

***Report on Quarterly Air Monitoring,
Area IV, Third Quarter 2024***

***Santa Susana Field Laboratory
Ventura County, California***



***Prepared for:
United States
Department of Energy***

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**REPORT ON QUARTERLY AIR MONITORING, AREA IV, THIRD
QUARTER 2024, SANTA SUSANA FIELD LABORATORY, VENTURA
COUNTY, CA**

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EXECUTIVE SUMMARY

This report summarizes the United States Department of Energy (DOE) air monitoring activities conducted during the third quarter of 2024 (Q3/2024), which is the twenty-sixth quarter (Q26) of the monitoring period (July 1, 2024, to September 30, 2024) at Area IV within the Santa Susana Field Laboratory (SSFL), located in Ventura County, California. The area specifically discussed within this report is the DOE portion, Area IV of SSFL, known as the Energy Technology Engineering Center (ETEC). The program is continuing for a seventh year, which consists of 2024, reporting periods Q24 through Q27.

This quarterly report has been developed by North Wind Portage, Inc., on behalf of DOE in cooperation with The Boeing Company (Boeing) and the National Aeronautics and Space Administration (NASA), as part of the Baseline Air Monitoring Program.

In accordance with the *Final Baseline Air Monitoring Work Plan, Santa Susana Field Laboratory, Ventura County, California* (NASA 2017), the responsible parties are monitoring for particulate matter between 2.5 and 10 microns in aerodynamic diameter (PM₁₀), volatile organic compounds (VOCs), and radionuclides at air monitoring stations DOE-1, DOE-2, DOE-3, and DOE-4 encompassing the ETEC, Area IV portion of SSFL. Having developed the baseline levels for PM₁₀, VOCs, and radionuclides helps distinguish between levels that naturally occur or were previously present at the ETEC site and if onsite remediation activities produce elevated results. Air monitoring will be continued throughout remediation activities to be able to compare results from onsite remediation activities to baseline data in the Annual Air Monitoring Reports.

The following air monitoring activities conducted during 2024, third quarter, by DOE within Area IV are summarized in this report:

- Collected meteorological data from one location (DOE-4);
- Collected PM₁₀ data from four locations (DOE-1 through DOE-4);
- Collected air samples from four locations (DOE-1 through DOE-4) for VOC laboratory analysis; and
- Collected radionuclide samples for laboratory analysis from four locations (DOE-1 through DOE-4).

PM₁₀ data, meteorological data, and radionuclide data all met the data completeness goal of 80%, and VOC data met the completeness goal of 85% for Q3/2024. The Q4/2024 monitoring period of the Air Monitoring Program will begin October 1, 2024.

The following site activities were conducted during Q3/2024 by DOE within Area IV:

- Quarterly site-wide groundwater level monitoring;
- CDM Smith conducted groundwater sampling activities at the Former Sodium Disposal Facility as a part of groundwater interim measures; and
- Surveillance and maintenance.

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ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
°F	degrees Fahrenheit
μCi	microcurie(s)
μg/m ³	microgram(s) per cubic meter
Boeing	The Boeing Company
CAAQS	California Ambient Air Quality Standards
CFR	Code of Federal Regulations
DASC	Data Assessment Statistical Calculator
DOE	U.S. Department of Energy
DTSC	State of California Department of Toxic Substances Control
EPA	U.S. Environmental Protection Agency
ETEC	Energy Technology Engineering Center
GC	gas chromatography
Hg	mercury
HHRA	Human Health Risk Assessment
m	meter(s)
m/sec	meter(s) per second
mb	millibar(s)
MDC	minimum detectable concentration
mL	milliliter(s)
mph	miles per hour
MS	mass spectrometry
MDL	method detection limit
NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics and Space Administration
NIST	National Institute of Standards and Technology
pCi	picocurie(s)
PM ₁₀	particulate matter less than 10 microns in aerodynamic diameter
Q26	twenty-sixth quarter
QA	quality assurance
QC	quality control
RAWS	Remote Automatic Weather Stations
RPD	relative percent difference
SDG	sample delivery group
SSFL	Santa Susana Field Laboratory
VOC	volatile organic compound

1. INTRODUCTION

National Aeronautics and Space Administration (NASA), The Boeing Company (Boeing), and the U.S. Department of Energy (DOE), also known as the responsible parties, are performing air monitoring at the Santa Susana Field Laboratory (SSFL) site located in Ventura County, California. The SSFL was a business segment of Boeing. SSFL includes 2,849 acres located atop a range of hills between the Simi and San Fernando valleys, north of Los Angeles. The westernmost 290 acres of the SSFL, known as Area IV, contains both DOE and Boeing former facilities. The DOE portion is mainly contained within the 90 acres known as the Energy Technology Engineering Center (ETEC).

When opened in the late 1950s, ETEC was ideally remote from population centers to enable development of security-sensitive projects. These projects supported research for DOE and its predecessor agencies for nuclear research and energy development. Area IV included buildings that house test apparatus for large-scale heat transfer and fluid mechanics experiments, mechanical and chemical test facilities, office buildings, and auxiliary facilities.

Air monitoring is being conducted in accordance with the *Final Baseline Air Monitoring Work Plan, Santa Susana Field Laboratory, Ventura County, California* (NASA 2017), which was submitted to the State of California Department of Toxic Substances Control (DTSC) on September 21, 2017. DTSC approved the Work Plan. Final locations of the air monitoring locations were approved by DTSC on January 30, 2018 (DTSC 2018).

The objective of the Air Monitoring Program is to evaluate project conditions and provide a basis for determining the magnitude of deviation from those baseline conditions that may result from onsite remediation activities at SSFL. Responsible parties are monitoring for particulate matter between 2.5 and 10 microns in aerodynamic diameter (PM₁₀), and volatile organic compounds (VOCs), at 14 locations at SSFL. Data was collected for four perimeter samplers (DOE-1 through DOE-4) and analyzed for gross alpha and gross beta. Individual radionuclide concentrations were determined by analysis at an offsite laboratory for these same four locations. Meteorological data are also collected as a part of the Air Monitoring Program.

Figure 1 shows the air monitoring locations for the Air Monitoring Program. These locations were selected based on the areas to be remediated, with consideration of winds in the area, topographic features, and accessibility. The air monitoring sites were also selected based on guidance obtained from the U.S. Environmental Protection Agency's (EPA's) *Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II, Ambient Air Monitoring Program* (EPA 2017) and *Meteorological Monitoring Guidance for Regulatory Modeling Applications* (EPA 2000). Sites were evaluated per 40 Code of Federal Regulations (CFR) 58, Appendix C – Ambient Air Quality Monitoring Methodology. DOE is responsible for DOE-1, DOE-2, DOE-3, and DOE-4 of the 14 monitoring locations, represented in Figure 1. VOCs, PM₁₀, and radionuclides are monitored at the four DOE monitoring locations, and meteorological conditions are monitored at the DOE-4 location. The DOE monitoring locations DOE-1 through DOE-4 are shown in Figure 2.

This report summarizes the results and quality assurance (QA) activities performed during the third quarter of 2024 (Q3/2024), which was from July 1, 2024, through September 30, 2024.

1.1 Regional Climate and Wind Direction

The climate in the SSFL area is characterized as “Mediterranean.” The mean temperature during the winter months is approximately 50 degrees Fahrenheit (°F), and the mean temperature in the summer months is approximately 70°F. Based on climate data from 2020 through 2023 from Weather Currents, average rainfall is on the order of 14.69 inches per year. The majority of the rainfall occurs between December and April with January and February being the wettest months.

During Q3/2024, the Simi Valley received approximately 0.02 inches of rainfall.

The average hourly wind speed in Simi Valley varies significantly by season. The more turbulent part of the year lasts for 6 months, from November to April, with average western wind speeds of more than 7 miles per hour (mph). The calmer time of year lasts for 6 months, with northerly winds from May to October.

During the fall, winter, and spring, Santa Ana winds can blow from the north or northeast in excess of 35 mph.

2. SUMMARY

This report summarizes the air monitoring data collected during the Q3/2024 reporting period (July 1, 2024, through September 30, 2024).

Quality objectives and data completeness were met for all meteorological, PM₁₀, VOC, and radionuclide data for Q3/2024 of the Air Monitoring Program. Urban background data compared with air monitoring data indicate that the PM₁₀ concentrations measured at stations DOE-1, DOE-2, DOE-3, and DOE-4 during Q3/2024 are comparable to the PM₁₀ concentrations measured at stations characterizing urban background. Other sources that emit VOC characteristics are motor vehicle emissions, fossil fuel combustion, and wildfires. The results are reflected when considering SSFL site's urban background and relatively remote location from vehicle traffic. None of the PM₁₀ concentrations exceeded the California Ambient Air Quality Standard (CAAQS; 50 micrograms per cubic meter [$\mu\text{g}/\text{m}^3$]) or the National Ambient Air Quality Standard (NAAQS; 150 $\mu\text{g}/\text{m}^3$).

During Q3/2024 no downtime was observed for the units at DOE-2 and DOE-4. The unit at DOE-1 was down on September 5, 2024, due to the nozzle getting stuck in the up position; the sample nozzle and vane were cleaned and the unit restarted on September 9, 2024. The unit at DOE-3 was down on July 18–19 and August 31, 2024, due to a data collection glitch; the unit was restarted on July 20, 2024, and September 3, 2024, respectively, which resolved the issue.

During Q3/2024 three VOC analytes were detected above the EPA regional screening level (RSL) and one VOC analyte was detected above the April 2019 State of California Department of Toxic Substances Control (DTSC) Human Health Risk Assessment (HHRA) Note 3 Screening Levels (DTSC 2019). Trichloroethene was detected at DOE-2, benzene and ethylbenzene were detected at DOE-4, acrylonitrile was detected at DOE-2 and DOE-4, chloroform was detected at DOE-1 and DOE-4, and methyl chloride was detected at DOE-2. Trichloroethene is a chemical used in a variety of industries and applications, such as chemical production, paint removers, spot removers, carpet cleaners, metal cleaners, and adhesives. Benzene, ethylbenzene, and chloroform are all made from crude oil or coal tar; they can be produced by cigarette smoking, car exhaust, and smoke from forest fires. Acrylonitrile is a chemical used in a variety of industries and applications, such as making fibers for clothing or carpets, plastic and rubber manufacturing, adhesives and chemical production. Chloroform is made from crude oil or coal tar; it can be produced by cigarette smoking, car exhaust, and smoke from forest fires. Methylene chloride is a solvent used in a variety of industries and applications, such as adhesives, paint and coating products, pharmaceuticals, metal cleaning, chemical processing, and aerosols. By using the results from the baseline Air Monitoring Program, along with other site characterization information, analytes were selected for routine air monitoring during soil disturbances. Establishing sources for specific contaminants or performing source apportionment was not required for identifying remedial air quality impacts nor was it within the scope or data quality objectives of the Air Monitoring Program.

VOC detection results are presented in Table B-1 (Appendix B), including comparison to the April 2019 State of California Department of Toxic Substances Control (DTSC) Human Health Risk Assessment (HHRA) Note 3 Screening Levels (DTSC 2019) or the EPA RSLs. Trichloroethene was detected above the EPA RSL limit of 0.48 $\mu\text{g}/\text{m}^3$ during the July 3, 2024, sampling at one location at a concentration of 1.4 $\mu\text{g}/\text{m}^3$. Benzene and ethylbenzene were detected above the DTSC HHRA Note 3 level and the EPA RSL limits of 0.097 $\mu\text{g}/\text{m}^3$ and 1.1 $\mu\text{g}/\text{m}^3$, respectively, during the August 15, 2024, sampling at one location at concentrations of 1.4 $\mu\text{g}/\text{m}^3$ and 2.3 $\mu\text{g}/\text{m}^3$, respectively. Acrylonitrile was detected above the EPA RSL limit of 0.041 $\mu\text{g}/\text{m}^3$ during the August 28, 2024, sampling at one location at a concentration of 2.5 $\mu\text{g}/\text{m}^3$. Chloroform was detected above the EPA RSL limit of 0.12 $\mu\text{g}/\text{m}^3$ during the September 10,

2024, sampling at two locations at concentrations of 2.8 B; $\mu\text{g}/\text{m}^3$ and 2.0 B; $\mu\text{g}/\text{m}^3$. Methylene chloride and acrylonitrile were detected above the DTSC HHRA Note 3 level and the EPA RSL limits of 1 $\mu\text{g}/\text{m}^3$ and 0.041 $\mu\text{g}/\text{m}^3$, respectively, during the September 25, 2024, sampling at one location each at concentrations of 1.2 $\mu\text{g}/\text{m}^3$ and 2.1 $\mu\text{g}/\text{m}^3$, respectively.

Data collected during Q3/2024 agree with data collected, analyzed, and reported by the State of California DTSC, Los Angeles County Emergency Response Organization, the DOE Emergency Response organization, or other Multi-Agency Task Forces. Air monitoring at Area IV of the SSFL is to be continued starting October 1, 2024, for the Q4/2024 of the Air Monitoring Program.

Site activities during Q3/2024 included quarterly site-wide groundwater level monitoring, surveillance and maintenance, and groundwater sampling activities conducted by CDM Smith at the Former Sodium Disposal Facility as part of the groundwater interim measures.

3. ANALYTICAL SAMPLING EVENTS

VOCs are collected according to the EPA Toxic Compendium Method TO-15, *Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)* (EPA 1999). Twenty-four-hour time-integrated samples are collected into Summa canisters via a flow controller and sent to an offsite laboratory for analysis. VOCs are collected every other week. There were seven VOC sampling events with seven field duplicate samples collected during this reporting period.

During Q3/2024, radionuclide samples were collected at four perimeter sampler locations, DOE-1 through DOE-4. These samples were collected on glass fiber (Type A/E) filters that are changed twice a week. After a minimum 120-hour holding time to allow the decay of short-lived radon and thoron daughter products, the samples are simultaneously counted for gross alpha and beta activity with a low-background, thin-window, gas-flow proportional-counting system continually purged with P-10 argon/methane counting gas over a preset time interval. There were 107 airborne radioactivity filter samples collected in Q3/2024 — 27 each for DOE-1, DOE-2, and DOE-4, and 26 at DOE-3. Following analysis for gross alpha and gross beta radiation, sample filters were combined to form one composite sample representative of each location. The four composite samples were then analyzed for individual radionuclides at an offsite laboratory.

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4. DATA

Sections 4.1 through 4.4 discuss Q3/2024 air monitoring data.

4.1 Meteorological Data

General Summary

Meteorological data, also called weather data, is being collected as part of the ETEC cleanup and restoration effort. This information, particularly the wind direction and wind speed, can be used to help understand how dust and other air pollutants from the site are carried by the wind to possibly affect nearby public and residential areas. This is especially important when the E-BAM particulate monitors at the site detect higher-than-normal amounts of dust in the air. Scientific computer models can be used with this weather data in association with the particulate monitoring data to describe the air quality for the communities near the ETEC site. However, before the weather data can be used with the computer models it must first be quality tested for completeness and accuracy to ensure it meets acceptance criteria. A detailed description of the weather data collection and quality testing is provided in the following paragraphs.

Monitored meteorology parameters at the DOE-4 station included wind speed, wind direction, air temperature at 2 meters (m) and 10 m, relative humidity, precipitation, barometric pressure, and solar radiation. In addition, statistical parameters provided by the data logger included delta temperature (i.e., the 10-m temperature minus the 2-m temperature), maximum wind speed (i.e., wind gust), and standard deviation of wind direction. Observations were recorded at 15-minute intervals corresponding to minutes :00, :15, :30, and :45 each hour. There were 92 days in this reporting period (Q3/2024) from 01 Jul 2024 through 30 Sep 2024 with a total of 8,832 possible 15-minute observations. This is the third quarter of Year 7 of the baseline monitoring.

Data Validation and Statistics

Data validation screening was performed on the recorded meteorological observations pursuant to EPA's *Meteorological Monitoring Guidance for Regulatory Modeling Applications* (EPA 2000) Table 8-4 (Suggested Data Screening Criteria) and Table 8-3 (Suggested Quality Control Codes). Validation screening provided the basis for evaluating data completeness and for determining sensor performance and/or maintenance status. Validation was performed following each weekly data download. Data validation quality control codes applied to the meteorological observations are defined in Table 1.

Table 1. Data screening quality control codes for meteorological data.

Code	Meaning	Description (as used for ETEC meteorological data validation)
0	Valid	PASS – Observation is accurate within the performance limits of the instrument (i.e., value passes all data validation screening criteria).
3	Acceptable	PASS – Observation originally failed initial quality control (QC) check (see Code 6), but additional review using other independent data and meteorological judgment support final validity.
6	Failed initial QC check	FAIL – Observation did not pass data validation screening criteria.
7	Suspect	FAIL – Observation failed initial data validation QC check (see Code 6) and could not be verified through additional review using other independent data.
8	Invalid	FAIL – Observation judged to be inaccurate or in error, and the cause is known.
9	Missing	FAIL – Observation was not collected.

The validation screening involved comparing, on an individual parameter basis, the recorded values (i.e., observations) against the EPA screening criteria shown in Table 2. The data validation procedure involved an initial automated review to apply a first-level QC Code of 0 (valid), 6 (failed), or 9 (missing) as defined in Table 1. Observations initially flagged with a QC Code = 6 were then manually (i.e., second-level) reviewed by a project meteorologist. The procedure is outlined below:

- Values meeting all screening criteria for the respective meteorological parameter were automatically considered “valid” (QC Code = 0).
- Values not meeting a screening criterion were automatically flagged as “failed initial QC” (QC Code = 6). These values were subjected to second-level manual meteorological review using other available observations (e.g., 2-m vs. 10-m temperature at DOE-4 or from nearby Remote Automatic Weather Stations [RAWS] meteorological station CEEC1 in the Cheeseboro Canyon, California, area located 2.6 miles south of the DOE-4 site), and meteorological judgment:
 - Values confirmed by second-level review were deemed “acceptable” (final QC Code = 3).
 - Otherwise, the values were deemed “suspect” (final QC Code = 7).
- Observations known to be inaccurate (QC Code = 8).
- Missing observations were automatically flagged as “missing” (QC Code = 9).

Values that pass validation with a final QC Code of 0 or 3 are included in the data completeness statistics and the final validated meteorological data set. Values with a final QC Code of 7, 8, or 9 are excluded from the final dataset and counted against the data completeness percentage. Quarterly data statistics for the meteorological parameters are listed in Table 2 along with year-to-date and project-to-date results. Year-to-date and project-to-date percentages are calculated as total valid observations through the completed quarters for the year divided by the total possible observations through this same period.

