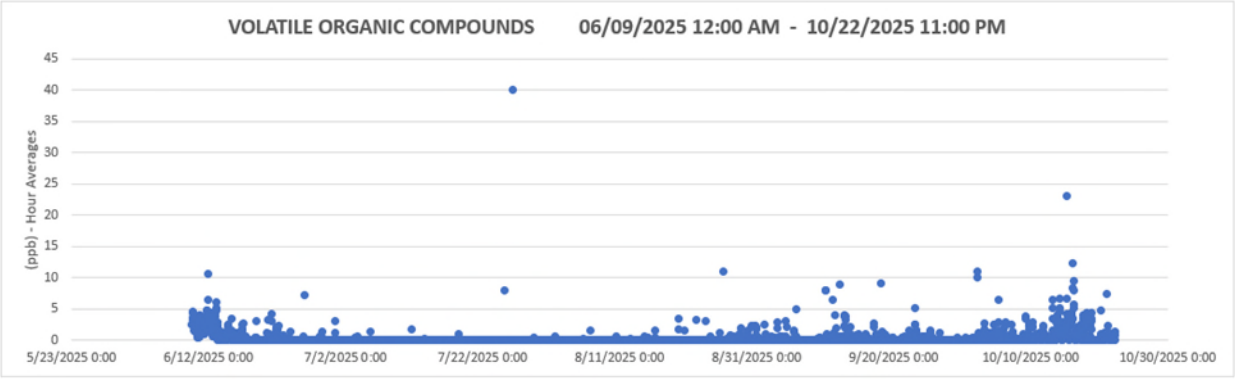


Figure D2-1: VOCs Hour Averages – Entire Collection Period

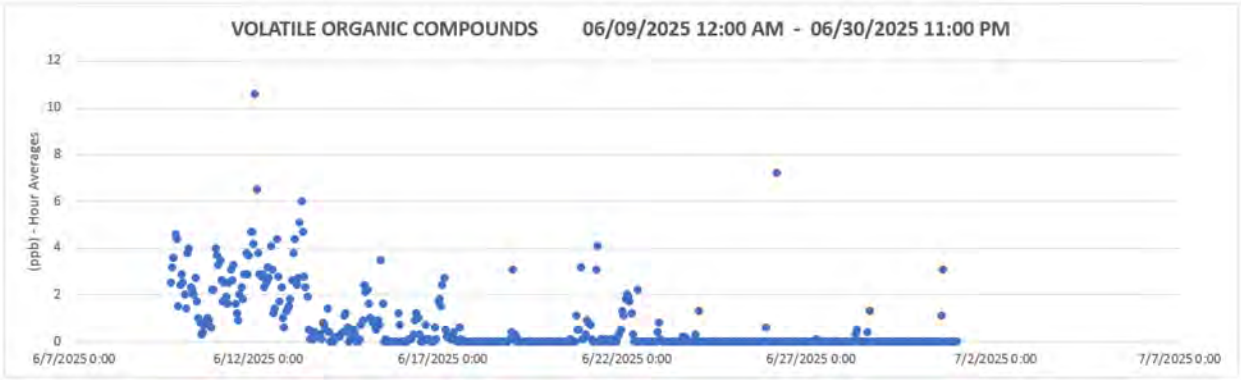


Figure D2-2: VOCs Hour Averages – June

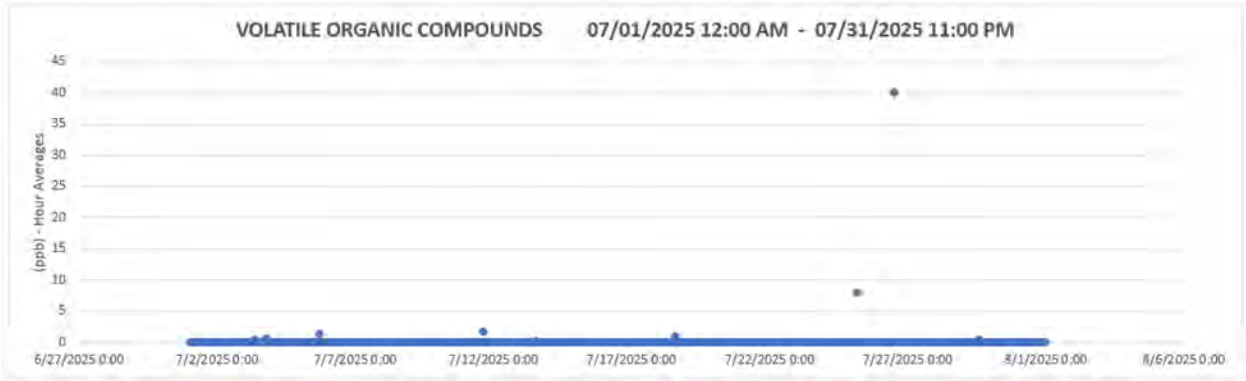


Figure D2-3: VOCs Hour Averages – July

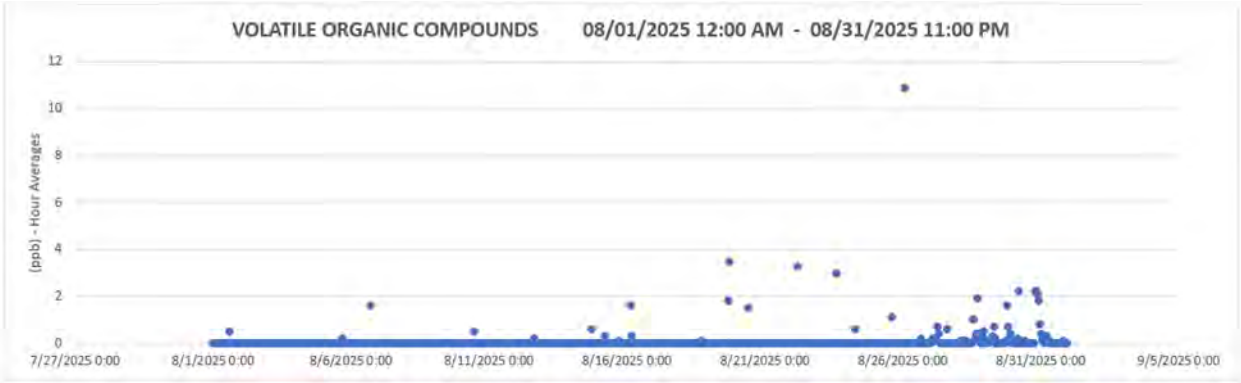


Figure D2-4: VOCs Hour Averages – August

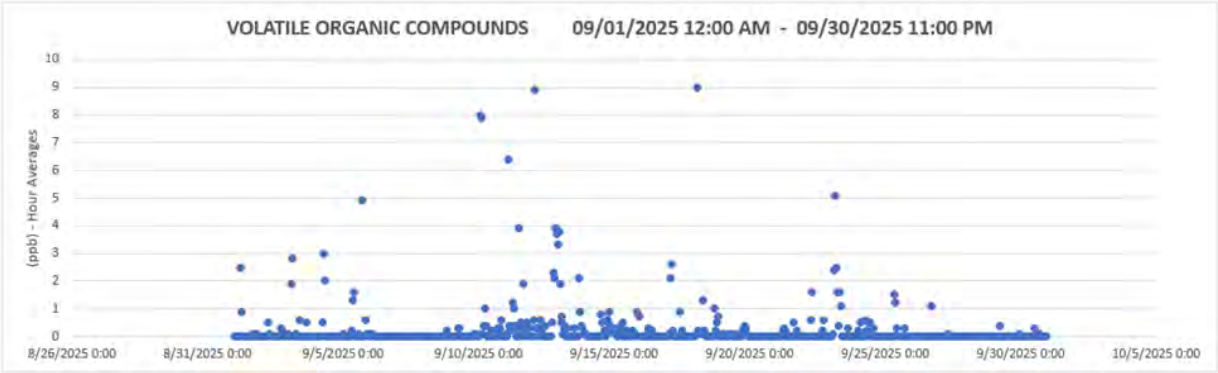


Figure D2-5: VOCs Hour Averages – September

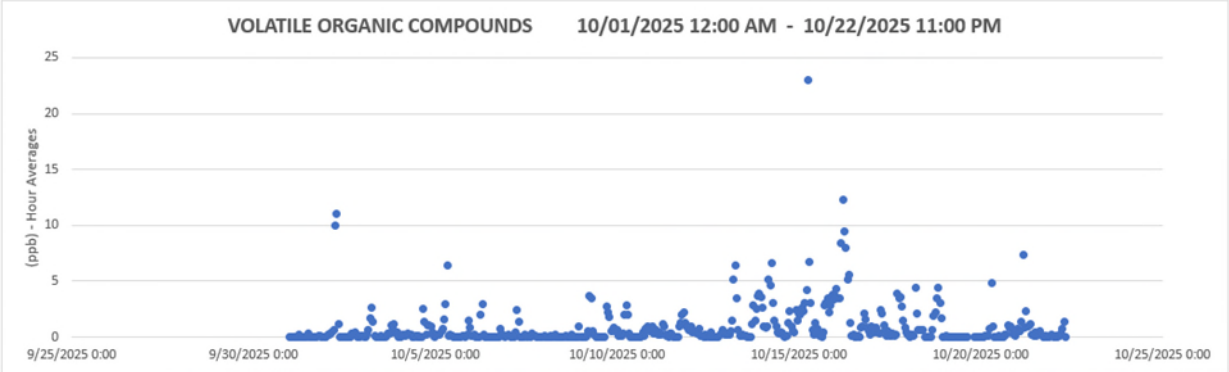


Figure D2-6: VOCs Hour Averages – October

Figures D2-7 – D2-12 plot averages based on the time of day for the entire collection period and for each month. During our collection period, VOCs were more present in the overnight and early morning hours, which indicate the VOCs are not from vehicular traffic.

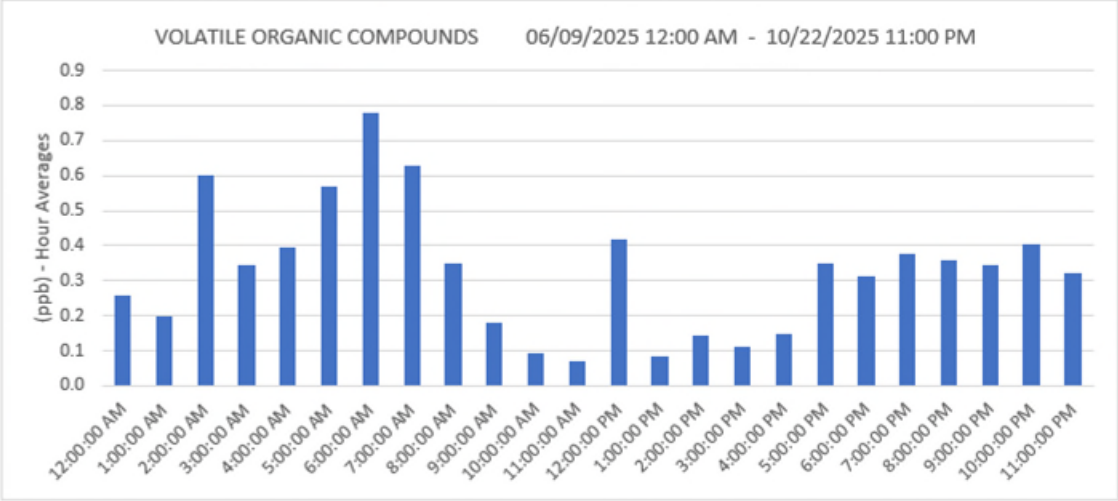


Figure D2-7: VOCs Hour Averages – Based on Time of Day for Collection Period

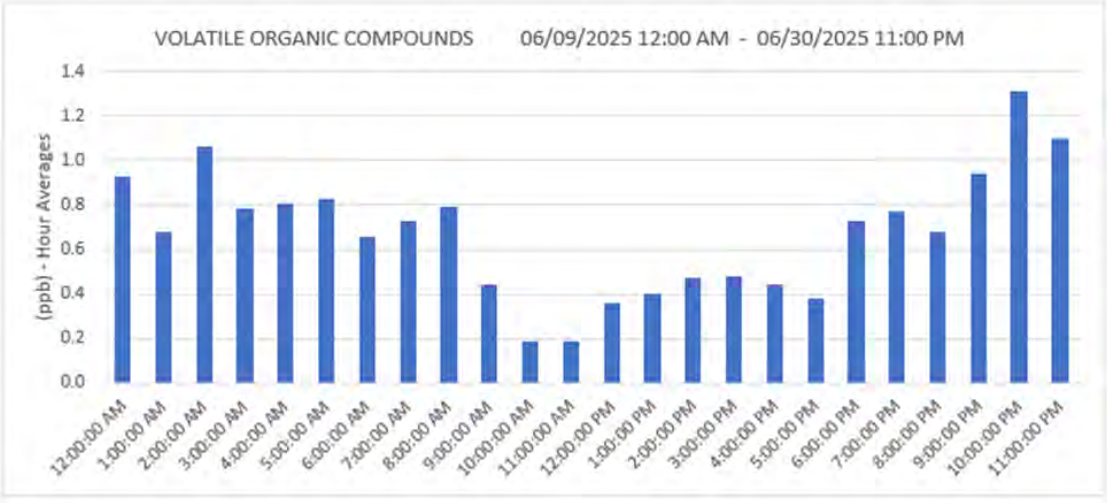


Figure D2-8: VOCs Hour Averages – Based on Time of Day for June

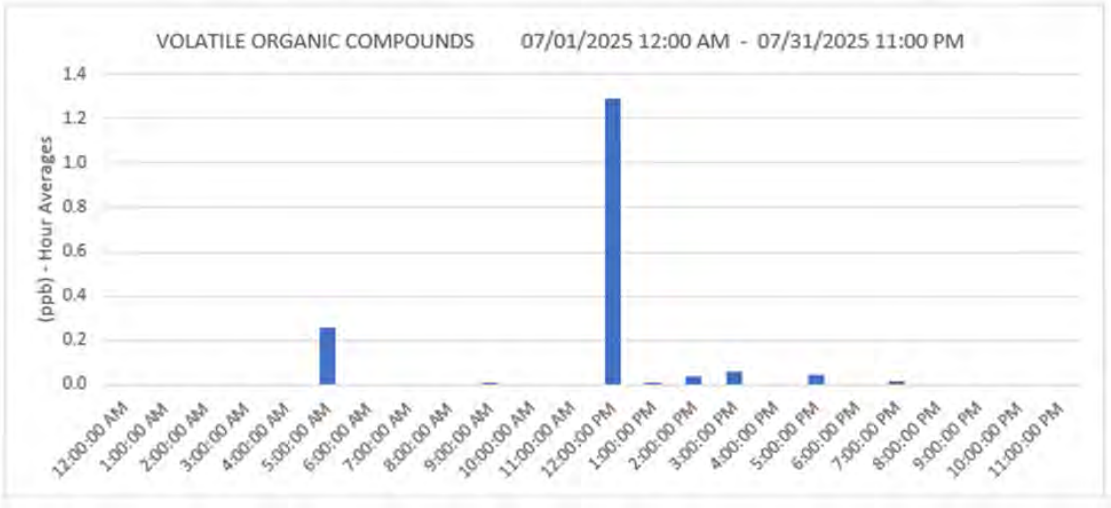


Figure D2-9: VOCs Hour Averages – Based on Time of Day for July

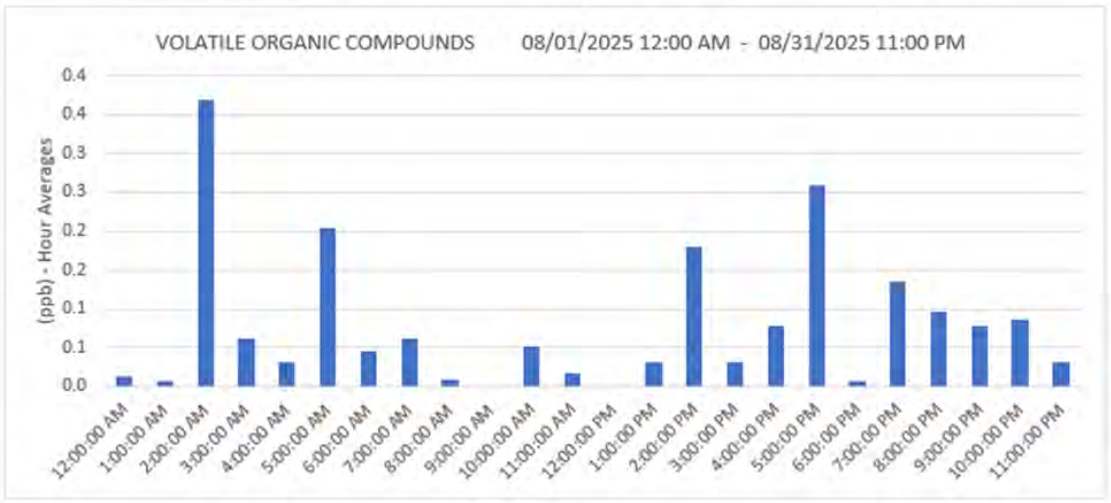


Figure D2-10: VOCs Hour Averages – Based on Time of Day for August

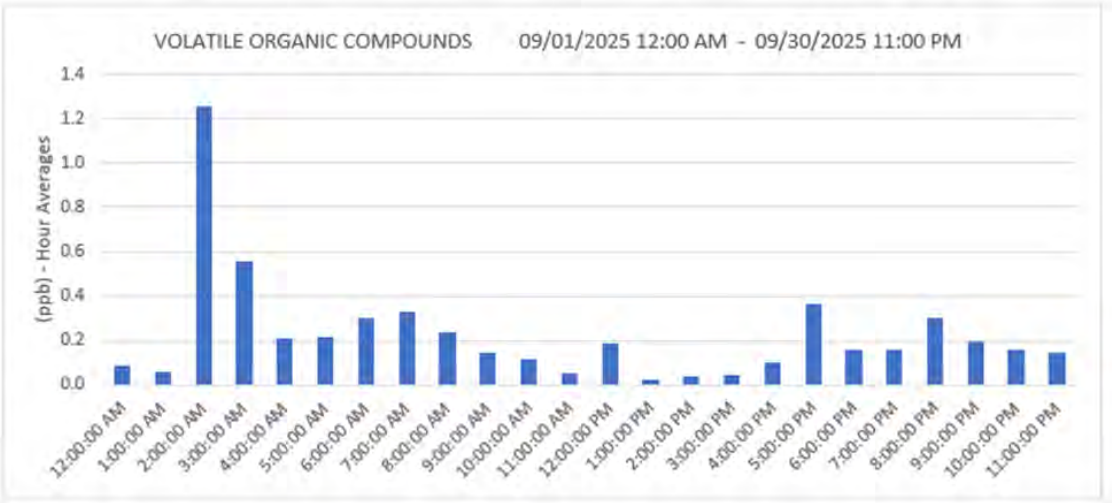


Figure D2-11: VOCs Hour Averages – Based on Time of Day for September

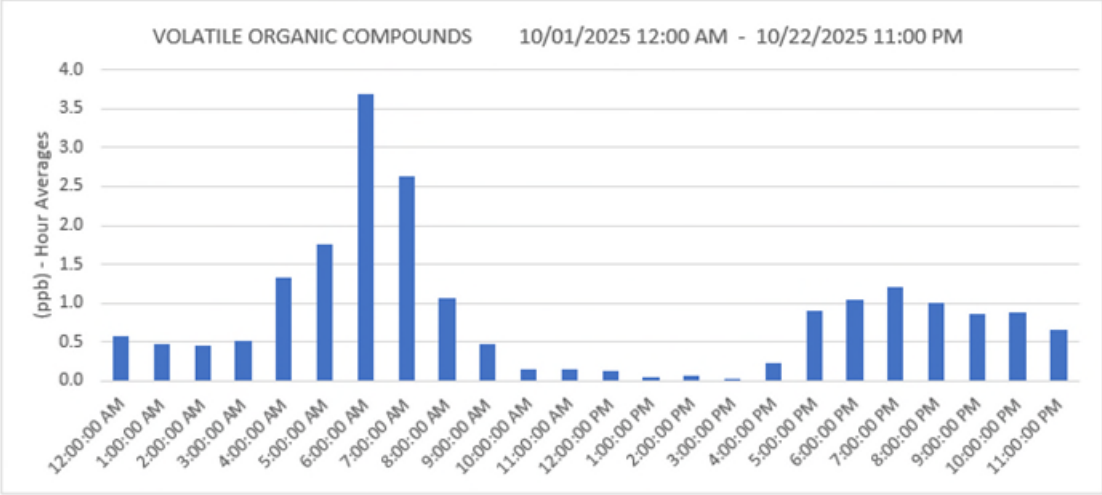


Figure D2-12: VOCs Hour Averages – Based on Time of Day for October

VOLATILE ORGANIC COMPOUNDS Top 25 Concentrations (ppb) - Hour Averages 06/09/2025 12:00 AM - 10/22/2025 11:00 PM		
Rank	**Concentration**	**Date & Time**
1	40.0	7/26/2025 12:00 PM
2	23.0	10/15/2025 6:00 AM
3	12.3	10/16/2025 5:00 AM
4	11.0	10/2/2025 7:00 AM
5	10.9	8/26/2025 2:00 AM
6	10.6	6/11/2025 10:00 PM
7	10.0	10/2/2025 6:00 AM
8	9.5	10/16/2025 6:00 AM
9	9.0	9/18/2025 2:00 AM
10	8.9	9/12/2025 2:00 AM
11	8.4	10/16/2025 4:00 AM
12	8.0	10/16/2025 7:00 AM
13	8.0	9/10/2025 2:00 AM
14	8.0	7/25/2025 5:00 AM
15	7.9	9/10/2025 3:00 AM
16	7.4	10/21/2025 4:00 AM
17	7.2	6/26/2025 2:00 AM
18	6.7	10/15/2025 7:00 AM
19	6.6	10/14/2025 6:00 AM
20	6.5	6/11/2025 11:00 PM
21	6.4	10/13/2025 6:00 AM
22	6.4	10/5/2025 8:00 AM
23	6.4	9/11/2025 2:00 AM
24	6.0	6/13/2025 4:00 AM
25	5.6	10/16/2025 9:00 AM

Figure D2-13: VOCs Hour Averages – Top 25 Concentrations

Figures D2:14 and D2:15 pollution roses display the pollutant concentration based on wind direction, which can indicate the direction of the pollution source.

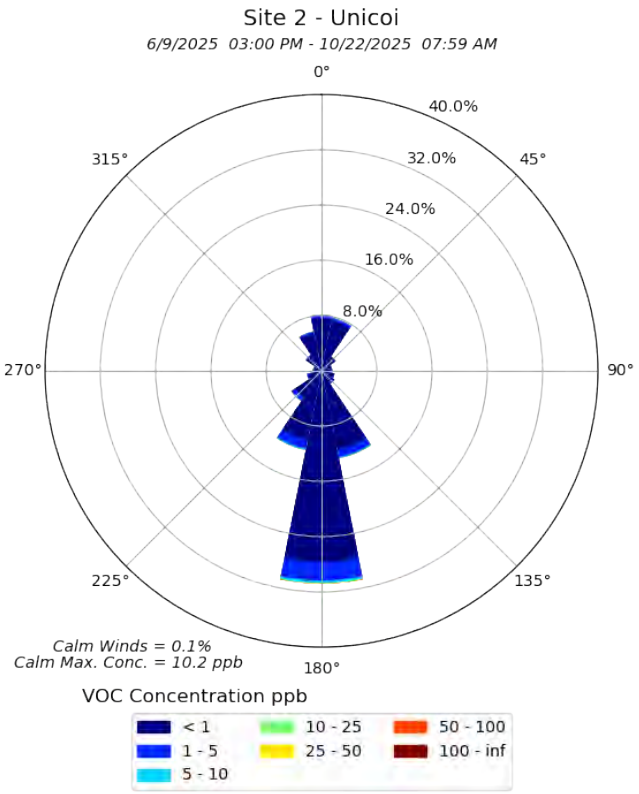


Figure D2-14: Pollution Rose

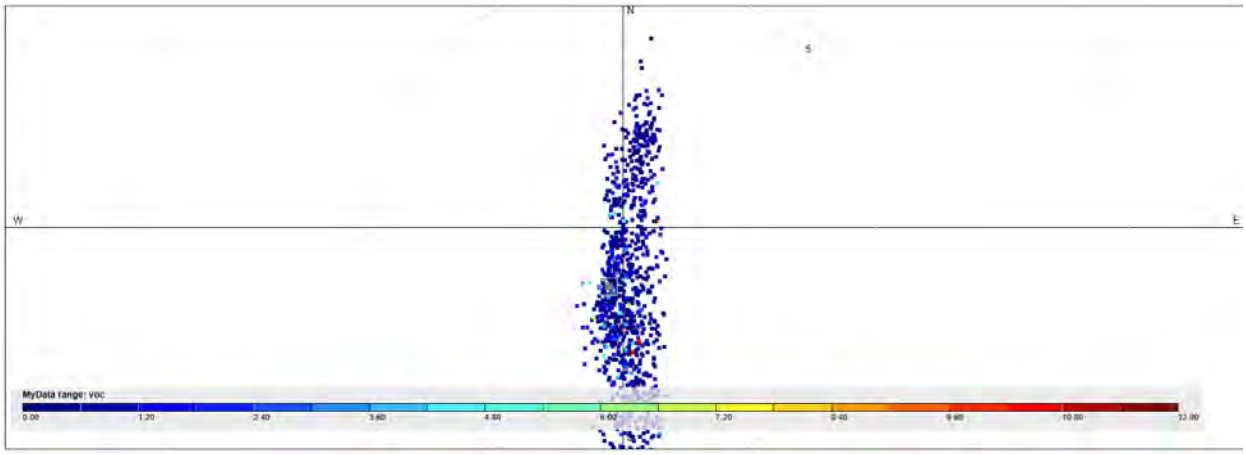


Figure D2-15: EPA RETIGO Pollution Rose 6/9/2025 - 10/22/2025

We separated the VOC minute concentrations of at least 25 ppb and plotted those on a pollution rose for a better visual representation of the direction of the highest concentrations.

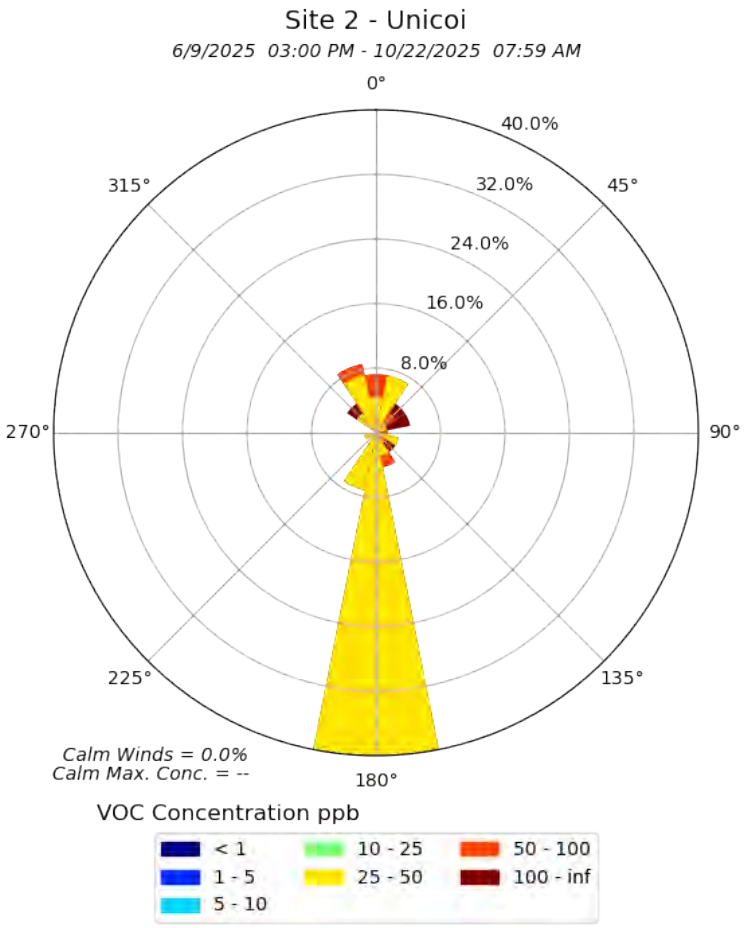


Figure D2-16: Pollution Rose displaying VOC concentrations of at least 25 ppb.

VOC Spikes

There were a few notable spikes of VOC data during our monitoring period. The spikes may have drifted in from outside the local area or originated from localized sources. Spikes would be present for time periods anywhere from 5 minutes or less to as long as 30 minutes.

June 23, 2025 Spike

Site host noted lots of trucks and dust from 7 AM – 4:30 PM EDT (6 AM – 3:30 PM EST).

- While VOC concentrations were mostly low or non-detectable, the spikes during the afternoon could possibly be from local sources. However, there were also similar concentrations during the evening.

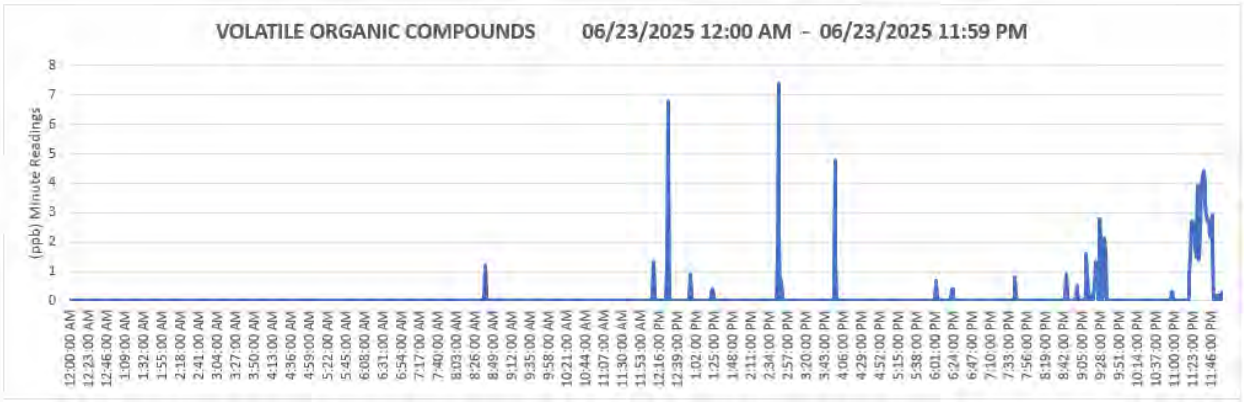


Figure D2-SP1: VOC levels for June 23, 2025

VOLATILE ORGANIC COMPOUNDS Top 25 Concentrations (ppb) Minute Readings 06/23/2025 12:00 AM - 06/23/2025 11:59 PM		
Rank	Concentration	Time
1	7.4	2:45:00 PM
2	6.8	12:27:00 PM
3	5.3	12:28:00 PM
4	4.8	3:56:00 PM
5	4.4	11:37:00 PM
6	4.4	11:36:00 PM
7	4.2	11:35:00 PM
8	4.0	11:38:00 PM
9	4.0	11:33:00 PM
10	3.9	11:29:00 PM
11	3.8	11:34:00 PM
12	3.3	11:39:00 PM
13	2.9	11:47:00 PM
14	2.9	11:40:00 PM
15	2.9	11:30:00 PM
16	2.8	11:43:00 PM
17	2.8	9:27:00 PM
18	2.7	11:45:00 PM
19	2.7	11:42:00 PM
20	2.7	11:41:00 PM
21	2.7	11:23:00 PM
22	2.7	11:22:00 PM
23	2.6	11:24:00 PM
24	2.6	11:21:00 PM
25	2.5	11:25:00 PM

VOLATILE ORGANIC COMPOUNDS Hour Averages Ranked by Highest (ppb) Hour Averages 06/23/2025 12:00 AM - 06/23/2025 11:59 PM		
Rank	Concentration	Time
1	1.3	11:00:00 PM
2	0.3	9:00:00 PM
3	0.2	2:00:00 PM
4	0.2	12:00:00 PM
5	0.1	3:00:00 PM
6	0.0	10:00:00 PM
7	0.0	8:00:00 PM
8	0.0	7:00:00 PM
9	0.0	6:00:00 PM
10	0.0	5:00:00 PM
11	0.0	4:00:00 PM
12	0.0	1:00:00 PM
13	0.0	11:00:00 AM
14	0.0	10:00:00 AM
15	0.0	9:00:00 AM
16	0.0	8:00:00 AM
17	0.0	7:00:00 AM
18	0.0	6:00:00 AM
19	0.0	5:00:00 AM
20	0.0	4:00:00 AM
21	0.0	3:00:00 AM
22	0.0	2:00:00 AM
23	0.0	1:00:00 AM
24	0.0	12:00:00 AM

Figure D2-SP2: Tables displaying VOC concentrations for June 23, 2025

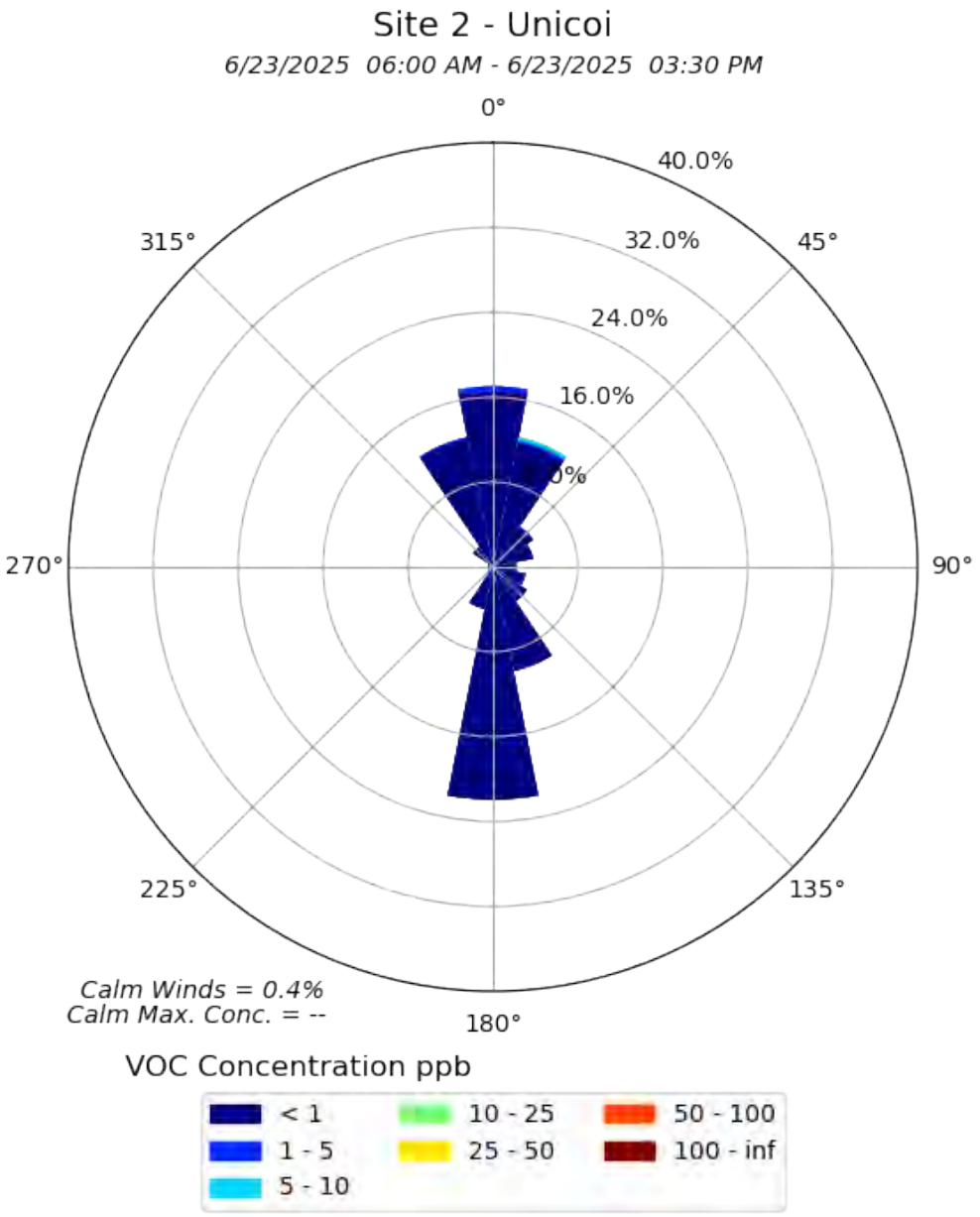


Figure D2-SP3: Pollution Rose displaying VOC concentrations and wind direction

July 25, 2025 Spike

VOC spike during the 5:30 AM – 6:00 AM timeframe on July 25, 2025. No other spikes were observed during this time for the other measured pollutants.

- Could not rule out local sources.
- VOC plume lasted around 30 minutes.

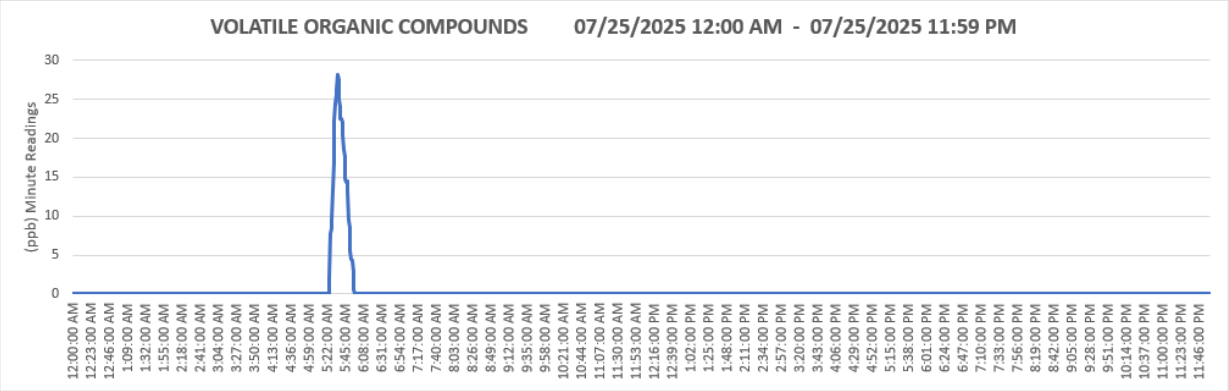


Figure D2-SP4: VOC levels for July 25, 2025

VOLATILE ORGANIC COMPOUNDS Top 25 Concentrations (ppb) Minute Readings 07/25/2025 12:00 AM - 07/25/2025 11:59 PM		
Rank	**Concentration**	**Time**
1	28.2	5:35:00 AM
2	27.5	5:36:00 AM
3	26.3	5:34:00 AM
4	25.6	5:33:00 AM
5	25.1	5:37:00 AM
6	24.4	5:32:00 AM
7	24.1	5:38:00 AM
8	22.5	5:40:00 AM
9	22.5	5:39:00 AM
10	22.2	5:31:00 AM
11	22.1	5:41:00 AM
12	20.5	5:42:00 AM
13	18.6	5:43:00 AM
14	17.6	5:44:00 AM
15	16.9	5:30:00 AM
16	14.8	5:45:00 AM
17	14.5	5:47:00 AM
18	14.4	5:46:00 AM
19	13.3	5:48:00 AM
20	13.3	5:29:00 AM
21	9.5	5:49:00 AM
22	9.5	5:28:00 AM
23	8.5	5:50:00 AM
24	8.4	5:27:00 AM
25	7.7	5:26:00 AM

VOLATILE ORGANIC COMPOUNDS Hour Averages Ranked by Highest (ppb) Hour Averages 07/25/2025 12:00 AM - 07/25/2025 11:59 PM		
Rank	**Concentration**	**Time**
1	8.0	5:00:00 AM
2	0.0	11:00:00 PM
3	0.0	10:00:00 PM
4	0.0	9:00:00 PM
5	0.0	8:00:00 PM
6	0.0	7:00:00 PM
7	0.0	6:00:00 PM
8	0.0	5:00:00 PM
9	0.0	4:00:00 PM
10	0.0	3:00:00 PM
11	0.0	2:00:00 PM
12	0.0	1:00:00 PM
13	0.0	12:00:00 PM
14	0.0	11:00:00 AM
15	0.0	10:00:00 AM
16	0.0	9:00:00 AM
17	0.0	8:00:00 AM
18	0.0	7:00:00 AM
19	0.0	6:00:00 AM
20	0.0	4:00:00 AM
21	0.0	3:00:00 AM
22	0.0	2:00:00 AM
23	0.0	1:00:00 AM
24	0.0	12:00:00 AM

Figure D2-SP5: Tables displaying VOC concentrations for July 25, 2025

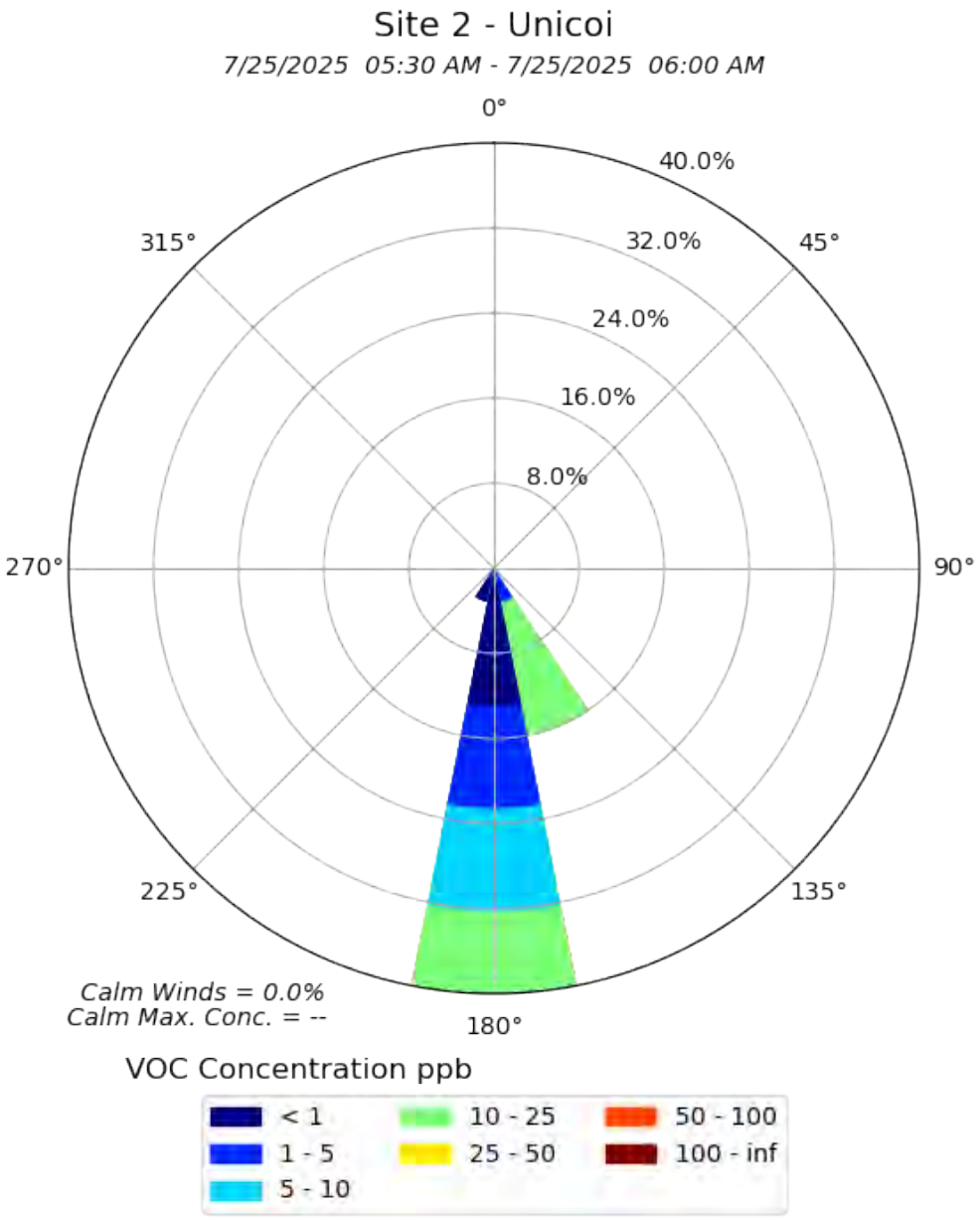


Figure D2-SP6: Pollution Rose displaying VOC concentrations and wind direction

July 26, 2025 Spike

An extremely high spike peaking over 800 ppb with several adjacent minute readings in the several hundreds.

- Pollution plume for less than 5 minutes involving VOCs and PM. NOx levels did not spike.
- Source unknown: Possibly drifted in from outside local area.

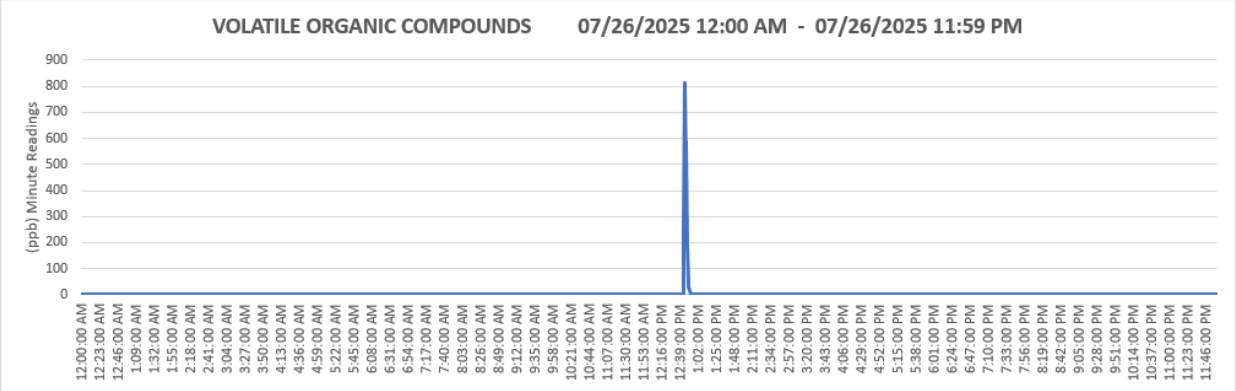


Figure D2-SP7: VOC levels for July 26, 2025

VOLATILE ORGANIC COMPOUNDS Top 25 Concentrations (ppb) Minute Readings 07/26/2025 12:00 AM - 07/26/2025 11:59 PM		
Rank	Concentration	Time
1	814.6	12:45:00 PM
2	588.6	12:47:00 PM
3	480.0	12:46:00 PM
4	237.7	12:44:00 PM
5	194.3	12:48:00 PM
6	42.9	12:49:00 PM
7	29.9	12:50:00 PM
8	15.3	12:51:00 PM
9	0.0	11:59:00 PM
10	0.0	11:58:00 PM
11	0.0	11:57:00 PM
12	0.0	11:56:00 PM
13	0.0	11:55:00 PM
14	0.0	11:54:00 PM
15	0.0	11:53:00 PM
16	0.0	11:52:00 PM
17	0.0	11:51:00 PM
18	0.0	11:50:00 PM
19	0.0	11:49:00 PM
20	0.0	11:48:00 PM
21	0.0	11:47:00 PM
22	0.0	11:46:00 PM
23	0.0	11:45:00 PM
24	0.0	11:44:00 PM
25	0.0	11:43:00 PM

VOLATILE ORGANIC COMPOUNDS Hour Averages Ranked by Highest (ppb) Hour Averages 07/26/2025 12:00 AM - 07/26/2025 11:59 PM		
Rank	Concentration	Time
1	40.0	12:00:00 PM
2	0.0	11:00:00 PM
3	0.0	10:00:00 PM
4	0.0	9:00:00 PM
5	0.0	8:00:00 PM
6	0.0	7:00:00 PM
7	0.0	6:00:00 PM
8	0.0	5:00:00 PM
9	0.0	4:00:00 PM
10	0.0	3:00:00 PM
11	0.0	2:00:00 PM
12	0.0	1:00:00 PM
13	0.0	11:00:00 AM
14	0.0	10:00:00 AM
15	0.0	9:00:00 AM
16	0.0	8:00:00 AM
17	0.0	7:00:00 AM
18	0.0	6:00:00 AM
19	0.0	5:00:00 AM
20	0.0	4:00:00 AM
21	0.0	3:00:00 AM
22	0.0	2:00:00 AM
23	0.0	1:00:00 AM
24	0.0	12:00:00 AM

Figure D2-SP8: Tables displaying VOC concentrations for July 26, 2025

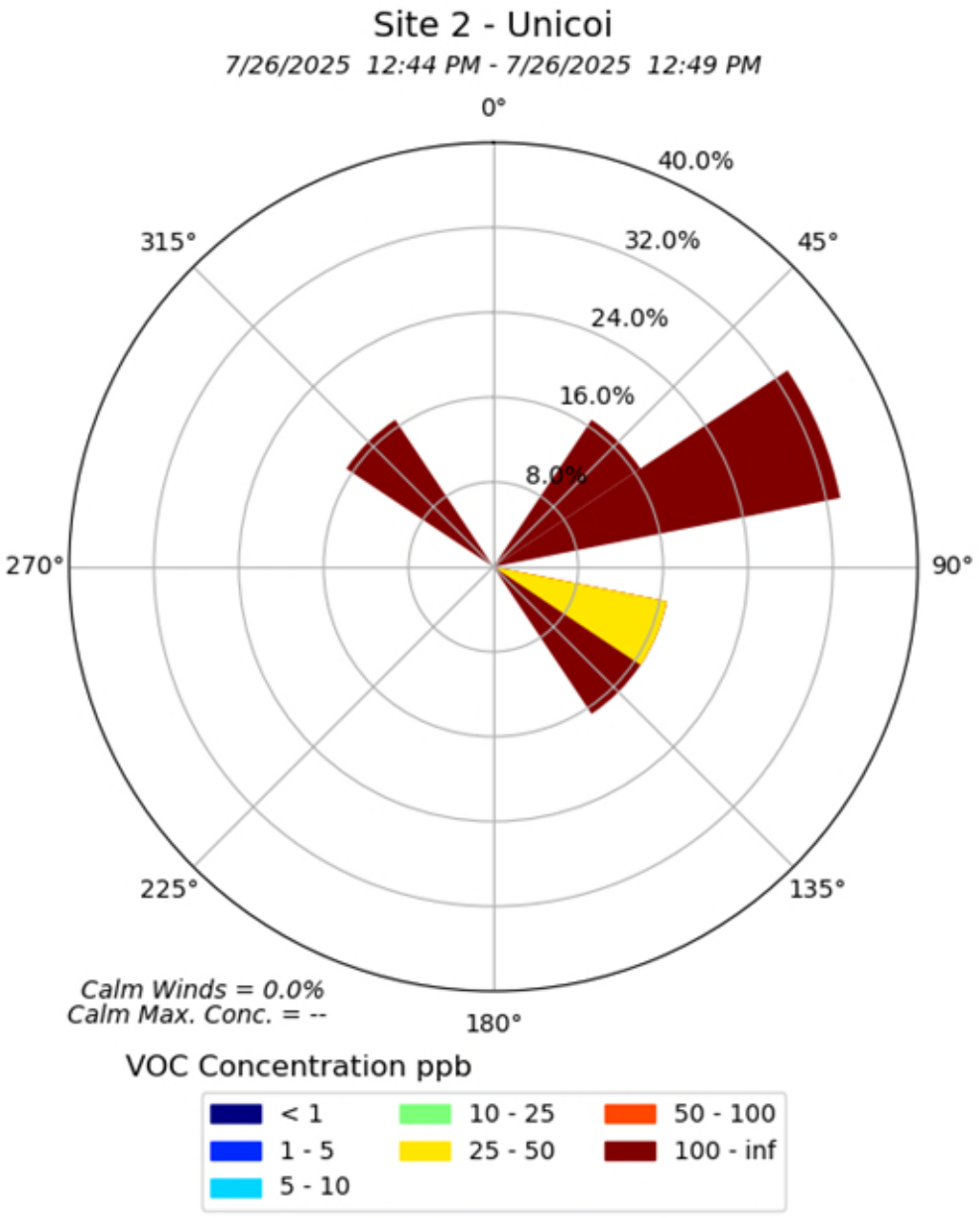


Figure D2-SP9: Pollution Rose displaying VOC concentrations and wind direction

August 23, 2025 Spike

VOC spike at 5:17 PM EST and a couple of spikes of PM 10 during 5:12 PM – 5:29 PM timeframe. Site host Event Log indicated few trucks, no smell during this day.

- Pollution plume for VOC cannot be attributed to nearby sources based on wind direction.
- Pollution Plume possibly drifted in from outside the region.
- Also, had a slight spike of NO and PM10 during this time period.
- Medium smoke was within the region, but not over the monitoring area.

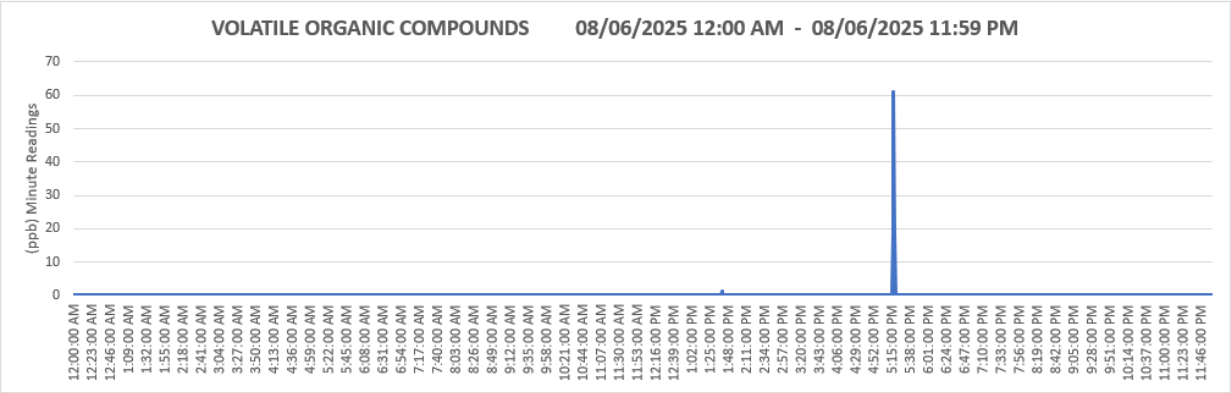


Figure D2-SP10: VOC levels for August 6, 2025

VOLATILE ORGANIC COMPOUNDS Top 25 Concentrations (ppb) Minute Readings 08/06/2025 12:00 AM - 08/06/2025 11:59 PM		
Rank	**Concentration**	**Time**
1	61.0	5:17:00 PM
2	18.3	5:18:00 PM
3	18.3	5:16:00 PM
4	1.1	1:40:00 PM
5	0.3	1:41:00 PM
6	0.3	1:39:00 PM
7	0.0	11:59:00 PM
8	0.0	11:58:00 PM
9	0.0	11:57:00 PM
10	0.0	11:56:00 PM
11	0.0	11:55:00 PM
12	0.0	11:54:00 PM
13	0.0	11:53:00 PM
14	0.0	11:52:00 PM
15	0.0	11:51:00 PM
16	0.0	11:50:00 PM
17	0.0	11:49:00 PM
18	0.0	11:48:00 PM
19	0.0	11:47:00 PM
20	0.0	11:46:00 PM
21	0.0	11:45:00 PM
22	0.0	11:44:00 PM
23	0.0	11:43:00 PM
24	0.0	11:42:00 PM
25	0.0	11:41:00 PM

VOLATILE ORGANIC COMPOUNDS Hour Averages Ranked by Highest (ppb) Hour Averages 08/06/2025 12:00 AM - 08/06/2025 11:59 PM		
Rank	**Concentration**	**Time**
1	1.6	5:00:00 PM
2	0.0	11:00:00 PM
3	0.0	10:00:00 PM
4	0.0	9:00:00 PM
5	0.0	8:00:00 PM
6	0.0	7:00:00 PM
7	0.0	6:00:00 PM
8	0.0	4:00:00 PM
9	0.0	3:00:00 PM
10	0.0	2:00:00 PM
11	0.0	1:00:00 PM
12	0.0	12:00:00 PM
13	0.0	11:00:00 AM
14	0.0	10:00:00 AM
15	0.0	9:00:00 AM
16	0.0	8:00:00 AM
17	0.0	7:00:00 AM
18	0.0	6:00:00 AM
19	0.0	5:00:00 AM
20	0.0	4:00:00 AM
21	0.0	3:00:00 AM
22	0.0	2:00:00 AM
23	0.0	1:00:00 AM
24	0.0	12:00:00 AM

Figure D2-SP11: Tables displaying VOC concentrations for August 6, 2025

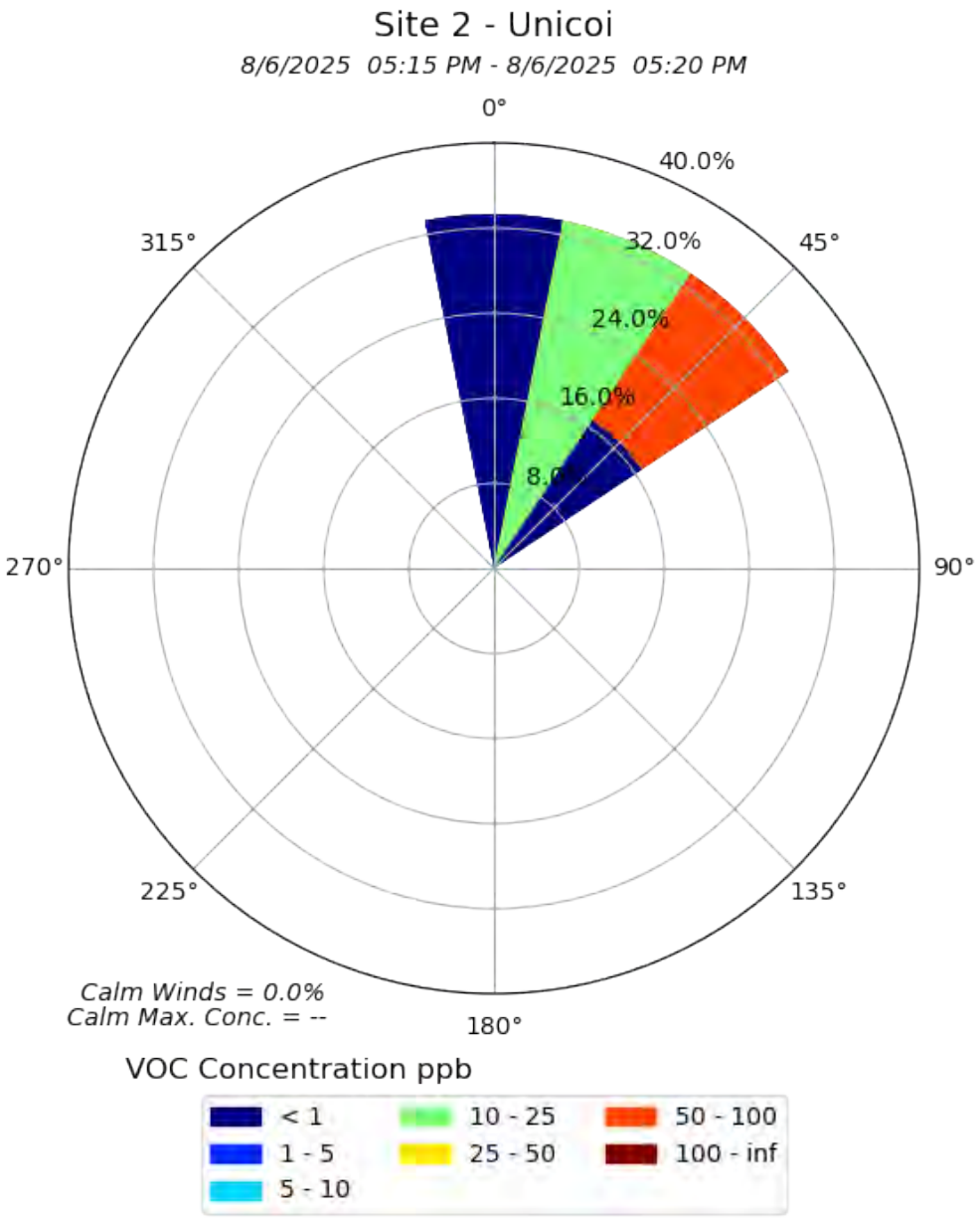


Figure D2-SP12: Pollution Rose displaying VOC concentrations and wind direction

September 5, 2025 Spike

Various spikes in all pollutants. Site host Event Log did not note anything of interest. There was a light to moderate level of regional smoke in the area.

- Research has shown that wildfire smoke contains particulate matter, NOx, and a variety of VOCs.
- Pollution levels could be a result of light to moderate levels of regional smoke that was in the area.
- No heavy truck traffic or other activity reported in immediate area.
- No fires mapped in the nearby vicinity of the trailer.

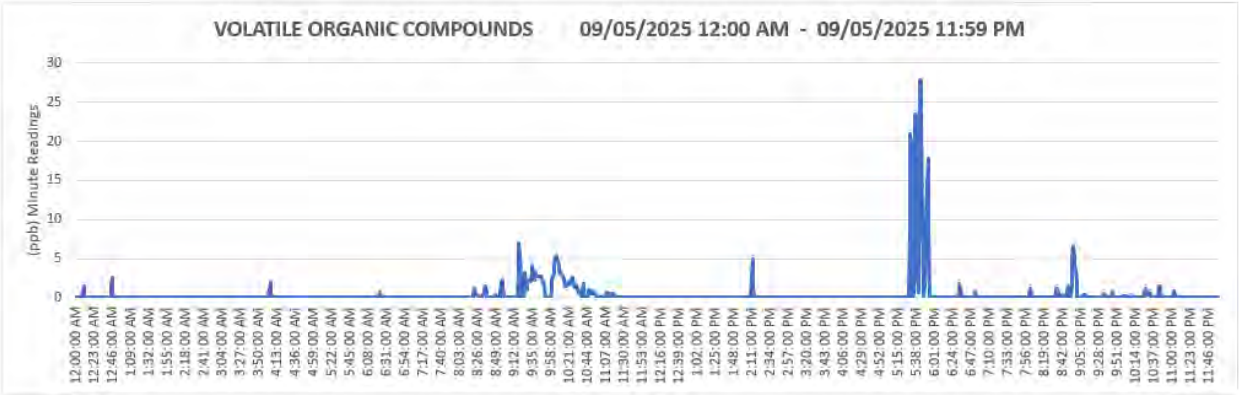


Figure D2-SP13: VOC levels for September 5, 2025

VOLATILE ORGANIC COMPOUNDS Top 25 Concentrations (ppb) Minute Readings 09/05/2025 12:00 AM - 09/05/2025 11:59 PM		
Rank	**Concentration**	**Time**
1	27.8	5:43:00 PM
2	27.7	5:44:00 PM
3	23.5	5:37:00 PM
4	23.1	5:45:00 PM
5	23.1	5:38:00 PM
6	20.9	5:31:00 PM
7	19.8	5:32:00 PM
8	17.8	5:53:00 PM
9	15.2	5:39:00 PM
10	14.7	5:52:00 PM
11	12.0	5:42:00 PM
12	11.2	5:33:00 PM
13	10.6	5:46:00 PM
14	10.2	5:36:00 PM
15	9.2	5:51:00 PM
16	9.1	5:54:00 PM
17	8.9	5:30:00 PM
18	7.0	9:18:00 AM
19	6.7	8:56:00 PM
20	5.7	9:19:00 AM
21	5.4	10:05:00 AM
22	5.3	8:57:00 PM
23	5.2	8:55:00 PM
24	5.2	10:04:00 AM
25	5.1	10:06:00 AM

VOLATILE ORGANIC COMPOUNDS Hour Averages Ranked by Highest (ppb) Hour Averages 09/05/2025 12:00 AM - 09/05/2025 11:59 PM		
Rank	**Concentration**	**Time**
1	4.9	5:00:00 PM
2	1.6	10:00:00 AM
3	1.3	9:00:00 AM
4	0.6	8:00:00 PM
5	0.2	8:00:00 AM
6	0.1	10:00:00 PM
7	0.1	9:00:00 PM
8	0.1	2:00:00 PM
9	0.1	12:00:00 AM
10	0.0	11:00:00 PM
11	0.0	7:00:00 PM
12	0.0	6:00:00 PM
13	0.0	4:00:00 PM
14	0.0	3:00:00 PM
15	0.0	1:00:00 PM
16	0.0	12:00:00 PM
17	0.0	11:00:00 AM
18	0.0	7:00:00 AM
19	0.0	6:00:00 AM
20	0.0	5:00:00 AM
21	0.0	4:00:00 AM
22	0.0	3:00:00 AM
23	0.0	2:00:00 AM
24	0.0	1:00:00 AM

Figure D2-SP14: Tables displaying VOC concentrations for September 5, 2025

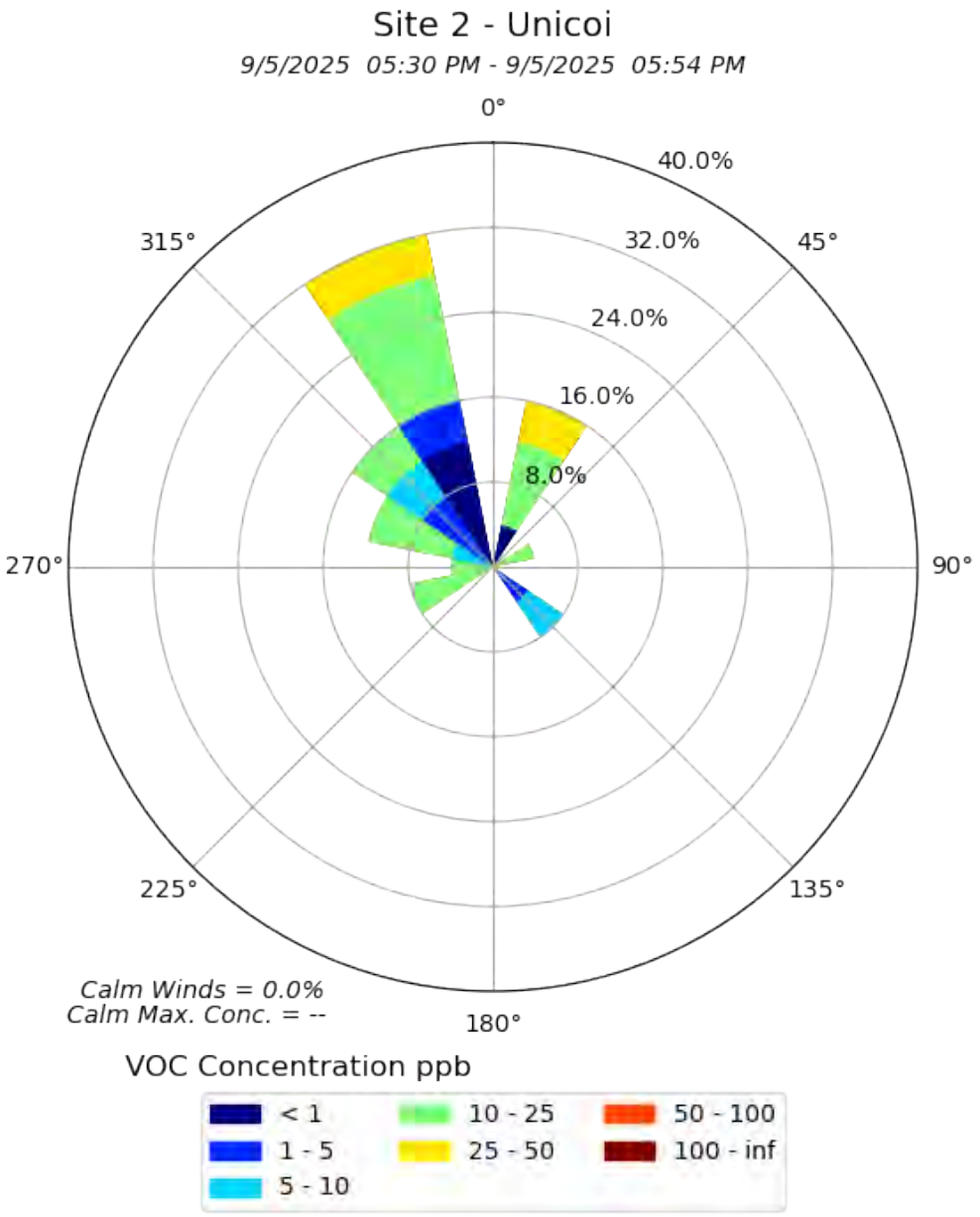


Figure D2-SP15: Pollution Rose displaying VOC concentrations and wind direction

September 13, 2025 Spike

Spikes at 5:33 – 5:39 PM EST, which affected all pollutants. Site host Event Log did not note anything of interest.

- Pollution plumes for the 5:30 PM block of time can probably not be attributed to nearby sources based on wind direction.
- 5:30 PM plume may have drifted in from outside areas such as Johnson City or Kingsport or even further away.
- Light smoke was within the region.

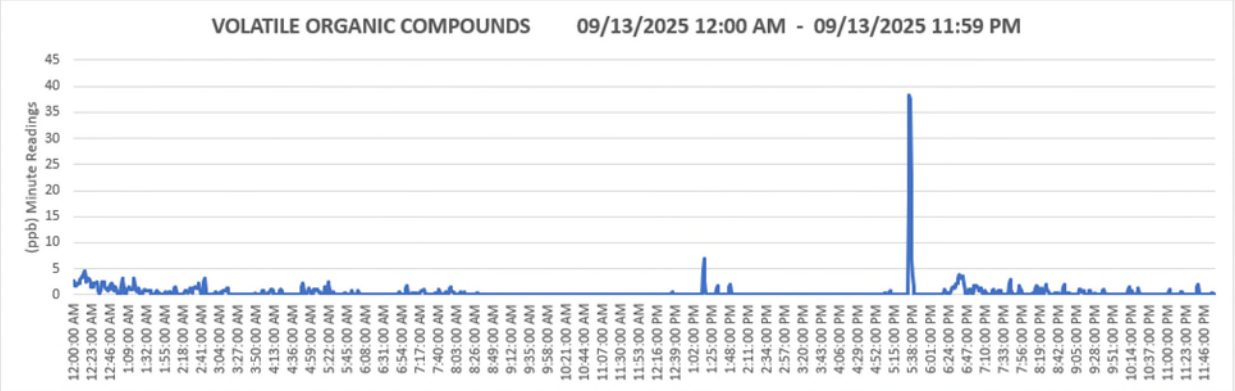


Figure D2-SP16: VOC levels for September 13, 2025

VOLATILE ORGANIC COMPOUNDS Top 25 Concentrations (ppb) Minute Readings 09/13/2025 12:00 AM - 09/13/2025 11:59 PM		
Rank	Concentration	Time
1	38.2	5:34:00 PM
2	37.5	5:35:00 PM
3	22.9	5:36:00 PM
4	18.8	5:33:00 PM
5	7.0	5:37:00 PM
6	6.9	1:15:00 PM
7	4.7	1:14:00 PM
8	4.5	12:14:00 AM
9	4.1	12:13:00 AM
10	3.8	6:37:00 PM
11	3.7	6:41:00 PM
12	3.7	12:11:00 AM
13	3.6	5:38:00 PM
14	3.6	12:10:00 AM
15	3.5	6:40:00 PM
16	3.3	6:42:00 PM
17	3.3	6:38:00 PM
18	3.3	12:15:00 AM
19	3.3	12:12:00 AM
20	3.2	6:36:00 PM
21	3.2	2:45:00 AM
22	3.2	1:01:00 AM
23	3.2	12:09:00 AM
24	3.1	6:39:00 PM
25	3.1	1:16:00 AM

VOLATILE ORGANIC COMPOUNDS Hour Averages Ranked by Highest (ppb) Hour Averages 09/13/2025 12:00 AM - 09/13/2025 11:59 PM		
Rank	Concentration	Time
1	2.1	5:00:00 PM
2	1.9	12:00:00 AM
3	0.9	6:00:00 PM
4	0.7	1:00:00 AM
5	0.5	2:00:00 AM
6	0.4	7:00:00 PM
7	0.4	5:00:00 AM
8	0.3	8:00:00 PM
9	0.3	1:00:00 PM
10	0.3	7:00:00 AM
11	0.3	4:00:00 AM
12	0.1	11:00:00 PM
13	0.1	10:00:00 PM
14	0.1	9:00:00 PM
15	0.1	3:00:00 AM
16	0.0	4:00:00 PM
17	0.0	3:00:00 PM
18	0.0	2:00:00 PM
19	0.0	12:00:00 PM
20	0.0	11:00:00 AM
21	0.0	10:00:00 AM
22	0.0	9:00:00 AM
23	0.0	8:00:00 AM
24	0.0	6:00:00 AM

Figure D2-SP17: Tables displaying VOC concentrations for September 13, 2025

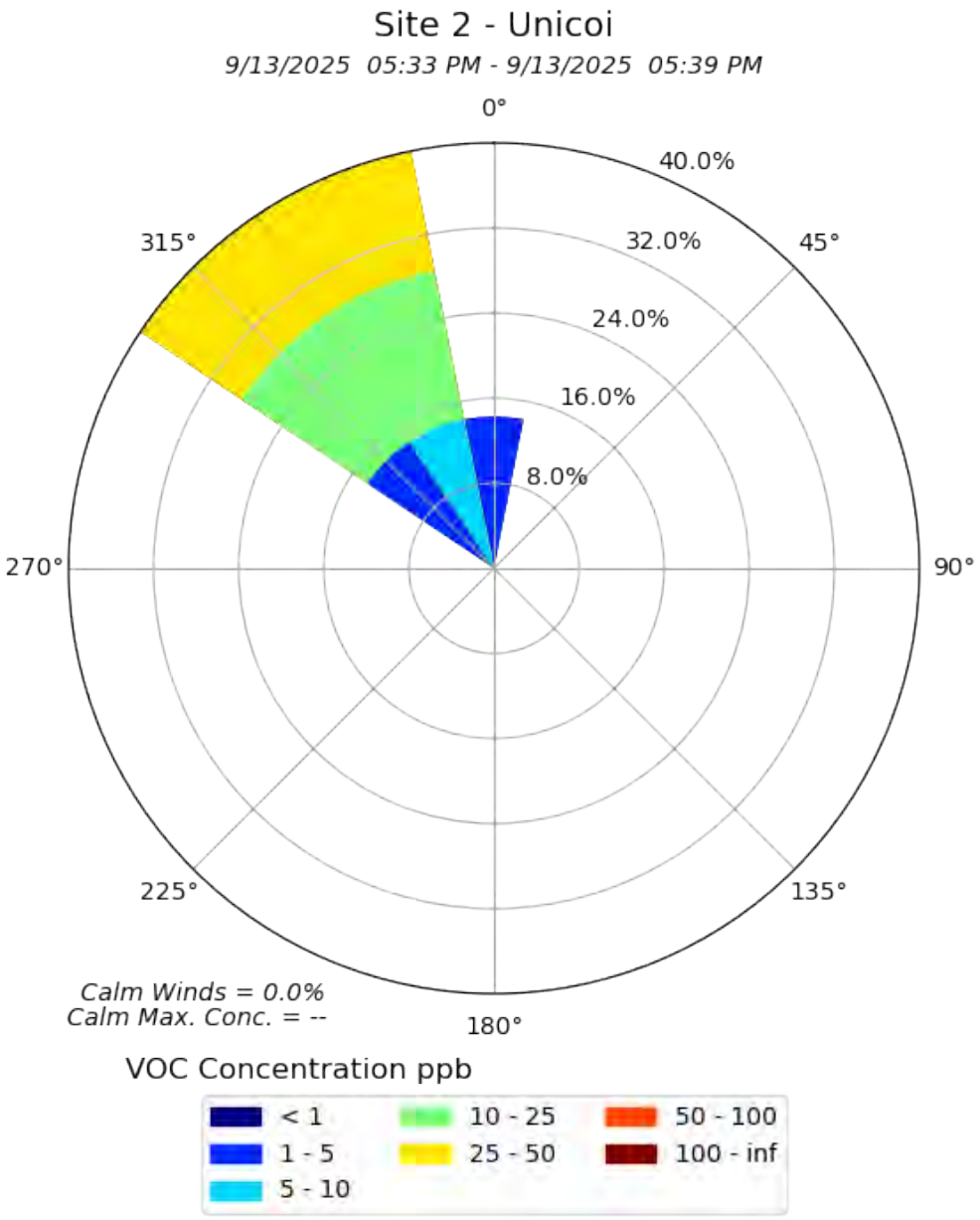


Figure D2-SP18: Pollution Rose displaying VOC concentrations and wind direction

D3: Data – Particulate Matter 2.5

PM2.5 Findings

- Most of our spikes and higher concentrations during our collection were probably from regional sources. Local sources may have, on occasion, contributed although we were unable to determine that.
- There was no significant difference in PM 2.5 levels for various times of the day.
- There was no significant difference in PM 2.5 levels for various days of the week, although early in the week levels were slightly lower.
- There were no 24-hour exceedances of the EPA health standard (35 ug/m3) for PM 2.5 during our Site 2 data collection.
- 84 percent of PM 2.5 hourly averages fell within the AQI good air quality range.
- Our highest one-minute reading was 52.4 ug/m3 at 12:47 PM on July 25, 2025.
- Our highest one-hour average was 26.0 ug/m3 at 7 PM on June 11, 2025.
- Our highest 24-hour average was 18.7 on June 11, 2025, equivalent to 69 AQI, which is a medium moderate yellow AQI code.
- Unsurprisingly, particulate matter increased during the evening on July Fourth as fireworks were set off throughout the area.
- The following two tables reflect the percentages of each range of concentrations recorded. Table range is based on Air Quality Index (AQI) concentrations and color code. Please see section D11 AQI of this report for more information regarding AQI.

Percentage of Minute Readings
Concentration Range in ug/m3

Range	Percentage
0	0.38%
0.1 - 9.0	83.24%
9.1 - 35.4	16.38%
> 35.4	0.003%

Percentage of Hourly Averages
Concentration Range in ug/m3

Range	Percentage
0	0.34%
0.1 - 9.0	83.81%
9.1 - 35.4	15.84%
> 35.4	0.00%

Data Presentations

BREDL data presentations for PM 2.5 include hour averages (the average of 60 one-minute readings) and 24-hour daily averages (the average of 24 one-hour readings). Wind and pollution roses use the one minute readings (1440 per day).

Time of day bar graphs are used to examine time periods of the day. For example, is there one part of the day where the pollution registered higher or lower? We also examined pollution levels by day of the week. Was there a particular day where the pollution was higher or lower?

Figures D3-1 – D3-13 plot hour averages for the entire collection period and for each month. The hour averages take the 60 one-minute readings for each hour and average them for the hour average. The day (24-hour) averages take the 24 one-hour averages and average them.

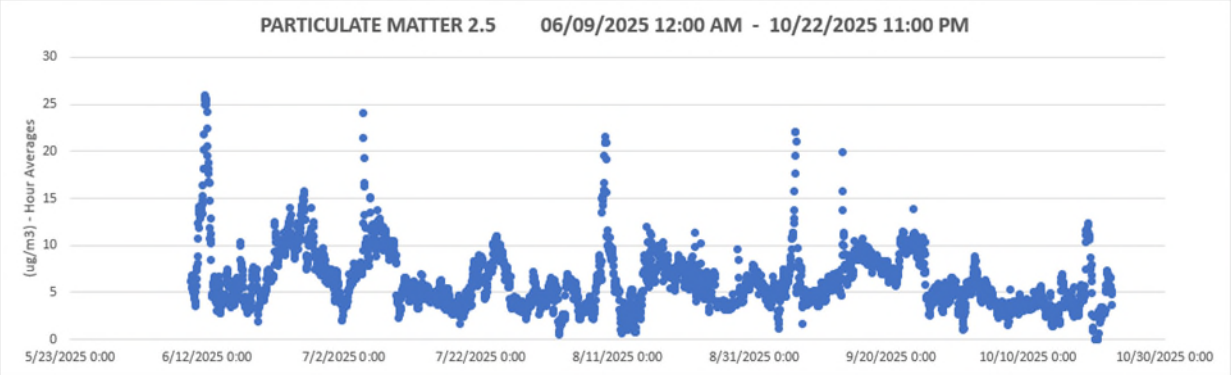


Figure D3-1: PM2.5 Hour Averages – Entire Collection Period

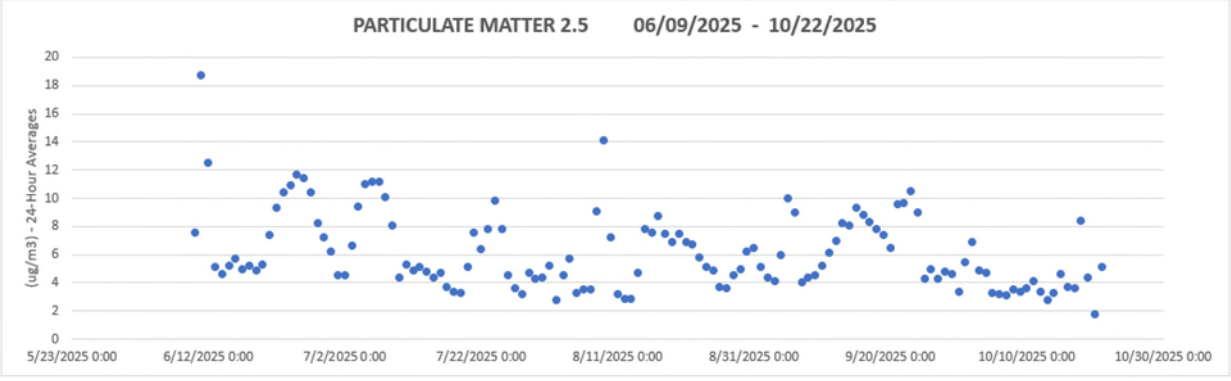


Figure D3-2: PM2.5 Day (24-Hour) Averages – Entire Collection Period

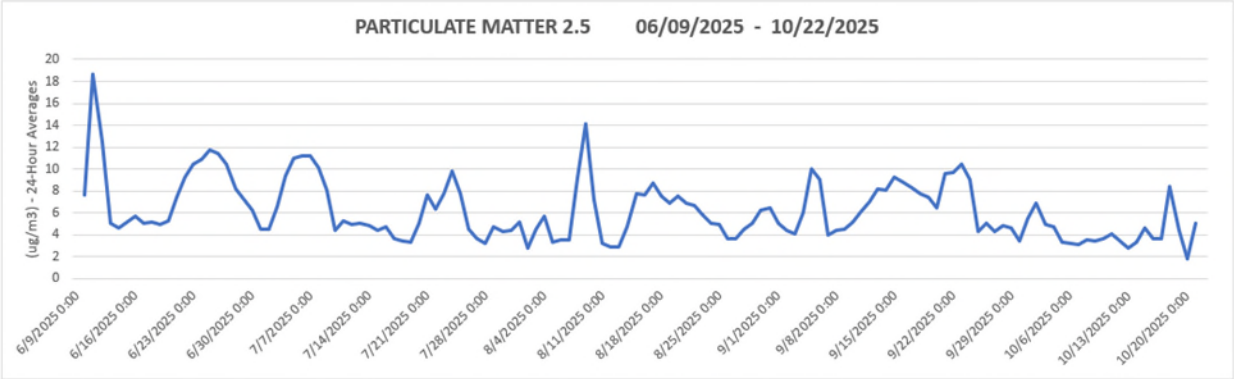


Figure D3-3: PM2.5 Day (24-Hour) Averages – Entire Collection Period

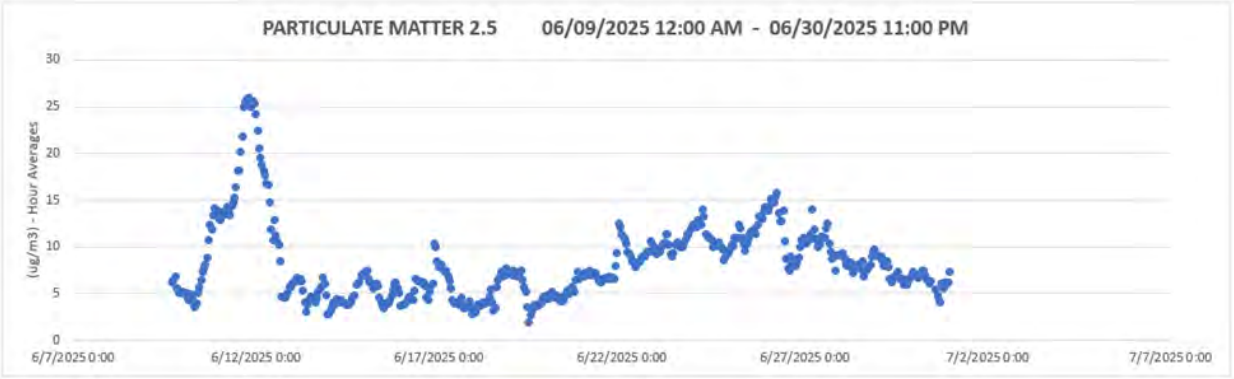


Figure D3-4: PM2.5 Hour Averages –June

Figure D3-5: PM2.5 Day (24-Hour) Averages –June

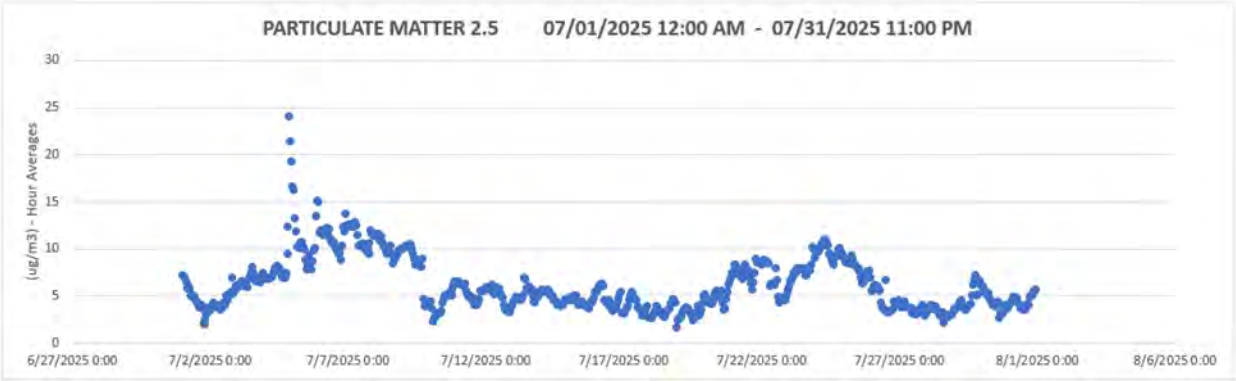


Figure D3-6: PM2.5 Hour Averages –July

Figure D3-7: PM2.5 Day (24-Hour) Averages – July

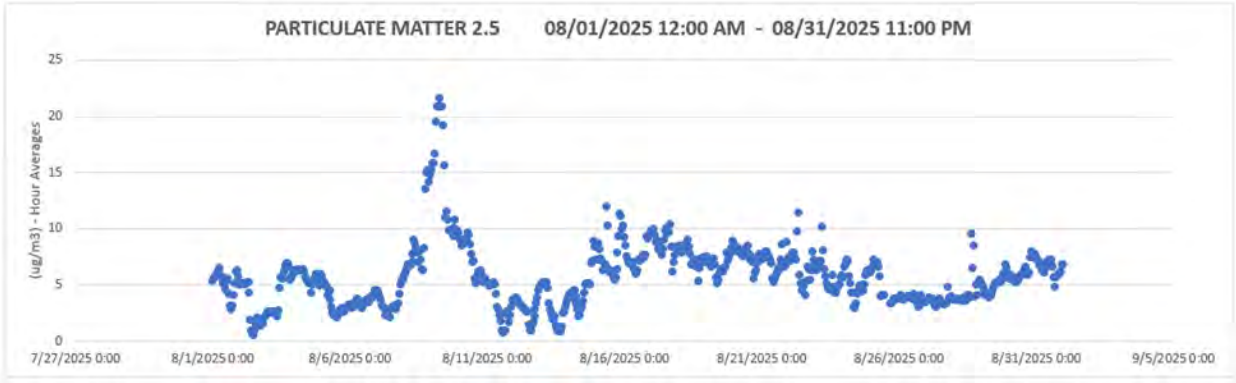


Figure D3-8: PM2.5 Hour Averages –August

Figure D3-9: PM2.5 Day (24-Hour) Averages – August

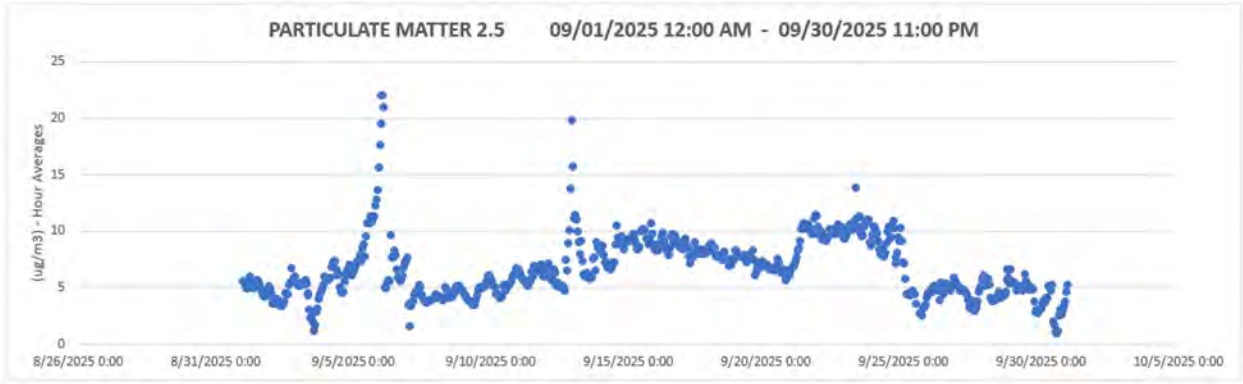


Figure D3-10: PM2.5 Hour Averages –September

Figure D3-11: PM2.5 Day (24-Hour) Averages – September

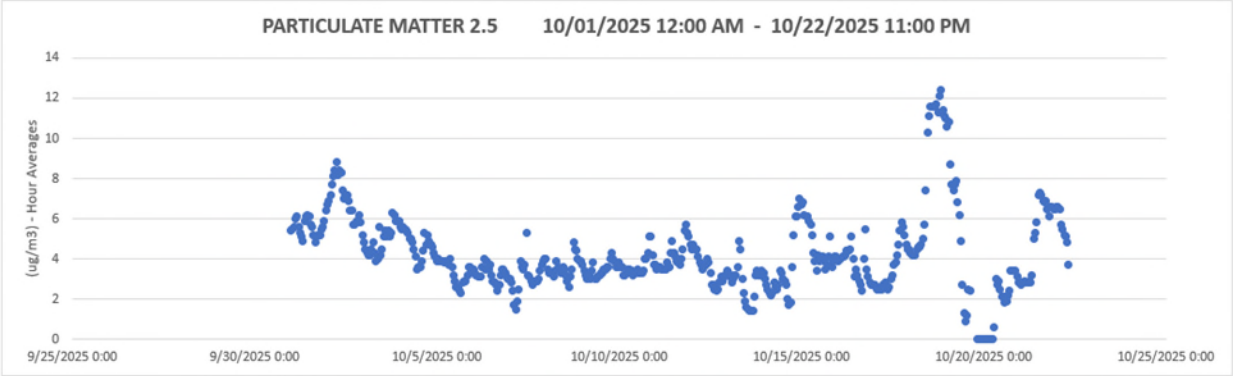


Figure D3-12: PM2.5 Hour Averages –October

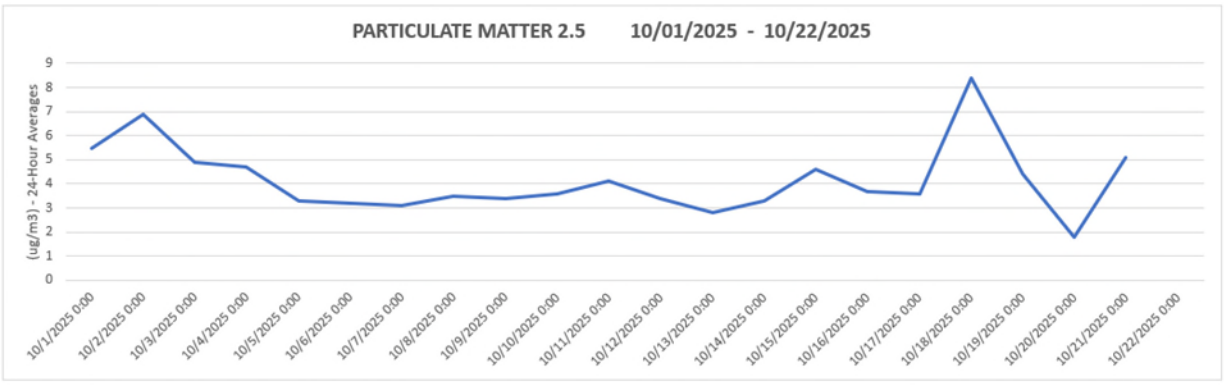


Figure D3-13: PM2.5 Day (24-Hour) Averages – October

Figures D3-14 – D3-19 plot averages based on the time of day for the entire collection period and for each month.

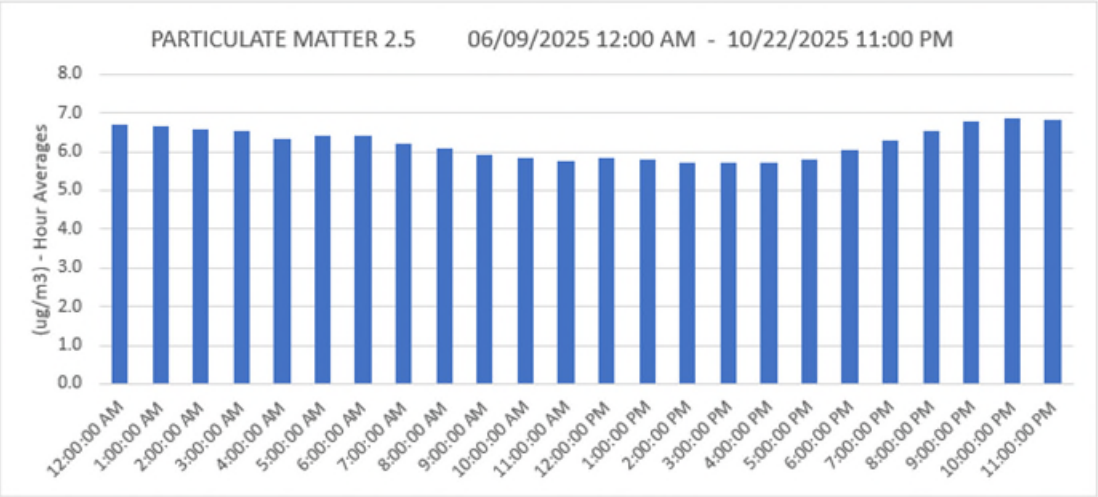


Figure D3-14: PM2.5 Hour Averages – Based on Time of Day for Collection Period

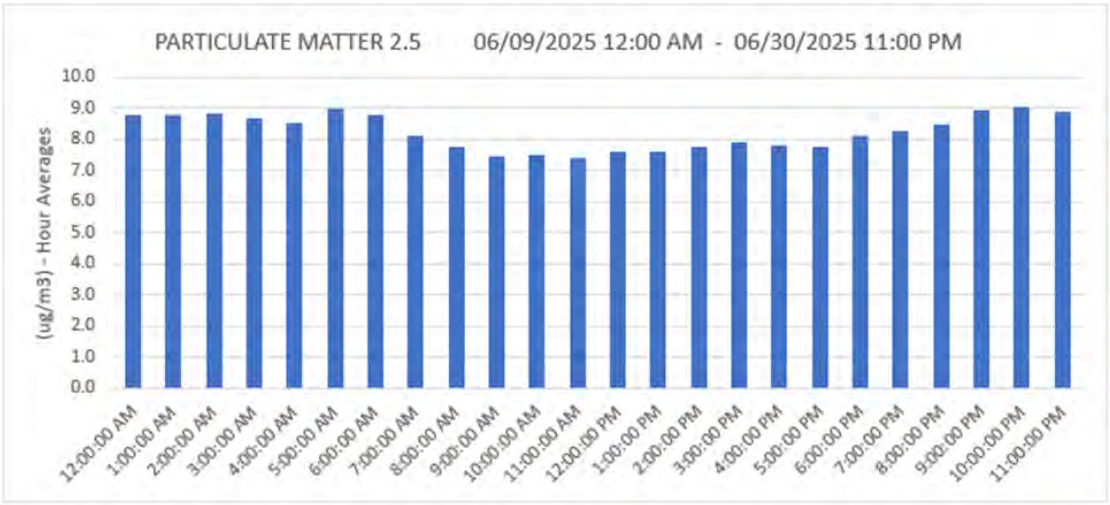


Figure D3-15: PM2.5 Hour Averages – Based on Time of Day for June

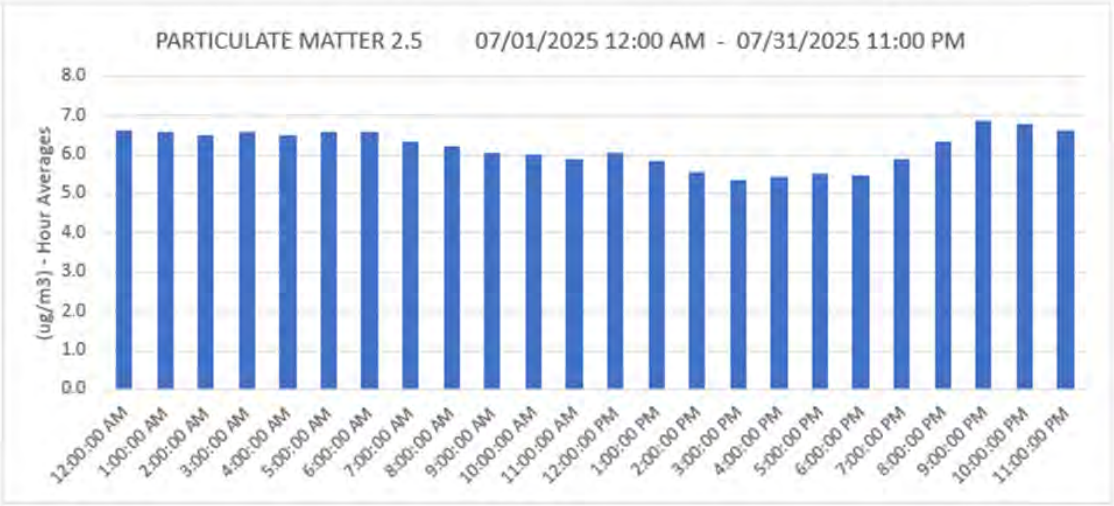


Figure D3-16: PM2.5 Hour Averages – Based on Time of Day for July

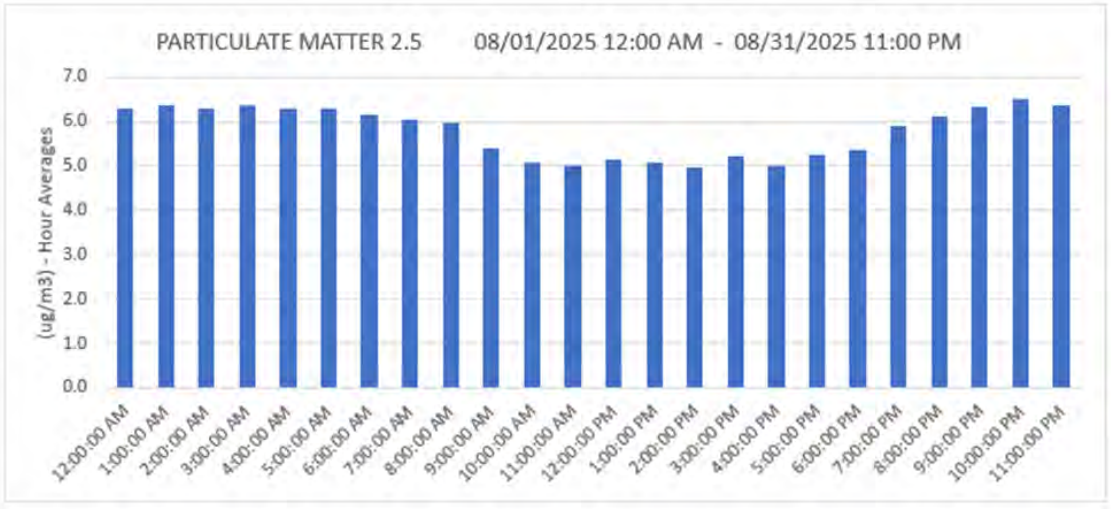


Figure D3-17: PM2.5 Hour Averages – Based on Time of Day for August

Figure D3-18: PM2.5 Hour Averages – Based on Time of Day for September

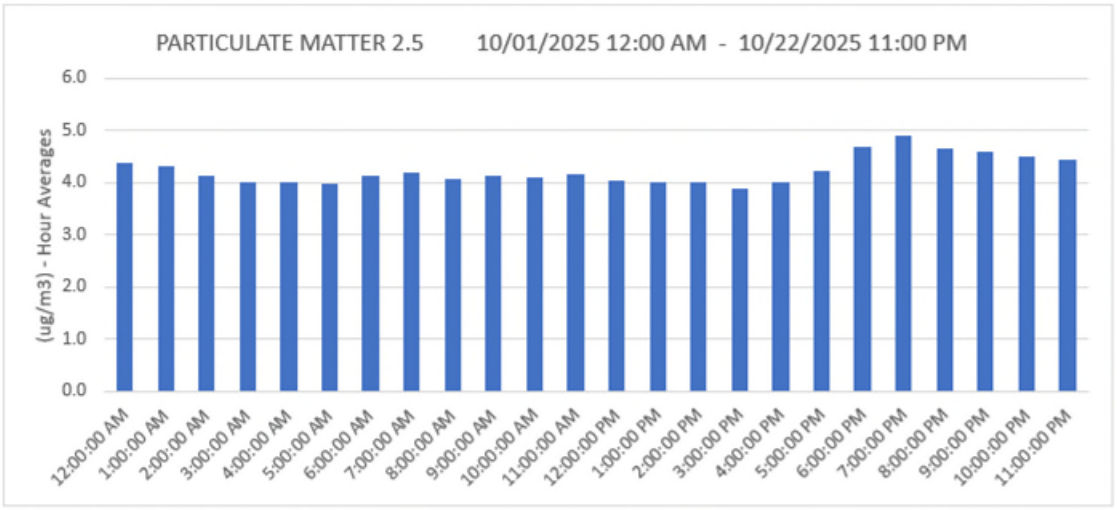


Figure D3-19: PM2.5 Hour Averages – Based on Time of Day for October

Figure D3-20 plot day averages based on the day of the week for the entire collection period.

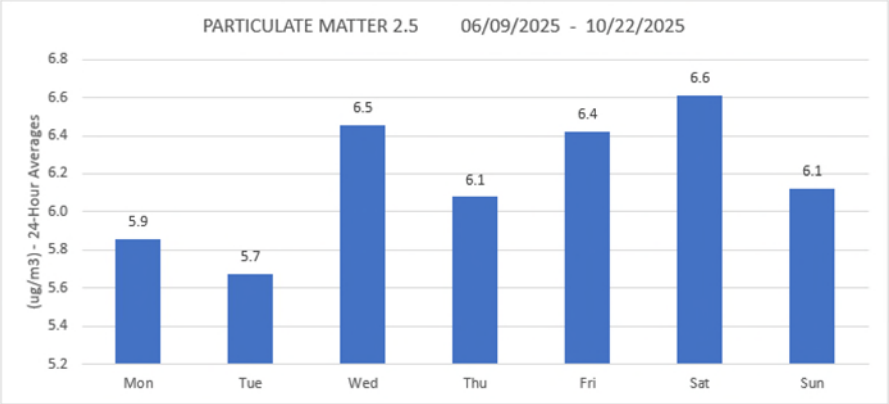


Figure D3-20: PM2.5 Day (24-Hour) Averages – Based on Day of the Week

PARTICULATE MATTER 2.5
Top 25 Concentrations
(ug/m3) - Hour Averages
06/09/2025 12:00 AM - 10/22/2025 11:00 PM

Rank	Concentration	Date & Time
1	26.0	6/11/2025 7:00 PM
2	25.7	6/11/2025 6:00 PM
3	25.6	6/11/2025 10:00 PM
4	25.4	6/11/2025 8:00 PM
5	25.4	6/11/2025 5:00 PM
6	25.3	6/11/2025 11:00 PM
7	25.0	6/11/2025 9:00 PM
8	24.9	6/11/2025 4:00 PM
9	24.2	6/12/2025 12:00 AM
10	24.1	7/4/2025 9:00 PM
11	22.4	6/12/2025 1:00 AM
12	22.1	9/6/2025 2:00 AM
13	22.1	9/6/2025 1:00 AM
14	21.8	6/11/2025 3:00 PM
15	21.6	8/9/2025 6:00 AM
16	21.4	7/4/2025 10:00 PM
17	21.0	9/6/2025 3:00 AM
18	20.9	8/9/2025 8:00 AM
19	20.9	8/9/2025 7:00 AM
20	20.9	8/9/2025 5:00 AM
21	20.9	8/9/2025 4:00 AM
22	20.6	6/12/2025 2:00 AM
23	20.2	6/11/2025 2:00 PM
24	19.9	9/12/2025 11:00 PM
25	19.5	9/6/2025 12:00 AM

PARTICULATE MATTER 2.5
Top 25 Concentrations
(ug/m3) - 24-Hour Averages
06/09/2025 - 10/22/2025

Rank	Concentration	Date
1	18.7	6/11/2025
2	14.1	8/9/2025
3	12.5	6/12/2025
4	11.7	6/25/2025
5	11.4	6/26/2025
6	11.2	7/7/2025
7	11.2	7/6/2025
8	11.0	7/5/2025
9	10.9	6/24/2025
10	10.5	9/23/2025
11	10.4	6/27/2025
12	10.4	6/23/2025
13	10.1	7/8/2025
14	10.0	9/5/2025
15	9.8	7/24/2025
16	9.7	9/22/2025
17	9.6	9/21/2025
18	9.4	7/4/2025
19	9.3	9/15/2025
20	9.3	6/22/2025
21	9.1	8/8/2025
22	9.0	9/24/2025
23	9.0	9/6/2025
24	8.8	9/16/2025
25	8.7	8/17/2025

Figure D3-21: PM2.5 Top 25 Concentrations for Hour Averages and 24-Hour Averages

Figures D3:22 and D3:23 pollution roses display the pollutant concentration based on wind direction, which can indicate the direction of the pollution source.

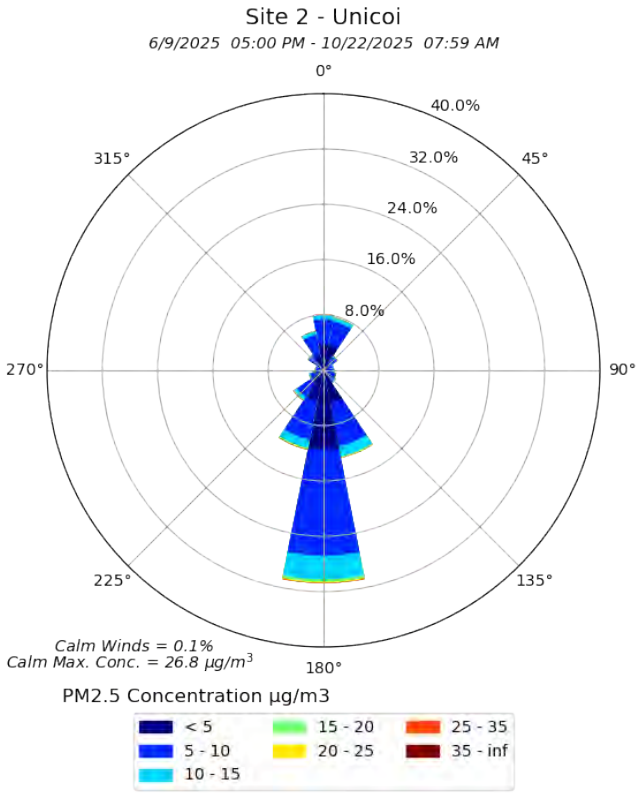


Figure D3-22: Pollution Rose

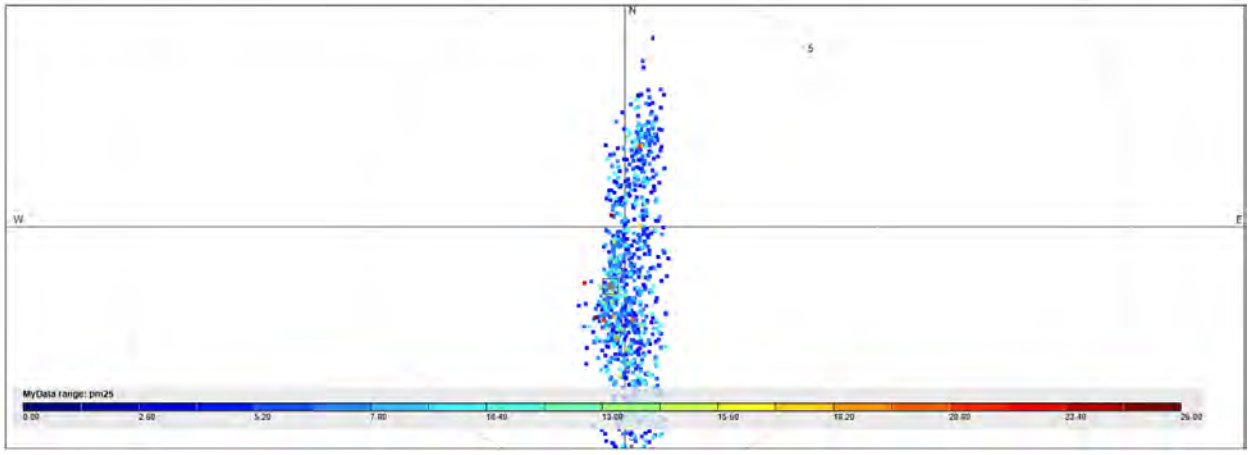


Figure D3-23: EPA RETIGO Pollution Rose 6/9/2025 - 10/22/2025

We separated the PM2.5 minute concentrations of at least 35 ug/m3 and plotted those on a pollution rose for a better visual representation of the direction of the highest concentrations.

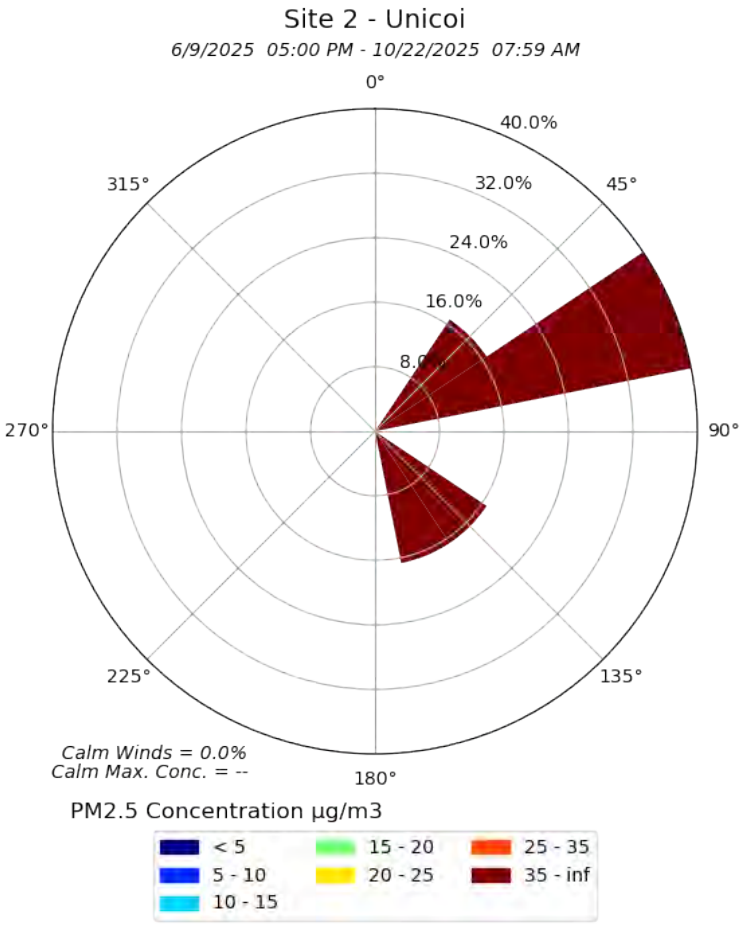


Figure D3-24: Pollution Rose displaying PM2.5 concentrations of at least 35 ug/m3.

PM2.5 Spikes

June 10, 2025 Event/Spike

Site host noted dust from heavy dump trucks from 10 AM – 4:30 PM EDT (9 AM – 3:30 PM EST).

- Could not determine if truck traffic caused a significant increase in PM during event.
- Regional PM increased in the afternoon and evening on BEAST and nearby agency PM monitors. No local impacts could be determined.

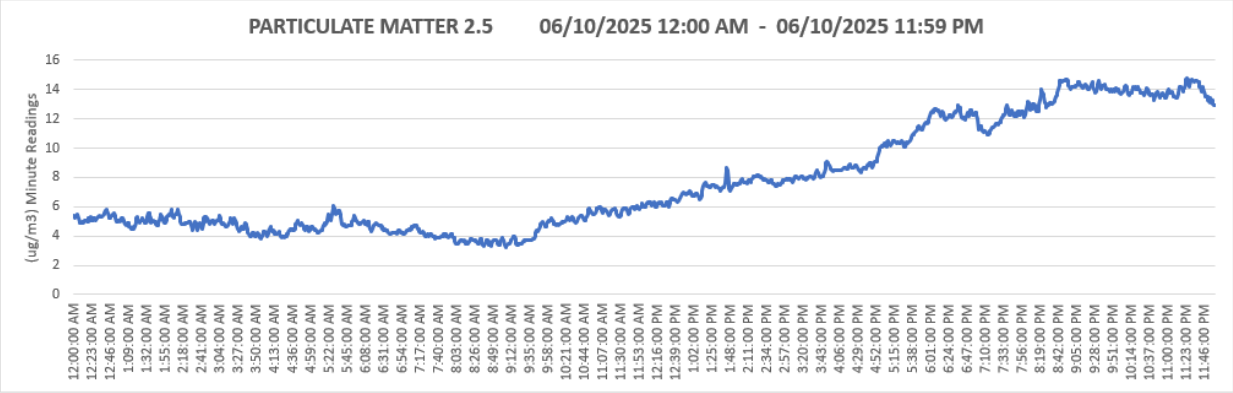


Figure D3-SP1: PM 2.5 levels for June 10, 2025

PARTICULATE MATTER 2.5 Top 25 Concentrations (ug/m3) Minute Readings 06/10/2025 12:00 AM - 06/10/2025 11:59 PM		
Rank	Concentration	Time
1	14.8	11:24:00 PM
2	14.7	11:31:00 PM
3	14.7	11:30:00 PM
4	14.7	11:25:00 PM
5	14.7	11:23:00 PM
6	14.7	8:53:00 PM
7	14.7	8:52:00 PM
8	14.6	11:37:00 PM
9	14.6	11:36:00 PM
10	14.6	11:35:00 PM
11	14.6	11:32:00 PM
12	14.6	9:33:00 PM
13	14.6	8:54:00 PM
14	14.6	8:51:00 PM
15	14.6	8:50:00 PM
16	14.6	8:49:00 PM
17	14.6	8:48:00 PM
18	14.6	8:45:00 PM
19	14.6	8:44:00 PM
20	14.5	11:39:00 PM
21	14.5	11:38:00 PM
22	14.5	11:34:00 PM
23	14.5	11:33:00 PM
24	14.5	11:29:00 PM
25	14.5	9:25:00 PM

PARTICULATE MATTER 2.5 Hour Averages Ranked by Highest (ug/m3) Hour Averages 06/10/2025 12:00 AM - 06/10/2025 11:59 PM		
Rank	Concentration	Time
1	14.1	9:00:00 PM
2	13.9	11:00:00 PM
3	13.8	10:00:00 PM
4	13.4	8:00:00 PM
5	12.3	6:00:00 PM
6	11.8	7:00:00 PM
7	10.7	5:00:00 PM
8	8.8	4:00:00 PM
9	8.1	3:00:00 PM
10	7.7	2:00:00 PM
11	7.3	1:00:00 PM
12	6.4	12:00:00 PM
13	5.7	11:00:00 AM
14	5.2	12:00:00 AM
15	5.1	10:00:00 AM
16	5.0	2:00:00 AM
17	5.0	1:00:00 AM
18	4.9	5:00:00 AM
19	4.5	6:00:00 AM
20	4.5	3:00:00 AM
21	4.3	4:00:00 AM
22	4.1	7:00:00 AM
23	3.9	9:00:00 AM
24	3.5	8:00:00 AM

Figure D3-SP2: Tables displaying PM 2.5 concentrations for June 10, 2025

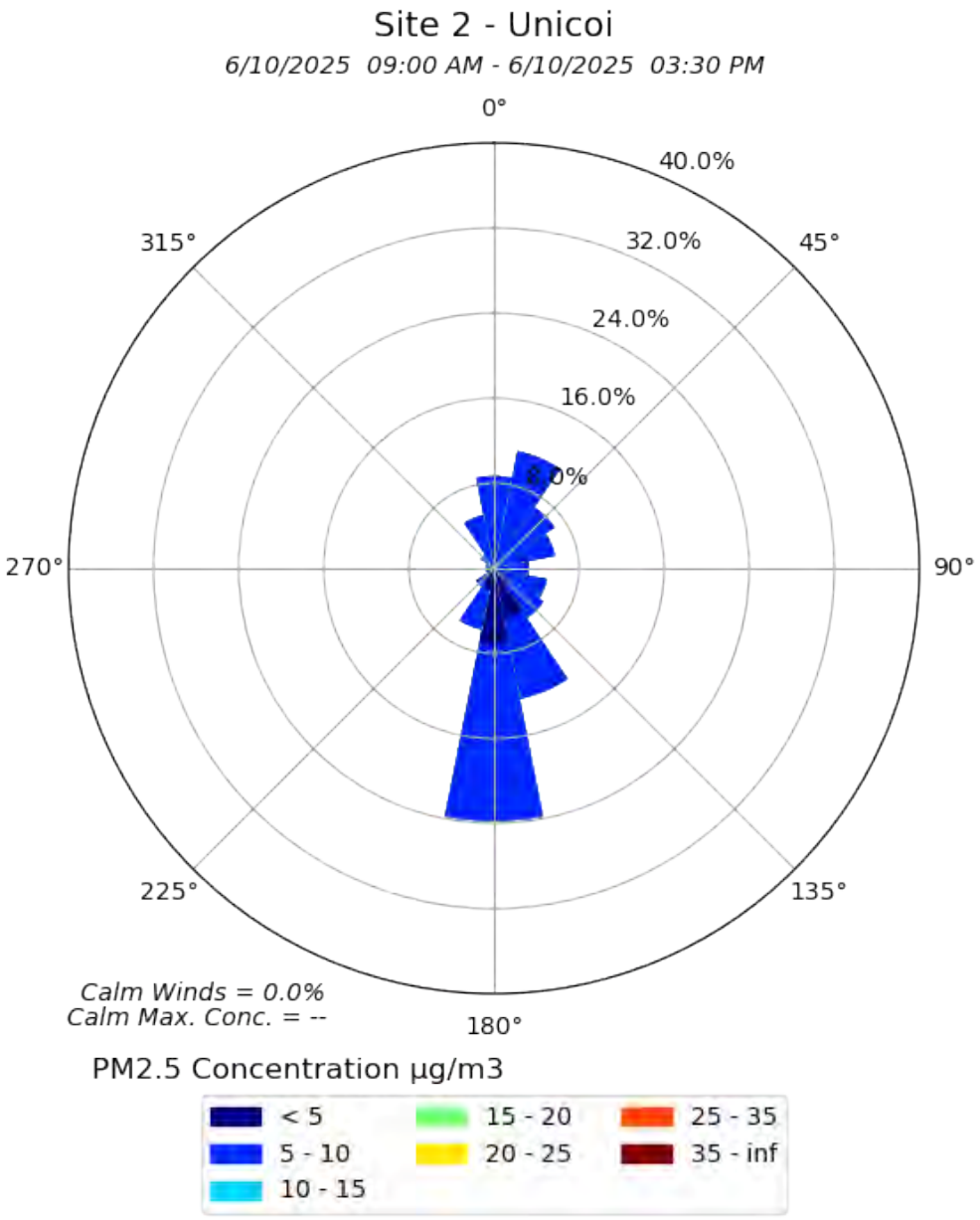


Figure D3-SP3: Pollution Rose displaying PM 2.5 concentrations and wind direction

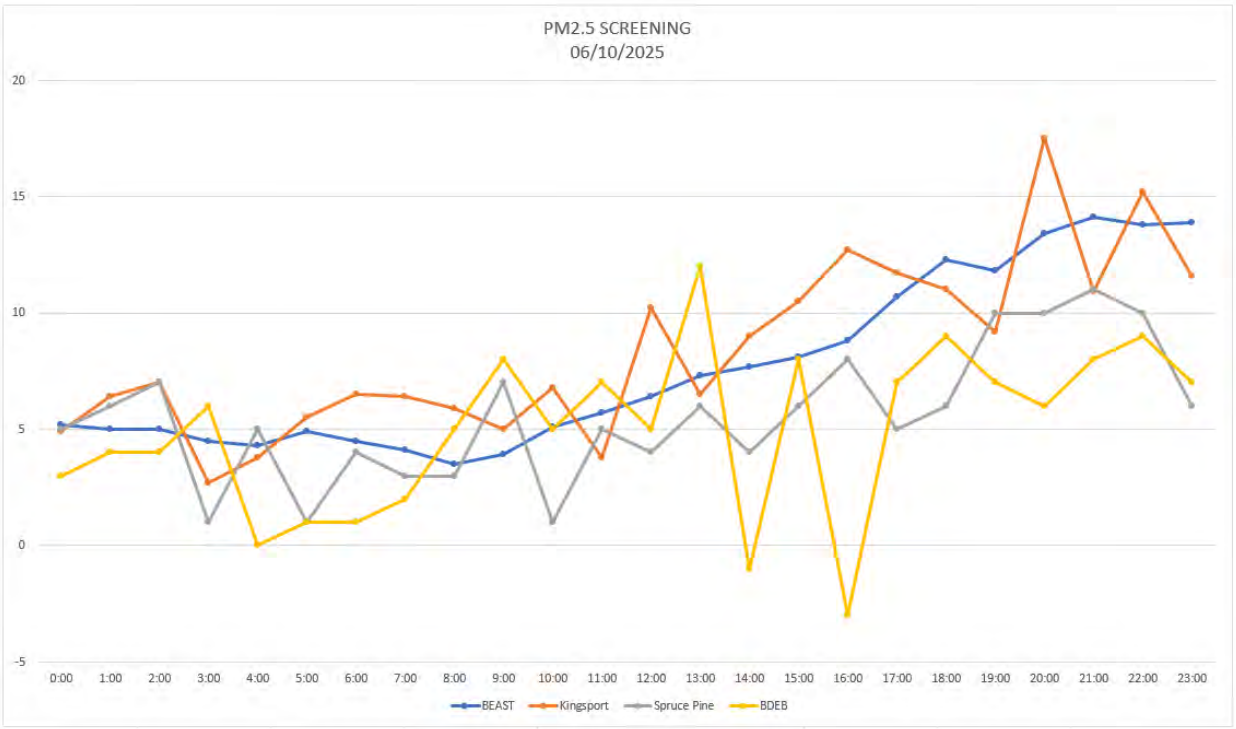


Figure D3-SP4: Graph displaying PM 2.5 concentrations for BEAST and nearby agency monitors

Screening BEAST data with regional agency monitors also show an increase in PM 2.5 during the evening hours from the Kingsport and Spruce Pine agency monitors.

CARE-4-AIR SITE 2			
Pollutant	**Agency Monitor**	**Monitor ID**	**Miles from BEAST**
PM2.5	Kingsport	471631007	20 - 25
PM2.5	Spruce Pine	371210004	25 - 30
PM2.5	BDEB	370210034	45 - 50

Figure D3-SP5: Table displaying nearby agency monitors and miles from our monitoring site

June 10 NOAA Smoke Map and EPA AQI Map show light smoke over the region with overall good air quality for the day.

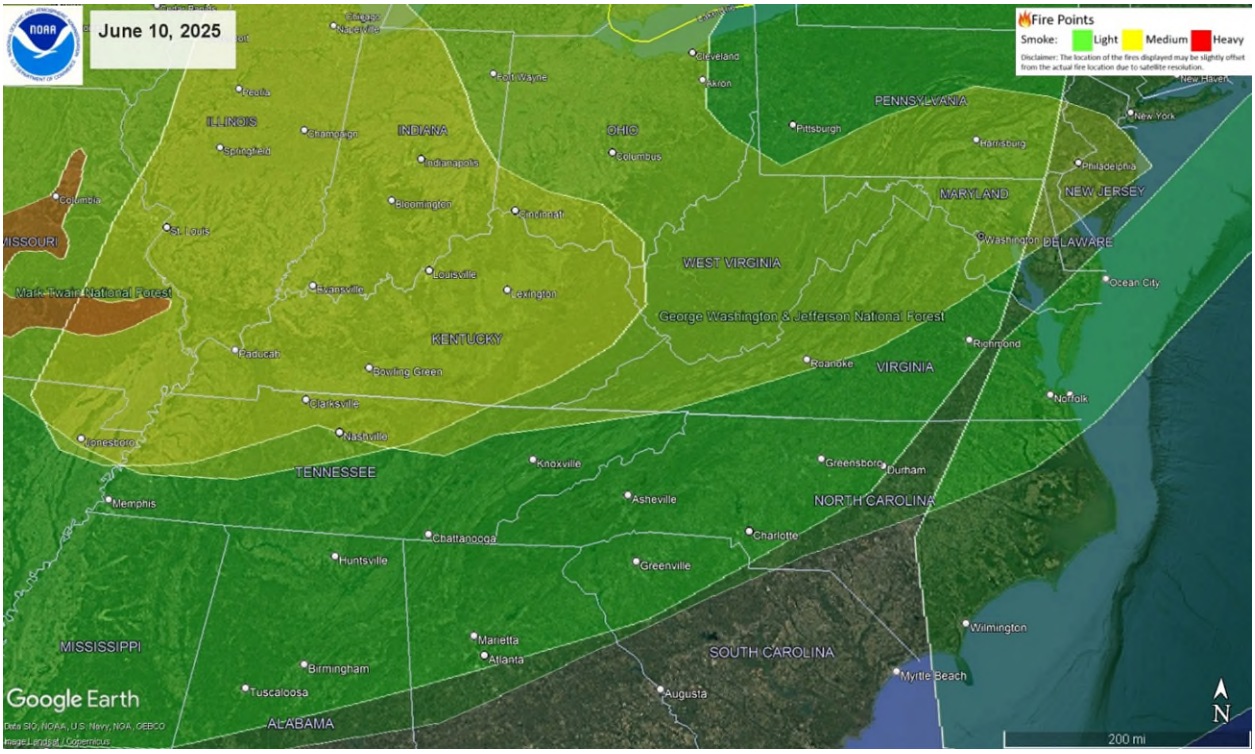


Figure D3-SP6: NOAA Map displaying regional smoke on June 10, 2025

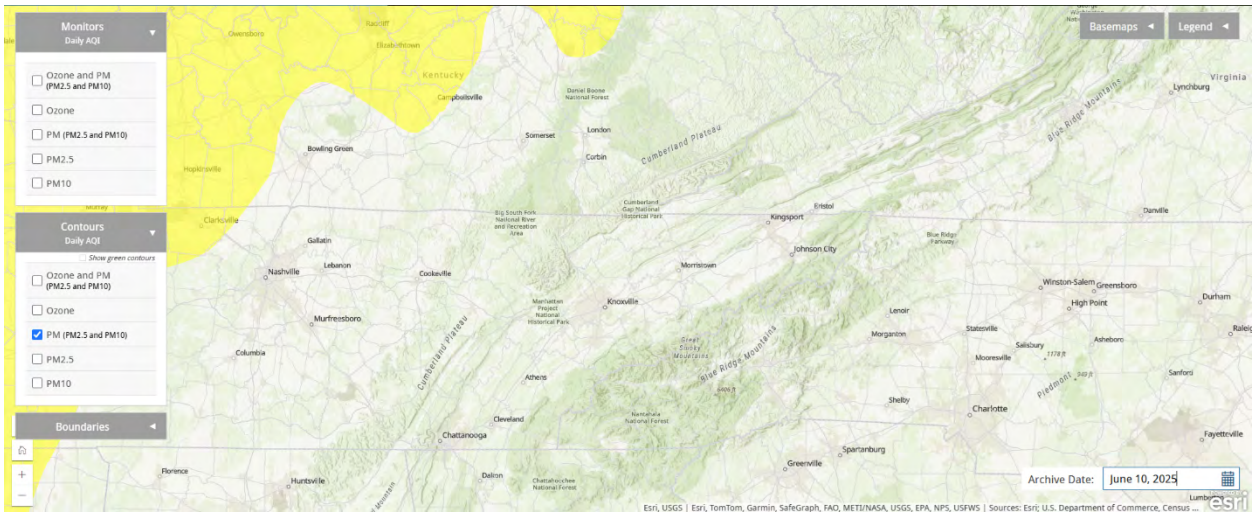


Figure D3-SP7: EPA AQI Map displaying AQI colors for June 10, 2025

June 23, 2025 Event/Spike

Site host noted lots of trucks and dust from 7 AM – 4:30 PM EDT (6 AM – 3:30 PM EST).

- Regional air quality was moderate for PM 2.5 with light smoke throughout the region.

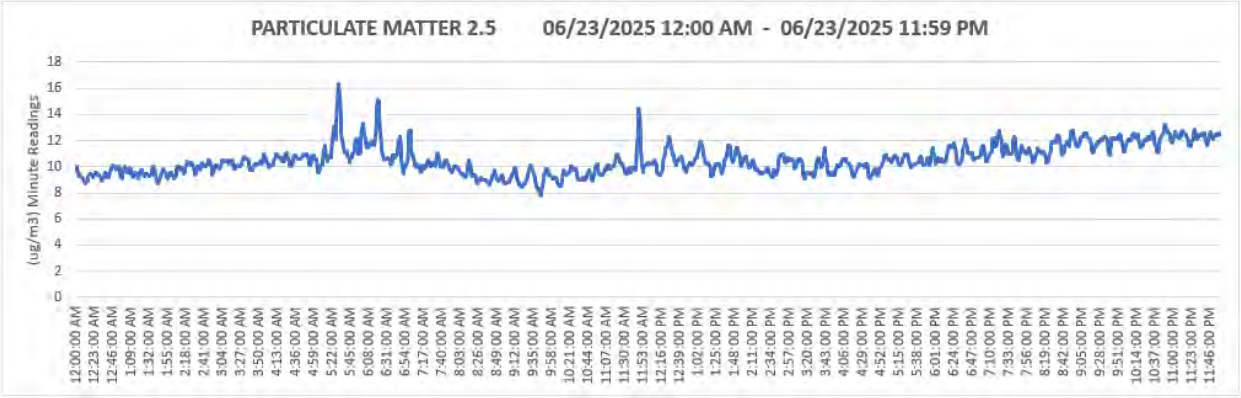


Figure D3-SP8: PM 2.5 levels for June 23, 2025

PARTICULATE MATTER 2.5 Top 25 Concentrations (ug/m3) Minute Readings 06/23/2025 12:00 AM - 06/23/2025 11:59 PM		
Rank	Concentration	Time
1	16.3	5:31:00 AM
2	16.3	5:30:00 AM
3	15.4	5:32:00 AM
4	15.1	6:20:00 AM
5	15.0	6:21:00 AM
6	14.8	5:29:00 AM
7	14.6	6:19:00 AM
8	14.5	11:48:00 AM
9	14.1	11:49:00 AM
10	14.0	5:33:00 AM
11	13.9	6:22:00 AM
12	13.3	6:18:00 AM
13	13.3	6:02:00 AM
14	13.3	6:01:00 AM
15	13.3	5:28:00 AM
16	13.2	10:51:00 PM
17	13.2	10:50:00 PM
18	13.0	10:49:00 PM
19	13.0	5:25:00 AM
20	12.9	11:28:00 PM
21	12.9	10:52:00 PM
22	12.9	6:00:00 AM
23	12.8	11:12:00 PM
24	12.8	10:53:00 PM
25	12.8	8:54:00 PM

PARTICULATE MATTER 2.5 Hour Averages Ranked by Highest (ug/m3) Hour Averages 06/23/2025 12:00 AM - 06/23/2025 11:59 PM		
Rank	Concentration	Time
1	12.3	11:00:00 PM
2	12.1	10:00:00 PM
3	11.9	9:00:00 PM
4	11.4	8:00:00 PM
5	11.4	6:00:00 AM
6	11.4	5:00:00 AM
7	11.3	7:00:00 PM
8	10.8	6:00:00 PM
9	10.5	1:00:00 PM
10	10.5	4:00:00 AM
11	10.4	5:00:00 PM
12	10.4	12:00:00 PM
13	10.2	11:00:00 AM
14	10.2	7:00:00 AM
15	10.2	3:00:00 AM
16	10.0	2:00:00 PM
17	9.9	4:00:00 PM
18	9.9	3:00:00 PM
19	9.9	2:00:00 AM
20	9.4	1:00:00 AM
21	9.4	12:00:00 AM
22	9.3	10:00:00 AM
23	9.2	8:00:00 AM
24	9.0	9:00:00 AM

Figure D3-SP9: Tables displaying PM 2.5 concentrations for June 23, 2025

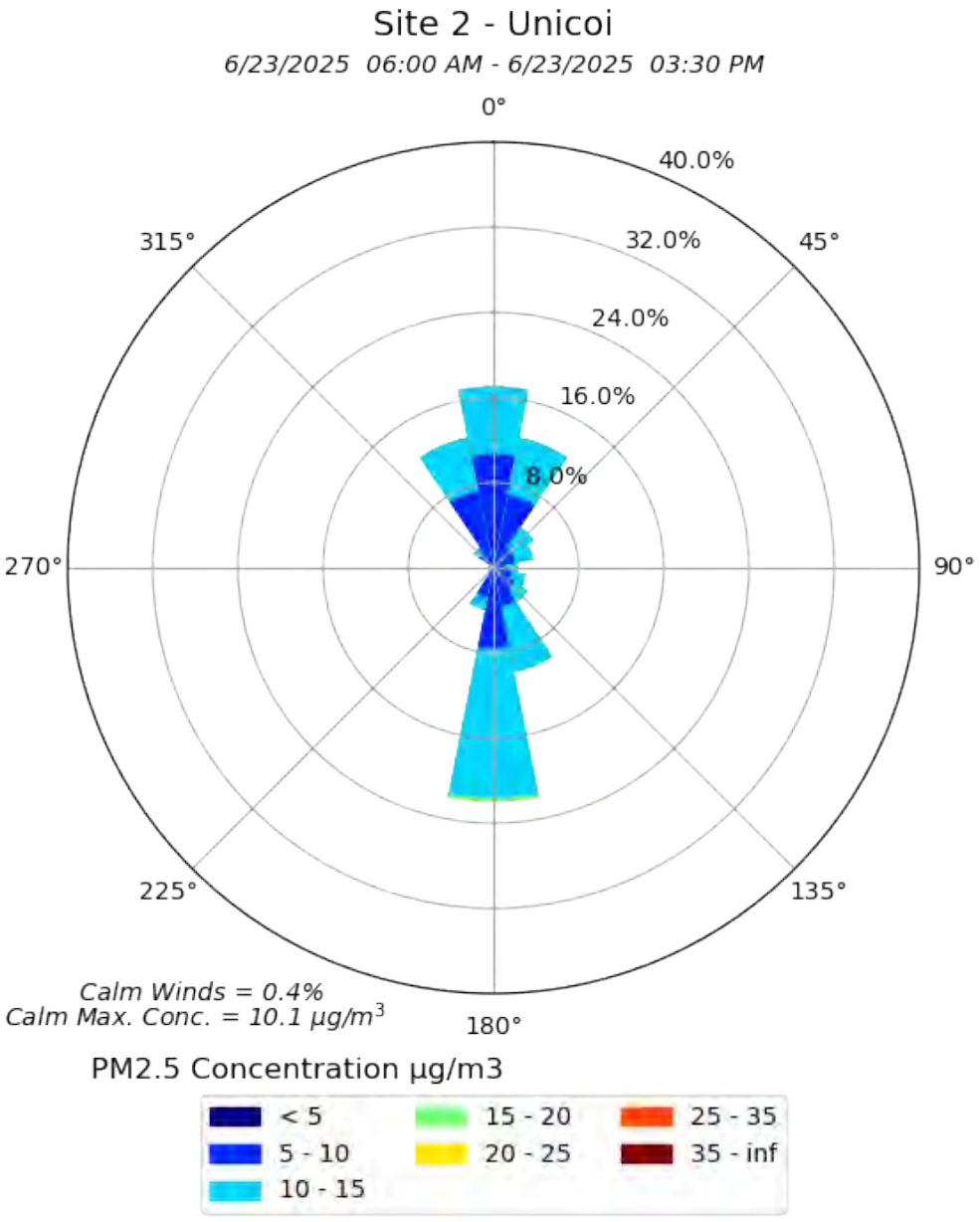


Figure D3-SP10: Pollution Rose displaying PM 2.5 concentrations and wind direction

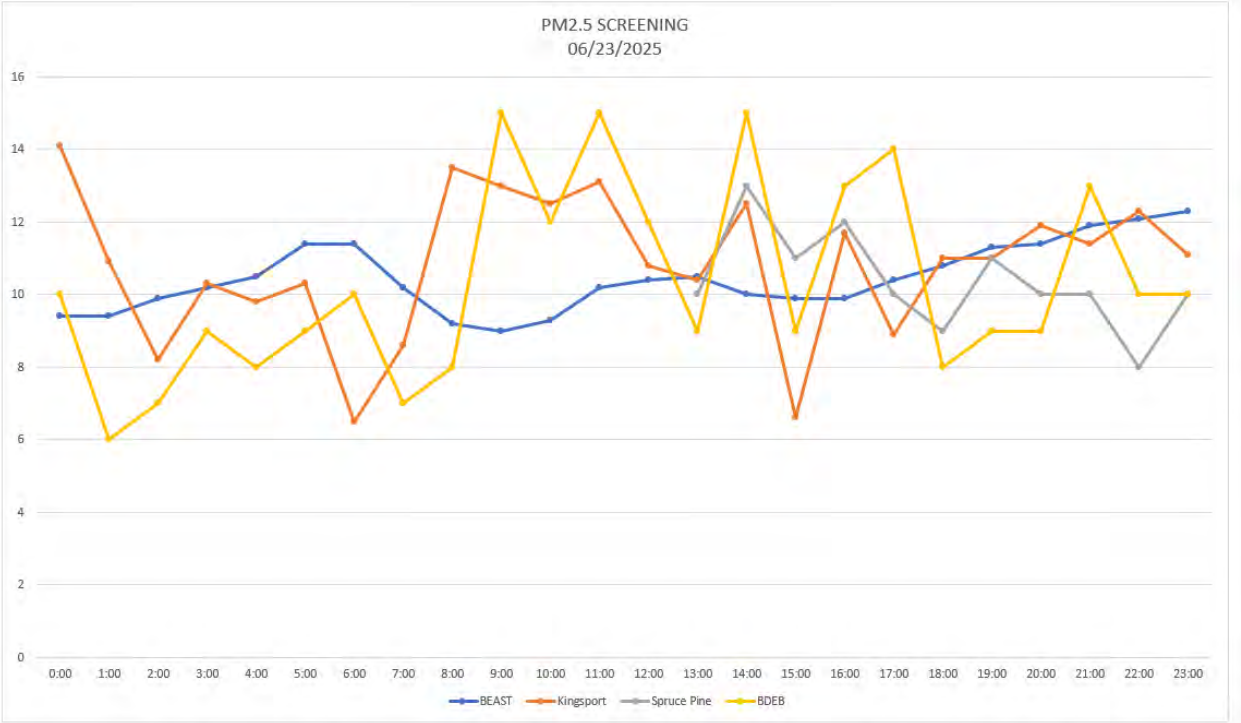


Figure D3-SP11: Graph displaying PM 2.5 concentrations for BEAST and nearby agency monitors

CARE-4-AIR SITE 2			
Pollutant	**Agency Monitor**	**Monitor ID**	**Miles from BEAST**
PM2.5	Kingsport	471631007	20 - 25
PM2.5	Spruce Pine	371210004	25 - 30
PM2.5	BDEB	370210034	45 - 50

Figure D3-SP12: Table displaying nearby agency monitors and miles from our monitoring site

June 23 24-hour Average*

	23
BEAST	10.4
Kingsport	10.8
Spruce Pine	-
BDEB	10.9

Figure D3-SP13: Table displaying the day's 24-hour average and AQI color code for BEAST and agency monitors

*Agency Monitor Data has not been quality assured.

June 23 NOAA Smoke Map and EPA AQI Map show light smoke in the region. June 23 was a moderate air quality day based on EPA AQI mapping.

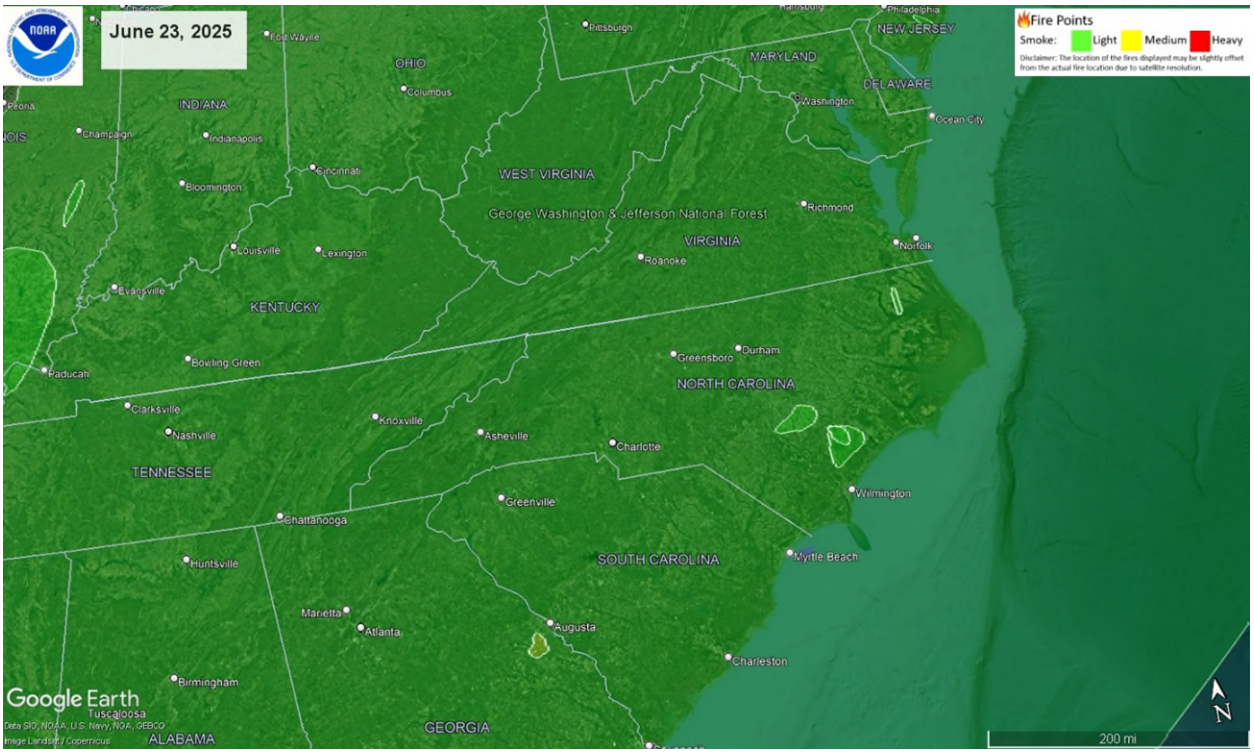


Figure D3-SP14: NOAA Map displaying regional smoke on June 23, 2025

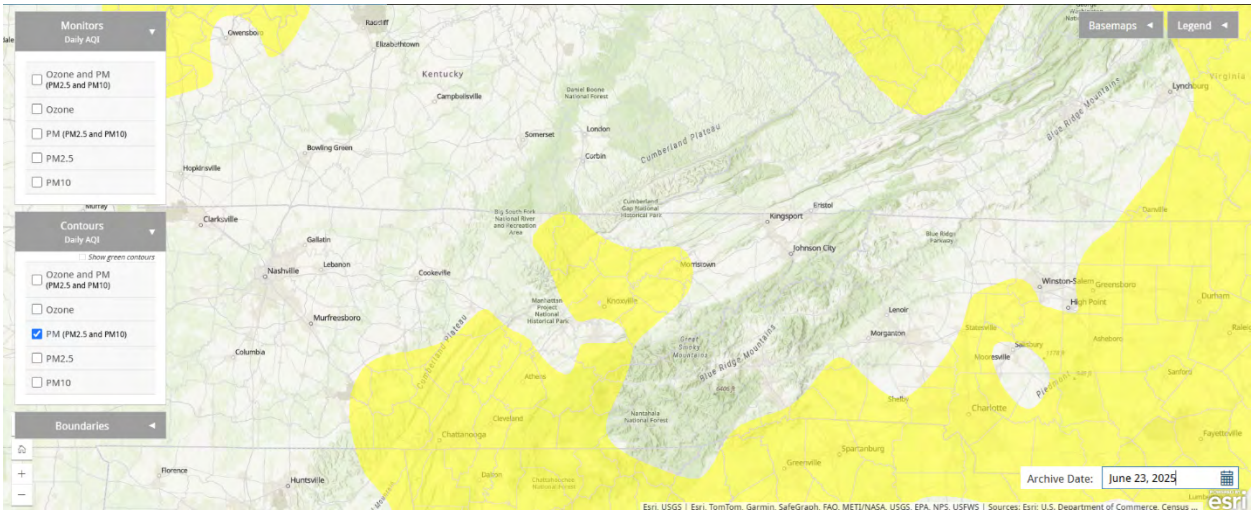


Figure D3-SP15: EPA AQI Map displaying AQI colors for June 23, 2025

July 4, 2025 Spike

- As expected, we saw spikes in Particulate Matter (PM2.5, PM10) during the evening of July Fourth as fireworks were set off.

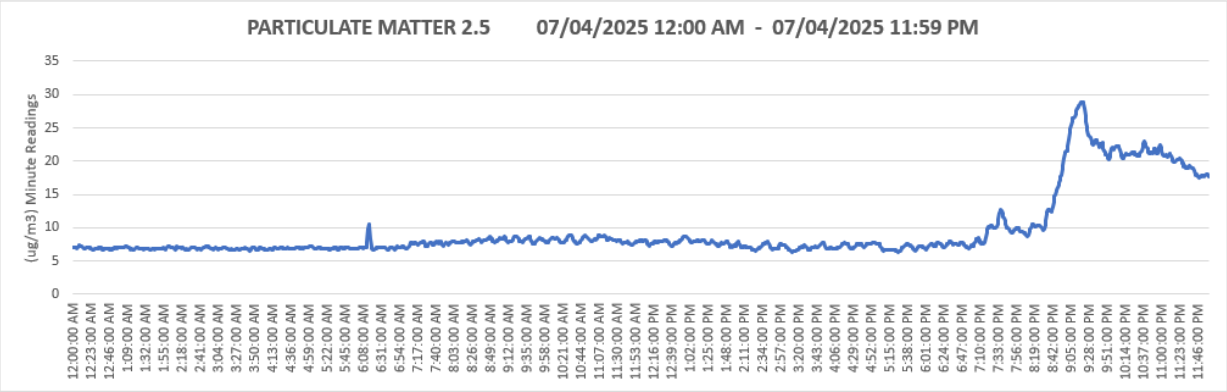


Figure D3-SP16: PM 2.5 levels for July 4, 2025

PARTICULATE MATTER 2.5 Top 25 Concentrations (ug/m3) Minute Readings 07/04/2025 12:00 AM - 07/04/2025 11:59 PM		
Rank	Concentration	Time
1	28.9	9:20:00 PM
2	28.9	9:19:00 PM
3	28.9	9:17:00 PM
4	28.8	9:18:00 PM
5	28.6	9:21:00 PM
6	28.4	9:16:00 PM
7	28.3	9:15:00 PM
8	28.1	9:14:00 PM
9	27.9	9:22:00 PM
10	27.9	9:13:00 PM
11	27.5	9:12:00 PM
12	27.0	9:11:00 PM
13	26.9	9:23:00 PM
14	26.6	9:10:00 PM
15	26.5	9:09:00 PM
16	26.5	9:08:00 PM
17	26.4	9:07:00 PM
18	26.0	9:24:00 PM
19	25.9	9:06:00 PM
20	25.4	9:05:00 PM
21	25.2	9:25:00 PM
22	24.9	9:04:00 PM
23	24.7	9:26:00 PM
24	24.2	9:03:00 PM
25	23.9	9:27:00 PM

PARTICULATE MATTER 2.5 Hour Averages Ranked by Highest (ug/m3) Hour Averages 07/04/2025 12:00 AM - 07/04/2025 11:59 PM		
Rank	Concentration	Time
1	24.1	9:00:00 PM
2	21.4	10:00:00 PM
3	19.3	11:00:00 PM
4	12.4	8:00:00 PM
5	9.5	7:00:00 PM
6	8.2	10:00:00 AM
7	8.1	11:00:00 AM
8	8.1	9:00:00 AM
9	7.9	12:00:00 PM
10	7.9	8:00:00 AM
11	7.7	1:00:00 PM
12	7.5	7:00:00 AM
13	7.4	6:00:00 PM
14	7.3	4:00:00 PM
15	7.1	2:00:00 PM
16	7.1	6:00:00 AM
17	6.9	5:00:00 PM
18	6.9	3:00:00 PM
19	6.9	5:00:00 AM
20	6.9	4:00:00 AM
21	6.9	2:00:00 AM
22	6.9	12:00:00 AM
23	6.8	3:00:00 AM
24	6.8	1:00:00 AM

Figure D3-SP17: Tables displaying PM 2.5 concentrations for July 4, 2025

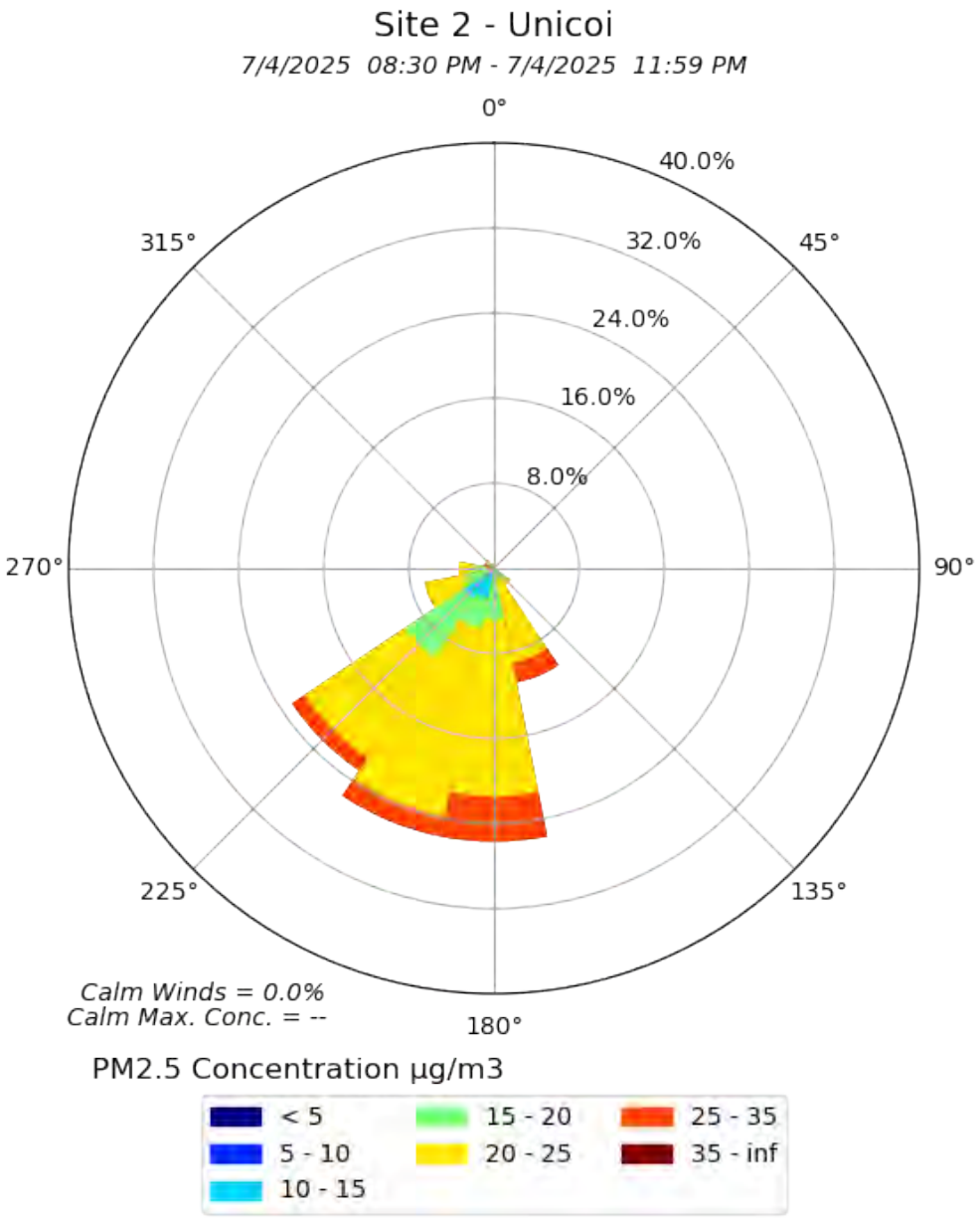


Figure D3-SP18: Pollution Rose displaying PM 2.5 concentrations and wind direction

July 4 NOAA Smoke Map and EPA AQI Map

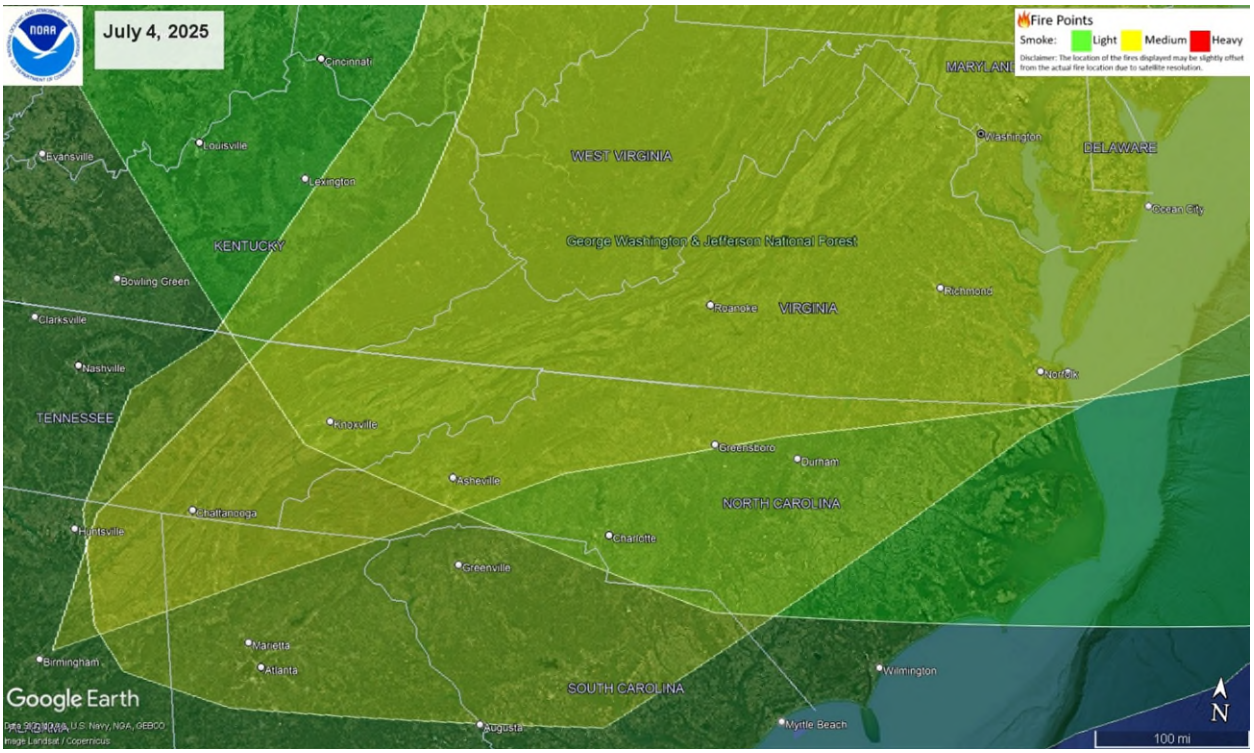


Figure D3-SP19: NOAA Map displaying regional smoke on July 4, 2025

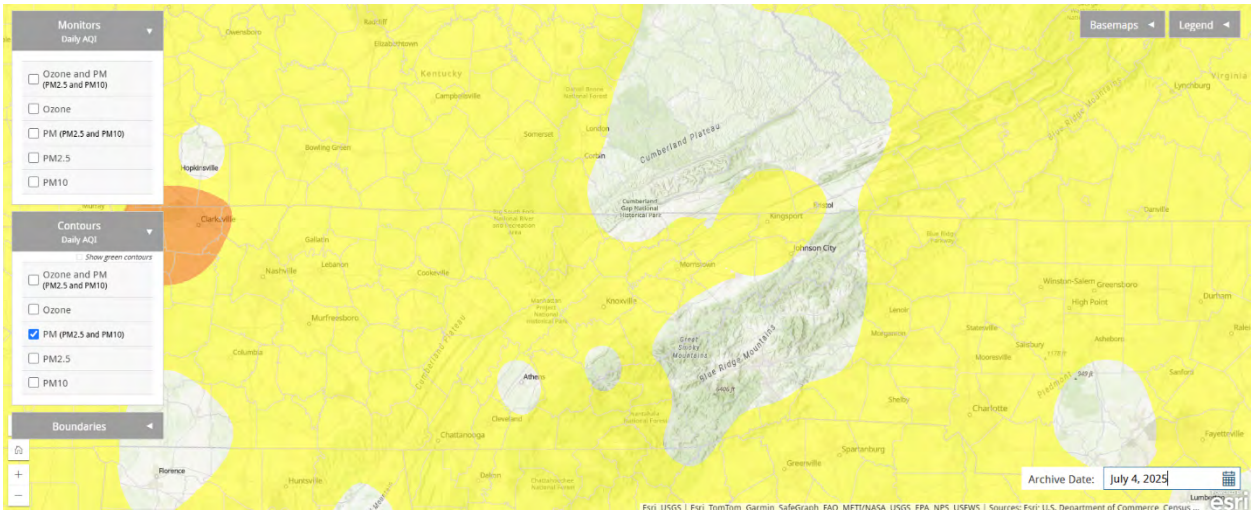


Figure D3-SP20: EPA AQI Map displaying AQI colors for July 4, 2025

July 26, 2025 Spike

A brief PM 2.5 spike from 12:44 PM -12:49 PM.