The completeness goal for meteorological data is 80% on an annual basis. Data completeness statistics for all completed reporting quarters in Year 7 of the baseline monitoring are presented in Table 2. Data completeness to-date for Year 7 exceeds 80% for all meteorological parameters being monitored except relative humidity. For this parameter, the low data completeness is due to data loss caused by a failed sensor during a previous quarter. The sensor had failed in Q4/2023 and was replaced late in Q1/2024.

Wind Rose

The final validated 15-minute meteorological dataset was used to develop the wind rose for Q3/2024 as presented in Figure 3. A wind rose is a graphical representation of wind speed and direction distribution (or wind climatology) for the period of interest. The frequency of winds blowing from specific directions are shown as petals on the wind rose, with the frequency of wind speeds depicted by color bands. Calm winds are identified as being less than 0.5 meters per second (m/sec).

During Q3/2024, data capture for wind speed and direction at DOE-4 was 100%. The average and maximum wind speeds were 3.27 m/sec and 11.9 m/sec, respectively. The maximum recorded wind gust was 16.2 m/sec. The predominant wind directions this quarter were from the east-southeast (ESE).

Table 2. Data screening summary for monitored meteorological parameters.

Meteorological Parameter	Screening Criteria ⁽¹⁾ (for valid sensor responses)	Data Completeness Percent (%) ⁽²⁾		
		Q3/2024 (Q26)	Year 7 to Date	Project to Date
Wind Speed	between 0 and 25 m/sec	100	100	96.05
	> 0.1 m/sec variation over 3 hours			
	> 0.5 m/sec variation over 12 hours			
Wind Direction	between 0 and 360 degrees	100	100	96.66
	> 1 degree variation over 3 hours			
	> 10 degree variation over 12 hours			
Standard Deviation of Wind Direction	Inherits the completeness stats of Wind Direction	100	100	96.66
Temperature @ 10 m	≤ local record high (monthly basis)	100	99.99	96.66
	≥ local record low (monthly basis)			
	> 0.5°C variation over 12 hours			
Temperature @ 2 m	≤ local record high (monthly basis)	100	99.45	96.62
	≥ local record low (monthly basis)			
	> 0.5°C variation over 12 hours			
Delta Temperature	≤ 0.1°C during daytime	100	99.44	96.62
	≥ -0.1°C during nighttime			
	between -3.0 and 5.0°C			
Relative Humidity (and Dewpoint Temperature)	relative humidity between 0–100%	100	70.65	89.01
	dew point T ≤ ambient T			
	dew point T ≤ 5.0°C variation over 1 hour			
	dew point T > 0.5°C variation over 12 hours			
Precipitation	≤ 1 inch in 1 hour	100	100	96.66
	≤ 4 inches in 24 hours			
	≥ 2 inches in 3 months			
Barometric Pressure	between 871 and 982 mb (local) (i.e., between 940 and 1060 mb sea level)	100	100	96.66
	≤ 6 mb variation over 3 hours			
	> 0 at night			
Solar Radiation	≤ maximum possible for date, time, lat/long	100	100	96.63

(1) Screening criteria from EPA Meteorological Monitoring Guidance (EPA 2000), Table 8-4.

(2) Data Completeness % = [Observations Passing] / [Possible Observations].

- a. Missing or suspect observations count against data completeness statistics.
- b. Year Two is an abbreviated data collection year spanning the period Apr 15–Dec 31, 2019 (i.e., Quarters 5, 6, and 7). This was done to synchronize future data collection years with calendar years.
- c. Last column in this table represents the cumulative Completeness % for all completed quarterly reporting periods.

Note: The number of possible 15-minute observations in the completed reporting periods:

(Note – Reference to Quarters are listed in sequence number from project start (Q1) to present Q26

- Q01 = 8,736
- Q02 = 8,832
- Q03 = 8,832
- Q04 = 8,640
- Year One = 35,040
- Q05 = 8,736
- Q06 = 8,832
- Q07 = 7,488
- (only 3 quarters)
- Year Two = 25,056 (abbreviated)
- Q08 = 8,736
- Q09 = 8,736
- Q10 = 8,832
- Q11 = 8,832
- Year Three = 35,136
- Q12 = 8,640
- Q13 = 8,736
- Q14 = 8,832
- Q15 = 8,832
- Year Four = 35,040
- Q16 = 8,640
- Q17 = 8,736
- Q18 = 8,832
- Q19 = 8,832
- Year Five = 35,040
- Q20 = 8,640
- Q21 = 8,736
- Q22 = 8,832
- Q23 = 8,832
- Year Six = 35,040
- Q24 = 8,736
- Q25 = 8,736
- Q26 = 8,832
- Year Seven = 26,304 (to-date)
- Project = 226,656 (to-date)

4.2 PM₁₀ Data

PM₁₀ data, defined as coarse particles between 2.5 and 10 microns in aerodynamic diameter, are measured at the ETEC site. Sources of particulate matter can be naturally occurring or caused by human activity. The air monitoring conducted at ETEC is used to determine if any suspended particles are from activities conducted onsite or if they are consistent with surrounding air quality data. Some of the naturally occurring particles can originate from high winds, forest or grass fires, burning of fossil fuels in vehicles, or stirred-up road dust.

PM₁₀ data are collected with Met One E-BAM monitors at four monitoring locations. The Met One E-BAM uses the principle of beta attenuation to provide a determination of mass concentration. Twenty-four-hour concentrations are calculated from the hourly concentrations. There were 92 days in this reporting period.

- DOE-1 had valid readings 87 out of 92 days.
- DOE-2 had valid readings all 92 days.
- DOE-3 had valid readings 86 out of 92 days.
- DOE-4 had valid readings all 92 days.

DOE-2 and DOE-4 had data completeness of 100% for PM₁₀ in Q3/2024, and DOE-1 and DOE-3 had data completeness of 95% and 93% respectively, for a total data completeness of 97%, exceeding the project goal of 80% completeness for total samples collected during Q3/2024 (see Table 3). The cumulative total project data completeness has been calculated as 93% from April 2018 through September 2024. The complete table of daily averages for Q3/2024 is presented in Appendix A. During Q3/2024 no downtime was observed for the units at DOE-2 and DOE-4. The unit at DOE-1 was down on September 5, 2024, due to the nozzle getting stuck in the up position; the sample nozzle and vane were cleaned and the unit restarted on September 9, 2024. The unit at DOE-3 was down on July 18–19 and August 31, 2024, due to a data collection glitch; the unit was restarted on July 20, 2024, and September 3, 2024, respectively, which resolved the issue. See the PM₁₀ daily average table in Appendix A for specific downtime dates.

The nearby State and Local Air Monitoring Stations (SLAMS), Simi Valley – Cochran Street – PM₁₀ Daily Averages, from 01/01/2024 to 07/31/2024 are presented in Appendix A. At the time of writing this report, the data posted are the most current available. Please note, per the EPA website, these EPA data are updated twice per year: once in June to capture the complete data for the prior year and once in December to capture the data for the summer (ozone season).

Table 3. PM₁₀ data completeness for July 1, 2024, to September 30, 2024.

Location	Valid Readings (Days)	Possible Readings (Days)	Data Completeness (Percent)
DOE-1	87	92	95%
DOE-2	92	92	100%
DOE-3	86	92	93%
DOE-4	92	92	100%

Average Total Data Completeness 97%

The five highest PM₁₀ results identified for the reporting period are listed in Table 4 along with the CAAQS for PM₁₀. PM₁₀ concentrations were consistent with levels typically found in urban air. Of these top five results, three were recorded at DOE-3, and two at DOE-4. In total for Q3/2024, no values were above the CAAQS of 50 µg/m³ or the NAAQS of 150 µg/m³. On these dates elevated winds and nearby wildfires may

have contributed to the elevated readings. Historically, it has been noticeable that there is a direct correlation between wildfires, high wind speeds, and higher PM₁₀ readings.

Table 4. Top five PM₁₀ 24-hour average concentration days for Q3/2024.

Date	Location	PM ₁₀ Value (µg/m ³)	CAAQS (µg/m ³)
7/10/2024	DOE-3	48.666	50
7/9/2024	DOE-3	47.666	50
9/9/2024	DOE-4	47.083	50
7/13/2024	DOE-3	43.700	50
9/29/2024	DOE-4	43.658	50

4.3 Volatile Organic Compound Data

VOCs are organic chemicals that have a high vapor pressure, which causes them to evaporate quickly and enter the surrounding air. VOCs can be naturally occurring or man-made. The VOC data collected can help distinguish between man-made detections from onsite activities or naturally existing organic chemicals. The VOC data collected are compared against screening levels. These screening levels are risk-based concentrations derived from standardized equations combining exposure information with toxicity data.

All four DOE locations were sampled during each of the seven VOC sampling events this period. Data completeness goals for VOCs exceeded the project goal of 85% (see Table 5).

Table 5. Ambient air VOC data completeness.

Location	Valid Readings (Days)	Possible Readings (Days)	Data Completeness (Percent)
DOE-1	7	7	100%
DOE-2	7	7	100%
DOE-3	7	7	100%
DOE-4	7	7	100%

Average Total Data Completeness 100%

VOC detection results are presented in Table B-1 (Appendix B), including comparison to the April 2019 DTSC Human Health Risk Assessment (HHRA) Note 3 Screening Levels (DTSC 2019) or the EPA RSLs. Trichloroethene was detected above the EPA RSL limit of 0.48 µg/m³ during the July 3, 2024, sampling at one location at a concentration of 1.4 µg/m³. Benzene and ethylbenzene were detected above the DTSC HHRA Note 3 level and the EPA RSL limits of 0.097 µg/m³ and 1.1 µg/m³, respectively, during the August 15, 2024, sampling at one location at concentrations of 1.4 µg/m³ and 2.3 µg/m³, respectively. Acrylonitrile was detected above the EPA RSL limit of 0.041 µg/m³ during the August 28, 2024, sampling at one location at a concentration of 2.5 µg/m³. Chloroform was detected above the EPA RSL limit of 0.12 µg/m³ during the September 10, 2024, sampling at two locations at concentrations of 2.8 µg/m³ and 2.0 µg/m³. Methylene chloride and acrylonitrile were detected above the DTSC HHRA Note 3 level and the EPA RSL limits of 1 µg/m³ and 0.041 µg/m³, respectively, during the September 25, 2024, sampling at one location each at concentrations of 1.2 µg/m³ and 2.1 µg/m³, respectively.

Two man-made VOC analytes, dichlorodifluoromethane (freon-12) and ethyl acetate, have been detected routinely at all four monitoring stations, during all quarterly sampling events, and in duplicate samples indicating that these VOCs were not caused by the building demolition activities performed during June 2020 through February 2022. These analytes were also detected as estimated values at NASA stations but

were not detected at Boeing stations. Based on laboratory QC data (method blanks, clean canister certifications), the sampling process and laboratory process are not the sources of the two analytes. The onsite source of the analytes is currently unknown.

Neither the establishment of sources for specific contaminants nor the performance of source apportionment was required for identifying remedial air quality impacts, nor was either within the scope or data quality objectives of the Air Monitoring Program.

4.4 Radionuclide Data

EETC continuously monitors air at multiple locations for radioactive particles. This is performed for two reasons: (1) to determine the background airborne radioactivity concentration so that any possible releases from work activities can be detected, and (2) to detect any possible release from existing activities.

There were 107 airborne radioactivity filter samples collected in Q3/2024 — 27 each for DOE-1, DOE-2, and DOE-4, and 26 at DOE-3. Filter sample collection at DOE-3 was reduced in Q3/2024 because the filter was lost due to a high gust of wind during filter retrieval. Each sample was collected on a glass-fiber filter (as discussed in Section 3) and was analyzed using a “low background” Protean radiation counter system onsite. These samples included background radioactive materials and the potential of Area IV–specific radioactive materials.

The alpha and beta data are presented in Table C-1 (Appendix C). The onsite analysis determined only “alpha” or “beta/gamma” and did not analyze for specific isotopes. Isotopic analysis was performed later by an offsite laboratory. Each sample produced a gross alpha and beta-gamma count. The analysis compared these values with the background radiation count rates, and using the volume of air collected determined the net counts and the minimum detectable concentration (MDC) for each sampling event. Some results in Table C-1 (Appendix C) are shown as negative values (because detector background is subtracted from the result).

All alpha samples except one were below the MDC, and this sample was only slightly greater than the MDC. The MDC was below the airborne effluent limits specified in California regulations. There was no possibility of significant Area IV alpha radioactive material on these filters.

Approximately 10% of the beta samples were below MDC, and the gross (background radioactive material included) samples exceeded the MDC in 90% of samples, indicating the presence of airborne radioactive material (including background materials). The beta-gamma samples greater than the MDC were only slightly above the MDC and were well below the effluent limits specified in California regulations. The elevated (but still low) results may be due to more airborne dust or smoke. Historically there has been a noticeable direct correlation between high wind speeds and higher beta result readings.

Following collection and onsite analysis, the air filters were composited and analyzed for specific radionuclides by an offsite laboratory. These data are shown in Table C-2 (Appendix C). This laboratory data determined that most radioactive material present was natural in origin, consisting of beryllium-7, polonium-210, potassium-40, combined radium-226 and radium-228, thorium-228, thorium-230, thorium-232, uranium-233/234, uranium-235/236, and uranium-238.

While artificial radionuclides (e.g., cesium-137, strontium-90, plutonium-239) were present in very small amounts, none of the results were above the MDC in Q3/2024. The presence of these radionuclides is considered a part of the normal variation of global fallout and resuspension activities.

A summary of the gross air sampling data is shown in Table 6 below.

Table 6. Gross alpha and beta-gamma average results for Q3/2024.

Location	Average alpha result (μCi/mL)	Average alpha MDC (μCi/mL)	Average beta result (μCi/mL)	Average beta MDC (μCi/mL)
DOE-1	6.75E-16	6.46E-15	6.09E-14	2.44E-14
DOE-2	3.33E-16	6.46E-15	6.81E-14	2.44E-14
DOE-3	6.28E-16	6.51E-15	6.78E-14	2.46E-14
DOE-4	6.96E-16	6.46E-15	6.71E-14	2.44E-14
Average	5.83E-16	6.47E-15	6.60E-14	2.45E-14

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5. QA/QC ACTIVITIES

The following QA/QC activities were conducted for the PM₁₀, VOC, radionuclide, and meteorological data collection and analysis.

5.1 Field QA/QC

5.1.1 PM₁₀

The 24-hour daily averages for Q3/2024 are presented in Appendix A along with the monthly minimum, maximum, and 95th percentile for each station location. In addition, the nearby SLAMS, Simi Valley – Cochran Street – PM₁₀ Daily Averages, from 01/01/2024 to 07/31/2024 along with the monthly average minimum, maximum, and 95th percentile for the Simi Valley – Cochran Street location, are presented in Appendix A. Please note, only the Simi Valley PM₁₀ data from the SLAMS have been reported. The Simi Valley PM_{2.5} and the Reseda PM_{2.5} have not been reported here since this report discusses only PM₁₀ data, not PM_{2.5} data. In addition, per the EPA website, these EPA data are updated twice per year: once in June to capture the complete data for the prior year, and once in December to capture the data for the summer (ozone season). At the time of writing this report, the data posted are the most current available.

Flow Verifications

Functionality of the Met One E-BAM units is verified and recorded monthly during instrument audits; however, the instruments are also checked several times a week for operability. During the monthly audits, the Met One E-BAM temperature, pressure, and flow rate are verified against a National Institute of Standards and Technology (NIST) traceable flowmeter. The flow rate audit results are presented as bias percentages. The average quarterly bias for each DOE site (DOE-1, DOE-2, DOE-3, and DOE-4) is compared to the flow rate measurement quality objective of +/- 4%.

E-BAM units are occasionally swapped out for maintenance. When this occurs during a quarter, the reported quarterly bias percentage for the affected DOE site is based on the combined monthly audit results for the E-BAM units that operated at the site during that quarter. During Q3/2024, the monitor at DOE-3 was replaced during first month (July 2024). This resulted in two audits for DOE-3 during the month of July 2024. The quarterly flow rate bias percentages at the four E-BAM sites ranged from -4.10 to -0.79%. Although no E-BAM data quality issues were reported in Q3/2024, the E-BAM unit at DOE-2 had a flow rate bias of -4.1%, which exceeded the flow rate measurement quality objective of +/- 4%.

Complete audit reports and flow verification results for Q3/2024 are presented in Appendix D of this document. The flow rate verifications were based on 40 CFR 58, Appendix A, 3.3.1 and 4.2.2 through 4.2.3, along with the *Guideline on the Meaning and the Use of Precision and Bias Data Required by 40 CFR Part 58 Appendix A* (EPA 2007). The *Data Assessment Statistical Calculator* (DASC) tool, which is an EPA Excel-based software application, was used to perform the necessary statistical calculations based on the flowrate data collected during the monthly audits. Sections 2 and 2.5 of this EPA guidance document (EPA 2007) provide additional information and instruction for using the DASC tool.

5.1.2 VOCs

All data underwent at least two levels of QC review at the laboratory prior to transmission to North Wind. A minimum of 20% of the transmitted VOC results undergo a Level IV third-party data validation, annually. During this quarter, three of the seven SDGs — P2402727, P2403134, and P2403593 — underwent the

Level IV data validation. The data validation ensures that the required analytical measurement quality objectives are met to ensure the data are of sufficient quality for their intended purpose.

Each location had valid readings on the seven sample days for a sample completeness of 100%. Data completeness goals for VOCs exceeded the project goal of 85%.

5.1.3 Field Duplicates

Seven field duplicates were collected during this reporting period. Seven sampling events were conducted for the Q3/2024 effort. Sixteen sample and duplicate analyte detections were within the quality objective of +/- 15% RPD. There were no other detections associated with the samples and associated duplicates collected during this reporting period. The following analytes in the field duplicate pairs exceeded the quality objective of +/- 15% relative percent difference (RPD):

- Ethyl acetate in P2403134, P2402927, and P2403961.
- Acrylonitrile and ethyl acetate in P2403593.
- Ethyl acetate and toluene in P2403384.
- Ethyl acetate, trichloroethene, toluene, m,p-xylenes, styrene, and total xylenes in P2402727.
- Ethyl acetate and chloroform in P2403758.

5.1.4 Canister Pressure

Vacuum in the canisters is measured before and after sampling with an analog pressure gauge to ensure proper function. Final canister vacuums ranged from -6.0 inches mercury (Hg) to -1.0 inches Hg during this reporting period.

5.1.5 Radiological

The detector for onsite gross alpha and beta sample analysis is calibrated annually by a third-party vendor using sources traceable to the NIST. The detector is checked by counting alpha- and beta-emitting sources at the site when received from the vendor following calibration. This establishes an acceptable performance range for daily source checks. On each day the detector is used, performance is determined with the site source. The detector may be used if the daily check is within the acceptable performance range.

Samples analyzed at the offsite laboratory are QC-checked at the laboratory. These QC checks include blanks, laboratory replicates, matrix spikes, and matrix spike duplicates. Barium, which behaves chemically similar to radium, is used as a carrier to determine the yield of the chemical extraction.

Since Q2/2021, 100% of the radiological analytical results have undergone Level IV, third-party data validation. The data validation ensures that the required analytical measurement quality objectives are met to ensure the data are of sufficient quality for their intended purpose.

5.1.6 Meteorological

During the reporting period, a weekly data validation screening and review was performed on the monitored meteorological parameters based on the EPA guidance document *Meteorological Monitoring*

Guidance for Regulatory Modeling Applications (EPA 2000), Table 8-4 – Suggested Data Screening Criteria, as outlined in Section 4.1. The data validation procedure provided the basis for evaluating data completeness and for determining sensor performance and/or maintenance status.

5.1.7 Maintenance

Routine visual checks were performed on the meteorological station during weekly data downloading site visits. This included inspection of the meteorological tower sensors, E-BAM monitoring unit wind sensors, and solar-powered batteries to ensure proper functioning.

5.1.8 Corrective Action

Issues and corrective actions regarding the PM₁₀ monitors and the meteorological station are noted in Sections 5.1.8.1 and 5.1.8.2, respectively. Issues and corrective actions regarding the E-BAM monitors are noted in Section 4.2. No issues or corrective actions were noted regarding the remaining monitoring equipment or sampling events during this reporting period.

5.1.8.1 PM₁₀ Monitors

The E-BAM unit at DOE-2 had a flow rate bias of -4.1% over the 3-month period from July 1, 2024 – September 30, 2024. Since the results of the E-BAM flow check at DOE-2 fell outside the project's warning threshold of +/- 4% the unit was adjusted and rechecked per the Baseline Air Monitoring Work Plan, Appendix A (NASA 2017).

Refer to Section 4.2 for a detailed description of PM₁₀ air monitoring equipment issues.

5.1.8.2 Meteorological Station

This section covers data quality issues and associated corrective actions that occurred during the current monitoring quarter. The data percent completion goal of $\geq 80\%$ was met during Q3/2024 for all parameters except relative humidity. Quality issues this quarter included: (1) continued post-processing of the delta temperature data to resolve a datalogger programming equation where the 10-m and 2-m temperature parameters are reversed, (2) although the relative humidity sensor was replaced during a previous quarter and is performing within quality specifications, the data loss that occurred during that period has resulted in $< 80\%$ year-to-date data completion for this parameter, and (3) preventative maintenance replacement of the temperature sensors at 2 m and 10 m. Also, the recommended sensor maintenance schedule is provided for reference.

(1) Delta Temperature Calculation

- Data Quality Issue:
 - For meteorological monitoring, delta temperature should be defined as T at the higher level minus T at the lower level. However, the datalogger was improperly programmed to calculate the inverse of delta temperature when the station was replaced after the Woolsey Wildfire during Q3/2018. Consequently, delta temperature observations are being calculated with an opposite sign compared to the values from the original data logger.

- Corrective Action:
 - Datalogger Equation – Instead of reprogramming the datalogger to correctly calculate delta temperature, an adjustment multiplication factor of “-1” has been applied to the delta temperature values from the new data logger prior to performing the data validation.

Resolution – With application of the “-1” multiplication factor, delta temperature values in the validated project dataset accurately present delta temperature as:

$$\text{Delta Temperature} = [\text{Temperature @ 10 m}] \text{ minus } [\text{Temperature @ 2 m}]$$

(2) Relative Humidity Sensor:

- Data Quality Issue:
 - The relative humidity sensor was replaced in Q1/2024. Although the replaced relative humidity sensor has performed within quality specifications for the entire Q2/2024 and Q3/2024 (i.e., Q2/2024 and Q3/2024 data completeness = 100%), the 7,721 lost relative humidity 15-minute observations during Q1/2024 (i.e., Q1/2024 data completeness = 11.62%) have limited the potential year 2024 maximum annual data completeness for relative humidity to 78%.
- Corrective Actions:
 - No corrective action needed – Data collection will continue for this parameter with the understanding that an annual data completion goal of 80% cannot be achieved for relative humidity for year 2024.

(3) Recommended Maintenance Schedule:

Although not a corrective action, the manufacturer’s recommended maintenance frequency for meteorological sensors is presented below for information purposes. Proper and timely maintenance of the meteorological sensors is critical for ensuring that the data are not only valid (based on screening criteria) but also accurate. Schedules for maintenance and calibration are provided in the sensor user manuals and based on the in-service time of the sensor. Table 7 lists the recommended maintenance schedules for the Met One sensors installed at the DOE-4 meteorological station.

Table 7. Meteorological sensor recommended maintenance frequency (Met One).

Sensor	Frequency	Maintenance
WS	6–12 Month	Inspect for proper operation (manual check of pulses per revolution, bearing condition, anemometer cup condition, and bearing replacement if warranted)
	12–24 Month	Return to Met One for complete overhaul
WD	6–12 Month	Inspect for proper operation (manual check of sensor readings through 360°)
	6–12 Month	Field calibration
	12–24 month	Replace bearings & potentiometer
T	6–12 Month	Inspect sensor for proper operation (field comparison sensor reading against a precision mercury thermometer)
RH	6–12 Month	Inspect sensor for proper operation (compare sensor reading against local weather service or field psychrometer)
	12 Month	Return sensor to Met One for calibration and replacement of O-rings and filter membrane
Rain Gauge	6 Month	Clean sensor and bucket and field verify proper operation
Pressure	12 Month	Return sensor to Met One for calibration and replacement of O-rings and filter membrane
Radiometer	Monthly	Clean sensor glass dome with clean rag/tissue

Note: Maintenance schedules are as specified in the respective Met One sensor user manuals.

5.2 Laboratory QA/QC

This report covers 35 air monitoring samples for VOCs collected and analyzed according to the EPA Toxic Compendium Method TO-15, *Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)* (EPA 1999). These samples were reported under seven SDGs by the laboratory. All seven SDG analyses were performed by ALS in Simi Valley, CA. For each SDG, the laboratory ran continuing calibration verification, a method blank, and laboratory control samples, and verified surrogate recoveries for each sample.

The laboratory provided certified clean canisters for the sampling events. The certification of the canister batch is considered the equipment blank for each sampling event. The ALS case narrative discusses the cleaning of the canisters.

5.3 Audit Results

The PM₁₀ instruments were calibrated at the manufacturer and were functioning properly upon installation. The PM₁₀ instruments were audited monthly with a secondary NIST traceable flow meter. Although audits occur only monthly, the instruments were checked several times a week to ensure that they were functioning. Table 8 lists the dates for audits conducted in July through September. Only one flow rate comparison exceeded the project’s acceptance criterion of +/- 4. The E-BAM unit at DOE-2 had a flow rate bias of -4.1% over the 3-month period from July 1, 2024 – September 30, 2024. Since the results of the E-BAM flow check at DOE-2 fell outside the project’s warning threshold of +/- 4% the unit

was adjusted and rechecked per the Baseline Air Monitoring Work Plan, Appendix A (NASA 2017). The sample nozzles and support vanes were cleaned as needed. Complete audit reports are presented in Appendix D.

Table 8. PM₁₀ audit completeness.

Location	Met One E-BAM Serial Number	Parameter	Date
DOE-1	W23314	PM ₁₀	07/12/2024
DOE-2	Y12096	PM ₁₀	07/12/2024
DOE-3	X16067	PM ₁₀	07/12/2024
DOE-3	W23310	PM ₁₀	07/19/2024*
DOE-4	B18932	PM ₁₀	07/12/2024
DOE-1	W23314	PM ₁₀	08/09/2024
DOE-2	Y12096	PM ₁₀	08/09/2024
DOE-3	W23310	PM ₁₀	08/09/2024
DOE-4	B18932	PM ₁₀	08/09/2024
DOE-1	W23314	PM ₁₀	09/26/2024
DOE-2	Y12096	PM ₁₀	09/26/2024
DOE-3	W23310	PM ₁₀	09/26/2024
DOE-4	B18932	PM ₁₀	09/26/2024

Note:

* = This is the initial audit for W23310, which replaced X16067.

6. REFERENCES

- 10 Code of Federal Regulations (CFR) 20, Appendix B, “Annual Limits on Intake (ALIs) and Derived Air Concentrations (DACs) of Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sewerage,” Table 2.
- 40 CFR 58, Appendix C – Ambient Air Quality Monitoring Methodology.
- 40 CFR 136, Appendix B – Definition and Procedure for the Determination of the Method Detection Limit.
- California Environmental Protection Agency, Department of Toxic Substances Control (DTSC). 2018. *Approval of the Final Air Monitoring Station Locations for the Santa Susana Field Laboratory, Ventura County, California*. January.
- California Environmental Protection Agency, DTSC. 2022. Human and Ecological Risk Office Human Health Risk Assessment Note Number 3, DTSC-modified Screening Levels. April. Available online at: [Human Health Risk Assessment Note 3 -June 2020 revised May 2022 \(ca.gov\)](#) and [HHRA-Note-3-Tables-June2020-Revised-May2022A.xlsx \(live.com\)](#).
- National Aeronautics and Space Administration (NASA). 2017. *Baseline Air Monitoring Work Plan, Santa Susana Field Laboratory, Ventura County, California*. Prepared for California Department of Toxic Substances Control. Prepared on behalf of National Aeronautics and Space Administration, George C. Marshall Space Flight Center, The Boeing Company, and Department of Energy, Energy Technology and Engineering Center. September. Available online at: [SSFL Baseline Air Monitoring Work Plan](#).
- U.S. Environmental Protection Agency (EPA). 1999. *Air Method, Toxic Organics-15 (TO-15), Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)*. EPA 625/R-96/010b. January. Available online at: <https://www.epa.gov/homeland-security-research/epa-air-method-toxic-organics-15-15-determination-volatile-organic>.
- U.S. Environmental Protection Agency (EPA). 2000. *Meteorological Monitoring Guidance for Regulatory Modeling Applications, United State Environmental Protection Agency, Office of Air Quality Planning and Standards*. EPA-454/R-99-005. February.
- U.S. Environmental Protection Agency (EPA). 2007. *Guideline on the Meaning and the Use of Precision and Bias Data Required by 40 CFR Part 58 Appendix A, Version 1.1*. EPA-454/B-07-001. October.
- U.S. Environmental Protection Agency (EPA). 2017. *Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II, Ambient Air Monitoring Program*. EPA-454/B-17-001. January.
- U.S. Environmental Protection Agency (EPA). 2023. Regional Screening Levels – Generic Tables. <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables>. November.
- U.S. Environmental Protection Agency (EPA). 2023. Air Data, Pre-Generated Data Files, Particulates 2023 PM10 Daily Mass. https://aqs.epa.gov/aqsweb/airdata/download_files.html#Meta. October 26.

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Figure 1 – SSFL Air Monitoring Locations

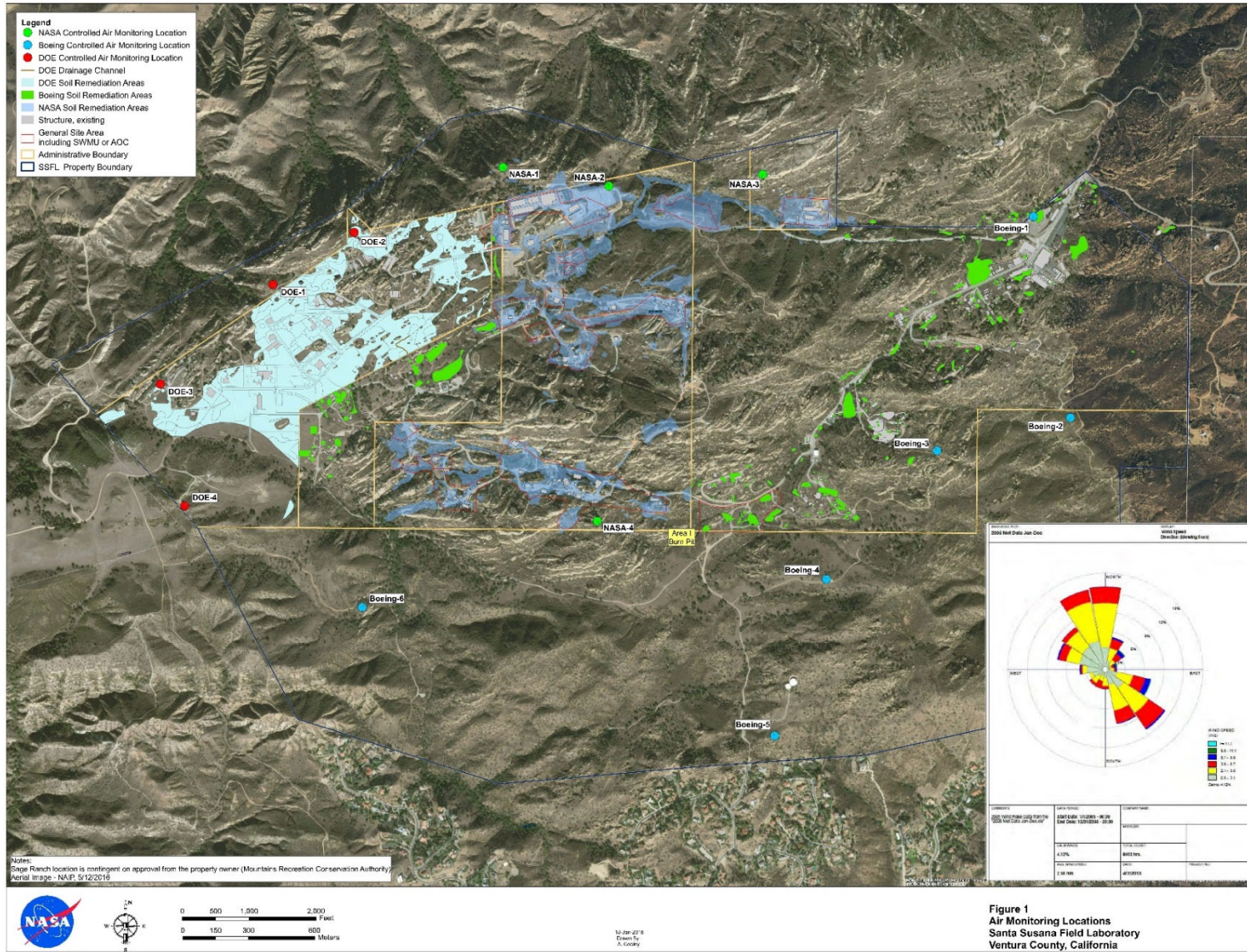
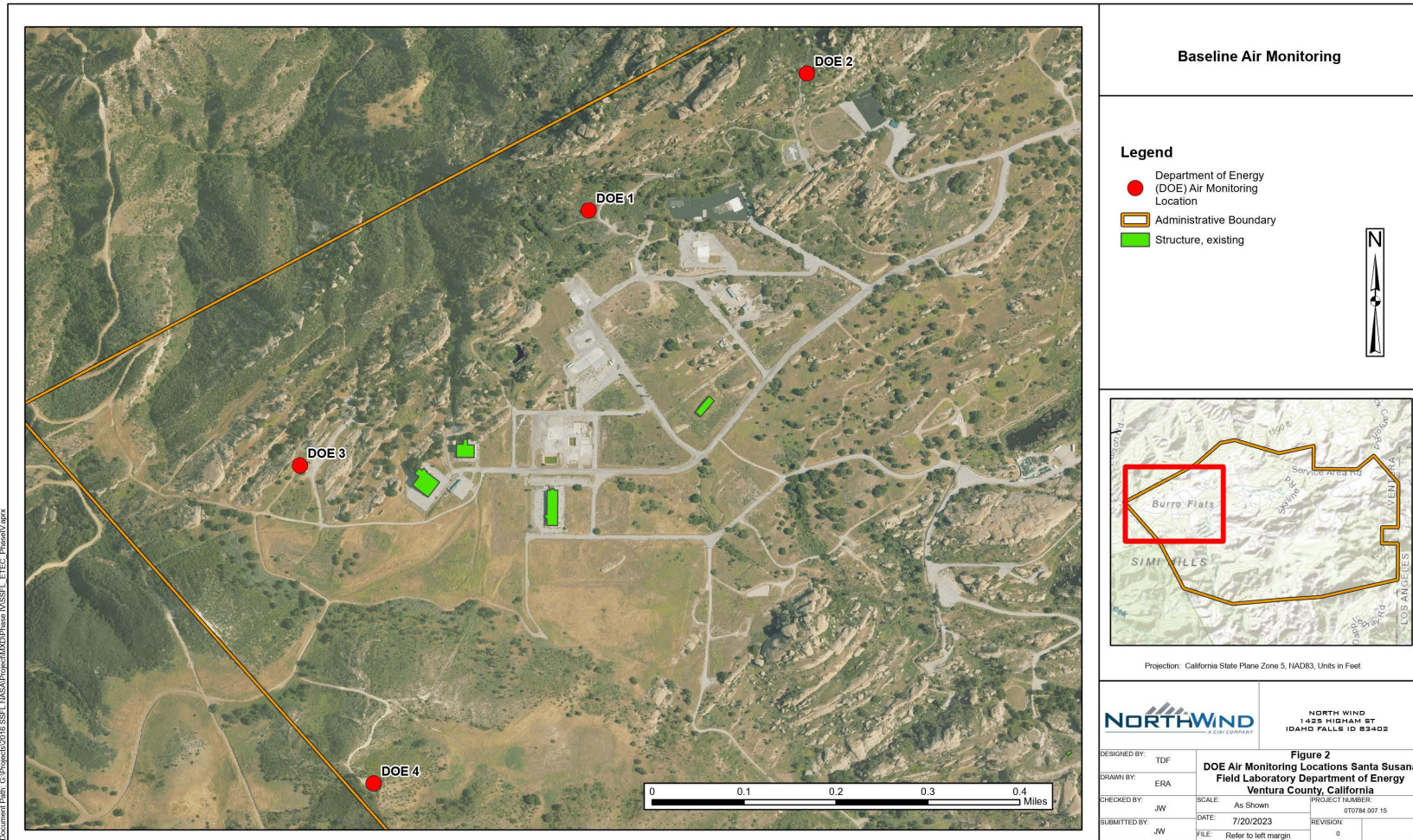
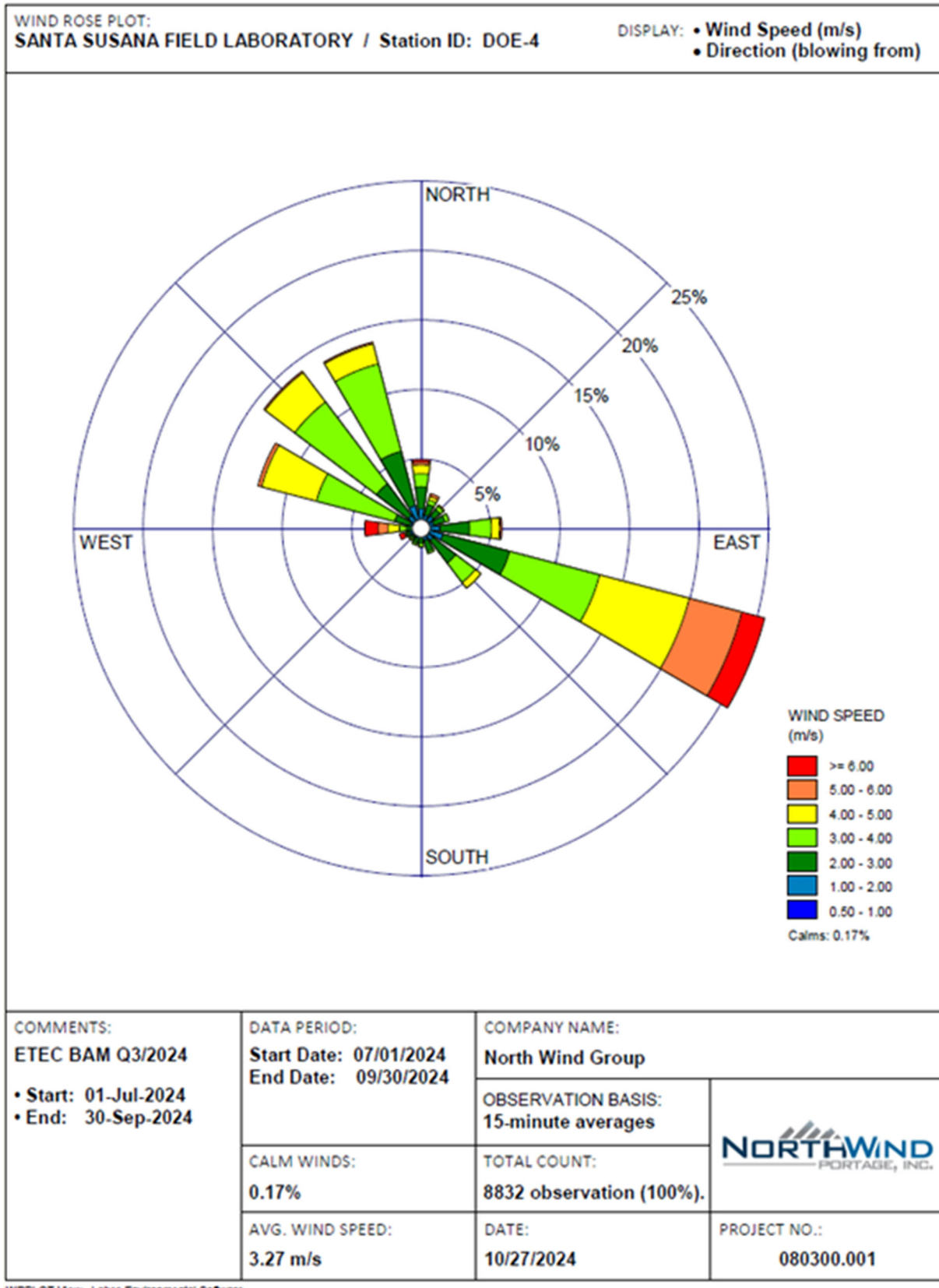