- Pollution plume for less than 5 minutes.
- Source unknown: Possibly drifted in from outside local area.

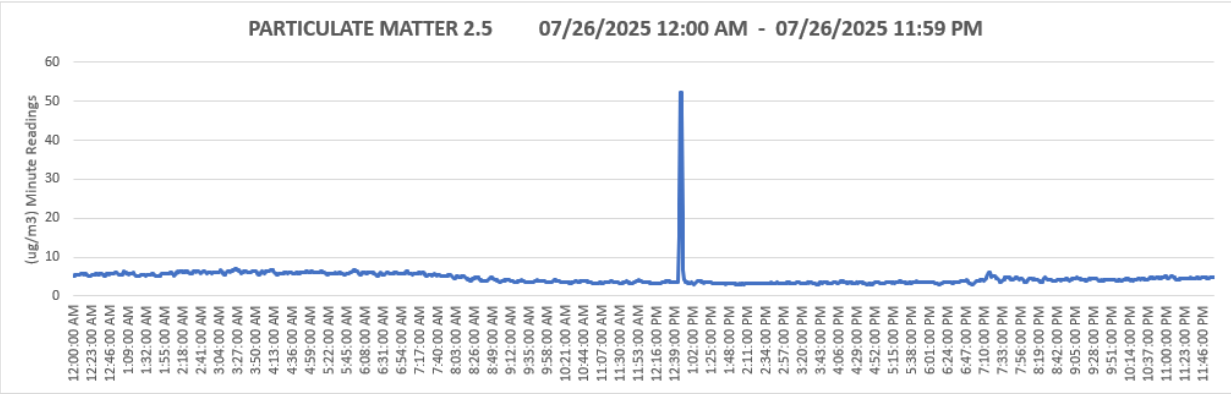


Figure D3-SP21: PM 2.5 levels for July 26, 2025

PARTICULATE MATTER 2.5 Top 25 Concentrations (ug/m3) Minute Readings 07/26/2025 12:00 AM - 07/26/2025 11:59 PM		
Rank	Concentration	Time
1	52.4	12:47:00 PM
2	52.3	12:46:00 PM
3	46.9	12:48:00 PM
4	23.7	12:45:00 PM
5	20.8	12:49:00 PM
6	15.1	12:44:00 PM
7	6.9	3:25:00 AM
8	6.9	3:24:00 AM
9	6.8	12:50:00 PM
10	6.8	3:27:00 AM
11	6.8	3:26:00 AM
12	6.8	3:23:00 AM
13	6.7	4:09:00 AM
14	6.7	4:08:00 AM
15	6.7	3:28:00 AM
16	6.7	3:22:00 AM
17	6.6	5:55:00 AM
18	6.6	5:54:00 AM
19	6.6	4:11:00 AM
20	6.6	4:10:00 AM
21	6.6	3:21:00 AM
22	6.6	3:06:00 AM
23	6.5	4:04:00 AM
24	6.5	3:48:00 AM
25	6.5	3:29:00 AM

PARTICULATE MATTER 2.5 Hour Averages Ranked by Highest (ug/m3) Hour Averages 07/26/2025 12:00 AM - 07/26/2025 11:59 PM		
Rank	Concentration	Time
1	6.7	12:00:00 PM
2	6.2	3:00:00 AM
3	6.0	5:00:00 AM
4	6.0	4:00:00 AM
5	6.0	2:00:00 AM
6	5.8	6:00:00 AM
7	5.5	7:00:00 AM
8	5.5	1:00:00 AM
9	5.5	12:00:00 AM
10	4.6	11:00:00 PM
11	4.4	7:00:00 PM
12	4.3	10:00:00 PM
13	4.3	8:00:00 AM
14	4.2	9:00:00 PM
15	4.1	8:00:00 PM
16	3.8	9:00:00 AM
17	3.6	10:00:00 AM
18	3.5	6:00:00 PM
19	3.5	5:00:00 PM
20	3.5	11:00:00 AM
21	3.4	4:00:00 PM
22	3.3	3:00:00 PM
23	3.3	2:00:00 PM
24	3.3	1:00:00 PM

Figure D3-SP22: Tables displaying PM 2.5 concentrations for July 26, 2025

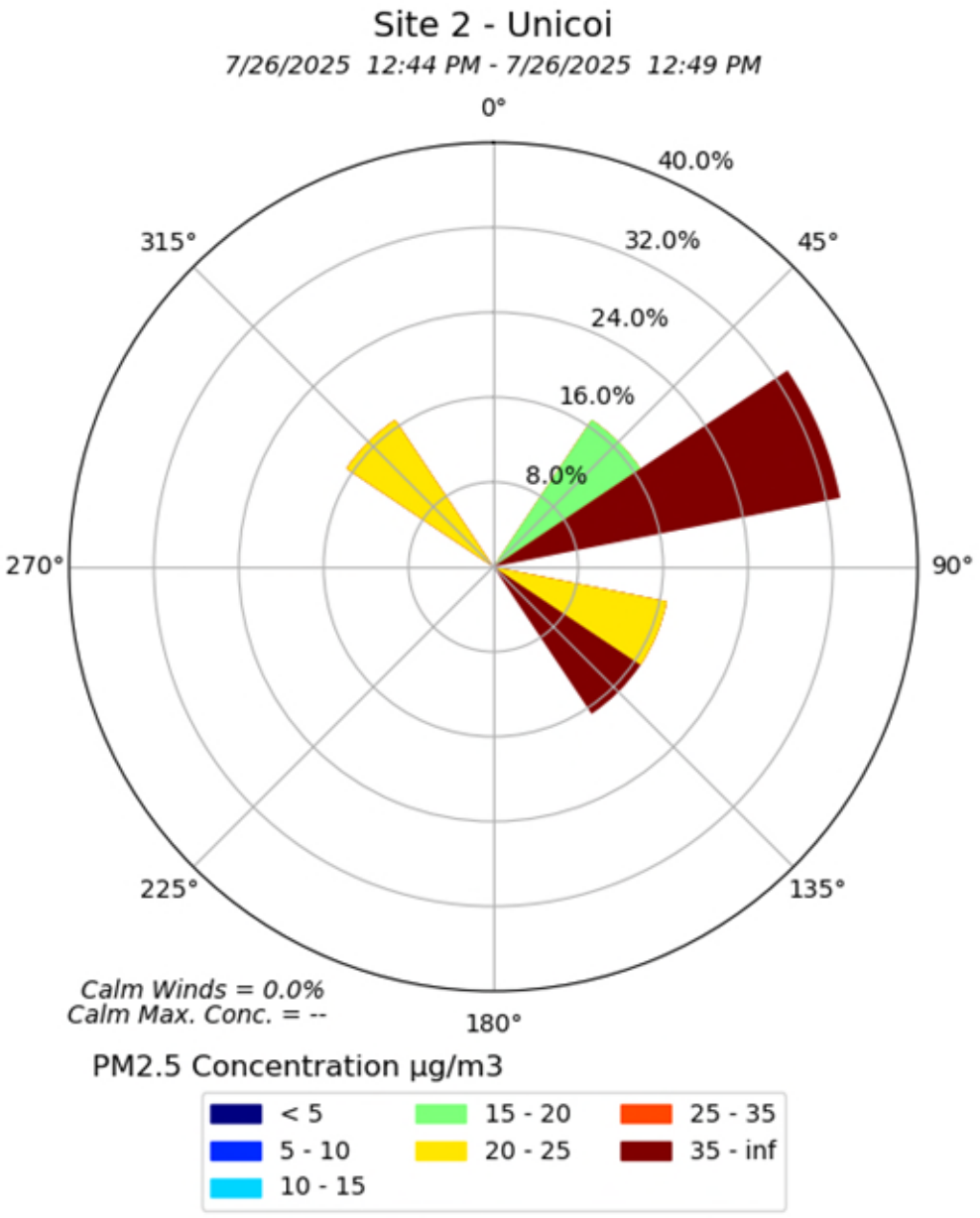


Figure D3-SP23: Pollution Rose displaying PM 2.5 concentrations and wind direction

July 26 NOAA Smoke Map and EPA AQI Map

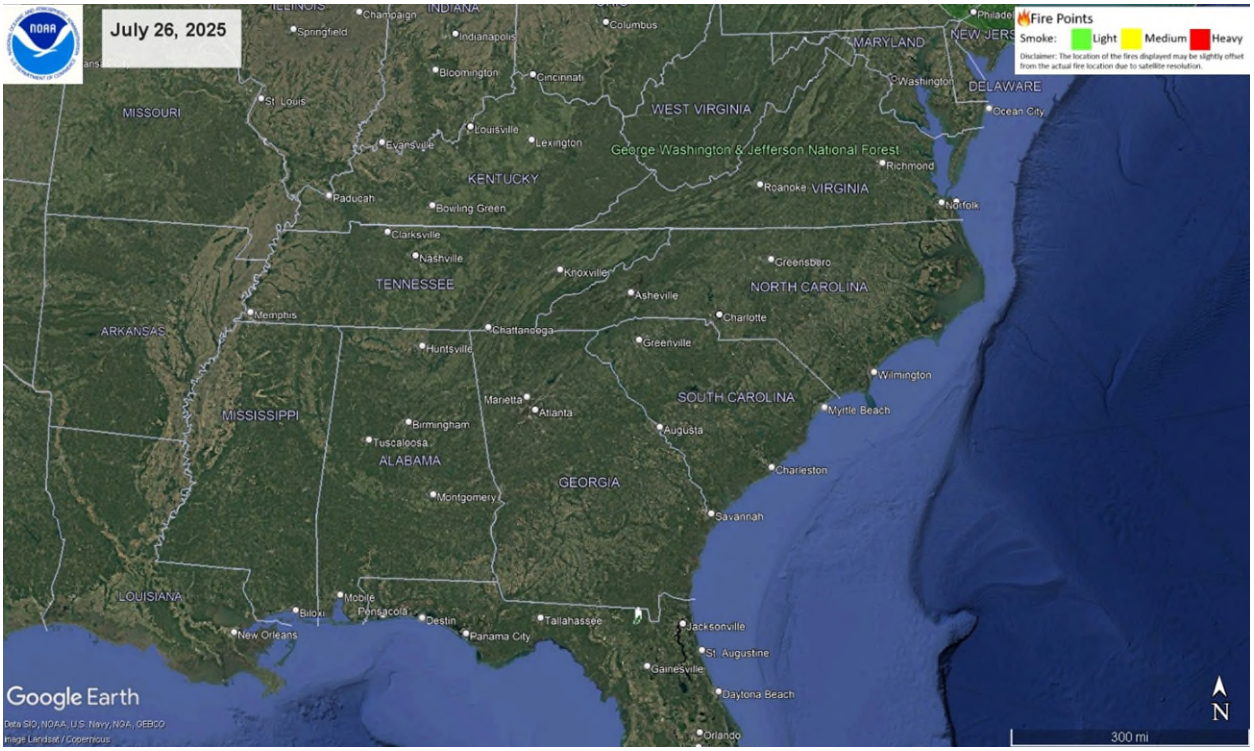


Figure D3-SP24: NOAA Map displaying regional smoke on July 26, 2025

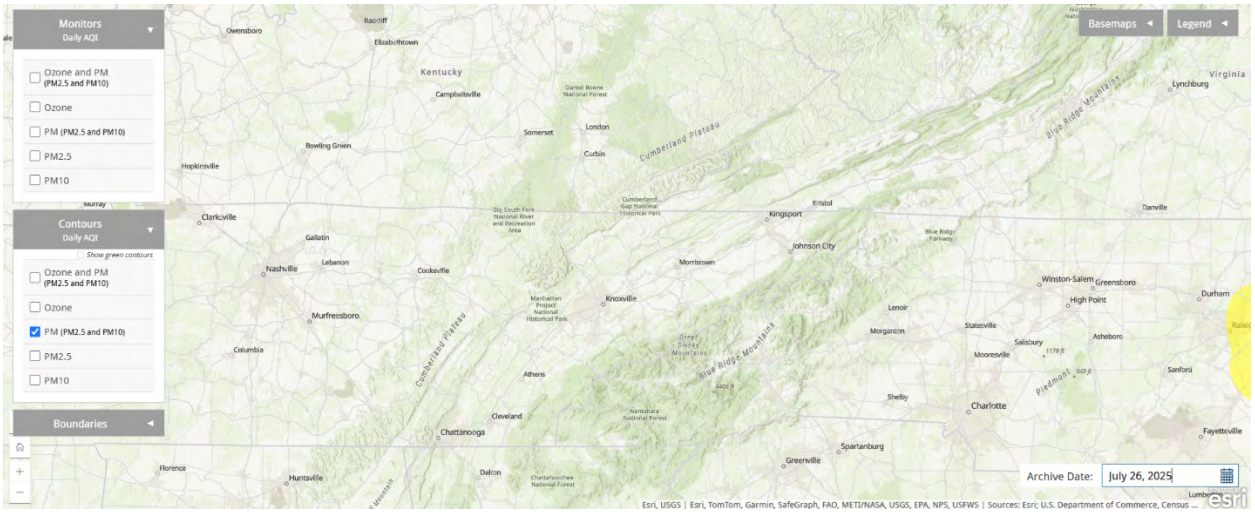


Figure D3-SP25: EPA AQI Map displaying AQI colors for July 26, 2025

August 9, 2025 Spike

Nothing noted on Event Log. However, there were some spikes of the monitored pollutants – at various times of the day. Of note is a nearby asphalt facility official startup date was August 4, just a few days before this.

- Event Log indicates nothing of note on this day.
- Nearby asphalt plant had just notified state agency that it was commencing operations on August 4.
- Regional PM 2.5 AQI was in the moderate yellow range for the day. However, no widespread smoke reported on the NOAA smoke map. Nor were any widespread local fire hotspots.
- BEAST PM data was comparable to screened regional agency data for the daily averages.
- PM 2.5 most likely influenced by regional particulates.

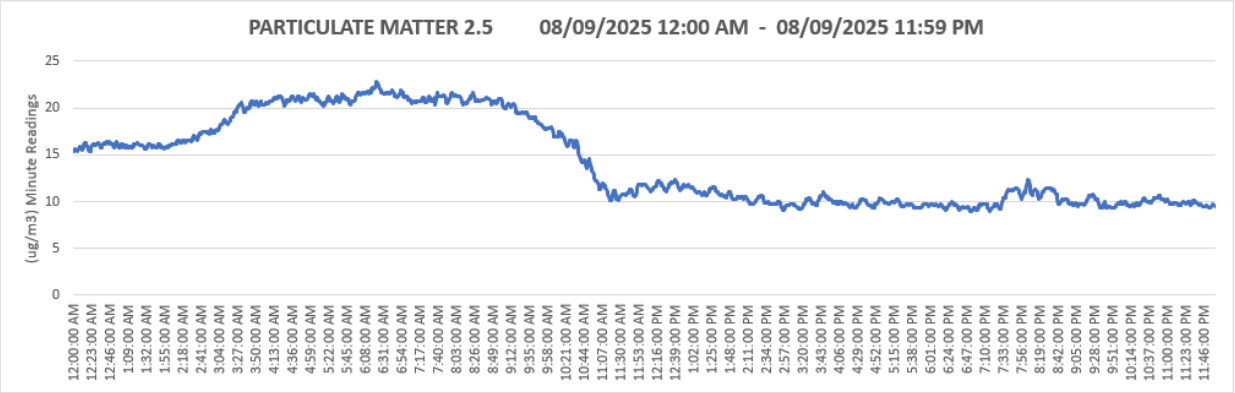


Figure D3-SP26: PM 2.5 levels for August 9, 2025

PARTICULATE MATTER 2.5 Top 25 Concentrations (ug/m3) Minute Readings 08/09/2025 12:00 AM - 08/09/2025 11:59 PM		
Rank	**Concentration**	**Time**
1	22.8	6:22:00 AM
2	22.7	6:23:00 AM
3	22.6	6:21:00 AM
4	22.4	6:24:00 AM
5	22.3	6:25:00 AM
6	22.2	6:20:00 AM
7	22.2	6:17:00 AM
8	22.1	6:26:00 AM
9	22.1	6:19:00 AM
10	22.1	6:18:00 AM
11	22.1	6:16:00 AM
12	21.9	6:53:00 AM
13	21.9	6:42:00 AM
14	21.9	6:27:00 AM
15	21.8	6:54:00 AM
16	21.8	6:41:00 AM
17	21.8	6:12:00 AM
18	21.8	6:11:00 AM
19	21.7	6:43:00 AM
20	21.7	6:40:00 AM
21	21.7	6:34:00 AM
22	21.7	6:30:00 AM
23	21.7	6:29:00 AM
24	21.7	6:28:00 AM
25	21.7	6:15:00 AM

PARTICULATE MATTER 2.5 Hour Averages Ranked by Highest (ug/m3) Hour Averages 08/09/2025 12:00 AM - 08/09/2025 11:59 PM		
Rank	**Concentration**	**Time**
1	21.6	6:00:00 AM
2	20.9	8:00:00 AM
3	20.9	7:00:00 AM
4	20.9	5:00:00 AM
5	20.9	4:00:00 AM
6	19.5	3:00:00 AM
7	19.2	9:00:00 AM
8	16.7	2:00:00 AM
9	15.9	1:00:00 AM
10	15.9	12:00:00 AM
11	15.6	10:00:00 AM
12	11.6	12:00:00 PM
13	11.0	11:00:00 AM
14	10.8	8:00:00 PM
15	10.8	1:00:00 PM
16	10.1	7:00:00 PM
17	9.9	10:00:00 PM
18	9.9	3:00:00 PM
19	9.9	2:00:00 PM
20	9.8	9:00:00 PM
21	9.8	4:00:00 PM
22	9.7	11:00:00 PM
23	9.7	5:00:00 PM
24	9.4	6:00:00 PM

Figure D3-SP27: Tables displaying PM 2.5 concentrations for August 9, 2025

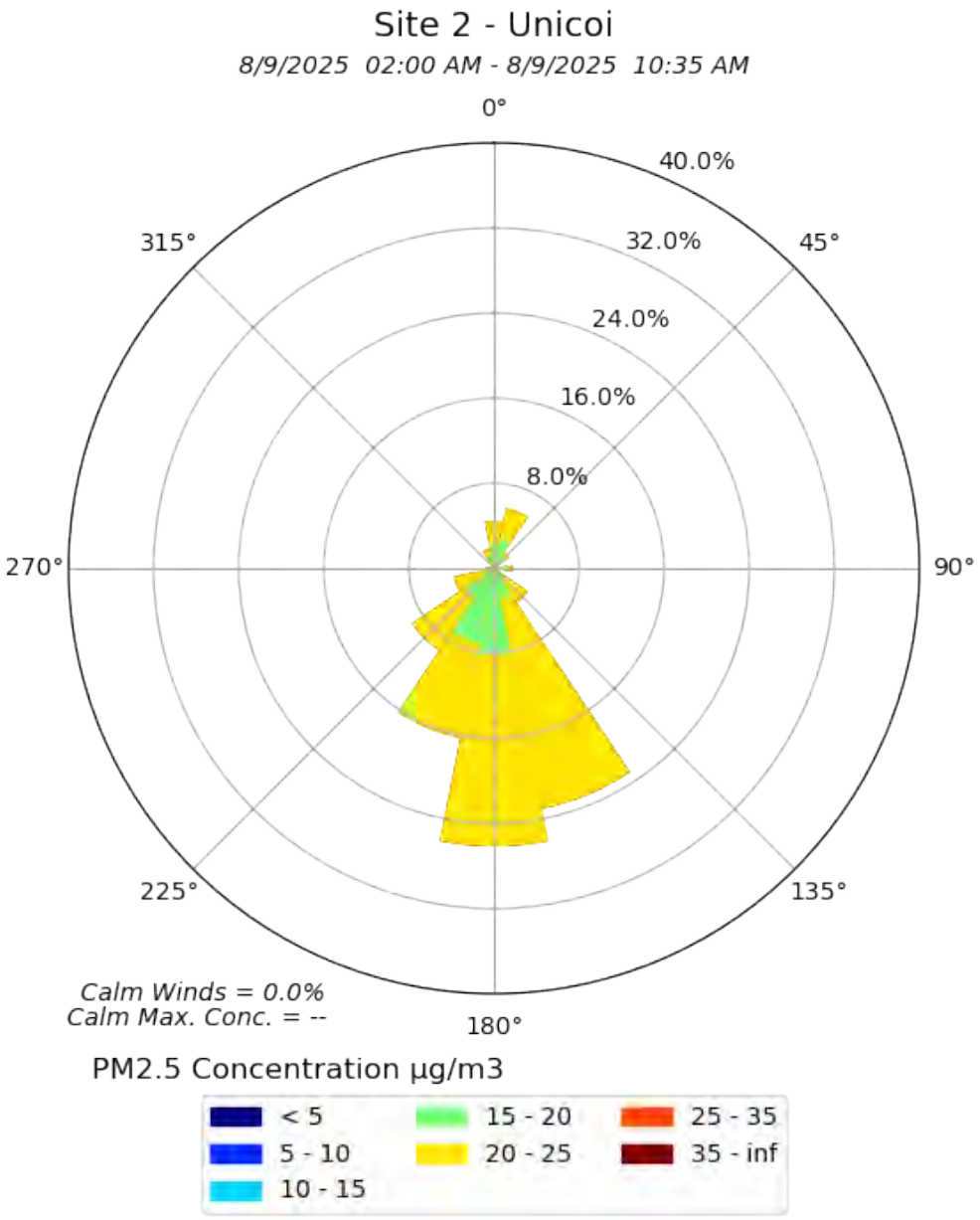


Figure D3-SP28: Pollution Rose displaying PM 2.5 concentrations and wind direction

August 9 NOAA Smoke Map and EPA AQI Map

Figure D3-SP29: NOAA Map displaying regional smoke on August 9, 2025

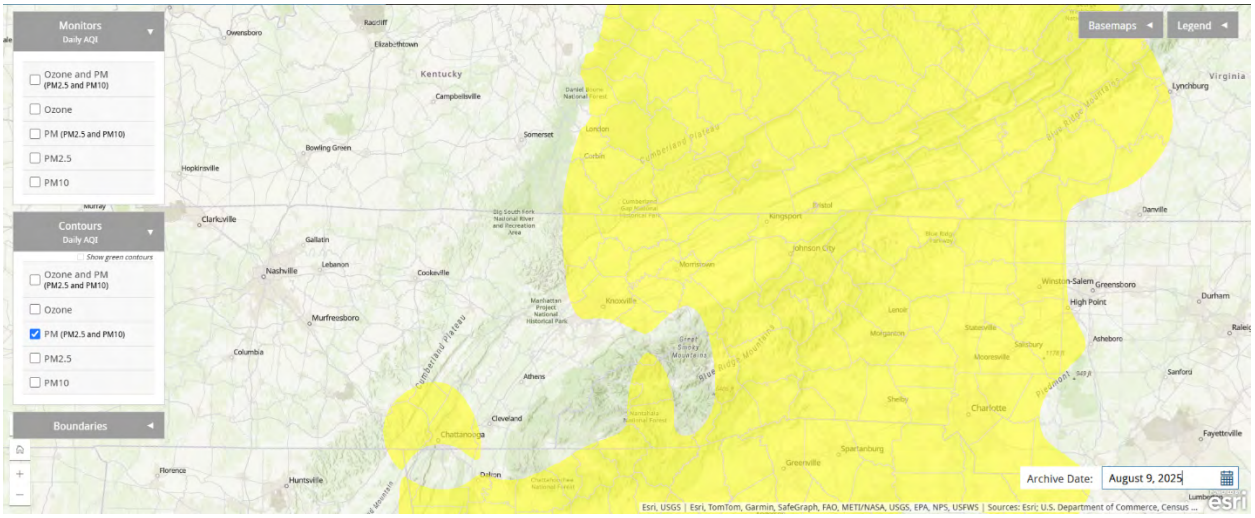


Figure D3-SP30: EPA AQI Map displaying AQI colors for August 9, 2025

Screening with Regional Agency Monitors

PM 2.5 Monitors and Data for August 9, 2025

CARE-4-AIR SITE 2			
Pollutant	Agency Monitor	Monitor ID	Miles from BEAST
PM2.5	Kingsport	471631007	20 - 25
PM2.5	Spruce Pine	371210004	25 - 30
PM2.5	BDEB	370210034	45 - 50

Figure D3-SP31: Table displaying nearby agency monitors and miles from our monitoring site

24-hour PM 2.5 Concentration

	9
BEAST	14.1
Kingsport	13.4
Spruce Pine	15.6
BDEB	16.0

24-hour PM 2.5 AQI

	9
BEAST	60
Kingsport	59
Spruce Pine	63
BDEB	64

Figure D3-SP32: Tables displaying the day's 24-hour average and AQI color code for BEAST and agency monitors

*Agency Monitor Data has not been quality assured.

D4: Data – Particulate Matter 10

PM10 Findings

- Most of our spikes and higher concentrations during our collection were probably from regional sources. Local sources may have, on occasion, contributed although we were unable to determine that.
- There was no significant difference in PM 10 levels for various times of the day.
- There was no significant difference in PM 10 levels for various days of the week, although early in the week levels were slightly lower.
- There were no 24-hour exceedances of the EPA health standard (150 ug/m3) for PM 10 during our Site 2 data collection.
- Nearly 100 percent of PM 10 hourly averages fell within the AQI good air quality range.
- Our highest one-minute reading was 184.4 ug/m3 at 2:02 PM on July 5, 2025.
- Our highest one-hour average was 48.8 ug/m3 at 5 AM on June 27, 2025.
- Our highest 24-hour average was 28.5 ug/m3 on June 11, 2025, equivalent to 26 AQI, which is a medium good green AQI code.
- The following two tables reflect the percentages of each range of concentrations recorded. Table range is based on Air Quality Index (AQI) concentrations and color code. Please see section D11 AQI of this report for more information regarding AQI.

Percentage of Minute Readings
Concentration Range in ug/m3

Range	Percentage
0	0.38%
1 - 54	99.55%
55 - 154	0.07%
155 - 254	0.003%

Percentage of Hourly Averages
Concentration Range in ug/m3

Range	Percentage
0	0.34%
1 - 54	99.66%
55 - 154	0.00%
155 - 254	0.00%

Data Presentations

BREDL data presentations for PM10 will include hour averages (the average of 60 one-minute readings) and 24-hour daily averages (the average of 24 one-hour readings). Wind and pollution roses use the one minute readings (1440 per day).

Time of day bar graphs are used to examine time periods of the day. For example, is there one part of the day where the pollution registered higher or lower? We also examined pollution levels by day of the week. Was there a particular day where the pollution was higher or lower?

Figures D4-1 – D4-13 plot hour averages for the entire collection period and for each month. The hour averages take the 60 one-minute readings for each hour and average them for the hour average. The day (24-hour) averages take the 24 one-hour averages and average them.

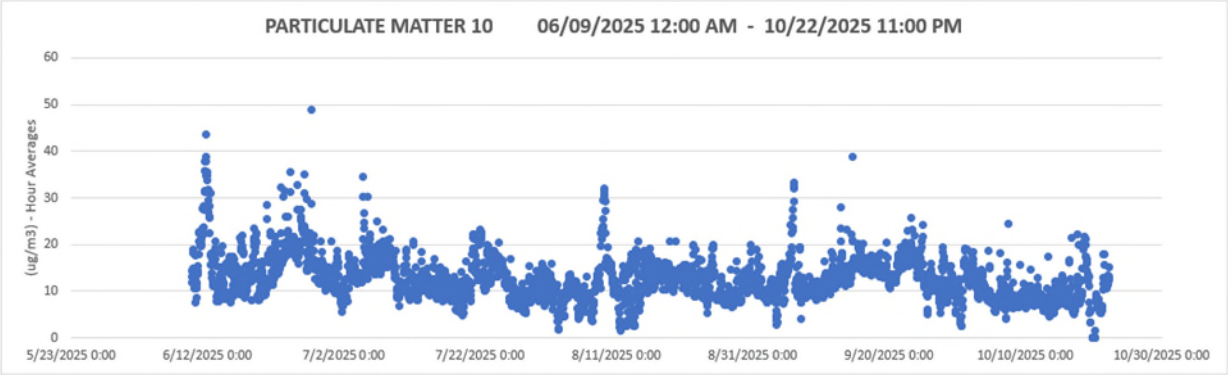


Figure D4-1: PM10 Hour Averages – Entire Collection Period

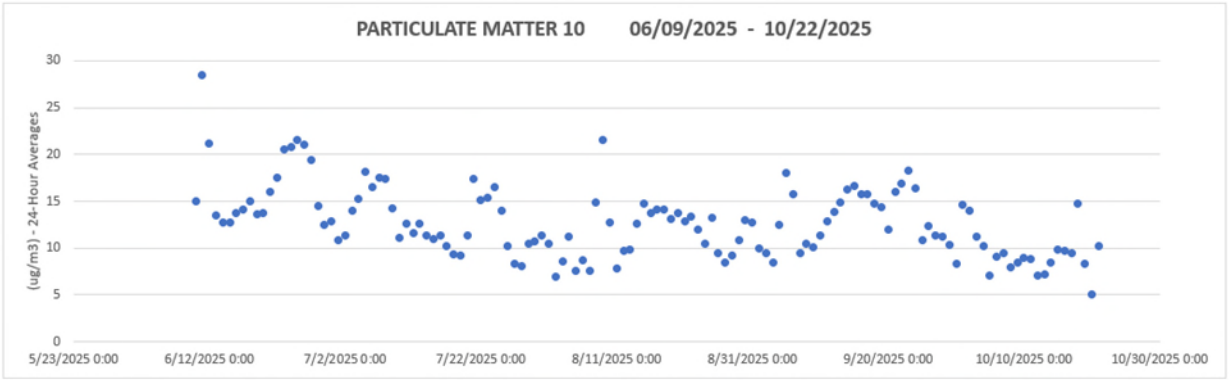


Figure D4-2: PM10 Day (24-Hour) Averages – Entire Collection Period

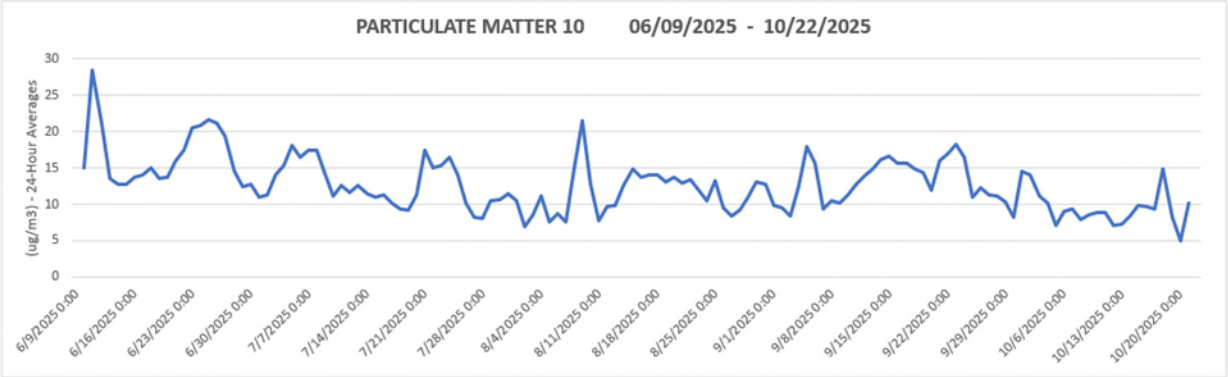


Figure D4-3: PM10 Day (24-Hour) Averages – Entire Collection Period

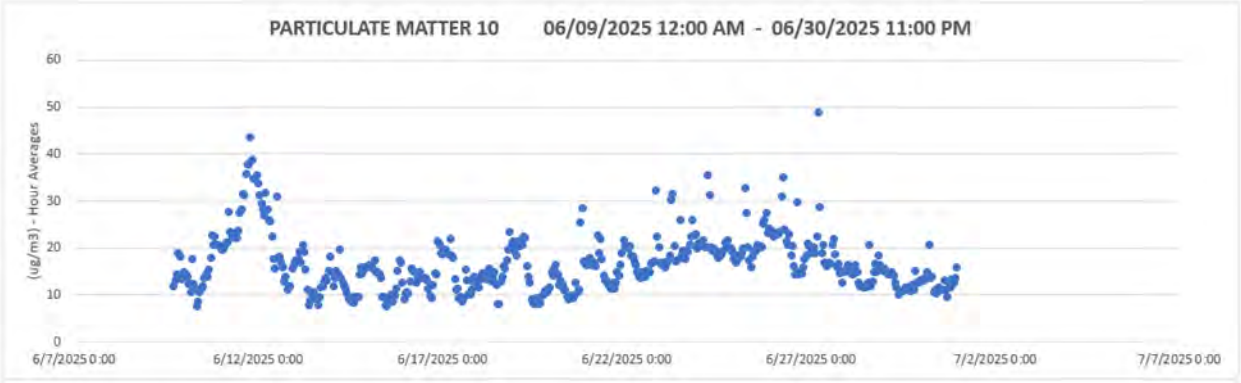


Figure D4-4: PM10 Hour Averages –June

Figure D4-5: PM10 Day (24-Hour) Averages –June

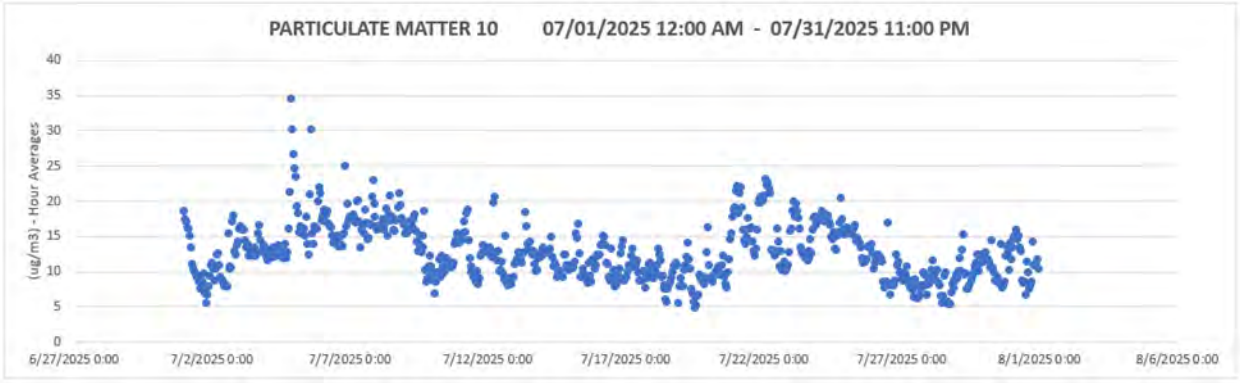


Figure D4-6: PM10 Hour Averages –July

Figure D4-7: PM10 Day (24-Hour) Averages – July

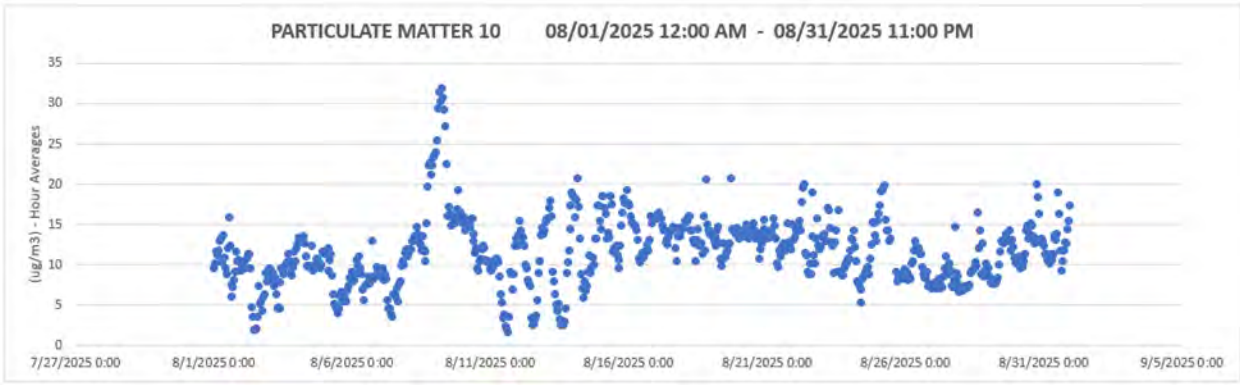


Figure D4-8: PM10 Hour Averages –August

Figure D4-9: PM10 Day (24-Hour) Averages – August

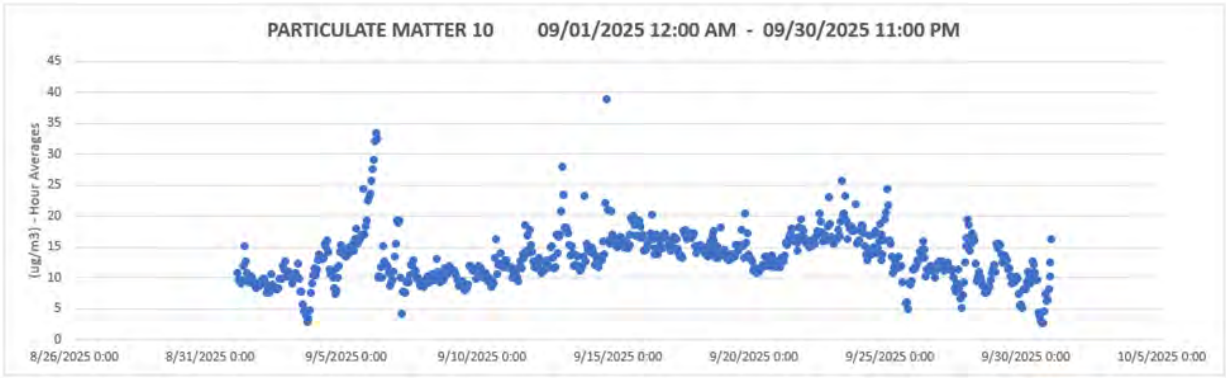


Figure D4-10: PM10 Hour Averages –September

Figure D4-11: PM10 Day (24-Hour) Averages – September

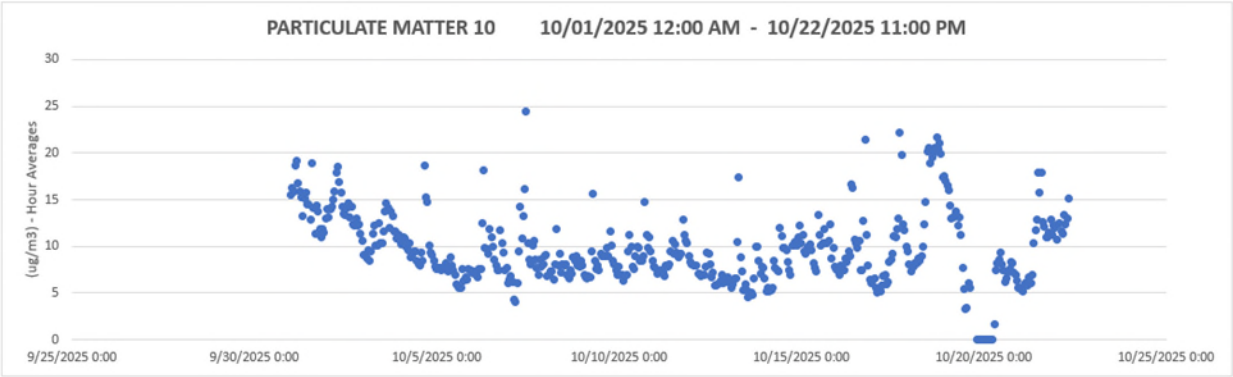


Figure D4-12: PM10 Hour Averages –October

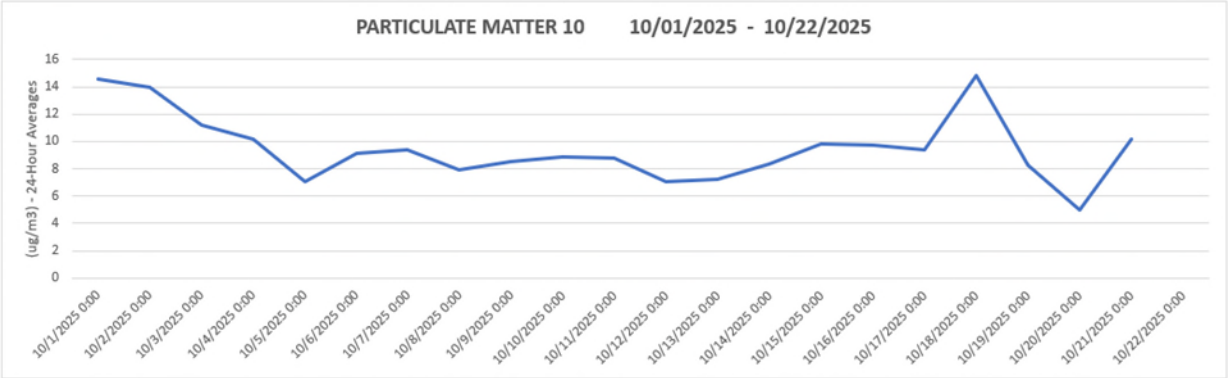


Figure D4-13: PM10 Day (24-Hour) Averages – October

Figures D4-14 – D4-19 plot averages based on the time of day for the entire collection period and for each month.

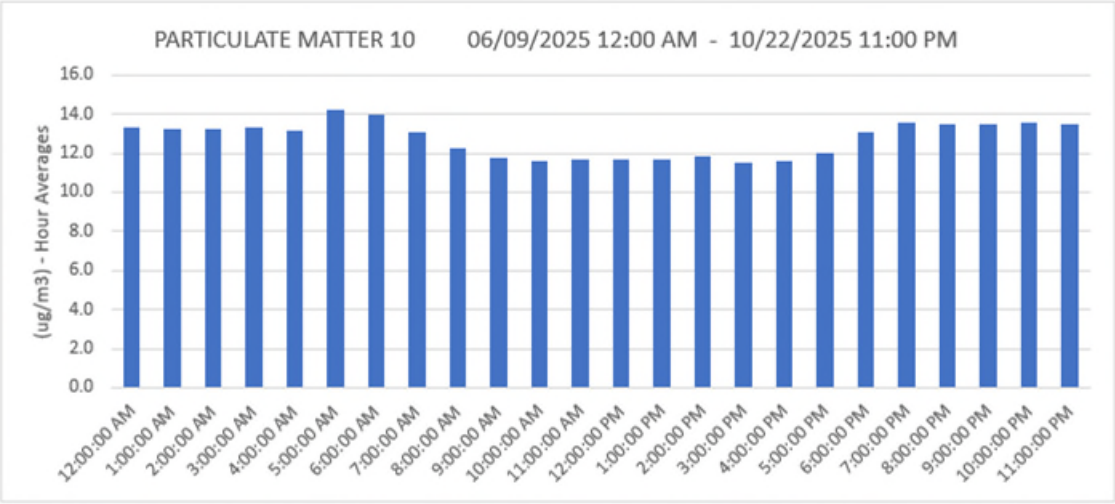


Figure D4-14: PM10 Hour Averages – Based on Time of Day for Collection Period

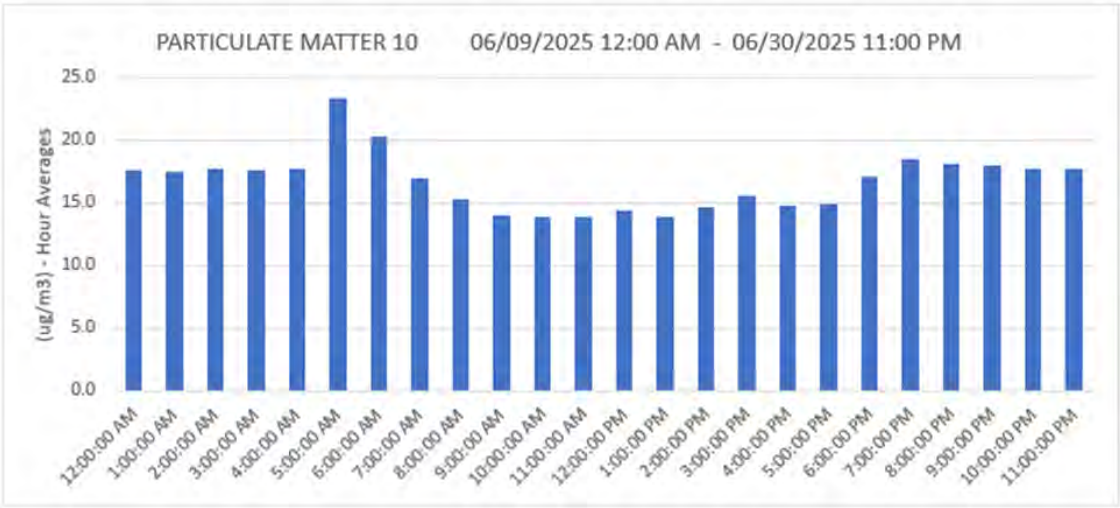


Figure D4-15: PM10 Hour Averages – Based on Time of Day for June

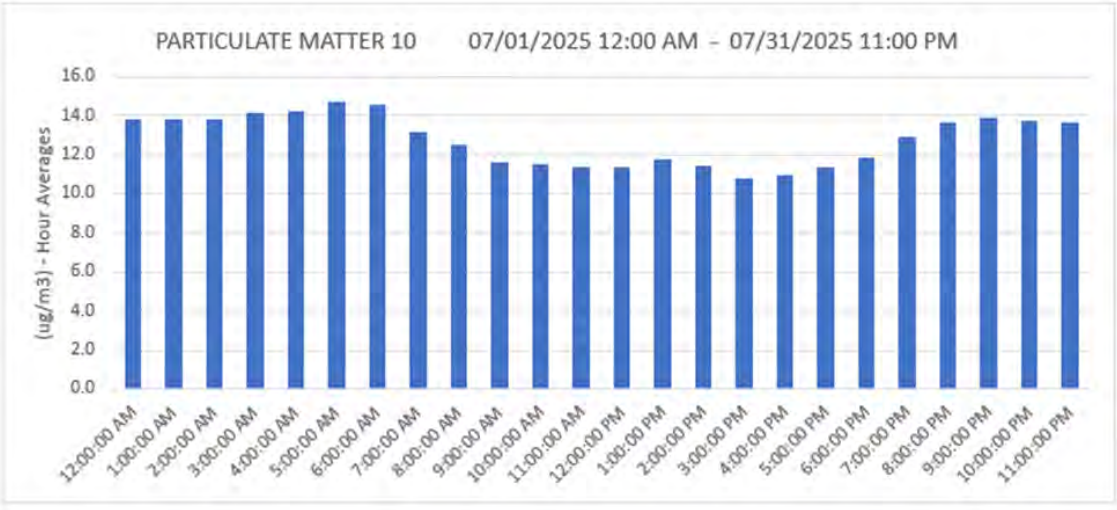


Figure D4-16: PM10 Hour Averages – Based on Time of Day for July

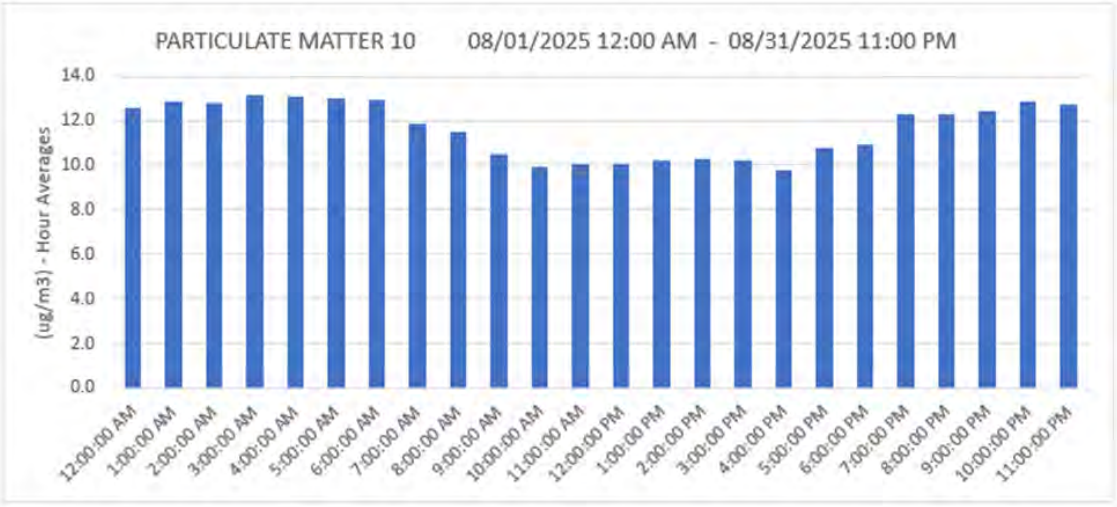


Figure D4-17: PM10 Hour Averages – Based on Time of Day for August

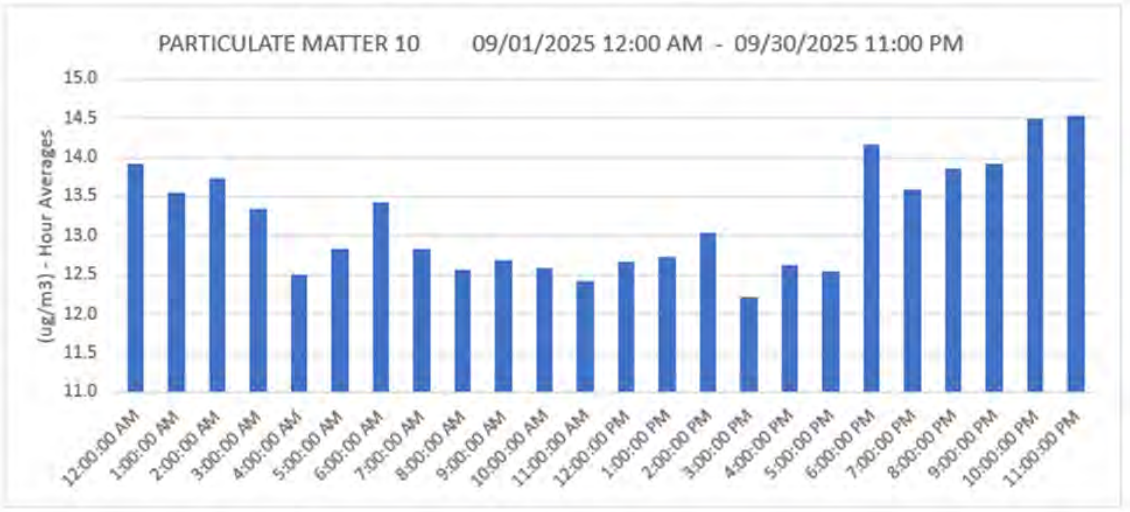


Figure D4-18: PM10 Hour Averages – Based on Time of Day for September

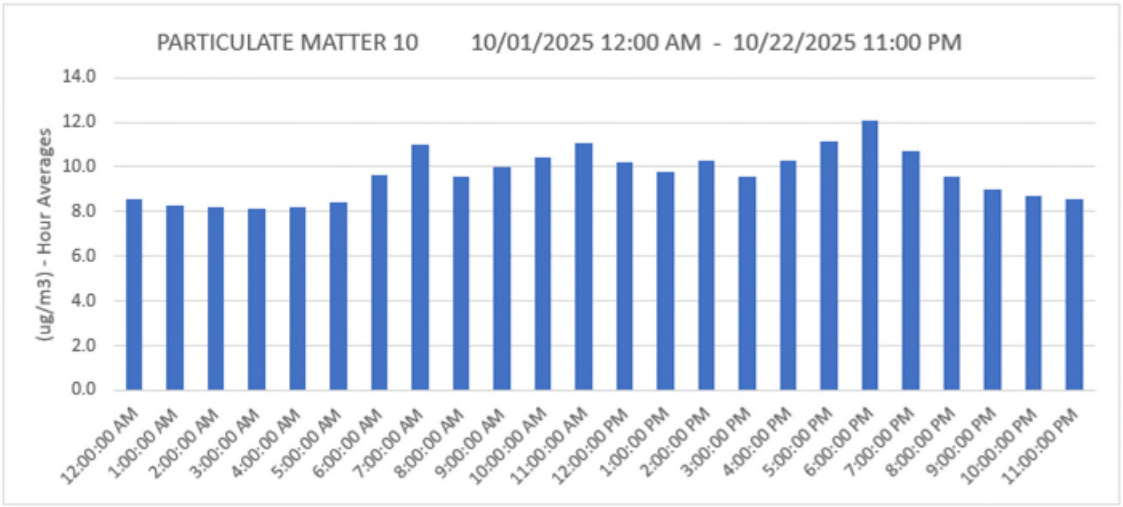


Figure D4-19: PM10 Hour Averages – Based on Time of Day for October

Figure D4-20 plot day averages based on the day of the week for the entire collection period.

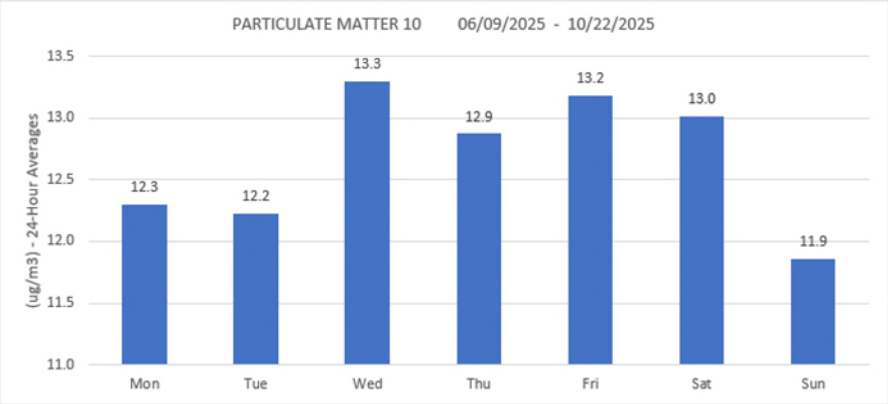


Figure D4-20: PM10 Day (24-Hour) Averages – Based on Day of the Week

PARTICULATE MATTER 10
Top 25 Concentrations
(ug/m3) - Hour Averages
06/09/2025 12:00 AM - 10/22/2025 11:00 PM

Rank	Concentration	Date & Time
1	48.8	6/27/2025 5:00 AM
2	43.7	6/11/2025 7:00 PM
3	38.9	9/14/2025 2:00 PM
4	38.7	6/11/2025 8:00 PM
5	37.9	6/11/2025 5:00 PM
6	37.7	6/11/2025 6:00 PM
7	35.9	6/11/2025 4:00 PM
8	35.6	6/24/2025 5:00 AM
9	35.6	6/11/2025 11:00 PM
10	35.1	6/26/2025 6:00 AM
11	34.8	6/11/2025 10:00 PM
12	34.7	6/11/2025 9:00 PM
13	34.6	7/4/2025 9:00 PM
14	33.7	6/12/2025 12:00 AM
15	33.4	9/6/2025 2:00 AM
16	32.9	6/25/2025 5:00 AM
17	32.5	9/6/2025 3:00 AM
18	32.3	6/22/2025 7:00 PM
19	32.1	9/6/2025 1:00 AM
20	31.9	8/9/2025 6:00 AM
21	31.8	6/12/2025 5:00 AM
22	31.6	6/11/2025 2:00 PM
23	31.5	6/23/2025 6:00 AM
24	31.4	8/9/2025 4:00 AM
25	31.3	6/11/2025 3:00 PM

PARTICULATE MATTER 10
Top 25 Concentrations
(ug/m3) - 24-Hour Averages
06/09/2025 - 10/22/2025

Rank	Concentration	Date
1	28.5	6/11/2025
2	21.6	6/25/2025
3	21.5	8/9/2025
4	21.2	6/12/2025
5	21.1	6/26/2025
6	20.8	6/24/2025
7	20.6	6/23/2025
8	19.4	6/27/2025
9	18.3	9/23/2025
10	18.1	7/5/2025
11	18.0	9/5/2025
12	17.5	7/7/2025
13	17.5	6/22/2025
14	17.4	7/21/2025
15	17.4	7/8/2025
16	16.9	9/22/2025
17	16.7	9/15/2025
18	16.5	7/24/2025
19	16.5	7/6/2025
20	16.4	9/24/2025
21	16.2	9/14/2025
22	16.0	9/21/2025
23	16.0	6/21/2025
24	15.7	9/17/2025
25	15.7	9/16/2025

Figure D4-21: PM10 Top 25 Concentrations for Hour Averages and 24-Hour Averages

Figures D4:22 and D4:23 pollution roses display the pollutant concentration based on wind direction, which can indicate the direction of the pollution source.

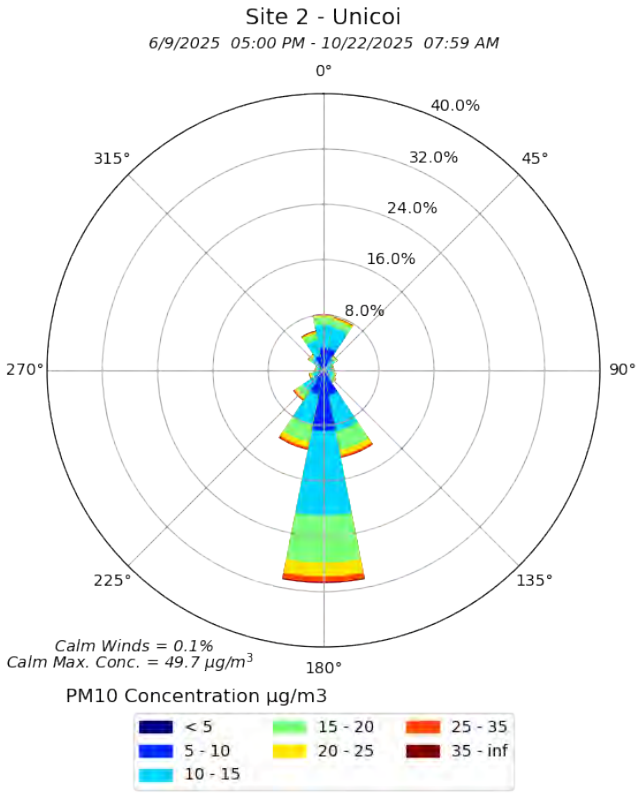


Figure D4-22: Pollution Rose

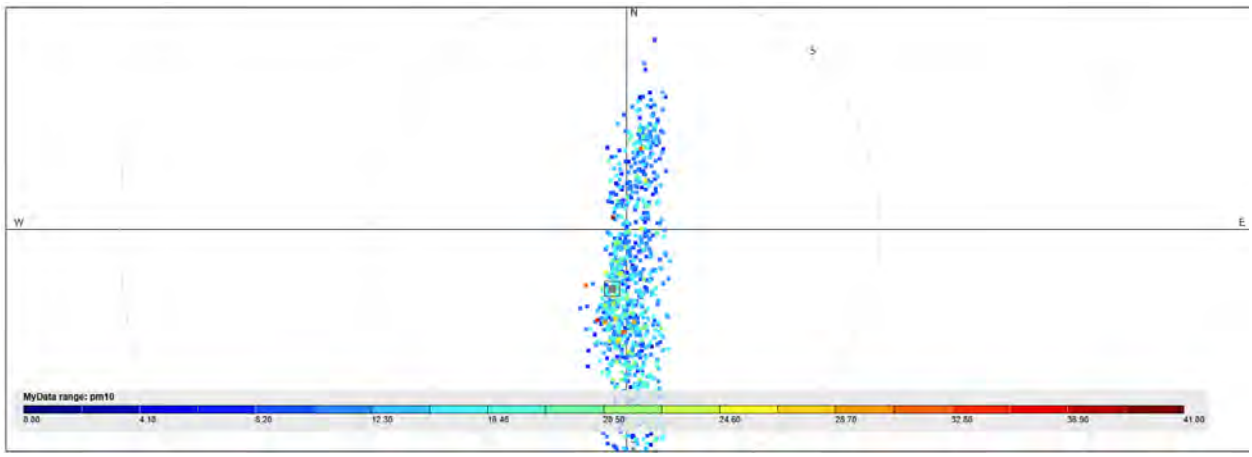


Figure D4-23: EPA RETIGO Pollution Rose 6/9/2025 - 10/22/2025

We separated the PM10 minute concentrations of at least 65 ug/m3 and plotted those on a pollution rose for a better visual representation of the direction of the highest concentrations.

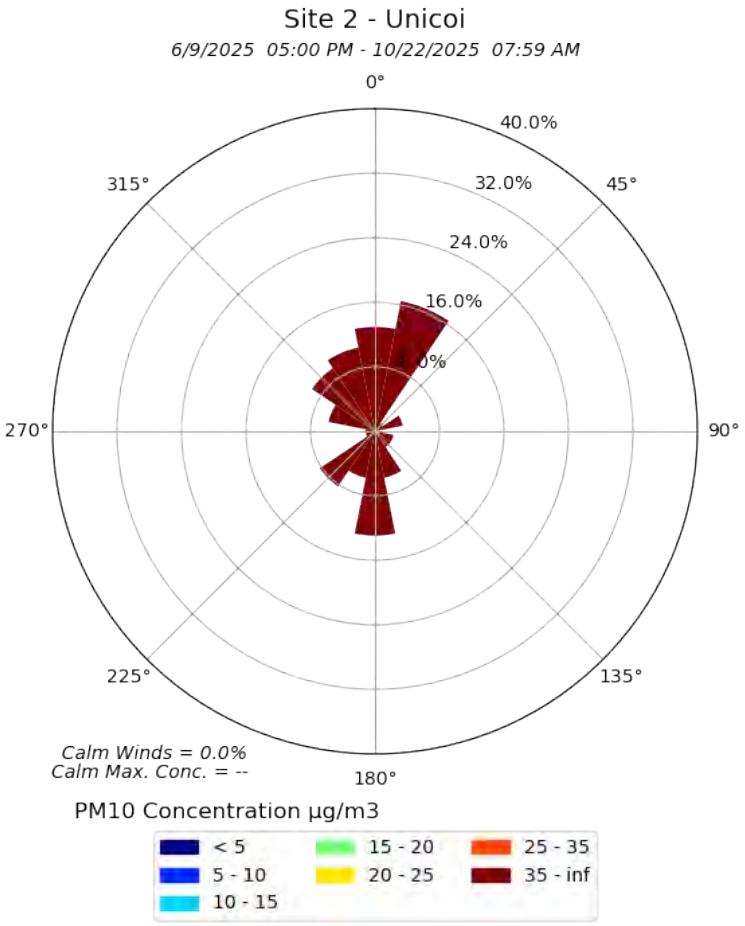


Figure D4-24: Pollution Rose displaying PM10 concentrations of at least 65 ug/m3.

PM10 Spikes

June 10, 2025 Spike

Site host noted dust from heavy dump trucks from 10 AM – 4:30 PM EDT (9 AM – 3:30 PM EST).

- Could not determine if truck traffic caused a significant increase in PM during event.
- Regional PM increased in the afternoon and evening on BEAST and nearby agency PM monitor.
- No local impacts could be determined.

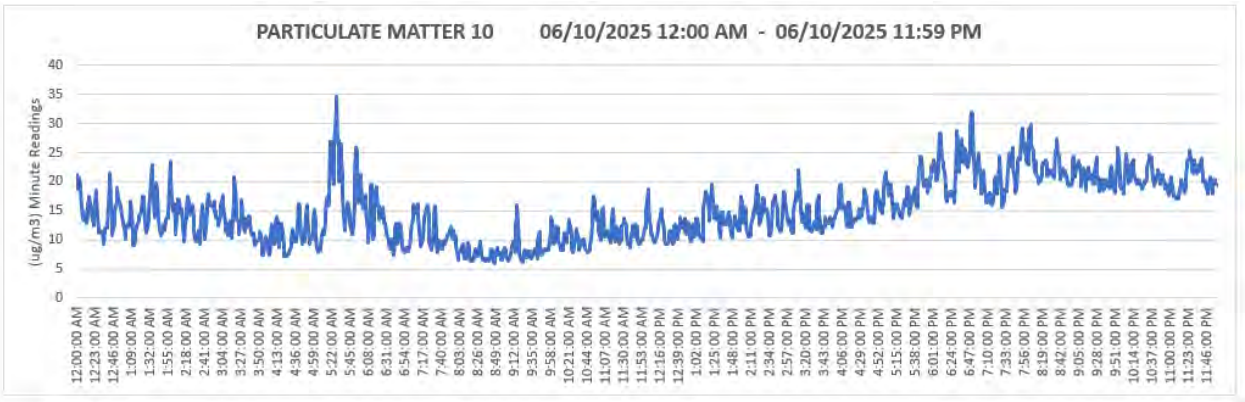


Figure D4-SP1: PM 10 levels for June 10, 2025

PARTICULATE MATTER 10 Top 25 Concentrations (ug/m3) Minute Readings 06/10/2025 12:00 AM - 06/10/2025 11:59 PM		
Rank	Concentration	Time
1	34.6	5:28:00 AM
2	32.5	5:27:00 AM
3	32.0	6:49:00 PM
4	31.8	6:50:00 PM
5	29.8	8:04:00 PM
6	29.8	6:48:00 PM
7	29.4	6:51:00 PM
8	29.3	7:53:00 PM
9	29.0	8:02:00 PM
10	29.0	5:26:00 AM
11	28.8	8:03:00 PM
12	28.7	6:31:00 PM
13	28.5	7:54:00 PM
14	28.3	6:09:00 PM
15	28.2	6:10:00 PM
16	28.1	7:52:00 PM
17	27.3	8:37:00 PM
18	27.3	6:36:00 PM
19	27.1	5:30:00 AM
20	27.0	6:11:00 PM
21	26.8	5:22:00 AM
22	26.8	5:20:00 AM
23	26.7	5:29:00 AM
24	26.5	7:58:00 PM
25	26.5	6:30:00 PM

PARTICULATE MATTER 10 Hour Averages Ranked by Highest (ug/m3) Hour Averages 06/10/2025 12:00 AM - 06/10/2025 11:59 PM		
Rank	Concentration	Time
1	22.8	6:00:00 PM
2	22.5	8:00:00 PM
3	20.8	9:00:00 PM
4	20.8	7:00:00 PM
5	20.7	10:00:00 PM
6	20.4	11:00:00 PM
7	17.9	5:00:00 PM
8	17.6	5:00:00 AM
9	15.3	4:00:00 PM
10	14.8	12:00:00 AM
11	14.3	2:00:00 PM
12	14.3	1:00:00 AM
13	14.0	2:00:00 AM
14	13.9	3:00:00 PM
15	13.7	1:00:00 PM
16	12.4	3:00:00 AM
17	12.3	6:00:00 AM
18	11.8	12:00:00 PM
19	11.4	11:00:00 AM
20	11.4	7:00:00 AM
21	10.6	10:00:00 AM
22	10.6	4:00:00 AM
23	8.5	9:00:00 AM
24	7.5	8:00:00 AM

Figure D4-SP2: Tables displaying PM 10 concentrations for June 10, 2025

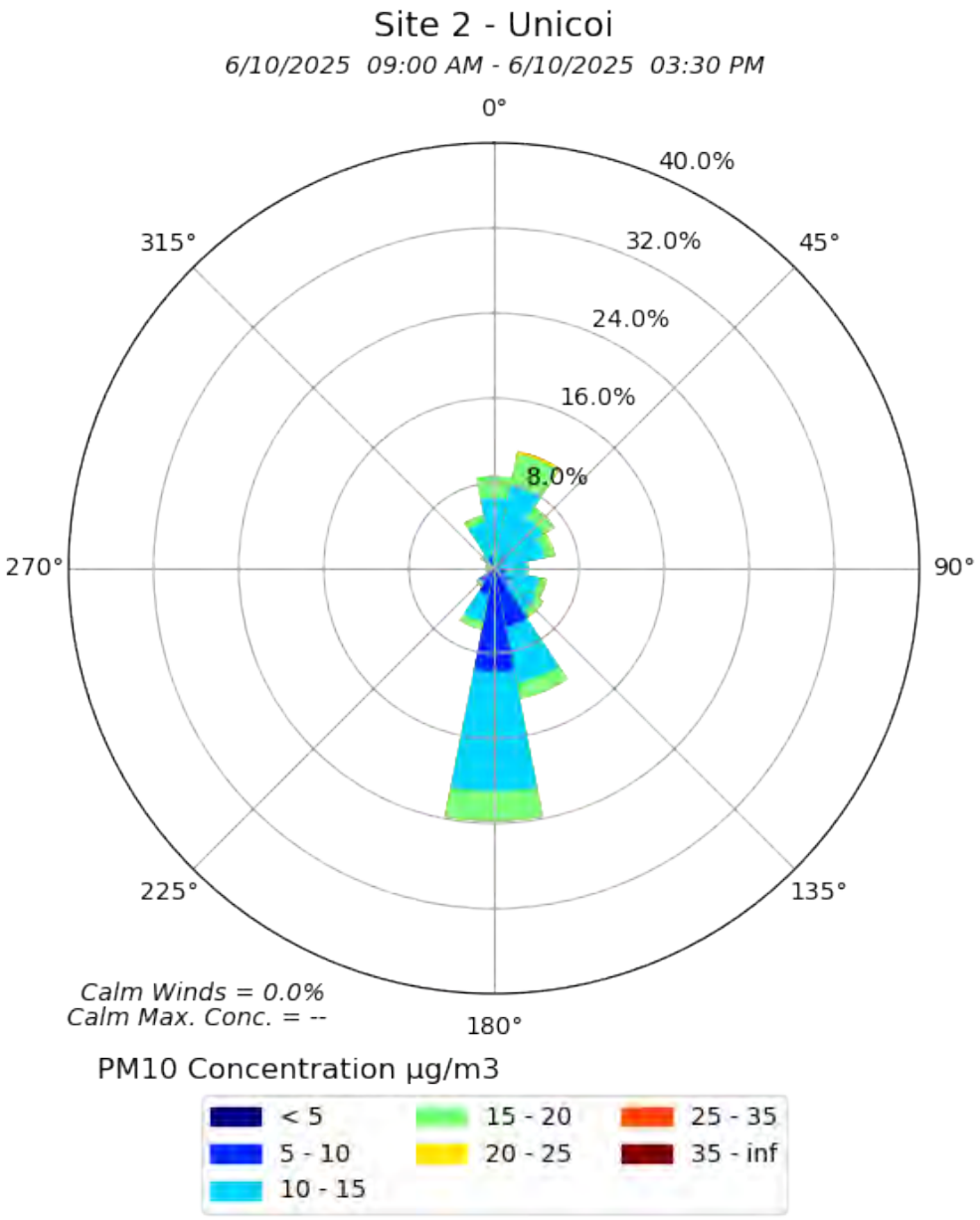


Figure D4-SP3: Pollution Rose displaying PM 10 concentrations and wind direction

June 10 NOAA Smoke Map and EPA AQI Map

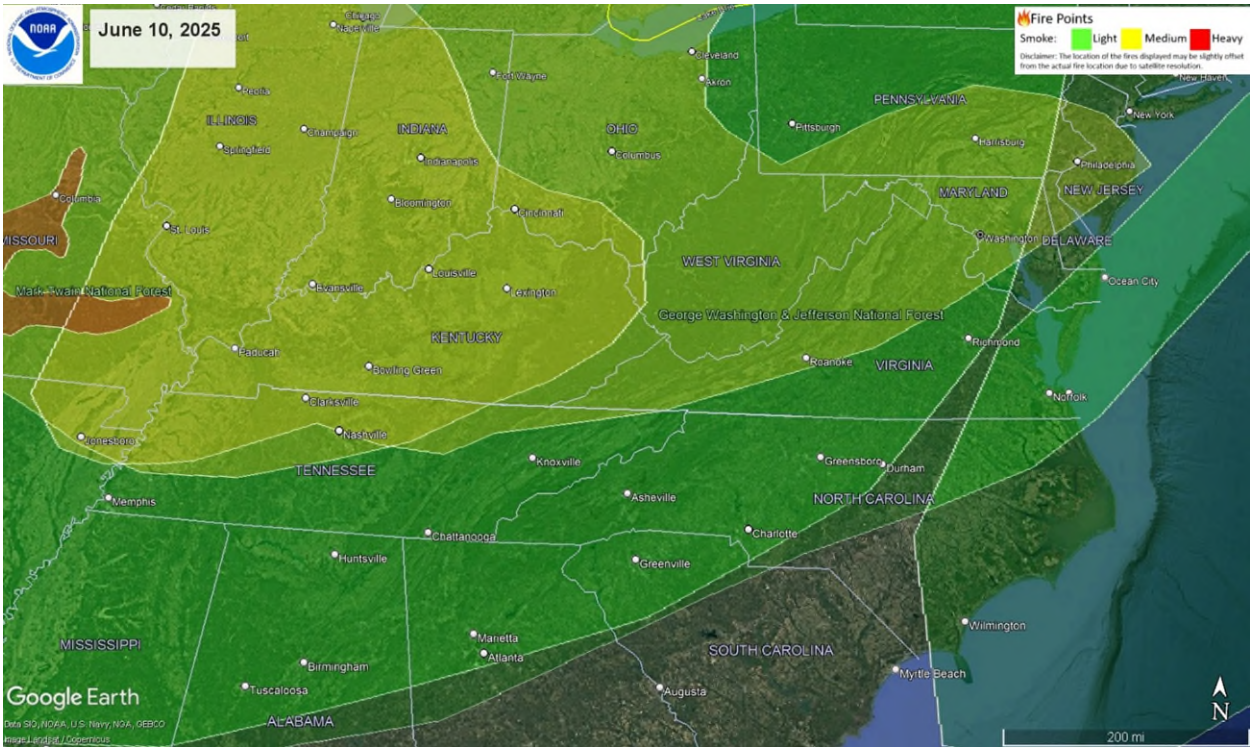


Figure D4-SP4: NOAA Map displaying regional smoke on June 10, 2025

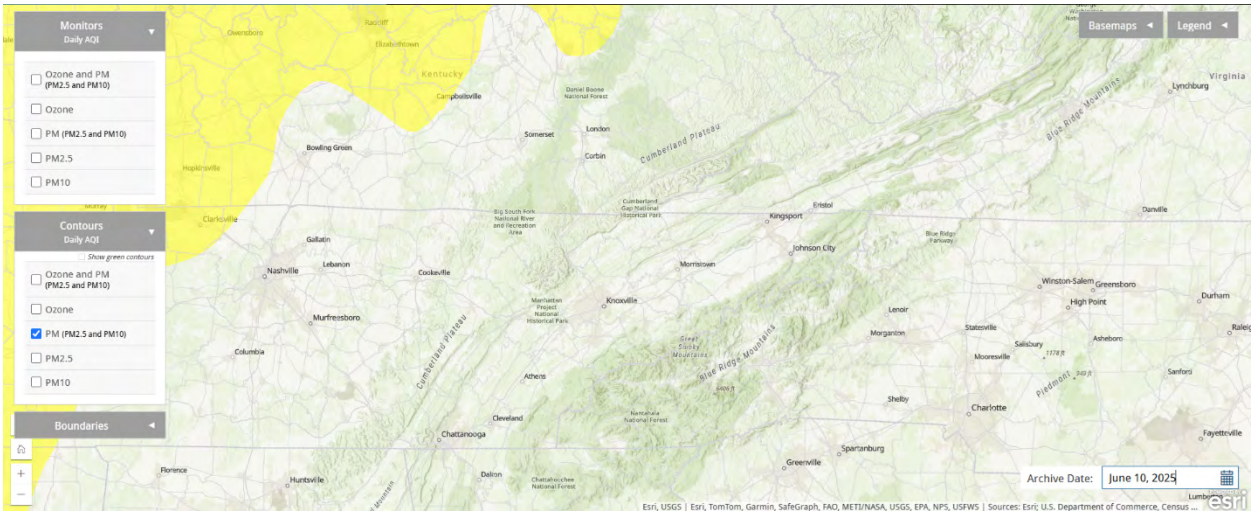


Figure D4-SP5: EPA AQI Map displaying AQI colors for June 10, 2025

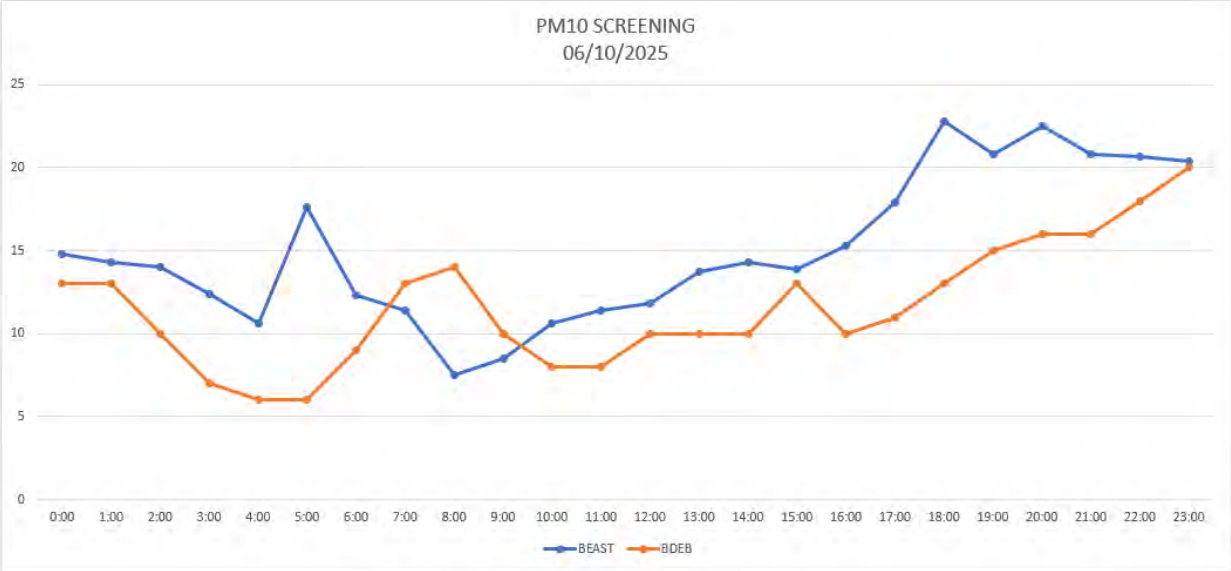


Figure D4-SP6: Graph displaying PM 10 concentrations for BEAST and nearby agency monitor

CARE-4-AIR SITE 2			
Pollutant	**Agency Monitor**	**Monitor ID**	**Miles from BEAST**
PM10	BDEB	370210034	45 - 50

Figure D4-SP7: Table displaying nearby agency monitor and miles from our monitoring site

24-hour PM 10 Concentration

	10
BEAST	15
BDEB	12

24-hour PM 10 AQI

	10
BEAST	14
BDEB	11

Figure D4-SP8: Tables displaying the day's 24-hour average and AQI color code for BEAST and agency monitor

The nearest PM 10 monitor, BDEB, reported similar PM 10 levels as the BEAST trailer.

*Agency monitor has not been quality assured.

June 23, 2025 Spike

Site host noted lots of trucks and dust from 7 AM – 4:30 PM EDT (6 AM – 3:30 PM EST).

- There was some light regional smoke in the area which may account for higher concentrations. PM 10 levels may be attributed to heavy dust from truck traffic.

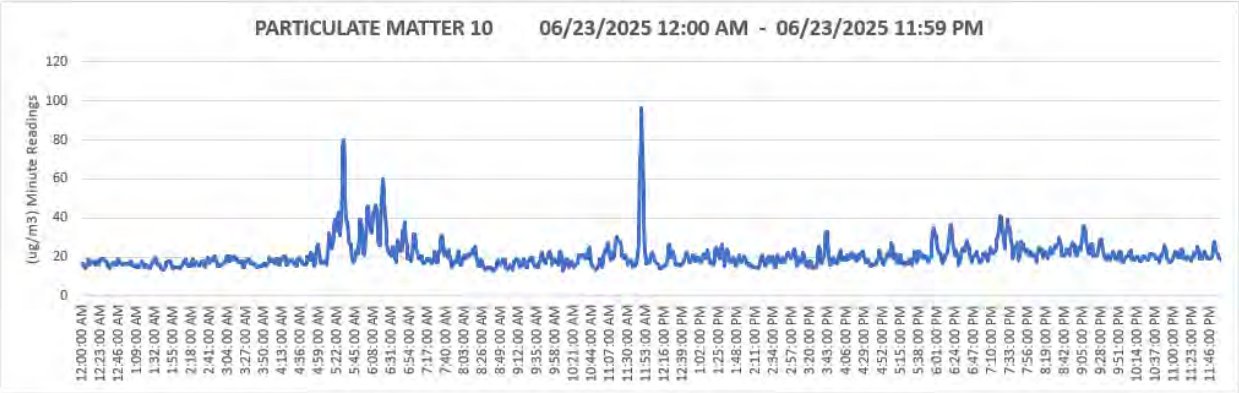


Figure D4-SP9: PM 10 levels for June 23, 2025

PARTICULATE MATTER 10 Top 25 Concentrations (ug/m3) Minute Readings 06/23/2025 12:00 AM - 06/23/2025 11:59 PM		
Rank	Concentration	Time
1	96.2	11:48:00 AM
2	80.9	11:47:00 AM
3	80.2	5:31:00 AM
4	76.8	5:30:00 AM
5	74.0	11:49:00 AM
6	70.8	5:32:00 AM
7	69.4	11:46:00 AM
8	60.2	6:21:00 AM
9	58.1	6:20:00 AM
10	56.8	11:50:00 AM
11	54.7	5:29:00 AM
12	54.5	6:22:00 AM
13	50.4	5:33:00 AM
14	50.0	6:19:00 AM
15	48.3	6:23:00 AM
16	46.6	6:11:00 AM
17	46.0	6:02:00 AM
18	45.8	6:01:00 AM
19	44.6	6:13:00 AM
20	43.6	6:10:00 AM
21	43.5	6:12:00 AM
22	43.1	5:25:00 AM
23	42.1	6:09:00 AM
24	41.3	7:21:00 PM
25	40.5	7:23:00 PM

PARTICULATE MATTER 10 Hour Averages Ranked by Highest (ug/m3) Hour Averages 06/23/2025 12:00 AM - 06/23/2025 11:59 PM		
Rank	Concentration	Time
1	31.5	6:00:00 AM
2	30.3	5:00:00 AM
3	25.9	7:00:00 PM
4	25.9	11:00:00 AM
5	23.0	9:00:00 PM
6	22.8	8:00:00 PM
7	22.5	6:00:00 PM
8	20.9	11:00:00 PM
9	20.6	5:00:00 PM
10	20.5	7:00:00 AM
11	19.9	10:00:00 PM
12	19.5	1:00:00 PM
13	19.4	3:00:00 PM
14	19.1	4:00:00 PM
15	18.4	12:00:00 PM
16	18.3	4:00:00 AM
17	17.7	2:00:00 PM
18	17.7	10:00:00 AM
19	17.5	9:00:00 AM
20	17.2	8:00:00 AM
21	17.2	3:00:00 AM
22	16.8	12:00:00 AM
23	16.7	2:00:00 AM
24	16.0	1:00:00 AM

Figure D4-SP10: Tables displaying PM 10 concentrations for June 23, 2025

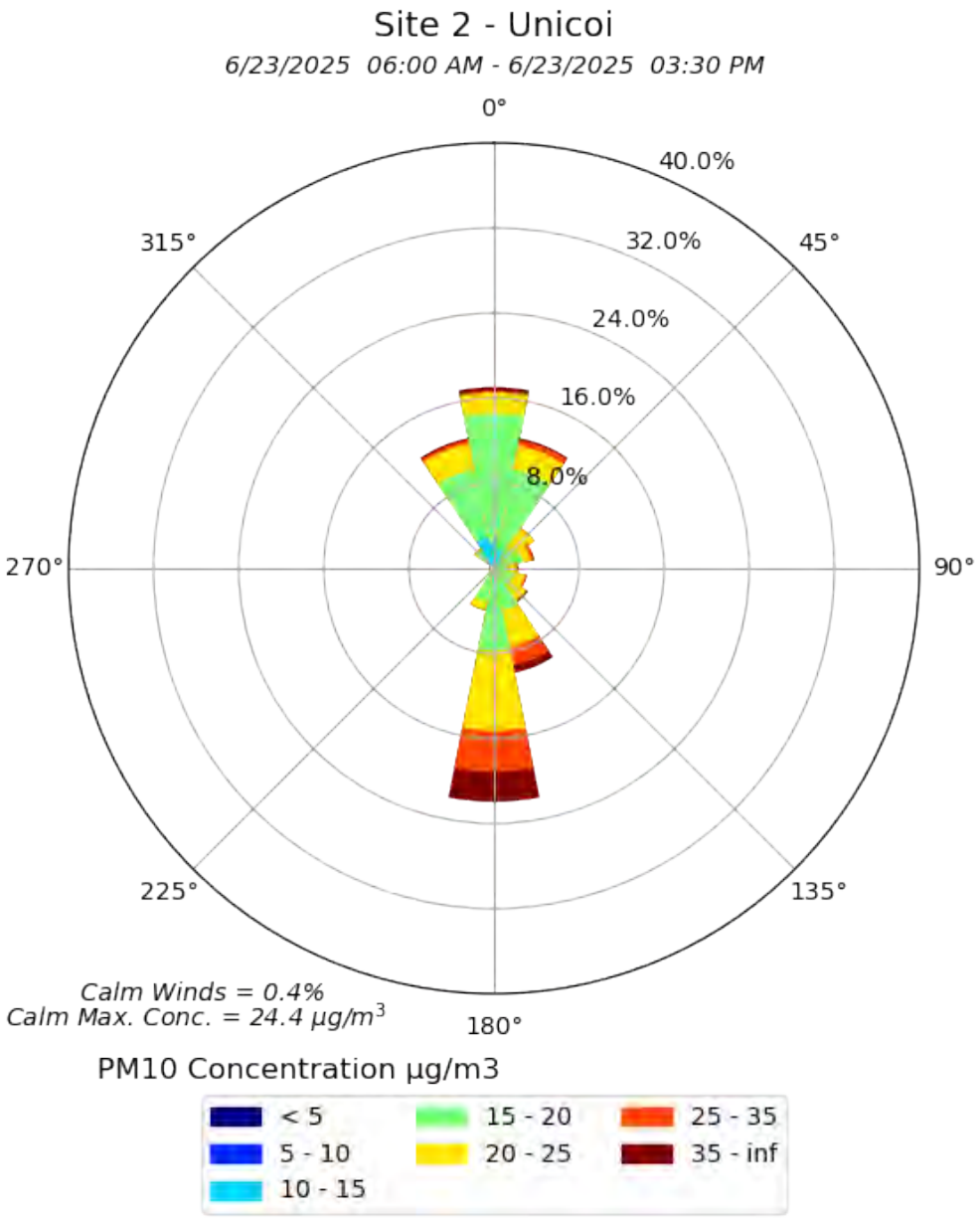


Figure D4-SP11: Pollution Rose displaying PM 10 concentrations and wind direction

June 23 NOAA Smoke Map and EPA AQI Map

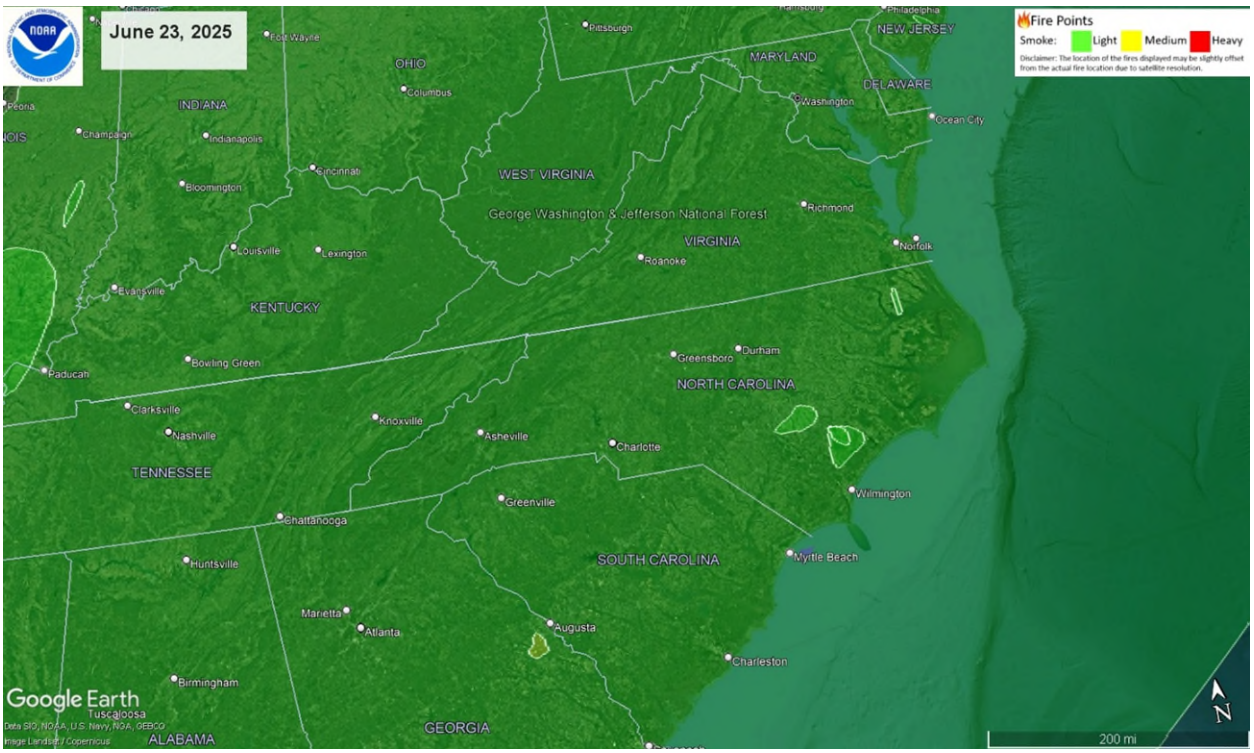


Figure D4-SP12: NOAA Map displaying regional smoke on June 23, 2025

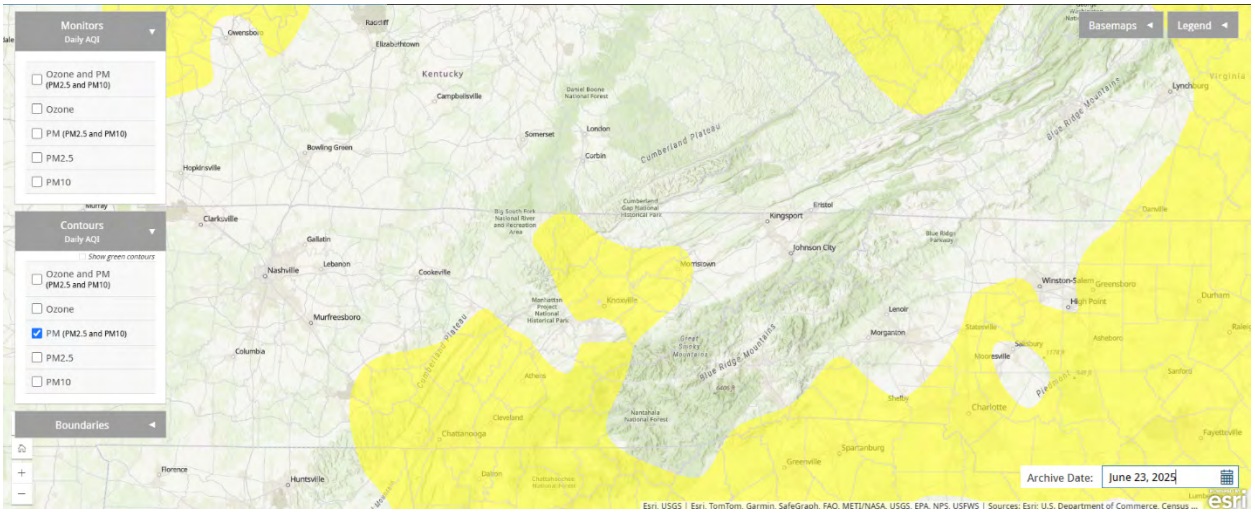


Figure D4-SP13: EPA AQI Map displaying AQI colors for June 23, 2025

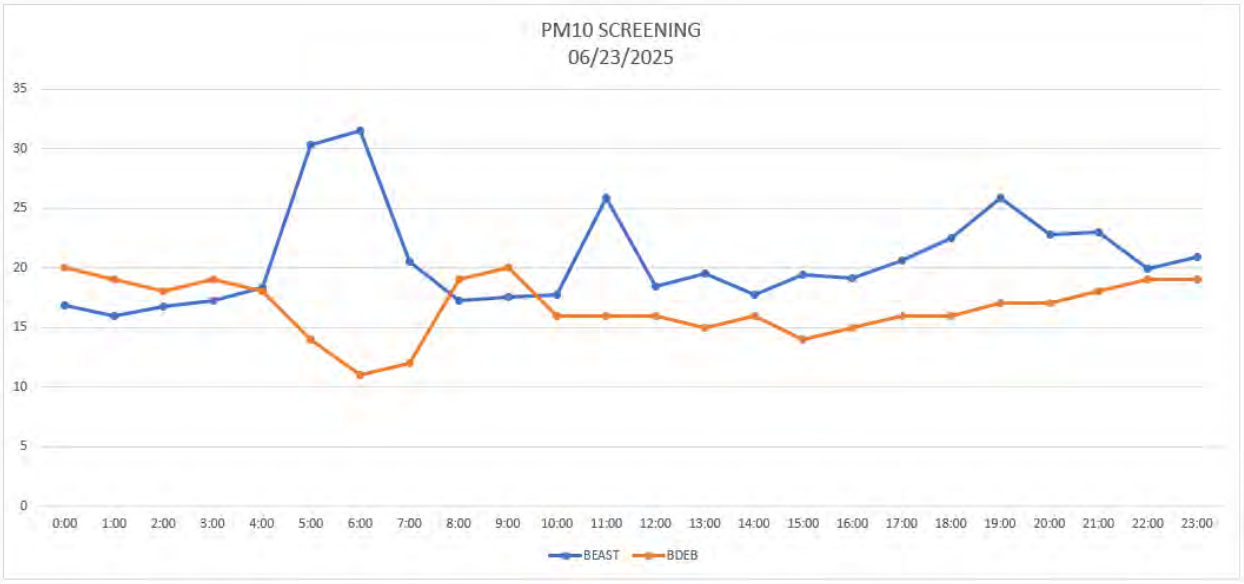


Figure D4-SP14: Graph displaying PM 10 concentrations for BEAST and nearby agency monitor

CARE-4-AIR SITE 2			
Pollutant	Agency Monitor	Monitor ID	Miles from BEAST
PM10	BDEB	370210034	45 - 50

Figure D4-SP15: Table displaying nearby agency monitor and miles from our monitoring site

24-hour PM 10 Concentration

	23
BEAST	21
BDEB	17

24-hour PM 10 AQI

	23
BEAST	19
BDEB	16

Figure D4-SP16: Tables displaying the day's 24-hour average and AQI color code for BEAST and agency monitor

The nearest PM 10 monitor, BDEB, reported similar PM 10 levels as the BEAST trailer.

*Agency monitor has not been quality assured.

August 9, 2025 Spike

Nothing noted on Event Log. However, there were some spikes of the monitored pollutants – at various times of the day. Of note is a nearby asphalt facility official startup date for new equipment was August 4, just a few days before this. We highlight two time periods on August 9.

- Nearby asphalt plant had just notified the Tennessee Department of Environment and Conservation that it was commencing operations on new equipment on August 4.
- Regional PM AQI was in the moderate yellow range for the day. However, no widespread smoke reported on the NOAA smoke map. Nor were any widespread local fire hotspots.
- BEAST PM data was comparable to screened regional agency data for the daily averages.
- PM 10 levels most likely from regional sources. Local sources may have contributed some.

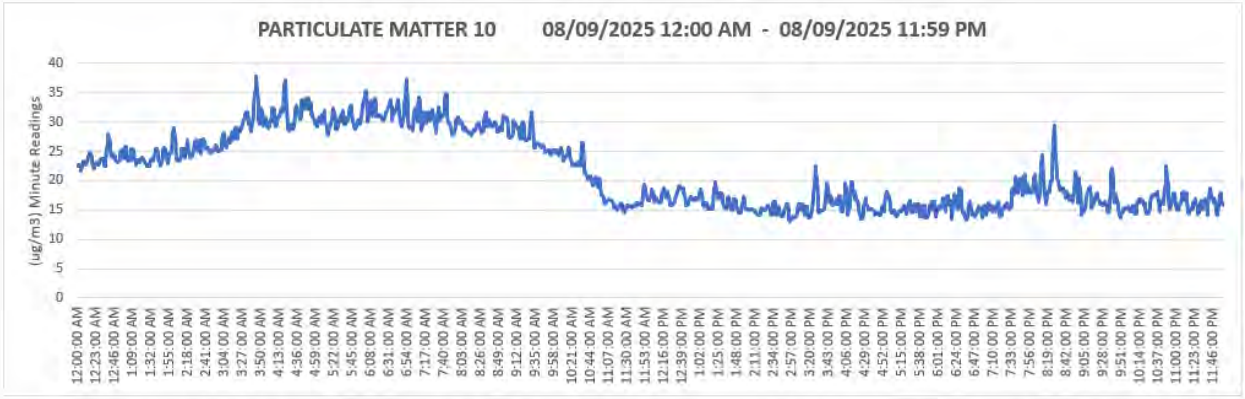


Figure D4-SP17: PM 10 levels for August 9, 2025

PARTICULATE MATTER 10 Top 25 Concentrations (ug/m3) Minute Readings 08/09/2025 12:00 AM - 08/09/2025 11:59 PM		
Rank	Concentration	Time
1	37.8	3:45:00 AM
2	37.4	6:53:00 AM
3	37.2	4:21:00 AM
4	36.9	4:22:00 AM
5	36.3	4:20:00 AM
6	36.2	6:54:00 AM
7	35.5	3:44:00 AM
8	35.3	6:03:00 AM
9	35.3	3:46:00 AM
10	35.1	6:02:00 AM
11	34.9	7:43:00 AM
12	34.8	3:43:00 AM
13	34.6	7:44:00 AM
14	34.3	7:42:00 AM
15	34.3	6:01:00 AM
16	34.2	7:09:00 AM
17	34.2	6:52:00 AM
18	34.1	6:14:00 AM
19	34.0	4:51:00 AM
20	34.0	4:49:00 AM
21	34.0	4:48:00 AM
22	33.9	6:43:00 AM
23	33.8	6:33:00 AM
24	33.8	4:47:00 AM
25	33.8	4:43:00 AM

PARTICULATE MATTER 10 Hour Averages Ranked by Highest (ug/m3) Hour Averages 08/09/2025 12:00 AM - 08/09/2025 11:59 PM		
Rank	Concentration	Time
1	31.9	6:00:00 AM
2	31.4	4:00:00 AM
3	30.7	7:00:00 AM
4	30.3	5:00:00 AM
5	29.4	3:00:00 AM
6	29.3	8:00:00 AM
7	27.2	9:00:00 AM
8	25.4	2:00:00 AM
9	23.9	1:00:00 AM
10	23.7	12:00:00 AM
11	22.5	10:00:00 AM
12	19.3	8:00:00 PM
13	17.2	12:00:00 PM
14	16.9	7:00:00 PM
15	16.4	10:00:00 PM
16	16.3	9:00:00 PM
17	16.3	1:00:00 PM
18	16.1	11:00:00 PM
19	16.1	11:00:00 AM
20	16.0	3:00:00 PM
21	15.8	4:00:00 PM
22	15.4	6:00:00 PM
23	15.1	5:00:00 PM
24	14.8	2:00:00 PM

Figure D4-SP18: Tables displaying PM 10 concentrations for August 9, 2025

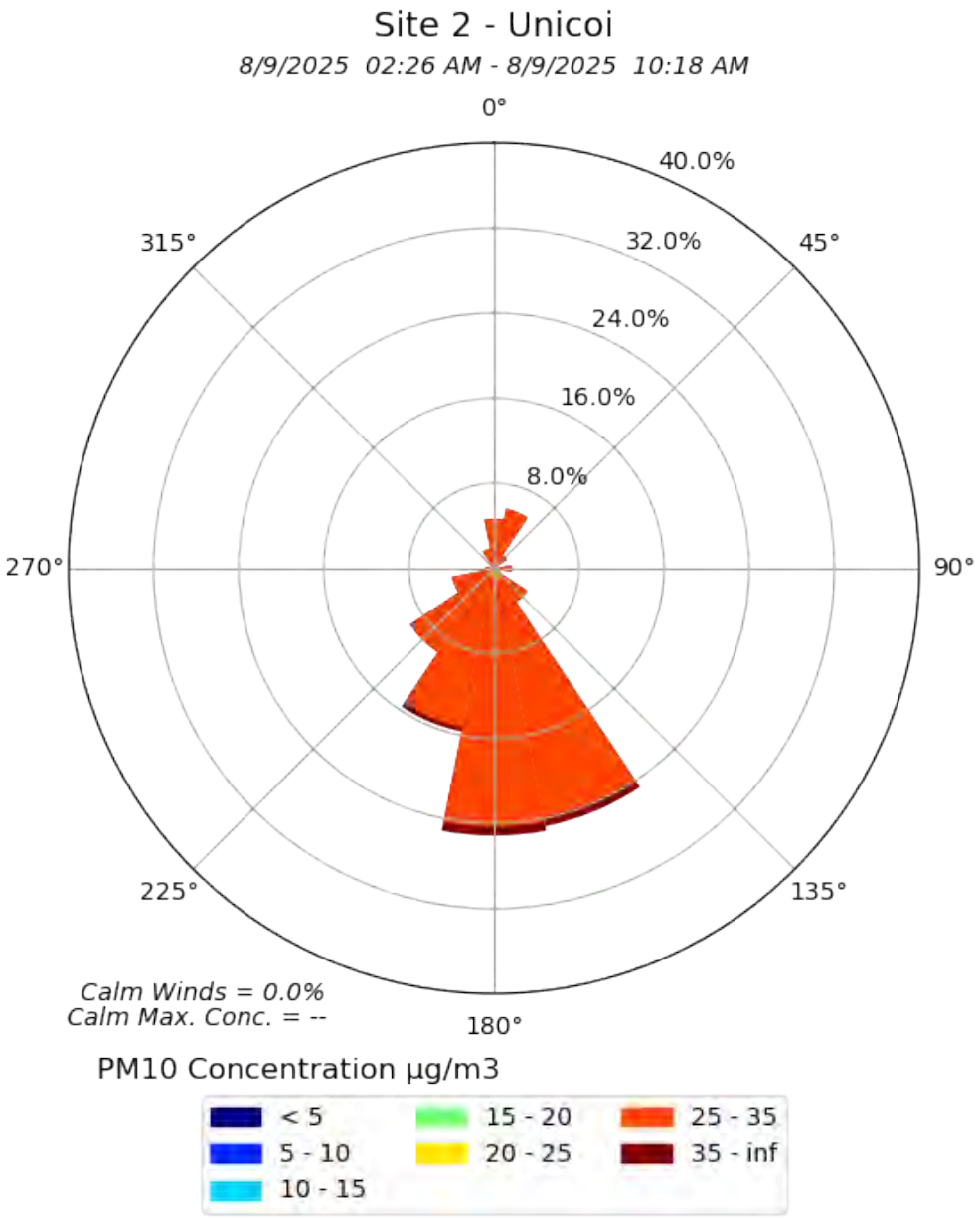


Figure D4-SP19: Pollution Rose displaying PM 10 concentrations and wind direction

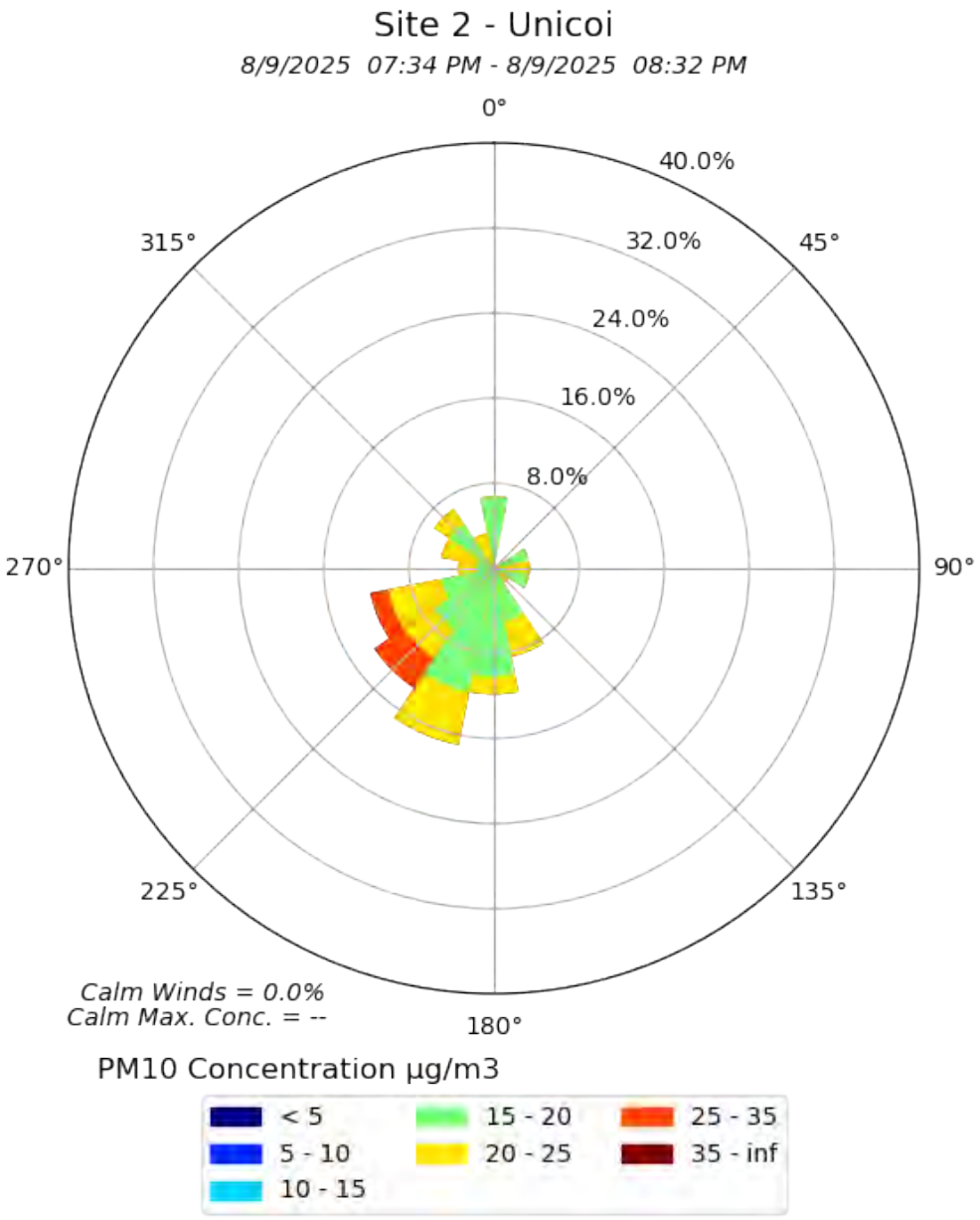


Figure D4-SP20: Pollution Rose displaying PM 10 concentrations and wind direction

August 9 NOAA Smoke Map and EPA AQI Map

Figure D4-SP21: NOAA Map displaying regional smoke on August 9, 2025

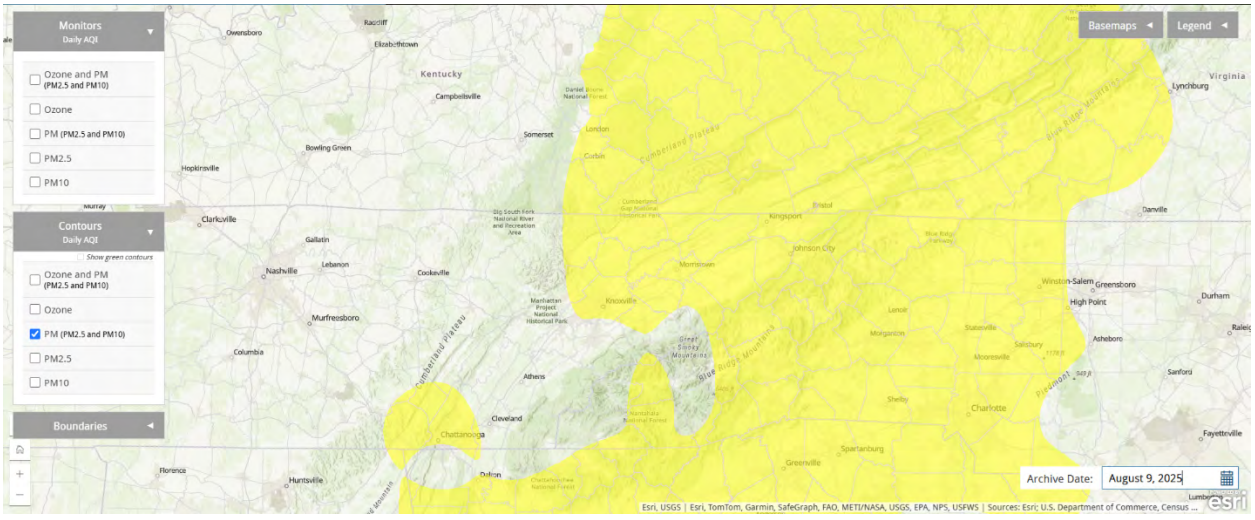


Figure D4-SP22: EPA AQI Map displaying AQI colors for August 9, 2025

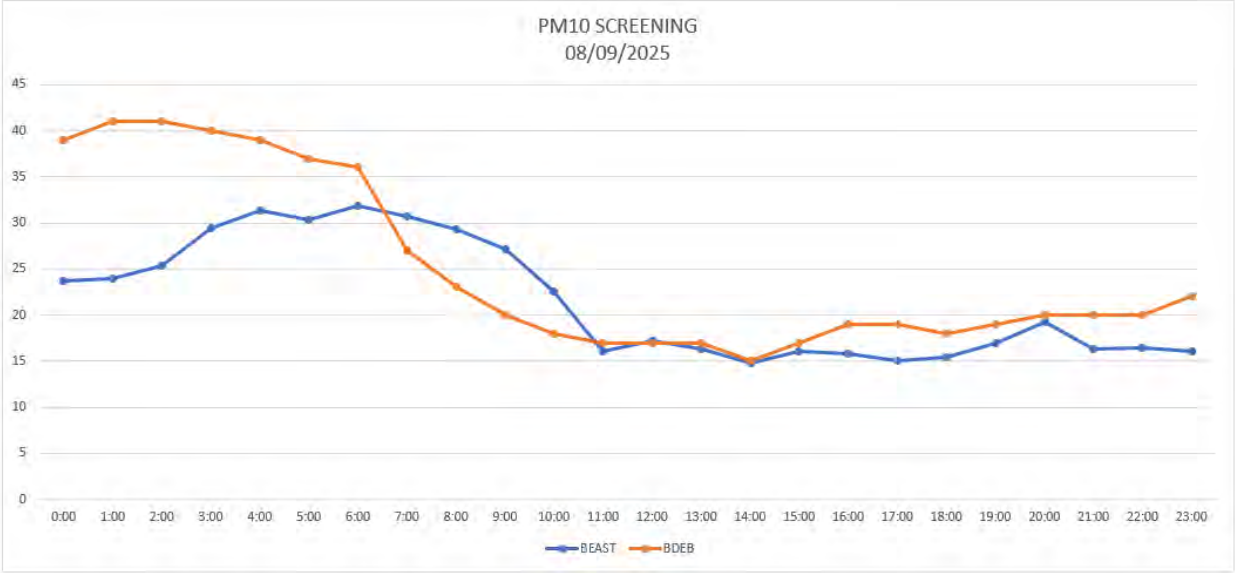


Figure D4-SP23: Graph displaying PM 10 concentrations for BEAST and nearby agency monitor

CARE-4-AIR SITE 2			
Pollutant	**Agency Monitor**	**Monitor ID**	**Miles from BEAST**
PM10	BDEB	370210034	45 - 50

Figure D4-SP24: Table displaying nearby agency monitor and miles from our monitoring site

24-hour PM 10 Concentration

	9
BEAST	22
BDEB	25

24-hour PM 10 AQI

	9
BEAST	20
BDEB	23

Figure D4-SP25: Tables displaying the day's 24-hour average and AQI color code for BEAST and agency monitor

The nearest PM 10 monitor, BDEB, reported similar PM 10 levels as the BEAST trailer.

*Agency monitor has not been quality assured.

September 5, 2025 Spike

Various spikes in all pollutants. Site host Event Log did not note anything of interest. Light to moderate levels of regional smoke was in the area.

- Pollution levels could be a result of light to moderate levels of regional smoke that was in the area.
- No heavy truck traffic or other activity reported in immediate area.
- PM levels higher for BEAST than regional agency monitor during spike time period.
- No fires mapped in the nearby vicinity of the trailer.
- Unable to determine the source of spike, but most likely from a local source.

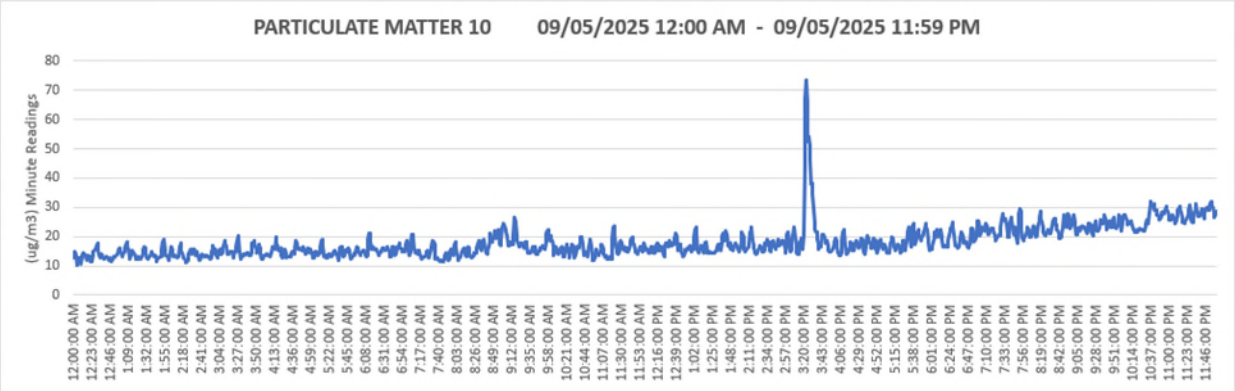


Figure D4-SP26: PM 10 levels for September 5, 2025

PARTICULATE MATTER 10 Top 25 Concentrations (ug/m3) Minute Readings 09/05/2025 12:00 AM - 09/05/2025 11:59 PM		
Rank	Concentration	Time
1	73.6	3:23:00 PM
2	67.0	3:22:00 PM
3	66.0	3:24:00 PM
4	54.3	3:26:00 PM
5	52.4	3:25:00 PM
6	51.3	3:27:00 PM
7	46.3	3:28:00 PM
8	43.9	3:21:00 PM
9	38.2	3:30:00 PM
10	37.9	3:29:00 PM
11	34.7	3:31:00 PM
12	31.9	11:53:00 PM
13	31.8	10:37:00 PM
14	31.4	11:52:00 PM
15	31.2	10:41:00 PM
16	31.0	11:34:00 PM
17	31.0	10:36:00 PM
18	30.9	11:54:00 PM
19	30.9	11:26:00 PM
20	30.6	10:39:00 PM
21	30.4	10:56:00 PM
22	30.4	10:38:00 PM
23	30.2	11:51:00 PM
24	30.2	11:13:00 PM
25	30.1	11:55:00 PM

PARTICULATE MATTER 10 Hour Averages Ranked by Highest (ug/m3) Hour Averages 09/05/2025 12:00 AM - 09/05/2025 11:59 PM		
Rank	Concentration	Time
1	27.6	11:00:00 PM
2	25.8	10:00:00 PM
3	24.3	3:00:00 PM
4	23.7	9:00:00 PM
5	23.0	8:00:00 PM
6	22.5	7:00:00 PM
7	19.3	6:00:00 PM
8	18.4	5:00:00 PM
9	18.0	9:00:00 AM
10	17.1	2:00:00 PM
11	17.0	4:00:00 PM
12	16.8	1:00:00 PM
13	16.3	8:00:00 AM
14	16.2	12:00:00 PM
15	15.8	11:00:00 AM
16	15.6	10:00:00 AM
17	15.5	6:00:00 AM
18	15.0	4:00:00 AM
19	15.0	3:00:00 AM
20	14.4	7:00:00 AM
21	14.3	5:00:00 AM
22	14.0	1:00:00 AM
23	13.9	2:00:00 AM
24	13.4	12:00:00 AM

Figure D4-SP27: Tables displaying PM 10 concentrations for September 5, 2025

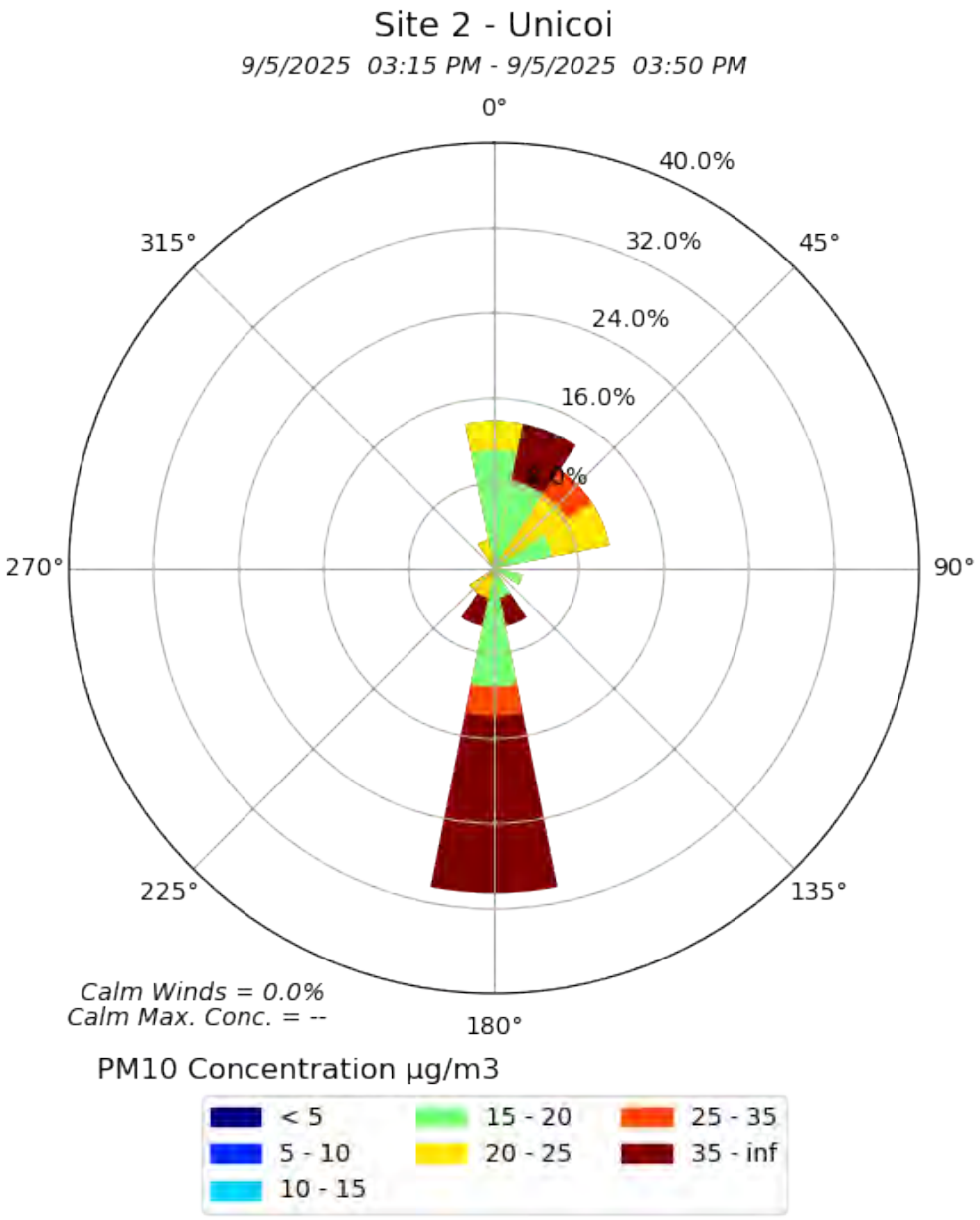


Figure D4-SP28: Pollution Rose displaying PM 10 concentrations and wind direction

September 5 NOAA Smoke Map and EPA AQI Map

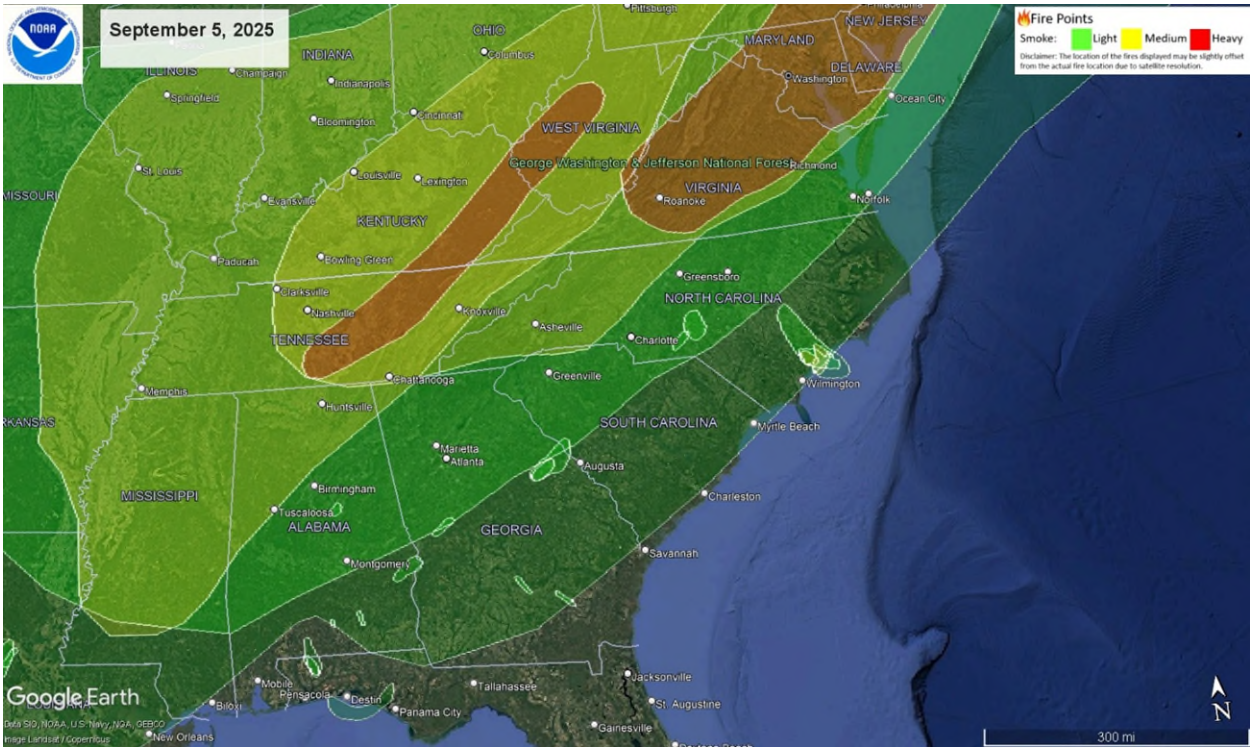


Figure D4-SP29: NOAA Map displaying regional smoke on September 5, 2025

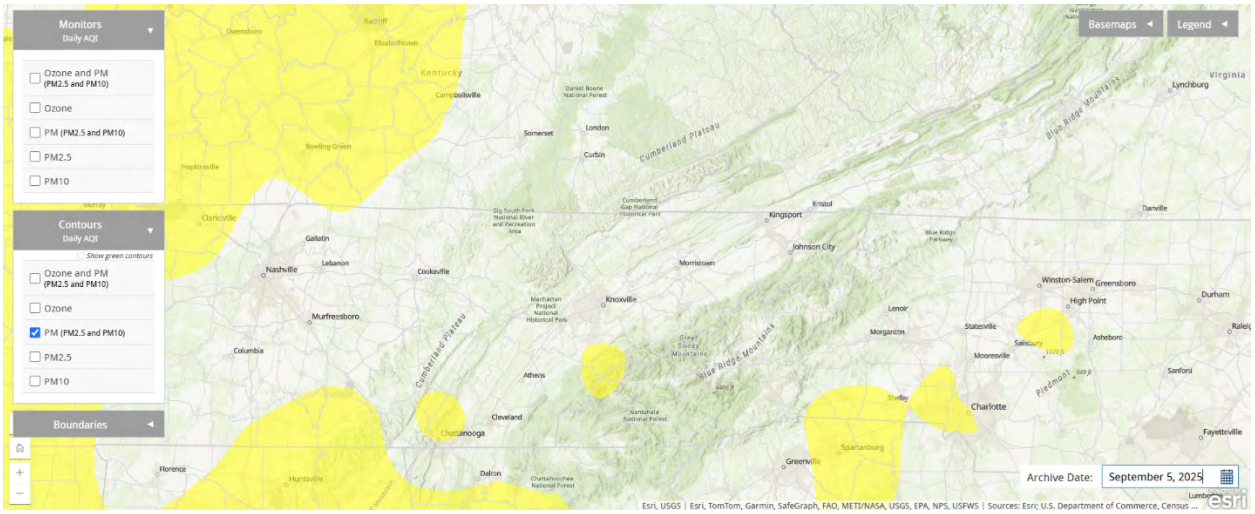


Figure D4-SP30: EPA AQI Map displaying AQI colors for September 5, 2025

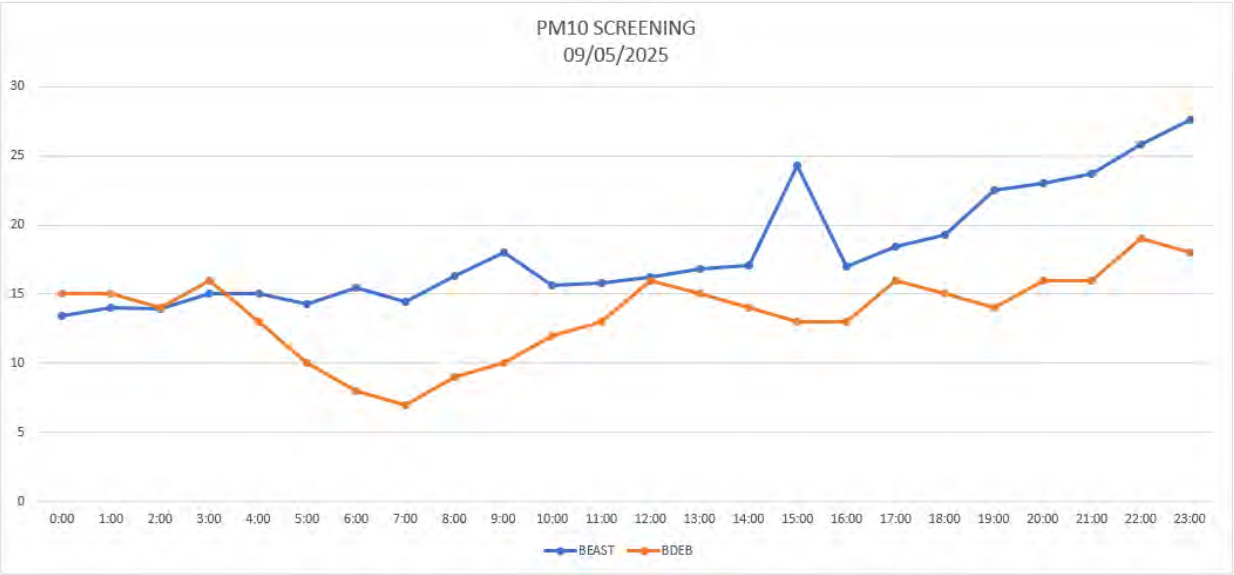


Figure D4-SP31: Graph displaying PM 10 concentrations for BEAST and nearby agency monitor

CARE-4-AIR SITE 2			
Pollutant	Agency Monitor	Monitor ID	Miles from BEAST
PM10	BDEB	370210034	45 - 50

Figure D4-SP32: Table displaying nearby agency monitor and miles from our monitoring site

24-hour PM 10 Concentration

	5
BEAST	18
BDEB	14

24-hour PM 10 AQI

	5
BEAST	17
BDEB	13

Figure D4-SP33: Tables displaying the day's 24-hour average and AQI color code for BEAST and agency monitor

The nearest PM 10 monitor, BDEB, reported similar PM 10 levels as the BEAST trailer, except during the spike around 3 PM.

*Agency monitor has not been quality assured.

D5: Data – Nitric Oxide

Nitric Oxide (NO) Findings

- There was no clear indication that recorded Nitric Oxide spikes originated from nearby sources of concern.
- Nitric Oxide levels were higher during the day from 5 AM to 8 AM.
- Albeit small concentrations, Nitric Oxide levels were lower during the weekend.
- Our highest one-minute Nitric Oxide concentration was 220.5 ppb at 8:11 AM on October 20, 2025.
- Our highest one-hour average for Nitric Oxide was 7.5 ppb at 7 AM on October 6, 2025.
- Just over 40% of minute readings recorded a concentration of 0 or a negative number. Nearly 47% of hourly averages were a concentration of 0 or a negative number. Note: This instrument may record negative numbers which meet EPA reporting protocol.
- Nearly 60% of minute readings recorded a concentration between 0.1 – 9.9 ppb.
- A small percentage of minute readings, 0.01%, were concentrations of at least 25 ppb or greater.
- Just over 53% of hourly averages were a concentration between 0.1 – 9.9 ppb.
- The following two tables reflect the percentages of each range of concentrations recorded. Nitric Oxide is not an EPA criteria pollutant; therefore, there is no Air Quality Index reference.

Percentage of Minute Readings
Concentration Range in ppb

Range	Percentage
0 -	40.34%
0.1 - 9.9	59.55%
10 - 24.9	0.10%
25 +	0.01%

Percentage of Hourly Averages
Concentration Range in ppb

Range	Percentage
0 -	46.55%
0.1 - 9.9	53.45%
10 - 24.9	0.00%
25 +	0.00%

Data Presentations

BREDL data presentations for NO will include hourly averages (the average of 60 one-minute readings). Wind and pollution roses use the one minute readings (1440 per day).

Time of day bar graphs are used to examine time periods of the day. For example, is there one part of the day where the pollution registered higher or lower?

Figures D5-1 – D5-6 plot hour averages for the entire collection period and for each month. These averages take the 60 one-minute readings for each hour and average them for the hour average.

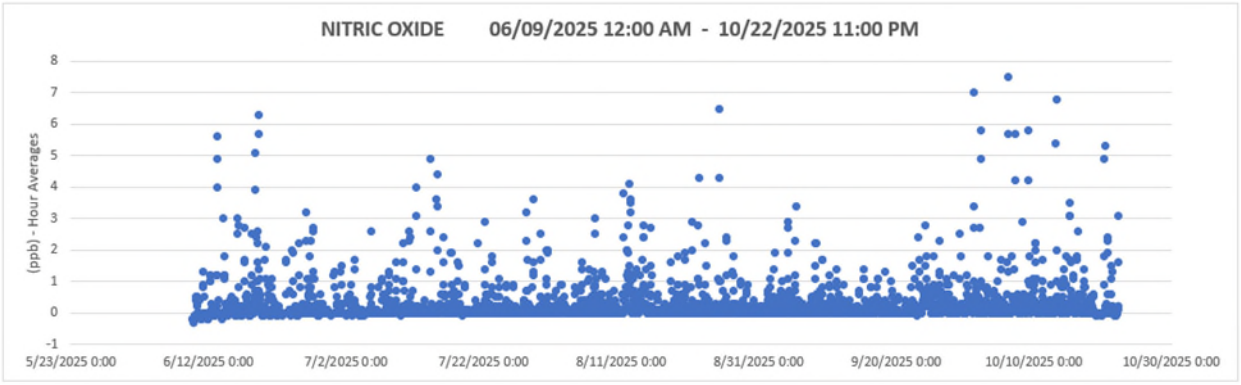


Figure D5-1: NO Hour Averages – Entire Collection Period

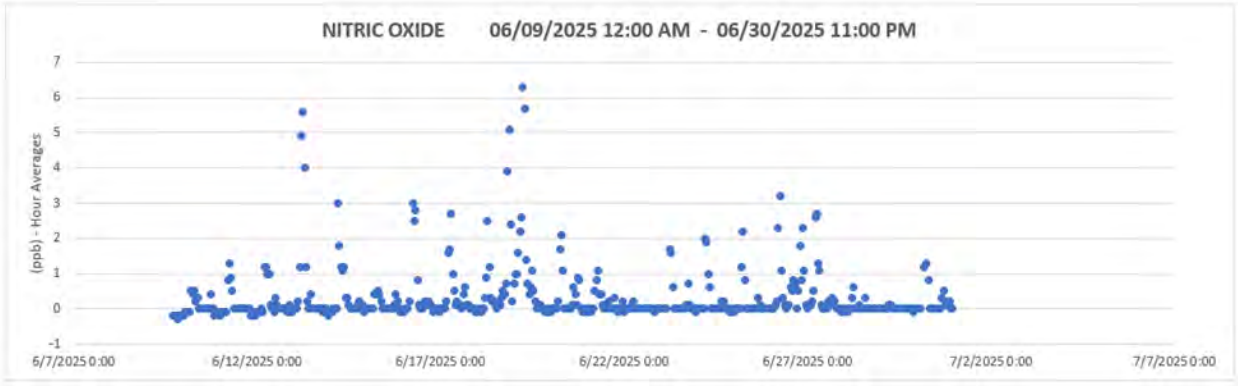


Figure D5-2: NO Hour Averages – June

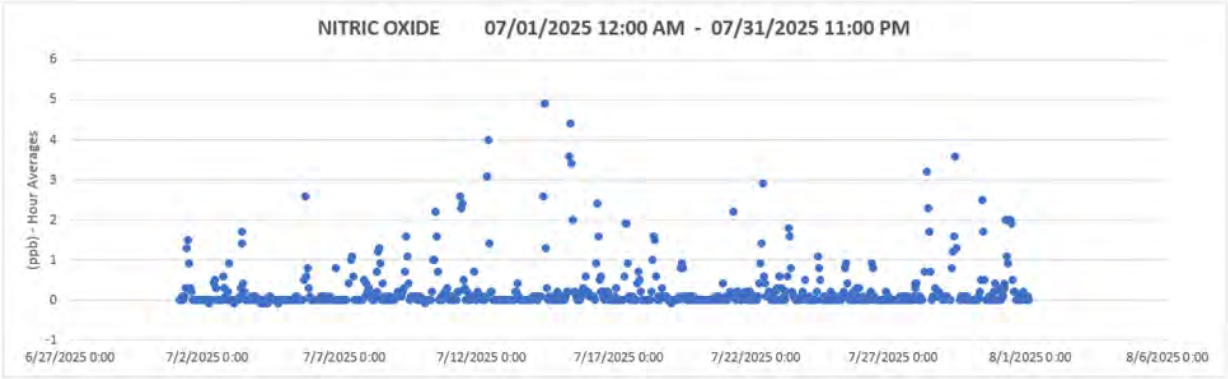


Figure D5-3: NO Hour Averages – July

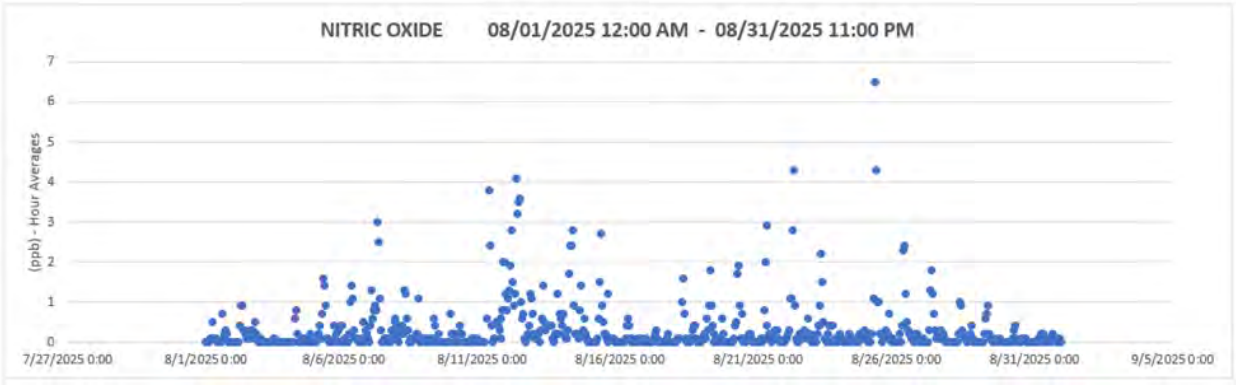


Figure D5-4: NO Hour Averages – August

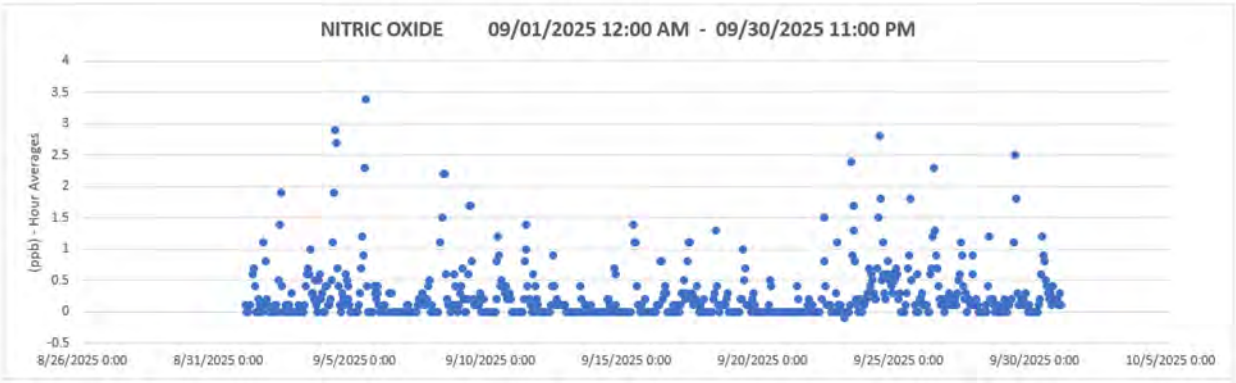


Figure D5-5: NO Hour Averages – September

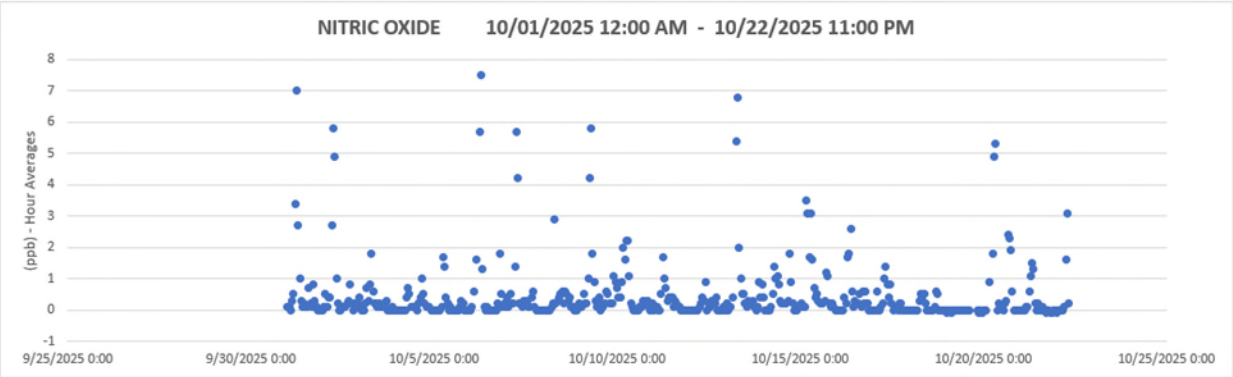


Figure D5-6: NO Hour Averages – October

Figures D5-7 – D5-12 plot averages based on the time of day for the entire collection period and for each month.

Figure D5-7: NO Hour Averages – Based on Time of Day for Collection Period

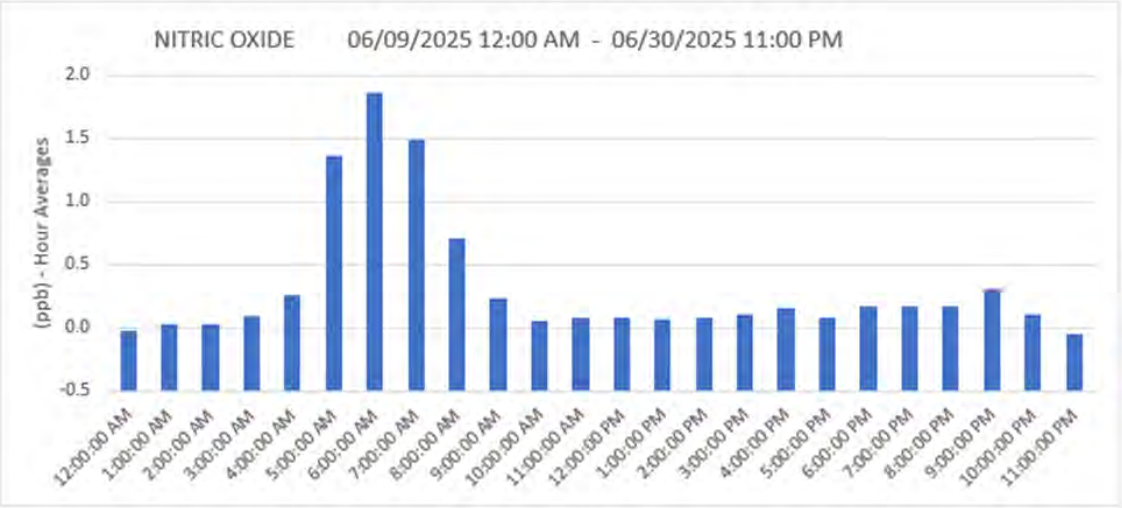


Figure D5-8: NO Hour Averages – Based on Time of Day for June

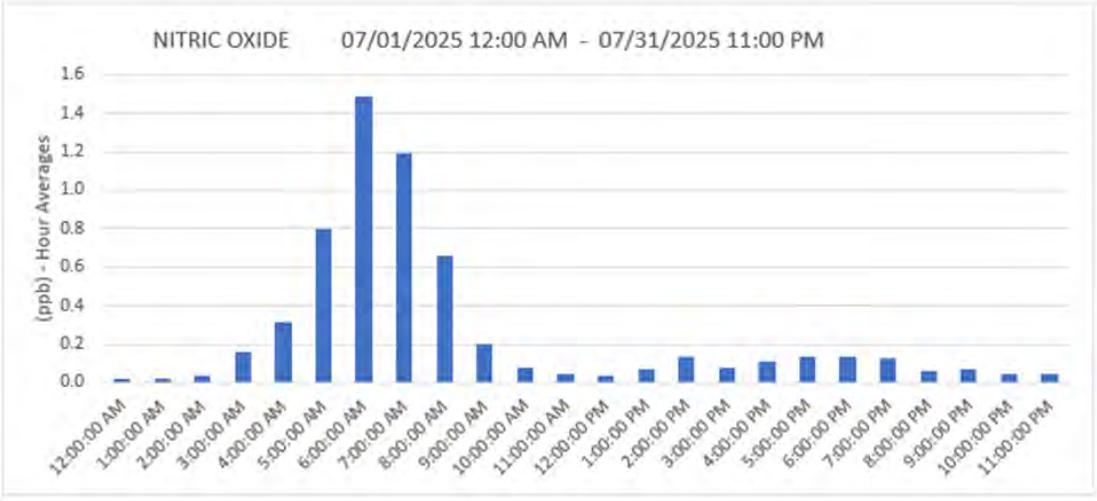


Figure D5-9: NO Hour Averages – Based on Time of Day for July

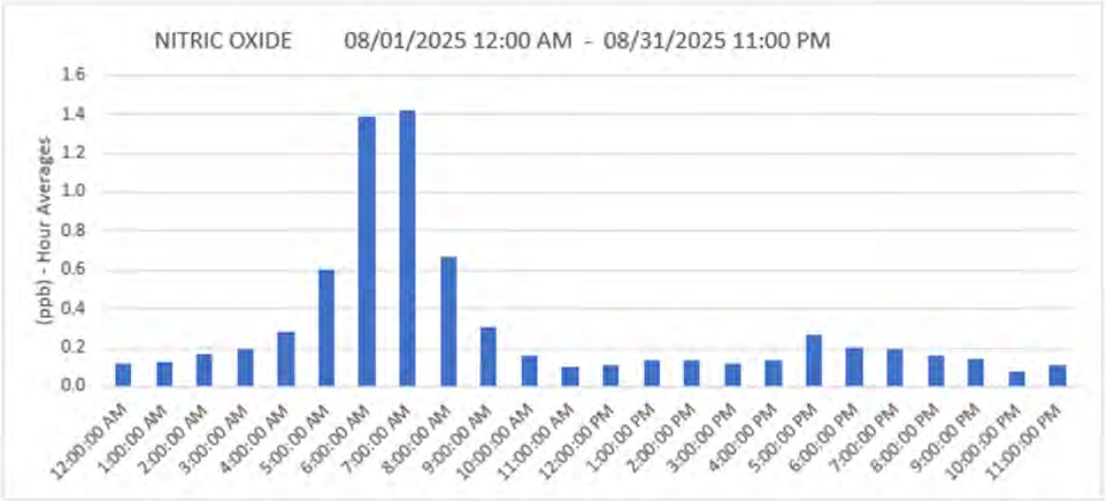


Figure D5-10: NO Hour Averages – Based on Time of Day for August

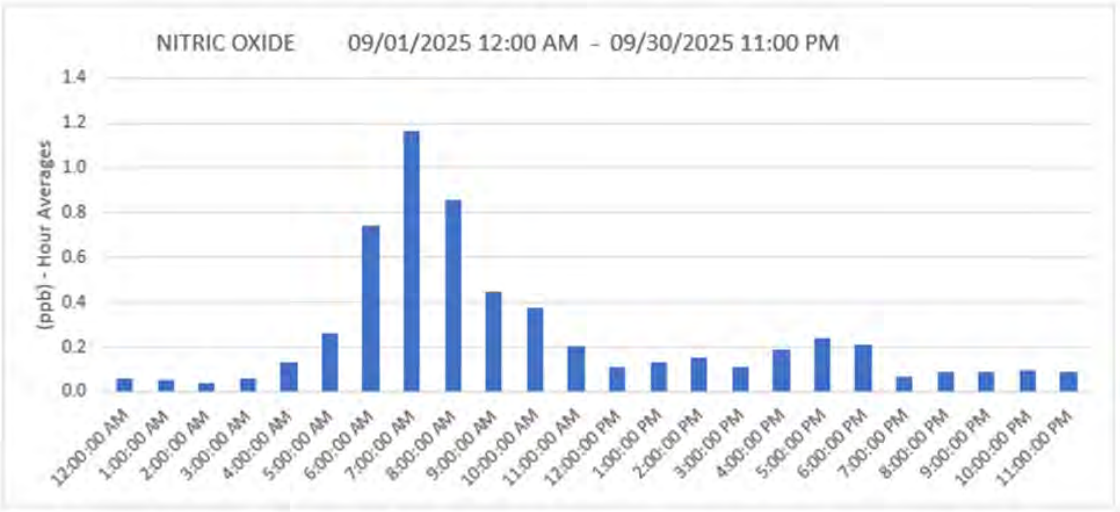


Figure D5-11: NO Hour Averages – Based on Time of Day for September

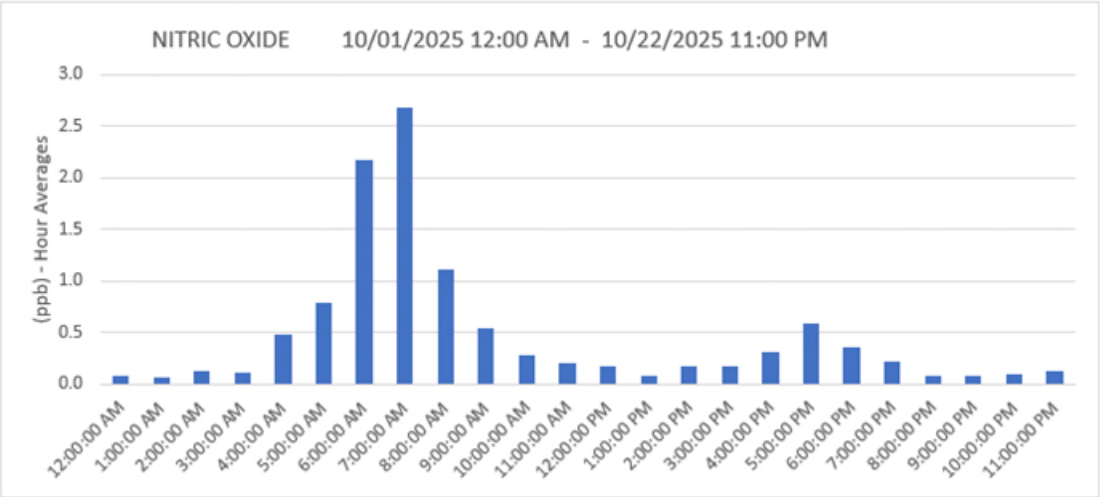


Figure D5-12: NO Hour Averages – Based on Time of Day for October

Figure D5-13 plots day averages based on the day of the week for the entire collection period.