Figure 2 – DOE Air Monitoring Locations



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Figure 3 – DOE Quarterly Wind Rose



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APPENDIX A

PM₁₀ Daily Averages and Monthly Statistics

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PM₁₀ Daily Averages

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM ₁₀ (µg/m ³) (CAAQS 50 µg/m ³)	PM ₁₀ (µg/m ³) (CAAQS 50 µg/m ³)	PM ₁₀ (µg/m ³) (CAAQS 50 µg/m ³)	PM ₁₀ (µg/m ³) (CAAQS 50 µg/m ³)
07/01/24	19.083	18.291	16.208	12.395
07/02/24	19.208	22.25	14.791	12.07
07/03/24	17.083	16.5	16.291	12.312
07/04/24	19.875	22.458	29.916	32.7
07/05/24	21.25	18.416	34.041	17.058
07/06/24	30.958	21.875	39.277	16.608
07/07/24	19.75	16.916	32.176	11.9
07/08/24	17.5	18.583	21.083	14.125
07/09/24	18.75	17.5	47.666	16.191
07/10/24	25.041	23.208	48.666	21.008
07/11/24	29.791	30.25	24.583	21.062
07/12/24	28	25.291	30.5	17.179
07/13/24	24.125	19.791	43.7	12.558
07/14/24	16.5	12.541	32.894	11.562
07/15/24	18.291	17.458	34	13.154
07/16/24	16	16.666	15.111	10.629
07/17/24	18.833	16.208	34.625	12.166
07/18/24	20.166	18.291	—	12.704
07/19/24	18.041	16.875	—	13.912
07/20/24	14.625	11.083	12.875	11.104
07/21/24	15.291	12.75	14.333	10.933
07/22/24	15.916	12.166	13.791	11.279
07/23/24	14.541	11.583	14.666	10.954
07/24/24	17.125	13.541	16.125	13.8
07/25/24	22	17.041	21	16.2
07/26/24	25.666	17.666	19.583	15.112
07/27/24	21.458	18.416	17.291	14.325
07/28/24	17.916	15.333	15.083	10.17
07/29/24	12.958	10.166	11.791	14.062
07/30/24	15.708	10.833	10.875	10.837
07/31/24	15.833	11.916	12.916	11.887
08/01/24	17.458	14.583	14.458	14.858
08/02/24	17.25	15	16.708	13.97
08/03/24	13.875	11.291	10.875	32.47
08/04/24	12.75	13.458	11.333	34.733
08/05/24	13.666	40.416	12.125	11.029

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM ₁₀ (µg/m ³) (CAAQS 50 µg/m ³)	PM ₁₀ (µg/m ³) (CAAQS 50 µg/m ³)	PM ₁₀ (µg/m ³) (CAAQS 50 µg/m ³)	PM ₁₀ (µg/m ³) (CAAQS 50 µg/m ³)
08/06/24	22.208	12.541	15.708	13.066
08/07/24	20.708	14.291	19.875	12.225
08/08/24	25.125	16	21.375	15.216
08/09/24	19.541	16.333	14.375	13.300
08/10/24	20.458	14.75	15.291	14.037
08/11/24	19.916	17.666	18.041	13.554
08/12/24	20.875	15.958	16.541	12.437
08/13/24	16.875	13.5	15.916	11.866
08/14/24	16.791	14.583	14.416	13.275
08/15/24	15.291	13	13.583	13.566
08/16/24	18.666	15.625	16.25	13.970
08/17/24	24.75	21.041	27.625	17.195
08/18/24	19.833	13	18.166	12.045
08/19/24	11.25	10.291	10.5	8.854
08/20/24	11.791	7.583	8.041	7.445
08/21/24	17.958	16.125	17.875	14.912
08/22/24	19.833	16.5	17.708	11.487
08/23/24	18.541	15.958	18.375	12.475
08/24/24	21.875	16.083	14.875	10.029
08/25/24	16.75	13.166	14.208	12.433
08/26/24	16.833	13.791	14	14.320
08/27/24	18.083	14.916	15.583	13.779
08/28/24	22.375	18.666	19.25	16.141
08/29/24	21.041	18.333	21.041	13.404
08/30/24	21.166	16.875	14.833	14.895
08/31/24	22.125	18.416	—	13.758
09/01/24	24.166	21.041	—	12.641
09/02/24	21.125	18.125	—	12.633
09/03/24	13.916	11.333	—	12.062
09/04/24	9.791	8.416	8.187	10.137
09/05/24	—	13.875	14.791	17.437
09/06/24	—	16.625	18.041	17.258
09/07/24	—	15.5	13.136	19.950
09/08/24	—	12.75	19.4	15.508
09/09/24	—	7.625	24.583	47.083
09/10/24	21.833	10	29.375	11.929

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM ₁₀ (µg/m ³) (CAAQS 50 µg/m ³)	PM ₁₀ (µg/m ³) (CAAQS 50 µg/m ³)	PM ₁₀ (µg/m ³) (CAAQS 50 µg/m ³)	PM ₁₀ (µg/m ³) (CAAQS 50 µg/m ³)
09/11/24	22.958	14.5	25.708	11.462
09/12/24	25.458	17.541	21.583	13.450
09/13/24	30.875	17.541	20.208	14.070
09/14/24	24.125	15.416	21.25	12.050
09/15/24	20.875	10.541	19.458	8.720
09/16/24	25.666	11.625	18.083	8.454
09/17/24	21.208	13.166	12	8.008
09/18/24	16.083	11.291	21.375	9.879
09/19/24	17.791	9.041	15.125	7.575
09/20/24	18.125	9.625	17.5	8.287
09/21/24	21.166	14.541	16.166	10.075
09/22/24	18.083	13.125	20.166	11.954
09/23/24	14.833	10.291	14.583	8.995
09/24/24	23.458	17.875	9.875	13.354
09/25/24	22.875	13.333	18.708	9.620
09/26/24	16.25	16.416	9.875	10.900
09/27/24	18.291	11.958	14.166	8.129
09/28/24	21.375	17	18.708	13.337
09/29/24	11.125	9.208	9.875	43.658
09/30/24	17	11.875	14.167	11.52

Notes:

"—" indicates a filter sensor pressure failure with no value.

EPA – Simi Valley – Cochran Street – PM₁₀ Daily Averages, 01/01/2024–07/31/2024

	Simi Valley AQS # 061112002
Simi Valley PM ₁₀ Sample Date	PM ₁₀ (µg/m ³) (CAAQS 50 µg/m ³)
01/01/24	10
01/02/24	11
01/03/24	7
01/04/24	5
01/05/24	15
01/06/24	12
01/07/24	6
01/08/24	6
01/13/24	14
01/14/24	21
01/15/24	19
01/16/24	12
01/17/24	15
01/18/24	22
01/19/24	23
01/20/24	9
01/21/24	4
01/22/24	2
01/23/24	3
01/24/24	14
01/25/24	8
01/26/24	3
01/27/24	1
01/28/24	2
01/29/24	9
01/30/24	12
01/31/24	20
02/01/24	3
02/02/24	9
02/03/24	9
02/04/24	3
02/05/24	1
02/06/24	1
02/07/24	5
02/08/24	4
02/09/24	4

	Simi Valley AQS # 061112002
Simi Valley PM₁₀ Sample Date	PM₁₀ (µg/m³) (CAAQS 50 µg/m³)
02/10/24	4
02/11/24	5
02/12/24	5
02/13/24	10
02/14/24	13
02/15/24	8
02/16/24	12
02/17/24	14
02/18/24	3
02/19/24	0
02/20/24	0
02/21/24	3
02/22/24	8
02/23/24	4
02/24/24	6
02/25/24	8
02/26/24	10
02/27/24	7
02/28/24	11
02/29/24	11
03/01/24	1
03/02/24	3
03/03/24	6
03/04/24	7
03/05/24	9
03/06/24	5
03/07/24	3
03/08/24	11
03/09/24	8
03/10/24	6
03/11/24	7
03/12/24	11
03/13/24	12
03/14/24	47
03/15/24	11
03/16/24	12
03/17/24	12

	Simi Valley AQS # 061112002
Simi Valley PM₁₀ Sample Date	PM₁₀ (µg/m³) (CAAQS 50 µg/m³)
03/18/24	11
03/19/24	18
03/20/24	18
03/21/24	21
03/22/24	21
03/23/24	9
03/24/24	4
03/25/24	11
03/26/24	18
03/27/24	16
03/28/24	11
03/29/24	9
03/30/24	3
03/31/24	1
04/01/24	4
04/02/24	9
04/03/24	11
04/04/24	10
04/05/24	5
04/06/24	6
04/07/24	8
04/08/24	8
04/09/24	9
04/10/24	16
04/11/24	20
04/12/24	19
04/13/24	8
04/14/24	3
04/15/24	5
04/16/24	8
04/17/24	12
04/18/24	19
04/19/24	20
04/20/24	21
04/21/24	20
04/22/24	19
04/23/24	7

Simi Valley AQS # 061112002	
Simi Valley PM₁₀ Sample Date	PM₁₀ (µg/m³) (CAAQS 50 µg/m³)
04/24/24	13
04/25/24	10
04/26/24	21
04/27/24	13
04/28/24	15
04/29/24	21
04/30/24	29
05/01/24	36
05/02/24	32
05/03/24	31
05/04/24	17
05/05/24	6
05/06/24	9
05/07/24	16
05/08/24	26
05/09/24	34
05/10/24	29
05/11/24	23
05/12/24	18
05/13/24	25
05/14/24	23
05/15/24	16
05/16/24	16
05/17/24	15
05/18/24	14
05/19/24	11
05/20/24	15
05/21/24	25
05/22/24	24
05/23/24	27
05/24/24	25
05/25/24	12
05/26/24	13
05/27/24	20
05/28/24	21
05/29/24	24
05/30/24	27

	Simi Valley AQS # 061112002
Simi Valley PM₁₀ Sample Date	PM₁₀ (µg/m³) (CAAQS 50 µg/m³)
05/31/24	24
06/01/24	17
06/02/24	14
06/03/24	19
06/04/24	28
06/05/24	25
06/06/24	23
06/07/24	16
06/08/24	14
06/09/24	8
06/10/24	18
06/11/24	20
06/12/24	22
06/13/24	15
06/14/24	25
06/15/24	31
06/16/24	57
06/17/24	41
06/18/24	42
06/19/24	38
06/20/24	33
06/21/24	32
06/22/24	28
06/23/24	13
06/24/24	20
06/25/24	29
06/26/24	32
06/27/24	33
06/28/24	35
06/29/24	31
06/30/24	16
07/01/24	24
07/02/24	29
07/03/24	27
07/04/24	27
07/05/24	36
07/06/24	35

	Simi Valley AQS # 061112002
Simi Valley PM₁₀ Sample Date	PM₁₀ (µg/m³) (CAAQS 50 µg/m³)
07/07/24	21
07/08/24	24
07/09/24	29
07/10/24	36
07/11/24	34
07/12/24	24
07/14/24	16
07/15/24	23
07/16/24	24
07/17/24	27
07/18/24	31
07/19/24	28
07/20/24	20
07/21/24	21
07/22/24	28
07/23/24	26
07/24/24	28
07/25/24	36
07/26/24	31
07/27/24	26
07/28/24	19
07/29/24	22
07/30/24	25
07/31/24	26

Notes:

Data supplied from https://aqs.epa.gov/aqsweb/airdata/download_files.html#Meta Only the Simi Valley PM₁₀ data from the State and Local Air Monitoring Stations (SLAMS) have been reported here. The Simi Valley PM_{2.5} and the Reseda PM_{2.5} have not been reported here since this report discusses only PM₁₀ data, not PM_{2.5} data. This webpage page contains pre-generated files of data available for download. The files are updated twice per year: once in June to capture the complete data for the prior year, and once in December to capture the data for the summer (ozone season). At the time of writing this report the data posted are the most current available.

Gray-shaded box with bold number indicates value exceeded CAAQS but is below the NAAQS of 150 µg/m³.

PM₁₀ Monthly Statistics

Location ID	July 2024			August 2024			September 2024		
	PM ₁₀			PM ₁₀			PM ₁₀		
	High	Low	95th PCTL	High	Low	95th PCTL	High	Low	95th PCTL
DOE-1	30.95800	12.95800	28.89550	25.12500	11.25000	23.56250	30.87500	9.79100	25.62440
DOE-2	30.25000	10.16600	24.24950	40.41600	7.58300	19.85350	21.04100	7.62500	18.01250
DOE-3	48.66600	10.87500	46.07960	27.62500	8.04100	21.22470	29.37500	8.18700	25.37050
DOE-4	32.70000	10.17000	21.03500	34.73300	7.44500	24.83250	47.08300	7.57500	32.98940

PCTL = percentile

EPA – Simi Valley – Cochran Street – PM₁₀ Monthly Statistics, 01/01/2024–07/31/2024

Location ID	January 2024			February 2024			March 2024		
	PM 10			PM 10			PM 10		
	High	Low	95th PCTL	High	Low	95th PCTL	High	Low	95th PCTL
Simi Valley AQS # 061112002 (PM ₁₀)	23.00000	1.00000	21.70000	14.00000	0.00000	12.60000	47.00000	1.00000	21.00000

Location ID	April 2024			May 2024			June 2024		
	PM 10			PM 10			PM 10		
	High	Low	95th PCTL	High	Low	95th PCTL	High	Low	95th PCTL
Simi Valley AQS # 061112002 (PM ₁₀)	29.00000	3.00000	21.00000	36.00000	6.00000	33.00000	57.00000	8.00000	41.55000

Location ID	July 2024		
	PM 10		
	High	Low	95th PCTL
Simi Valley AQS # 061112002 (PM ₁₀)	36.00000	16.00000	36.00000

Notes:

Data supplied from https://aqs.epa.gov/aqsweb/airdata/download_files.html#Meta. Only the Simi Valley PM₁₀ data from the State and Local Air Monitoring Stations (SLAMS) have been reported here. The Simi Valley PM_{2.5} and the Reseda PM_{2.5} have not been reported here since this report discusses only PM₁₀ data, not PM_{2.5} data. This webpage page contains pre-generated files of data available for download. The files are updated twice per year: once in June to capture the complete data for the prior year, and once in December to capture the data for the summer (ozone season).

APPENDIX B

Analytical Results for Ambient Air VOCs

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Table B-1. Ambient air VOC detection results compared to Screening Level Values.