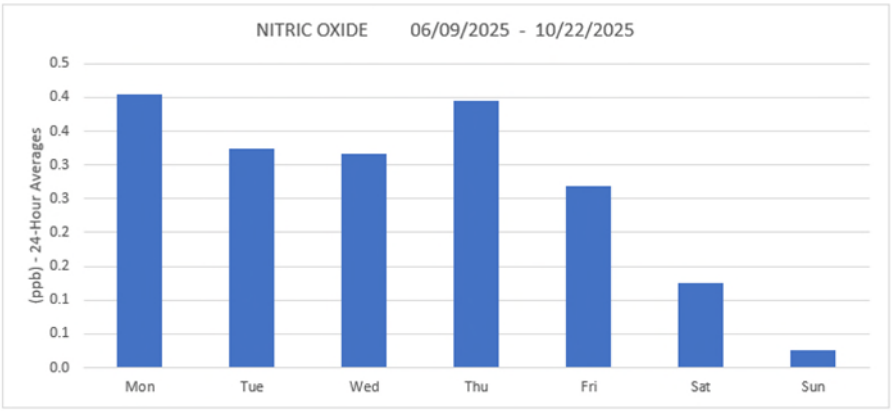


Figure D5-13: NO Day (24-Hour) Averages – Based on Day of the Week

NITRIC OXIDE One-Hour Averages Ranked by Highest (ppb) - Hour Averages 06/09/2025 12:00 AM - 10/22/2025 11:00 PM		
Rank	**Concentration**	**Date & Time**
1	7.5	10/6/2025 7:00 AM
2	7.0	10/1/2025 6:00 AM
3	6.8	10/13/2025 7:00 AM
4	6.5	8/25/2025 6:00 AM
5	6.3	6/19/2025 6:00 AM
6	5.8	10/9/2025 7:00 AM
7	5.8	10/2/2025 6:00 AM
8	5.7	10/7/2025 6:00 AM
9	5.7	10/6/2025 6:00 AM
10	5.7	6/19/2025 7:00 AM
11	5.6	6/13/2025 6:00 AM
12	5.4	10/13/2025 6:00 AM
13	5.3	10/20/2025 8:00 AM
14	5.1	6/18/2025 9:00 PM
15	4.9	10/20/2025 7:00 AM
16	4.9	10/2/2025 7:00 AM
17	4.9	7/14/2025 7:00 AM
18	4.9	6/13/2025 5:00 AM
19	4.4	7/15/2025 6:00 AM
20	4.3	8/25/2025 7:00 AM
21	4.3	8/22/2025 7:00 AM
22	4.2	10/9/2025 6:00 AM
23	4.2	10/7/2025 7:00 AM
24	4.1	8/12/2025 6:00 AM

Figure D5-14: NO Hour Averages – Top 25 Concentrations

Figures D5:15 and D5:16 pollution roses display the pollutant concentration based on wind direction, which can indicate the direction of the pollution source.

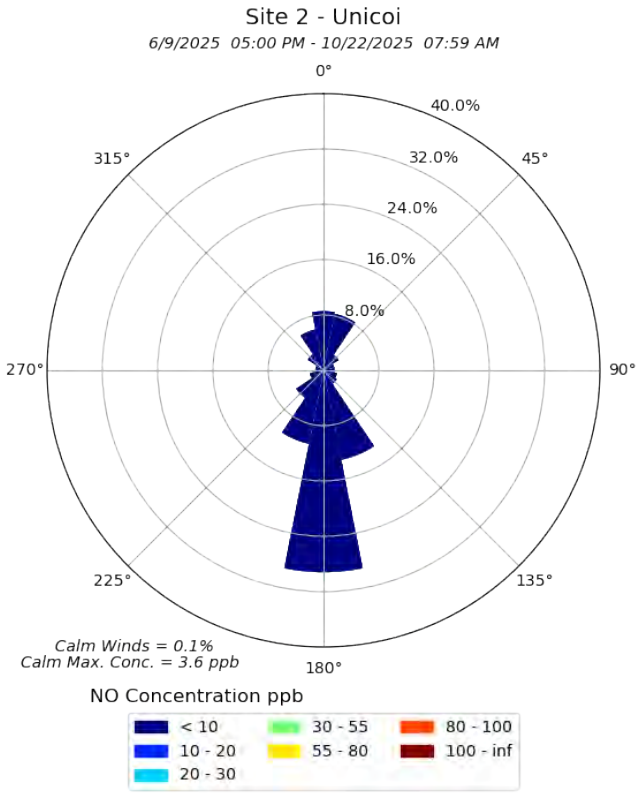


Figure D5-15: Pollution Rose

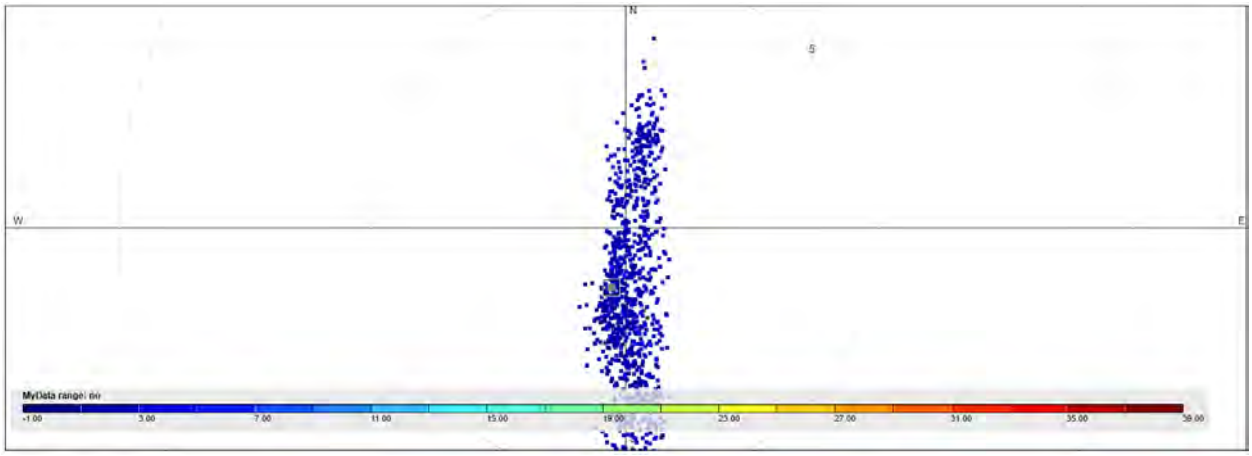


Figure D5-16: EPA RETIGO Pollution Rose 6/9/2024 - 10/22/2025

We separated the NO minute concentrations of at least 30 ppb and plotted those on a pollution rose for a better visual representation of the direction of the highest concentrations.

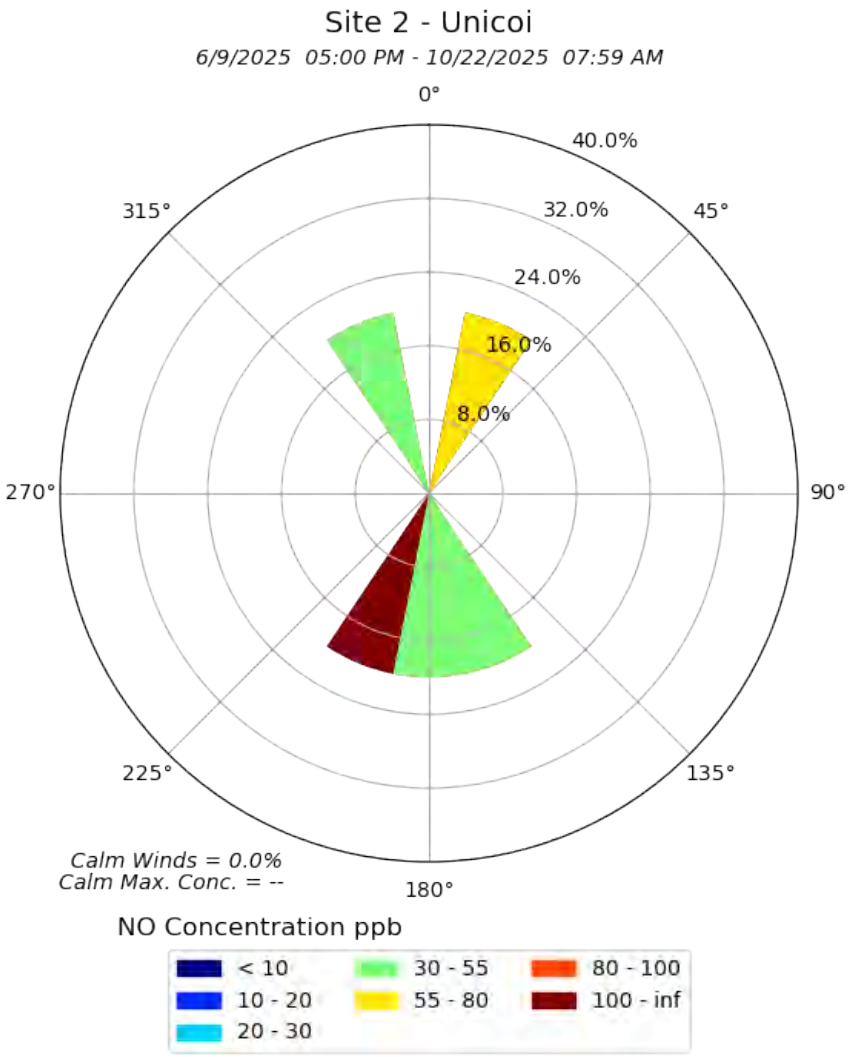


Figure D5-17: Pollution Rose displaying NO concentrations of at least 30 ppb.

NO Spikes

August 9, 2025 Spike

Nothing noted on Event Log. However, there were some spikes of the monitored pollutants – at various times of the day. Of note is a nearby asphalt facility official startup of new equipment date was August 4, just a few days before this. Nitric Oxide spike around 10:33 AM.

- No clear indication as to where the Nitric Oxide spike originated.
- Most likely not from local facilities of concern.

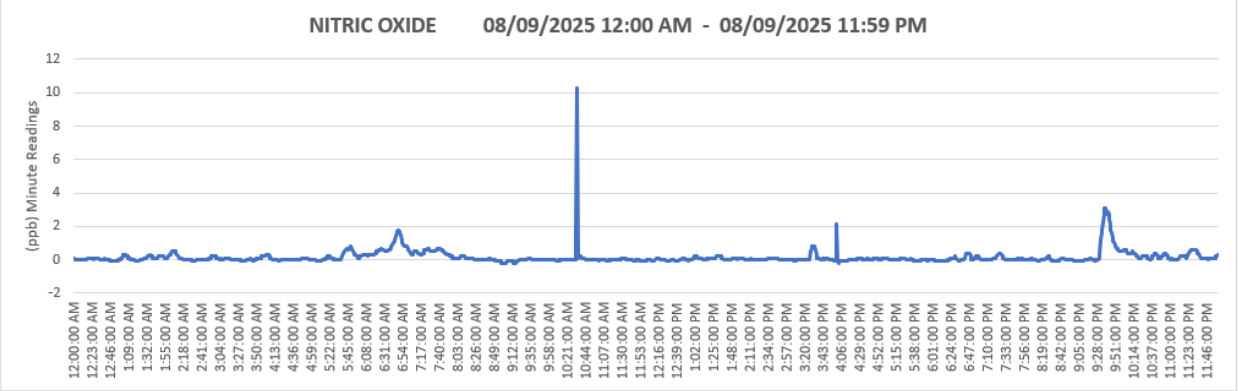


Figure D5-SP1: NO levels for August 9, 2025

NITRIC OXIDE Top 25 Concentrations (ppb) Minute Readings 08/09/2025 12:00 AM - 08/09/2025 11:59 PM		
Rank	**Concentration**	**Time**
1	10.3	10:33:00 AM
2	3.1	9:38:00 PM
3	3.1	9:37:00 PM
4	2.9	9:41:00 PM
5	2.8	9:40:00 PM
6	2.7	9:42:00 PM
7	2.7	9:39:00 PM
8	2.7	9:36:00 PM
9	2.4	9:43:00 PM
10	2.2	9:35:00 PM
11	2.1	9:44:00 PM
12	2.1	4:00:00 PM
13	1.8	9:45:00 PM
14	1.8	9:34:00 PM
15	1.8	6:48:00 AM
16	1.7	6:49:00 AM
17	1.7	6:47:00 AM
18	1.6	9:46:00 PM
19	1.6	9:33:00 PM
20	1.6	6:50:00 AM
21	1.6	6:46:00 AM
22	1.5	10:32:00 AM
23	1.5	6:51:00 AM
24	1.4	6:45:00 AM
25	1.3	9:47:00 PM

NITRIC OXIDE Hour Averages Ranked by Highest (ppb) Hour Averages 08/09/2025 12:00 AM - 08/09/2025 11:59 PM		
Rank	**Concentration**	**Time**
1	0.7	9:00:00 PM
2	0.6	6:00:00 AM
3	0.4	7:00:00 AM
4	0.2	11:00:00 PM
5	0.2	10:00:00 PM
6	0.2	10:00:00 AM
7	0.1	5:00:00 AM
8	0.1	2:00:00 AM
9	0.1	1:00:00 AM
10	0.0	8:00:00 PM
11	0.0	7:00:00 PM
12	0.0	6:00:00 PM
13	0.0	5:00:00 PM
14	0.0	4:00:00 PM
15	0.0	3:00:00 PM
16	0.0	2:00:00 PM
17	0.0	1:00:00 PM
18	0.0	12:00:00 PM
19	0.0	11:00:00 AM
20	0.0	9:00:00 AM
21	0.0	8:00:00 AM
22	0.0	4:00:00 AM
23	0.0	3:00:00 AM
24	0.0	12:00:00 AM

Figure D5-SP2: Tables displaying NO concentrations for August 9, 2025

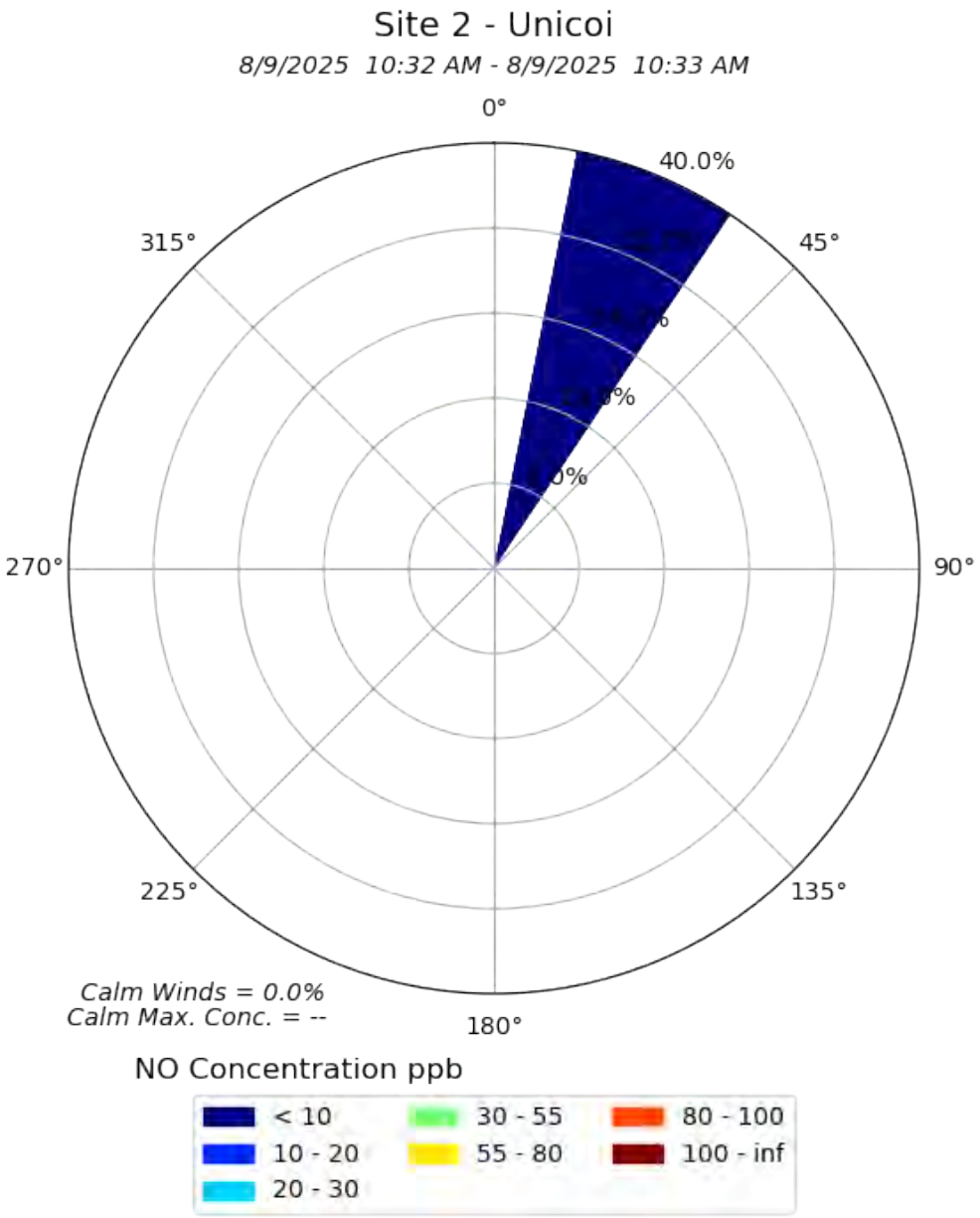


Figure D5-SP3: Pollution Rose displaying NO concentrations and wind direction

September 5, 2025 Spike

Various spikes in all pollutants. Site host Event Log did not note anything of interest. Light to moderate levels of regional smoke was in the area. Small increase in concentration for Nitric Oxide from 9:30 AM – 10:51 AM EST.

- ❖ No clear indication as to where the Nitric Oxide spike originated.
- ❖ Most likely not from local facilities of concern.

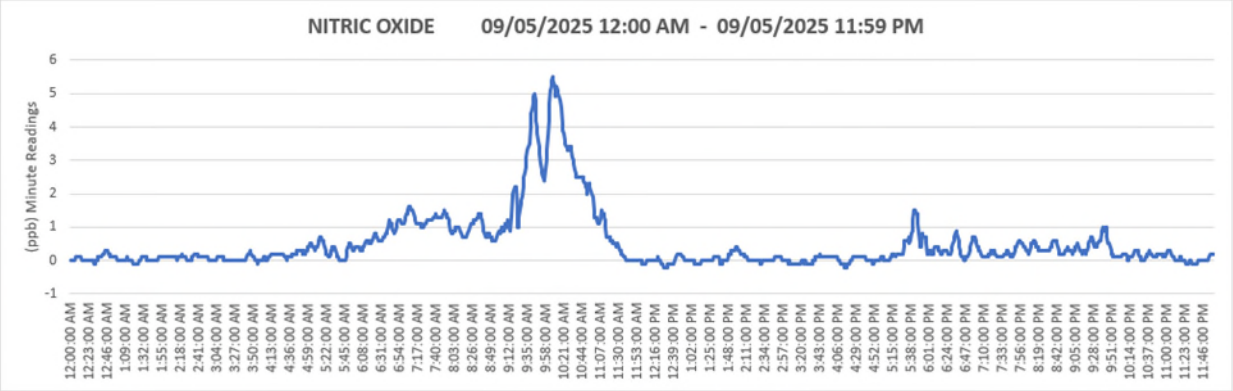


Figure D5-SP4: NO levels for September 5, 2025

NITRIC OXIDE Top 25 Concentrations (ppb) Minute Readings 09/05/2025 12:00 AM - 09/05/2025 11:59 PM		
Rank	Concentration	Time
1	5.5	10:07:00 AM
2	5.4	10:08:00 AM
3	5.4	10:06:00 AM
4	5.3	10:09:00 AM
5	5.2	10:12:00 AM
6	5.2	10:10:00 AM
7	5.2	10:05:00 AM
8	5.1	10:13:00 AM
9	5.1	10:04:00 AM
10	5.0	10:14:00 AM
11	5.0	9:44:00 AM
12	4.9	10:15:00 AM
13	4.9	10:11:00 AM
14	4.9	9:43:00 AM
15	4.8	10:17:00 AM
16	4.8	10:16:00 AM
17	4.8	9:45:00 AM
18	4.7	10:03:00 AM
19	4.7	9:42:00 AM
20	4.6	10:18:00 AM
21	4.5	9:41:00 AM
22	4.4	9:40:00 AM
23	4.2	10:02:00 AM
24	4.2	9:46:00 AM
25	4.1	10:19:00 AM

NITRIC OXIDE Hour Averages Ranked by Highest (ppb) Hour Averages 09/05/2025 12:00 AM - 09/05/2025 11:59 PM		
Rank	Concentration	Time
1	3.4	10:00:00 AM
2	2.3	9:00:00 AM
3	1.2	7:00:00 AM
4	0.9	8:00:00 AM
5	0.7	6:00:00 AM
6	0.4	9:00:00 PM
7	0.4	5:00:00 PM
8	0.4	11:00:00 AM
9	0.3	8:00:00 PM
10	0.3	6:00:00 PM
11	0.3	5:00:00 AM
12	0.2	7:00:00 PM
13	0.1	10:00:00 PM
14	0.1	4:00:00 AM
15	0.0	11:00:00 PM
16	0.0	4:00:00 PM
17	0.0	3:00:00 PM
18	0.0	2:00:00 PM
19	0.0	1:00:00 PM
20	0.0	12:00:00 PM
21	0.0	3:00:00 AM
22	0.0	2:00:00 AM
23	0.0	1:00:00 AM
24	0.0	12:00:00 AM

Figure D5-SP5: Tables displaying NO concentrations for September 5, 2025

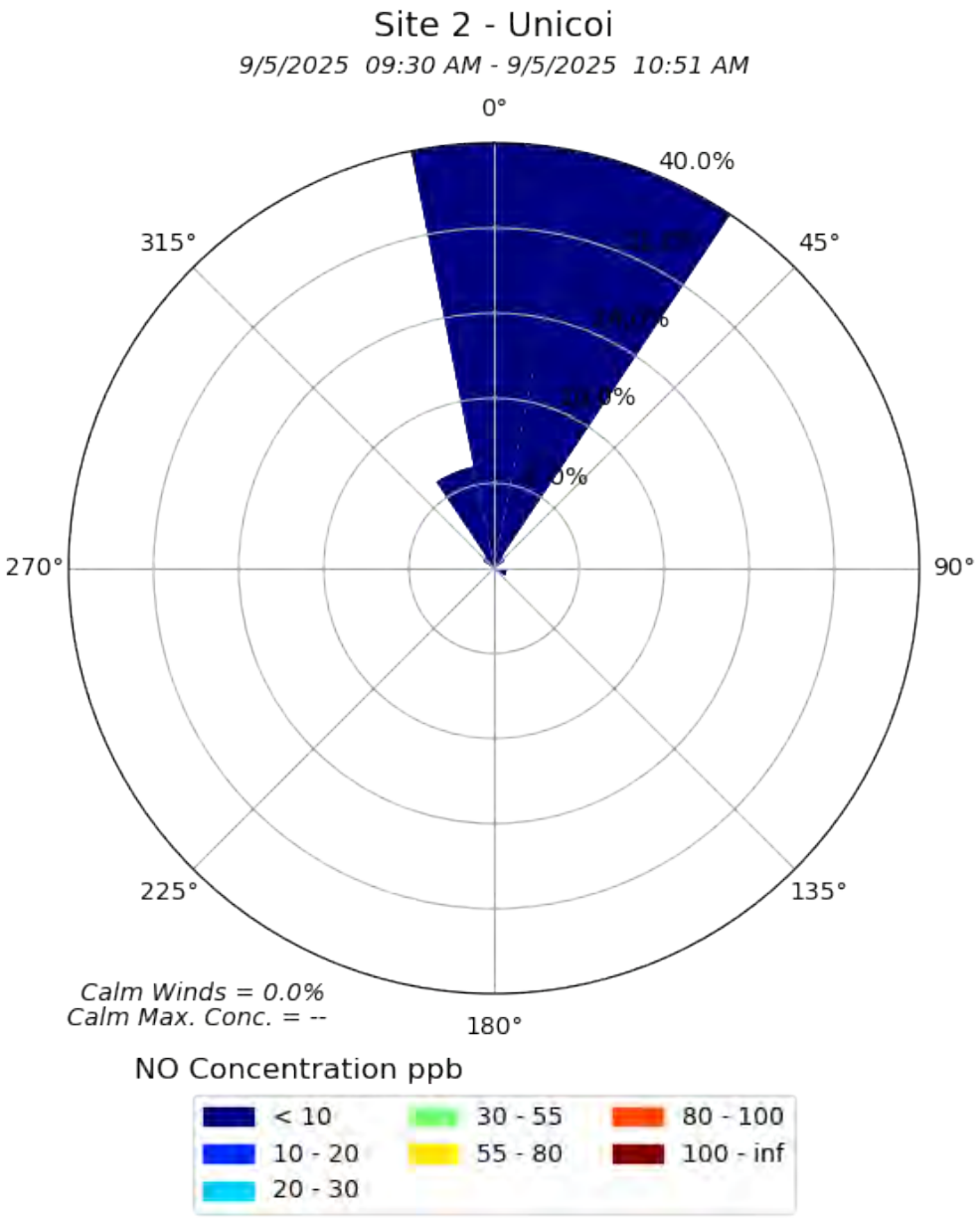


Figure D5-SP6: Pollution Rose displaying NO concentrations and wind direction

September 13, 2025 Spike

Spikes at 5:33 – 5:39 PM EST, which affected all pollutants. Site host Event Log did not note anything of interest.

- Pollution plumes were noted during the 5:30 PM period of time can likely not be attributed to nearby sources based on wind direction.
- The plume around 5:30 PM may have drifted in from outside areas such as Johnson City or Kingsport.
- Light smoke was within the region.

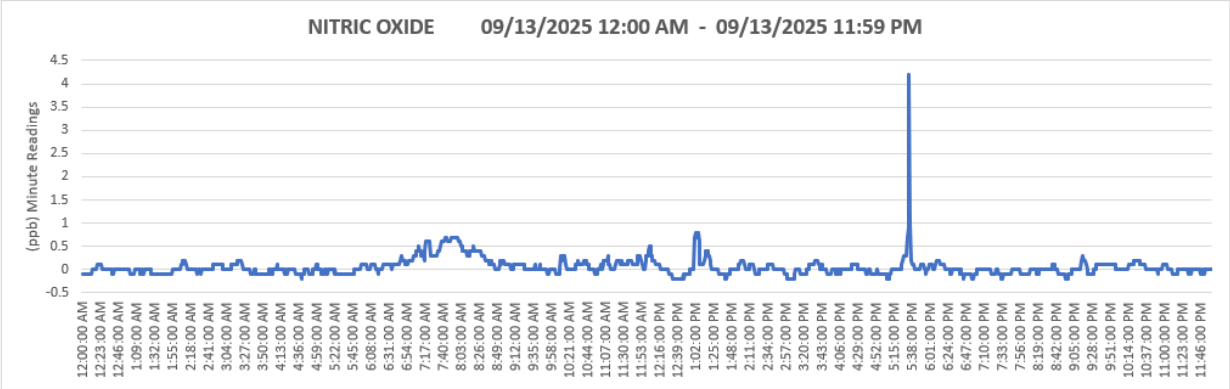


Figure D5-SP7: NO levels for September 13, 2025

NITRIC OXIDE Top 25 Concentrations (ppb) Minute Readings 09/13/2025 12:00 AM - 09/13/2025 11:59 PM		
Rank	Concentration	Time
1	4.2	5:34:00 PM
2	1.0	5:35:00 PM
3	0.9	5:33:00 PM
4	0.8	1:05:00 PM
5	0.8	1:02:00 PM
6	0.7	5:32:00 PM
7	0.7	1:04:00 PM
8	0.7	1:03:00 PM
9	0.7	1:01:00 PM
10	0.7	1:00:00 PM
11	0.7	7:58:00 AM
12	0.7	7:57:00 AM
13	0.7	7:56:00 AM
14	0.7	7:55:00 AM
15	0.7	7:54:00 AM
16	0.7	7:53:00 AM
17	0.7	7:52:00 AM
18	0.7	7:51:00 AM
19	0.7	7:50:00 AM
20	0.7	7:44:00 AM
21	0.7	7:43:00 AM
22	0.7	7:42:00 AM
23	0.6	1:06:00 PM
24	0.6	8:01:00 AM
25	0.6	8:00:00 AM

NITRIC OXIDE Hour Averages Ranked by Highest (ppb) Hour Averages 09/13/2025 12:00 AM - 09/13/2025 11:59 PM		
Rank	Concentration	Time
1	0.4	7:00:00 AM
2	0.2	8:00:00 AM
3	0.1	5:00:00 PM
4	0.1	1:00:00 PM
5	0.1	11:00:00 AM
6	0.0	11:00:00 PM
7	0.0	10:00:00 PM
8	0.0	9:00:00 PM
9	0.0	8:00:00 PM
10	0.0	7:00:00 PM
11	0.0	6:00:00 PM
12	0.0	4:00:00 PM
13	0.0	3:00:00 PM
14	0.0	2:00:00 PM
15	0.0	12:00:00 PM
16	0.0	10:00:00 AM
17	0.0	9:00:00 AM
18	0.0	6:00:00 AM
19	0.0	5:00:00 AM
20	0.0	4:00:00 AM
21	0.0	3:00:00 AM
22	0.0	2:00:00 AM
23	0.0	1:00:00 AM
24	0.0	12:00:00 AM

Figure D5-SP8: Tables displaying NO concentrations for September 13, 2025

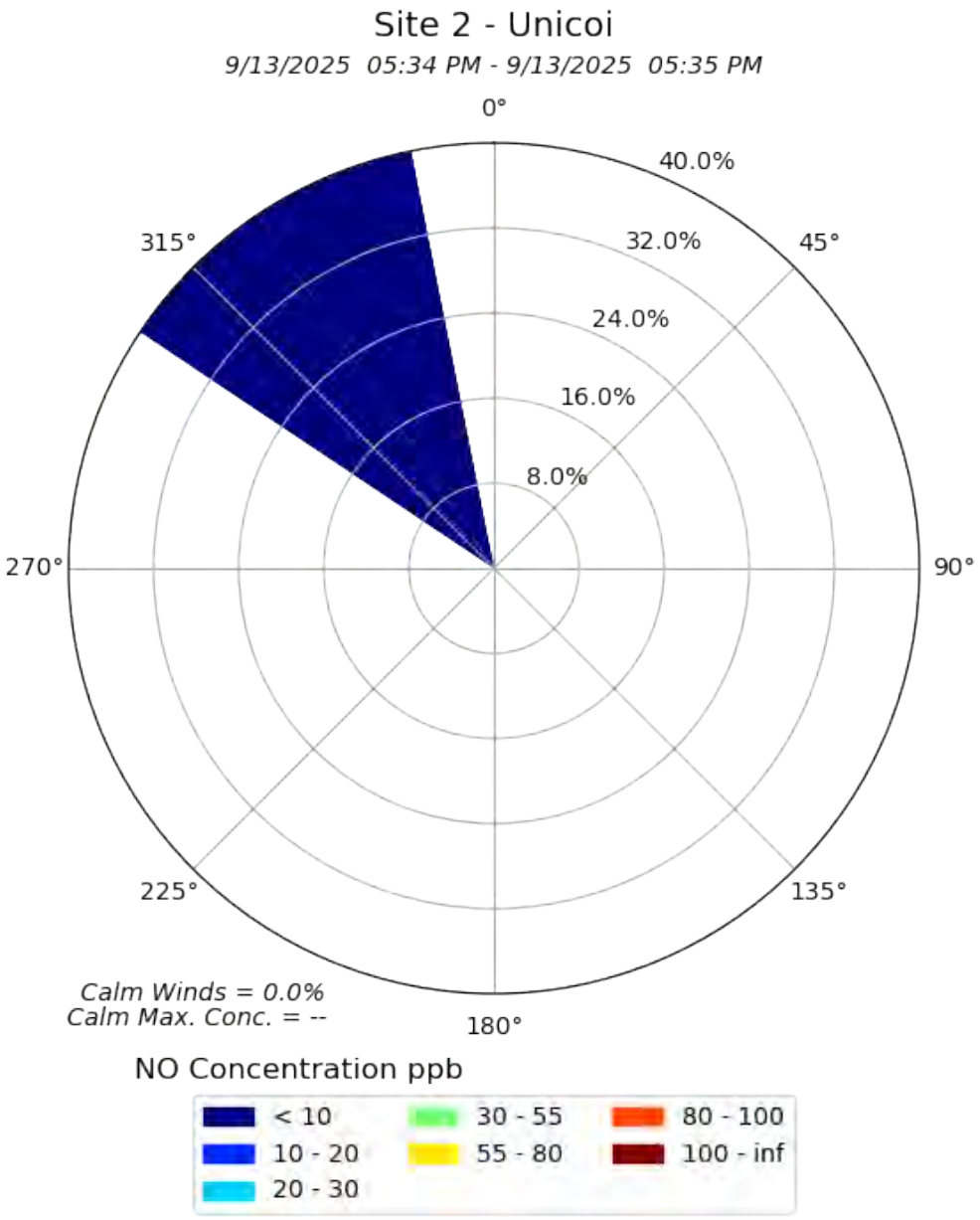


Figure D5-SP9: Pollution Rose displaying NO concentrations and wind direction

D6: Data – Nitrogen Dioxide

Nitrogen Dioxide (NO2) Findings

- There were no exceedances of the EPA health standard for Nitrogen Dioxide.
- All daily hourly average highs for NO2 were good air quality, code green for the day.
- NO2 levels were lower during the day from 9 AM to 4 PM.
- NO2 concentrations were lower on the weekend.
- Just over 40% of minute readings recorded a concentration of 0 or a negative number. Note: This instrument may record negative numbers which meet EPA reporting protocol.
- Nearly 60% of minute readings recorded a concentration from 0.1 ppb to 53 ppb.
- The highest one-minute NO2 reading was 75.3 ppb on July 5, 2025 at 2:01 PM. The second highest one-minute NO2 reading was 40.4 ppb on September 13, 2025 at 5:34 PM.
- The highest one-hour average was 15 ppb on October 15, 2025.
- The following two tables reflect the percentages of each range of concentrations recorded. Table range is based on Air Quality Index (AQI) concentrations and color code. Please see section D11 AQI of this report for more information regarding AQI.

Percentage of Minute Readings
Concentration Range in ppb

Range	Percentage
0 -	40.26%
0.1 - 53	59.74%
54 - 100	0.001%
101 - 360	0.00%

Percentage of Hourly Averages
Concentration Range in ppb

Range	Percentage
0 -	39.70%
0.1 - 53	60.30%
54 - 100	0.00%
101 - 360	0.00%

Data Presentations

BREDL data presentations for NO2 will include hour averages (the average of 60 one-minute readings), daily one-hour highs (NAAQS standard), and 24-hour daily averages (the average of 24 one-hour readings). Wind and pollution roses use the one-minute readings (1440 per day).

Time of day bar graphs are used to examine time periods of the day. For example, is there one part of the day where the pollution registered higher or lower? We also examined pollution levels by day of the week. Was there a particular day where the pollution was higher or lower?

Figures D6-1 – D6-13 plot hour averages for the entire collection period and for each month. These averages take the 60 one-minute readings for each hour and average them for the hour average. Hour highs for the day figures display the highest reported one-hour average concentration for the day. This is indicative of the NAAQS standard for NO2.

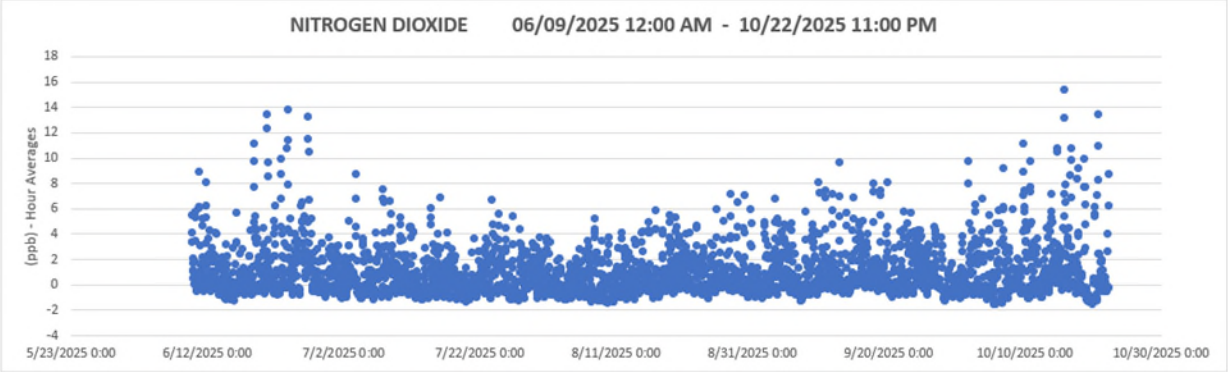


Figure D6-1: NO2 Hour Averages – Entire Collection Period

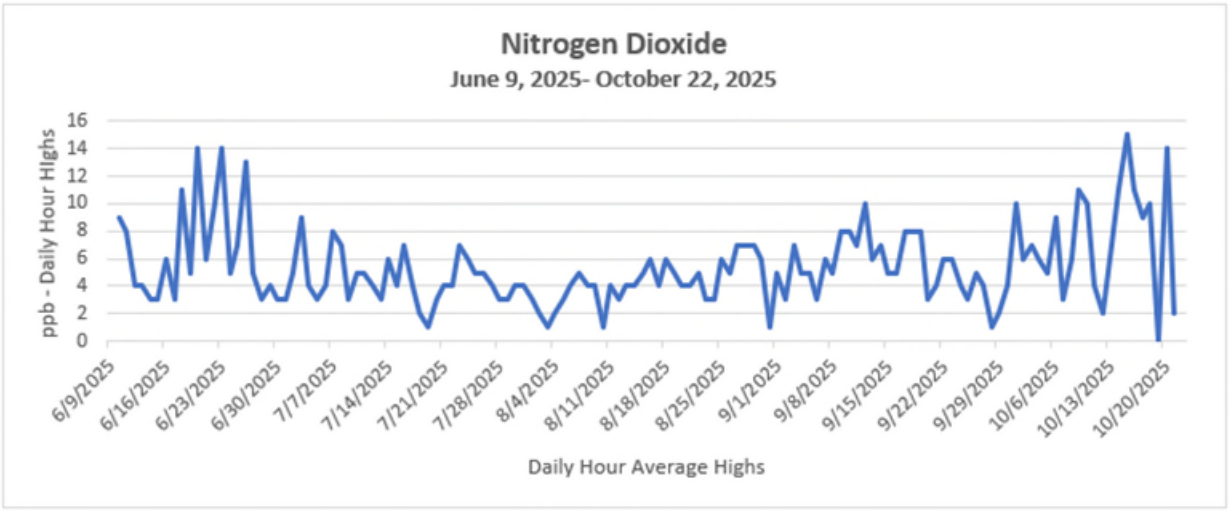


Figure D6-2: NO2 Daily 1-Hour Highs – Entire Collection Period

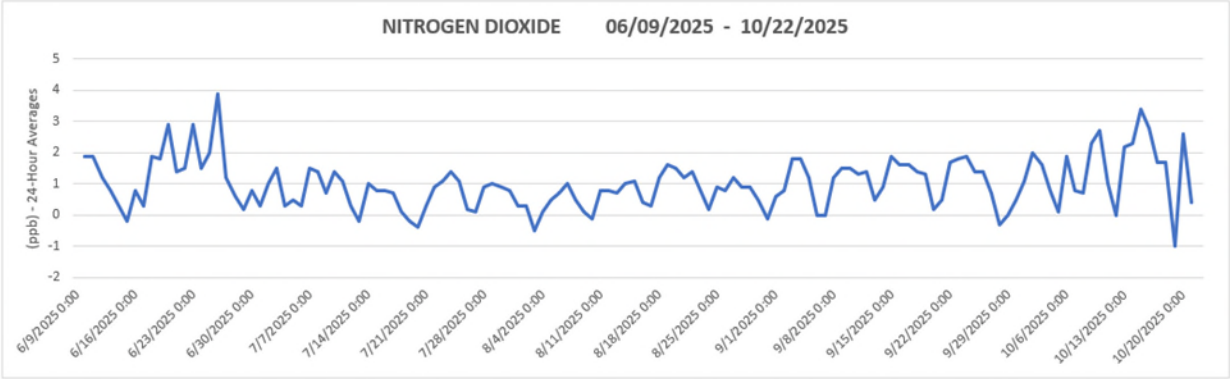


Figure D6-3: NO2 Day (24-Hour) Averages – Entire Collection Period

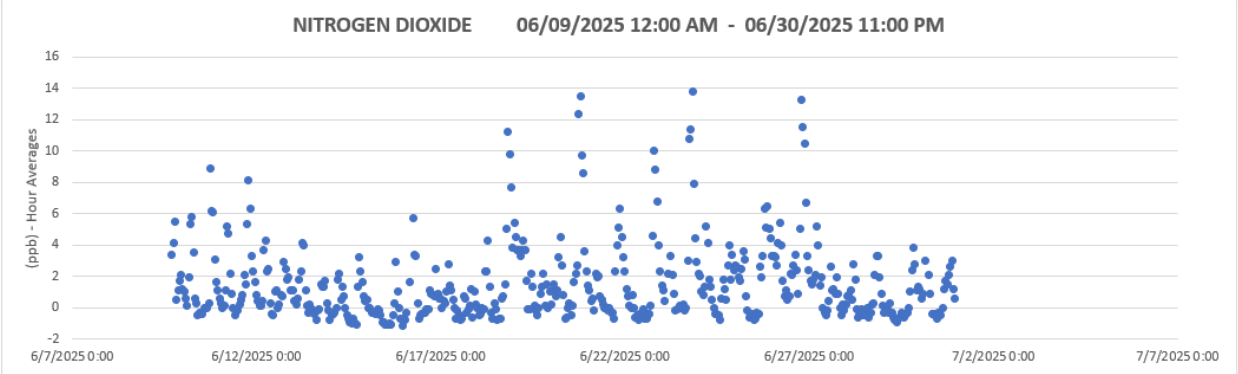


Figure D6-4: NO2 Hour Averages –June

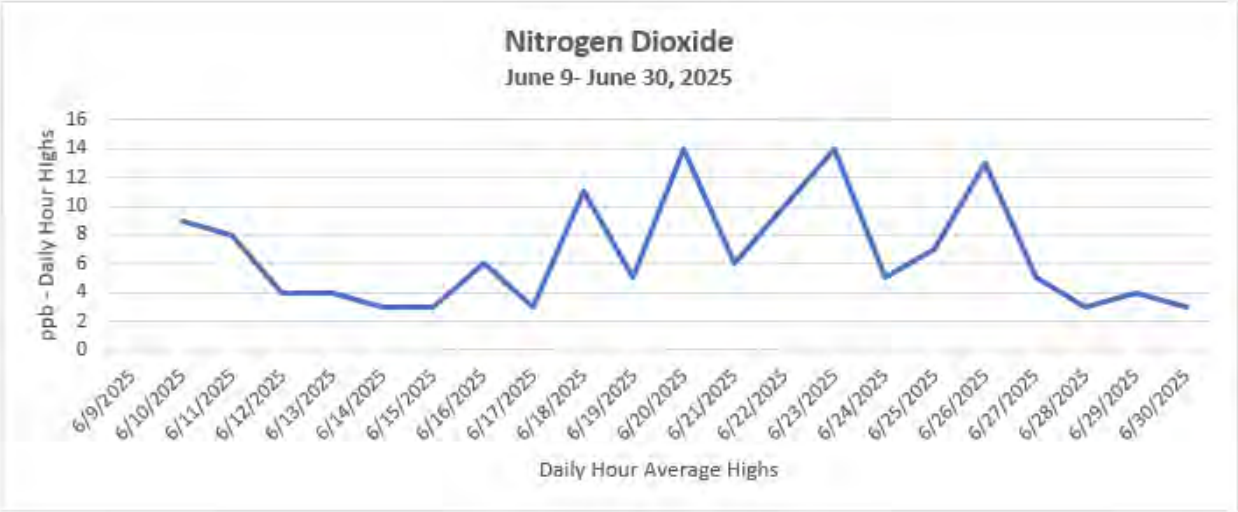


Figure D6-5: NO2 Daily 1-Hour Highs – June

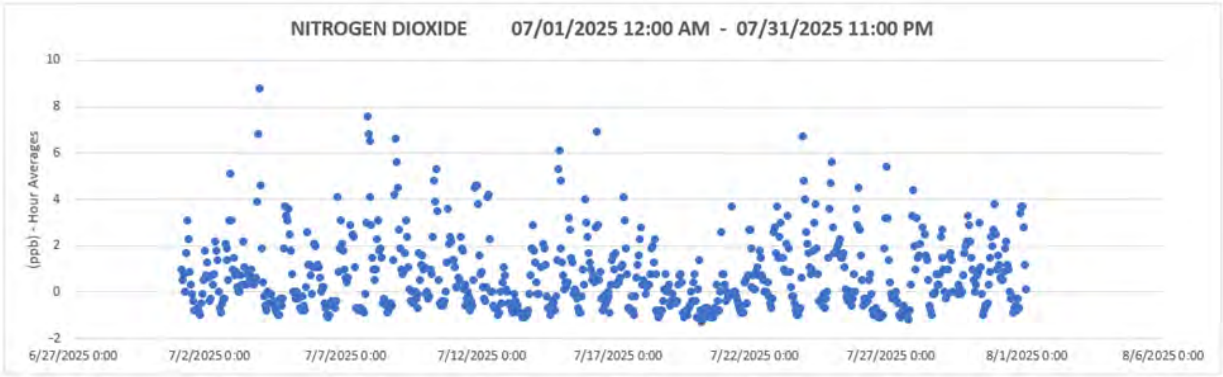


Figure D6-6: NO2 Hour Averages – July

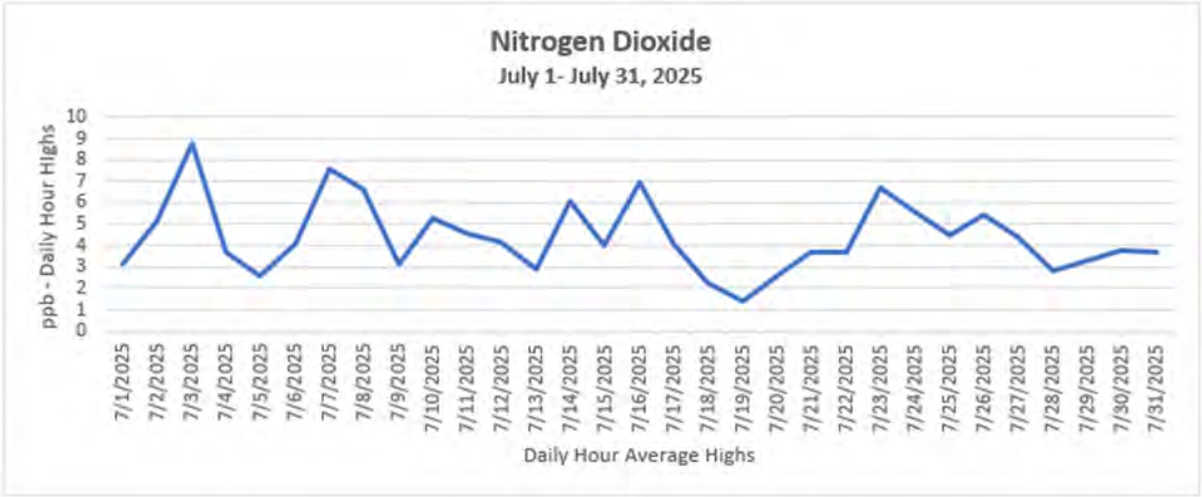


Figure D6-7: NO2 Daily 1-Hour Highs – July

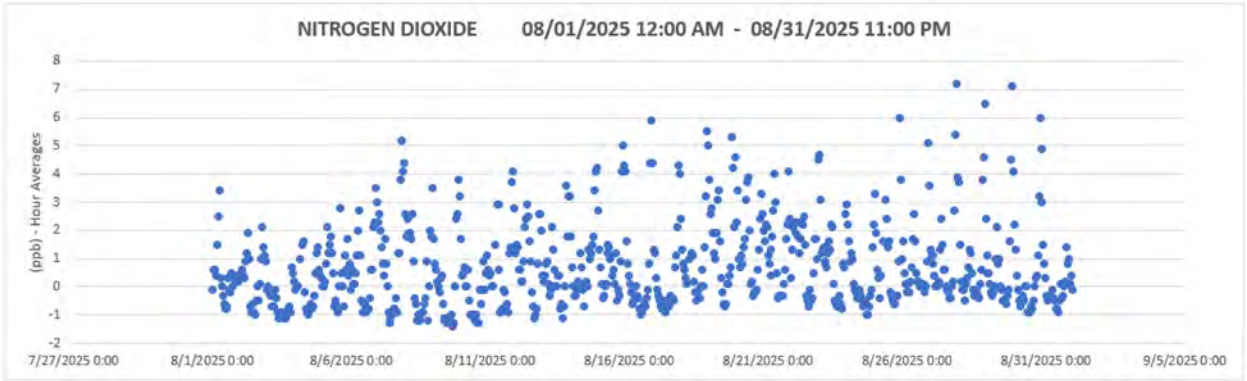


Figure D6-8: NO2 Hour Averages –August

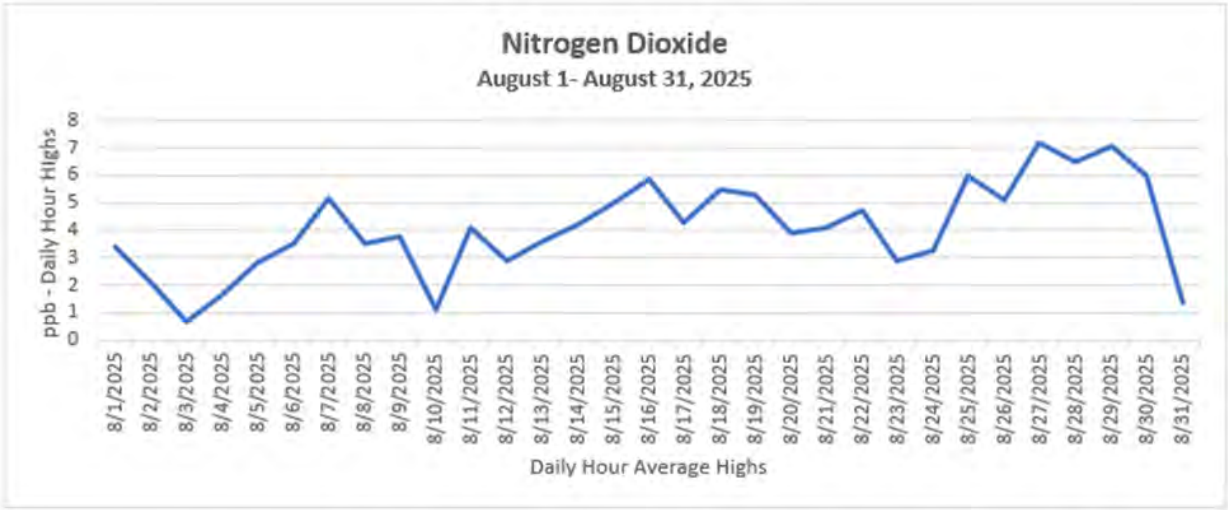


Figure D6-9: NO2 Daily 1-Hour Highs – August

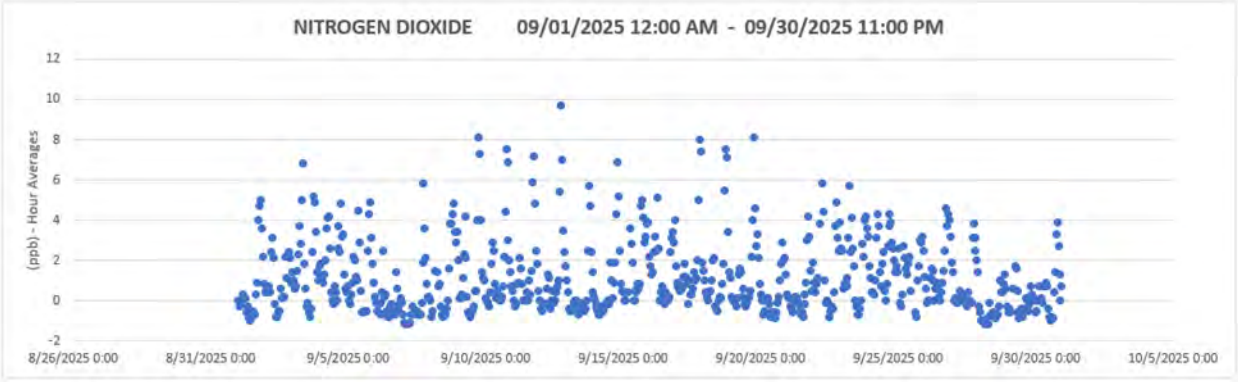


Figure D6-10: NO2 Hour Averages –September

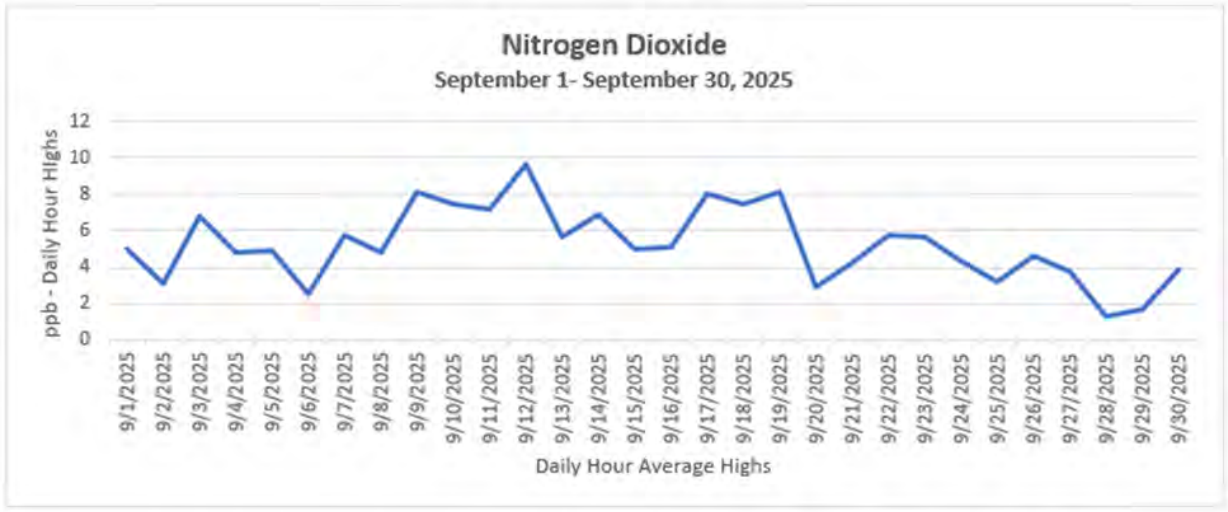


Figure D6-11: NO2 Daily 1-Hour Highs – September

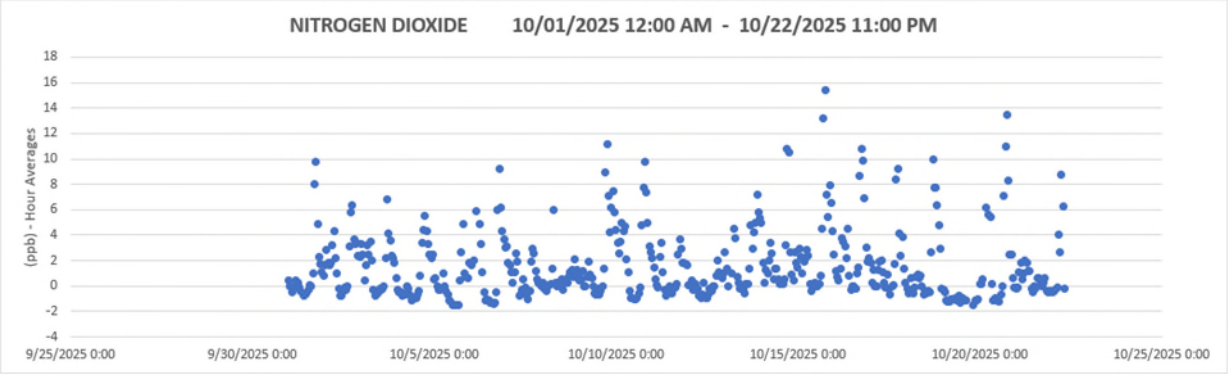


Figure D6-12: NO2 Hour Averages – October

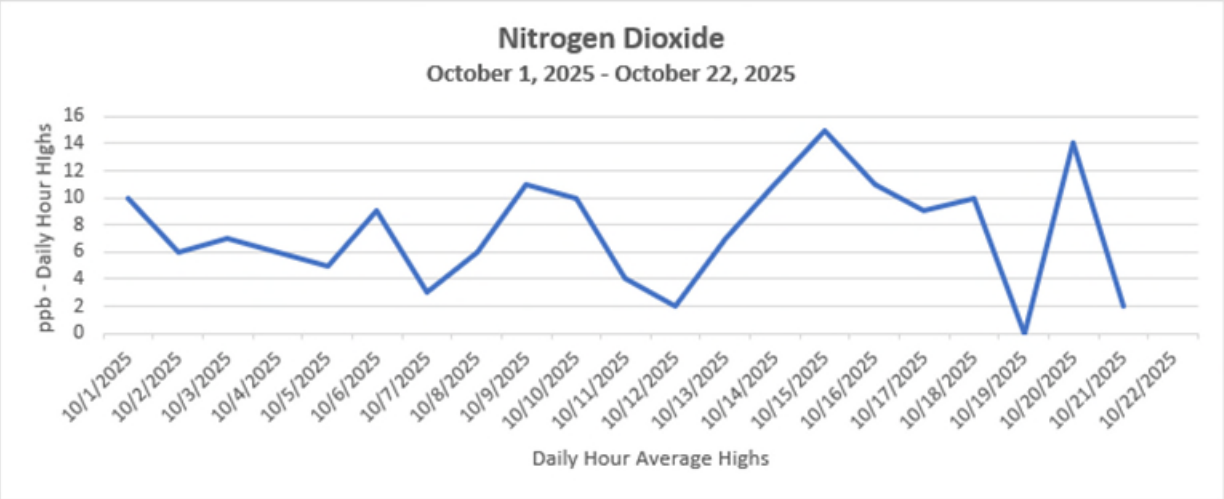


Figure D6-13: NO2 Daily 1-Hour Highs – October

Figures D6-14 – D6-19 plot averages based on the time of day for the entire collection period and for each month.

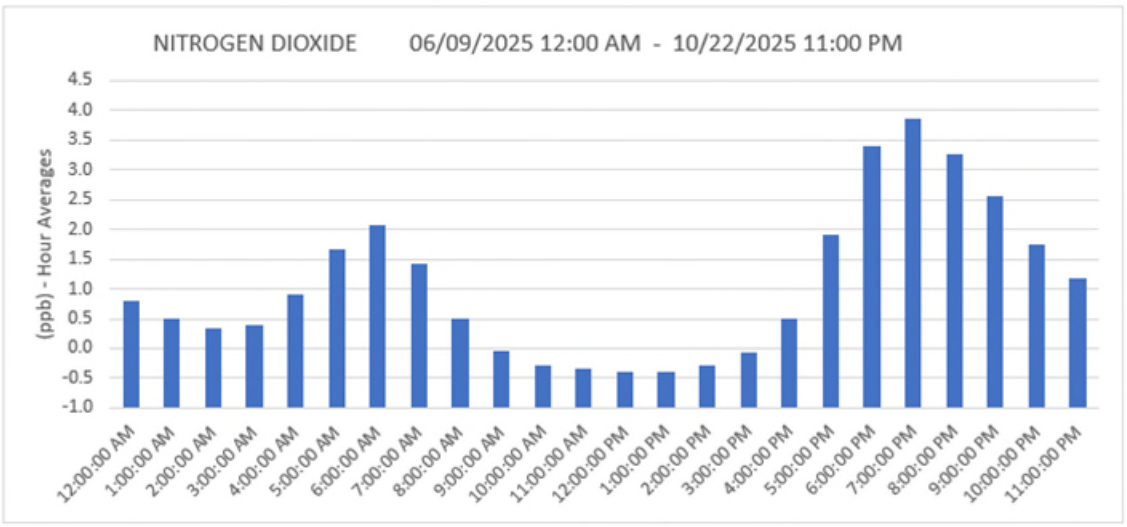


Figure D6-14: NO2 Hour Averages – Based on Time of Day for Collection Period

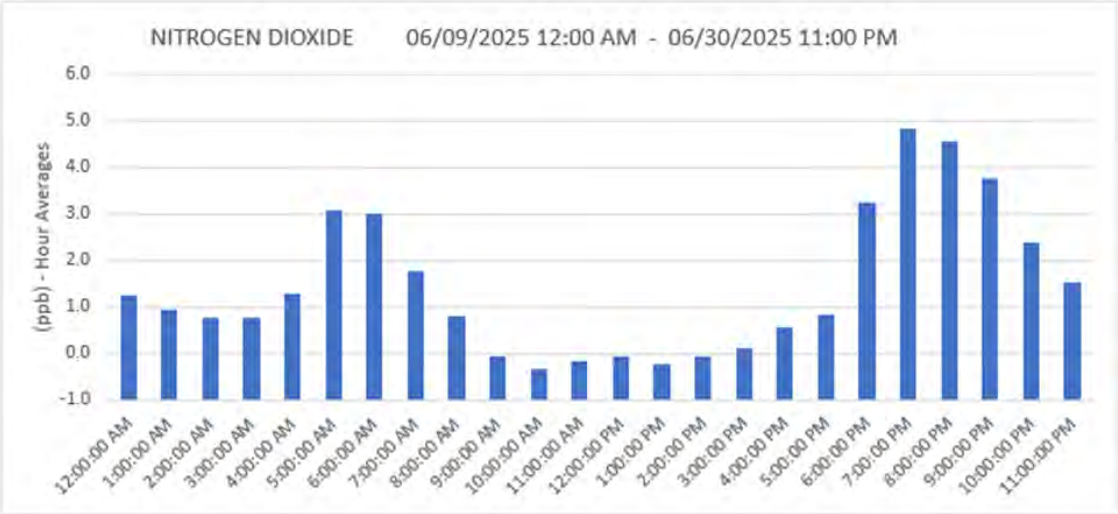


Figure D6-15: NO2 Hour Averages – Based on Time of Day for June

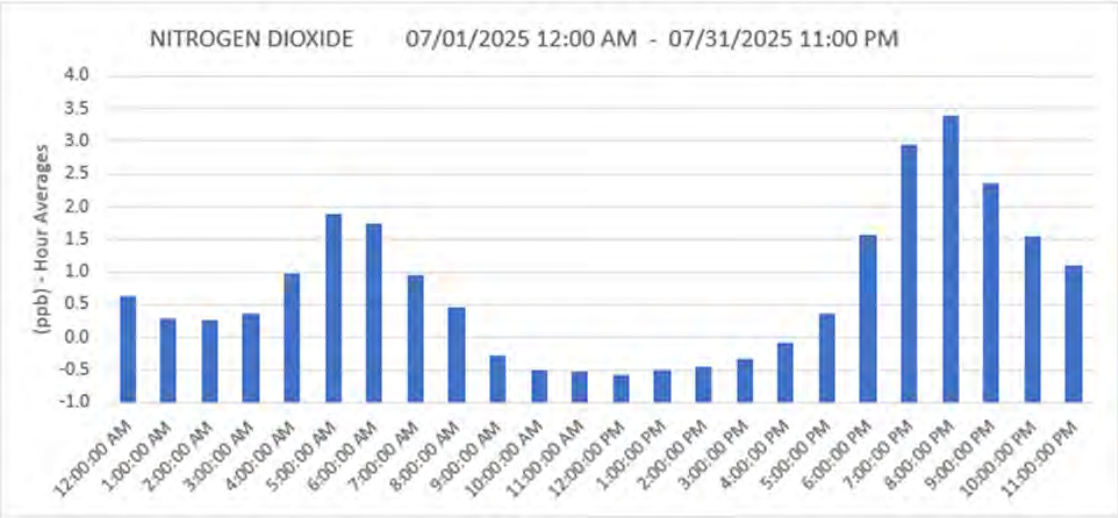


Figure D6-16: NO2 Hour Averages – Based on Time of Day for July

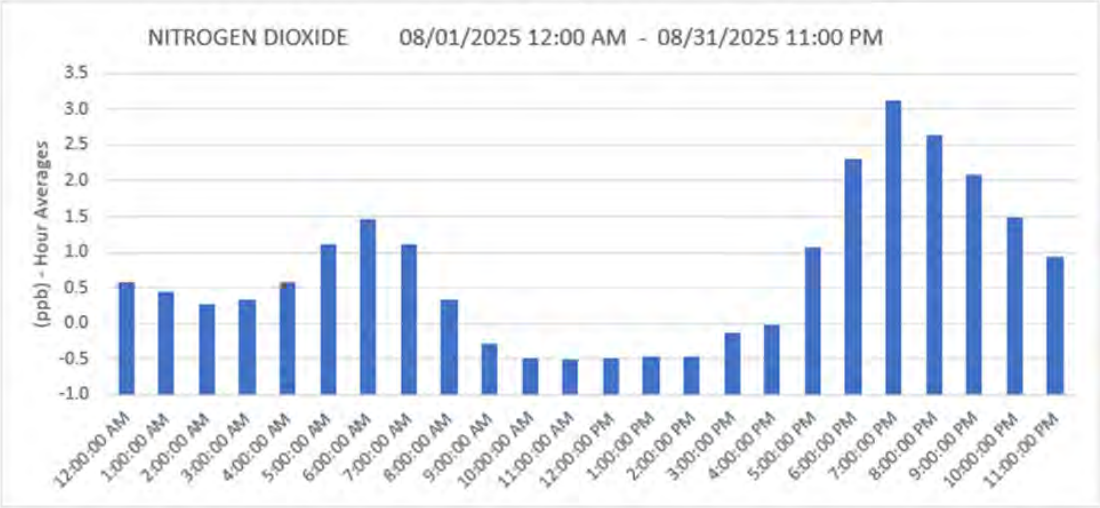


Figure D6-17: NO2 Hour Averages – Based on Time of Day for August

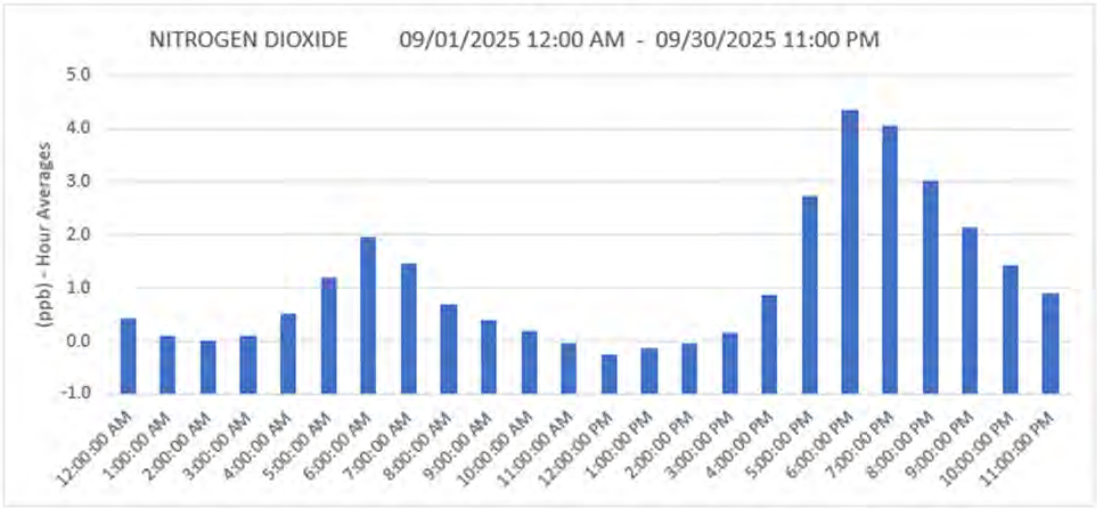


Figure D6-18: NO2 Hour Averages – Based on Time of Day for September

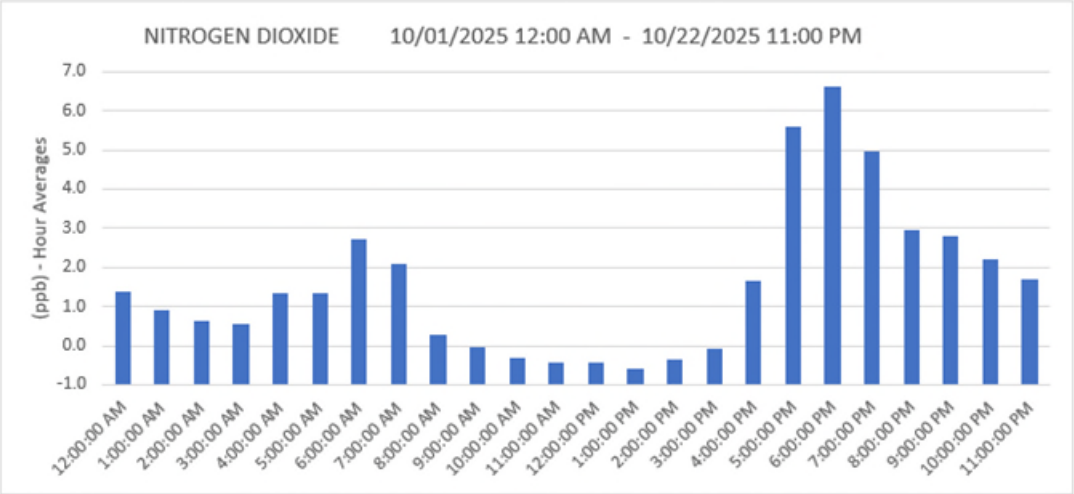


Figure D6-19: NO2 Hour Averages – Based on Time of Day for October

Figure D6-20 plot day averages based on the day of the week for the entire collection period.

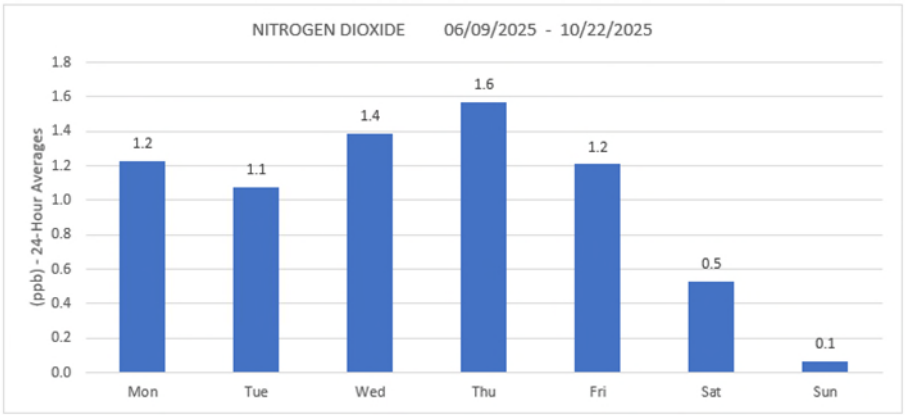


Figure D6-20: NO2 Day (24-Hour) Averages – Based on Day of the Week

NITROGEN DIOXIDE Top 25 Concentrations (ppb) - Hour Averages 06/09/2025 12:00 AM - 10/22/2025 11:00 PM		
Rank	Concentration	Date & Time
1	15.4	10/15/2025 6:00 PM
2	13.8	6/23/2025 8:00 PM
3	13.5	10/20/2025 6:00 PM
4	13.5	6/20/2025 7:00 PM
5	13.3	6/26/2025 7:00 PM
6	13.2	10/15/2025 5:00 PM
7	12.4	6/20/2025 6:00 PM
8	11.5	6/26/2025 8:00 PM
9	11.4	6/23/2025 7:00 PM
10	11.2	10/9/2025 6:00 PM
11	11.2	6/18/2025 8:00 PM
12	11.0	10/20/2025 5:00 PM
13	10.8	10/16/2025 6:00 PM
14	10.8	10/14/2025 5:00 PM
15	10.8	6/23/2025 6:00 PM
16	10.5	10/14/2025 6:00 PM
17	10.5	6/26/2025 9:00 PM
18	10.0	10/18/2025 5:00 PM
19	10.0	6/22/2025 7:00 PM
20	9.9	10/16/2025 7:00 PM
21	9.8	10/10/2025 7:00 PM
22	9.8	10/1/2025 6:00 PM
23	9.8	6/18/2025 9:00 PM
24	9.7	9/12/2025 6:00 PM
25	9.7	6/20/2025 8:00 PM

Nitrogen Dioxide Top 25 Concentrations Daily Hour Highs June 9, 2025 12:00 AM - October 22, 2025 11:59 PM		
Rank	Concentration	Date
1	15	10/15/2025
2	14	6/20/2025
3	14	6/23/2025
4	14	10/20/2025
5	13	6/26/2025
6	11	6/18/2025
7	11	10/9/2025
8	11	10/14/2025
9	11	10/16/2025
10	10	6/22/2025
11	10	9/12/2025
12	10	10/1/2025
13	10	10/10/2025
14	10	10/18/2025
15	9	6/10/2025
16	9	7/3/2025
17	9	10/6/2025
18	9	10/17/2025
19	8	6/11/2025
20	8	7/7/2025
21	8	9/9/2025
22	8	9/10/2025
23	8	9/17/2025
24	8	9/18/2025
25	8	9/19/2025

Figure D6-21: NO2 Top 25 Concentrations for Hour Averages and Daily Hour Highs

Figures D6:22 and D6:23 pollution roses display the pollutant concentration based on wind direction, which can indicate the direction of the pollution source.

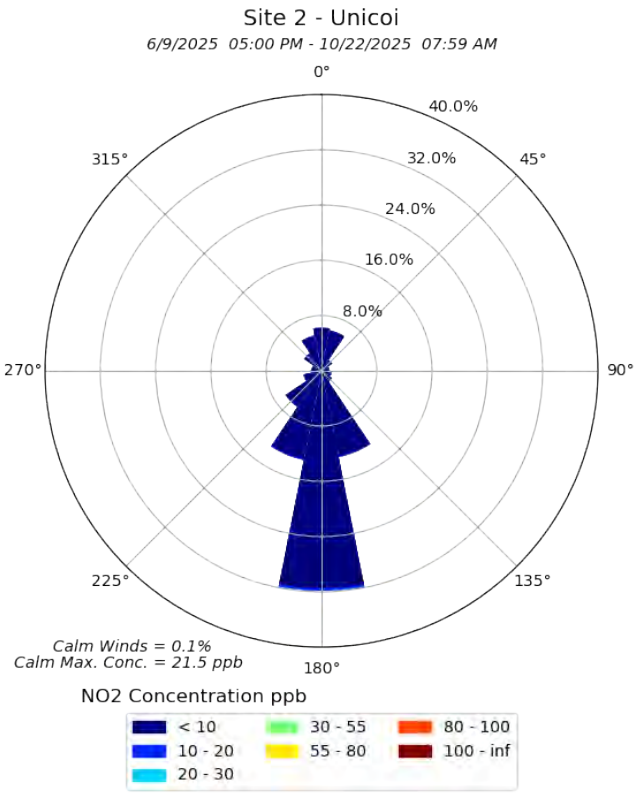


Figure D6-22: Pollution Rose

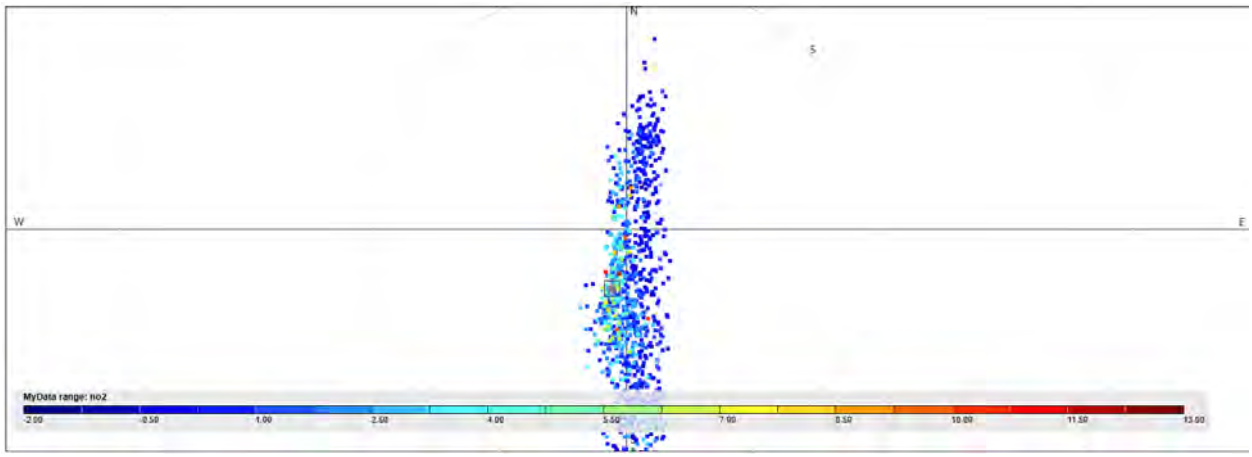


Figure D6-23: EPA RETIGO Pollution Rose 6/9/2025 - 10/22/2025

We separated the NO2 minute concentrations of at least 25 ppb and plotted those on a pollution rose for a better visual representation of the direction of the highest concentrations.