Location ID	Sample Date	Analyte	Method Detection Limit	Result	Screening Level Value	SL Source
DOE-1	7/3/2024	Dichlorodifluoromethane	0.14	2.1	100	US EPA RSL
DOE-1	7/3/2024	Ethyl acetate	1.2	33	73	US EPA RSL
DOE-1	7/3/2024	Toluene	0.1	0.93	310	DTSC HHRA NOTE 3
DOE-1	7/3/2024	Trichlorofluoromethane	0.13	0.97	1300	DTSC HHRA NOTE 3
DOE-2	7/3/2024	Dichlorodifluoromethane	0.13	2	100	US EPA RSL
DOE-2	7/3/2024	Ethyl acetate	1.1	23 ;J	73	US EPA RSL
DOE-2	7/3/2024	M-xylene & p-xylene	0.21	2.2 ;J	100	US EPA RSL
DOE-2	7/3/2024	Styrene	0.13	1.4 ;J	940	DTSC HHRA NOTE 3
DOE-2	7/3/2024	Toluene	0.098	5.2 ;J	310	DTSC HHRA NOTE 3
DOE-2	7/3/2024	Trichloroethene	0.11	1.4 ;J	0.48	US EPA RSL
DOE-2	7/3/2024	Trichlorofluoromethane	0.12	0.97	1300	DTSC HHRA NOTE 3
DOE-2	7/3/2024	Xylenes, total	0.21	2.2	100	US EPA RSL
DOE-3	7/3/2024	Dichlorodifluoromethane	0.12	2.1	100	US EPA RSL
DOE-3	7/3/2024	Ethyl acetate	1.1	17	73	US EPA RSL
DOE-3	7/3/2024	Trichlorofluoromethane	0.12	1	1300	DTSC HHRA NOTE 3
DOE-4	7/3/2024	Dichlorodifluoromethane	0.13	2	100	US EPA RSL
DOE-4	7/3/2024	Ethyl acetate	1.1	18	73	US EPA RSL
DOE-4	7/3/2024	Trichlorofluoromethane	0.12	0.96	1300	DTSC HHRA NOTE 3
DOE-1	7/18/2024	Dichlorodifluoromethane	0.15	2.7	100	US EPA RSL
DOE-1	7/18/2024	Ethyl acetate	1.3	58	73	US EPA RSL
DOE-1	7/18/2024	Trichlorofluoromethane	0.14	1.2	1300	DTSC HHRA NOTE 3
DOE-3	7/18/2024	Dichlorodifluoromethane	0.13	2.5	100	US EPA RSL
DOE-3	7/18/2024	Ethyl acetate	1.1	26	73	US EPA RSL
DOE-3	7/18/2024	Methylene chloride	0.22	0.69	1	DTSC HHRA NOTE 3
DOE-3	7/18/2024	Trichlorofluoromethane	0.12	1.1	1300	DTSC HHRA NOTE 3
DOE-2	7/18/2024	Dichlorodifluoromethane	0.14	2.6	100	US EPA RSL
DOE-2	7/18/2024	Ethyl acetate	1.2	20	73	US EPA RSL
DOE-2	7/18/2024	Trichlorofluoromethane	0.13	1.2	1300	DTSC HHRA NOTE 3
DOE-4	7/18/2024	Dichlorodifluoromethane	0.13	2.6	100	US EPA RSL
DOE-4	7/18/2024	Ethyl acetate	1.2	38	73	US EPA RSL
DOE-4	7/18/2024	Trichlorofluoromethane	0.13	1.2	1300	DTSC HHRA NOTE 3
DOE-1	8/2/2024	Dichlorodifluoromethane	0.13	2.3	100	US EPA RSL
DOE-1	8/2/2024	Ethyl acetate	1.2	23	73	US EPA RSL
DOE-1	8/2/2024	Trichlorofluoromethane	0.12	1.1	1300	DTSC HHRA NOTE 3
DOE-2	8/2/2024	Dichlorodifluoromethane	0.13	2.3	100	US EPA RSL
DOE-2	8/2/2024	Ethyl acetate	1.1	30	73	US EPA RSL
DOE-2	8/2/2024	Trichlorofluoromethane	0.12	1.1	1300	DTSC HHRA NOTE 3
DOE-3	8/2/2024	Dichlorodifluoromethane	0.13	2.3	100	US EPA RSL
DOE-3	8/2/2024	Ethyl acetate	1.2	20	73	US EPA RSL
DOE-3	8/2/2024	Trichlorofluoromethane	0.13	1.1	1300	DTSC HHRA NOTE 3
DOE-4	8/2/2024	Dichlorodifluoromethane	0.14	2.3	100	US EPA RSL
DOE-4	8/2/2024	Ethyl acetate	1.2	15 J;	73	US EPA RSL
DOE-4	8/2/2024	Trichlorofluoromethane	0.13	1.1	1300	DTSC HHRA NOTE 3
DOE-1	8/15/2024	Dichlorodifluoromethane	0.13	2.4	100	US EPA RSL
DOE-1	8/15/2024	Ethyl acetate	1.2	25	73	US EPA RSL
DOE-1	8/15/2024	Trichlorofluoromethane	0.12	1.2	1300	DTSC HHRA NOTE 3

DOE-2	8/15/2024	Dichlorodifluoromethane	0.15	2.5	100	US EPA RSL
DOE-2	8/15/2024	Ethyl acetate	1.3	17	73	US EPA RSL
DOE-2	8/15/2024	Trichlorofluoromethane	0.14	1.2	1300	DTSC HHRA NOTE 3
DOE-3	8/15/2024	Carbon disulfide	0.25	1.8	730	US EPA RSL
DOE-3	8/15/2024	Dichlorodifluoromethane	0.13	2.4	100	US EPA RSL
DOE-3	8/15/2024	Ethyl acetate	1.2	24	73	US EPA RSL
DOE-3	8/15/2024	Trichlorofluoromethane	0.13	1.2	1300	DTSC HHRA NOTE 3
DOE-4	8/15/2024	1,2,4-trimethylbenzene	0.11	0.84	63	US EPA RSL
DOE-4	8/15/2024	1,2-dimethyl-benzene	0.12	1.1	100	US EPA RSL
DOE-4	8/15/2024	4-isopropyltoluene	0.12	2.9	-----	-----
DOE-4	8/15/2024	Benzene	0.12	1.4	0.097	DTSC HHRA NOTE 3
DOE-4	8/15/2024	Dichlorodifluoromethane	0.13	2.3	100	US EPA RSL
DOE-4	8/15/2024	Ethyl acetate	1.2	49	73	US EPA RSL
DOE-4	8/15/2024	Ethylbenzene	0.12	2.3	1.1	US EPA RSL
DOE-4	8/15/2024	M-xylene & p-xylene	0.22	3.4	100	US EPA RSL
DOE-4	8/15/2024	N-heptane	0.13	0.99	420	US EPA RSL
DOE-4	8/15/2024	Toluene	0.10	8.5	310	DTSC HHRA NOTE 3
DOE-4	8/15/2024	Trichlorofluoromethane	0.12	1.2	1300	DTSC HHRA NOTE 3
DOE-4	8/15/2024	Xylenes, total	0.22	4.4	100	US EPA RSL
DOE-1	8/28/2024	Dichlorodifluoromethane	0.13	1.9	100	US EPA RSL
DOE-1	8/28/2024	Ethyl acetate	1.1	19	73	US EPA RSL
DOE-1	8/28/2024	Trichlorofluoromethane	0.12	1.1	1300	DTSC HHRA NOTE 3
DOE-2	8/28/2024	Acrylonitrile	0.39	2.5 ;J	0.041	US EPA RSL
DOE-2	8/28/2024	Dichlorodifluoromethane	0.13	2	100	US EPA RSL
DOE-2	8/28/2024	Ethyl acetate	1.2	46 ;J	73	US EPA RSL
DOE-2	8/28/2024	Trichlorofluoromethane	0.13	1.1	1300	DTSC HHRA NOTE 3
DOE-3	8/28/2024	Dichlorodifluoromethane	0.13	2	100	US EPA RSL
DOE-3	8/28/2024	Ethyl acetate	1.1	16	73	US EPA RSL
DOE-3	8/28/2024	Trichlorofluoromethane	0.12	1.1	1300	DTSC HHRA NOTE 3
DOE-4	8/28/2024	Dichlorodifluoromethane	0.13	2	100	US EPA RSL
DOE-4	8/28/2024	Ethyl acetate	1.2	24	73	US EPA RSL
DOE-4	8/28/2024	Trichlorofluoromethane	0.12	1.2	1300	DTSC HHRA NOTE 3
DOE-1	9/10/2024	Chloroform	0.12	2.8 B;	0.12	US EPA RSL
DOE-1	9/10/2024	Dichlorodifluoromethane	0.14	2.5	100	US EPA RSL
DOE-1	9/10/2024	Ethyl acetate	1.2	20	73	US EPA RSL
DOE-1	9/10/2024	Trichlorofluoromethane	0.13	1.7	1300	DTSC HHRA NOTE 3
DOE-2	9/10/2024	Dichlorodifluoromethane	0.14	2.4	100	US EPA RSL
DOE-2	9/10/2024	Trichlorofluoromethane	0.13	1.3	1300	DTSC HHRA NOTE 3
DOE-3	9/10/2024	Dichlorodifluoromethane	0.13	2.4	100	US EPA RSL
DOE-3	9/10/2024	Ethyl acetate	1.1	11	73	US EPA RSL
DOE-3	9/10/2024	Trichlorofluoromethane	0.12	1.3	1300	DTSC HHRA NOTE 3
DOE-4	9/10/2024	Chloroform	0.11	2.0 B;	0.12	US EPA RSL
DOE-4	9/10/2024	Dichlorodifluoromethane	0.14	2.4	100	US EPA RSL
DOE-4	9/10/2024	Ethyl acetate	1.2	11	73	US EPA RSL
DOE-4	9/10/2024	Trichlorofluoromethane	0.13	1.3	1300	DTSC HHRA NOTE 3
DOE-1	9/25/2024	Dichlorodifluoromethane	0.14	2.2	100	US EPA RSL
DOE-1	9/25/2024	Ethyl acetate	1.2	15	73	US EPA RSL
DOE-1	9/25/2024	Toluene	0.10	0.93	310	DTSC HHRA NOTE 3
DOE-1	9/25/2024	Trichlorofluoromethane	0.13	1.0	1300	DTSC HHRA NOTE 3

DOE-2	9/25/2024	Dichlorodifluoromethane	0.14	2.9	100	US EPA RSL
DOE-2	9/25/2024	Ethyl acetate	1.2	7.0	73	US EPA RSL
DOE-2	9/25/2024	Isopropanol	0.35	1.7	210	US EPA RSL
DOE-2	9/25/2024	Methylene chloride	0.24	1.2	1	DTSC HHRA NOTE 3
DOE-2	9/25/2024	Toluene	0.10	0.93	310	DTSC HHRA NOTE 3
DOE-2	9/25/2024	Trichlorofluoromethane	0.13	1.3	1300	DTSC HHRA NOTE 3
DOE-3	9/25/2024	Dichlorodifluoromethane	0.13	1.9	100	US EPA RSL
DOE-3	9/25/2024	Ethyl acetate	1.1	7.0	73	US EPA RSL
DOE-3	9/25/2024	Trichlorofluoromethane	0.12	0.94	1300	DTSC HHRA NOTE 3
DOE-4	9/25/2024	Acrylonitrile	0.39	2.1	0.041	US EPA RSL
DOE-4	9/25/2024	Dichlorodifluoromethane	0.14	2.1	100	US EPA RSL
DOE-4	9/25/2024	Ethyl acetate	1.2	16	73	US EPA RSL
DOE-4	9/25/2024	Trichlorofluoromethane	0.13	1.0	1300	DTSC HHRA NOTE 3

Notes:

Bold text and gray-shaded boxes indicate detection above reporting limit, and also exceeds the EPA or DTSC Screening Level.

B = Compound was found in the associated blank as well as in the sample.

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

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APPENDIX C
Radionuclide Results

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Table C-1. Gross alpha and gross beta air sample results for air samplers.

Sample Collection Date	Result Alpha (mCi/mL)	MDC – Alpha (mCi/mL)	Result Beta (mCi/mL)	MDC – Beta (mCi/mL)
Sample location DOE-1				
7/1/2024	9.88E-16	7.16E-15	5.41E-14	2.82E-14
7/5/2024	4.21E-15	5.27E-15	3.59E-14	2.08E-14
7/8/2024	6.52E-16	7.18E-15	2.72E-14	2.83E-14
7/12/2024	3.54E-15	5.38E-15	5.04E-14	2.12E-14
7/15/2024	2.64E-15	7.05E-15	3.38E-14	2.78E-14
7/19/2024	2.28E-15	5.41E-15	4.12E-14	2.13E-14
7/22/2024	-1.36E-15	7.06E-15	5.91E-14	2.78E-14
7/26/2024	-5.30E-16	5.40E-15	5.03E-14	2.13E-14
7/29/2024	3.08E-16	7.08E-15	5.64E-14	2.79E-14
8/2/2024	4.02E-15	5.34E-15	5.89E-14	2.07E-14
8/5/2024	4.66E-15	7.08E-15	9.43E-14	2.74E-14
8/9/2024	-2.72E-16	5.33E-15	7.16E-14	2.06E-14
8/12/2024	2.34E-15	7.15E-15	8.09E-14	2.76E-14
8/16/2024	4.01E-15	5.33E-15	6.38E-14	2.06E-14
8/19/2024	-2.03E-15	7.05E-15	4.87E-14	2.72E-14
8/23/2024	-1.29E-15	5.38E-15	4.17E-14	2.08E-14
8/26/2024	-3.03E-15	7.06E-15	4.70E-14	2.73E-14
8/30/2024	4.85E-16	5.35E-15	6.89E-14	2.07E-14
9/3/2024	4.01E-15	5.81E-15	8.65E-14	2.07E-14
9/6/2024	4.02E-15	7.74E-15	1.01E-13	2.75E-14
9/9/2024	3.65E-16	7.87E-15	1.17E-13	2.80E-14
9/13/2024	-1.74E-15	5.86E-15	4.02E-14	2.08E-14
9/16/2024	-6.29E-15	7.74E-15	3.19E-14	2.75E-14
9/20/2024	-3.49E-15	5.84E-15	3.26E-14	2.08E-14
9/23/2024	-6.41E-16	7.78E-15	6.58E-14	2.77E-14
9/27/2024	2.02E-17	5.87E-15	8.28E-14	2.09E-14
9/30/2024	3.62E-16	7.80E-15	1.02E-13	2.78E-14

Sample Collection Date	Result Alpha (mCi/mL)	MDC – Alpha (mCi/mL)	Result Beta (mCi/mL)	MDC – Beta (mCi/mL)
Sample location DOE-2				
7/1/2024	-3.75E-15	7.16E-15	4.66E-14	2.82E-14
7/5/2024	2.72E-15	5.27E-15	5.09E-14	2.08E-14
7/8/2024	2.35E-15	7.19E-15	7.10E-14	2.83E-14
7/12/2024	5.06E-15	5.38E-15	9.96E-14	2.12E-14
7/15/2024	3.31E-15	7.05E-15	6.36E-14	2.78E-14
7/19/2024	7.46E-16	5.41E-15	6.18E-14	2.13E-14
7/22/2024	1.98E-15	7.07E-15	4.74E-14	2.79E-14
7/26/2024	1.76E-15	5.39E-15	5.10E-14	2.12E-14
7/29/2024	-4.38E-15	7.09E-15	4.75E-14	2.80E-14
8/2/2024	4.27E-15	5.34E-15	5.70E-14	2.07E-14
8/5/2024	3.66E-15	7.08E-15	9.33E-14	2.74E-14
8/9/2024	2.50E-15	5.32E-15	5.73E-14	2.06E-14
8/12/2024	3.11E-16	7.15E-15	1.11E-13	2.76E-14
8/16/2024	4.84E-16	5.33E-15	8.28E-14	2.06E-14
8/19/2024	-1.03E-15	7.05E-15	7.28E-14	2.73E-14
8/23/2024	-7.82E-16	5.37E-15	5.57E-14	2.08E-14
8/26/2024	-4.37E-15	7.06E-15	4.46E-14	2.73E-14
8/30/2024	-2.02E-17	5.35E-15	5.31E-14	2.07E-14
9/3/2024	3.51E-15	5.81E-15	8.91E-14	2.07E-14
9/6/2024	2.65E-17	7.72E-15	8.88E-14	2.74E-14
9/9/2024	4.43E-15	7.88E-15	8.93E-14	2.80E-14
9/13/2024	1.53E-15	5.86E-15	7.29E-14	2.09E-14
9/16/2024	-4.96E-15	7.74E-15	6.55E-14	2.75E-14
9/20/2024	-2.24E-15	5.84E-15	5.40E-14	2.08E-14
9/23/2024	-3.31E-15	7.77E-15	7.85E-14	2.77E-14
9/27/2024	-1.49E-15	5.87E-15	7.51E-14	2.09E-14
9/30/2024	-3.32E-15	7.80E-15	5.82E-14	2.78E-14

Sample Collection Date	Result Alpha (mCi/mL)	MDC – Alpha (mCi/mL)	Result Beta (mCi/mL)	MDC – Beta (mCi/mL)
Sample location DOE-3				
7/1/2024	-2.70E-17	7.15E-15	2.35E-14	2.82E-14
—	—	—	—	—
7/8/2024	9.92E-16	7.19E-15	1.12E-13	2.83E-14
7/12/2024	7.35E-15	5.38E-15	7.74E-14	2.12E-14
7/15/2024	-2.36E-15	7.07E-15	3.04E-14	2.79E-14
7/19/2024	2.02E-15	5.41E-15	5.15E-14	2.13E-14
7/22/2024	6.43E-16	7.09E-15	8.14E-14	2.79E-14
7/26/2024	3.03E-15	5.39E-15	4.67E-14	2.12E-14
7/29/2024	1.31E-15	7.09E-15	5.29E-14	2.79E-14
8/2/2024	1.24E-15	5.34E-15	4.60E-14	2.07E-14
8/5/2024	5.33E-15	7.09E-15	9.55E-14	2.74E-14
8/9/2024	3.75E-15	5.32E-15	8.05E-14	2.06E-14
8/12/2024	3.11E-16	7.16E-15	5.70E-14	2.77E-14
8/16/2024	3.25E-15	5.32E-15	6.47E-14	2.06E-14
8/19/2024	3.07E-16	7.07E-15	8.14E-14	2.73E-14
8/23/2024	-2.74E-16	5.38E-15	5.68E-14	2.08E-14
8/26/2024	-3.61E-16	7.06E-15	4.28E-14	2.73E-14
8/30/2024	-2.30E-15	5.35E-15	6.08E-14	2.07E-14
9/3/2024	1.52E-15	5.81E-15	8.12E-14	2.07E-14
9/6/2024	-9.66E-16	7.70E-15	1.13E-13	2.74E-14
9/9/2024	3.08E-15	7.90E-15	1.34E-13	2.81E-14
9/13/2024	2.79E-15	5.87E-15	4.61E-14	2.09E-14
9/16/2024	-4.96E-15	7.74E-15	5.06E-14	2.75E-14
9/20/2024	-3.24E-15	5.84E-15	5.26E-14	2.08E-14
9/23/2024	-3.65E-15	7.78E-15	6.44E-14	2.77E-14
9/27/2024	-4.84E-16	5.87E-15	9.35E-14	2.09E-14
9/30/2024	-1.98E-15	7.80E-15	6.74E-14	2.78E-14