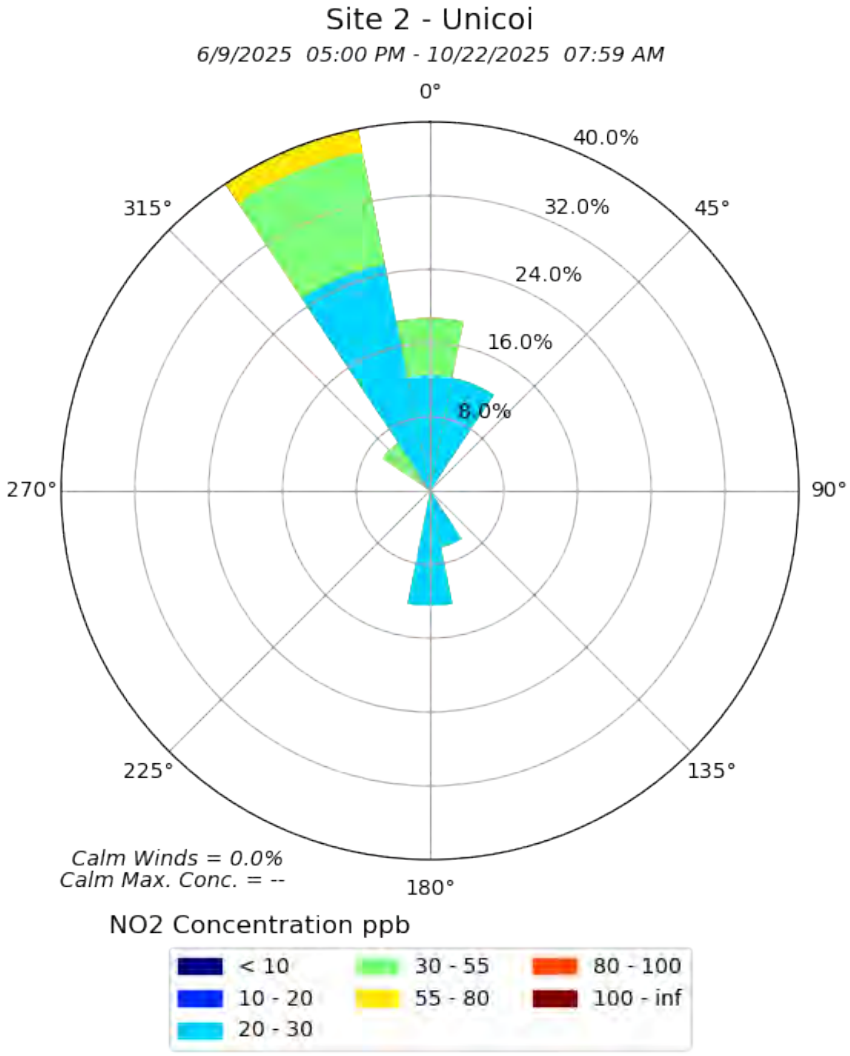


Figure D6-24: Pollution Rose displaying NO2 concentrations of at least 25 ppb.

NO2 Spikes

June 23, 2025 Spike

Site host noted lots of trucks and dust from 7 AM – 4:30 PM EST. Two noticeable spikes for Nitrogen Dioxide.

- Source undetermined for the evening NO2 spikes, which came from different directions.

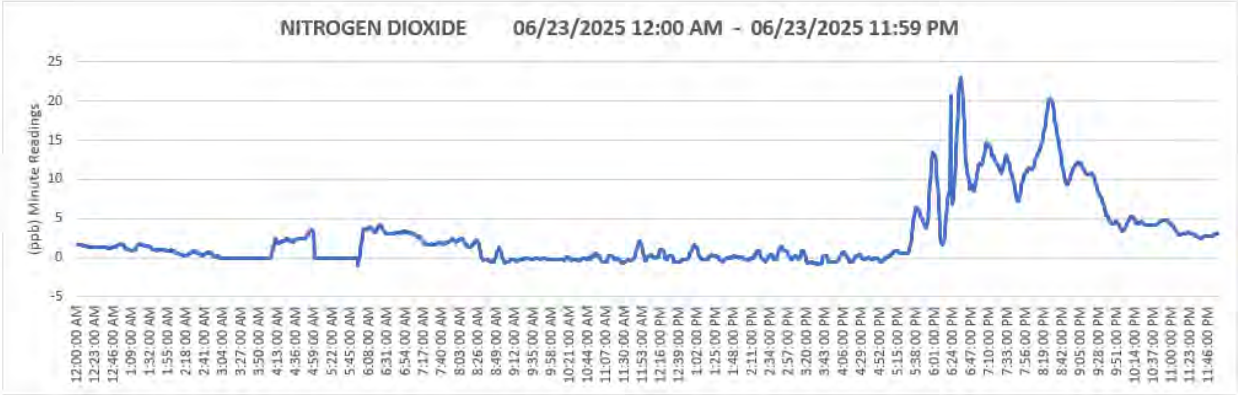


Figure D6-SP1: NO2 levels for June 23, 2025

NITROGEN DIOXIDE Top 25 Concentrations (ppb) Minute Readings 06/23/2025 12:00 AM - 06/23/2025 11:59 PM		
Rank	Concentration	Time
1	23.1	6:34:00 PM
2	22.9	6:35:00 PM
3	22.2	6:33:00 PM
4	21.7	6:36:00 PM
5	20.8	6:32:00 PM
6	20.6	6:22:00 PM
7	20.4	8:28:00 PM
8	20.4	8:27:00 PM
9	20.2	8:26:00 PM
10	20.1	8:29:00 PM
11	20.1	6:37:00 PM
12	19.8	8:30:00 PM
13	19.8	8:25:00 PM
14	19.4	8:31:00 PM
15	19.2	8:24:00 PM
16	18.8	6:31:00 PM
17	18.7	8:32:00 PM
18	18.7	6:38:00 PM
19	18.4	8:23:00 PM
20	17.7	8:33:00 PM
21	17.6	6:39:00 PM
22	17.4	8:22:00 PM
23	17.1	8:34:00 PM
24	16.8	8:21:00 PM
25	16.6	8:35:00 PM

NITROGEN DIOXIDE Hour Averages Ranked by Highest (ppb) Hour Averages 06/23/2025 12:00 AM - 06/23/2025 11:59 PM		
Rank	Concentration	Time
1	13.8	8:00:00 PM
2	11.4	7:00:00 PM
3	10.8	6:00:00 PM
4	7.9	9:00:00 PM
5	4.4	10:00:00 PM
6	3.3	6:00:00 AM
7	3.0	5:00:00 PM
8	2.9	11:00:00 PM
9	2.2	4:00:00 AM
10	2.1	7:00:00 AM
11	1.4	12:00:00 AM
12	1.1	1:00:00 AM
13	0.9	8:00:00 AM
14	0.4	2:00:00 AM
15	0.2	2:00:00 PM
16	0.1	12:00:00 PM
17	0.0	4:00:00 PM
18	0.0	1:00:00 PM
19	0.0	11:00:00 AM
20		10:00:00 AM
21		3:00:00 PM
22		9:00:00 AM
23		
24		

Figure D6-SP2: Tables displaying NO2 concentrations for June 23, 2025

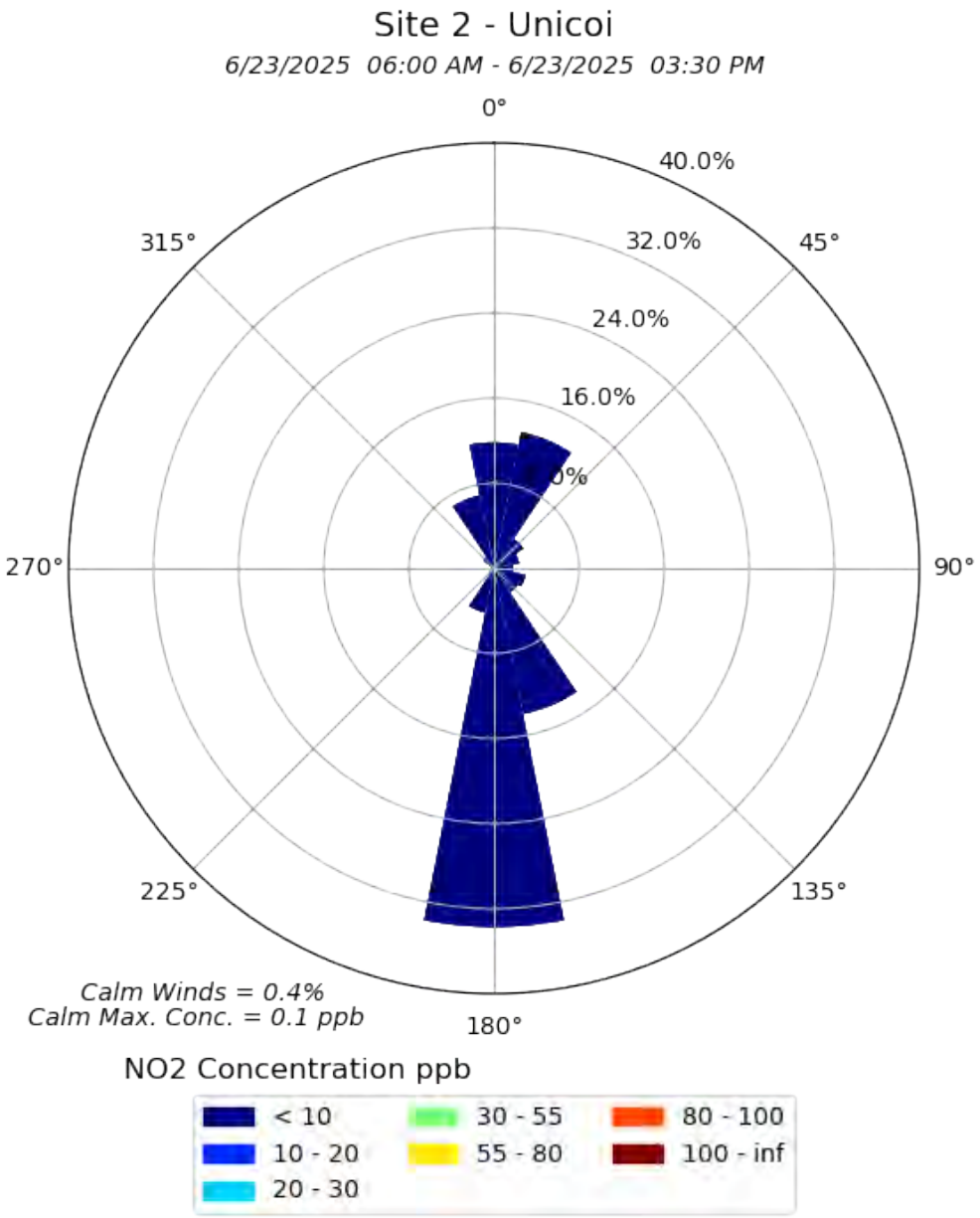


Figure D6-SP3: Pollution Rose displaying NO2 concentrations and wind direction

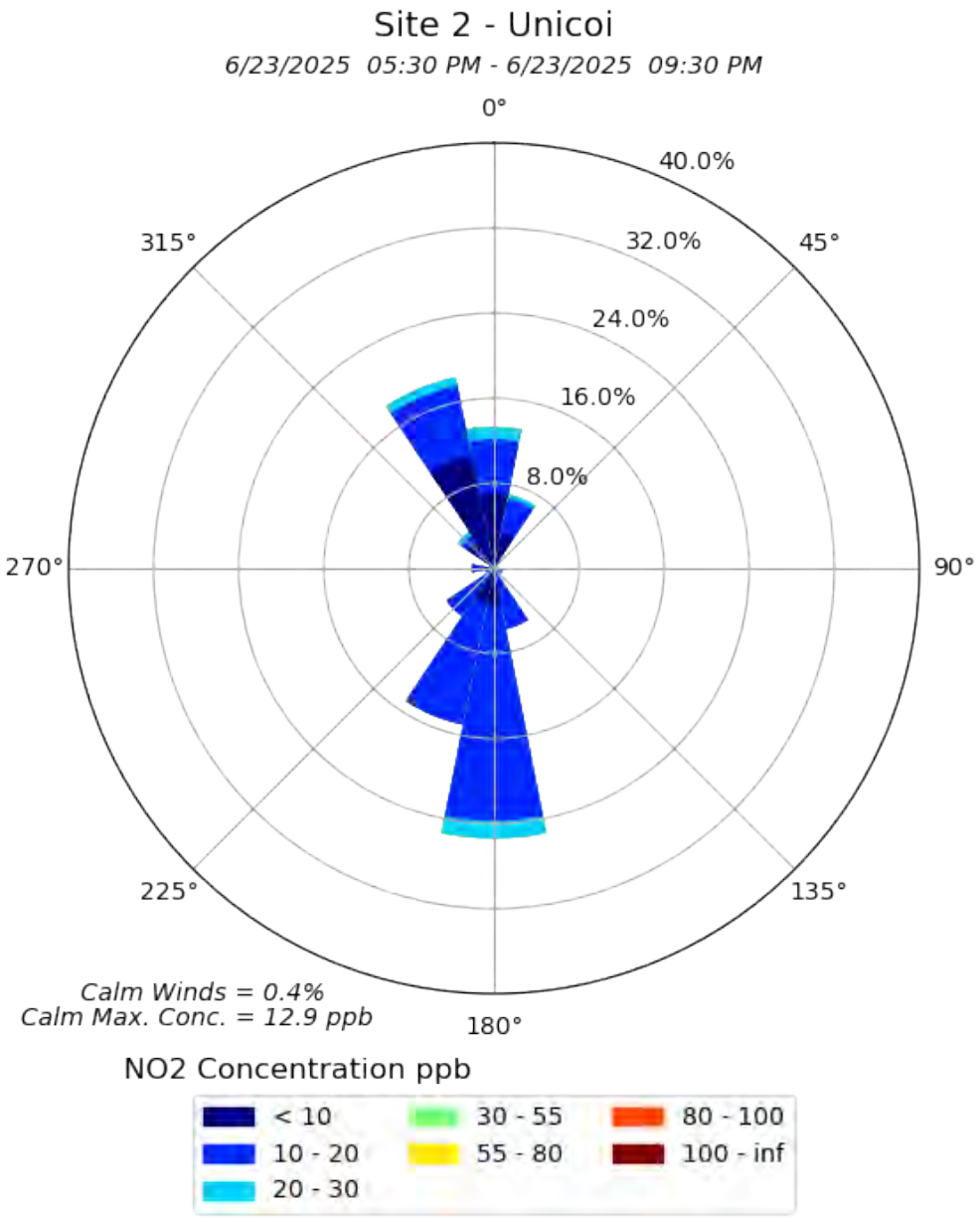


Figure D6-SP4: Pollution Rose displaying NO2 concentrations and wind direction

August 9, 2025 Spike

Nothing noted on Event Log. However, Noted some spikes of the monitored pollutants – at various times of the day. Of note is a nearby asphalt facility official startup date for new equipment was August 4, just a few days before this. Two unique spike periods from 10:32 – 10:33 AM and 6:42 – 11:42 PM, albeit low concentrations.

- ❖ No clear indication as to where the NOs spikes originated.

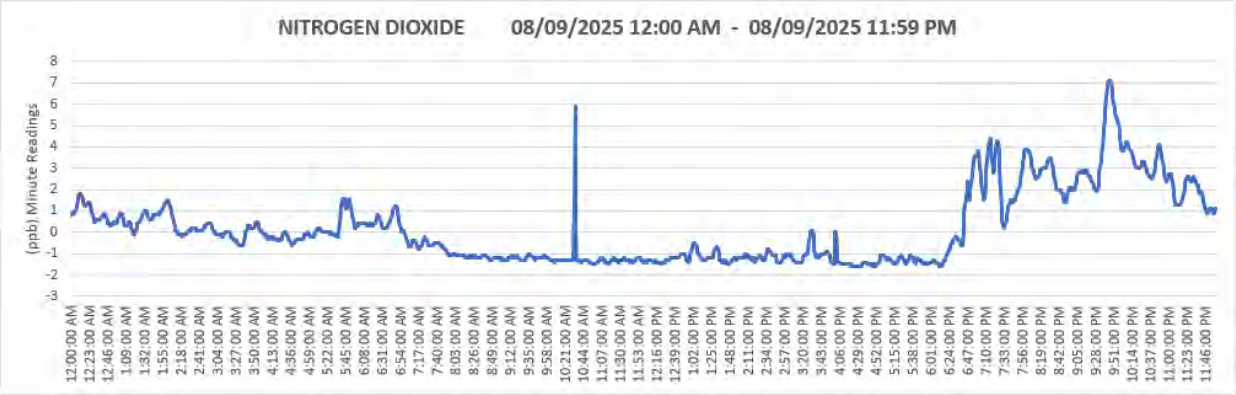


Figure D6-SP5: NO2 levels for August 9, 2025

NITROGEN DIOXIDE Top 25 Concentrations (ppb) Minute Readings 08/09/2025 12:00 AM - 08/09/2025 11:59 PM		
Rank	Concentration	Time
1	7.1	9:46:00 PM
2	7.1	9:45:00 PM
3	7.1	9:44:00 PM
4	7.0	9:47:00 PM
5	7.0	9:43:00 PM
6	6.8	9:42:00 PM
7	6.7	9:48:00 PM
8	6.3	9:49:00 PM
9	6.3	9:41:00 PM
10	6.0	9:50:00 PM
11	5.9	9:51:00 PM
12	5.9	10:33:00 AM
13	5.7	9:40:00 PM
14	5.6	9:52:00 PM
15	5.4	9:53:00 PM
16	5.3	9:54:00 PM
17	5.2	9:55:00 PM
18	5.2	9:39:00 PM
19	5.1	9:56:00 PM
20	5.0	9:38:00 PM
21	4.8	9:57:00 PM
22	4.6	9:37:00 PM
23	4.4	9:58:00 PM
24	4.4	7:15:00 PM
25	4.3	7:24:00 PM

NITROGEN DIOXIDE Hour Averages Ranked by Highest (ppb) Hour Averages 08/09/2025 12:00 AM - 08/09/2025 11:59 PM		
Rank	Concentration	Time
1	3.8	9:00:00 PM
2	3.2	10:00:00 PM
3	2.6	8:00:00 PM
4	2.4	7:00:00 PM
5	1.7	11:00:00 PM
6	0.8	12:00:00 AM
7	0.6	1:00:00 AM
8	0.4	6:00:00 AM
9	0.3	5:00:00 AM
10	0.2	2:00:00 AM
11	0.0	6:00:00 PM
12	0.0	3:00:00 AM
13		4:00:00 AM
14		7:00:00 AM
15		3:00:00 PM
16		2:00:00 PM
17		1:00:00 PM
18		10:00:00 AM
19		8:00:00 AM
20		12:00:00 PM
21		9:00:00 AM
22		5:00:00 PM
23		11:00:00 AM
24		4:00:00 PM

Figure D6-SP6: Tables displaying NO2 concentrations for August 9, 2025

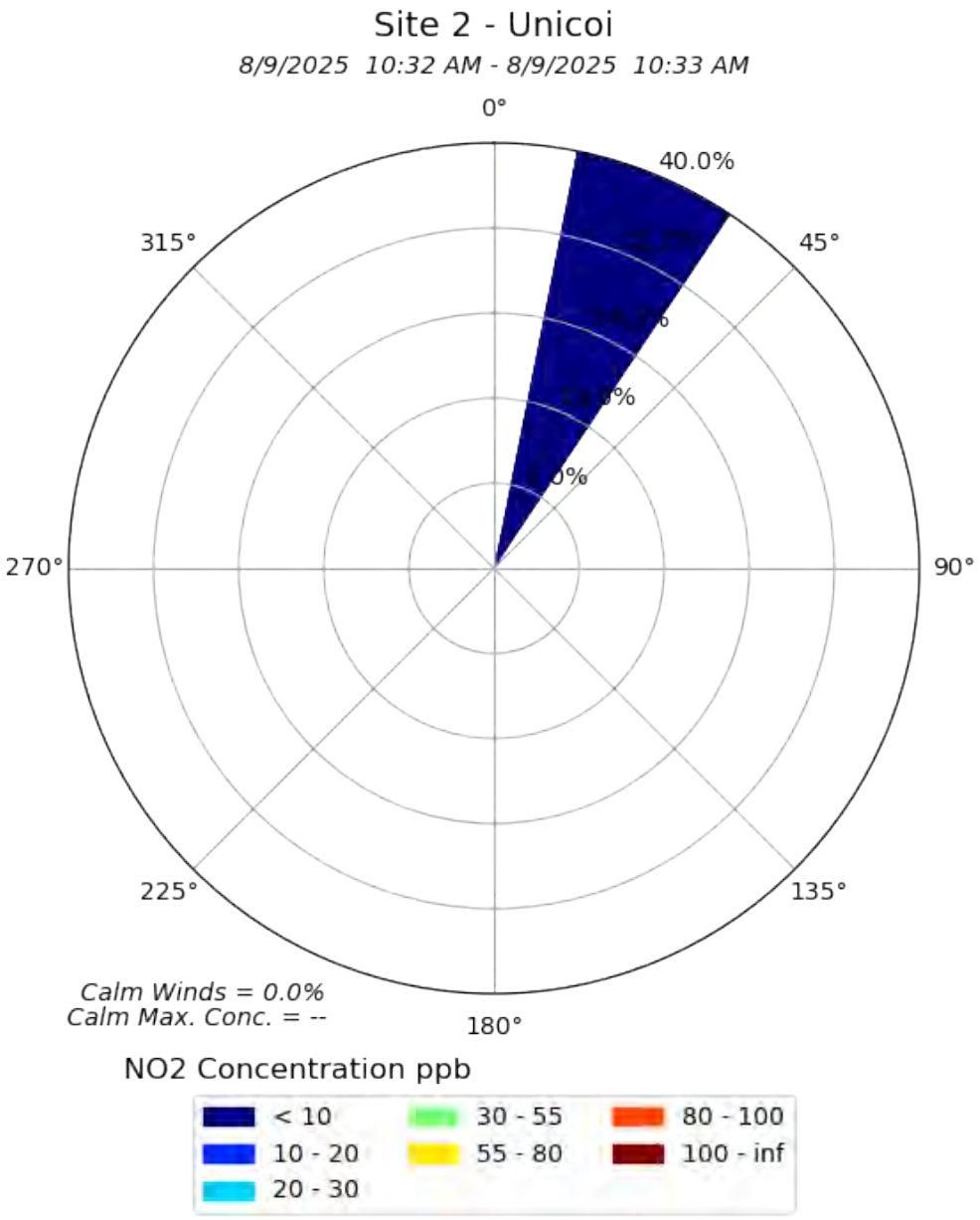


Figure D6-SP7: Pollution Rose displaying NO2 concentrations and wind direction

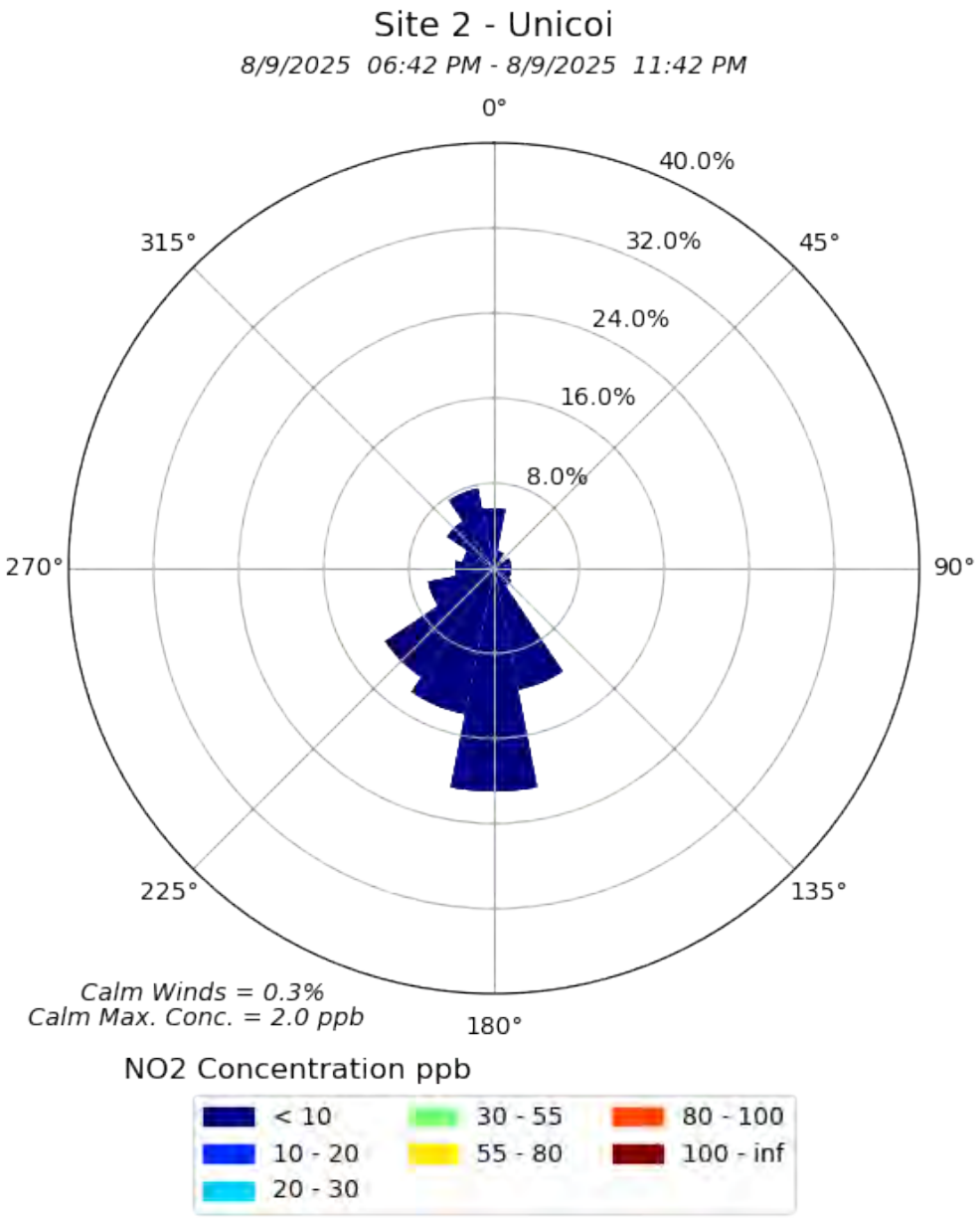


Figure D6-SP8: Pollution Rose displaying NO2 concentrations and wind direction

September 5, 2025 Spike

Various spikes in all pollutants. Site host Event Log did not note anything of interest. Light to moderate levels of regional smoke was in the area. Small increases in concentrations from 8:49 AM to 11:02 AM and from 5:30 PM to 8:48 PM.

- Pollution levels could be a result of light to moderate levels of regional smoke that was in the area.
- No heavy truck traffic or other activity reported in immediate area.
- No fires mapped in the nearby vicinity of the trailer.

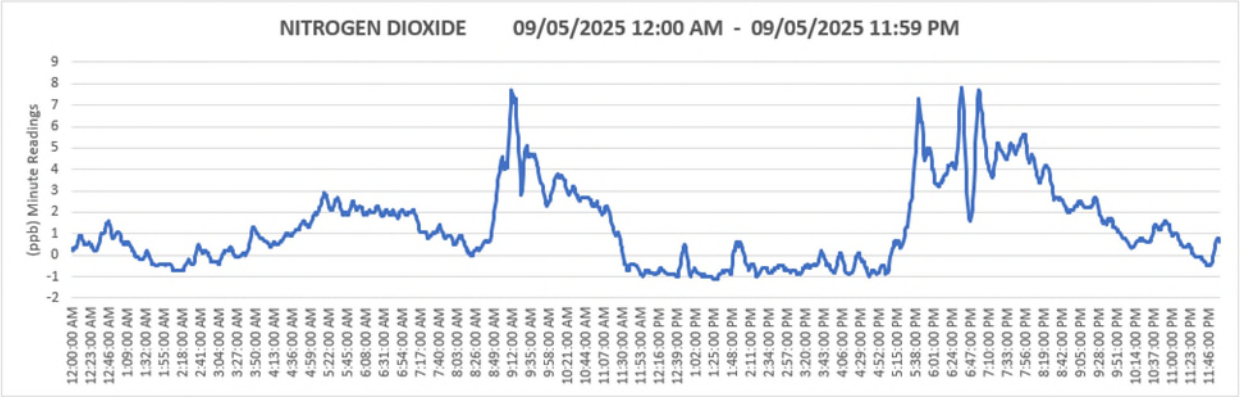


Figure D6-SP9: NO2 levels for September 5, 2025

NITROGEN DIOXIDE Top 25 Concentrations (ppb) Minute Readings 09/05/2025 12:00 AM - 09/05/2025 11:59 PM		
Rank	**Concentration**	**Time**
1	7.8	6:36:00 PM
2	7.7	6:57:00 PM
3	7.7	6:35:00 PM
4	7.7	9:11:00 AM
5	7.6	6:58:00 PM
6	7.5	9:12:00 AM
7	7.4	9:13:00 AM
8	7.3	6:56:00 PM
9	7.3	6:37:00 PM
10	7.3	6:34:00 PM
11	7.3	5:42:00 PM
12	7.3	9:16:00 AM
13	7.3	9:15:00 AM
14	7.2	6:59:00 PM
15	7.1	5:41:00 PM
16	7.1	9:14:00 AM
17	7.0	9:10:00 AM
18	6.8	7:00:00 PM
19	6.8	5:43:00 PM
20	6.7	6:38:00 PM
21	6.7	6:33:00 PM
22	6.6	7:01:00 PM
23	6.6	6:55:00 PM
24	6.5	9:17:00 AM
25	6.4	5:44:00 PM

NITROGEN DIOXIDE Hour Averages Ranked by Highest (ppb) Hour Averages 09/05/2025 12:00 AM - 09/05/2025 11:59 PM		
Rank	**Concentration**	**Time**
1	4.9	7:00:00 PM
2	4.5	9:00:00 AM
3	4.3	6:00:00 PM
4	3.1	8:00:00 PM
5	2.9	10:00:00 AM
6	2.5	5:00:00 PM
7	2.2	5:00:00 AM
8	2.0	6:00:00 AM
9	1.8	9:00:00 PM
10	1.2	7:00:00 AM
11	1.0	8:00:00 AM
12	0.9	10:00:00 PM
13	0.9	4:00:00 AM
14	0.7	12:00:00 AM
15	0.5	11:00:00 AM
16	0.3	3:00:00 AM
17	0.2	11:00:00 PM
18	0.0	1:00:00 AM
19		2:00:00 AM
20		4:00:00 PM
21		3:00:00 PM
22		2:00:00 PM
23		1:00:00 PM
24		12:00:00 PM

Figure D6-SP10: Tables displaying NO2 concentrations for September 5, 2025

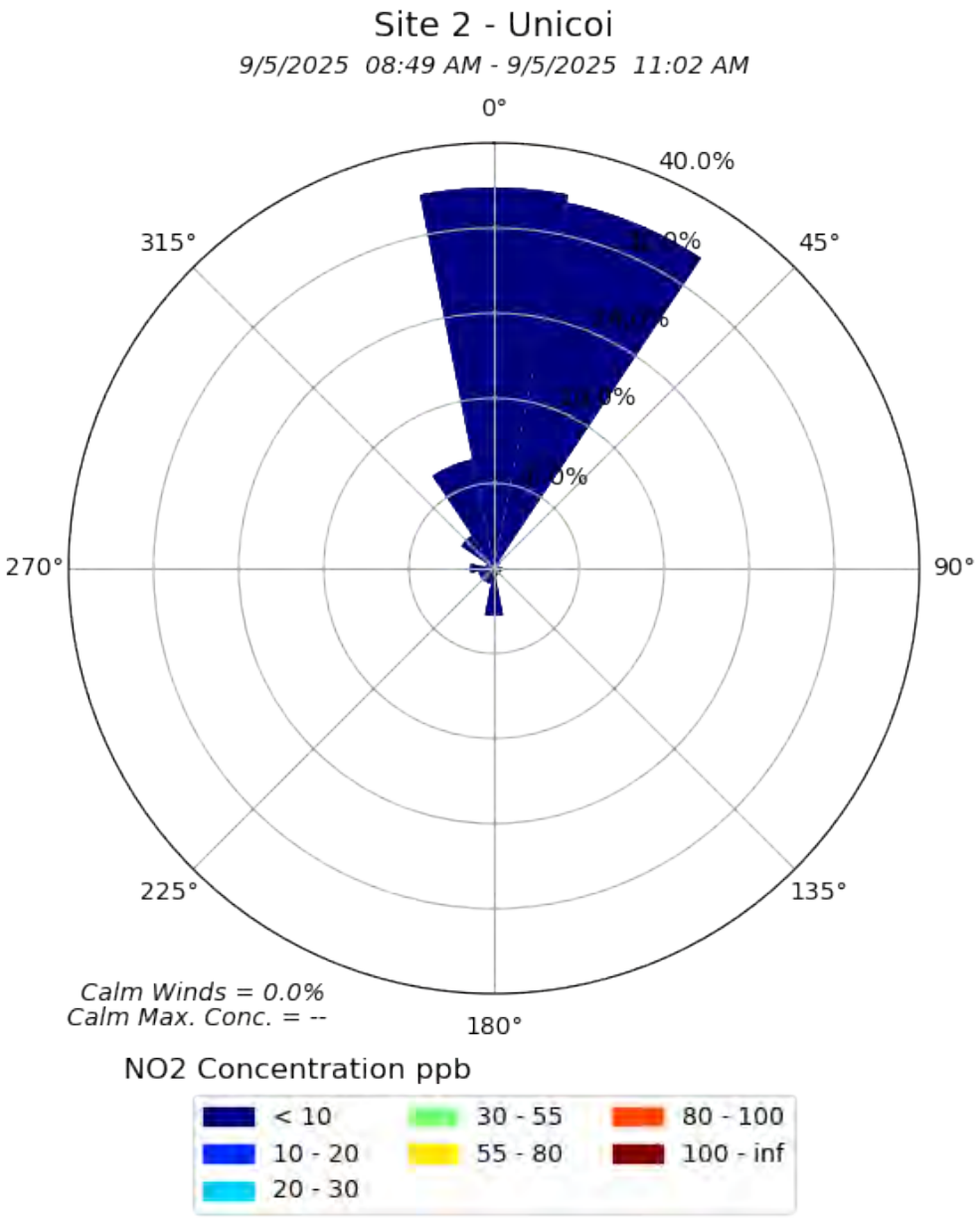


Figure D6-SP11: Pollution Rose displaying NO2 concentrations and wind direction

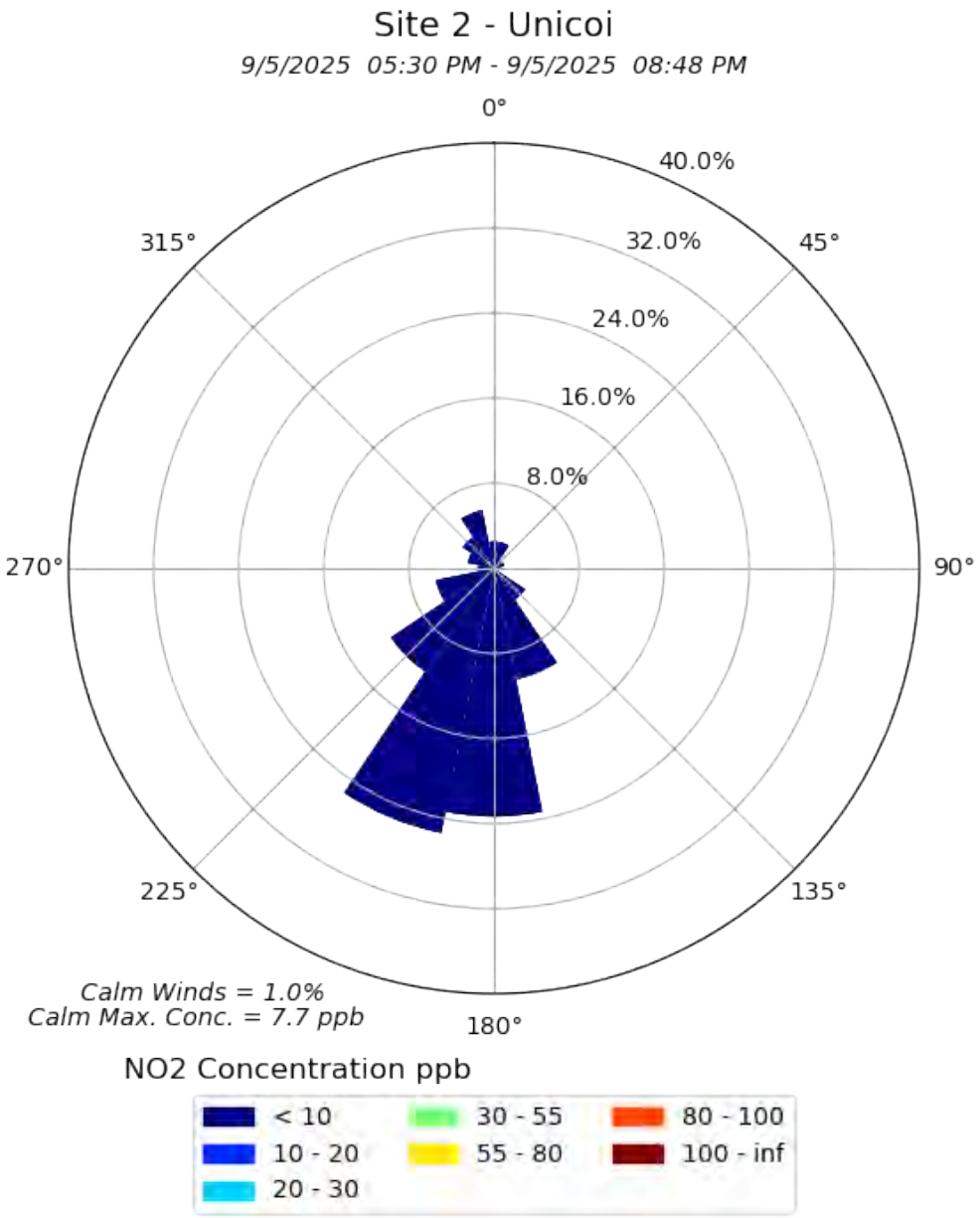


Figure D6-SP12: Pollution Rose displaying NO2 concentrations and wind direction

September 13, 2025 Spike

Spikes at 5:33 – 5:39 PM EST, which affected all pollutants. Site host Event Log did not note anything of interest.

- The plume around 5:30 PM may have drifted in from outside areas such as Johnson City or Kingsport or further out.
- The wind direction at 5:30 PM did not come directly from facilities of concern.
- Light smoke was within the region.

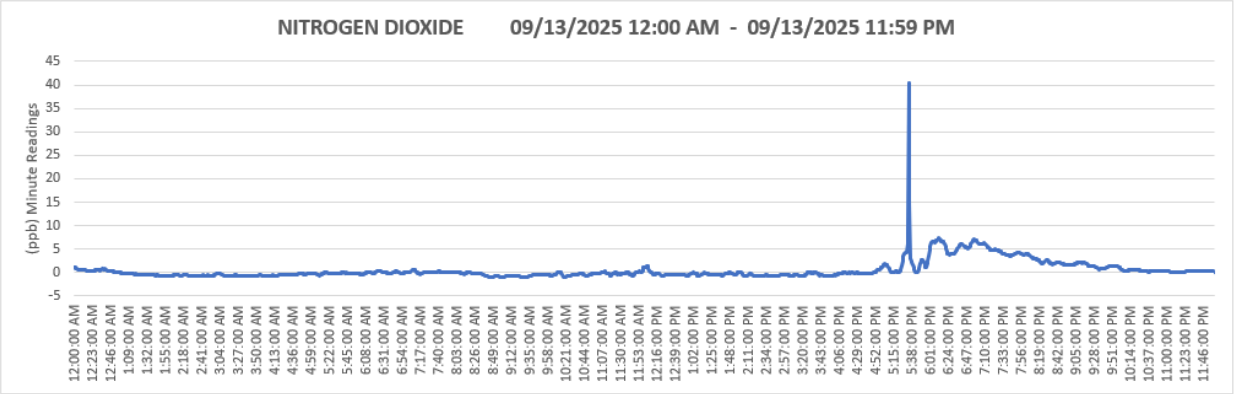


Figure D6-SP13: NO2 levels for September 13, 2025

NITROGEN DIOXIDE Top 25 Concentrations (ppb) Minute Readings 09/13/2025 12:00 AM - 09/13/2025 11:59 PM		
Rank	Concentration	Time
1	40.4	5:34:00 PM
2	15.1	5:35:00 PM
3	8.2	5:33:00 PM
4	7.4	6:12:00 PM
5	7.2	6:13:00 PM
6	7.2	6:11:00 PM
7	7.1	6:56:00 PM
8	7.0	6:57:00 PM
9	7.0	6:10:00 PM
10	6.9	6:59:00 PM
11	6.9	6:58:00 PM
12	6.9	6:55:00 PM
13	6.8	6:14:00 PM
14	6.8	6:09:00 PM
15	6.7	7:00:00 PM
16	6.7	6:15:00 PM
17	6.7	6:04:00 PM
18	6.6	6:54:00 PM
19	6.6	6:16:00 PM
20	6.6	6:08:00 PM
21	6.6	6:03:00 PM
22	6.5	6:17:00 PM
23	6.5	6:05:00 PM
24	6.4	7:01:00 PM
25	6.4	6:07:00 PM

NITROGEN DIOXIDE Hour Averages Ranked by Highest (ppb) Hour Averages 09/13/2025 12:00 AM - 09/13/2025 11:59 PM		
Rank	Concentration	Time
1	5.7	6:00:00 PM
2	4.7	7:00:00 PM
3	2.5	5:00:00 PM
4	2.4	8:00:00 PM
5	1.4	9:00:00 PM
6	0.4	10:00:00 PM
7	0.4	12:00:00 AM
8	0.2	11:00:00 PM
9	0.0	4:00:00 PM
10	0.0	7:00:00 AM
11	0.0	6:00:00 AM
12		11:00:00 AM
13		5:00:00 AM
14		12:00:00 PM
15		1:00:00 PM
16		8:00:00 AM
17		3:00:00 PM
18		10:00:00 AM
19		4:00:00 AM
20		1:00:00 AM
21		2:00:00 PM
22		3:00:00 AM
23		2:00:00 AM
24		9:00:00 AM

Figure D6-SP14: Tables displaying NO2 concentrations for September 13, 2025

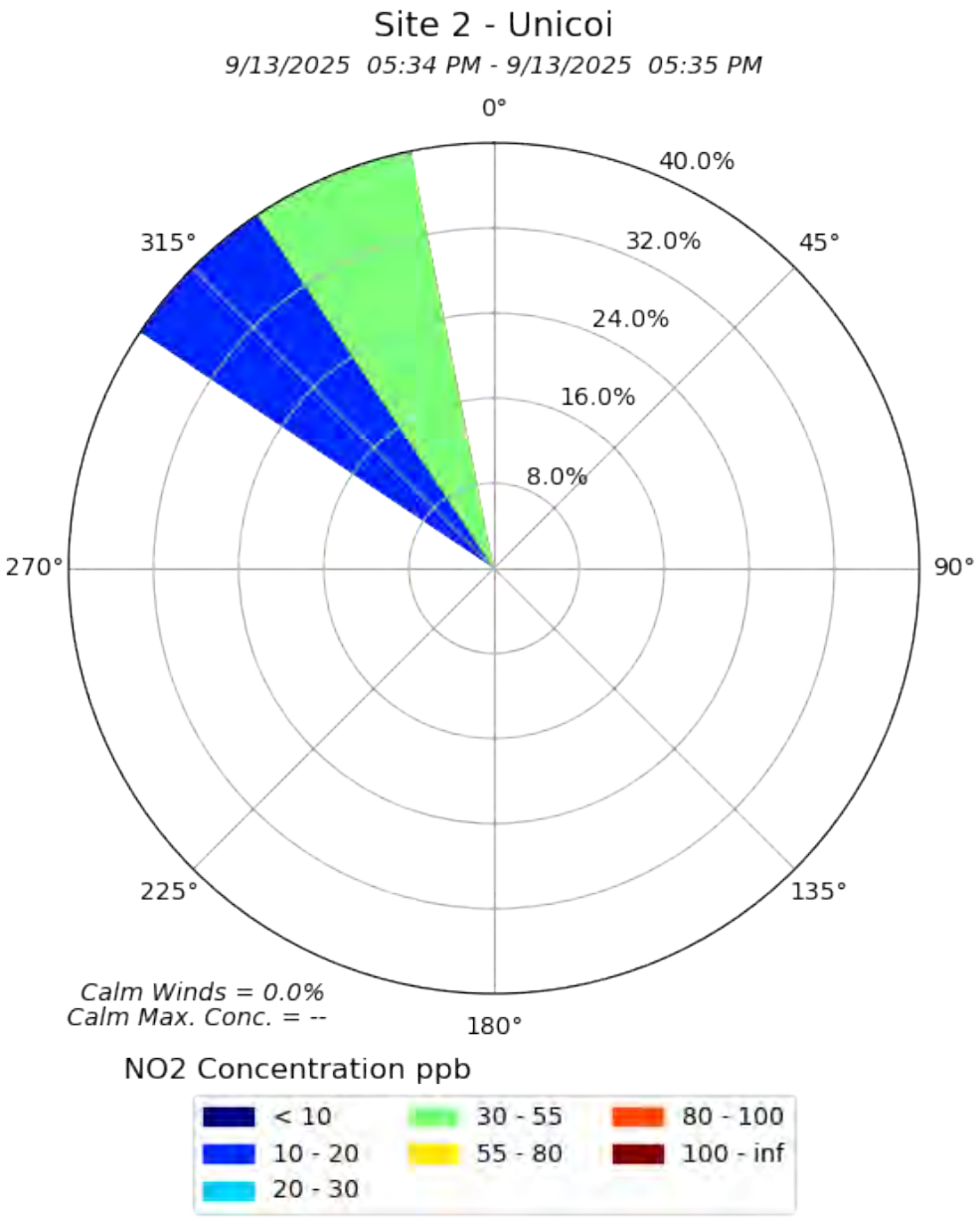


Figure D6-SP15: Pollution Rose displaying NO2 concentrations and wind direction

D7: Data – Nitrogen Oxides

Nitrogen Oxides (NOx) Findings

- There was no clear indication that recorded spikes of Nitrogen Oxides originated from nearby sources of concern.
- NOx concentrations were lower during the day from 9 AM to 4 PM.
- NOx levels were lower over the weekend.
- The highest one-minute NOx reading was 224.5 ppb at 8:11 AM on October 20, 2025. The second highest one-minute NOx reading was 97 ppb at 2:01 PM on July 5, 2025.
- The highest one-hour average was 16.5 ppb at 6 PM on October 15, 2025. The second highest one-hour average was 15.4 ppb at 6 PM on October 20, 2025.
- Nearly 37% of minute readings recorded a concentration of 0 or a negative number. Nearly 35% of hourly averages were a concentration of 0 or a negative number. Note: This instrument may record negative numbers which meet EPA reporting protocol.
- 62% of minute readings were of concentrations from 0.1 ppb to 9.9 ppb.
- 64% of hourly averages were of concentrations from 0.1 ppb to 9.9 ppb.
- The following two tables reflect the percentages of each range of concentrations recorded. NOx is not an EPA criteria pollutant; therefore, there is no Air Quality Index reference.

Percentage of Minute Readings
Concentration Range in ppb

Range	Percentage
0 -	36.80%
0.1 - 9.9	62.00%
10 - 24.9	1.48%
25 - 49.9	0.03%
50 - 99.9	0.002%
100 +	0.001%

Percentage of Hourly Averages
Concentration Range in ppb

Range	Percentage
0 -	34.99%
0.1 - 9.9	64.01%
10 - 24.9	1.01%
25 - 49.9	0.00%
50 - 99.9	0.00%
100 +	0.00%

Data Presentations

BREDL data presentations for NOx will include hour averages (the average of 60 one-minute readings). Wind and pollution roses use the one-minute readings (1440 per day).

Time of day bar graphs are used to examine time periods of the day. For example, is there one part of the day where the pollution registered higher or lower?

Figures D7-1 – D7-6 plot hour averages for the entire collection period and for each month. These averages take the 60 one-minute readings for each hour and average them for the hour average.

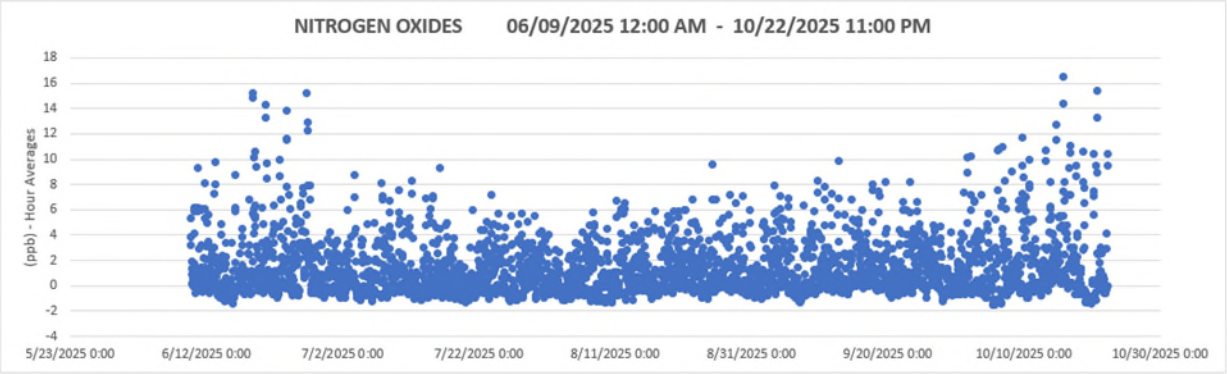


Figure D7-1: NOx Hour Averages – Entire Collection Period

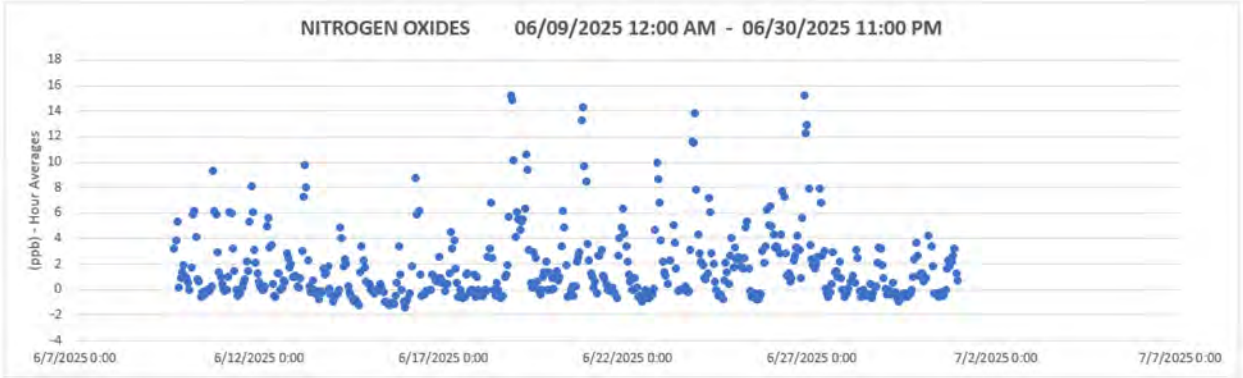


Figure D7-2: NOx Hour Averages – June

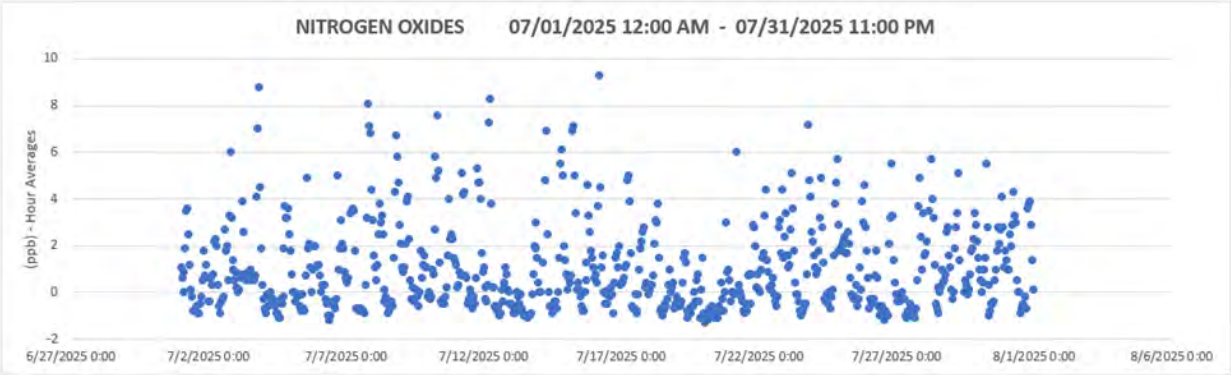


Figure D7-3: NOx Hour Averages – July

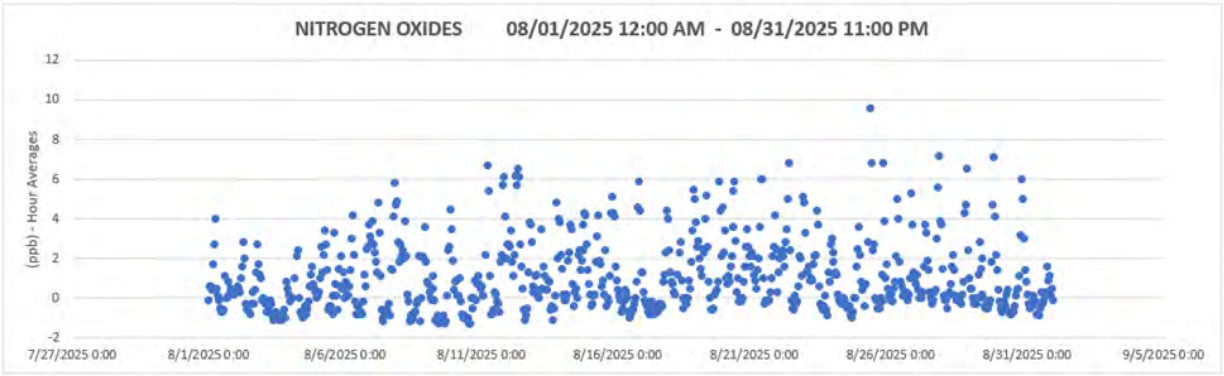


Figure D7-4: NOx Hour Averages – August

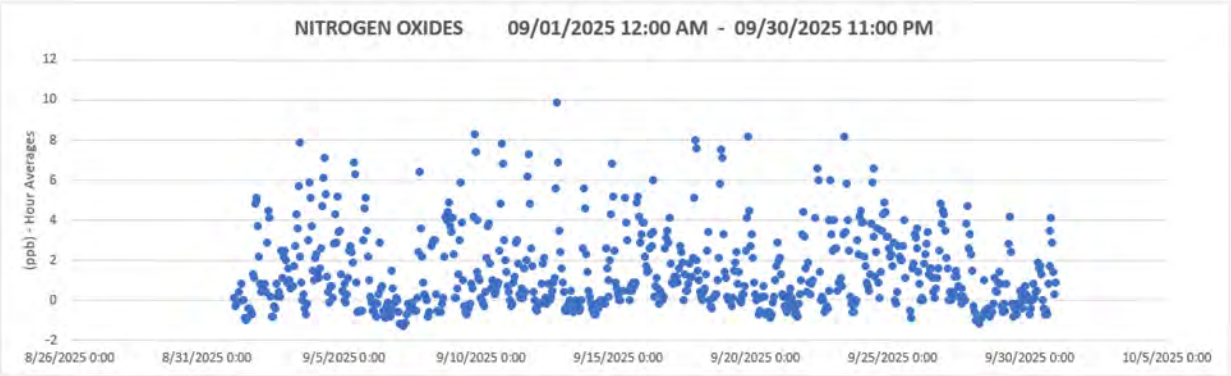


Figure D7-5: NOx Hour Averages – September

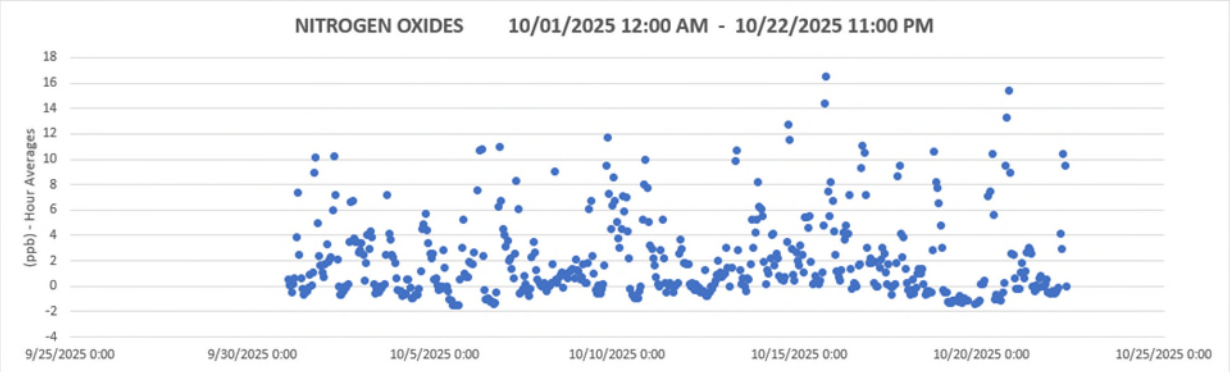


Figure D7-6: NOx Hour Averages – October

Figures D7-7 – D7-12 plot averages based on the time of day for the entire collection period and for each month.

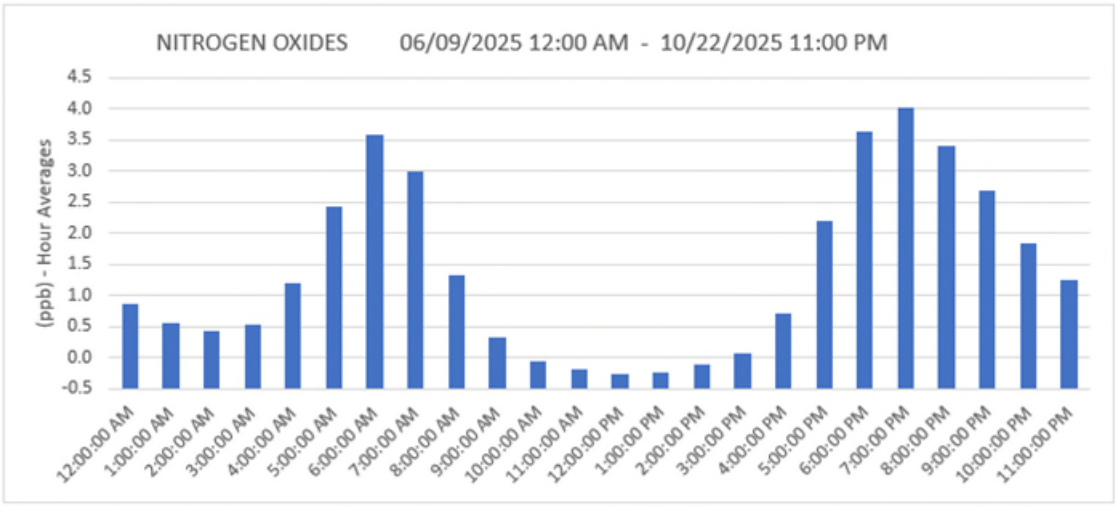


Figure D7-7: NOx Hour Averages – Based on Time of Day for Collection Period

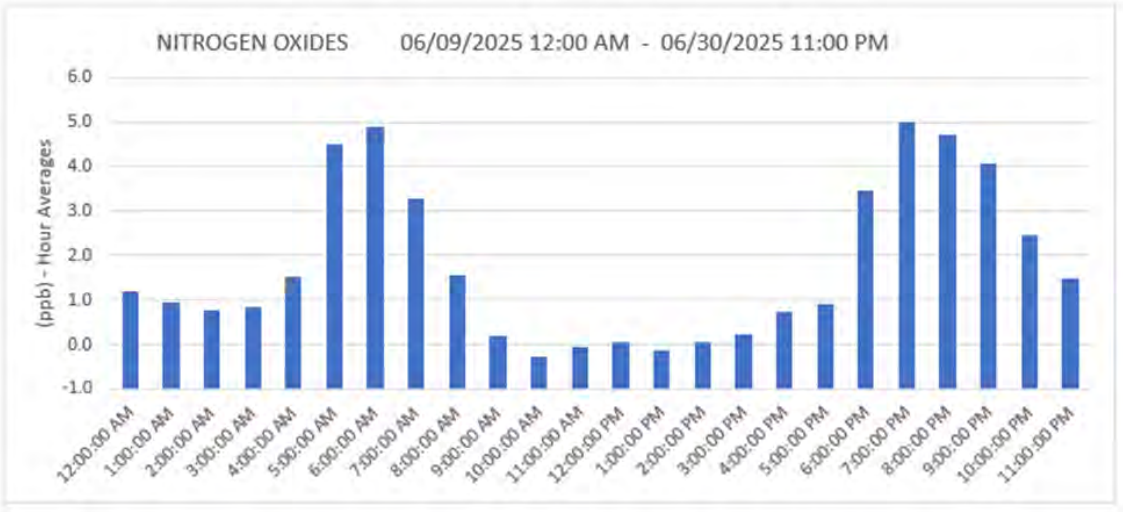


Figure D7-8: NOx Hour Averages – Based on Time of Day for June

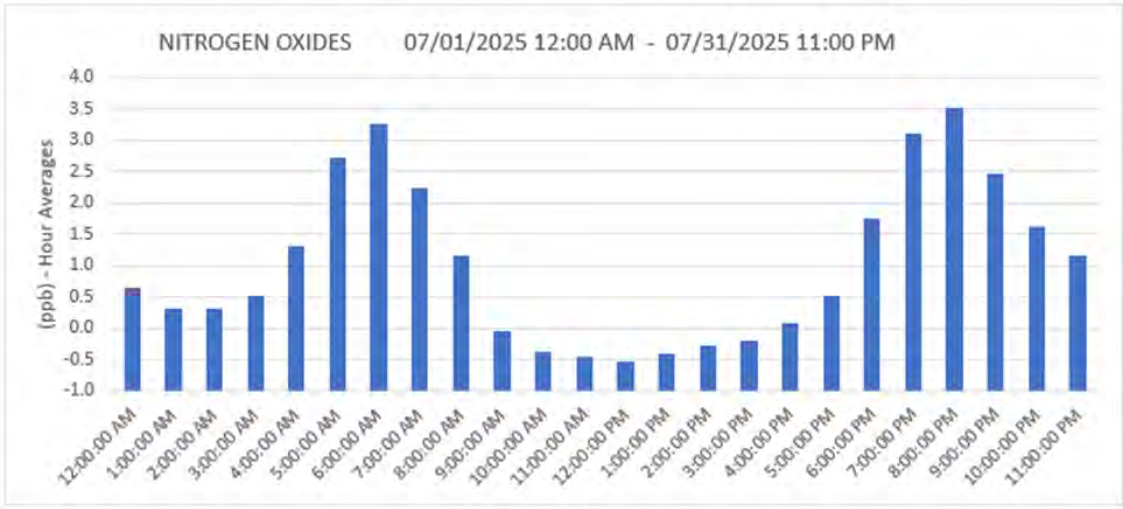


Figure D7-9: NOx Hour Averages – Based on Time of Day for July

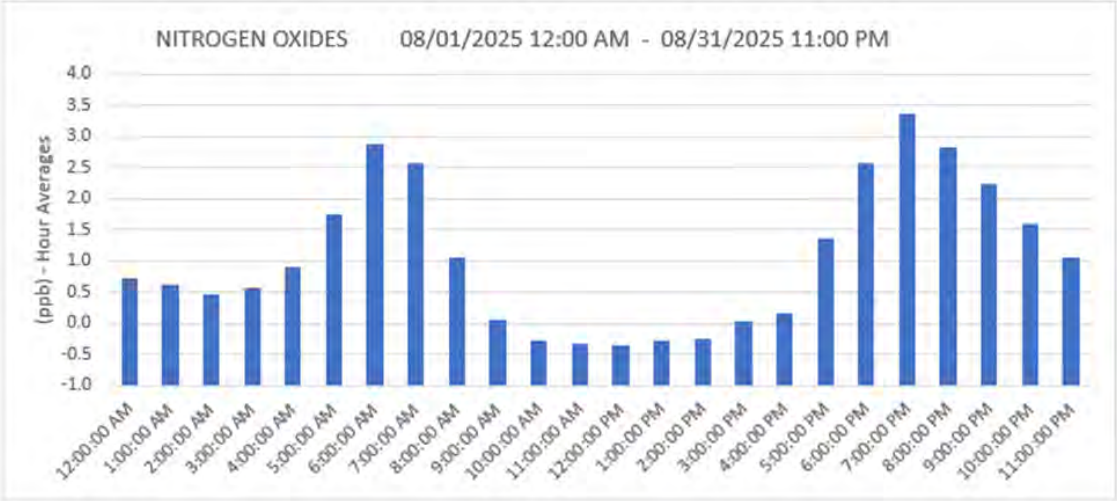


Figure D7-10: NOx Hour Averages – Based on Time of Day for August

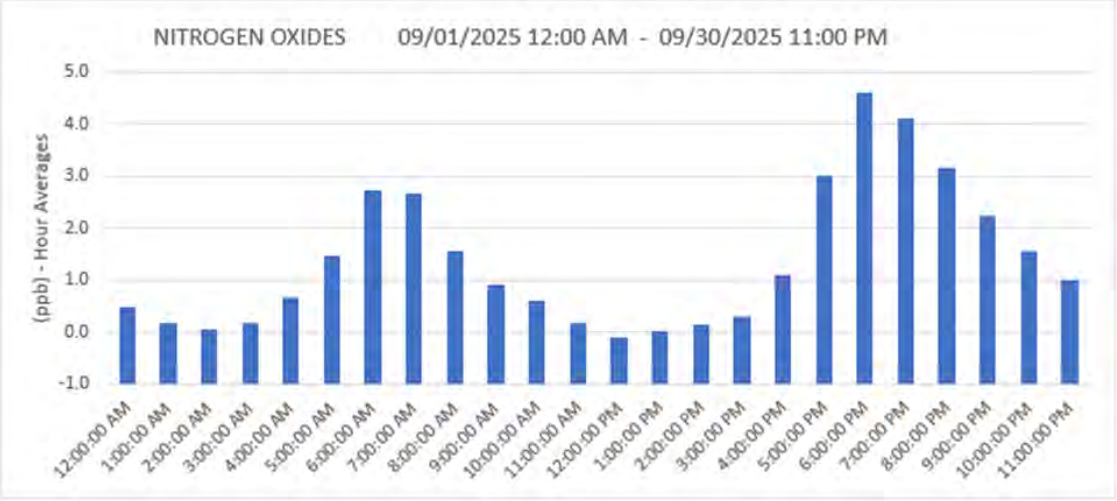


Figure D7-11: NOx Hour Averages – Based on Time of Day for September

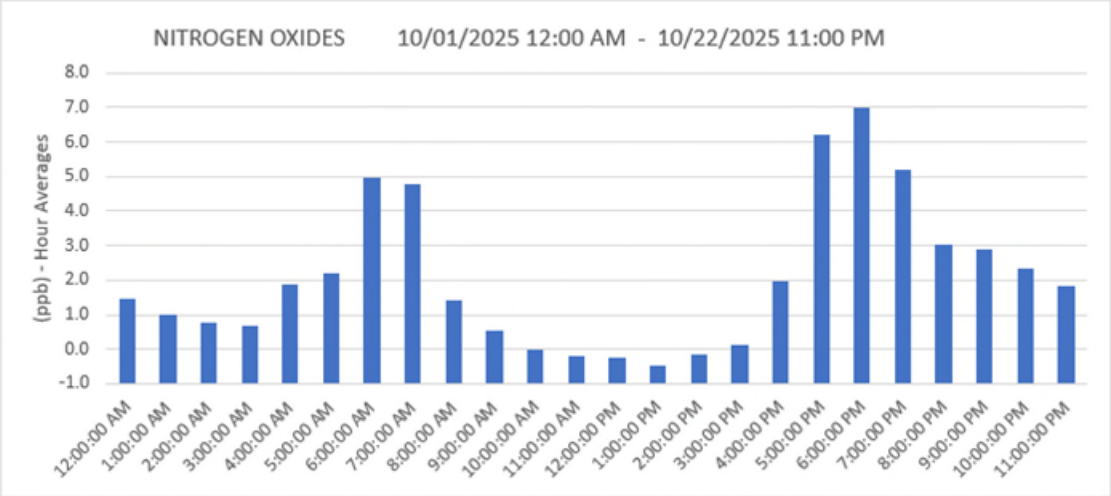


Figure D7-12: NOx Hour Averages – Based on Time of Day for October

Figure D7-13 plots day averages based on the day of the week for the entire collection period.

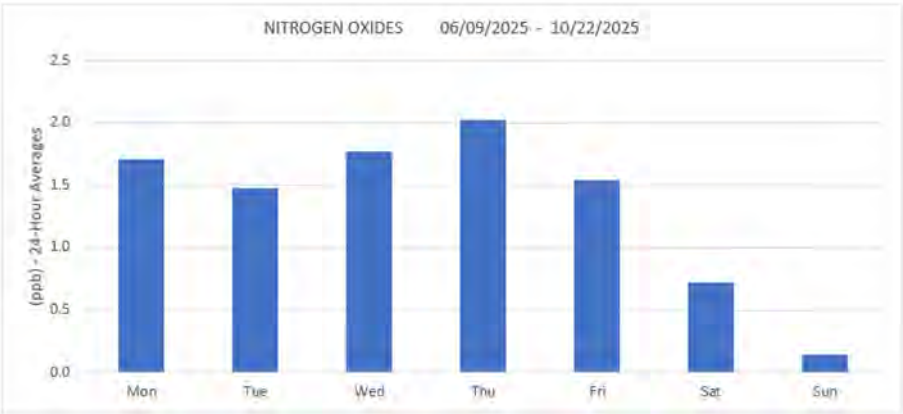


Figure D7-13: NOx Day (24-Hour) Averages – Based on Day of the Week

NITROGEN OXIDES Top 25 Concentrations (ppb) - Hour Averages 06/09/2025 12:00 AM - 10/22/2025 11:00 PM		
Rank	**Concentration**	**Date & Time**
1	16.5	10/15/2025 6:00 PM
2	15.4	10/20/2025 6:00 PM
3	15.2	6/26/2025 7:00 PM
4	15.2	6/18/2025 8:00 PM
5	14.9	6/18/2025 9:00 PM
6	14.4	10/15/2025 5:00 PM
7	14.3	6/20/2025 7:00 PM
8	13.8	6/23/2025 8:00 PM
9	13.3	10/20/2025 5:00 PM
10	13.3	6/20/2025 6:00 PM
11	12.9	6/26/2025 9:00 PM
12	12.7	10/14/2025 5:00 PM
13	12.3	6/26/2025 8:00 PM
14	11.7	10/9/2025 6:00 PM
15	11.6	6/23/2025 6:00 PM
16	11.5	10/14/2025 6:00 PM
17	11.5	6/23/2025 7:00 PM
18	11.1	10/16/2025 6:00 PM
19	11.0	10/6/2025 7:00 PM
20	10.8	10/6/2025 7:00 AM
21	10.7	10/13/2025 7:00 AM
22	10.7	10/6/2025 6:00 AM
23	10.6	10/18/2025 5:00 PM
24	10.6	6/19/2025 6:00 AM
25	10.5	10/16/2025 7:00 PM

Figure D7-14: NOx Hour Averages – Top 25 Concentrations

Figures D7:15 and D7:16 pollution roses display the pollutant concentration based on wind direction, which can indicate the direction of the pollution source.

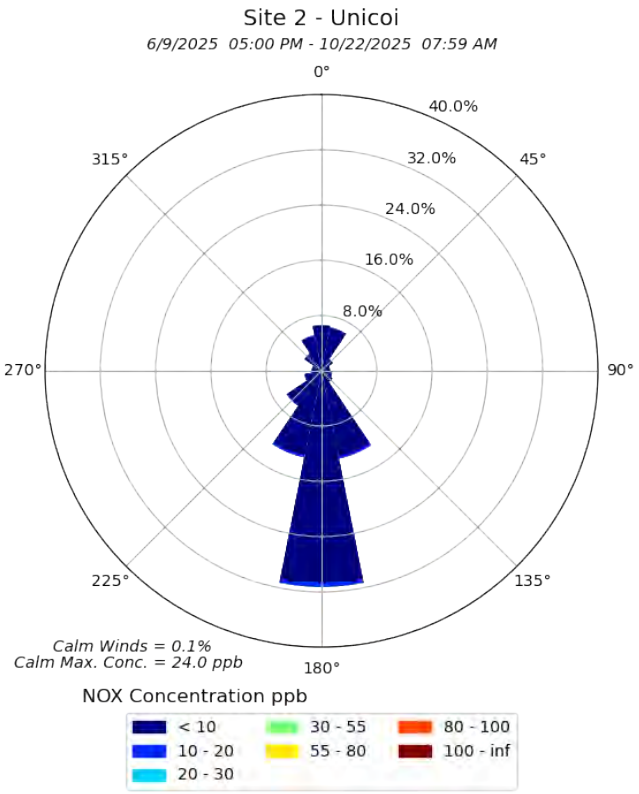


Figure D7-15: Pollution Rose

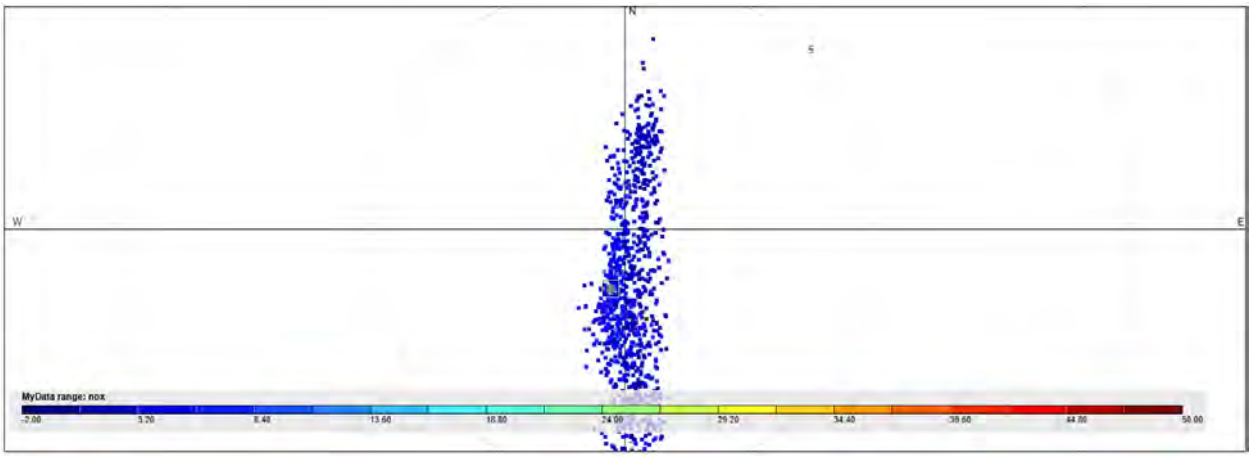


Figure D7-16: EPA RETIGO Pollution Rose 6/9/2025 - 10/22/2025

We separated the NOx minute concentrations of at least 30 ppb and plotted those on a pollution rose for a better visual representation of the direction of the highest concentrations.

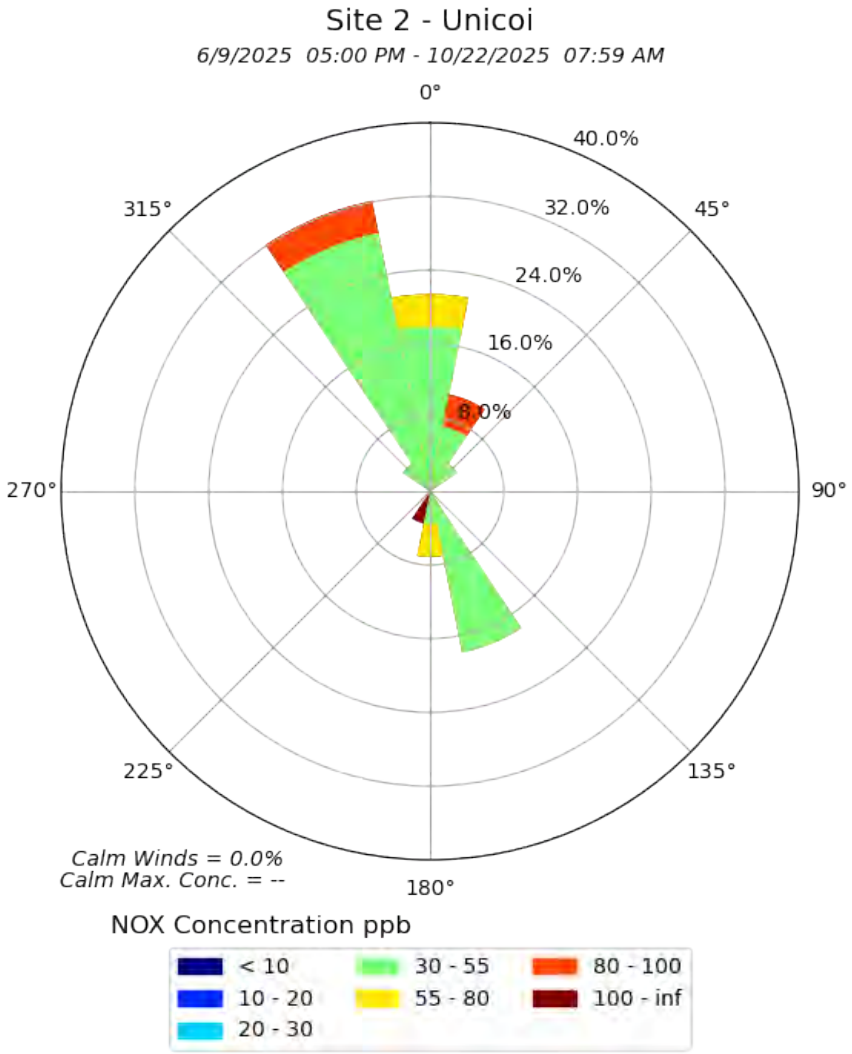


Figure D7-17: Pollution Rose displaying NOx concentrations of at least 30 ppb.

NOx Spikes

August 9, 2025 Spike

Nothing noted on Event Log. However, Noted some spikes of the monitored pollutants – at various times of the day. Of note is a nearby asphalt facility official startup date for new equipment was August 4, just a few days before this. A couple spikes from 10:32 to 10:34 AM and from 9:32 to 11:04 PM .

- Wind direction came from various directions during the two NOx pollution spikes.
- No clear indication as to where the NOx spikes originated.
- The highest concentrations of the day can sometimes not be evident in hourly average data.

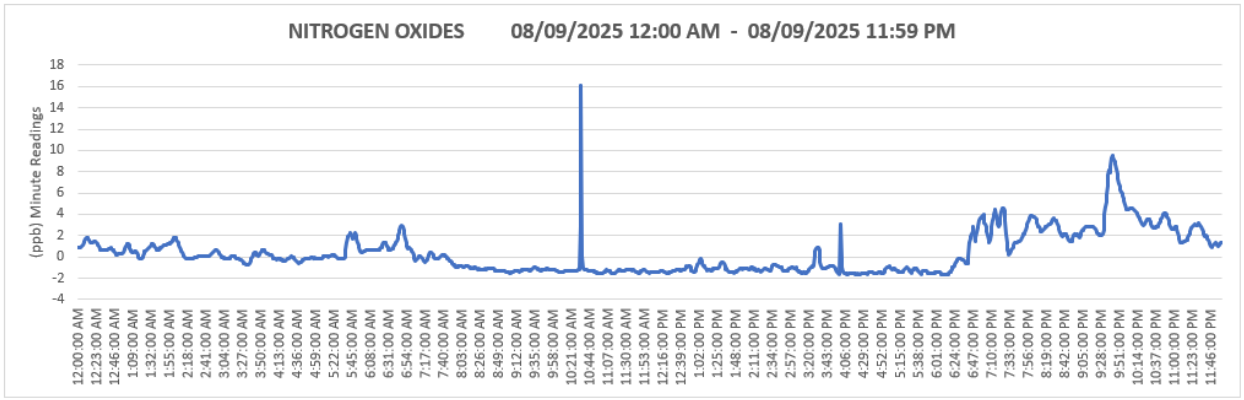


Figure D7-SP1: NOx levels for August 9, 2025 – Minute Readings

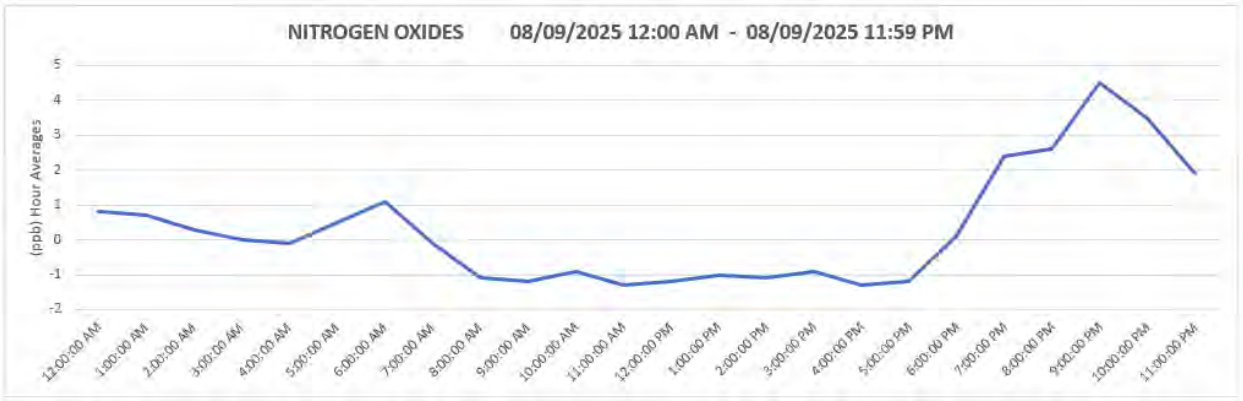


Figure D7-SP2: NOx levels for August 9, 2025 – Hour Averages

Notice how the highest concentration of the day is virtually non-existent in the hourly average for that time period. The first graph displays minute data while the second graph displays hourly average data.

NITROGEN OXIDES Top 25 Concentrations (ppb) Minute Readings 08/09/2025 12:00 AM - 08/09/2025 11:59 PM		
Rank	Concentration	Time
1	16.1	10:33:00 AM
2	9.5	9:42:00 PM
3	9.4	9:43:00 PM
4	9.3	9:41:00 PM
5	9.1	9:44:00 PM
6	8.9	9:45:00 PM
7	8.7	9:46:00 PM
8	8.5	9:40:00 PM
9	8.3	9:47:00 PM
10	8.1	9:38:00 PM
11	7.9	9:39:00 PM
12	7.8	9:48:00 PM
13	7.7	9:37:00 PM
14	7.3	9:49:00 PM
15	6.9	9:50:00 PM
16	6.7	9:36:00 PM
17	6.6	9:51:00 PM
18	6.3	9:52:00 PM
19	6.1	9:53:00 PM
20	5.9	9:54:00 PM
21	5.8	9:35:00 PM
22	5.7	9:55:00 PM
23	5.5	9:56:00 PM
24	5.3	9:57:00 PM
25	5.1	9:34:00 PM

NITROGEN OXIDES Hour Averages Ranked by Highest (ppb) Hour Averages 08/09/2025 12:00 AM - 08/09/2025 11:59 PM		
Rank	Concentration	Time
1	4.5	9:00:00 PM
2	3.5	10:00:00 PM
3	2.6	8:00:00 PM
4	2.4	7:00:00 PM
5	1.9	11:00:00 PM
6	1.1	6:00:00 AM
7	0.8	12:00:00 AM
8	0.7	1:00:00 AM
9	0.5	5:00:00 AM
10	0.3	2:00:00 AM
11	0.1	6:00:00 PM
12	0.0	3:00:00 AM
13		7:00:00 AM
14		4:00:00 AM
15		3:00:00 PM
16		10:00:00 AM
17		1:00:00 PM
18		2:00:00 PM
19		8:00:00 AM
20		5:00:00 PM
21		12:00:00 PM
22		9:00:00 AM
23		4:00:00 PM
24		11:00:00 AM

Figure D7-SP3: Tables displaying NOx concentrations for August 9, 2025

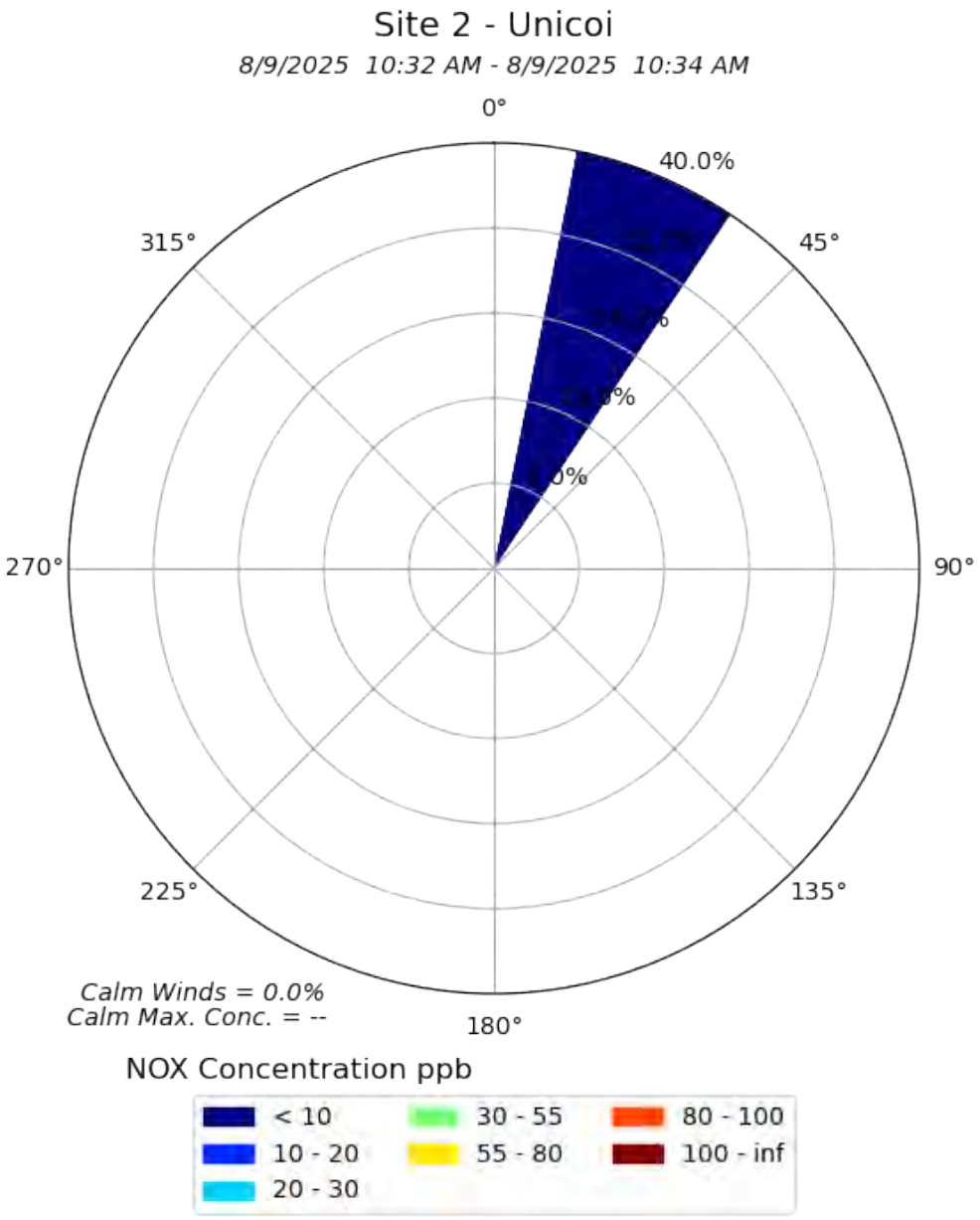


Figure D7-SP4: Pollution Rose displaying NOx concentrations and wind direction

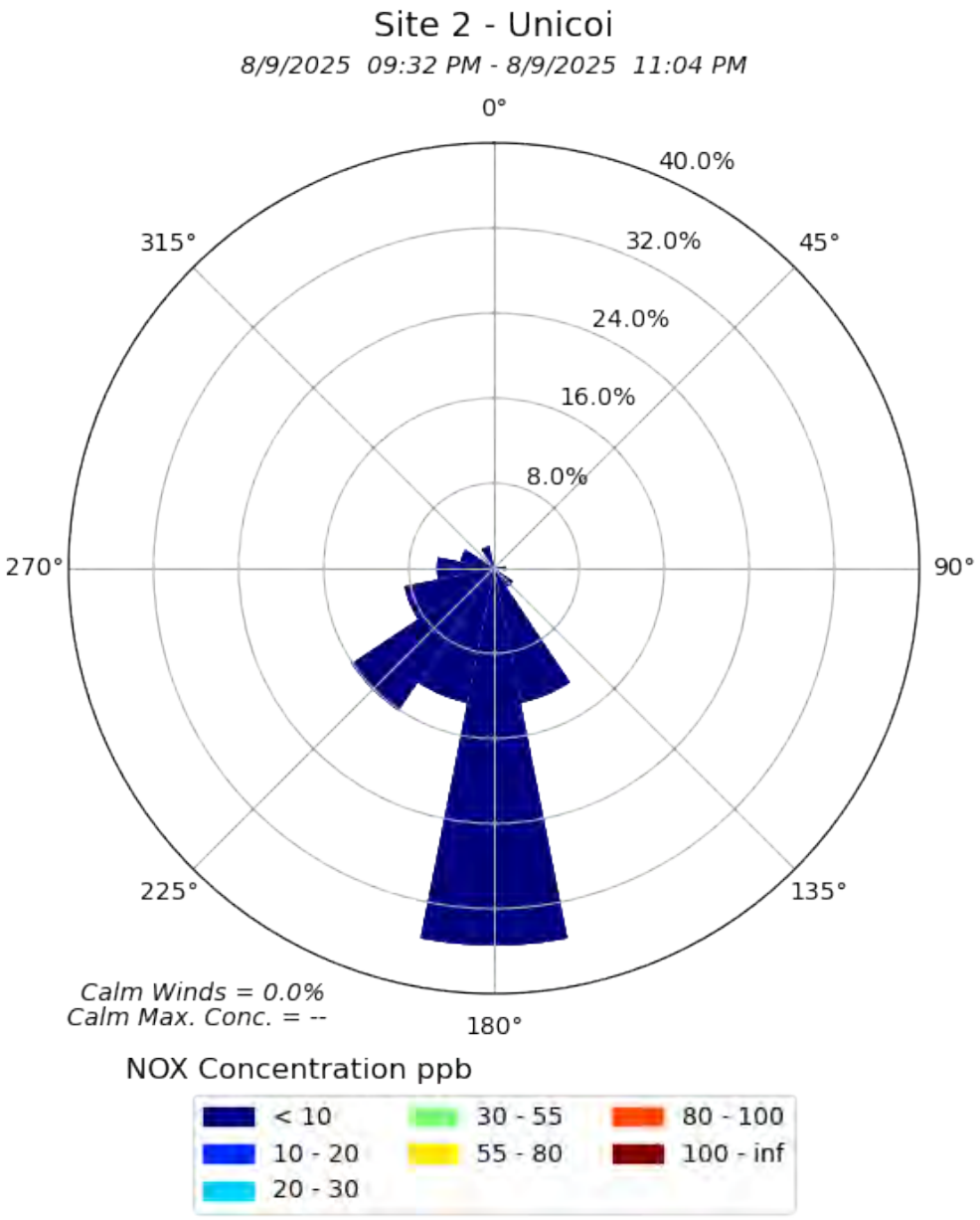


Figure D7-SP5: Pollution Rose displaying NOx concentrations and wind direction

September 5, 2025 Spike

Small increases in concentrations from 8:47 AM to 11:17 AM and from 5:29 PM to 9:31 PM.

- Light to moderate levels of regional smoke was in the area.
- No heavy truck traffic or other activity reported in immediate area.
- No fires mapped in the nearby vicinity of the trailer.
- Wind was in two different directions for the two spikes.

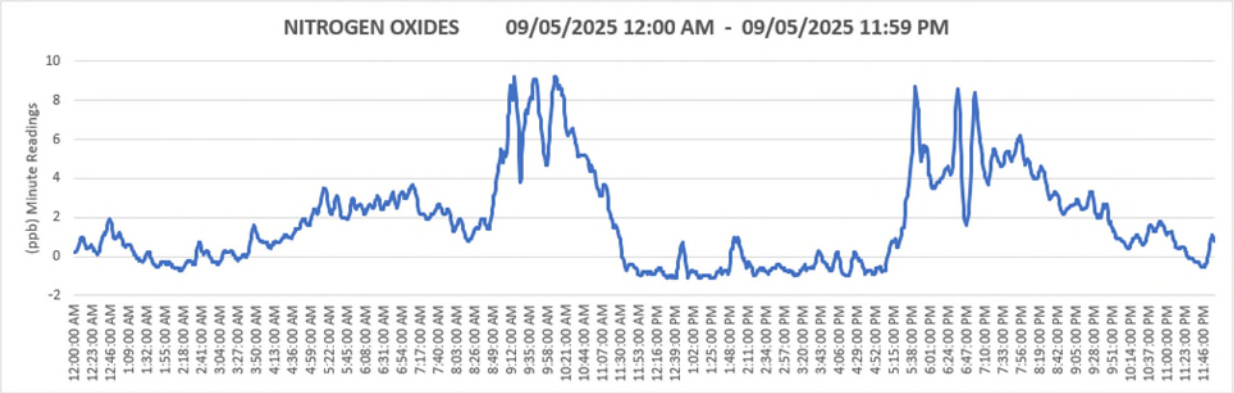


Figure D7-SP6: NOx levels for September 5, 2025

NITROGEN OXIDES Top 25 Concentrations (ppb) Minute Readings 09/05/2025 12:00 AM - 09/05/2025 11:59 PM		
Rank	**Concentration**	**Time**
1	9.2	10:08:00 AM
2	9.2	10:07:00 AM
3	9.2	9:16:00 AM
4	9.1	10:09:00 AM
5	9.1	9:44:00 AM
6	9.1	9:43:00 AM
7	9.1	9:40:00 AM
8	9.0	9:42:00 AM
9	9.0	9:41:00 AM
10	8.9	10:10:00 AM
11	8.9	10:06:00 AM
12	8.8	10:13:00 AM
13	8.8	10:12:00 AM
14	8.8	9:39:00 AM
15	8.8	9:11:00 AM
16	8.7	5:42:00 PM
17	8.7	9:45:00 AM
18	8.6	6:36:00 PM
19	8.6	6:35:00 PM
20	8.6	10:15:00 AM
21	8.6	10:14:00 AM
22	8.6	10:11:00 AM
23	8.6	10:05:00 AM
24	8.6	9:17:00 AM
25	8.6	9:15:00 AM

NITROGEN OXIDES Hour Averages Ranked by Highest (ppb) Hour Averages 09/05/2025 12:00 AM - 09/05/2025 11:59 PM		
Rank	**Concentration**	**Time**
1	6.9	9:00:00 AM
2	6.3	10:00:00 AM
3	5.1	7:00:00 PM
4	4.6	6:00:00 PM
5	3.5	8:00:00 PM
6	3.0	5:00:00 PM
7	2.7	6:00:00 AM
8	2.5	5:00:00 AM
9	2.4	7:00:00 AM
10	2.2	9:00:00 PM
11	1.9	8:00:00 AM
12	1.1	4:00:00 AM
13	1.0	10:00:00 PM
14	0.9	11:00:00 AM
15	0.8	12:00:00 AM
16	0.3	3:00:00 AM
17	0.2	11:00:00 PM
18	0.0	1:00:00 AM
19		2:00:00 AM
20		4:00:00 PM
21		3:00:00 PM
22		2:00:00 PM
23		1:00:00 PM
24		12:00:00 PM

Figure D7-SP7: Tables displaying NOx concentrations for September 5, 2025

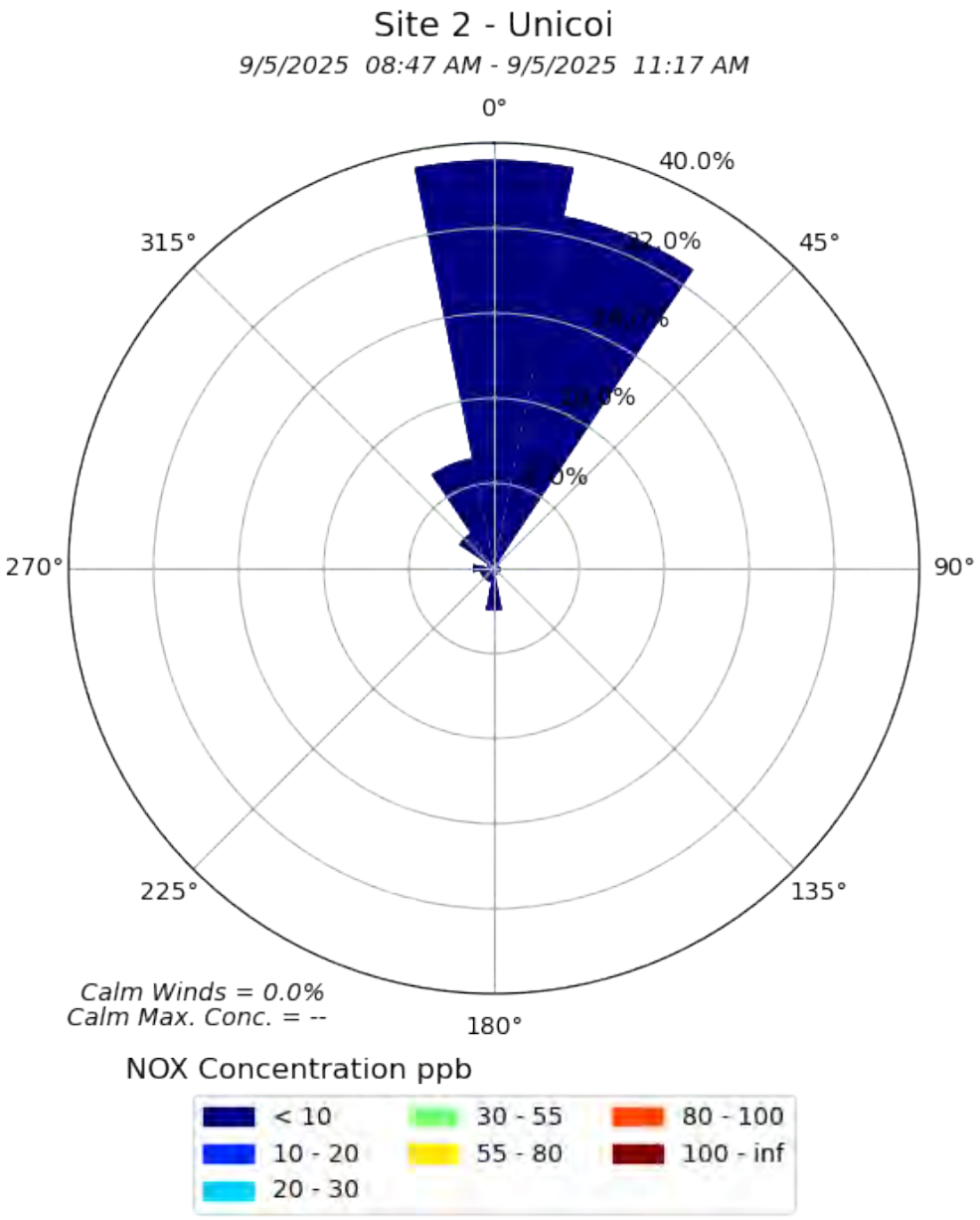


Figure D7-SP8: Pollution Rose displaying NOx concentrations and wind direction

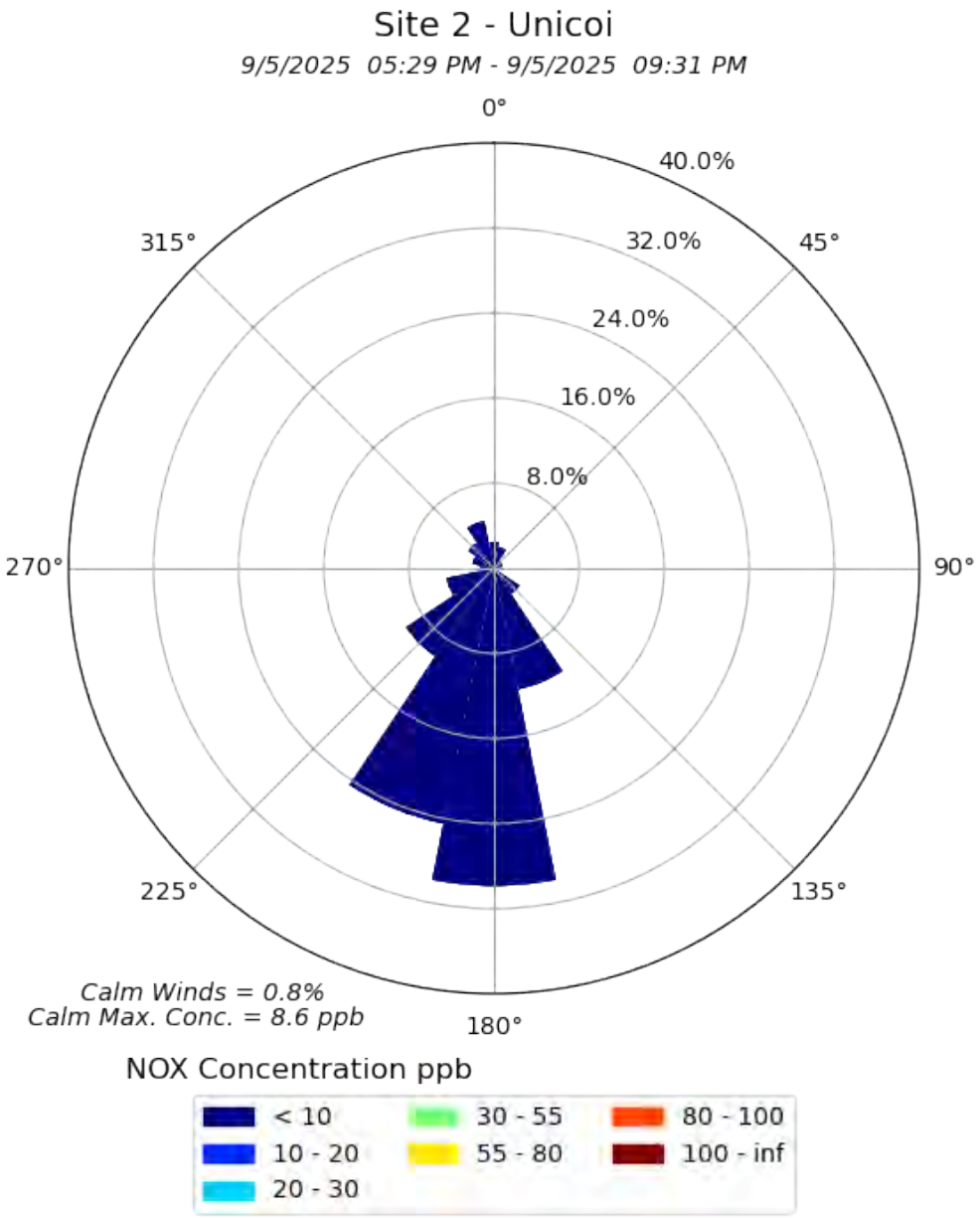


Figure D7-SP9: Pollution Rose displaying NOx concentrations and wind direction

September 13, 2025 Spike

Spikes at 5:33 – 5:39 PM EST, which affected all pollutants. Site host Event Log did not note anything of interest.

- Pollution plumes for 5:30 PM time block can probably not be attributed to nearby sources of concern based on wind direction.
- 5:30 PM plume may have drifted in from outside areas such as Johnson City or Kingsport or further.
- Light smoke was within the region.

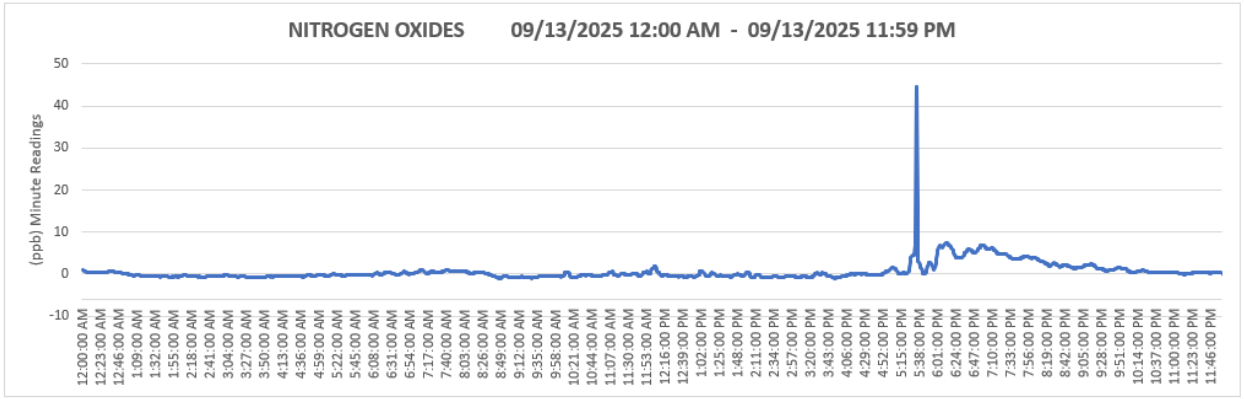


Figure D7-SP10: NOx levels for September 13, 2025

NITROGEN OXIDES Top 25 Concentrations (ppb) Minute Readings 09/13/2025 12:00 AM - 09/13/2025 11:59 PM		
Rank	Concentration	Time
1	44.5	5:34:00 PM
2	16.1	5:35:00 PM
3	9.0	5:33:00 PM
4	7.5	6:12:00 PM
5	7.3	6:13:00 PM
6	7.3	6:11:00 PM
7	7.1	6:10:00 PM
8	7.0	6:14:00 PM
9	7.0	6:09:00 PM
10	6.9	6:57:00 PM
11	6.9	6:56:00 PM
12	6.8	6:59:00 PM
13	6.8	6:58:00 PM
14	6.8	6:15:00 PM
15	6.7	6:55:00 PM
16	6.7	6:16:00 PM
17	6.7	6:08:00 PM
18	6.7	6:04:00 PM
19	6.7	6:03:00 PM
20	6.7	5:32:00 PM
21	6.6	7:00:00 PM
22	6.6	6:17:00 PM
23	6.5	6:05:00 PM
24	6.4	7:01:00 PM
25	6.4	6:54:00 PM

NITROGEN OXIDES Hour Averages Ranked by Highest (ppb) Hour Averages 09/13/2025 12:00 AM - 09/13/2025 11:59 PM		
Rank	Concentration	Time
1	5.6	6:00:00 PM
2	4.6	7:00:00 PM
3	2.6	5:00:00 PM
4	2.3	8:00:00 PM
5	1.4	9:00:00 PM
6	0.5	10:00:00 PM
7	0.5	7:00:00 AM
8	0.4	12:00:00 AM
9	0.2	11:00:00 PM
10	0.0	4:00:00 PM
11	0.0	11:00:00 AM
12	0.0	6:00:00 AM
13		8:00:00 AM
14		1:00:00 PM
15		12:00:00 PM
16		5:00:00 AM
17		3:00:00 PM
18		10:00:00 AM
19		1:00:00 AM
20		2:00:00 PM
21		4:00:00 AM
22		3:00:00 AM
23		2:00:00 AM
24		9:00:00 AM

Figure D7-SP11: Tables displaying NOx concentrations for September 13, 2025

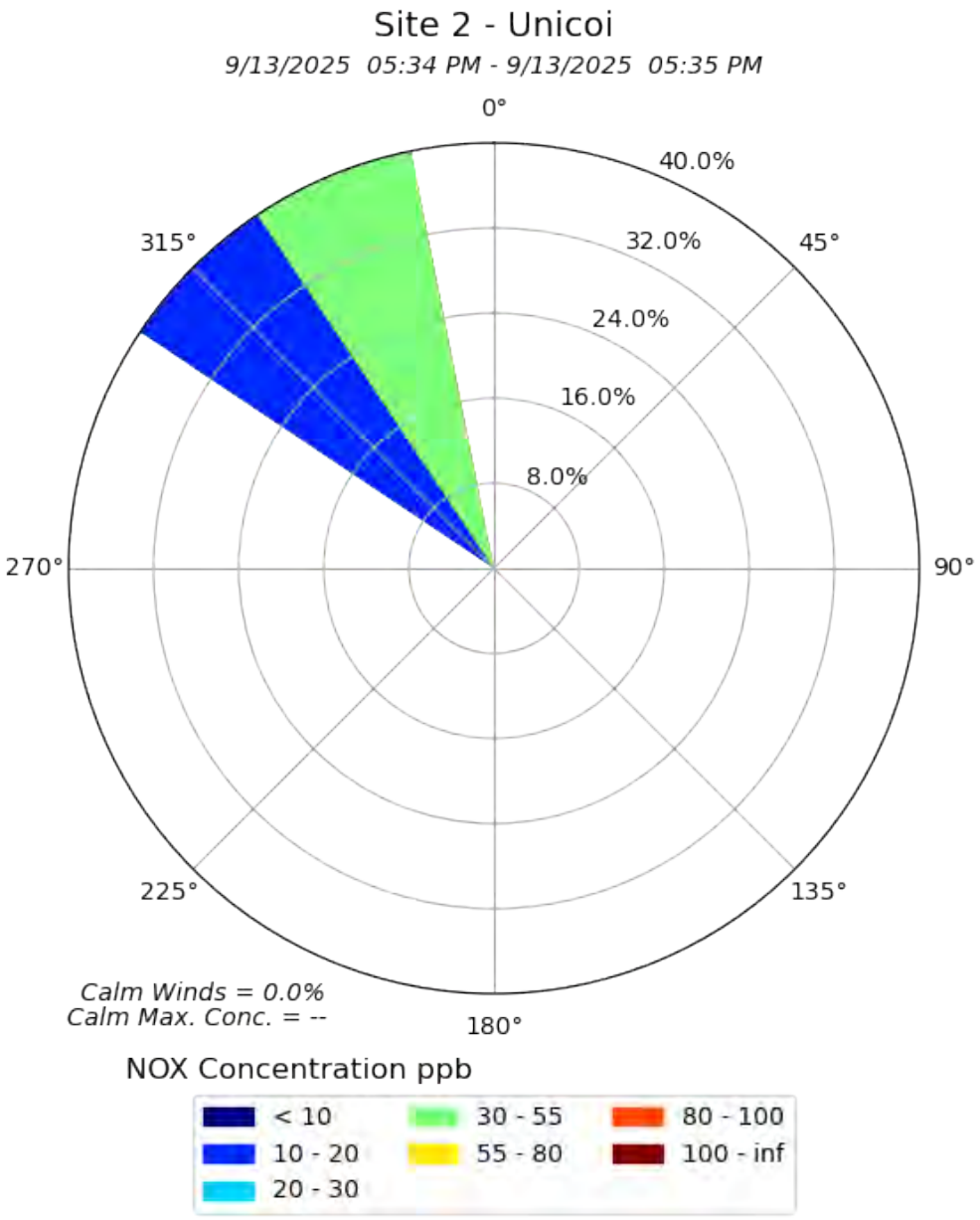


Figure D7-SP12: Pollution Rose displaying NOx concentrations and wind direction

D8: Data Completeness

Data is being delivered to BREDL via daily emails and obtained daily via manual logins to our on board DAS computer and online for Aeroqual data stored in their cloud. If necessary, data may be obtained monthly directly from the trailer's central computer. Data will be backed up in several places as mentioned in our QAPP.

At least 75% completeness is our acceptance criteria for each air monitor.[16] Each hour requires at least 75% of minute data (45 minutes of data) to be a complete, valid hour. Each day requires at least 75% of hour data (18 hours of data) to be a complete, valid day of data.

All of our pollutant data exceeded EPA's requirement for completeness at our Site 2 location.

Note that this completeness table includes the entire day for both June 9 and October 22. These are days when we arrived or departed Site 2. Both days had limited hours of operation.

DATA COMPLETENESS

Unicoi

Data Range: 06/09/2025 - 10/22/2025

Number of Data Days: 136

	VOC	PM25	PM10	NO	NOX	NO2
Number of Data Hours	3229	3219	3219	3184	3184	3184
Ave. No. of Hour Readings per day	23.7	23.7	23.7	23.4	23.4	23.4
Hour Data Completeness	98.93%	98.62%	98.62%	97.55%	97.55%	97.55%
Minute Data Completeness	98.95%	98.68%	98.68%	97.57%	97.57%	97.57%

Figure D8-1: Table displaying pollutant data completeness for Site 2.

[16] EPA has a history of using 75% completeness for air toxins and VOCs. EPA research documentation and presentations indicate the use of 75% completeness. Reference examples include:
1992: https://www.tandfonline.com/doi/abs/10.1080/10473289.1992.10467079 ;
2009: https://www3.epa.gov/ttnamti1/files/ambient/airtox/workbook/T-Workbook_Secs1-8.pdf ;
2015: https://www.tandfonline.com/doi/full/10.1080/10962247.2015.1076538

D9: Wind Data

Figure D9-1 displays the wind speed and wind direction from minute measurements at our Site 2 location during our monitoring period.

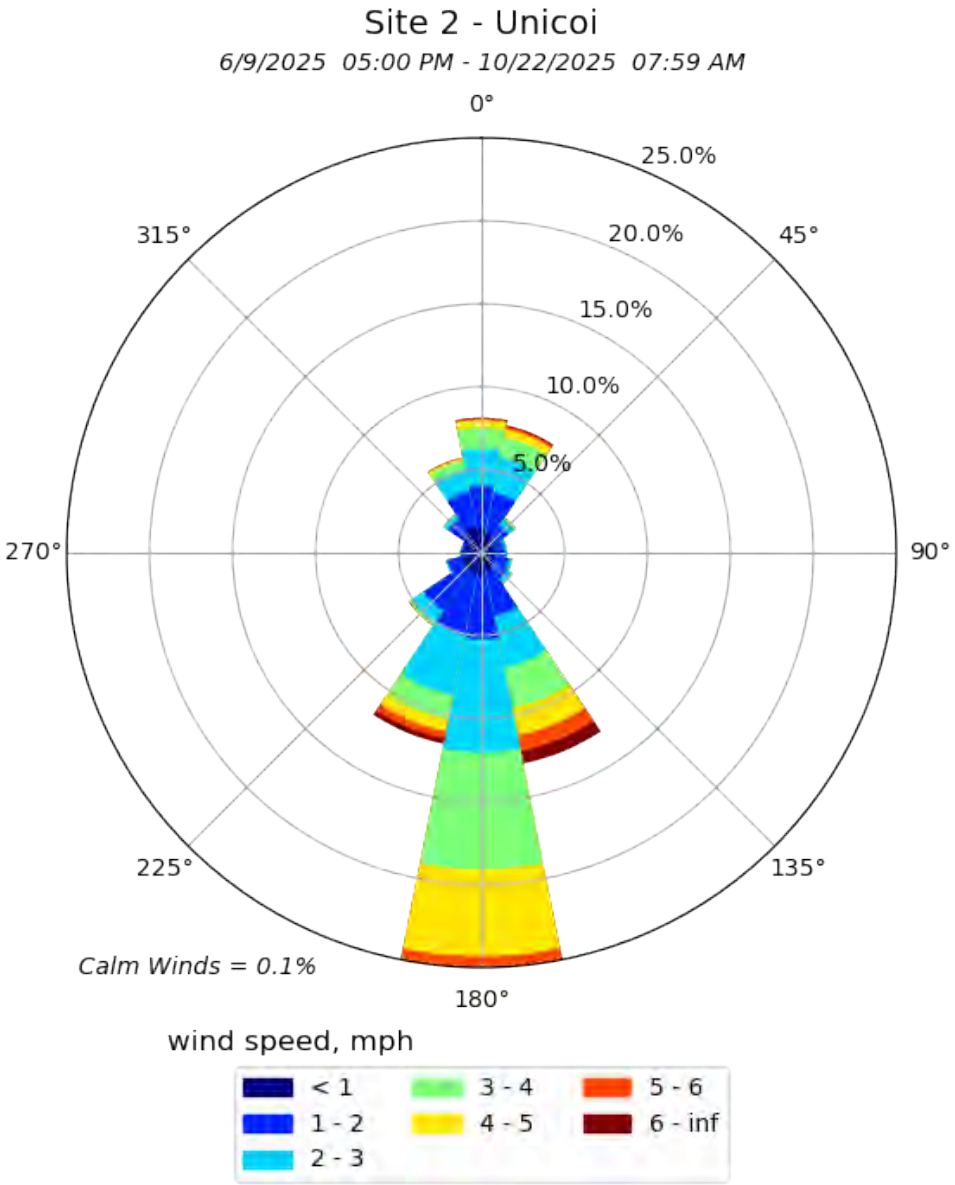


Figure D9-1: Wind Rose

The wind roses on this page are from EPA's RETIGO tool. Both graphics used BREDL's BEAST data taken at Site 2 from June 9, 2025 – October 22, 2025.

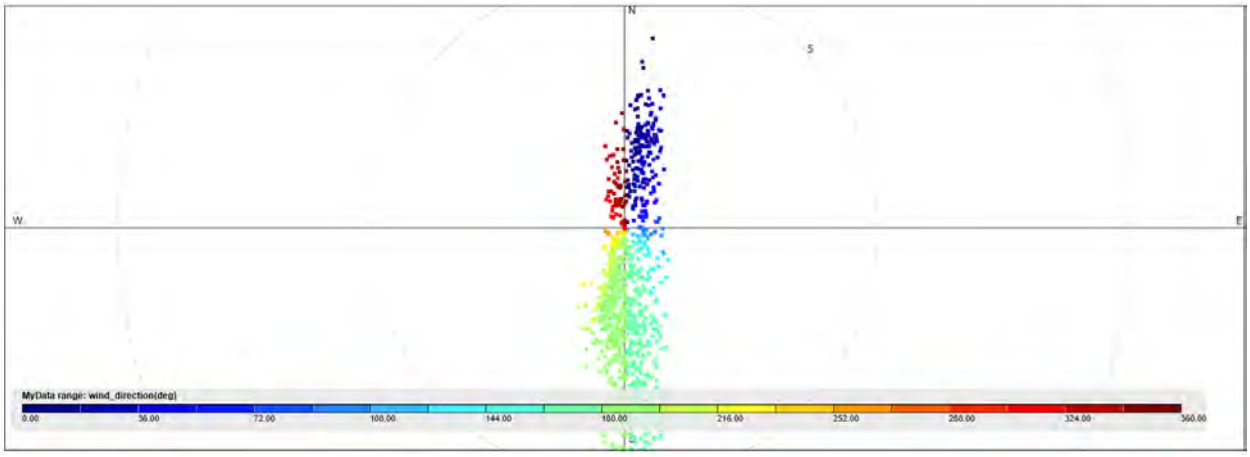


Figure D9-2: EPA RETIGO Wind Rose displaying wind direction

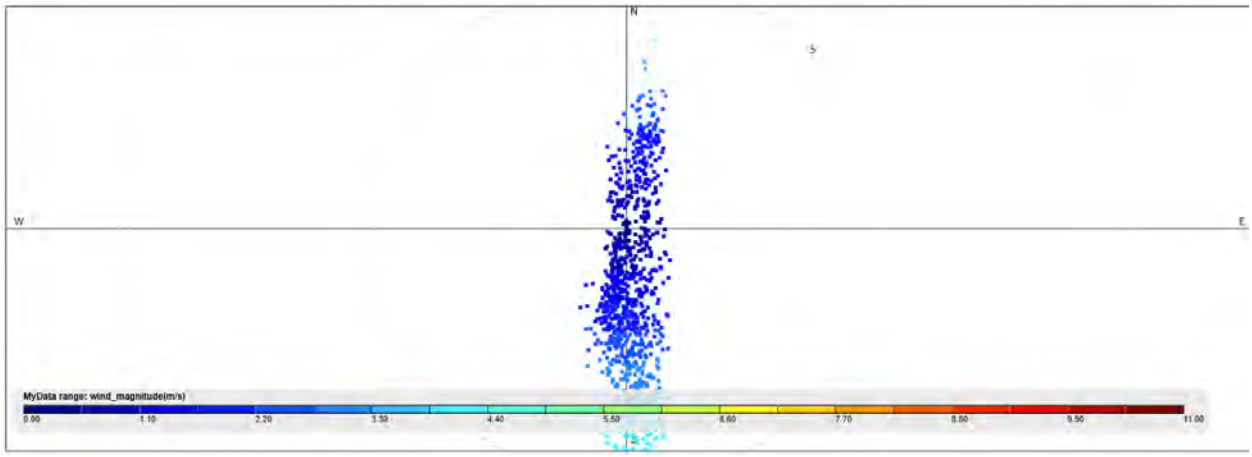


Figure D9-3: EPA RETIGO Wind Rose displaying wind speed

D10: Regional Agency Air Monitors

Three (PM2.5, PM10, and NO2) of the six pollutants that we are monitoring are criteria pollutants with National Ambient Air Quality Standards with Air Quality Indices. We screened the BEAST data with regional agency monitors to see if the current air monitoring network is a sufficient indication of this community's air quality. In the following map, we used one of the facilities of concern as the map anchor point to conceal the exact location of the BEAST.

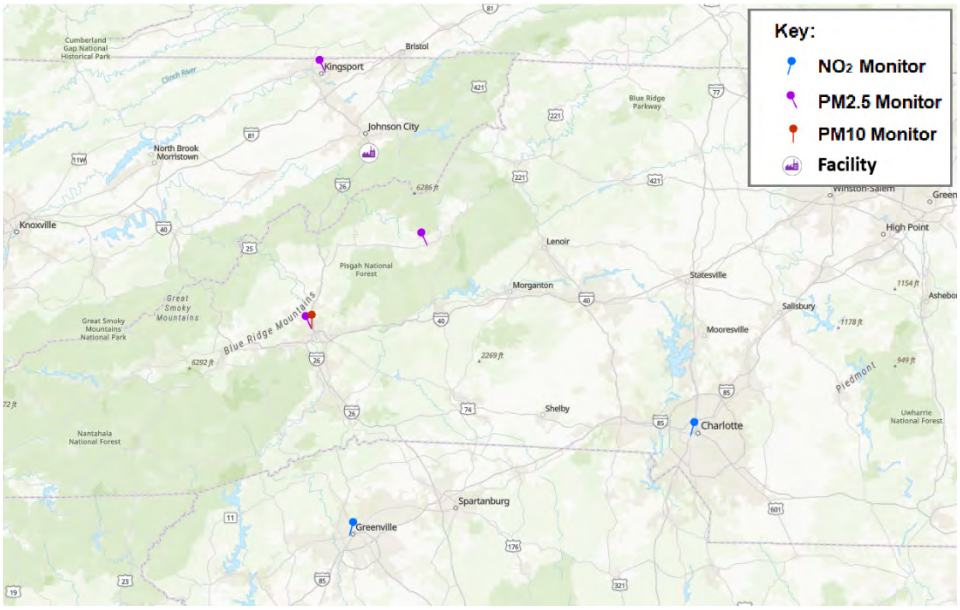
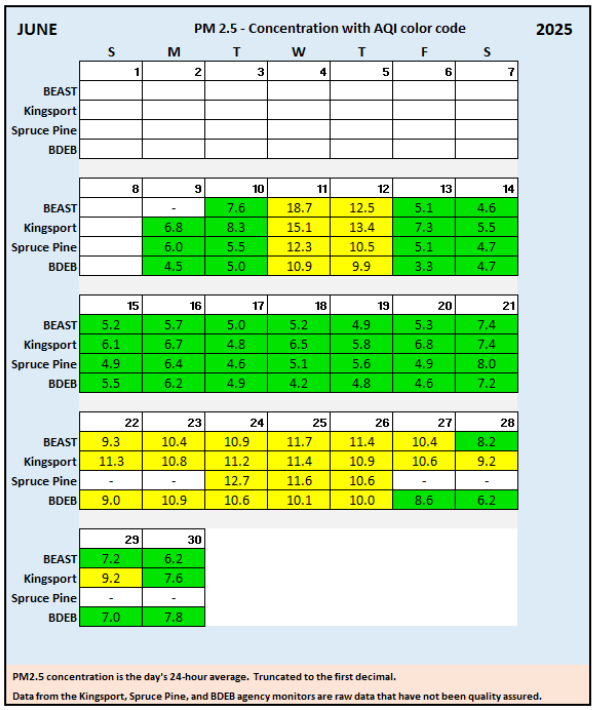


Figure D10-1: Map displaying regional agency air monitors

CARE-4-AIR SITE 2			
Pollutant	Agency Monitor	Monitor ID	Miles from BEAST
PM2.5	Kingsport	471631007	20 - 25
PM2.5	Spruce Pine	371210004	25 - 30
PM2.5	BDEB	370210034	45 - 50
PM10	BDEB	370210034	45 - 50
NO2	Remount	371190045	105 - 110
NO2	Greenville	450450015	95 - 100

Figure D10-2: Table displaying regional air monitors with approximate miles from BEAST

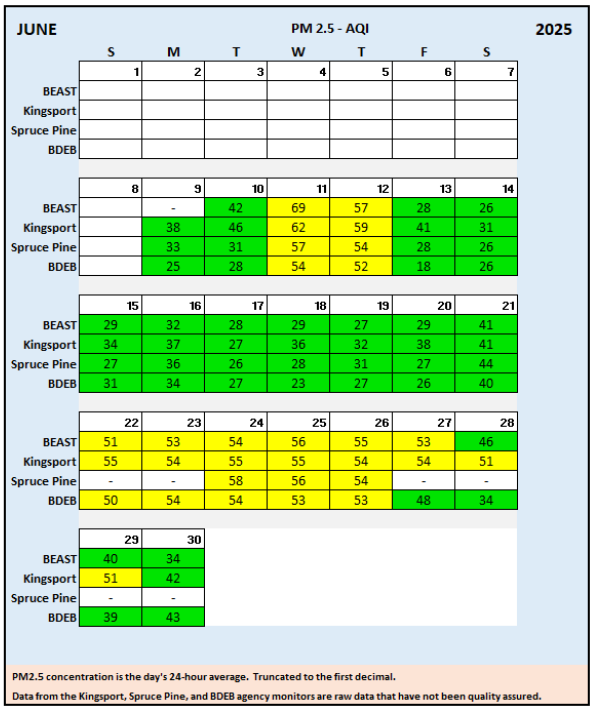
BEAST screened with regional PM 2.5 monitors



JUNE — PM 2.5 - Concentration with AQI color code — 2025

	S	M	T	W	T	F	S
	1	2	3	4	5	6	7
BEAST							
Kingsport							
Spruce Pine							
BDEB							
	8	9	10	11	12	13	14
BEAST		-	7.6	18.7	12.5	5.1	4.6
Kingsport		6.8	8.3	15.1	13.4	7.3	5.5
Spruce Pine		6.0	5.5	12.3	10.5	5.1	4.7
BDEB		4.5	5.0	10.9	9.9	3.3	4.7
	15	16	17	18	19	20	21
BEAST	5.2	5.7	5.0	5.2	4.9	5.3	7.4
Kingsport	6.1	6.7	4.8	6.5	5.8	6.8	7.4
Spruce Pine	4.9	6.4	4.6	5.1	5.6	4.9	8.0
BDEB	5.5	6.2	4.9	4.2	4.8	4.6	7.2
	22	23	24	25	26	27	28
BEAST	9.3	10.4	10.9	11.7	11.4	10.4	8.2
Kingsport	11.3	10.8	11.2	11.4	10.9	10.6	9.2
Spruce Pine	-	-	12.7	11.6	10.6	-	-
BDEB	9.0	10.9	10.6	10.1	10.0	8.6	6.2
	29	30					
BEAST	7.2	6.2					
Kingsport	9.2	7.6					
Spruce Pine	-	-					
BDEB	7.0	7.8					

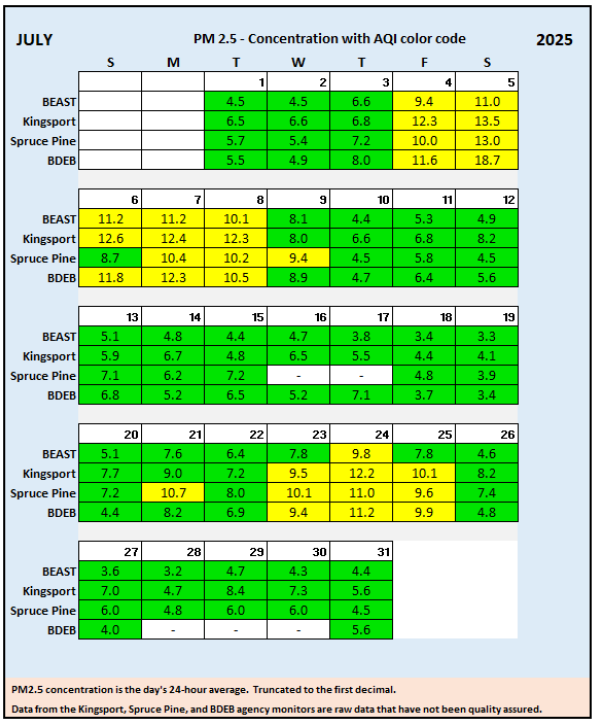
PM2.5 concentration is the day's 24-hour average. Truncated to the first decimal.
Data from the Kingsport, Spruce Pine, and BDEB agency monitors are raw data that have not been quality assured.



JUNE — PM 2.5 - AQI — 2025

	S	M	T	W	T	F	S
	1	2	3	4	5	6	7
BEAST							
Kingsport							
Spruce Pine							
BDEB							
	8	9	10	11	12	13	14
BEAST		-	42	69	57	28	26
Kingsport		38	46	62	59	41	31
Spruce Pine		33	31	57	54	28	26
BDEB		25	28	54	52	18	26
	15	16	17	18	19	20	21
BEAST	29	32	28	29	27	29	41
Kingsport	34	37	27	36	32	38	41
Spruce Pine	27	36	26	28	31	27	44
BDEB	31	34	27	23	27	26	40
	22	23	24	25	26	27	28
BEAST	51	53	54	56	55	53	46
Kingsport	55	54	55	55	54	54	51
Spruce Pine	-	-	58	56	54	-	-
BDEB	50	54	54	53	53	48	34
	29	30					
BEAST	40	34					
Kingsport	51	42					
Spruce Pine	-	-					
BDEB	39	43					

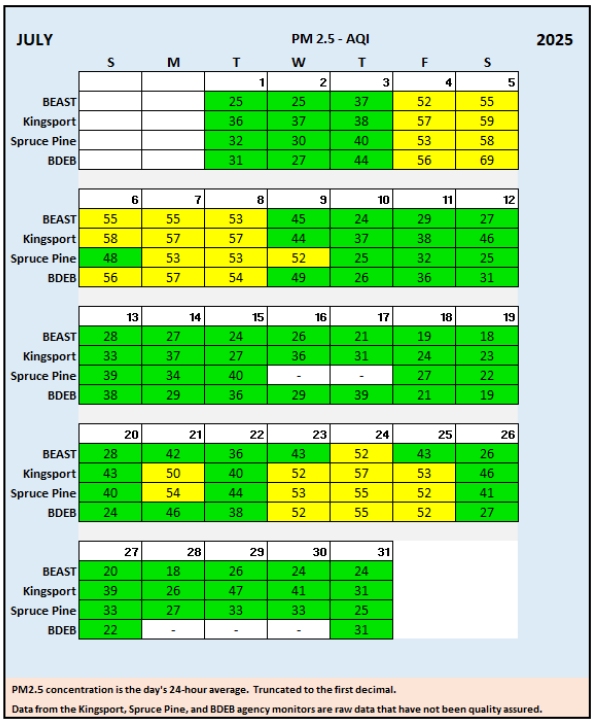
PM2.5 concentration is the day's 24-hour average. Truncated to the first decimal.
Data from the Kingsport, Spruce Pine, and BDEB agency monitors are raw data that have not been quality assured.



JULY — PM 2.5 - Concentration with AQI color code — 2025

	S	M	T	W	T	F	S
			1	2	3	4	5
BEAST			4.5	4.5	6.6	9.4	11.0
Kingsport			6.5	6.6	6.8	12.3	13.5
Spruce Pine			5.7	5.4	7.2	10.0	13.0
BDEB			5.5	4.9	8.0	11.6	18.7
	6	7	8	9	10	11	12
BEAST	11.2	11.2	10.1	8.1	4.4	5.3	4.9
Kingsport	12.6	12.4	12.3	8.0	6.6	6.8	8.2
Spruce Pine	8.7	10.4	10.2	9.4	4.5	5.8	4.5
BDEB	11.8	12.3	10.5	8.9	4.7	6.4	5.6
	13	14	15	16	17	18	19
BEAST	5.1	4.8	4.4	4.7	3.8	3.4	3.3
Kingsport	5.9	6.7	4.8	6.5	5.5	4.4	4.1
Spruce Pine	7.1	6.2	7.2	-	-	4.8	3.9
BDEB	6.8	5.2	6.5	5.2	7.1	3.7	3.4
	20	21	22	23	24	25	26
BEAST	5.1	7.6	6.4	7.8	9.8	7.8	4.6
Kingsport	7.7	9.0	7.2	9.5	12.2	10.1	8.2
Spruce Pine	7.2	10.7	8.0	10.1	11.0	9.6	7.4
BDEB	4.4	8.2	6.9	9.4	11.2	9.9	4.8
	27	28	29	30	31		
BEAST	3.6	3.2	4.7	4.3	4.4		
Kingsport	7.0	4.7	8.4	7.3	5.6		
Spruce Pine	6.0	4.8	6.0	6.0	4.5		
BDEB	4.0	-	-	-	5.6		

PM2.5 concentration is the day's 24-hour average. Truncated to the first decimal.
Data from the Kingsport, Spruce Pine, and BDEB agency monitors are raw data that have not been quality assured.

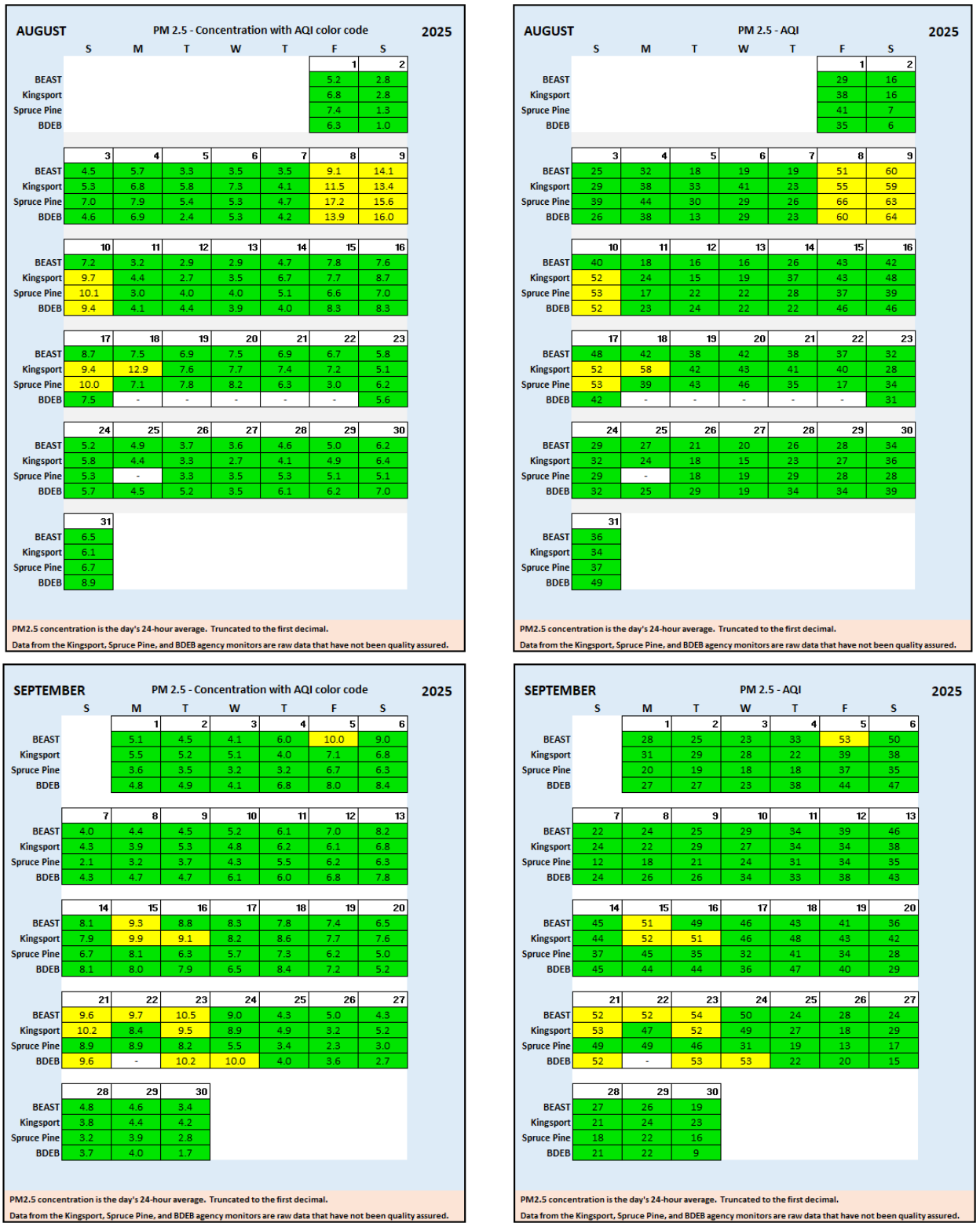


JULY — PM 2.5 - AQI — 2025

	S	M	T	W	T	F	S
			1	2	3	4	5
BEAST			25	25	37	52	55
Kingsport			36	37	38	57	59
Spruce Pine			32	30	40	53	58
BDEB			31	27	44	56	69
	6	7	8	9	10	11	12
BEAST	55	55	53	45	24	29	27
Kingsport	58	57	57	44	37	38	46
Spruce Pine	48	53	53	52	25	32	25
BDEB	56	57	54	49	26	36	31
	13	14	15	16	17	18	19
BEAST	28	27	24	26	21	19	18
Kingsport	33	37	27	36	31	24	23
Spruce Pine	39	34	40	-	-	27	22
BDEB	38	29	36	29	39	21	19
	20	21	22	23	24	25	26
BEAST	28	42	36	43	52	43	26
Kingsport	43	50	40	52	57	53	46
Spruce Pine	40	54	44	53	55	52	41
BDEB	24	46	38	52	55	52	27
	27	28	29	30	31		
BEAST	20	18	26	24	24		
Kingsport	39	26	47	41	31		
Spruce Pine	33	27	33	33	25		
BDEB	22	-	-	-	31		

PM2.5 concentration is the day's 24-hour average. Truncated to the first decimal.
Data from the Kingsport, Spruce Pine, and BDEB agency monitors are raw data that have not been quality assured.

Figure D10-3: Monthly data tables displaying air monitors' daily concentrations in the left tables with associated AQI in the right tables.



AUGUST — PM 2.5 - Concentration with AQI color code — 2025

	S	M	T	W	T	F	S
						1	2
BEAST						5.2	2.8
Kingsport						6.8	2.8
Spruce Pine						7.4	1.3
BDEB						6.3	1.0

	3	4	5	6	7	8	9
BEAST	4.5	5.7	3.3	3.5	3.5	9.1	14.1
Kingsport	5.3	6.8	5.8	7.3	4.1	11.5	13.4
Spruce Pine	7.0	7.9	5.4	5.3	4.7	17.2	15.6
BDEB	4.6	6.9	2.4	5.3	4.2	13.9	16.0

	10	11	12	13	14	15	16
BEAST	7.2	3.2	2.9	2.9	4.7	7.8	7.6
Kingsport	9.7	4.4	2.7	3.5	6.7	7.7	8.7
Spruce Pine	10.1	3.0	4.0	4.0	5.1	6.6	7.0
BDEB	9.4	4.1	4.4	3.9	4.0	8.3	8.3

	17	18	19	20	21	22	23
BEAST	8.7	7.5	6.9	7.5	6.9	6.7	5.8
Kingsport	9.4	12.9	7.6	7.7	7.4	7.2	5.1
Spruce Pine	10.0	7.1	7.8	8.2	6.3	3.0	6.2
BDEB	7.5	-	-	-	-	-	5.6

	24	25	26	27	28	29	30
BEAST	5.2	4.9	3.7	3.6	4.6	5.0	6.2
Kingsport	5.8	4.4	3.3	2.7	4.1	4.9	6.4
Spruce Pine	5.3	-	3.3	3.5	5.3	5.1	5.1
BDEB	5.7	4.5	5.2	3.5	6.1	6.2	7.0

	31
BEAST	6.5
Kingsport	6.1
Spruce Pine	6.7
BDEB	8.9

PM2.5 concentration is the day's 24-hour average. Truncated to the first decimal.
Data from the Kingsport, Spruce Pine, and BDEB agency monitors are raw data that have not been quality assured.

AUGUST — PM 2.5 - AQI — 2025

	S	M	T	W	T	F	S
						1	2
BEAST						29	16
Kingsport						38	16
Spruce Pine						41	7
BDEB						35	6

	3	4	5	6	7	8	9
BEAST	25	32	18	19	19	51	60
Kingsport	29	38	33	41	23	55	59
Spruce Pine	39	44	30	29	26	66	63
BDEB	26	38	13	29	23	60	64

	10	11	12	13	14	15	16
BEAST	40	18	16	16	26	43	42
Kingsport	52	24	15	19	37	43	48
Spruce Pine	53	17	22	22	28	37	39
BDEB	52	23	24	22	22	46	46

	17	18	19	20	21	22	23
BEAST	48	42	38	42	38	37	32
Kingsport	52	58	42	43	41	40	28
Spruce Pine	53	39	43	46	35	17	34
BDEB	42	-	-	-	-	-	31

	24	25	26	27	28	29	30
BEAST	29	27	21	20	26	28	34
Kingsport	32	24	18	15	23	27	36
Spruce Pine	29	-	18	19	29	28	28
BDEB	32	25	29	19	34	34	39

	31
BEAST	36
Kingsport	34
Spruce Pine	37
BDEB	49

PM2.5 concentration is the day's 24-hour average. Truncated to the first decimal.
Data from the Kingsport, Spruce Pine, and BDEB agency monitors are raw data that have not been quality assured.

SEPTEMBER — PM 2.5 - Concentration with AQI color code — 2025

	S	M	T	W	T	F	S
		1	2	3	4	5	6
BEAST		5.1	4.5	4.1	6.0	10.0	9.0
Kingsport		5.5	5.2	5.1	4.0	7.1	6.8
Spruce Pine		3.6	3.5	3.2	3.2	6.7	6.3
BDEB		4.8	4.9	4.1	6.8	8.0	8.4

	7	8	9	10	11	12	13
BEAST	4.0	4.4	4.5	5.2	6.1	7.0	8.2
Kingsport	4.3	3.9	5.3	4.8	6.2	6.1	6.8
Spruce Pine	2.1	3.2	3.7	4.3	5.5	6.2	6.3
BDEB	4.3	4.7	4.7	6.1	6.0	6.8	7.8

	14	15	16	17	18	19	20
BEAST	8.1	9.3	8.8	8.3	7.8	7.4	6.5
Kingsport	7.9	9.9	9.1	8.2	8.6	7.7	7.6
Spruce Pine	6.7	8.1	6.3	5.7	7.3	6.2	5.0
BDEB	8.1	8.0	7.9	6.5	8.4	7.2	5.2

	21	22	23	24	25	26	27
BEAST	9.6	9.7	10.5	9.0	4.3	5.0	4.3
Kingsport	10.2	8.4	9.5	8.9	4.9	3.2	5.2
Spruce Pine	8.9	8.9	8.2	5.5	3.4	2.3	3.0
BDEB	9.6	-	10.2	10.0	4.0	3.6	2.7

	28	29	30
BEAST	4.8	4.6	3.4
Kingsport	3.8	4.4	4.2
Spruce Pine	3.2	3.9	2.8
BDEB	3.7	4.0	1.7

PM2.5 concentration is the day's 24-hour average. Truncated to the first decimal.
Data from the Kingsport, Spruce Pine, and BDEB agency monitors are raw data that have not been quality assured.

SEPTEMBER — PM 2.5 - AQI — 2025

	S	M	T	W	T	F	S
		1	2	3	4	5	6
BEAST		28	25	23	33	53	50
Kingsport		31	29	28	22	39	38
Spruce Pine		20	19	18	18	37	35
BDEB		27	27	23	38	44	47

	7	8	9	10	11	12	13
BEAST	22	24	25	29	34	39	46
Kingsport	24	22	29	27	34	34	38
Spruce Pine	12	18	21	24	31	34	35
BDEB	24	26	26	34	33	38	43

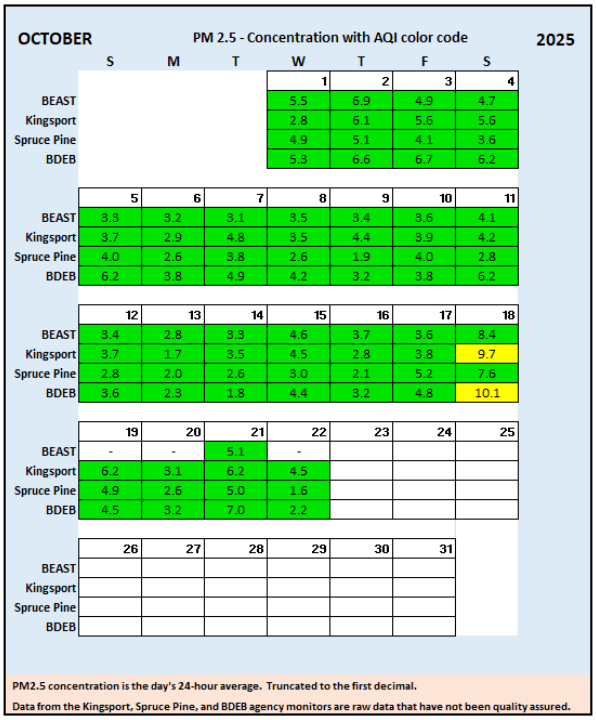
	14	15	16	17	18	19	20
BEAST	45	51	49	46	43	41	36
Kingsport	44	52	51	46	48	43	42
Spruce Pine	37	45	35	32	41	34	28
BDEB	45	44	44	36	47	40	29

	21	22	23	24	25	26	27
BEAST	52	52	54	50	24	28	24
Kingsport	53	47	52	49	27	18	29
Spruce Pine	49	49	46	31	19	13	17
BDEB	52	-	53	53	22	20	15

	28	29	30
BEAST	27	26	19
Kingsport	21	24	23
Spruce Pine	18	22	16
BDEB	21	22	9

PM2.5 concentration is the day's 24-hour average. Truncated to the first decimal.
Data from the Kingsport, Spruce Pine, and BDEB agency monitors are raw data that have not been quality assured.

Figure D10-4: Monthly data tables displaying air monitors' daily concentrations in the left tables with associated AQI in the right tables.



OCTOBER — PM 2.5 - Concentration with AQI color code — 2025

	S	M	T	W	T	F	S
				1	2	3	4
BEAST				5.5	6.9	4.9	4.7
Kingsport				2.8	6.1	5.6	5.6
Spruce Pine				4.9	5.1	4.1	3.6
BDEB				5.3	6.6	6.7	6.2
	5	6	7	8	9	10	11
BEAST	3.3	3.2	3.1	3.5	3.4	3.6	4.1
Kingsport	3.7	2.9	4.8	3.5	4.4	3.9	4.2
Spruce Pine	4.0	2.6	3.8	2.6	1.9	4.0	2.8
BDEB	6.2	3.8	4.9	4.2	3.2	3.8	6.2
	12	13	14	15	16	17	18
BEAST	3.4	2.8	3.3	4.6	3.7	3.6	8.4
Kingsport	3.7	1.7	3.5	4.5	2.8	3.8	9.7
Spruce Pine	2.8	2.0	2.6	3.0	2.1	5.2	7.6
BDEB	3.6	2.3	1.8	4.4	3.2	4.8	10.1
	19	20	21	22	23	24	25
BEAST	-	-	5.1	-			
Kingsport	6.2	3.1	6.2	4.5			
Spruce Pine	4.9	2.6	5.0	1.6			
BDEB	4.5	3.2	7.0	2.2			
	26	27	28	29	30	31	
BEAST							
Kingsport							
Spruce Pine							
BDEB							

PM2.5 concentration is the day's 24-hour average. Truncated to the first decimal.
Data from the Kingsport, Spruce Pine, and BDEB agency monitors are raw data that have not been quality assured.

OCTOBER — PM 2.5 - AQI — 2025

	S	M	T	W	T	F	S
				1	2	3	4
BEAST				31	38	27	26
Kingsport				16	34	31	31
Spruce Pine				27	28	23	20
BDEB				29	37	37	34
	5	6	7	8	9	10	11
BEAST	18	18	17	19	19	20	23
Kingsport	21	16	27	19	24	22	23
Spruce Pine	22	14	21	14	11	22	16
BDEB	34	21	27	23	18	21	34
	12	13	14	15	16	17	18
BEAST	19	16	18	26	21	20	47
Kingsport	21	9	19	25	16	21	52
Spruce Pine	16	11	14	17	12	29	42
BDEB	20	13	10	24	18	27	53
	19	20	21	22	23	24	25
BEAST	-	-	28	-			
Kingsport	34	17	34	25			
Spruce Pine	27	14	28	9			
BDEB	25	18	39	12			
	26	27	28	29	30	31	
BEAST							
Kingsport							
Spruce Pine							
BDEB							

PM2.5 concentration is the day's 24-hour average. Truncated to the first decimal.
Data from the Kingsport, Spruce Pine, and BDEB agency monitors are raw data that have not been quality assured.

Figure D10-5: Monthly data tables displaying air monitors' daily concentrations in the left tables with associated AQI in the right tables.

The Kingsport PM 2.5 monitor was the nearest regional monitor that had data which was the closest to the BEAST data. 59% of daily 24-hour averages were within 1 ug/m3 of the BEAST. Nearly 80% of the daily 24-hour averages were within 2 ug/m3 of the BEAST. Nearly 94% were within 3 ug/m3.

	AMOUNT of Days		
RANGE	Kingsport	Spruce Pine	BDEB
Within 1	76	58	71
Within 2	27	37	39
Within 3	18	20	9
Within 4	7	4	1
Within 5	0	0	1
Within 6	1	0	0
Within 7	0	1	0
Within 8	0	0	2
Within 9	0	1	0
Within 10	0	0	0
More than 10	0	0	0

	PERCENTAGE		
RANGE	Kingsport	Spruce Pine	BDEB
Within 1	58.91%	47.93%	57.72%
Within 2	20.93%	30.58%	31.71%
Within 3	13.95%	16.53%	7.32%
Within 4	5.43%	3.31%	0.81%
Within 5	0.00%	0.00%	0.81%
Within 6	0.78%	0.00%	0.00%
Within 7	0.00%	0.83%	0.00%
Within 8	0.00%	0.00%	1.63%
Within 9	0.00%	0.83%	0.00%
Within 10	0.00%	0.00%	0.00%
More than 10	0.00%	0.00%	0.00%

Figure D10-6: The left table provides the number of days within a ug/m3 range of our BEAST data. The second table provides the percentage of days within the ug/m3 range.

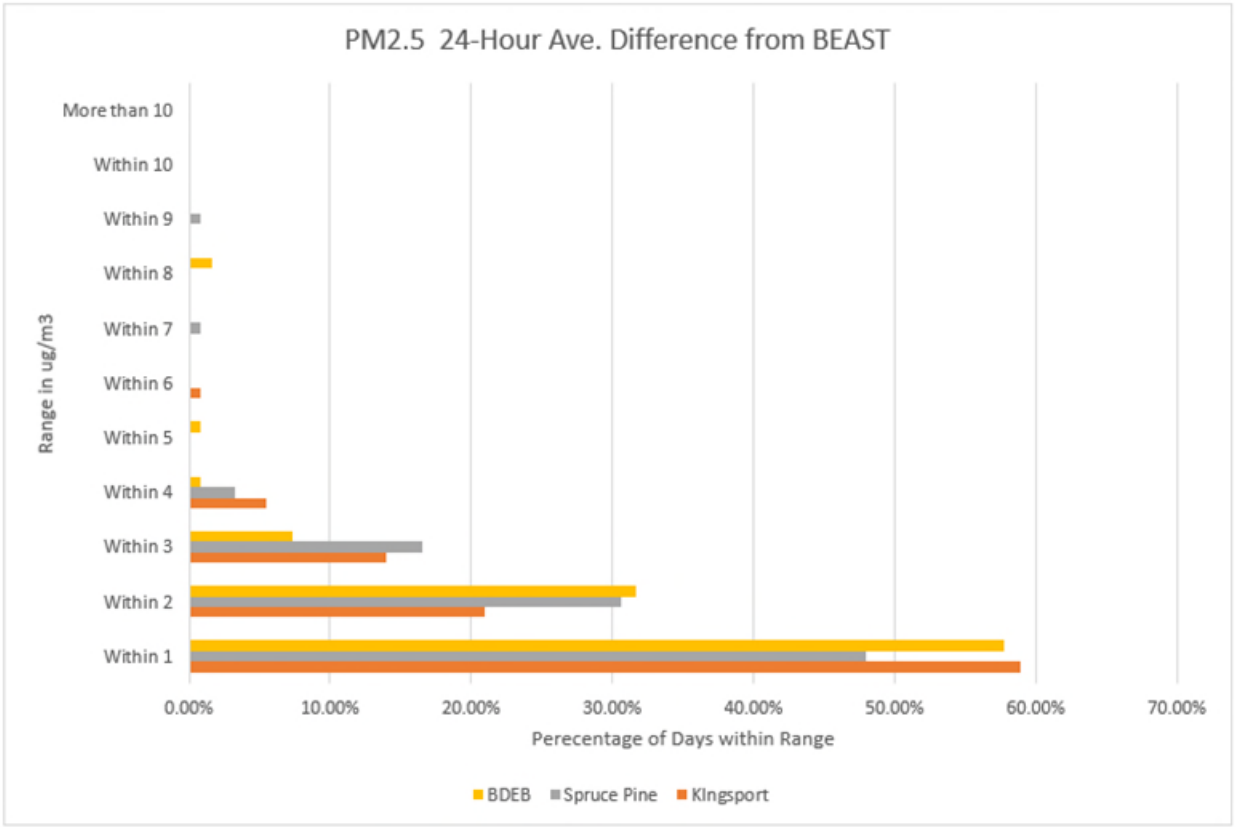


Figure D10-7: Provides a side bar chart of how close regional monitors were when screened with our BEAST data.

BEAST screened with regional PM 10 monitor

JUNE — PM 10 - Concentration with AQI color code — 2025

	S	M	T	W	T	F	S
	1	2	3	4	5	6	7
BEAST							
BDEB							
	8	9	10	11	12	13	14
BEAST		-	15	29	21	14	13
BDEB		12	12	21	18	9	12
	15	16	17	18	19	20	21
BEAST	13	14	14	15	14	14	16
BDEB	11	12	12	13	12	11	13
	22	23	24	25	26	27	28
BEAST	18	21	21	22	21	19	15
BDEB	15	17	18	18	18	14	12
	29	30					
BEAST	13	13					
BDEB	12	13					

PM10 concentration is the day's 24-hour average. Rounded to whole number.
Data from the BDEB agency monitor are raw data that have not been quality assured.

JUNE — PM 10 - AQI — 2025

	S	M	T	W	T	F	S
	1	2	3	4	5	6	7
BEAST							
BDEB							
	8	9	10	11	12	13	14
BEAST		-	14	27	19	13	12
BDEB		11	11	19	17	8	11
	15	16	17	18	19	20	21
BEAST	12	13	13	14	13	13	15
BDEB	10	11	11	12	11	10	12
	22	23	24	25	26	27	28
BEAST	17	19	19	20	19	18	14
BDEB	14	16	17	17	17	13	11
	29	30					
BEAST	12	12					
BDEB	11	12					

PM10 AQI is based on the day's 24-hour average.
Data from the BDEB agency monitor are raw data that have not been quality assured.

JULY — PM 10 - Concentration with AQI color code — 2025

	S	M	T	W	T	F	S
			1	2	3	4	5
BEAST			11	11	14	15	18
BDEB			13	10	13	19	24
	6	7	8	9	10	11	12
BEAST	17	18	17	14	11	13	12
BDEB	18	17	15	16	12	12	11
	13	14	15	16	17	18	19
BEAST	13	11	11	11	10	9	9
BDEB	15	12	13	11	13	11	10
	20	21	22	23	24	25	26
BEAST	11	17	15	15	17	14	10
BDEB	11	-	-	-	-	15	8
	27	28	29	30	31		
BEAST	8	8	11	11	11		
BDEB	8	9	9	11	11		

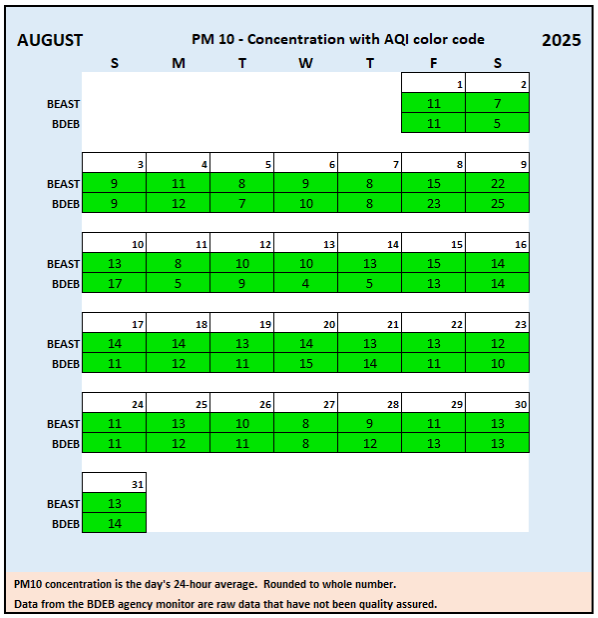
PM10 concentration is the day's 24-hour average. Rounded to whole number.
Data from the BDEB agency monitor are raw data that have not been quality assured.

JULY — PM 10 - AQI — 2025

	S	M	T	W	T	F	S
			1	2	3	4	5
BEAST			10	10	13	14	17
BDEB			12	9	12	18	22
	6	7	8	9	10	11	12
BEAST	16	17	16	13	10	12	11
BDEB	17	16	14	15	11	11	10
	13	14	15	16	17	18	19
BEAST	12	10	10	10	9	8	8
BDEB	14	11	12	10	12	10	9
	20	21	22	23	24	25	26
BEAST	10	16	14	14	16	13	9
BDEB	10	-	-	-	-	14	7
	27	28	29	30	31		
BEAST	7	7	10	10	10		
BDEB	7	8	8	10	10		

PM10 AQI is based on the day's 24-hour average.
Data from the BDEB agency monitor are raw data that have not been quality assured.

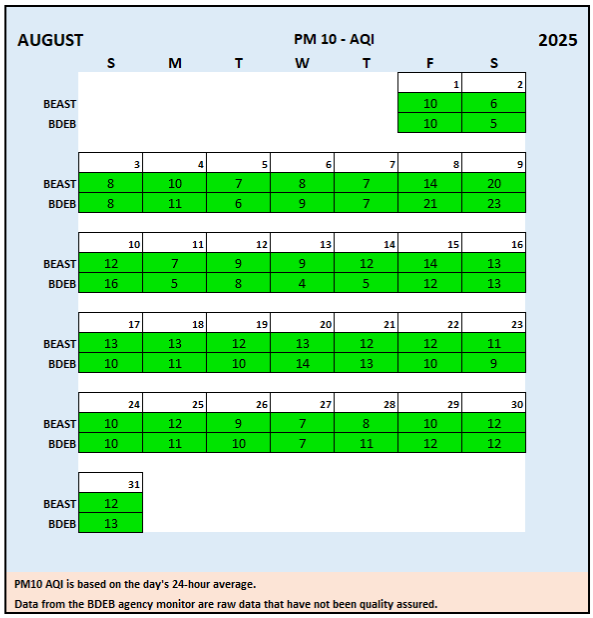
Figure D10-8: Monthly data tables displaying air monitors' daily concentrations in the left tables with associated AQI in the right tables.



AUGUST — PM 10 - Concentration with AQI color code — 2025

	S	M	T	W	T	F	S
						1	2
BEAST						11	7
BDEB						11	5
	3	4	5	6	7	8	9
BEAST	9	11	8	9	8	15	22
BDEB	9	12	7	10	8	23	25
	10	11	12	13	14	15	16
BEAST	13	8	10	10	13	15	14
BDEB	17	5	9	4	5	13	14
	17	18	19	20	21	22	23
BEAST	14	14	13	14	13	13	12
BDEB	11	12	11	15	14	11	10
	24	25	26	27	28	29	30
BEAST	11	13	10	8	9	11	13
BDEB	11	12	11	8	12	13	13
	31						
BEAST	13						
BDEB	14						

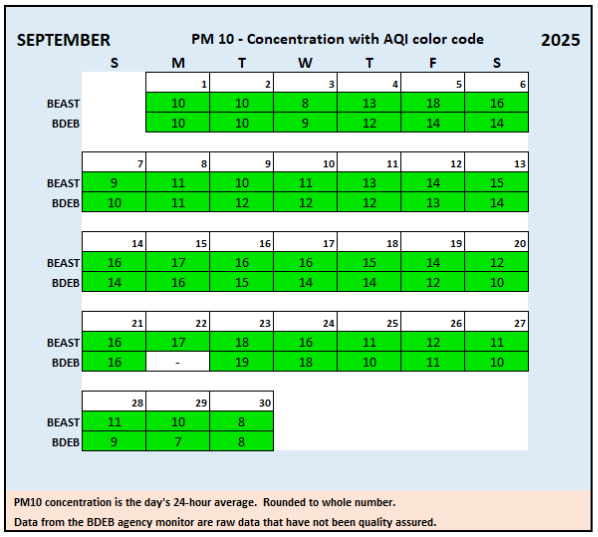
PM10 concentration is the day's 24-hour average. Rounded to whole number.
Data from the BDEB agency monitor are raw data that have not been quality assured.



AUGUST — PM 10 - AQI — 2025

	S	M	T	W	T	F	S
						1	2
BEAST						10	6
BDEB						10	5
	3	4	5	6	7	8	9
BEAST	8	10	7	8	7	14	20
BDEB	8	11	6	9	7	21	23
	10	11	12	13	14	15	16
BEAST	12	7	9	9	12	14	13
BDEB	16	5	8	4	5	12	13
	17	18	19	20	21	22	23
BEAST	13	13	12	13	12	12	11
BDEB	10	11	10	14	13	10	9
	24	25	26	27	28	29	30
BEAST	10	12	9	7	8	10	12
BDEB	10	11	10	7	11	12	12
	31						
BEAST	12						
BDEB	13						

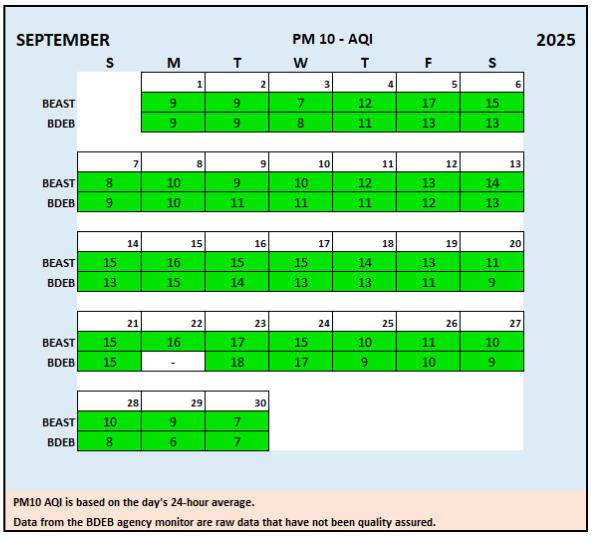
PM10 AQI is based on the day's 24-hour average.
Data from the BDEB agency monitor are raw data that have not been quality assured.



SEPTEMBER — PM 10 - Concentration with AQI color code — 2025

	S	M	T	W	T	F	S
		1	2	3	4	5	6
BEAST		10	10	8	13	18	16
BDEB		10	10	9	12	14	14
	7	8	9	10	11	12	13
BEAST	9	11	10	11	13	14	15
BDEB	10	11	12	12	12	13	14
	14	15	16	17	18	19	20
BEAST	16	17	16	16	15	14	12
BDEB	14	16	15	14	14	12	10
	21	22	23	24	25	26	27
BEAST	16	17	18	16	11	12	11
BDEB	16	-	19	18	10	11	10
	28	29	30				
BEAST	11	10	8				
BDEB	9	7	8				

PM10 concentration is the day's 24-hour average. Rounded to whole number.
Data from the BDEB agency monitor are raw data that have not been quality assured.

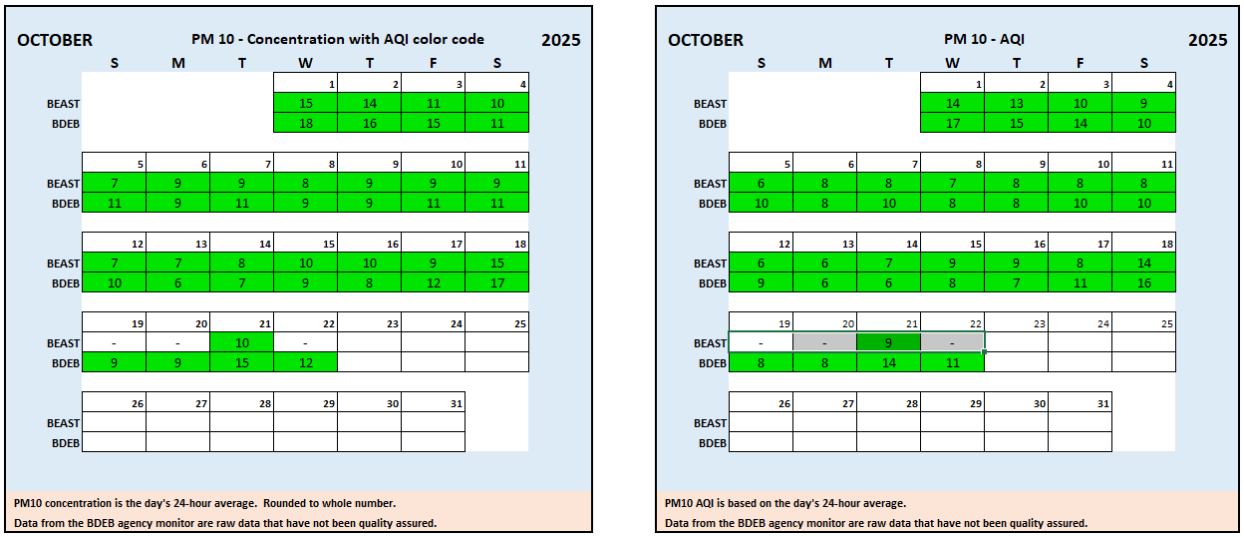


SEPTEMBER — PM 10 - AQI — 2025

	S	M	T	W	T	F	S
		1	2	3	4	5	6
BEAST		9	9	7	12	17	15
BDEB		9	9	8	11	13	13
	7	8	9	10	11	12	13
BEAST	8	10	9	10	12	13	14
BDEB	9	10	11	11	11	12	13
	14	15	16	17	18	19	20
BEAST	15	16	15	15	14	13	11
BDEB	13	15	14	13	13	11	9
	21	22	23	24	25	26	27
BEAST	15	16	17	15	10	11	10
BDEB	15	-	18	17	9	10	9
	28	29	30				
BEAST	10	9	7				
BDEB	8	6	7				

PM10 AQI is based on the day's 24-hour average.
Data from the BDEB agency monitor are raw data that have not been quality assured.

Figure D10-9: Monthly data tables displaying air monitors' daily concentrations in the left tables with associated AQI in the right tables.



OCTOBER — PM 10 - Concentration with AQI color code — 2025

	S	M	T	W	T	F	S
				1	2	3	4
BEAST				15	14	11	10
BDEB				18	16	15	11
	5	6	7	8	9	10	11
BEAST	7	9	9	8	9	9	9
BDEB	11	9	11	9	9	11	11
	12	13	14	15	16	17	18
BEAST	7	7	8	10	10	9	15
BDEB	10	6	7	9	8	12	17
	19	20	21	22	23	24	25
BEAST	-	-	10	-			
BDEB	9	9	15	12			
	26	27	28	29	30	31	
BEAST							
BDEB							

PM10 concentration is the day's 24-hour average. Rounded to whole number.
Data from the BDEB agency monitor are raw data that have not been quality assured.

OCTOBER — PM 10 - AQI — 2025

	S	M	T	W	T	F	S
				1	2	3	4
BEAST				14	13	10	9
BDEB				17	15	14	10
	5	6	7	8	9	10	11
BEAST	6	8	8	7	8	8	8
BDEB	10	8	10	8	8	10	10
	12	13	14	15	16	17	18
BEAST	6	6	7	9	9	8	14
BDEB	9	6	6	8	7	11	16
	19	20	21	22	23	24	25
BEAST	-	-	9	-			
BDEB	8	8	14	11			
	26	27	28	29	30	31	
BEAST							
BDEB							

PM10 AQI is based on the day's 24-hour average.
Data from the BDEB agency monitor are raw data that have not been quality assured.

Figure D10-10: Monthly data tables displaying air monitors' daily concentrations in the left tables with associated AQI in the right tables.

There was only one regional monitor close enough for screening with the BEAST. The BDEB PM 10 monitor daily 24-hour average was within 1 ug/m3 of the BEAST data nearly 35% of the time. The BDEB monitor was within 2 ug/m3 of the BEAST nearly 63% of the time. Nearly 81% of the time, the BDEB fell within 3 ug/m3 of the BEAST.

AMOUNT of Days	
RANGE	BDEB
Within 1	44
Within 2	35
Within 3	23
Within 4	14
Within 5	4
Within 6	2
Within 7	1
Within 8	3
Within 9	0
Within 10	0
More than 10	0

PERCENTAGE	
RANGE	BDEB
Within 1	34.92%
Within 2	27.78%
Within 3	18.25%
Within 4	11.11%
Within 5	3.17%
Within 6	1.59%
Within 7	0.79%
Within 8	2.38%
Within 9	0.00%
Within 10	0.00%
More than 10	0.00%

Figure D10-11: The left table provides the number of days within a ug/m3 range of our BEAST data. The second table provides the percentage of days within the ug/m3 range.

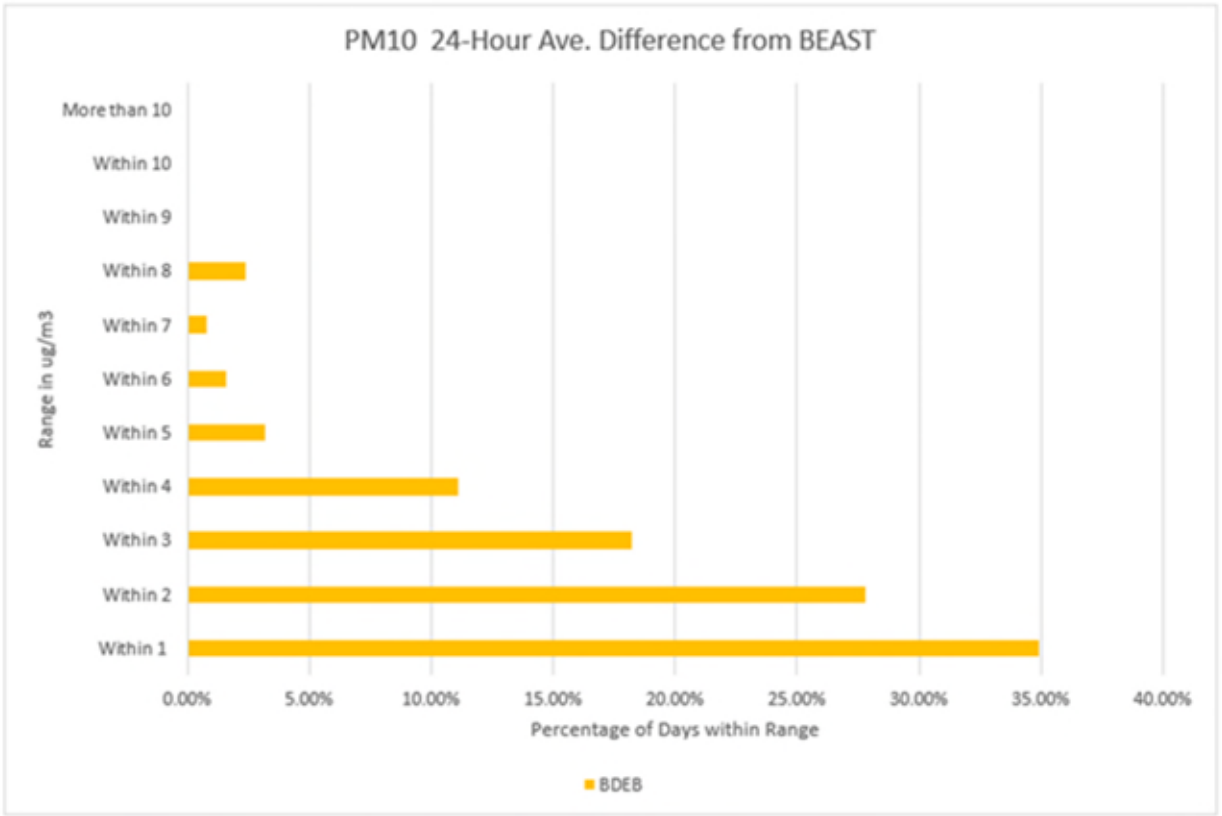
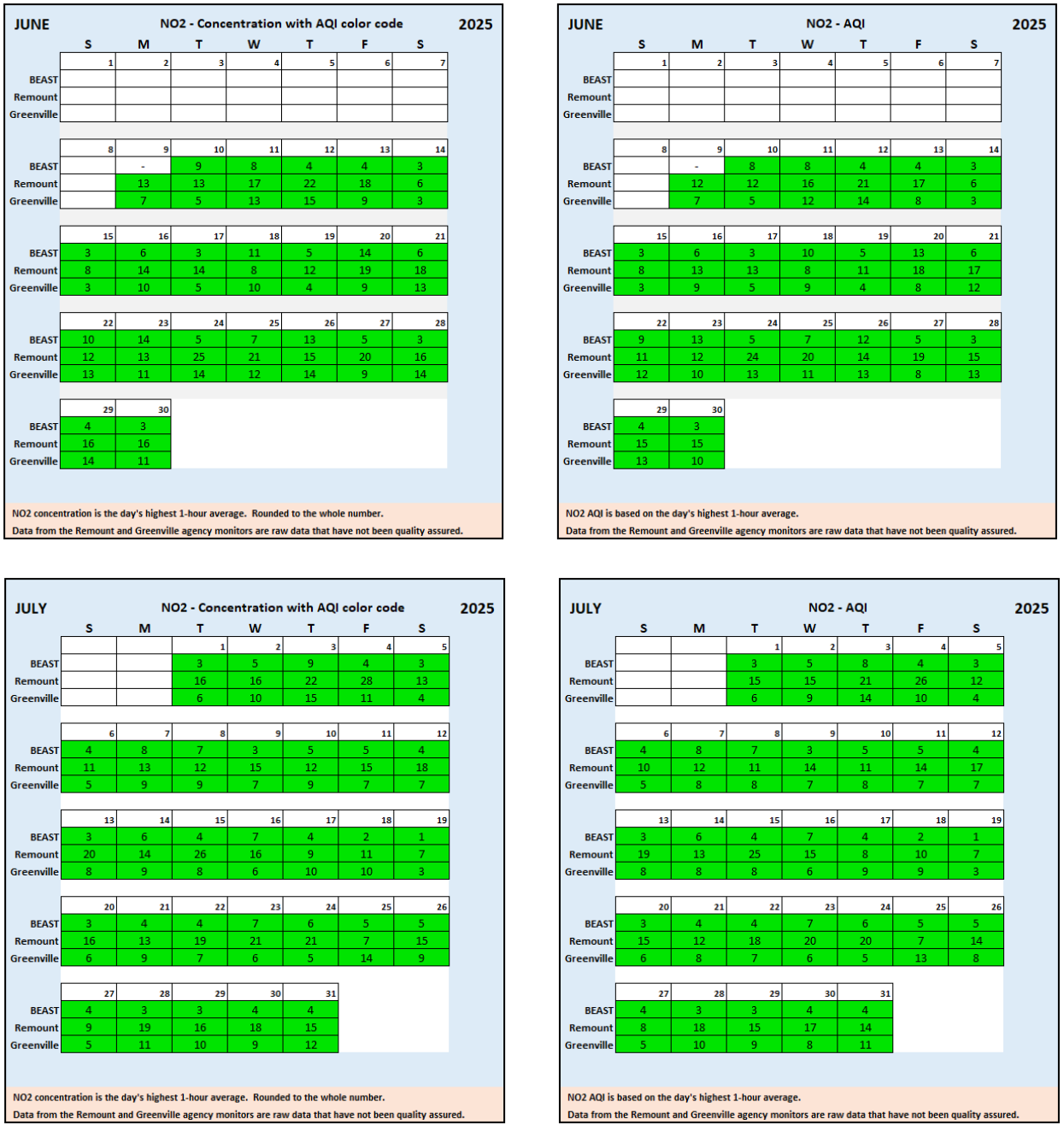


Figure D10-12: Provides a side bar chart of how close regional monitors were when screened with our BEAST data.

BEAST screened with regional NO2 monitors



JUNE — NO2 - Concentration with AQI color code — 2025

	S	M	T	W	T	F	S
	1	2	3	4	5	6	7
BEAST							
Remount							
Greenville							
	8	9	10	11	12	13	14
BEAST		-	9	8	4	4	3
Remount		13	13	17	22	18	6
Greenville		7	5	13	15	9	3
	15	16	17	18	19	20	21
BEAST	3	6	3	11	5	14	6
Remount	8	14	14	8	12	19	18
Greenville	3	10	5	10	4	9	13
	22	23	24	25	26	27	28
BEAST	10	14	5	7	13	5	3
Remount	12	13	25	21	15	20	16
Greenville	13	11	14	12	14	9	14
	29	30					
BEAST	4	3					
Remount	16	16					
Greenville	14	11					

NO2 concentration is the day's highest 1-hour average. Rounded to the whole number.
Data from the Remount and Greenville agency monitors are raw data that have not been quality assured.

JUNE — NO2 - AQI — 2025

	S	M	T	W	T	F	S
	1	2	3	4	5	6	7
BEAST							
Remount							
Greenville							
	8	9	10	11	12	13	14
BEAST		-	8	8	4	4	3
Remount		12	12	16	21	17	6
Greenville		7	5	12	14	8	3
	15	16	17	18	19	20	21
BEAST	3	6	3	10	5	13	6
Remount	8	13	13	8	11	18	17
Greenville	3	9	5	9	4	8	12
	22	23	24	25	26	27	28
BEAST	9	13	5	7	12	5	3
Remount	11	12	24	20	14	19	15
Greenville	12	10	13	11	13	8	13
	29	30					
BEAST	4	3					
Remount	15	15					
Greenville	13	10					

NO2 AQI is based on the day's highest 1-hour average.
Data from the Remount and Greenville agency monitors are raw data that have not been quality assured.

JULY — NO2 - Concentration with AQI color code — 2025

	S	M	T	W	T	F	S
			1	2	3	4	5
BEAST			3	5	9	4	3
Remount			16	16	22	28	13
Greenville			6	10	15	11	4
	6	7	8	9	10	11	12
BEAST	4	8	7	3	5	5	4
Remount	11	13	12	15	12	15	18
Greenville	5	9	9	7	9	7	7
	13	14	15	16	17	18	19
BEAST	3	6	4	7	4	2	1
Remount	20	14	26	16	9	11	7
Greenville	8	9	8	6	10	10	3
	20	21	22	23	24	25	26
BEAST	3	4	4	7	6	5	5
Remount	16	13	19	21	21	7	15
Greenville	6	9	7	6	5	14	9
	27	28	29	30	31		
BEAST	4	3	3	4	4		
Remount	9	19	16	18	15		
Greenville	5	11	10	9	12		

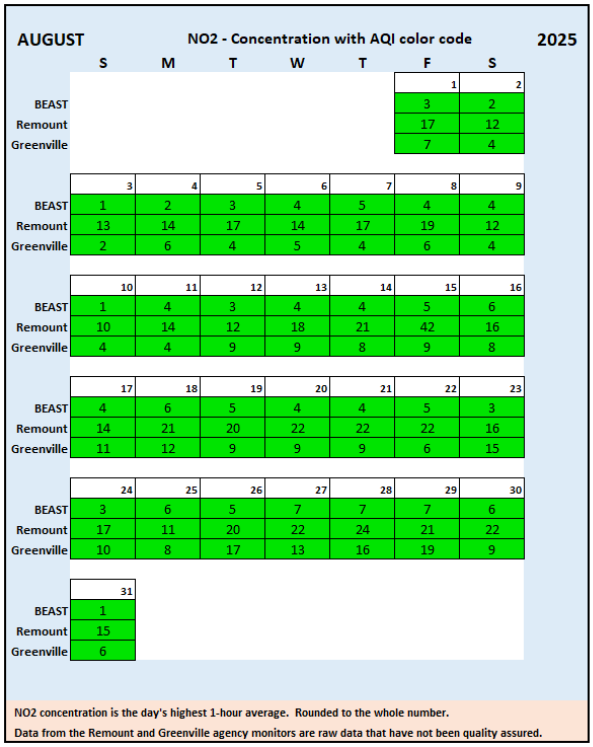
NO2 concentration is the day's highest 1-hour average. Rounded to the whole number.
Data from the Remount and Greenville agency monitors are raw data that have not been quality assured.

JULY — NO2 - AQI — 2025

	S	M	T	W	T	F	S
			1	2	3	4	5
BEAST			3	5	8	4	3
Remount			15	15	21	26	12
Greenville			6	9	14	10	4
	6	7	8	9	10	11	12
BEAST	4	8	7	3	5	5	4
Remount	10	12	11	14	11	14	17
Greenville	5	8	8	7	8	7	7
	13	14	15	16	17	18	19
BEAST	3	6	4	7	4	2	1
Remount	19	13	25	15	8	10	7
Greenville	8	8	8	6	9	9	3
	20	21	22	23	24	25	26
BEAST	3	4	4	7	6	5	5
Remount	15	12	18	20	20	7	14
Greenville	6	8	7	6	5	13	8
	27	28	29	30	31		
BEAST	4	3	3	4	4		
Remount	8	18	15	17	14		
Greenville	5	10	9	8	11		

NO2 AQI is based on the day's highest 1-hour average.
Data from the Remount and Greenville agency monitors are raw data that have not been quality assured.

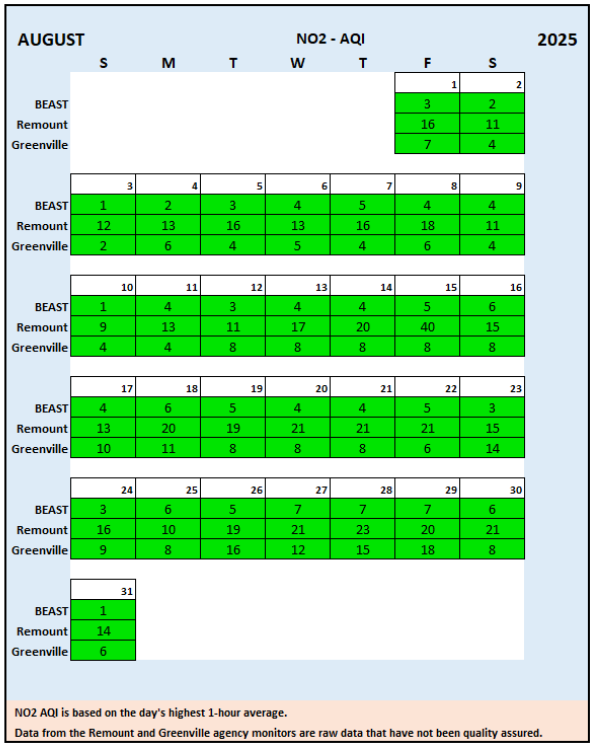
Figure D10-13: Monthly data tables displaying air monitors' daily concentrations in the left tables with associated AQI in the right tables.



AUGUST — NO2 - Concentration with AQI color code — 2025

	S	M	T	W	T	F	S
						1	2
BEAST						3	2
Remount						17	12
Greenville						7	4
	3	4	5	6	7	8	9
BEAST	1	2	3	4	5	4	4
Remount	13	14	17	14	17	19	12
Greenville	2	6	4	5	4	6	4
	10	11	12	13	14	15	16
BEAST	1	4	3	4	4	5	6
Remount	10	14	12	18	21	42	16
Greenville	4	4	9	9	8	9	8
	17	18	19	20	21	22	23
BEAST	4	6	5	4	4	5	3
Remount	14	21	20	22	22	22	16
Greenville	11	12	9	9	9	6	15
	24	25	26	27	28	29	30
BEAST	3	6	5	7	7	7	6
Remount	17	11	20	22	24	21	22
Greenville	10	8	17	13	16	19	9
	31						
BEAST	1						
Remount	15						
Greenville	6						

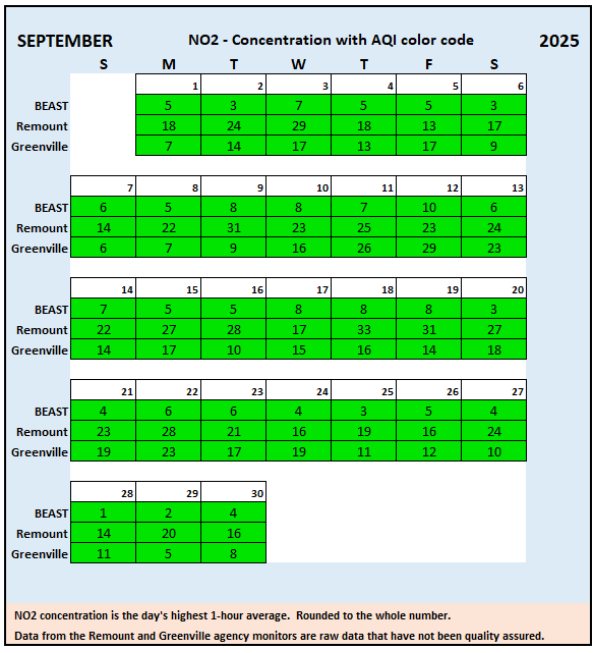
NO2 concentration is the day's highest 1-hour average. Rounded to the whole number.
Data from the Remount and Greenville agency monitors are raw data that have not been quality assured.



AUGUST — NO2 - AQI — 2025

	S	M	T	W	T	F	S
						1	2
BEAST						3	2
Remount						16	11
Greenville						7	4
	3	4	5	6	7	8	9
BEAST	1	2	3	4	5	4	4
Remount	12	13	16	13	16	18	11
Greenville	2	6	4	5	4	6	4
	10	11	12	13	14	15	16
BEAST	1	4	3	4	4	5	6
Remount	9	13	11	17	20	40	15
Greenville	4	4	8	8	8	8	8
	17	18	19	20	21	22	23
BEAST	4	6	5	4	4	5	3
Remount	13	20	19	21	21	21	15
Greenville	10	11	8	8	8	6	14
	24	25	26	27	28	29	30
BEAST	3	6	5	7	7	7	6
Remount	16	10	19	21	23	20	21
Greenville	9	8	16	12	15	18	8
	31						
BEAST	1						
Remount	14						
Greenville	6						

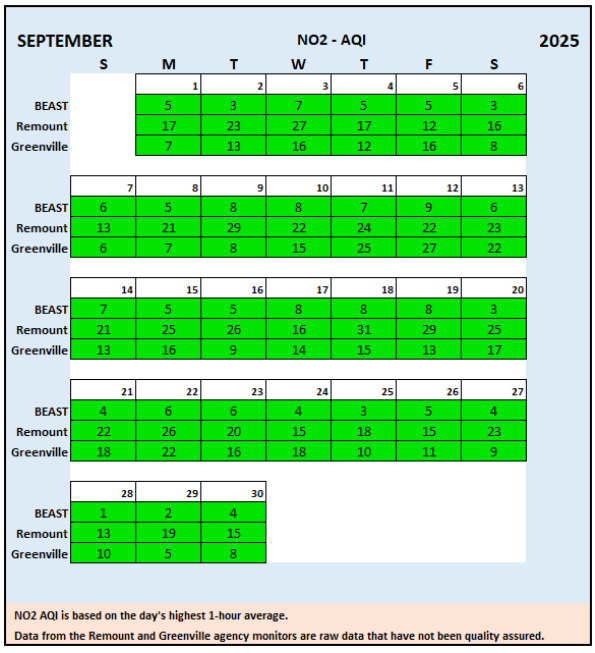
NO2 AQI is based on the day's highest 1-hour average.
Data from the Remount and Greenville agency monitors are raw data that have not been quality assured.



SEPTEMBER — NO2 - Concentration with AQI color code — 2025

	S	M	T	W	T	F	S
		1	2	3	4	5	6
BEAST		5	3	7	5	5	3
Remount		18	24	29	18	13	17
Greenville		7	14	17	13	17	9
	7	8	9	10	11	12	13
BEAST	6	5	8	8	7	10	6
Remount	14	22	31	23	25	23	24
Greenville	6	7	9	16	26	29	23
	14	15	16	17	18	19	20
BEAST	7	5	5	8	8	8	3
Remount	22	27	28	17	33	31	27
Greenville	14	17	10	15	16	14	18
	21	22	23	24	25	26	27
BEAST	4	6	6	4	3	5	4
Remount	23	28	21	16	19	16	24
Greenville	19	23	17	19	11	12	10
	28	29	30				
BEAST	1	2	4				
Remount	14	20	16				
Greenville	11	5	8				

NO2 concentration is the day's highest 1-hour average. Rounded to the whole number.
Data from the Remount and Greenville agency monitors are raw data that have not been quality assured.

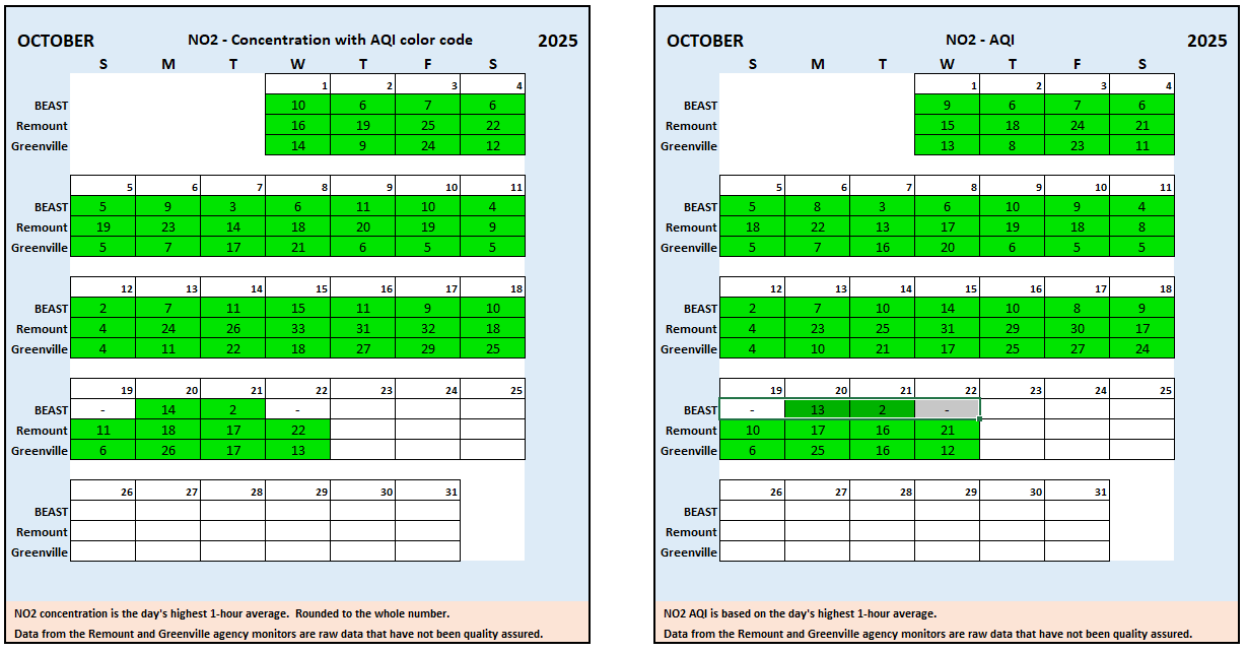


SEPTEMBER — NO2 - AQI — 2025

	S	M	T	W	T	F	S
		1	2	3	4	5	6
BEAST		5	3	7	5	5	3
Remount		17	23	27	17	12	16
Greenville		7	13	16	12	16	8
	7	8	9	10	11	12	13
BEAST	6	5	8	8	7	9	6
Remount	13	21	29	22	24	22	23
Greenville	6	7	8	15	25	27	22
	14	15	16	17	18	19	20
BEAST	7	5	5	8	8	8	3
Remount	21	25	26	16	31	29	25
Greenville	13	16	9	14	15	13	17
	21	22	23	24	25	26	27
BEAST	4	6	6	4	3	5	4
Remount	22	26	20	15	18	15	23
Greenville	18	22	16	18	10	11	9
	28	29	30				
BEAST	1	2	4				
Remount	13	19	15				
Greenville	10	5	8				

NO2 AQI is based on the day's highest 1-hour average.
Data from the Remount and Greenville agency monitors are raw data that have not been quality assured.

Figure D10-14: Monthly data tables displaying air monitors' daily concentrations in the left tables with associated AQI in the right tables.



OCTOBER — NO2 - Concentration with AQI color code — 2025

	S	M	T	W	T	F	S
				1	2	3	4
BEAST				10	6	7	6
Remount				16	19	25	22
Greenville				14	9	24	12
	5	6	7	8	9	10	11
BEAST	5	9	3	6	11	10	4
Remount	19	23	14	18	20	19	9
Greenville	5	7	17	21	6	5	5
	12	13	14	15	16	17	18
BEAST	2	7	11	15	11	9	10
Remount	4	24	26	33	31	32	18
Greenville	4	11	22	18	27	29	25
	19	20	21	22	23	24	25
BEAST	-	14	2	-			
Remount	11	18	17	22			
Greenville	6	26	17	13			
	26	27	28	29	30	31	
BEAST							
Remount							
Greenville							

NO2 concentration is the day's highest 1-hour average. Rounded to the whole number.
Data from the Remount and Greenville agency monitors are raw data that have not been quality assured.

OCTOBER — NO2 - AQI — 2025

	S	M	T	W	T	F	S
				1	2	3	4
BEAST				9	6	7	6
Remount				15	18	24	21
Greenville				13	8	23	11
	5	6	7	8	9	10	11
BEAST	5	8	3	6	10	9	4
Remount	18	22	13	17	19	18	8
Greenville	5	7	16	20	6	5	5
	12	13	14	15	16	17	18
BEAST	2	7	10	14	10	8	9
Remount	4	23	25	31	29	30	17
Greenville	4	10	21	17	25	27	24
	19	20	21	22	23	24	25
BEAST	-	13	2	-			
Remount	10	17	16	21			
Greenville	6	25	16	12			
	26	27	28	29	30	31	
BEAST							
Remount							
Greenville							

NO2 AQI is based on the day's highest 1-hour average.
Data from the Remount and Greenville agency monitors are raw data that have not been quality assured.

Figure D10-15: Monthly data tables displaying air monitors' daily concentrations in the left tables with associated AQI in the right tables.

Neither of the two regional NO2 monitors were a good indication of the local community's air quality. In this case, the BEAST registered lower NO2 concentrations during our 4.5 months of air monitoring. When screening data, the Greenville monitor was closer to the BEAST than Remount.

	AMOUNT	
RANGE	Remount	Greenville
Within 1	0	5
Within 2	0	13
Within 3	1	40
Within 4	6	35
Within 5	7	18
Within 6	12	7
Within 7	18	8
Within 8	15	4
Within 9	19	1
Within 10	15	0
More than 10	38	0

	PERCENTAGE	
RANGE	Remount	Greenville
Within 1	0.00%	3.82%
Within 2	0.00%	9.92%
Within 3	0.76%	30.53%
Within 4	4.58%	26.72%
Within 5	5.34%	13.74%
Within 6	9.16%	5.34%
Within 7	13.74%	6.11%
Within 8	11.45%	3.05%
Within 9	14.50%	0.76%
Within 10	11.45%	0.00%
More than 10	29.01%	0.00%

Figure D10-16: The left table provides the number of days within a ug/m3 range of our BEAST data. The second table provides the percentage of days within the ug/m3 range.

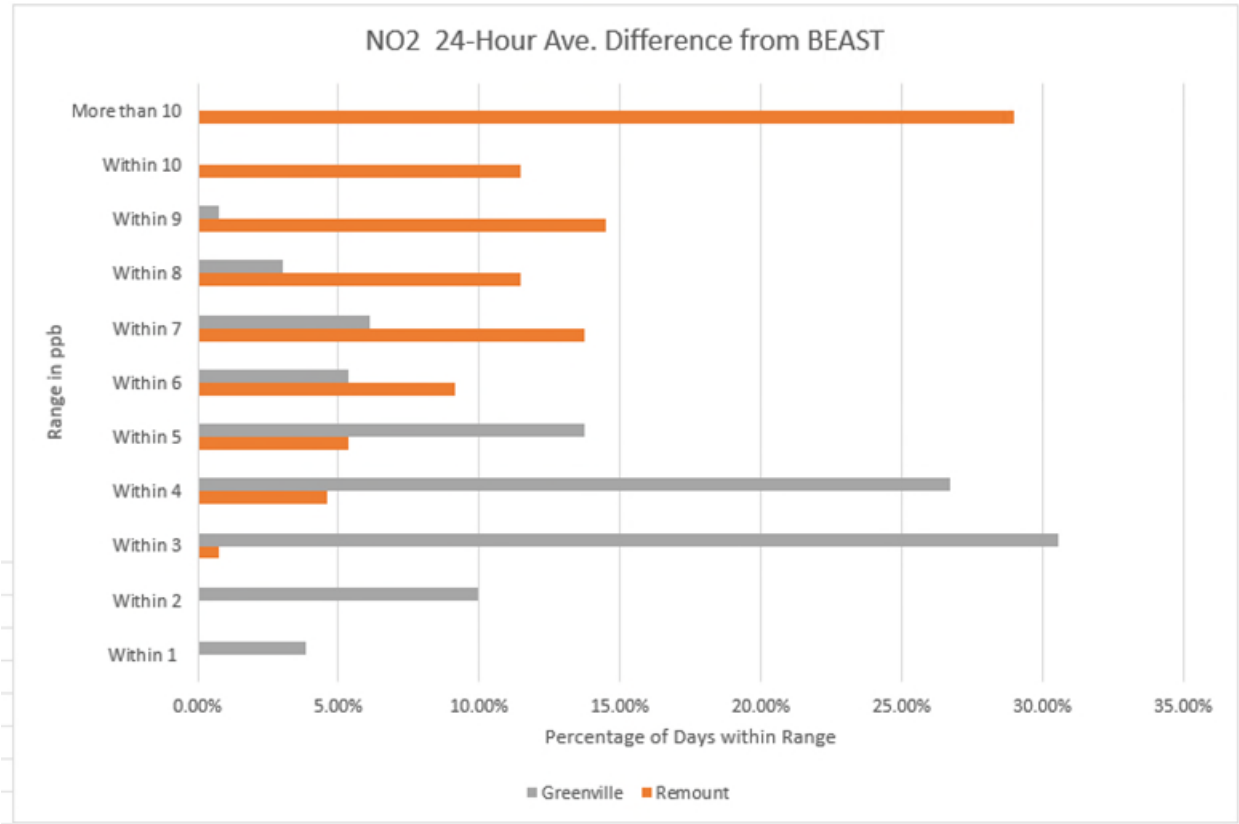


Figure D10-17: Provides a side bar chart of how close regional monitors were when screened with our BEAST data.

The Beast registered lower NO2 concentrations than screened regional NO2 monitors

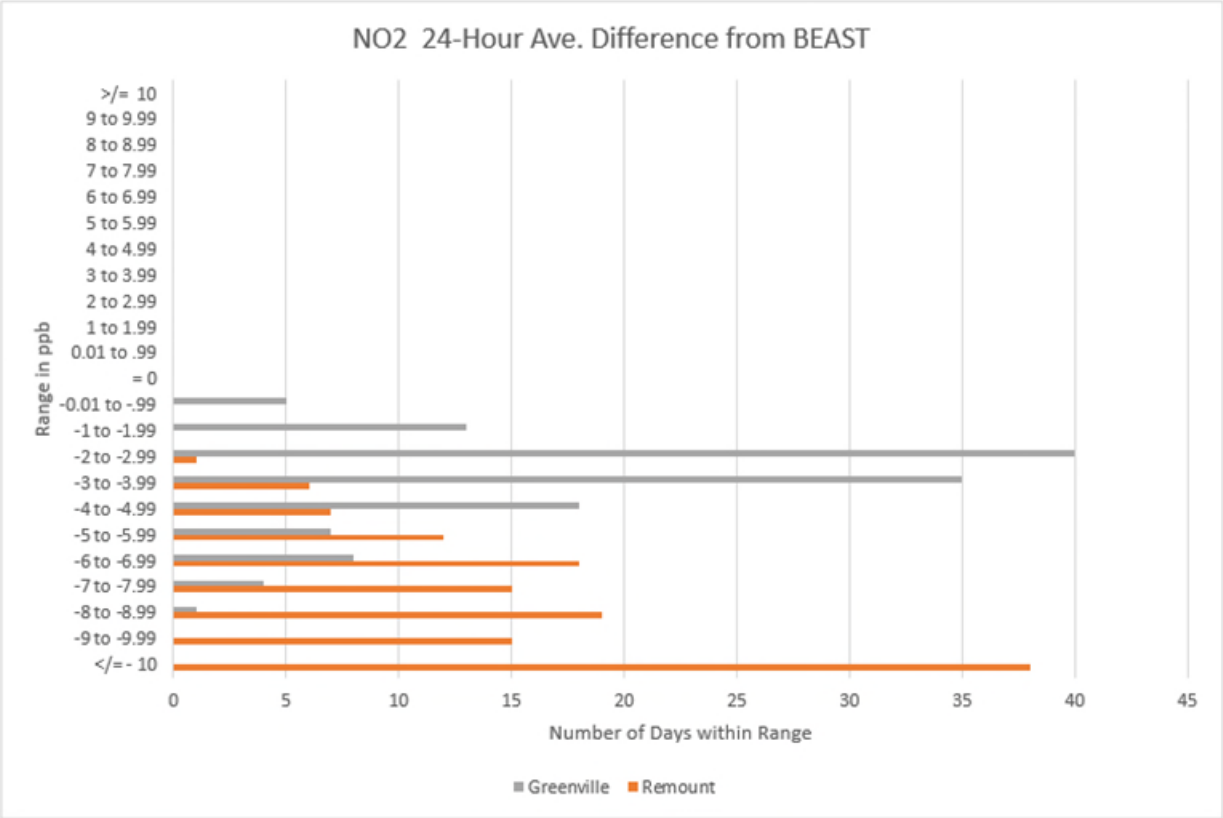


Figure D10-18: Shows that the BEAST registered NO2 levels below the nearest agency NO2 monitors.

D11: AQI

Three (PM2.5, PM10, and NO2) of the six pollutants that we are monitoring are criteria pollutants with National Ambient Air Quality Standards with Air Quality Indices. Thus, we compiled our BEAST data's AQI for commonality.

The AQI data in this section was compiled following guidelines from the EPA Technical Assistance Document for the Reporting of Daily Air Quality – the Air Quality Index (AQI).[17] The EPA's AirNow website offers more information about AQI.[18]

AQI and Cautionary Statements for PM 2.5, PM 10, and NO2[19]

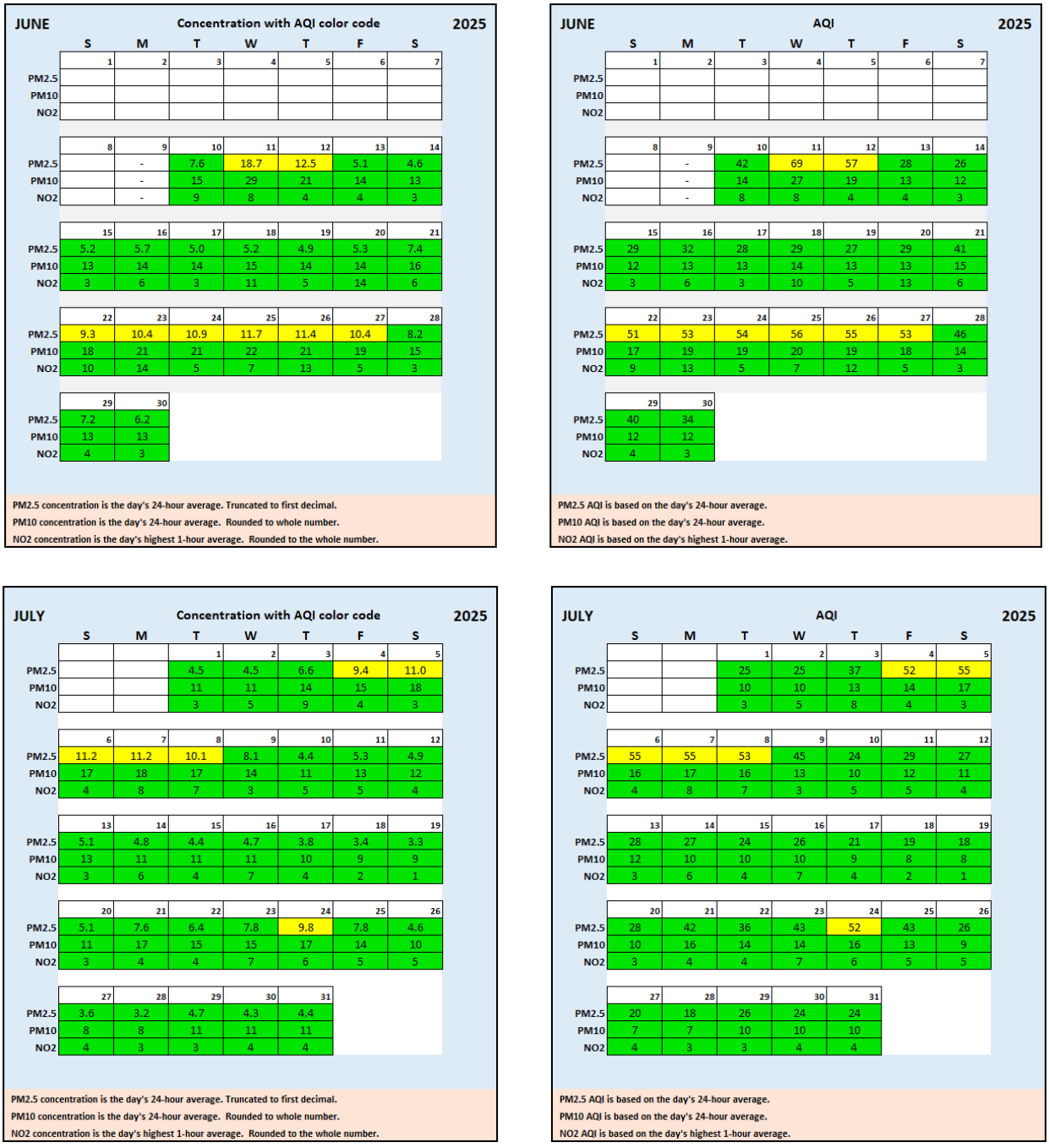
Category	AQI	PM 2.5 /PM 10 (24-hr)	NO2 (1-hr)
Good	**0 -50**	It's a great day to be active outside.	It's a great day to be active outside.
Moderate	**51 - 100**	**Unusually sensitive people:** Consider making outdoor activities shorter and less intense. Go inside if you have symptoms such as coughing or shortness of breath.	**Unusually sensitive people:** Consider limiting prolonged exertion especially near busy roads.
Unhealthy for Sensitive Groups	**101-150**	**Sensitive groups:** Make outdoor activities shorter and less intense. It's OK to be active outdoors but take more breaks. Watch for symptoms such as coughing or shortness of breath. **People with asthma:** Follow your asthma action plan and keep quick relief medicine handy. **People with heart disease:** Symptoms such as palpitations, shortness of breath, or unusual fatigue may indicate a serious problem. If you have any of these, contact your health care provider.	**Sensitive groups:** Limit prolonged exertion outdoors, especially near busy roads. **People with asthma:** Follow your asthma action plan and keep quick relief medicine handy.

[17] Technical Assistance Document for the Reporting of Daily Air Quality – the Air Quality Index (AQI), EPA-454/B-24-002, May 2024
[18] https://www.airnow.gov/aqi/aqi-basics/
[19] Table compiled from information from: Technical Assistance Document for the Reporting of Daily Air Quality – the Air Quality Index (AQI), EPA-454/B-24-002, May 2024

Unhealthy	**151 - 200**	**Sensitive groups:** Consider rescheduling or moving all activities inside. Go inside if you have symptoms. **People with asthma:** Follow your asthma action plan and keep quick-relief medicine handy. **People with heart disease:** Symptoms such as palpitations, shortness of breath, or unusual fatigue may indicate a serious problem. If you have any of these, contact your health care provider. **Everyone else:** Keep outdoor activities shorter and less intense. Go inside if you have symptoms.	**Sensitive groups:** Avoid prolonged outdoor exertion near roadways. **People with asthma:** Follow your asthma action plan and keep quick relief medicine handy. **Everyone else:** Limit prolonged outdoor exertion especially near busy roads.
Very Unhealthy	**201-300**	**Sensitive groups:** Avoid all physical activity outdoors. Reschedule to a time when air quality is better or move activities indoors.* **People with asthma:** Follow your asthma action plan and keep quick-relief medicine handy. **People with heart disease:** Symptoms such as palpitations, shortness of breath, or unusual fatigue may indicate a serious problem. If you have any of these, contact your health care provider. **Everyone else:** Limit outdoor physical activity. Go indoors* if you have symptoms.	**Sensitive groups:** Avoid all outdoor exertion. **People with asthma:** Follow your asthma action plan and keep quick relief medicine handy. **Everyone else:** Avoid prolonged outdoor exertion especially near busy roads.
Hazardous	**301 +**	**Sensitive groups:** Stay indoors and keep activity levels light. Follow tips for keeping particle levels low indoors.* **People with asthma:** Follow your asthma action plan and keep quick-relief medicine handy. **People with heart disease:** Symptoms such as palpitations, shortness of breath, or unusual fatigue may indicate a serious problem. If you have any of these, contact your health care provider. **Everyone:** Avoid all physical activity outdoors.*	**Sensitive groups:** Remain indoors.* **People with asthma:** Follow your asthma action plan and keep quick relief medicine handy. **Everyone else:** Avoid all outdoor exertion.

*Note: If you don't have an air conditioner, staying indoors with the windows closed may be dangerous in extremely hot weather. If you are hot, go someplace with air conditioning or check with your local government to find out if cooling centers are available in your community.

Figure D11-1: EPA AQI and Cautionary Statements for PM 2.5, PM 10, and NO2.



JUNE — Concentration with AQI color code — 2025

	S	M	T	W	T	F	S
	1	2	3	4	5	6	7
PM2.5							
PM10							
NO2							
	8	9	10	11	12	13	14
PM2.5		-	7.6	18.7	12.5	5.1	4.6
PM10		-	15	29	21	14	13
NO2		-	9	8	4	4	3
	15	16	17	18	19	20	21
PM2.5	5.2	5.7	5.0	5.2	4.9	5.3	7.4
PM10	13	14	14	15	14	14	16
NO2	3	6	3	11	5	14	6
	22	23	24	25	26	27	28
PM2.5	9.3	10.4	10.9	11.7	11.4	10.4	8.2
PM10	18	21	21	22	21	19	15
NO2	10	14	5	7	13	5	3
	29	30					
PM2.5	7.2	6.2					
PM10	13	13					
NO2	4	3					

PM2.5 concentration is the day's 24-hour average. Truncated to first decimal.
PM10 concentration is the day's 24-hour average. Rounded to whole number.
NO2 concentration is the day's highest 1-hour average. Rounded to the whole number.

JUNE — AQI — 2025

	S	M	T	W	T	F	S
	1	2	3	4	5	6	7
PM2.5							
PM10							
NO2							
	8	9	10	11	12	13	14
PM2.5		-	42	69	57	28	26
PM10		-	14	27	19	13	12
NO2		-	8	8	4	4	3
	15	16	17	18	19	20	21
PM2.5	29	32	28	29	27	29	41
PM10	12	13	13	14	13	13	15
NO2	3	6	3	10	5	13	6
	22	23	24	25	26	27	28
PM2.5	51	53	54	56	55	53	46
PM10	17	19	19	20	19	18	14
NO2	9	13	5	7	12	5	3
	29	30					
PM2.5	40	34					
PM10	12	12					
NO2	4	3					

PM2.5 AQI is based on the day's 24-hour average.
PM10 AQI is based on the day's 24-hour average.
NO2 AQI is based on the day's highest 1-hour average.

JULY — Concentration with AQI color code — 2025

	S	M	T	W	T	F	S
			1	2	3	4	5
PM2.5			4.5	4.5	6.6	9.4	11.0
PM10			11	11	14	15	18
NO2			3	5	9	4	3
	6	7	8	9	10	11	12
PM2.5	11.2	11.2	10.1	8.1	4.4	5.3	4.9
PM10	17	18	17	14	11	13	12
NO2	4	8	7	3	5	5	4
	13	14	15	16	17	18	19
PM2.5	5.1	4.8	4.4	4.7	3.8	3.4	3.3
PM10	13	11	11	11	10	9	9
NO2	3	6	4	7	4	2	1
	20	21	22	23	24	25	26
PM2.5	5.1	7.6	6.4	7.8	9.8	7.8	4.6
PM10	11	17	15	15	17	14	10
NO2	3	4	4	7	6	5	5
	27	28	29	30	31		
PM2.5	3.6	3.2	4.7	4.3	4.4		
PM10	8	8	11	11	11		
NO2	4	3	3	4	4		

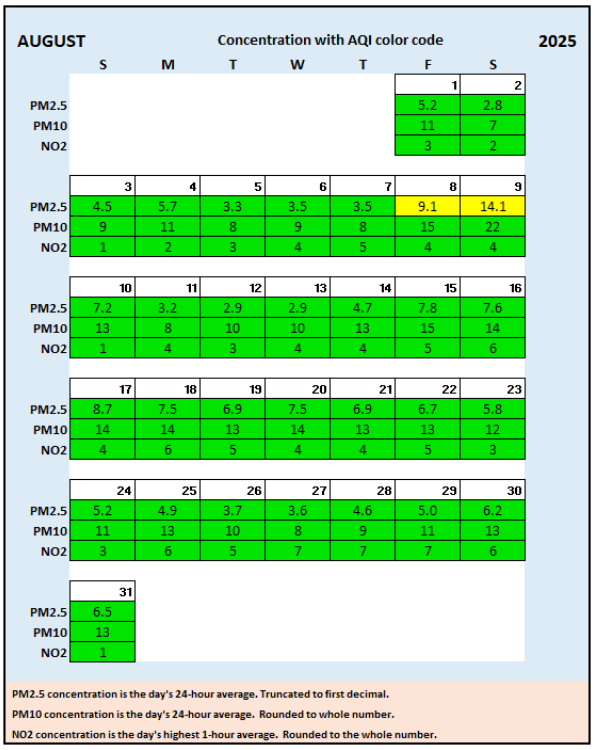
PM2.5 concentration is the day's 24-hour average. Truncated to first decimal.
PM10 concentration is the day's 24-hour average. Rounded to whole number.
NO2 concentration is the day's highest 1-hour average. Rounded to the whole number.

JULY — AQI — 2025

	S	M	T	W	T	F	S
			1	2	3	4	5
PM2.5			25	25	37	52	55
PM10			10	10	13	14	17
NO2			3	5	8	4	3
	6	7	8	9	10	11	12
PM2.5	55	55	53	45	24	29	27
PM10	16	17	16	13	10	12	11
NO2	4	8	7	3	5	5	4
	13	14	15	16	17	18	19
PM2.5	28	27	24	26	21	19	18
PM10	12	10	10	10	9	8	8
NO2	3	6	4	7	4	2	1
	20	21	22	23	24	25	26
PM2.5	28	42	36	43	52	43	26
PM10	10	16	14	14	16	13	9
NO2	3	4	4	7	6	5	5
	27	28	29	30	31		
PM2.5	20	18	26	24	24		
PM10	7	7	10	10	10		
NO2	4	3	3	4	4		

PM2.5 AQI is based on the day's 24-hour average.
PM10 AQI is based on the day's 24-hour average.
NO2 AQI is based on the day's highest 1-hour average.

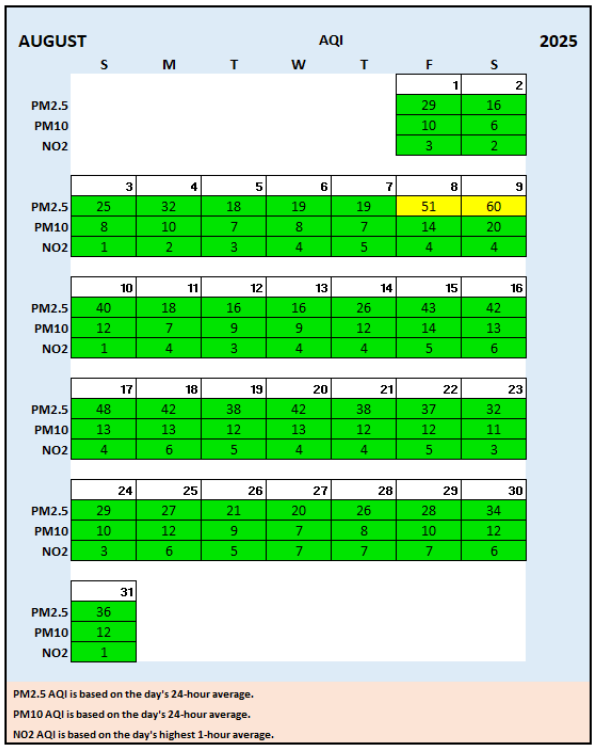
Figure D11-2: Monthly data tables displaying air monitors' daily concentrations in the left tables with associated AQI in the right tables.



AUGUST — Concentration with AQI color code — 2025

	S	M	T	W	T	F	S
						1	2
PM2.5						5.2	2.8
PM10						11	7
NO2						3	2
	3	4	5	6	7	8	9
PM2.5	4.5	5.7	3.3	3.5	3.5	9.1	14.1
PM10	9	11	8	9	8	15	22
NO2	1	2	3	4	5	4	4
	10	11	12	13	14	15	16
PM2.5	7.2	3.2	2.9	2.9	4.7	7.8	7.6
PM10	13	8	10	10	13	15	14
NO2	1	4	3	4	4	5	6
	17	18	19	20	21	22	23
PM2.5	8.7	7.5	6.9	7.5	6.9	6.7	5.8
PM10	14	14	13	14	13	13	12
NO2	4	6	5	4	4	5	3
	24	25	26	27	28	29	30
PM2.5	5.2	4.9	3.7	3.6	4.6	5.0	6.2
PM10	11	13	10	8	9	11	13
NO2	3	6	5	7	7	7	6
	31						
PM2.5	6.5						
PM10	13						
NO2	1						

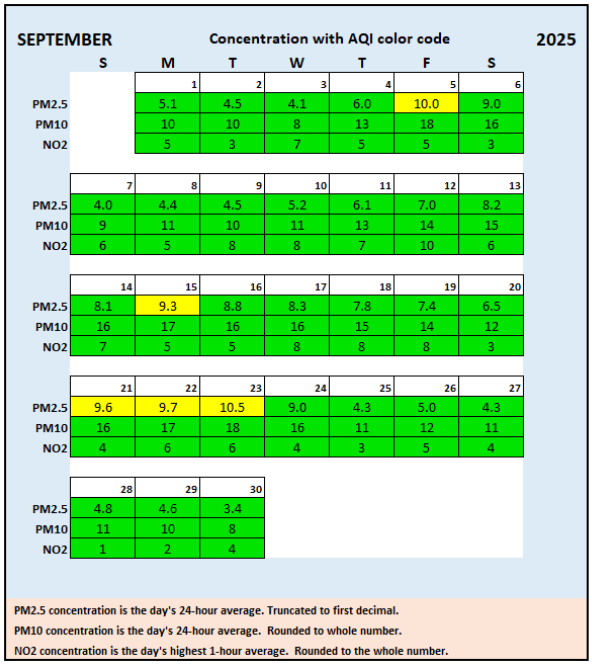
PM2.5 concentration is the day's 24-hour average. Truncated to first decimal.
PM10 concentration is the day's 24-hour average. Rounded to whole number.
NO2 concentration is the day's highest 1-hour average. Rounded to the whole number.



AUGUST — AQI — 2025

	S	M	T	W	T	F	S
						1	2
PM2.5						29	16
PM10						10	6
NO2						3	2
	3	4	5	6	7	8	9
PM2.5	25	32	18	19	19	51	60
PM10	8	10	7	8	7	14	20
NO2	1	2	3	4	5	4	4
	10	11	12	13	14	15	16
PM2.5	40	18	16	16	26	43	42
PM10	12	7	9	9	12	14	13
NO2	1	4	3	4	4	5	6
	17	18	19	20	21	22	23
PM2.5	48	42	38	42	38	37	32
PM10	13	13	12	13	12	12	11
NO2	4	6	5	4	4	5	3
	24	25	26	27	28	29	30
PM2.5	29	27	21	20	26	28	34
PM10	10	12	9	7	8	10	12
NO2	3	6	5	7	7	7	6
	31						
PM2.5	36						
PM10	12						
NO2	1						

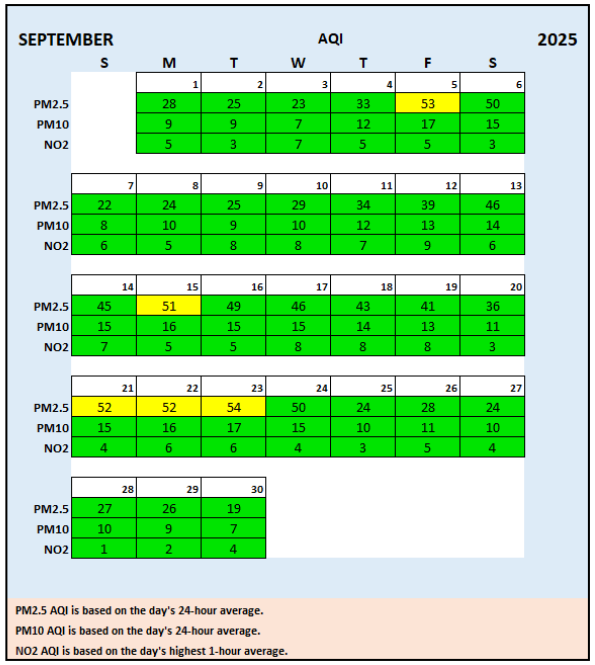
PM2.5 AQI is based on the day's 24-hour average.
PM10 AQI is based on the day's 24-hour average.
NO2 AQI is based on the day's highest 1-hour average.



SEPTEMBER — Concentration with AQI color code — 2025

	S	M	T	W	T	F	S
		1	2	3	4	5	6
PM2.5		5.1	4.5	4.1	6.0	10.0	9.0
PM10		10	10	8	13	18	16
NO2		5	3	7	5	5	3
	7	8	9	10	11	12	13
PM2.5	4.0	4.4	4.5	5.2	6.1	7.0	8.2
PM10	9	11	10	11	13	14	15
NO2	6	5	8	8	7	10	6
	14	15	16	17	18	19	20
PM2.5	8.1	9.3	8.8	8.3	7.8	7.4	6.5
PM10	16	17	16	16	15	14	12
NO2	7	5	5	8	8	8	3
	21	22	23	24	25	26	27
PM2.5	9.6	9.7	10.5	9.0	4.3	5.0	4.3
PM10	16	17	18	16	11	12	11
NO2	4	6	6	4	3	5	4
	28	29	30				
PM2.5	4.8	4.6	3.4				
PM10	11	10	8				
NO2	1	2	4				

PM2.5 concentration is the day's 24-hour average. Truncated to first decimal.
PM10 concentration is the day's 24-hour average. Rounded to whole number.
NO2 concentration is the day's highest 1-hour average. Rounded to the whole number.

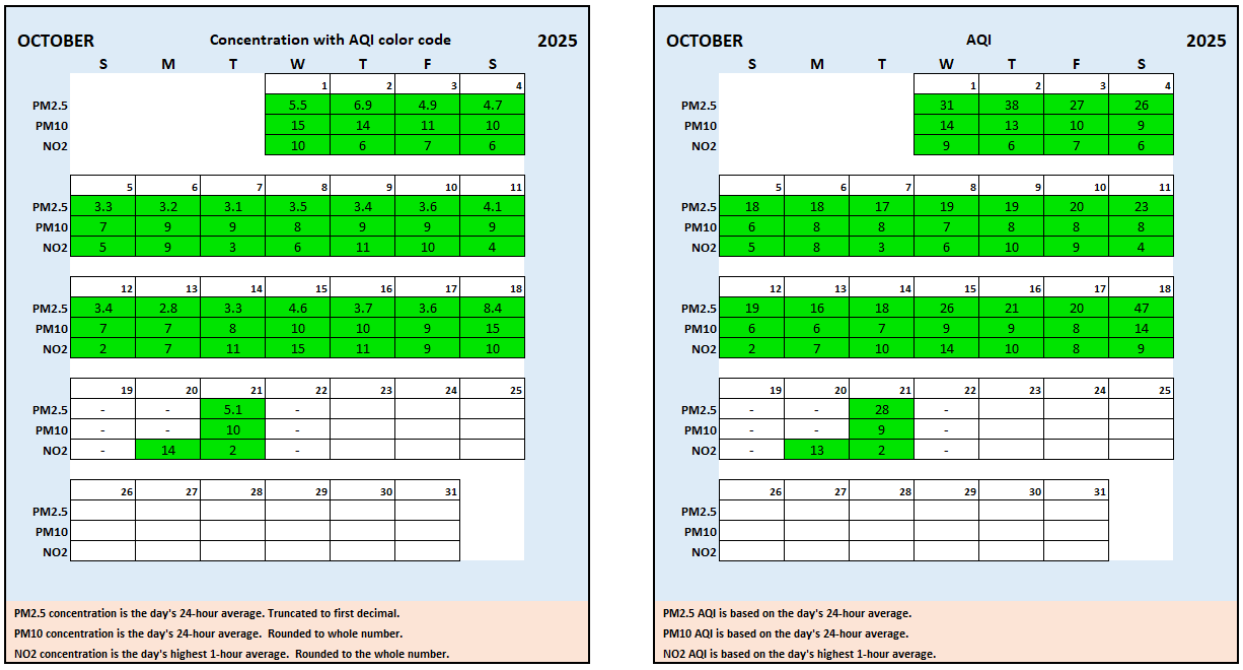


SEPTEMBER — AQI — 2025

	S	M	T	W	T	F	S
		1	2	3	4	5	6
PM2.5		28	25	23	33	53	50
PM10		9	9	7	12	17	15
NO2		5	3	7	5	5	3
	7	8	9	10	11	12	13
PM2.5	22	24	25	29	34	39	46
PM10	8	10	9	10	12	13	14
NO2	6	5	8	8	7	9	6
	14	15	16	17	18	19	20
PM2.5	45	51	49	46	43	41	36
PM10	15	16	15	15	14	13	11
NO2	7	5	5	8	8	8	3
	21	22	23	24	25	26	27
PM2.5	52	52	54	50	24	28	24
PM10	15	16	17	15	10	11	10
NO2	4	6	6	4	3	5	4
	28	29	30				
PM2.5	27	26	19				
PM10	10	9	7				
NO2	1	2	4				

PM2.5 AQI is based on the day's 24-hour average.
PM10 AQI is based on the day's 24-hour average.
NO2 AQI is based on the day's highest 1-hour average.

Figure D11-3: Monthly data tables displaying air monitors' daily concentrations in the left tables with associated AQI in the right tables.



OCTOBER — Concentration with AQI color code — 2025

	S	M	T	W	T	F	S
				1	2	3	4
PM2.5				5.5	6.9	4.9	4.7
PM10				15	14	11	10
NO2				10	6	7	6
	5	6	7	8	9	10	11
PM2.5	3.3	3.2	3.1	3.5	3.4	3.6	4.1
PM10	7	9	9	8	9	9	9
NO2	5	9	3	6	11	10	4
	12	13	14	15	16	17	18
PM2.5	3.4	2.8	3.3	4.6	3.7	3.6	8.4
PM10	7	7	8	10	10	9	15
NO2	2	7	11	15	11	9	10
	19	20	21	22	23	24	25
PM2.5	-	-	5.1	-			
PM10	-	-	10	-			
NO2	-	14	2	-			
	26	27	28	29	30	31	
PM2.5							
PM10							
NO2							

PM2.5 concentration is the day's 24-hour average. Truncated to first decimal.
PM10 concentration is the day's 24-hour average. Rounded to whole number.
NO2 concentration is the day's highest 1-hour average. Rounded to the whole number.

OCTOBER — AQI — 2025

	S	M	T	W	T	F	S
				1	2	3	4
PM2.5				31	38	27	26
PM10				14	13	10	9
NO2				9	6	7	6
	5	6	7	8	9	10	11
PM2.5	18	18	17	19	19	20	23
PM10	6	8	8	7	8	8	8
NO2	5	8	3	6	10	9	4
	12	13	14	15	16	17	18
PM2.5	19	16	18	26	21	20	47
PM10	6	6	7	9	9	8	14
NO2	2	7	10	14	10	8	9
	19	20	21	22	23	24	25
PM2.5	-	-	28	-			
PM10	-	-	9	-			
NO2	-	13	2	-			
	26	27	28	29	30	31	
PM2.5							
PM10							
NO2							

PM2.5 AQI is based on the day's 24-hour average.
PM10 AQI is based on the day's 24-hour average.
NO2 AQI is based on the day's highest 1-hour average.

Figure D11-4: Monthly data tables displaying air monitors' daily concentrations in the left tables with associated AQI in the right tables.