Sample Collection Date	Result Alpha (mCi/mL)	MDC – Alpha (mCi/mL)	Result Beta (mCi/mL)	MDC – Beta (mCi/mL)
Sample location DOE-4				
7/1/2024	4.37E-15	7.15E-15	4.33E-14	2.82E-14
7/5/2024	3.47E-15	5.27E-15	7.30E-14	2.08E-14
7/8/2024	4.39E-15	7.19E-15	5.69E-14	2.84E-14
7/12/2024	2.01E-15	5.36E-15	4.62E-14	2.12E-14
7/15/2024	-2.70E-15	7.08E-15	6.95E-14	2.79E-14
7/19/2024	1.51E-15	5.39E-15	7.28E-14	2.13E-14
7/22/2024	-3.62E-16	7.10E-15	9.26E-14	2.80E-14
7/26/2024	-7.84E-16	5.39E-15	4.97E-14	2.12E-14
7/29/2024	1.98E-15	7.08E-15	4.14E-14	2.79E-14
8/2/2024	2.75E-15	5.34E-15	7.59E-14	2.06E-14
8/5/2024	2.32E-15	7.10E-15	8.43E-14	2.75E-14
8/9/2024	2.24E-15	5.31E-15	6.25E-14	2.05E-14
8/12/2024	3.69E-15	7.15E-15	8.45E-14	2.76E-14
8/16/2024	1.49E-15	5.32E-15	9.52E-14	2.06E-14
8/19/2024	9.76E-16	7.07E-15	6.98E-14	2.73E-14
8/23/2024	1.50E-15	5.38E-15	4.17E-14	2.08E-14
8/26/2024	-1.70E-15	7.06E-15	4.42E-14	2.73E-14
8/30/2024	1.75E-15	5.35E-15	6.16E-14	2.07E-14
9/3/2024	-2.29E-16	5.80E-15	8.13E-14	2.06E-14
9/6/2024	6.89E-16	7.71E-15	7.30E-14	2.74E-14
9/9/2024	-3.13E-16	7.92E-15	1.03E-13	2.82E-14
9/13/2024	2.54E-15	5.86E-15	4.13E-14	2.09E-14
9/16/2024	-6.62E-15	7.74E-15	7.82E-14	2.75E-14
9/20/2024	-2.48E-15	5.83E-15	4.61E-14	2.07E-14
9/23/2024	-3.99E-15	7.79E-15	7.80E-14	2.77E-14
9/27/2024	-7.36E-16	5.87E-15	8.42E-14	2.09E-14
9/30/2024	1.03E-15	7.79E-15	5.99E-14	2.77E-14

Note: Some values are negative after background subtraction.

Gray-shaded box indicates that the sample at DOE-3 was not collected during this event.

Table C-2. Individual radionuclide analysis for the composite filter samples.

Radionuclide	Result (pCi/sample)	MDC (pCi/sample)	Data Qualifier	Airborne Concentration (μ Ci/mL)
Location DOE-1 – Air volume/sample = 1.02E+09				
Strontium-90	-1.22	2.83	U U	-1.196E-15
Radium-226, -228 combined	2.42	3.29	U U	2.373E-15
Ra-228 – total	1.63	4.27	U U	1.598E-15
Polonium-210	14	4.78		1.373E-14
Americium-241	0.0698	0.374	U U	6.843E-17
Thorium-230	1.68	1.04	UJ	1.647E-15
Thorium-228	0.326	1.2	U U	3.196E-16
Thorium-232	0.438	1.01	U U	4.294E-16
Uranium-238	0.873	0.308	UJ	8.559E-16
Uranium-233/234	1	0.484	UJ	9.804E-16
Uranium-235/236	-0.0545	0.381	U U	-5.343E-17
Plutonium-238	0.044	0.278	U U	4.314E-17
Plutonium-239	0.0903	0.428	U U	8.853E-17
Plutonium-241	21.1	44.2	U U	2.069E-14
Cesium-137	-0.98	5.42	U U	-9.608E-16
Cobalt-60	5.11	8.2	U U	5.010E-15
Potassium-40	50.6	138	U U	4.961E-14
Beryllium-7	172	76.4		1.686E-13
Actinium-228	15.8	31.9	U U	1.549E-14
Location DOE-2 – Air volume/sample = 1.02E+09				
Strontium-90	-0.265	2.96	U U	-2.598E-16
Radium-226, -228 combined	2.91	3.24	U U	2.853E-15
Ra-228 – total	0.968	3.71	U U	9.490E-16
Polonium-210	14.5	1.44		1.422E-14
Americium-241	0.0704	0.276	U U	6.902E-17
Thorium-230	2.06	0.845	UJ	2.020E-15
Thorium-228	0.752	0.94	U U	7.373E-16
Thorium-232	1.2	0.467	UJ	1.176E-15
Uranium-238	0.955	0.348	UJ	9.363E-16
Uranium-233/234	0.725	0.566	UJ	7.108E-16
Uranium-235/236	0.0736	0.289	U U	7.216E-17
Plutonium-238	0.145	0.253	U U	1.422E-16
Plutonium-239	0.0274	0.291	U U	2.686E-17
Plutonium-241	2.34	37.9	U U	2.294E-15
Cesium-137	-6.21	11.4	U U	-6.088E-15
Cobalt-60	-5.62	14.2	U U	-5.510E-15
Potassium-40	112	196	U U	1.098E-13
Beryllium-7	91.6	150	U U	8.980E-14
Actinium-228	-14.2	57	U U	-1.392E-14

Radionuclide	Result (pCi/sample)	MDC (pCi/sample)	Data Qualifier	Airborne Concentration (µCi/mL)
Location DOE-3 – Air volume/sample = 9.72E+08				
Strontium-90	1.03	2.89	U U	1.060E-15
Radium-226, -228 combined	-1	4.26	U U	-1.029E-15
Ra-228 – total	0.262	3.73	U U	2.695E-16
Polonium-210	17.7	4.23		1.821E-14
Americium-241	0.132	0.387	U U	1.358E-16
Thorium-230	1.4	1.17	UJ	1.440E-15
Thorium-228	0.662	1	U U	6.811E-16
Thorium-232	0.12	0.822	U U	1.235E-16
Uranium-238	0.671	0.473	UJ	6.903E-16
Uranium-233/234	0.662	0.607	UJ	6.811E-16
Uranium-235/236	-0.127	0.474	U U	-1.307E-16
Plutonium-238	0.0373	0.492	U U	3.837E-17
Plutonium-239	0.0559	0.558	U U	5.751E-17
Plutonium-241	11.3	45.9	U U	1.163E-14
Cesium-137	-0.134	6.08	U U	-1.379E-16
Cobalt-60	-0.211	8.08	U U	-2.171E-16
Potassium-40	92.1	60.1	UI UJ	9.475E-14
Beryllium-7	146	74.5		1.502E-13
Actinium-228	3.93	30.7	U U	4.043E-15
Location DOE-4 – Air volume/sample = 1.02E+09				
Strontium-90	-1.3	2.86	U U	-1.275E-15
Radium-226, -228 combined	2.49	1.6	UJ	2.441E-15
Ra-228 – total	0.132	3.76	U U	1.294E-16
Polonium-210	17.1	4.46		1.676E-14
Americium-241	0.145	1.03	U U	1.422E-16
Thorium-230	1.22	1.2	UJ	1.196E-15
Thorium-228	0.832	1.1	U U	8.157E-16
Thorium-232	1.01	0.702	UJ	9.902E-16
Uranium-238	1.28	0.326	UJ	1.255E-15
Uranium-233/234	0.873	0.537	UJ	8.559E-16
Uranium-235/236	0.0639	0.403	U U	6.265E-17
Plutonium-238	0.12	0.323	U U	1.176E-16
Plutonium-239	-0.076	0.39	U U	-7.451E-17
Plutonium-241	6.83	39.5	U U	6.696E-15
Cesium-137	1.28	8.64	U U	1.255E-15
Cobalt-60	0.616	8.28	U U	6.039E-16
Potassium-40	-18.6	140	U U	-1.824E-14
Beryllium-7	59.6	103	U U	5.843E-14
Actinium-228	6.86	33.4	U U	6.725E-15

Notes – Data Qualifier meanings:

U U – Analyte was analyzed for but not detected and is qualified as a non-detect.

UJ – The analyte was not detected; however, the result is estimated because of discrepancies in meeting certain analyte-specific QC criteria.

APPENDIX D

PM₁₀ Monthly Audit Reports and Flow Verification Results

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One-Point Flow Rate Bias Estimate

ETEC Site: DOE-1				Pollutant type: PM10				Bias (%)	
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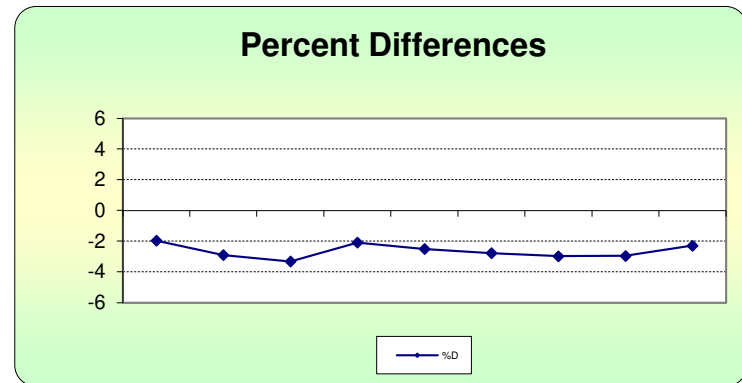
Quarter	E-BAM	Date	Meas Val (Y)	Audit Val (X)	d (Eqn. 1)	Percentile	d ²	d	d ²
26	W23314	7/12/2024	14.00	14.28	-1.961	25th -2.963	3.845	1.961	3.845
			16.70	17.20	-2.907		8.451	2.907	8.451
			17.50	18.10	-3.315		10.989	3.315	10.989
26	W23314	8/9/2024	14.00	14.30	-2.098	75th -2.289	4.401	2.098	4.401
			16.70	17.13	-2.510		6.301	2.510	6.301
			17.50	18.00	-2.778		7.716	2.778	7.716
26	W23314	9/26/2024	14.00	14.43	-2.980		8.880	2.980	8.880
			16.70	17.21	-2.963		8.782	2.963	8.782
			17.50	17.91	-2.289		5.241	2.289	5.241

n	Σ d	"AB" (Eqn 4)
9	23.801	2.645
n-1	Σ d ²	"AS" (Eqn 5)
8	64.604	0.456

Bias (%) (Eqn 3)	Both Signs Positive
2.93	FALSE
Signed Bias (%)	Both Signs Negative
-2.93	TRUE

Note: No quality issues reported this quarter.

Reference: U.S. EPA, Ambient Monitoring Technology Information Center (AMTIC)
 Quality Indicator Assessment Reports
 Data Assessment Statistical Calculator - Software to calculate precision and bias statistics
 MS EXCEL filename - "11/3/2017 (dasc)11_3_17.xls"
<https://www3.epa.gov/tnn/amtic/qareport.html>





One-Point Flow Rate Bias Estimate

ETEC Site: DOE-2						Pollutant type: PM10				Bias (%)	
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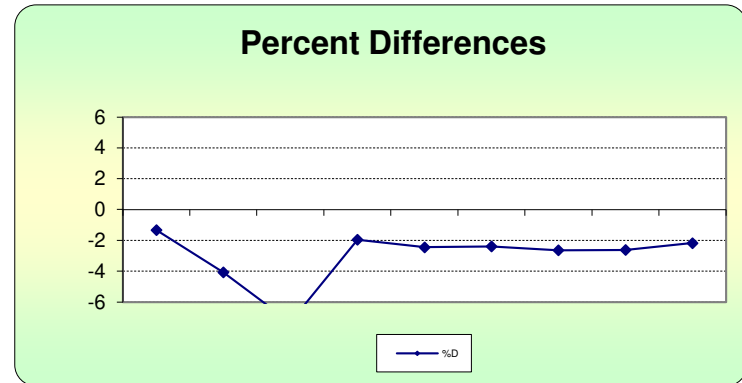
Quarter	E-BAM	Date	Meas Val (Y)	Audit Val (X)	d (Eqn. 1)	Percentile	d ²	d	d ²
26	Y12096	7/12/2024	14.00	14.19	-1.339	25th	1.793	1.339	1.793
			16.70	17.41	-4.078		16.631	4.078	16.631
			17.50	18.88	-7.309		-2.643	53.426	7.309
26	Y12096	8/9/2024	14.00	14.28	-1.961	75th	3.845	1.961	3.845
			16.70	17.12	-2.453		6.019	2.453	6.019
			17.50	17.93	-2.398		-2.180	5.751	2.398
26	Y12096	9/26/2024	14.00	14.38	-2.643		6.983	2.643	6.983
			16.70	17.15	-2.624		6.885	2.624	6.885
			17.50	17.89	-2.180		4.752	2.180	4.752

n	$\sum d $	"AB" (Eqn 4)
9	26.985	2.998
n-1	$\sum d^2$	"AS" (Eqn 5)
8	106.085	1.774

Bias (%) (Eqn 3)	Both Signs Positive
4.1	FALSE
Signed Bias (%)	Both Signs Negative
-4.10	TRUE

Note: No quality issues reported this quarter.

Reference: U.S. EPA, Ambient Monitoring Technology Information Center (AMTIC)
 Quality Indicator Assessment Reports
 Data Assessment Statistical Calculator - Software to calculate precision and bias statistics
 MS EXCEL filename - "11/3/2017 (dasc)11_3_17.xls"
<https://www3.epa.gov/tnn/amtic/qareport.html>





One-Point Flow Rate Bias Estimate

ETEC Site: DOE-3	Pollutant type: PM10	Bias (%)
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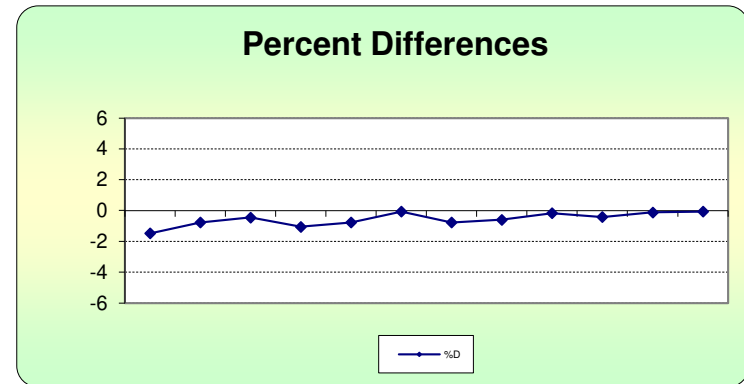
Quarter	E-BAM	Date	Meas Val (Y)	Audit Val (X)	d (Eqn. 1)	Percentile	d ²	d	d ²	
26	X16067	7/12/2024	14.00	14.21	-1.478	-0.774	2.184	1.478	2.184	
			16.70	16.83	-0.772		25th	0.597	0.772	0.597
			17.50	17.58	-0.455		0.207	0.455	0.207	
26	W23310	7/19/2024	14.00	14.15	-1.060	75th	1.124	1.060	1.124	
			16.70	16.83	-0.772		0.597	0.772	0.597	
			17.50	17.51	-0.057		-0.158	0.003	0.057	0.003
26	W23310	8/9/2024	14.00	14.11	-0.780		0.608	0.780	0.608	
			16.70	16.80	-0.595		0.354	0.595	0.354	
			17.50	17.53	-0.171		0.029	0.171	0.029	
26	W23310	9/26/2024	14.00	14.06	-0.427		0.182	0.427	0.182	
			16.70	16.72	-0.120		0.014	0.120	0.014	
			17.50	17.51	-0.057		0.003	0.057	0.003	

n	$\sum d $	"AB" (Eqn 4)
12	6.744	0.562
n-1	$\sum d ^2$	"AS" (Eqn 5)
11	5.902	0.438

Bias (%) (Eqn 3)	Both Signs Positive
0.79	FALSE
Signed Bias (%)	Both Signs Negative
-0.79	TRUE

Note: Although there were no quality issues with E-BAM X16067 in July 2024, the unit was removed from service for maintenance and was replaced with unit W23310 on 7/19/2024.

Reference: U.S. EPA, Ambient Monitoring Technology Information Center (AMTIC) Quality Indicator Assessment Reports
 Data Assessment Statistical Calculator - Software to calculate precision and bias statistics
 MS EXCEL filename - "11/3/2017 (dasc)11_3_17.xls"
<https://www3.epa.gov/tnn/amtic/qareport.html>





One-Point Flow Rate Bias Estimate

ETEC Site: DOE-4				Pollutant type: PM10				Bias (%)	
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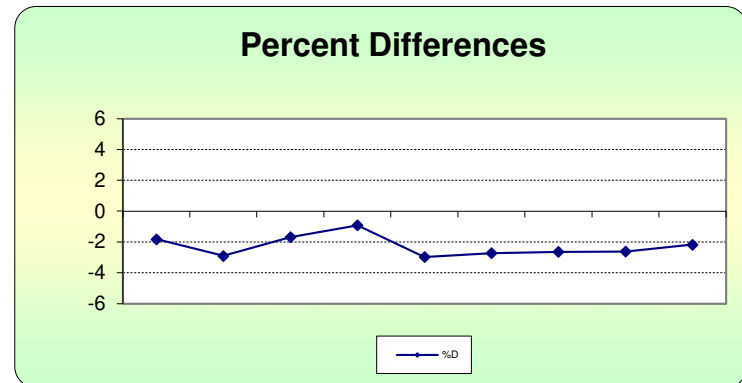
Quarter	E-BAM	Date	Meas Val (Y)	Audit Val (X)	d (Eqn. 1)	Percentile	d ²	d	d ²
26	B18932	7/12/2024	14.00	14.26	-1.823	25th -2.724	3.324	1.823	3.324
			16.70	17.20	-2.907		8.451	2.907	8.451
			17.50	17.80	-1.685		2.841	1.685	2.841
26	B18932	8/9/2024	14.00	14.13	-0.920	75th -1.823	0.846	0.920	0.846
			16.70	17.21	-2.963		8.782	2.963	8.782
			17.50	17.99	-2.724		7.419	2.724	7.419
26	B18932	9/26/2024	14.00	14.38	-2.643		6.983	2.643	6.983
			16.70	17.15	-2.624		6.885	2.624	6.885
			17.50	17.89	-2.180		4.752	2.180	4.752

n	$\sum d $	"AB" (Eqn 4)
9	20.469	2.274
n-1	$\sum d^2$	"AS" (Eqn 5)
8	50.283	0.683

Bias (%) (Eqn 3)	Both Signs Positive
2.7	FALSE
Signed Bias (%)	Both Signs Negative
-2.70	TRUE

Note: No quality issues reported this quarter.

Reference: U.S. EPA, Ambient Monitoring Technology Information Center (AMTIC)
 Quality Indicator Assessment Reports
 Data Assessment Statistical Calculator - Software to calculate precision and bias statistics
 MS EXCEL filename - "11/3/2017 (dasc)11_3_17.xls"
<https://www3.epa.gov/tnn/amtic/qareport.html>





Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-1 Serial # W23314
 Audit Date: 7/12/24 Audited By: TS Williford

Flow Audit					
Flow Audit Device Model:	BGI Delta Cal DC-1A	Serial No:	158047	Calibration Date:	2/5/2024
Leak Check Value:	as found: <u>0.3</u>		as left: <u>0.3</u>		
Ambient Temperature:	as found:	E-BAM	Ref. Std.	as left:	E-BAM
Barometric Pressure:	as found:	25.1 °C	24.3 °C	as left:	25.1 °C
16.7 lpm Flow Rate	as found:	710.2 mmHg	711.3 mmHg	as left:	710.2 mmHg
14.0 lpm Flow Rate	as found:	16.7 lpm	17.20 lpm	as left:	16.7 lpm
17.5 lpm Flow Rate	as found:	14.0 lpm	14.28 lpm	as left:	14.0 lpm
	as found:	17.5 lpm	18.10 lpm	as left:	17.5 lpm

Mechanical Audits (Y = Yes N = No)			
Sample nozzle clean:	as found	<u>Y</u>	as left <u>Y</u>
Tape support vane clean:	as found	<u>Y</u>	as left <u>Y</u>
Tape spool covers tight:	as found	<u>Y</u>	as left <u>Y</u>
PM10 particle trap clean:	as found	<u>Y</u>	as left <u>Y</u>
PM10 drip jar empty:	as found	<u>Y</u>	as left <u>Y</u>
PM10 bug screen clear:	as found	<u>Y</u>	as left <u>Y</u>

Manual Span Membrane Test	Pump Test		
Expected Span Mass (mg/cm2): <u>0.984</u>	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2): <u>0.986</u>			
Difference (mg/cm2): <u>0.002</u>			
% Difference / <u>Pass</u> or Fail: <u>0.20%</u>	<u>14.8</u>	<u>421.4</u>	<u>Marginal</u>

Setup and Calibration Values								
Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	<u>0742</u>	<u>0742</u>	Analog Mode	Hourly	<u>Hourly</u>	Flow Type	Actual	<u>Act</u>
Location	<u>1</u>	<u>1</u>	Baud Rate	9600	<u>9600</u>	Restart Voltage	12.5 v	<u>12.5v</u>
Tape Advance	24 hrs	<u>24hr</u>	RH Setpoint	45%	<u>45%</u>	Std Cond Temp	25 C	<u>25C</u>
Realtime Avg	60 mins	<u>60min</u>	Delta T Setpoint	15 C	<u>15C</u>	DAC	8.0 v	<u>8.0v</u>
Machine Type	PM-10	<u>PM-10</u>	RH Control	On	<u>on</u>	RH Connect	No	<u>NO</u>
Analog FS	1.0 v	<u>1.0v</u>	Flow Setpoint	16.7	<u>16.7</u>	Pump Protect	Off	<u>OFF</u>

Last 6 Errors in E-BAM Error Log						
Error	Date	Time	Error	Date	Time	
<u>1 No new messages</u>	<u>7/12/24</u>	<u>0751</u>	4			
<u>2</u>			5			
<u>3</u>			6			

Audit Notes:



Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-1

Serial # W23314

Audit Date: 8/9/24

Audited By: T.S. Williams

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/5/2024
 Leak Check Value: as found: 0.3 as left: 0.3

	E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found: <u>27.6</u> °C	<u>26.9</u> °C	as left:	<u>27.6</u> °C	<u>26.9</u> °C
Barometric Pressure:	as found: <u>712.4</u> mmHg	<u>713.0</u> mmHg	as left:	<u>712.4</u> mmHg	<u>713.0</u> mmHg
16.7 lpm Flow Rate	as found: <u>16.7</u> lpm	<u>17.13</u> lpm	as left:	<u>16.7</u> lpm	<u>17.13</u> lpm
14.0 lpm Flow Rate	as found: <u>14.0</u> lpm	<u>14.30</u> lpm	as left:	<u>14.0</u> lpm	<u>14.30</u> lpm
17.5 lpm Flow Rate	as found: <u>17.5</u> lpm	<u>18.0</u> lpm	as left:	<u>17.5</u> lpm	<u>18.0</u> lpm

Mechanical Audits (Y = Yes N = No)

Sample nozzle clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape support vane clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape spool covers tight:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 particle trap clean:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 drip jar empty:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 bug screen clear:	as found	<u>Y</u>	as left	<u>Y</u>

Manual Span Membrane Test

Pump Test

Expected Span Mass (mg/cm2): <u>0.984</u>	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2): <u>0.990</u>			
Difference (mg/cm2): <u>0.006</u>			
% Difference <u>Pass</u> or Fail: <u>0.61%</u>	<u>14.6</u>	<u>430.1</u>	<u>Marginal</u>

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	<u>0845</u>	<u>0845</u>	Analog Mode	Hourly	<u>Hourly</u>	Flow Type	Actual	<u>Act</u>
Location	<u>1</u>	<u>1</u>	Baud Rate	9600	<u>9600</u>	Restart Voltage	12.5 v	<u>12.5v</u>
Tape Advance	24 hrs	<u>24 hrs</u>	RH Setpoint	45%	<u>45%</u>	Std Cond Temp	25 C	<u>25C</u>
Realtime Avg	60 mins	<u>60 mins</u>	Delta T Setpoint	15 C	<u>15C</u>	DAC	8.0 v	<u>8.0v</u>
Machine Type	PM-10	<u>PM-10</u>	RH Control	On	<u>on</u>	RH Connect	No	<u>No</u>
Analog FS	1.0 v	<u>1.0v</u>	Flow Setpoint	16.7	<u>16.7</u>	Pump Protect	Off	<u>off</u>

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
<u>1 No new messages</u>	<u>8/9/24</u>	<u>0900</u>	4		
<u>2</u>			5		
<u>3</u>			6		

Audit Notes:



Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-1

Serial # W23314

Audit Date: 9/26/24

Audited By: TBWilliford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/5/2024

Leak Check Value: as found: 0.3 as left: 0.3

	as found:	E-BAM	Ref. Std.	as left:	E-BAM	Ref. Std.
Ambient Temperature:	19.4 °C	19.4 °C	19.2 °C	19.4 °C	19.2 °C	19.2 °C
Barometric Pressure:	711.5 mmHg	711.5 mmHg	712.3 mmHg	711.5 mmHg	712.3 mmHg	712.3 mmHg
16.7 lpm Flow Rate	16.7 lpm	16.7 lpm	17.21 lpm	16.7 lpm	17.21 lpm	17.21 lpm
14.0 lpm Flow Rate	14.0 lpm	14.0 lpm	14.43 lpm	14.0 lpm	14.43 lpm	14.43 lpm
17.5 lpm Flow Rate	17.5 lpm	17.5 lpm	17.91 lpm	17.5 lpm	17.91 lpm	17.91 lpm

Mechanical Audits (Y = Yes N = No)

Sample nozzle clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape support vane clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape spool covers tight:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 particle trap clean:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 drip jar empty:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 bug screen clear:	as found	<u>Y</u>	as left	<u>Y</u>

Manual Span Membrane Test

Pump Test

Expected Span Mass (mg/cm2) : 0.984

Measured Span Mass (mg/cm2) : 0.988

Difference (mg/cm2) : 0.004

% Difference / Pass or Fail: 0.41%

Flow Rate
14.0 - 15.0
(lpm)

Vacuum
Value
(Hg)

Quality Category
Good / Marginal / Poor

14.3

405.0

Good/Marg

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	<u>0857</u>	<u>0857</u>	Analog Mode	Hourly	<u>1hr</u>	Flow Type	Actual	<u>Act</u>
Location	<u>1</u>	<u>1</u>	Baud Rate	9600	<u>9600</u>	Restart Voltage	12.5 v	<u>12.5v</u>
Tape Advance	24 hrs	<u>24hrs</u>	RH Setpoint	45%	<u>45%</u>	Std Cond Temp	25 C	<u>25.0</u>
Realtime Avg	60 mins	<u>60min</u>	Delta T Setpoint	15 C	<u>15C</u>	DAC	8.0 v	<u>8.0v</u>
Machine Type	PM-10	<u>PM-10</u>	RH Control	On	<u>on</u>	RH Connect	No	<u>NO</u>
Analog FS	1.0 v	<u>1.0v</u>	Flow Setpoint	16.7	<u>16.7</u>	Pump Protect	Off	<u>off</u>

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
<u>1 No New Messages</u>	<u>9/26/24</u>	<u>0905</u>	4		
<u>2</u>			5		
<u>3</u>			6		

Audit Notes:



Baseline Air Monitoring Program - DOE
E-BAM Monthly Audit and Maintenance

Station # DOE-2 Serial # Y12096
 Audit Date: 7/12/2024 Audited By: TS Williford

Flow Audit

Flow Audit Device Model:	<u>BGI Delta Cal DC-1A</u>	Serial No:	<u>158047</u>	Calibration Date:	<u>2/5/2024</u>
Leak Check Value:	as found: <u>0.4</u>	as left:	<u>0.4</u>		
Ambient Temperature:	as found: <u>30.3</u> °C	Ref. Std.:	<u>31.8</u> °C	as left:	<u>30.3</u> °C
Barometric Pressure:	as found: <u>709.3</u> mmHg	Ref. Std.:	<u>710.6</u> mmHg	as left:	<u>709.3</u> mmHg
16.7 lpm Flow Rate	as found: <u>16.7</u> lpm	Ref. Std.:	<u>17.41</u> lpm	as left:	<u>16.7</u> lpm
14.0 lpm Flow Rate	as found: <u>14.0</u> lpm	Ref. Std.:	<u>14.19</u> lpm	as left:	<u>14.0</u> lpm
17.5 lpm Flow Rate	as found: <u>17.5</u> lpm	Ref. Std.:	<u>17.88</u> lpm	as left:	<u>17.5</u> lpm

Mechanical Audits (Y = Yes N = No)

Sample nozzle clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape support vane clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape spool covers tight:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 particle trap clean:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 drip jar empty:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 bug screen clear:	as found	<u>Y</u>	as left	<u>Y</u>

Manual Span Membrane Test

Pump Test

Expected Span Mass (mg/cm2):	<u>0.891</u>	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2):	<u>0.893</u>			
Difference (mg/cm2):	<u>0.002</u>			
% Difference / <u>Pass</u> or Fail:	<u>0.22%</u>	<u>14.6</u>	<u>412.7</u>	<u>Marginal</u>

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	<u>0919</u>	<u>0919</u>	Analog Mode	Hourly	<u>hourly</u>	Flow Type	Actual	<u>Act</u>
Location	<u>2</u>	<u>2</u>	Baud Rate	9600	<u>9600</u>	Restart Voltage	12.5 v	<u>12.5v</u>
Tape Advance	24 hrs	<u>24hr</u>	RH Setpoint	45%	<u>45%</u>	Std Cond Temp	25 C	<u>25.C</u>
Realtime Avg	60 mins	<u>60min</u>	Delta T Setpoint	15 C	<u>15C</u>	DAC	8.0 v	<u>8.0v</u>
Machine Type	PM-10	<u>PM-10</u>	RH Control	On	<u>on</u>	RH Connect	No	<u>NO</u>
Analog FS	1.0 v	<u>1.0v</u>	Flow Setpoint	16.7	<u>16.7</u>	Pump Protect	Off	<u>off</u>

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
<u>1 No new messages</u>	<u>7/12/24</u>	<u>0930</u>	4		
<u>2</u>			5		
<u>3</u>			6		

Audit Notes:



Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-2

Serial # Y12096

Audit Date: 8/9/2024

Audited By: TS williford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/5/2024

Leak Check Value: as found: 0.4 as left: 0.4

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	17.7 °C	18.6 °C	as left:	17.7 °C	18.6 °C
Barometric Pressure:	as found:	708.6 mmHg	710.2 mmHg	as left:	708.6 mmHg	710.2 mmHg
16.7 lpm Flow Rate	as found:	16.7 lpm	17.12 lpm	as left:	16.7 lpm	17.12 lpm
14.0 lpm Flow Rate	as found:	14.0 lpm	14.28 lpm	as left:	14.0 lpm	14.28 lpm
17.5 lpm Flow Rate	as found:	17.5 lpm	17.93 lpm	as left:	17.5 lpm	17.93 lpm

Mechanical Audits (Y = Yes N = No)

Sample nozzle clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape support vane clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape spool covers tight:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 particle trap clean:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 drip jar empty:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 bug screen clear:	as found	<u>Y</u>	as left	<u>Y</u>

Manual Span Membrane Test

Pump Test

Expected Span Mass (mg/cm2):	<u>0.891</u>	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2):	<u>0.892</u>			
Difference (mg/cm2):	<u>0.001</u>			
% Difference / <u>Pass</u> or Fail:	<u>0.11%</u>	<u>15.0</u>	<u>429.3</u>	<u>Marginal</u>

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	<u>0721</u>	<u>0721</u>	Analog Mode	Hourly	<u>Hourly</u>	Flow Type	Actual	<u>Act</u>
Location	<u>2</u>	<u>2</u>	Baud Rate	9600	<u>9600</u>	Restart Voltage	12.5 v	<u>12.5v</u>
Tape Advance	24 hrs	<u>24 hrs</u>	RH Setpoint	45%	<u>45%</u>	Std Cond Temp	25 C	<u>25C</u>
Realtime Avg	60 mins	<u>60 min</u>	Delta T Setpoint	15 C	<u>15C</u>	DAC	8.0 v	<u>8.0v</u>
Machine Type	PM-10	<u>PM-10</u>	RH Control	On	<u>on</u>	RH Connect	No	<u>NO</u>
Analog FS	1.0 v	<u>1.0 v</u>	Flow Setpoint	16.7	<u>16.7</u>	Pump Protect	Off	<u>off</u>

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
<u>1 No new messages</u>	<u>8/9/24</u>	<u>0741</u>	4		
<u>2</u>			5		
<u>3</u>			6		

Audit Notes:



Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-2

Serial # Y12096

Audit Date: 9/26/24

Audited By: TS Williford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/5/2024
 Leak Check Value: as found: 0.5 as left: 0.5

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	<u>22.4</u> °C	<u>21.9</u> °C	as left:	<u>22.4</u> °C	<u>21.9</u> °C
Barometric Pressure:	as found:	<u>710.7</u> mmHg	<u>708.9</u> mmHg	as left:	<u>710.7</u> mmHg	<u>708.9</u> mmHg
16.7 lpm Flow Rate	as found:	<u>16.7</u> lpm	<u>17.15</u> lpm	as left:	<u>16.7</u> lpm	<u>17.15</u> lpm
14.0 lpm Flow Rate	as found:	<u>14.0</u> lpm	<u>14.38</u> lpm	as left:	<u>14.0</u> lpm	<u>14.38</u> lpm
17.5 lpm Flow Rate	as found:	<u>17.5</u> lpm	<u>17.89</u> lpm	as left:	<u>17.5</u> lpm	<u>17.89</u> lpm

Mechanical Audits (Y = Yes N = No)

Sample nozzle clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape support vane clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape spool covers tight:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 particle trap clean:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 drip jar empty:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 bug screen clear:	as found	<u>Y</u>	as left	<u>Y</u>

Manual Span Membrane Test

Pump Test

Expected Span Mass (mg/cm ²):	<u>0.891</u>	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm ²):	<u>0.867</u>			
Difference (mg/cm ²):	<u>2.73</u> <u>0.024</u>			
% Difference / (Pass or Fail):	<u>2.73%</u>	<u>14.8</u>	<u>427.9</u>	<u>Marginal</u>

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	<u>0936</u>	<u>0936</u>	Analog Mode	Hourly	<u>Hourly</u>	Flow Type	Actual	<u>ACT</u>
Location	<u>2</u>	<u>2</u>	Baud Rate	9600	<u>9600</u>	Restart Voltage	12.5 v	<u>12.5V</u>
Tape Advance	24 hrs	<u>24hr</u>	RH Setpoint	45%	<u>45%</u>	Std Cond Temp	25 C	<u>25C</u>
Realtime Avg	60 mins	<u>60.mn</u>	Delta T Setpoint	15 C	<u>15C</u>	DAC	8.0 v	<u>8.0V</u>
Machine Type	PM-10	<u>PM-10</u>	RH Control	On	<u>On</u>	RH Connect	No	<u>NO</u>
Analog FS	1.0 v	<u>1.0V</u>	Flow Setpoint	16.7	<u>16.7</u>	Pump Protect	Off	<u>off</u>

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
<u>1 No need messages</u>	<u>9/26/24</u>	<u>1040</u>			
<u>2</u>					
<u>3</u>					

Audit Notes:



Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-3

Serial # X16067

Audit Date: 7/12/24

Audited By: TSW

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/5/2024
 Leak Check Value: as found: 0.5 as left: 0.5

	E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found: <u>27.1</u> °C	<u>26.4</u> °C	as left:	<u>27.1</u> °C	<u>26.4</u> °C
Barometric Pressure:	as found: <u>710.0</u> mmHg	<u>709.5</u> mmHg	as left:	<u>710.0</u> mmHg	<u>709.5</u> mmHg
16.7 lpm Flow Rate	as found: <u>16.7</u> lpm	<u>16.83</u> lpm	as left:	<u>16.7</u> lpm	<u>16.83</u> lpm
14.0 lpm Flow Rate	as found: <u>14.0</u> lpm	<u>14.21</u> lpm	as left:	<u>14.0</u> lpm	<u>14.21</u> lpm
17.5 lpm Flow Rate	as found: <u>17.5</u> lpm	<u>17.58</u> lpm	as left:	<u>17.5</u> lpm	<u>17.58</u> lpm

Mechanical Audits (Y = Yes N = No)

Sample nozzle clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape support vane clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape spool covers tight:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 particle trap clean:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 drip jar empty:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 bug screen clear:	as found	<u>Y</u>	as left	<u>Y</u>

Manual Span Membrane Test

Pump Test

Expected Span Mass (mg/cm2):	<u>0.950</u>	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2):	<u>0.956</u>			
Difference (mg/cm2):	<u>0.006</u>			
% Difference / <u>Pass</u> or Fail:	<u>0.63%</u>	<u>14.2</u>	<u>411.9</u>	<u>Marginal</u>

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	<u>1110</u>	<u>1110</u>	Analog Mode	Hourly	<u>Hourly</u>	Flow Type	Actual	<u>Act</u>
Location	<u>3</u>	<u>3</u>	Baud Rate	9600	<u>9600</u>	Restart Voltage	12.5 v	<u>12.5V</u>
Tape Advance	24 hrs	<u>24 hr</u>	RH Setpoint	45%	<u>45%</u>	Std Cond Temp	25 C	<u>25C</u>
Realtime Avg	60 mins	<u>60 min</u>	Delta T Setpoint	15 C	<u>15C</u>	DAC	8.0 v	<u>8.0V</u>
Machine Type	PM-10	<u>PM-10</u>	RH Control	On	<u>On</u>	RH Connect	No	<u>No</u>
Analog FS	1.0 v	<u>1.0V</u>	Flow Setpoint	16.7	<u>16.7</u>	Pump Protect	Off	<u>off</u>

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
<u>1 No new messages</u>	<u>7/12/24</u>	<u>1121</u>			
<u>2</u>					
<u>3</u>					

Audit Notes:



Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-3

Serial # W23310

Audit Date: 7/19/24

Audited By: TSWilliford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/5/2024

Leak Check Value: as found: 0.4 as left: 0.4

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	<u>37.0</u> °C	<u>36.2</u> °C	as left:	<u>37.0</u> °C	<u>36.2</u> °C
Barometric Pressure:	as found:	<u>708.3</u> mmHg	<u>710.0</u> mmHg	as left:	<u>708.3</u> mmHg	<u>710.0</u> mmHg
16.7 lpm Flow Rate	as found:	<u>16.7</u> lpm	<u>16.83</u> lpm	as left:	<u>16.7</u> lpm	<u>16.83</u> lpm
14.0 lpm Flow Rate	as found:	<u>14.0</u> lpm	<u>14.15</u> lpm	as left:	<u>14.0</u> lpm	<u>14.15</u> lpm
17.5 lpm Flow Rate	as found:	<u>17.5</u> lpm	<u>17.51</u> lpm	as left:	<u>17.5</u> lpm	<u>17.51</u> lpm

Mechanical Audits (Y = Yes N = No)

Sample nozzle clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape support vane clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape spool covers tight:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 particle trap clean:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 drip jar empty:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 bug screen clear:	as found	<u>Y</u>	as left	<u>Y</u>

Manual Span Membrane Test

Pump Test

Expected Span Mass (mg/cm2):	<u>0.915</u>	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2):	<u>0.926</u>			
Difference (mg/cm2):	<u>0.011</u>			
% Difference / Pass or Fail:	<u>1.195%</u>	<u>14.5</u>	<u>410.6</u>	<u>Marginal</u>

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	<u>1006</u>	<u>1006</u>	Analog Mode	Hourly	<u>Hourly</u>	Flow Type	Actual	<u>Act</u>
Location	<u>3</u>	<u>3</u>	Baud Rate	9600	<u>9600</u>	Restart Voltage	12.5 v	<u>12.5v</u>
Tape Advance	24 hrs	<u>24hr</u>	RH Setpoint	45%	<u>45%</u>	Std Cond Temp	25 C	<u>25C</u>
Realtime Avg	60 mins	<u>60min</u>	Delta T Setpoint	15 C	<u>15C</u>	DAC	8.0 v	<u>8.0v</u>
Machine Type	PM-10	<u>PM-10</u>	RH Control	On	<u>on</u>	RH Connect	No	<u>NO</u>
Analog FS	1.0 v	<u>1.0v</u>	Flow Setpoint	16.7	<u>16.7</u>	Pump Protect	Off	<u>off</u>

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
<u>1 No new messages</u>	<u>7/19/24</u>	<u>1020</u>	<u>4</u>		
<u>2</u>			<u>5</u>		
<u>3</u>			<u>6</u>		

Audit Notes:

* This is the initial Audit for Unit W23310 which replaced X16067



Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-3

Serial # W23310

Audit Date: 8/9/24

Audited By: TS Williford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/5/2024

Leak Check Value: as found: 0.3 as left: 0.3

	E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found: <u>24.3</u> °C	<u>23.9</u> °C	as left:	<u>24.3</u> °C	<u>23.9</u> °C
Barometric Pressure:	as found: <u>710.6</u> mmHg	<u>711.0</u> mmHg	as left:	<u>710.6</u> mmHg	<u>711.0</u> mmHg
16.7 lpm Flow Rate	as found: <u>16.7</u> lpm	<u>16.80</u> lpm	as left:	<u>16.7</u> lpm	<u>16.80</u> lpm
14.0 lpm Flow Rate	as found: <u>14.0</u> lpm	<u>14.11</u> lpm	as left:	<u>14.0</u> lpm	<u>14.11</u> lpm
17.5 lpm Flow Rate	as found: <u>17.5</u> lpm	<u>17.53</u> lpm	as left:	<u>17.5</u> lpm	<u>17.53</u> lpm

Mechanical Audits (Y = Yes N = No)

Sample nozzle clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape support vane clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape spool covers tight:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 particle trap clean:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 drip jar empty:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 bug screen clear:	as found	<u>Y</u>	as left	<u>Y</u>

Manual Span Membrane Test

Pump Test

Expected Span Mass (mg/cm2): <u>0.915</u>	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2): <u>0.929</u>			
Difference (mg/cm2): <u>0.014</u>			
% Difference / Pass or Fail: <u>1.52%</u>	<u>14.8</u>	<u>421.7</u>	<u>Marginal</u>

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	<u>0740</u>	<u>0740</u>	Analog Mode	Hourly	<u>Hourly</u>	Flow Type	Actual	<u>Act</u>
Location	<u>3</u>	<u>3</u>	Baud Rate	9600	<u>9600</u>	Restart Voltage	12.5 v	<u>12.5v</u>
Tape Advance	24 hrs	<u>24hr</u>	RH Setpoint	45%	<u>45%</u>	Std Cond Temp	25 C	<u>25C</u>
Realtime Avg	60 mins	<u>60min</u>	Delta T Setpoint	15 C	<u>15C</u>	DAC	8.0 v	<u>8.0v</u>
Machine Type	PM-10	<u>PM-10</u>	RH Control	On	<u>on</u>	RH Connect	No	<u>NO</u>
Analog FS	1.0 v	<u>1.0v</u>	Flow Setpoint	16.7	<u>16.7</u>	Pump Protect	Off	<u>off</u>

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
<u>1 NO New Messages</u>	<u>8/9/24</u>	<u>0745</u>	4		
2			5		
3			6		

Audit Notes:



Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-3

Serial # W23310

Audit Date: 9/26/24

Audited By: TS Willis

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/5/2024

Leak Check Value: as found: 0.4 as left: 0.4

	as found:	E-BAM	Ref. Std.	as left:	E-BAM	Ref. Std.
Ambient Temperature:		25.5 °C	26.2 °C		25.5 °C	26.2 °C
Barometric Pressure:		710.5 mmHg	712.2 mmHg		710.5 mmHg	712.2 mmHg
16.7 lpm Flow Rate		16.7 lpm	16.72 lpm		16.7 lpm	16.72 lpm
14.0 lpm Flow Rate		14.0 lpm	14.06 lpm		14.0 lpm	14.06 lpm
17.5 lpm Flow Rate		17.5 lpm	17.51 lpm		17.5 lpm	17.51 lpm

Mechanical Audits (Y = Yes N = No)

Sample nozzle clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape support vane clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape spool covers tight:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 particle trap clean:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 drip jar empty:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 bug screen clear:	as found	<u>Y</u>	as left	<u>Y</u>

Manual Span Membrane Test

Pump Test

Expected Span Mass (mg/cm2): <u>0.915</u>	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2): <u>0.917</u>			
Difference (mg/cm2): <u>0.002</u>			
% Difference <u>Pass</u> or Fail: <u>0.22%</u>	<u>15.0</u>	<u>400.0</u>	<u>Good</u>

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	<u>1028</u>	<u>1028</u>	Analog Mode	Hourly	<u>Hourly</u>	Flow Type	Actual	<u>Act</u>
Location	<u>3</u>	<u>3</u>	Baud Rate	9600	<u>9600</u>	Restart Voltage	12.5 v	<u>12.5v</u>
Tape Advance	24 hrs	<u>24</u>	RH Setpoint	45%	<u>45%</u>	Std Cond Temp	25 C	<u>25C</u>
Realtime Avg	60 mins	<u>60</u>	Delta T Setpoint	15 C	<u>15C</u>	DAC	8.0 v	<u>8.0v</u>
Machine Type	PM-10	<u>PM-10</u>	RH Control	On	<u>on</u>	RH Connect	No	<u>NO</u>
Analog FS	1.0 v	<u>1.0V</u>	Flow Setpoint	16.7	<u>16.7</u>	Pump Protect	Off	<u>OFF</u>

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
<u>1 No new messages</u>	<u>9/26/24</u>	<u>1130</u>			
<u>2</u>					
<u>3</u>					

Audit Notes:



Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-4

Serial # B18932

Audit Date: 7/12/24

Audited By: TS Williford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/5/2024

Leak Check Value: as found: 0.23 as left: 0.23

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	<u>31.8</u> °C	<u>31.0</u> °C	as left:	<u>31.8</u> °C	<u>31.0</u> °C
Barometric Pressure:	as found:	<u>711.5</u> mmHg	<u>710.5</u> mmHg	as left:	<u>711.5</u> mmHg	<u>710.5</u> mmHg
16.7 lpm Flow Rate	as found:	<u>16.7</u> lpm	<u>17.20</u> lpm	as left:	<u>16.7</u> lpm	<u>17.20</u> lpm
14.0 lpm Flow Rate	as found:	<u>14.0</u> lpm	<u>14.26</u> lpm	as left:	<u>14.0</u> lpm	<u>14.26</u> lpm
17.5 lpm Flow Rate	as found:	<u>17.5</u> lpm	<u>17.80</u> lpm	as left:	<u>17.5</u> lpm	<u>17.80</u> lpm

Mechanical Audits (Y = Yes N = No)

Sample nozzle clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape support vane clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape spool covers tight:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 particle trap clean:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 drip jar empty:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 bug screen clear:	as found	<u>Y</u>	as left	<u>Y</u>

Manual Span Membrane Test

Pump Test

Expected Span Mass (mg/cm ²):	<u>0.854</u>	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm ²):	<u>0.856</u>			
Difference (mg/cm ²):	<u>0.002</u>			
% Difference / <u>Pass</u> or Fail:	<u>0.23%</u>	<u>14.7</u>	<u>381.0</u>	<u>Good</u>

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	<u>1305</u>	<u>1305</u>	Analog Mode	Hourly	<u>Hourly</u>	Flow Type	Actual	<u>Act</u>
Location	<u>4</u>	<u>4</u>	Baud Rate	9600	<u>915200</u>	Restart Voltage	12.5 v	<u>12.5v</u>
Tape Advance	24 hrs	<u>24hr</u>	RH Setpoint	45%	<u>45%</u>	Std Cond Temp	25 C	<u>25C</u>
Realtime Avg	60 mins	<u>60min</u>	Delta T Setpoint	15 C	<u>15C</u>	DAC	8.0 v	<u>8.0v</u>
Machine Type	PM-10	<u>PM-10</u>	RH Control	On	<u>on</u>	RH Connect	No	<u>No</u>
Analog FS	1.0 v	<u>1.0v</u>	Flow Setpoint	16.7	<u>16.7</u>	Pump Protect	Off	<u>off</u>

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
<u>1 No new messages</u>	<u>7/12/24</u>	<u>1315</u>			
<u>2</u>					
<u>3</u>					

Audit Notes:



Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-4
 Audit Date: 8/9/24

Serial # B18932
 Audited By: TS Williford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/5/2024
 Leak Check Value: as found: 0.25 as left: 0.25

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	<u>30.3</u> °C	<u>30.1</u> °C	as left:	<u>30.3</u> °C	<u>30.1</u> °C
Barometric Pressure:	as found:	<u>704.3</u> mmHg	<u>704.7</u> mmHg	as left:	<u>704.3</u> mmHg	<u>704.1</u> mmHg
16.7 lpm Flow Rate	as found:	<u>16.7</u> lpm	<u>17.21</u> lpm	as left:	<u>16.7</u> lpm	<u>17.21</u> lpm
14.0 lpm Flow Rate	as found:	<u>14.0</u> lpm	<u>14.13</u> lpm	as left:	<u>14.0</u> lpm	<u>14.13</u> lpm
17.5 lpm Flow Rate	as found:	<u>17.5</u> lpm	<u>17.99</u> lpm	as left:	<u>17.5</u> lpm	<u>17.99</u> lpm

Mechanical Audits (Y = Yes N = No)

Sample nozzle clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape support vane clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape spool covers tight:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 particle trap clean:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 drip jar empty:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 bug screen clear:	as found	<u>Y</u>	as left	<u>Y</u>

Manual Span Membrane Test	Pump Test		
Expected Span Mass (mg/cm2) : <u>0.8584</u>	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2) : <u>0.858</u>			
Difference (mg/cm2) : <u>0.004</u>			
% Difference / Pass or Fail: <u>0.5%</u>	<u>14.0</u>	<u>368.9</u>	<u>Good</u>

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	<u>1000</u>	<u>1000</u>	Analog Mode	Hourly	<u>Hourly</u>	Flow Type	Actual	<u>Act</u>
Location	<u>4</u>	<u>4</u>	Baud Rate	9600	<u>115200</u>	Restart Voltage	12.5 v	<u>12.5v</u>
Tape Advance	24 hrs	<u>24 hr</u>	RH Setpoint	45%	<u>45%</u>	Std Cond Temp	25 C	<u>25C</u>
Realtime Avg	60 mins	<u>60 min</u>	Delta T Setpoint	15 C	<u>15C</u>	DAC	8.0 v	<u>8.0v</u>
Machine Type	PM-10	<u>PM-10</u>	RH Control	On	<u>On</u>	RH Connect	No	<u>NO</u>
Analog FS	1.0 v	<u>1.0v</u>	Flow Setpoint	16.7	<u>16.7</u>	Pump Protect	Off	<u>off</u>

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
<u>1 No new messages</u>	<u>8/9/24</u>	<u>1010</u>			
<u>2</u>					
<u>3</u>					

Audit Notes:



Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-4 Serial # B18932
 Audit Date: 9/26/24 Audited By: TS Williams

Flow Audit

Flow Audit Device Model:	BGI Delta Cal DC-1A	Serial No:	158047	Calibration Date:	2/5/2024
Leak Check Value:	as found: <u>0.23</u>	as left:	<u>0.23</u>		
Ambient Temperature:	as found: <u>26.1</u> °C	Ref. Std. <u>27.4</u> °C	as left:	<u>26.1</u> °C	<u>27.4</u> °C
Barometric Pressure:	as found: <u>704.2</u> mmHg	Ref. Std. <u>703.8</u> mmHg	as left:	<u>704.2</u> mmHg	<u>703.8</u> mmHg
16.7 lpm Flow Rate	as found: <u>16.7</u> lpm	Ref. Std. <u>17.15</u> lpm	as left:	<u>16.7</u> lpm	<u>17.15</u> lpm
14.0 lpm Flow Rate	as found: <u>14.0</u> lpm	Ref. Std. <u>14.38</u> lpm	as left:	<u>14.0</u> lpm	<u>14.38</u> lpm
17.5 lpm Flow Rate	as found: <u>17.5</u> lpm	Ref. Std. <u>17.89</u> lpm	as left:	<u>17.5</u> lpm	<u>17.89</u> lpm

Mechanical Audits (Y = Yes N = No)

Sample nozzle clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape support vane clean:	as found	<u>Y</u>	as left	<u>Y</u>
Tape spool covers tight:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 particle trap clean:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 drip jar empty:	as found	<u>Y</u>	as left	<u>Y</u>
PM10 bug screen clear:	as found	<u>Y</u>	as left	<u>Y</u>

Manual Span Membrane Test

Pump Test

Expected Span Mass (mg/cm2):	<u>0.854</u>	Flow Rate	14.0 - 15.0 (lpm)	Vacuum Value (Hg)	372.90	Quality Category	Good / Marginal / Poor
Measured Span Mass (mg/cm2):	<u>0.850</u>						
Difference (mg/cm2):	<u>0.004</u>						
% Difference / Pass or Fail:	<u>0.47%</u>						<u>Good</u>

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	1105	1105	Analog Mode	Hourly	Hourly	Flow Type	Actual	Act
Location	4	4	Baud Rate	9600	9600	Restart Voltage	12.5 v	12.5v
Tape Advance	24 hrs	24 hrs	RH Setpoint	45%	45%	Std Cond Temp	25 C	25C
Realtime Avg	60 mins	60 mins	Delta T Setpoint	15 C	15C	DAC	8.0 v	8.0v
Machine Type	PM-10	PM-10	RH Control	On	on	RH Connect	No	No
Analog FS	1.0 v	1.0 v	Flow Setpoint	16.7	16.7	Pump Protect	Off	off

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
1 No new messages	9/26/24	1115			
2					
3					

Audit Notes:
