Report on Air Monitoring, Area IV, Fifteenth Quarter and Annual Summary 2021

Santa Susana Field Laboratory Ventura County, California

April 2022
Revision 0

Prepared for:
United States Department of Energy

Prepared by:
North Wind Portage, Inc.

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Ventura County, CA

April 2022
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EXECUTIVE SUMMARY

This report summarizes the United States Department of Energy (DOE) air monitoring activities conducted during the fifteenth quarter (Q15) of the air monitoring period (October 1, 2021, to December 31, 2021) at Area IV within the Santa Susana Field Laboratory (SSFL), located in Ventura County, California. The report also provides an annual summary for the fourth year of the air monitoring period (Q12 through Q15, January 1, 2021, through December 31, 2021). The area specifically discussed within this report is the DOE portion, Area IV of SSFL, known as the Energy Technology Engineering Center (ETEC). Year one of the Baseline Air Monitoring Program consisted of Quarter 1 through Quarter 4. Year two consisted of Quarter 5 through Quarter 7. Year three consisted of Q8 through Q11. Year four consists of Q12 through Q15. The program is continuing for a fifth year, which consists of 2022 reporting periods Q16 through Q19.

This 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 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 (PM_{10}), 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 the SSFL. Having developed the baseline levels for PM_{10}, 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. Year 4 observations show a very similar trend when compared to data collected during Years 1, 2, and 3. These stable data trends indicate that site activities are not having an effect on site air conditions. High heat, wind, fires, and holidays like the Fourth of July all show consistent impacts to the air report readings. 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 quarters Q12 through Q15 by DOE within Area IV are summarized in this report:

- Collected meteorological data from one location (DOE-4);
- Collected PM_{10} 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).

Meteorological, PM_{10}, and radionuclide data all met the data completeness goal of 80% and VOC data met the completeness goal of 85% for Q15. The air monitoring is to be continued beginning January 1, 2022, with the sixteenth quarter (Year 5) of air monitoring. Future data collected during remediation may be compared to these summarized conditions.

The following site activities were conducted during Q15 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;
- Building 4462/4463 Demolition; 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
Cs-137	cesium-137
DAC	derived airborne concentration
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
FSDF	Former Sodium Disposal Facility
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

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
Q12	twelfth quarter
Q13	thirteenth quarter
Q14	fourteenth quarter
Q15	fifteenth quarter
QA	quality assurance
QC	quality control
Ra-226	radium-226
Ra-228	radium-228
RAWS	Remote Automatic Weather Stations
RMHF	Radioactive Materials Handling Facility
RPD	relative percent difference
RSL	regional screening level
SDG	sample delivery group
SRE	Sodium Reactor Experiment
Sr-90	strontium-90
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 is a business segment of Boeing. SSFL operates the 2,849-acre facility 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 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 includes 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 resulting from onsite remediation activities (project) at SSFL. Responsible parties are monitoring for particulate matter between 2.5 and 10 microns in aerodynamic diameter (PM_{10}), and volatile organic compounds (VOCs), at 14 locations at SSFL. Data were collected from 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 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, PM_{10}, 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 Q15 quarterly results and quality assurance (QA) activities performed at the DOE locations between October 1, 2021, and December 31, 2021. The report also provides an annual summary for the fourth year of the air monitoring period (Q12 through Q15, January 1, 2021, through December 31, 2021). The air monitoring is to be continued beginning January 1, 2022, for 2022 with the fifth year (beginning with Q16) of the Air Monitoring Program.

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 between 2020 and 2021 from Weather Currents, average 12-month total rainfall is on the order of 13.4 inches. The majority of the rainfall occurs between December and April with January and February being the wettest months.

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 Q15 reporting period. The report also provides an annual summary for the fourth year of the air monitoring period (Q12 through Q15, January 1, 2021, through December 31, 2021).

Quality objectives and data completeness were met for all meteorological, PM_{10}, VOC, and radionuclide data for Q15 of the Air Monitoring Program.

Urban background data compared with air monitoring data indicate that the PM_{10} concentrations measured at stations DOE-1, DOE-2, DOE-3, and DOE-4 during Q12 through Q15 are comparable to the PM_{10} concentrations measured at stations characterizing urban background. Concentrations of VOCs characteristic of motor vehicle emissions, fossil fuel combustion, and wildfires are comparable around SSFL compared with the urban background, reflecting the site's relatively remote location from vehicle traffic. PM_{10} concentrations exceeded the California Ambient Air Quality Standard (CAAQS; 50 micrograms per cubic meter [$\mu g/m^3$]) twice at DOE-3 and one each at DOE-1, DOE-2, and DOE-4 during Q15, but the concentrations were below the National Ambient Air Quality Standard (NAAQS; 150 $\mu g/m^3$). Graphs 5–8 in Section 4.2 show that the PM_{10} data for Year 4 are consistent with the baseline data from Year 1, Year 2, and Year 3.

During Q15 one VOC analyte was detected above the EPA regional screening level (RSL). Methylene chloride was detected at DOE-4. Methylene chloride is a chemical used in paint and varnish strippers used to remove paint or varnish coatings and it is also used in aerosol and pesticide products. 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 a requirement for identifying remedial air quality impacts nor was it within the scope or data quality objectives of the Air Monitoring Program.

During the remainder of Year 4 (Q12, Q13, and Q14), there were 13 additional instances of VOC analytes detected above either the EPA Residential Air RSL or the DTSC human health risk assessment (HHRA) RSL. During Q12 two VOC analytes were detected above the RSL, both at DOE-3. During Q13 three VOC analytes were detected above the RSL, two at DOE-3 and one at DOE-4. During Q14 eight VOC analytes were detected above the RSL, one at DOE-1, four at DOE-2, one at DOE-3, and two at DOE-4. VOC data analyzed during Year 4 are consistent with the baseline data from Year 1, Year 2, and Year 3. The distribution of the VOC data cannot be explained by the extensive site database.

During Q12 through Q15, detections for gross alpha and gross beta that exceeded the minimum detectable concentration (MDC) are all naturally occurring radionuclides. Detections are expected because the results are calculated at a 95% confidence level. No man-made radionuclides that are contaminants of concern at ETEC were detected. Gross alpha, gross beta, and radionuclide data analyzed during Year 4 are consistent with the baseline data from Year 1, Year 2, and Year 3. All radiological data reported for the air filter samples are naturally occurring.

Data collected during Q12 through Q15 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. The remaining data were validated and there are no statistically significant changes in the air monitoring results. Air monitoring at Area IV of the SSFL

is to be continued starting January 1, 2022, for 2022 with the fifth year (beginning with Q16) of the Air Monitoring Program.

Site activities during Q15 included the demolition of buildings 4462/4463. Work area air monitoring was conducted during this building demolition, confirming there was no airborne contamination resulting from the demolition activities (see Section 4). Routine activities onsite during the baseline period (Q1–Q7) also included general site maintenance, operations of the meteorological stations, the Former Sodium Disposal Facility groundwater interim measure, which started November 2017, and groundwater sampling. When comparing Q15 and the rest of the Year 4 data, to Year 1, Year 2, and Year 3 data, the PM_{10}, VOC, and RAD data collected are consistent, indicating that building demolition activities had no impact on the site air conditions.

3. ANALYTICAL SAMPLING EVENTS

VOCs are collected according to the EPA Toxic Compendium Method TO-15, *Determination of Volatile Organic Compounds (VOCs) 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 in this reporting period. One field duplicate sample was collected during each sampling event.

During Q15, radionuclide samples were collected at four perimeter sampling 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-220 and radon-222 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 35 sampling events at each of samplers DOE-1, DOE-2, DOE-3, and DOE-4. Following analysis for gross alpha and gross beta radiation, sample filters from each of the locations 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 Q15 air monitoring data.

4.1 Meteorological Data

General Summary

Meteorological data, also called weather data, are 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 and 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 and particulate monitoring data to describe the air quality for the people and communities living near the ETEC site. However, before the weather data can be used with the computer models it must first be tested for completeness and accuracy. 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., defined as 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 for :00, :15, :30, and :45 minutes each hour. There were 92 days in this reporting period (Q15), which covers October 1, 2021, through December 31, 2021, with a total of 8,832 possible 15-minute observations. During year 4 (Q12 through Q15), there were a total of 35,040 possible 15-minute observations.

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. It was performed routinely throughout the reporting period following each weekly data download. Data validation quality control codes applied to the meteorological observations are defined in Table 1.

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 quality control (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 all applicable screening criteria 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 "invalid" (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 4 of the baseline monitoring are presented in Table 2. Note that a correction has been applied to the solar radiometer data to eliminate an upward-trending bias detected in this sensor. Table 2 reflects updates to the solar radiometer Year-to-Date and Project Data Completeness Percent based on adjusting the data to remove the bias from Q8 through Q15. See Section 5.1.8.2 of this report for a discussion of the bias identification and removal procedure.

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 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.

Wind Rose

The final validated 15-minute meteorological dataset was used to develop wind rose diagrams for this monitoring quarter (Figure 3-1) and Year 4 (Figure 3-2). 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 Q15, data capture for wind speed and direction at DOE-4 was 86.70%. The average and maximum wind speeds were 4.26 m/sec and 19.9 m/s, respectively. The maximum recorded wind gust was 27.8 m/sec. There are two predominant wind directions: the first from the east-southeast (ESE) and the second group clustered around north (N).

For entire Year 4, data capture for wind speed and direction at DOE-4 was 96.64%. The annual average and maximum wind speeds were 4.10 m/sec and 21.4 m/s, respectively. The maximum recorded wind gust was 31.2 m/sec. There are two predominant wind directions: the first from the east-southeast (ESE) and the second group clustered around north (N) to northwest (NW).

Table 2. Data screening summary for monitored meteorological parameters.

Meteorological Parameter	Screening Criteria [1] (for valid sensor responses)	Data Completeness Percent (%) [2]					
		Q12	Q13	Q14	Q15	Year 4	Project to Date
Wind Speed	between 0 and 25 m/sec > 0.1 m/sec variation over 3 hours > 0.5 m/sec variation over 12 hours	100	100	99.97	86.70	96.64	93.29
Wind Direction	between 0 and 360 degrees > 1 degree variation over 3 hours > 10 degree variation over 12 hours	100	100	99.97	100	99.99	94.19
Standard Deviation of Wind Direction	Inherits the completeness stats of Wind Direction	100	100	99.97	100	99.99	94.19
Temperature @ 2 m	≤ local record high (monthly basis) ≥ local record low (monthly basis) > 0.5 degrees Celsius (°C) variation over 12 hours	100	100	99.97	100	99.99	94.19
Temperature @ 10 m	≤ local record high (monthly basis) ≥ local record low (monthly basis) > 0.5°C variation over 12 hours	100	100	99.97	100	99.99	94.19
Delta Temperature	≤ 0.1°C during daytime ≥ -0.1°C during nighttime between -3.0 and 5.0°C	100	100	99.97	100	99.99	94.19
Relative Humidity (and Dewpoint Temperature)	relative humidity between 0-100% 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	100	100	99.97	100	99.99	87.57
Precipitation	≤ 1 inch in 1 hour ≤ 4 inches in 24 hours ≥ 2 inches in 3 months	100	100	99.97	100	99.99	94.18
Barometric Pressure	between 871 and 982 millibar (mb) (local) (i.e., between 940 and 1060 mb sea level) ≤ 6 mb variation over 3 hours	100	100	99.97	100	99.99	94.19
Solar Radiation	> 0 at night ≤ maximum possible for date and latitude	99.95	99.99	99.97	100	99.98	94.17

(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.

(3) The number of possible 15-minute observations in the completed reporting periods:

- Q1 = 8,736 • Q2 = 8,832 • Q3 = 8,832 • Q4 = 8,640 • Year One = 35,040
- Q5 = 8,736 • Q6 = 8,832 • Q7 = 7,488 (only 3 quarters) • Year Two = 25,056 (abbreviated)
- Q8 = 8,736 • Q9 = 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
- Project = 130,272 (to-date)

4.2 PM_{10} Data

PM_{10} data, also defined as coarse particles between 2.5 and 10 micrometers in 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.

PM_{10} data are being 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 the Q15 reporting period.

- DOE-1 had valid readings 80 of the 92 days.
- DOE-2 had valid readings all 92 days.
- DOE-3 had valid readings all 92 days.
- DOE-4 had valid readings all 92 days.

Three of the four (DOE-2, -3, and -4) station units had 100% data completeness for PM_{10} in Q15. DOE-1 had a data completeness of 87%, exceeding the project goal of 80% completeness for total samples collected (see Table 3). The complete tables of daily averages for both Q15 and for Year 4 are presented in Appendix A. DOE-1, from 11/20/21 until 12/1/21, suffered from “Nozzle fail up” and “Flow failure” and the unit was unable to be replaced due to the lack of extras at the time of failure.

Table 3. PM_{10} data completeness for October 1, 2021 – December 31, 2021.

Location	Valid Readings (Days)	Possible Readings (Days)	Data Completeness (Percent)
DOE-1	80	92	87
DOE-2	92	92	100
DOE-3	92	92	100
DOE-4	92	92	100
Total Completeness			96.74

During the 365 days of the annual reporting period (Q12–Q15) the PM_{10} monitoring stations (DOE-1, DOE-2, DOE-3, and DOE-4) exceeded the project goal of 80% data completeness, as shown in Table 4.

Table 4. PM_{10} data completeness for Year 4, January 1, 2021 – December 31, 2021.

Location	Valid Readings (Days)	Possible Readings (Days)	Data Completeness (Percent)
DOE-1	344	365	94.2
DOE-2	350	365	95.9
DOE-3	365	365	100
DOE-4	365	365	100
Total Completeness			97.5

The five highest PM_{10} results identified for the reporting period are listed in Table 5 along with the CAAQS for PM_{10}. PM_{10} concentrations were consistent with levels typically found in urban air. Of these top five results, two were recorded at DOE-4 and one each at DOE-1, DOE-2, and DOE-3. All five values were above the CAAQS, but below the NAAQS of 150 µg/m^3. Four of the Top 5 readings were on 10/11/2021. On this date there were high winds with sustained speeds reaching 35 mph. From year to year it has been noticeable that there is a direct correlation between high wind speeds and higher PM_{10} readings. The remaining reading (10/30/2021) fell on a Saturday where activity was being done on site but the reading was recorded after work was completed for the day.

Table 5. Top five PM_{10} 24-hour average concentration days for October 1, 2021 – December 31, 2021.

Date	Location	PM_{10} Value (µg/m^3)	CAAQS (µg/m^3)
10/11/2021	DOE-1	**66.875**	50
10/11/2021	DOE-4	**60.708**	50
10/30/2021	DOE-4	**58.750**	50
10/11/2021	DOE-3	**57.458**	50
10/11/2021	DOE-2	**53.166**	50

Bold text and gray shaded – Value exceeds CAAQS.

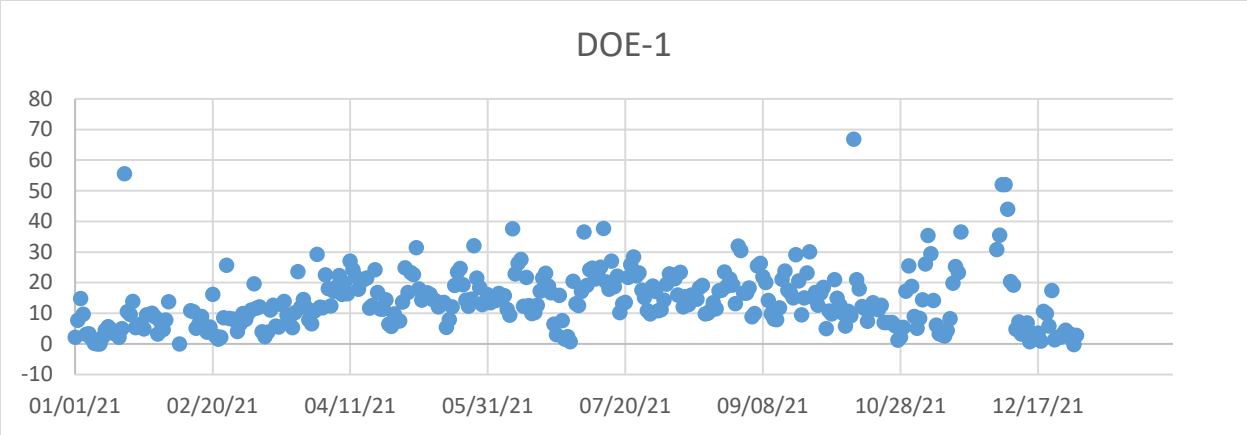
The five highest PM_{10} results identified for the reporting year are listed in Table 6. All five values were above the CAAQS, but below the NAAQS of 150 µg/m^3. Wildfires, high temperatures, high winds, and the Fourth of July all occurred during this recording period and are known to increase air particulates (as shown in the tables and graphs below).

Table 6. Top five PM_{10} 24-hour average concentration days for January 1, 2021 – December 31, 2021.

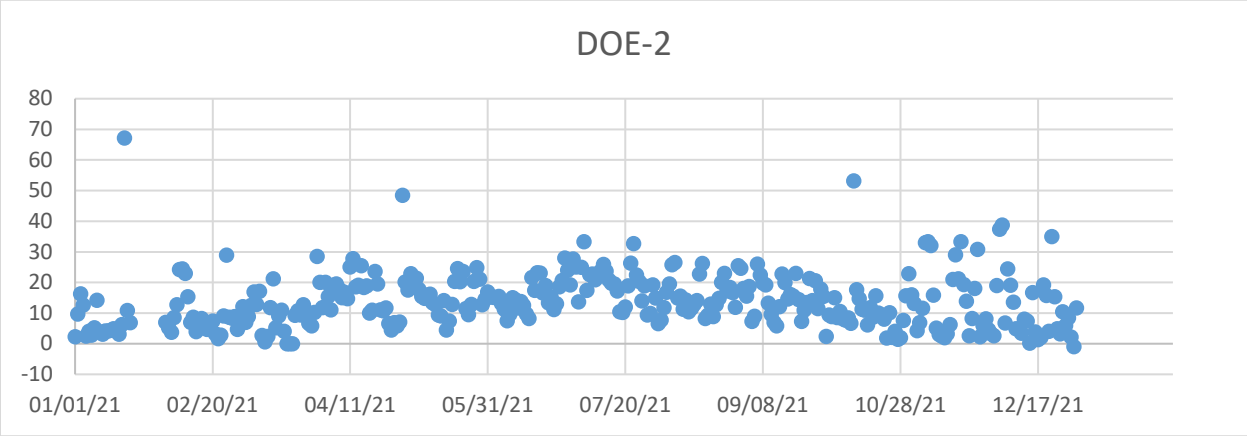
Date	Location	PM_{10} Value (µg/m^3)	CAAQS (µg/m^3)
01/19/2021	DOE-2	**67.166**	50
10/11/2021	DOE-1	**66.875**	50
08/07/2021	DOE-4	**62.083**	50
10/11/2021	DOE-4	**60.708**	50
06/23/2021	DOE-4	**60.333**	50

Bold text and gray shaded – Value exceeds CAAQS.

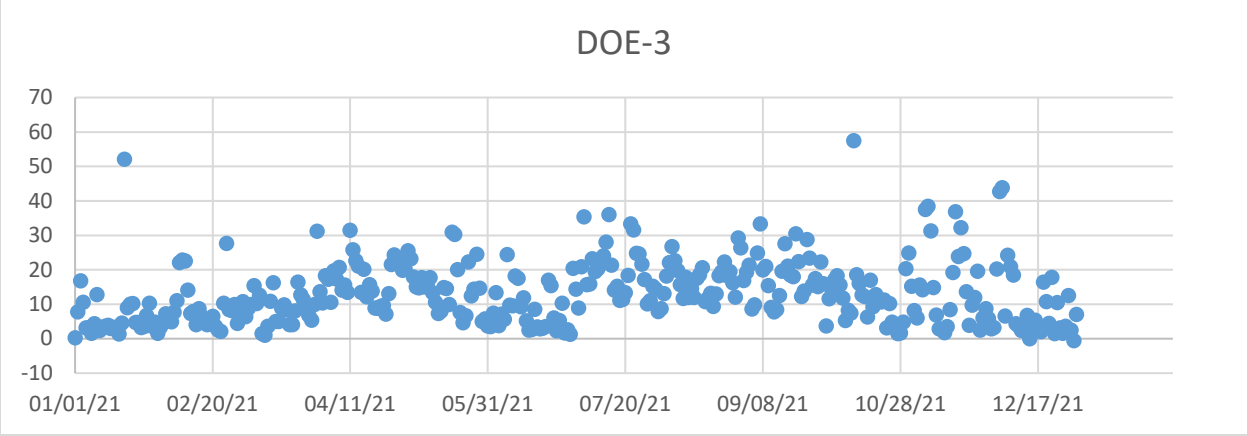
The Year 4 trend data from each monitor are shown below in Graphs 1 through 4. The Year 1 through Year 4 trend data are shown in graphs 5 through 8 for trend comparison. When reviewing graphs 5 through 8, one can determine that PM_{10} values have remained constant through baseline and site activities.



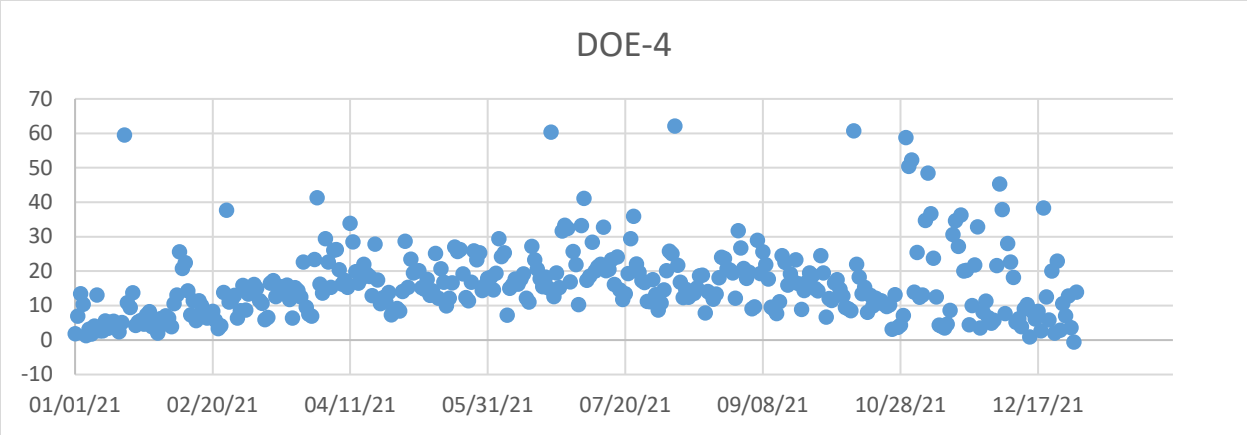
Graph 1. Year 4 trend data, Q12–Q15, for PM_{10} at monitor DOE-1.



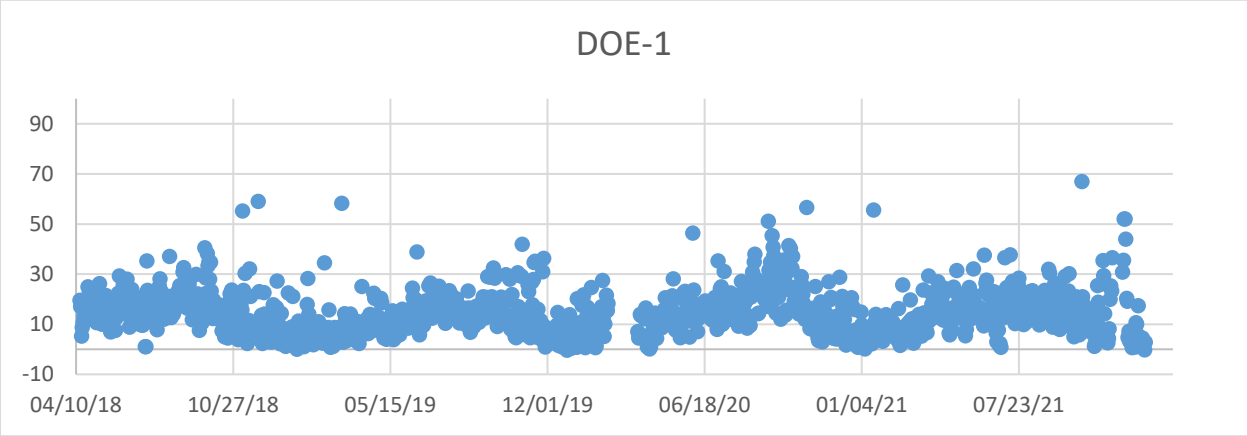
Graph 2. Year 4 trend data, Q12–Q15, for PM_{10} at monitor DOE-2.



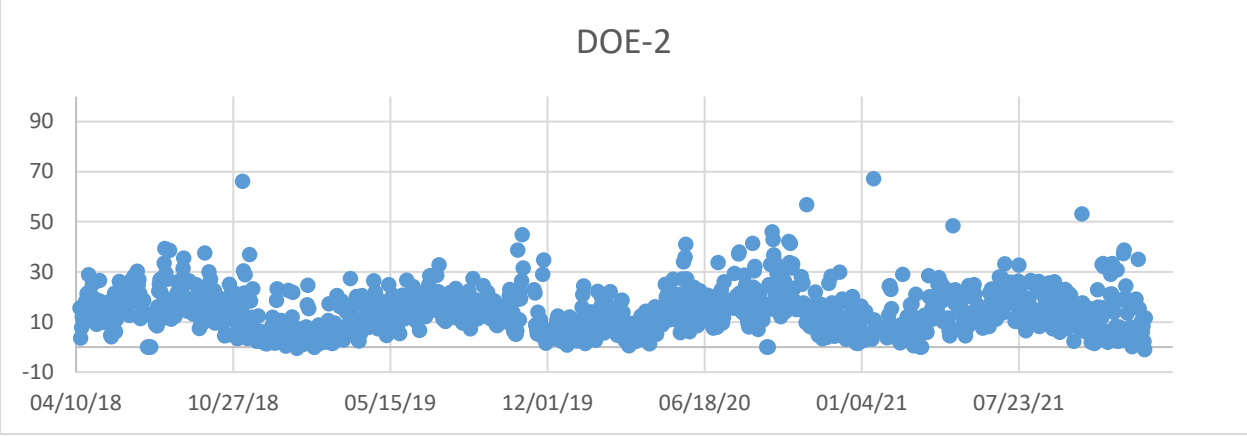
Graph 3. Year 4 trend data, Q12–Q15, for PM_{10} at monitor DOE-3.



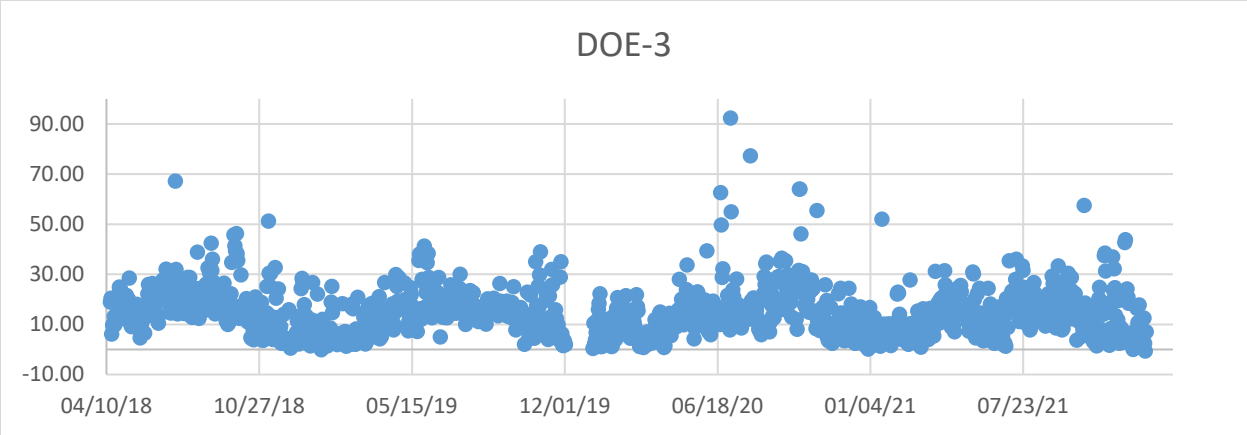
Graph 4. Year 4 trend data, Q12–Q15, for PM_{10} at monitor DOE-4.



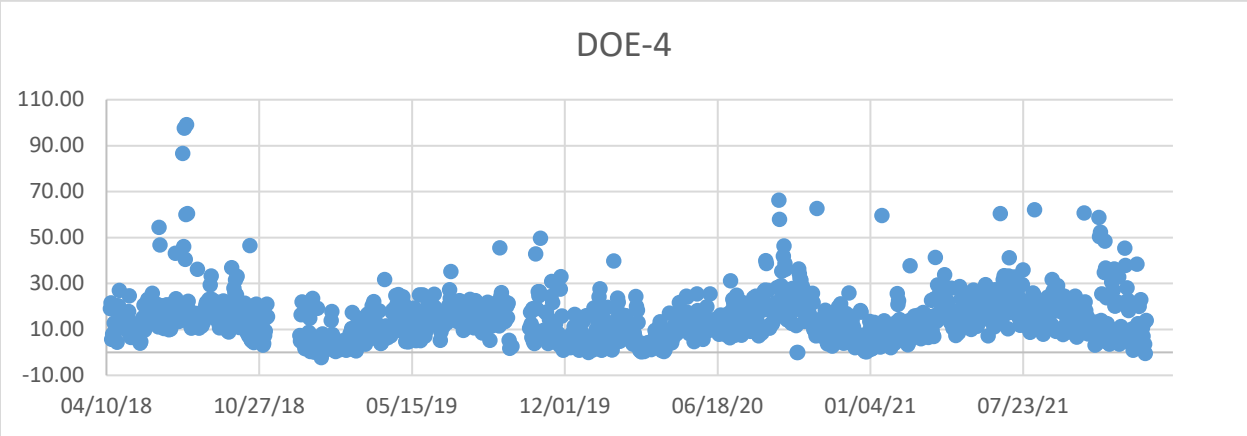
Graph 5. Years 1–4 trend data, Q1–Q15, for PM_{10} at monitor DOE-1.



Graph 6. Years 1–4 trend data, Q1–Q15, for PM_{10} at monitor DOE-2.



Graph 7. Years 1–4 trend data, Q1–Q15, for PM_{10} at monitor DOE-3.



Graph 8. Years 1–4 trend data, Q1–Q15, for PM_{10} at monitor DOE-4.

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 both 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.

There were seven VOC sampling events in the Q15 reporting period. Each of the four DOE locations was sampled during each sampling event. Data completeness goals for VOCs exceeded the project goal of 85% (see Table 7).

Table 7. Ambient air VOC data completeness for Q15.

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

There were 26 annual VOC sampling events. Each of the four locations was sampled during each sampling event. Data completeness goals for VOCs exceeded the project goal of 85% (Table 8).

Table 8. Ambient air VOC data completeness for Q12–Q15.

Location	Valid Readings (Days)	Possible Readings (Days)	Data Completeness (Percent)
DOE-1	26	26	100
DOE-2	25	26	96.15
DOE-3	26	26	100
DOE-4	26	26	100
Average Total Data Completeness			99.03

VOC detection results for Q15 are presented in Table B-1 (Appendix B), including comparison to the April 2019 DTSC HHRA Note 3 Screening Levels (DTSC 2019) or the May 2018 EPA Residential Air RSLs (EPA 2018). Methylene chloride was detected at a concentration of 1.7 µg/m^3 at DOE-4, exceeding the EPA RSL of 1 µg/m^3 in one sample during Q15.

VOC analytical results for Q12 through Q15 are presented in Table B-2 (Appendix B). During Q12 there were two VOC analytes detected above the EPA Residential Air RSL or the DTSC HHRA. Both of these events occurring at DOE-3. During Q13 three VOC analytes were detected above the EPA Residential Air RSL or the DTSC HHRA: two VOC analytes at DOE-3 and one at DOE-4. During Q14 eight analytes were detected above the screening levels: two analytes at DOE-1, three at DOE-2, one at DOE-3, and two at DOE-4.

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, including Year 1, Year 2, and Year 3 baseline monitoring, indicating that these VOCs are not caused by the building demolition activities being performed. 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.

VOC data analyzed for Year 4 are consistent with VOC data analyzed for Year 1, Year 2, and Year 3 baseline data.

4.4 Radionuclide Data

DOE continuously monitors air at multiple locations for radioactive particles. This activity is performed for two reasons: (1) to determine the background airborne radioactivity concentration so that any possible releases from future work activities can be detected, and (2) to detect any possible release from existing activities. During Q15, the background airborne radioactive contamination continued at

low and stable concentrations, and there was no detected release of material. Based on EPA's 3,000 soil samples, the radionuclides of concern are strontium-90 (Sr-90) and cesium-137 (Cs-137). The locations with elevated concentrations of both radionuclides are near the Radioactive Materials Handling Facility (RMHF) , beneath the RMHF asphalt, and in the rocky terrain area south of the Sodium Reactor Experiment (SRE) complex. There has been no dust-producing activity in the Sr-90 and Cs-137 impacted soil areas to contribute to any sample. The EPA's data show the majority of Area IV to be free of these radiological contaminants.

There were 104 airborne radioactivity samples collected in Q15 — 26 each with DOE-1, DOE-2, DOE-3, and DOE-4. 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.

Gross alpha and gross beta data are used to evaluate whether site remediation work is potentially causing airborne radionuclide emissions. The gross alpha and beta analyses are performed at the site using a Protean alpha/beta radiation counter and a Ludlum 2929 gross alpha/beta counter.

The individual filters are analyzed within approximately one week following collection. The delay in analysis is required for the naturally occurring short-lived radon daughters to decay and not affect the analysis results. The benefit of analyzing the filters at the site is to allow for an early warning of potential site remediation-caused elevated radionuclide emissions.

The air sample analysis results are tabulated and reviewed for trends. Some results are less than zero once background is subtracted, some are above background, and some are above MDC, a value statistically above background. The MDC is tracked and reviewed with every analysis to determine if the instrument performance is stable. Any variation will be investigated, and may provoke a repair or a calibration.

While approximately 13% of the gross alpha results and most (69%) of the gross beta-gamma results are above the MDC, none of these results are significant. This is due to the fact that the "background" value is computed with a clean filter, not a filter exposed to background airborne concentrations. While a higher-than-usual proportion of the beta results were detectable, the average results remained low. The increased (though still low) results do correlate in time with the regional fires that release natural radioactive materials into the air.

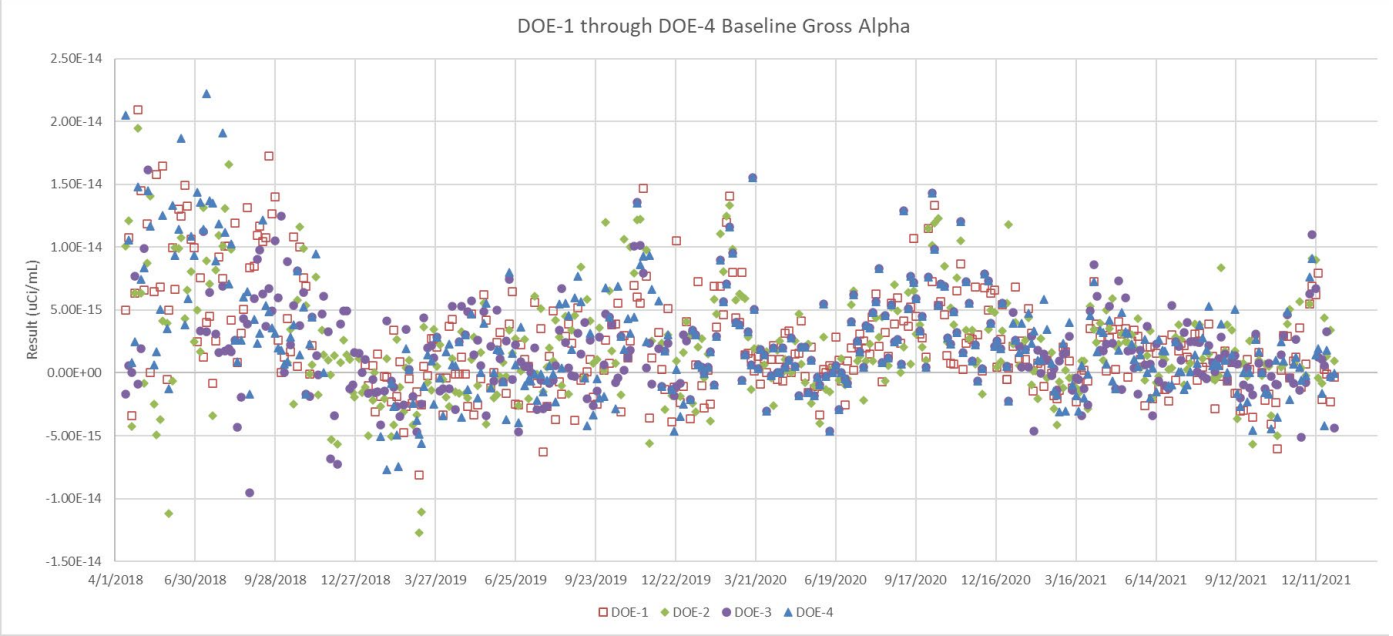
For conservatism, the air sample gross counting results are reviewed considering that all alpha activity is from the most restrictive expected radionuclide (plutonium-239 [Pu-239]), and all beta activity is from the most restrictive expected radionuclide (strontium/yttrium-90). In all cases the results are less than 1% of the airborne limit for the most conservative radionuclide.

After the end of a quarter, the samples are composited and sent to a laboratory for detailed isotopic analysis. All analyses to date show a broad range of radioactive material consistent with background material and global fallout. These results vary seasonally, and do not show any contribution from ETEC activities. There is a small spike in November 2020 that is attributed to environmental factors external to SSFL. A similar spike was seen in November of 2019. Gross alpha and gross beta results along with the radionuclide analytical results for Q11 and Year 3 (Q8–Q11) can be found in Appendix C. The gross alpha and gross beta results for Year 1 through Year 4 are presented in Graph 5 and Graph 6, respectively, with multiple years included to show the natural variability. To give a full picture of the significance in

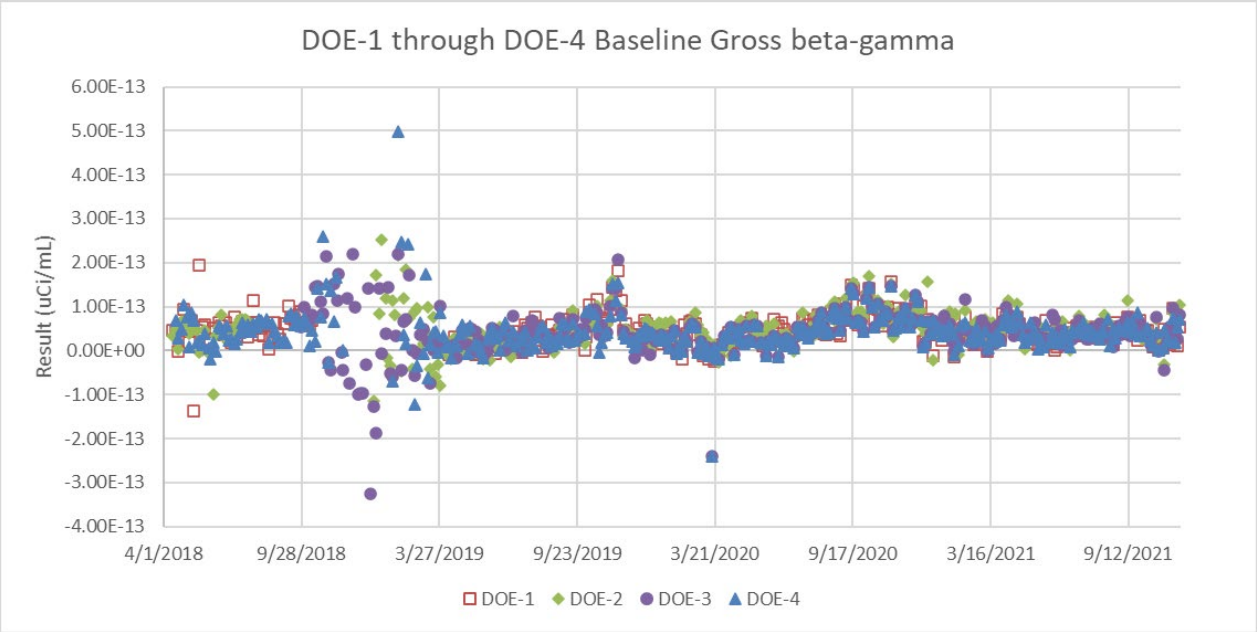
background variation, Graph 7 presents the gross alpha results for Year 1 through Year 4 compared to the Pu-239 limit. Graph 7 shows how the air samples are less than 1% of the limit, hover around 0.1%, and are sometimes less than zero.

Table 9. Gross alpha and beta-gamma average results for Q15.

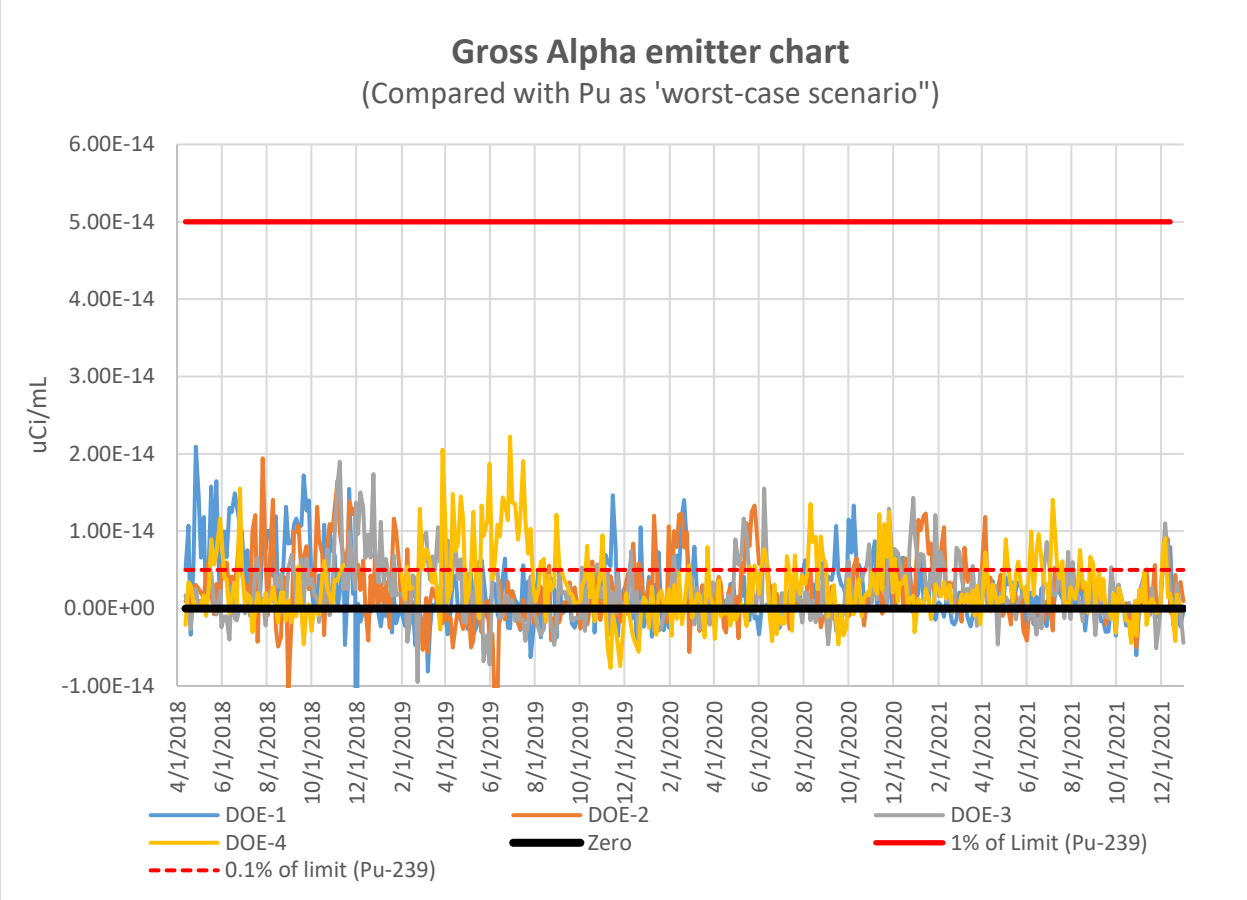
Location	Average alpha result (µCi/mL)	Average alpha MDC (µCi/mL)	Average beta result (µCi/mL)	Average beta MDC (µCi/mL)
DOE-1	8.11E-16	6.13E-15	4.77E-14	2.67E-14
DOE-2	1.69E-15	6.13E-15	5.19E-14	2.67E-14
DOE-3	1.15E-15	6.44E-15	4.34E-14	2.81E-14
DOE-4	6.80E-16	6.14E-15	4.47E-14	2.68E-14
Average	1.08E-15	6.21E-15	4.69E-14	2.71E-14



Graph 9. Gross alpha results for Year 1 through Year 4.



Graph 10. Gross beta results for Year 1 through Year 4.



Graph 11. Year 1 through Year 4 gross alpha worst-case emitter chart.

When radionuclides are collated and compared, it is clear that the primary contributors are background radioactive materials. The two most common indicators of artificial radionuclides are Cs-137 and cobalt-60, which have short half-lives. These radionuclides are either negative values, or below the MDC in all cases. For this analysis, the radioisotopic analyses from Year 4 were summed, then compared to the airborne radioactivity limits (derived airborne concentration [DAC]) (Table 10).

Table 10. Comparison of air sample results with DAC.

Radionuclide	Average (no Zero) µCi/mL	% contribution to total alpha activity	DAC alpha	%DAC (of measured nuclides)	DAC beta	% of DAC (of measured nuclides)	% contribution to beta-gamma activity
Cesium-137	0				8.00E-08	0.00E+00	0.00%
Strontium-90	3.71E-16				1.00E-08	3.71E-08	0.18%
Cobalt-60	0				3.00E-08	0.00E+00	0.00%
Potassium-40	1.55E-14				1.00E-07	1.55E-07	7.56%
Beryllium-7	1.89E-13				2.00E-08	9.46E-06	92.26%
Plutonium-238	0	0.00%	5.00E-11	0			
Polonium-210	1.35E-14	51.84%	2.00E-10	6.75E-05			
Plutonium-241	0	0.00%	2.00E-10	0			
Thorium-230	6.33E-16	2.43%	3.00E-12	2.11E-04			
Thorium-228	6.11E-16	2.34%	2.00E-11	3.05E-05			
Actinium-228	0	0.00%	6.00E-09	0			
Americium-241	4.19E-17	0.16%	5.00E-12	8.38E-06			
Plutonium-239	0	0.00%	5.00E-12	0			
Ra-228 – total	5.98E-15	22.94%	1.00E-10	5.98E-05			
Radium-226, - 228 combined	2.72E-15	10.44%	2.00E-10	1.36E-05			
Thorium-232	7.32E-16	2.81%	3.00E-12	2.44E-04			
Uranium-238	8.82E-16	3.39%	3.00E-10	2.94E-06			
Uranium-233/234	8.75E-16	3.36%	2.00E-10	4.38E-06			
Uranium-235/236	7.88E-17	0.30%	3.00E-10	2.63E-07			

Artificial Radionuclides
Natural Radionuclides

Most of the alpha-emitting radionuclide activity is from background radioactive materials indicating airborne dust. Less than 1% of the alpha contribution is from artificial radionuclides (e.g., plutonium). As discussed above, it is likely that most of the airborne radioactivity is from the environment, either cosmogenic or global fallout. There is no indication of a local release, as there is no clear mixture associated with fission reactions, given the absence of Cs-137 and Sr-90. The air sample results are compared using conservative assumptions. Since the results hover near or below the detection limit of the instruments, there are no plans to investigate minor variations in background. These radionuclide data are consistent with Year 1, Year 2, and Year 3 baseline data.

5. QA/QC ACTIVITIES

The following QA/QC activities were conducted for the PM_{10}, VOC, radionuclide, and meteorological data collection and analysis.

5.1 Field QA/QC

5.1.1 PM_{10}

The 24-hour daily averages for Q15 are presented in Appendix A along with the monthly average minimum, maximum, and 95th percentile for each station location.

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. E-BAM units are occasionally swapped out for maintenance, and preliminary audits of the new units are performed. The Q15 audit results for the four DOE sites showed bias percentages that ranged from -2.18 to 0.51%. None of the results exceeded the flow rate measurement quality objective of ± 4%.

Complete audit reports and flow verification results for Q15 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 input audit data. 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

A minimum of 20% of the VOC results are undergoing third-party data validation. During Q15, two of the seven sample delivery groups (SDGs), #P2105203 and P2106648, underwent 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.

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, one per sampling event. The following analytes, ethyl acetate in SDGs #P2105203, P2105453, P2105730, P2106243, and P2106648, along with dichlorodifluoromethane and trichlorofluoromethane in SDG #P2105730, were detected in five field duplicates pairs and exceeded the quality objective of +/- 15% relative percent difference (RPD). For SDG #P2105230 the analytes methylene chloride, benzene, and toluene; and for SDG# P2105730 the analytes methylene chloride and toluene were detected at levels higher than the RL in either the sample or duplicate, and in comparison, were reported as a non-detect in the associated sample or duplicate and exceeded the quality objective of +/- 15% RPD. Fourteen 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.

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 -9 inches mercury (Hg) to -2 inches Hg during this reporting period.

5.1.5 Radiological

The detector for onsite gross alpha and beta sample analysis is calibrated annually using sources traceable to the NIST. The detector is checked in 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. The acceptable yield per laboratory procedure is from 40 to 110%. The barium yield was greater than 110% for all radium analyses. When the yield is higher than that allowed, then the analytical results for radium-226 (Ra-226) and radium-228 (Ra-228) are biased low. All results were less than the laboratory MDC during Q15. In all cases, the Ra-226 and Ra-228 results when evaluated against the MDC were more than 1,000 times less than the airborne effluent limits listed in 10 CFR 20, Appendix B, Table 2. Thus, there is no reason to suspect that there was an airborne release of Ra-226 or Ra-228 that was of any significance.

Since Q13, 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 PM_{10} monitors and the meteorological station are noted in Sections 5.1.8.1 and Section 5.1.8.2, respectively. No issues or corrective actions were noted regarding the remaining monitoring equipment or sampling events during this reporting period.

5.1.8.1 PM_{10} Monitors

Refer to Section 4.2 for a detailed description of PM_{10} air monitoring equipment issues that occurred during Q15.

5.1.8.2 Meteorological Station

Although the data percent completion goal during Q15 has been met: (1) the solar radiometer raw data continued to show an upward drift, (2) the wind speed sensor had a failure, and (3) the improperly programmed data logger continues to affect calculation of delta temperature (i.e., temperature difference between 2 m and 10 m). The recommend sensor maintenance schedule is provided as item (4) below.

(1) Solar Radiometer:

- Data Quality Issues:
    - The solar radiometer continued to display an upward bias drift in the raw data observations.
- Corrective Actions:
    - Bias Removal – In the previous quarterly report (i.e., Q14), details of the bias and correction were first presented. Quarterly adjustment factors were developed and applied to the project datasets starting with the first quarter of 2020 using a comparison of quarterly average ratios to the 2018 baseline year:

      Adjustment Factor = (Quarter Average) / (Baseline Quarter Average)

      A "bias removal" adjustment factor has also been applied to the Q15 solar radiometer. All validated project meteorological datasets now include "unbiased" solar radiometer observations.
    - Resolution – The unbiased observations are in line with the baseline year observations and theoretical values. The sensor drift bias will continue to be evaluated and correction factors applied during upcoming quarters. The following table presents the quarterly adjustment factors that have been applied. In addition, replacement of the solar radiometer will be considered.

Solar Radiometer Adjustment Factor - Quarterly
(adustment factor to eliminate drift bias)

MON	2018	2019	2020	2021
1	No Adj Factor for Baseline Qtrs	1.000	0.946	0.894
2				
3				
4		0.980	0.924	0.889
5				
6				
7		0.926	0.888	0.860
8				
9				
10		0.935	0.893	0.849
11				
12				

(2) Wind Speed Sensor:

- Data Quality Issue:
    - Near the end of Q15, from December 15, 2021, at 13:30 through December 26, 2021, at 6:00 Pacific Standard Time, the wind speed sensor failed and then began working again after this 11-day period.
- Corrective Action:
    - Data Quality – Site inspection revealed that the wind sensor propellor was not spinning. A failed bearing was suspected. However, after 11 days, the sensor began reporting reasonable wind speed values. A comparative evaluation of the data using concurrent wind speed observations from the CEEC1 and SV meteorological stations showed reasonable agreement with these other nearby stations. The daily data review continued through the end of the quarter and wind speed data was deemed to be acceptable.
    - Resolution – The wind speed sensor observations will continue to be monitored for unusual or unacceptable response. Replacement of the sensor or bearings will be planned.

(3) Delta Temperature Calculation

- Data Quality Issue:
    - For meteorological monitoring, delta temperature is 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. Consequently, delta temperature observations are being calculated with an opposite sign.

- 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 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:

      Delta Temperature = [Temperature @ 2 m] minus [Temperature @ 10 m]

(4) 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 11 lists the recommended maintenance schedules for the Met One sensors installed at the DOE-4 meteorological station.

Table 11. 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 and 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 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 certified clean canisters are discussed by ALS in the case narrative of each SDG.

5.3 Audit Results

The PM_{10} instruments were calibrated at the manufacturer and were functioning properly upon installation. The PM_{10} 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 12 lists the dates for audits conducted in October through December. No flow rate comparisons exceeded the project's acceptance criterion of +/- 4; however, the sample dots got darker/black due to smoke in the area. The sample nozzles and support vanes were cleaned as needed. Complete audit reports are presented in Appendix D.

Table 12. PM_{10} audit completeness.

Location	Met One E-BAM Serial Number	Parameter	Date
DOE-1	W23314	PM_{10}	10/19/2021
DOE-2	Y12096	PM_{10}	10/19/2021
DOE-3	W23313	PM_{10}	10/19/2021
DOE-4	X16067	PM_{10}	10/19/2021
DOE-1	W23314	PM_{10}	11/17/2021
DOE-2	Y12096	PM_{10}	11/17/2021
DOE-3	W23313	PM_{10}	11/17/2021
DOE-4	X16067	PM_{10}	11/17/2021
DOE-1	W23314	PM_{10}	12/17/2021
DOE-2	Y12096	PM_{10}	12/17/2021
DOE-3	W23313	PM_{10}	12/17/2021
DOE-4	X16067	PM_{10}	12/17/2021

6. CONCLUSION

In conclusion, when observing Year 4 data, there is a very similar pattern when comparing the data collected (PM_{10}, VOC, gross alpha and gross beta, and RAD) to the baseline data collected during Years 1–3 (Q1–Q11). This conclusion is able to be visualized by the data shown in the graphs for Years 1–4, PM_{10} data, and radionuclide data, shown in Section 4 of this report. These stable trends indicate that building demolition activities performed in Year 4 had no recordable impact on the site air conditions.

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7. 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.

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Figure 1

SSFL Air Monitoring Locations

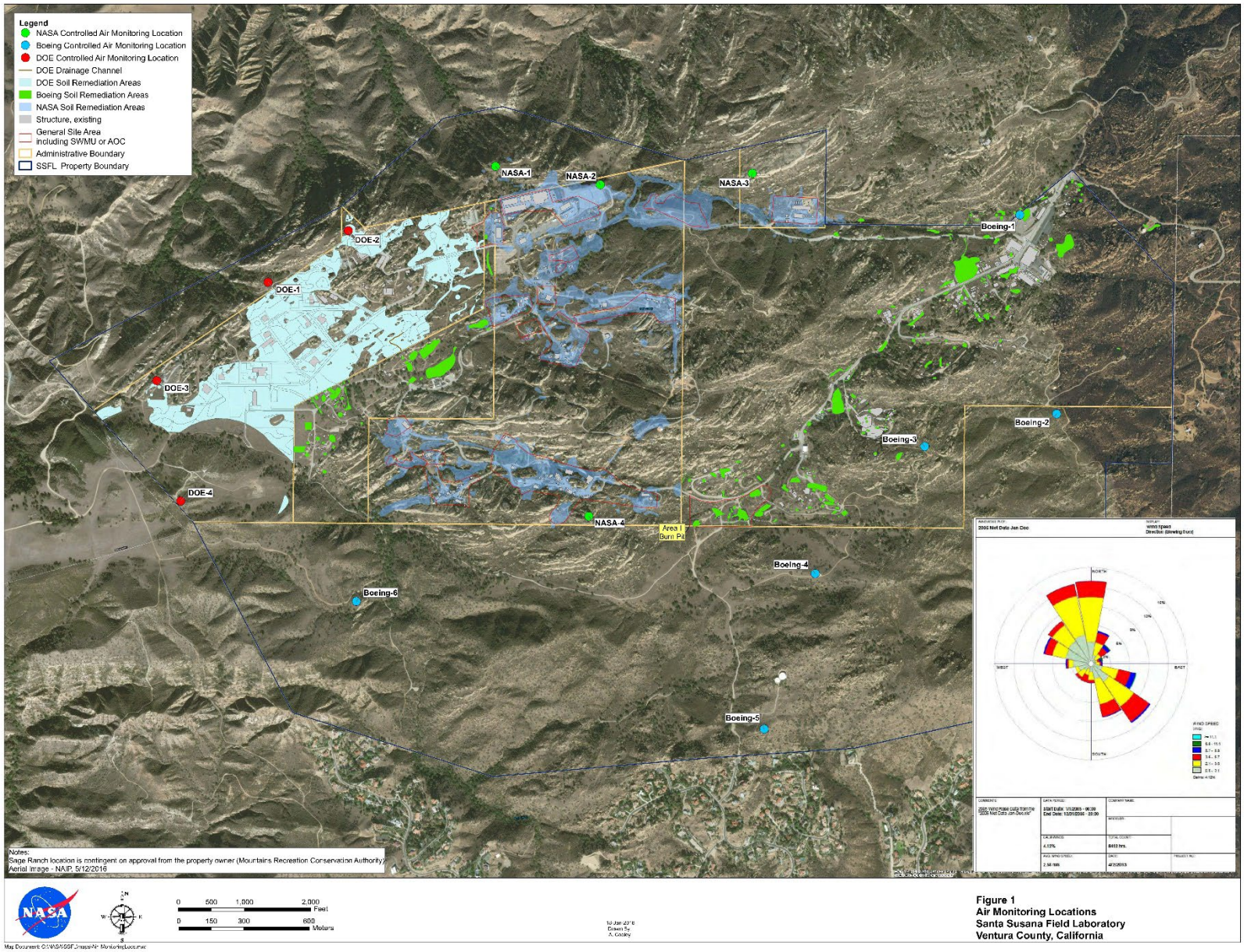


Figure 1
Air Monitoring Locations
Santa Susana Field Laboratory
Ventura County, California

Figure 2

DOE Air Monitoring Locations

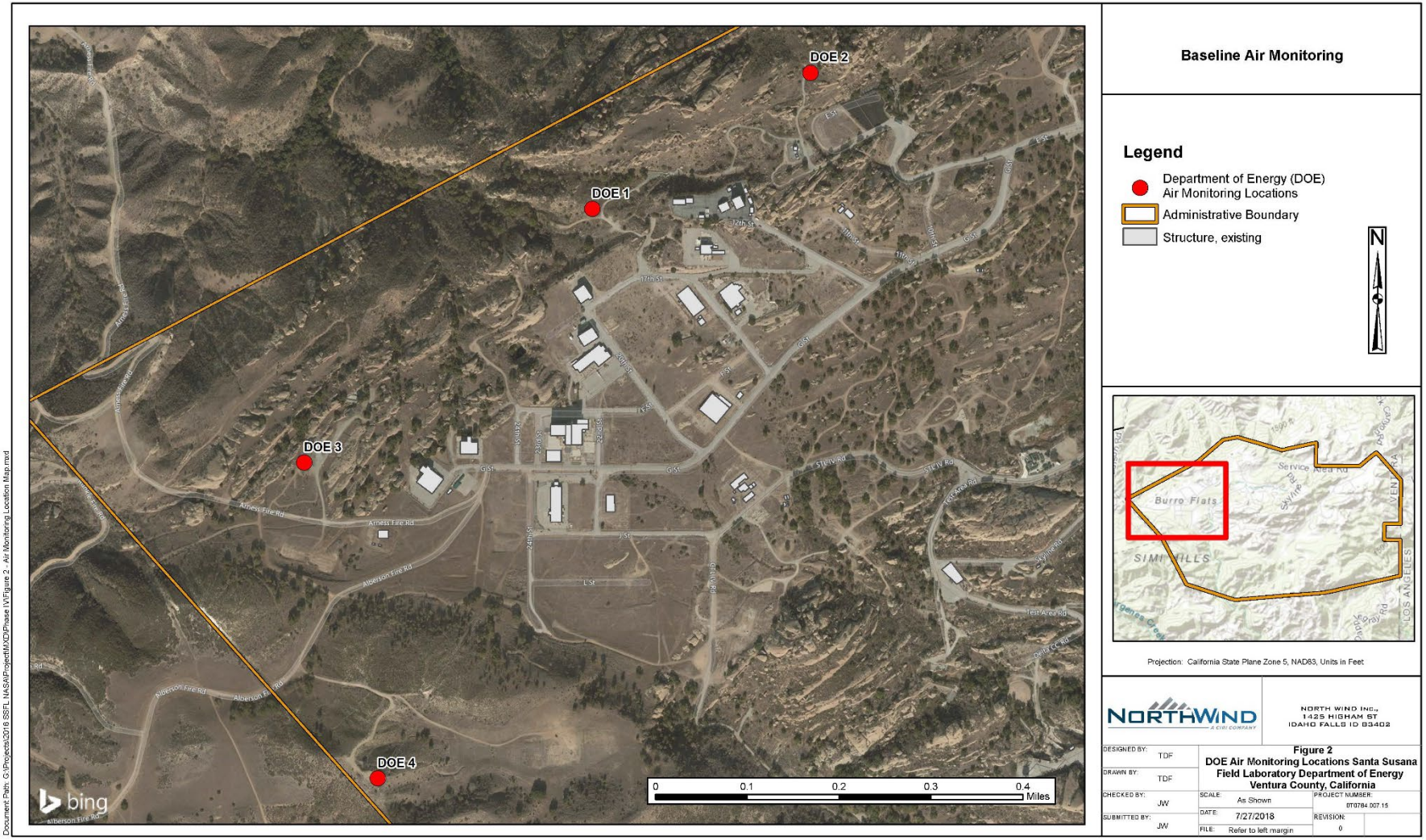

DOE 1
DOE 2
DOE 3
DOE 4
Baseline Air Monitoring
Legend
Department of Energy (DOE) Air Monitoring Locations
Administrative Boundary
Structure, existing
N
Burro Flats
SIMI HILLS
LOS ANGELES
Projection: California State Plane Zone 5, NAD83, Units in Feet
NORTHWIND
NORTH WIND INC.,
1425 HIGHAM ST
IDAHO FALLS ID 83402
Figure 2
DOE Air Monitoring Locations Santa Susana Field Laboratory Department of Energy Ventura County, California
DESIGNED BY: TDF
DRAWN BY: TDF
CHECKED BY: JW
SUBMITTED BY: JW
SCALE: As Shown
DATE: 7/27/2018
FILE: Refer to left margin
PROJECT NUMBER: 070784.007.15
REVISION: 0
0 0.1 0.2 0.3 0.4 Miles
bing

Figure 3 – DOE Quarterly Wind Rose

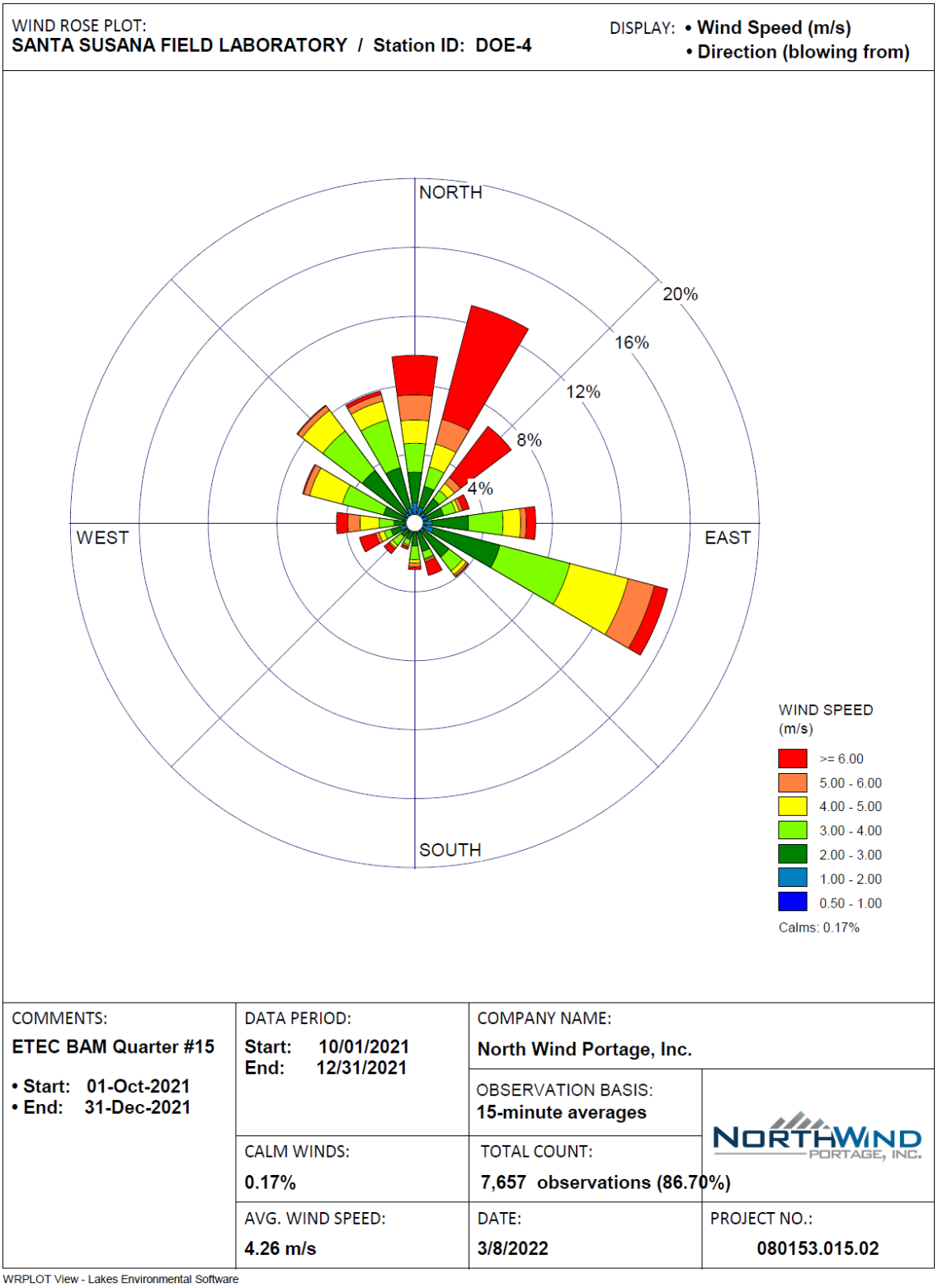
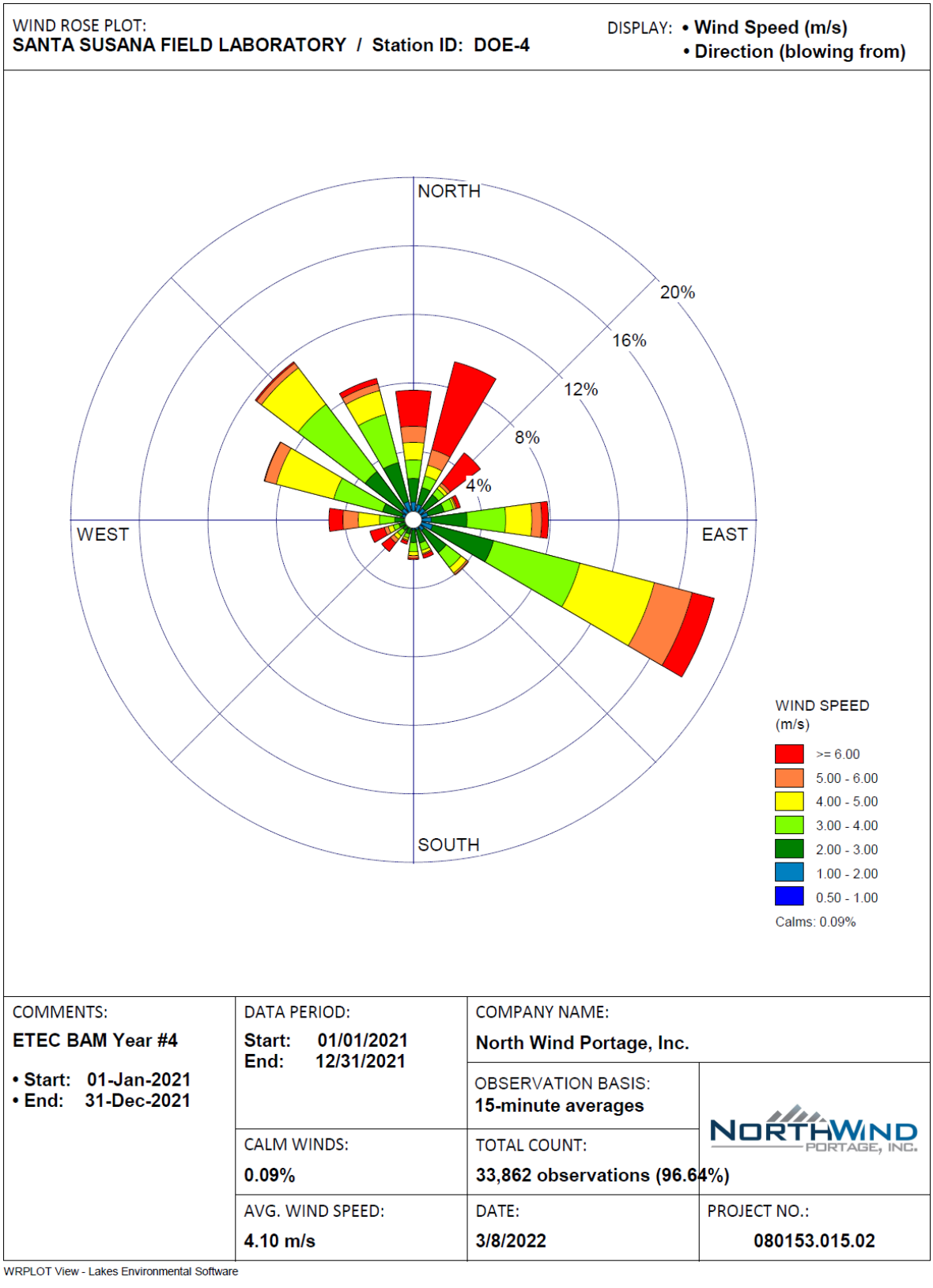


Figure 4 – DOE Annual Wind Rose



APPENDIX A

PM_{10} Daily Averages and Monthly Statistics

.

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PM_{10} Daily Averages, Q15

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)
10/01/21	5	2.333	3.666	6.666
10/02/21	10.708	9.375	11.541	12.041
10/03/21	9.833	8.833	14.458	11.458
10/04/21	21	14.958	17.041	16.583
10/05/21	14.958	8.5	18.25	17.5
10/06/21	12.583	10.5	15.583	14.75
10/07/21	10.041	8.125	11.791	12.833
10/08/21	5.791	7.666	5.25	9.416
10/09/21	10.583	8.416	8.25	9.083
10/10/21	9.125	6.625	7.375	8.541
10/11/21	66.875	53.166	57.458	60.708
10/12/21	20.958	17.583	18.5	22
10/13/21	17.958	14.666	16	18.25
10/14/21	12.166	11.291	12.708	13.416
10/15/21	11.541	10.958	12.25	15.333
10/16/21	7.375	6.125	6.291	8.041
10/17/21	11.166	11.791	16.958	12.958
10/18/21	13.5	8.583	9.208	9.875
10/19/21	12.166	15.625	12.75	12.166
10/20/21	11.166	10.041	11.208	10.875
10/21/21	12.625	9.458	10.666	11.416
10/22/21	7	7.958	11.166	10.375
10/23/21	7	1.875	3.083	9.708
10/24/21	7	10.125	10.208	10.208
10/25/21	7	2.083	4.791	3.125
10/26/21	5.958	4	3.75	13.166
10/27/21	1.208	1.375	1.458	3.708
10/28/21	2.208	1.958	1.666	4.333
10/29/21	5.416	7.538	4.833	7.166
10/30/21	17.25	15.583	20.333	58.75
10/31/21	25.416	22.875	24.833	50.375
11/01/21	18.75	15.958	15.166	52.291
11/02/21	9	13.166	8.125	13.916
11/03/21	5.125	4.25	5.958	25.458
11/04/21	8.375	6.833	15.583	12.458
11/05/21	14.375	11.541	14.125	13.041

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)
11/06/21	26.041	32.958	37.458	34.75
11/07/21	35.375	33.333	38.416	48.416
11/08/21	29.416	32	31.25	36.708
11/09/21	14.208	15.791	14.833	23.791
11/10/21	6.166	5.125	6.791	12.541
11/11/21	3.333	3.041	2.875	4.333
11/12/21	3	2.458	2.666	4
11/13/21	2.583	1.958	1.708	3.5
11/14/21	4.375	3.208	3.458	4.625
11/15/21	8.208	6.208	8.416	8.583
11/16/21	19.875	21	19.208	30.583
11/17/21	25.291	29.041	36.875	34.625
11/18/21	23.25	21.166	23.791	27.166
11/19/21	36.5	33.333	32.166	36.291
11/20/21	—	19.333	24.708	20.083
11/21/21	—	13.833	13.583	20.25
11/22/21	—	2.583	3.875	4.458
11/23/21	—	8.166	9.666	10
11/24/21	—	18.083	11.916	21.791
11/25/21	—	30.75	19.583	32.875
11/26/21	—	2.291	2.5	3.5
11/27/21	—	5.958	6.041	8.166
11/28/21	—	8.083	8.666	11.291
11/29/21	—	4.583	5.833	6.5
11/30/21	—	3.166	2.875	4.916
12/01/21	—	2.583	3.166	5.75
12/02/21	30.769	18.958	20.25	21.583
12/03/21	35.458	37.333	42.708	45.333
12/04/21	52	38.708	43.833	37.875
12/05/21	52	6.791	6.541	7.708
12/06/21	43.958	24.375	24.166	28.041
12/07/21	20.333	19.083	20.875	22.666
12/08/21	19.166	13.583	18.416	18.166
12/09/21	4.75	4.916	4.291	5.166
12/10/21	7.166	4.625	3.583	6.208
12/11/21	3.166	3.416	2.416	3.833
12/12/21	5.666	8.041	4.041	9.083

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)
12/13/21	6.916	7.416	6.75	10.291
12/14/21	0.666	0.125	0	0.875
12/15/21	3.416	16.708	2.25	8.208
12/16/21	2.75	3.875	5.333	6.125
12/17/21	3.541	1.291	2.833	8.291
12/18/21	0.958	2	2	2.708
12/19/21	10.666	19.166	16.375	38.333
12/20/21	9.916	15.708	10.708	12.541
12/21/21	5.791	4	4.458	5.791
12/22/21	17.375	35	17.791	20
12/23/21	1.291	15.333	1.458	2.041
12/24/21	2.083	4.833	10.416	22.875
12/25/21	2.125	3.25	3.083	2.833
12/26/21	3.166	10.375	1.541	10.541
12/27/21	4.458	5.958	3.625	7.083
12/28/21	2.333	8.375	12.541	12.791
12/29/21	3.083	2.166	2.5	3.625
12/30/21	-0.208	-1	-0.583	-0.541
12/31/21	2.761	11.666	7	13.904

Notes:

Negative values mean the background exceeded the particulate count.

Gray-shaded boxes indicate a filter sensor pressure failure (11/20/21 – 12/2/21)

PM_{10} Daily Averages, Q12 through Q15

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)
Q12				
01/01/21	2.2	2.3	0.2	1.8
01/02/21	7.708	9.666	7.791	6.958
01/03/21	14.833	16.291	16.791	13.458
01/04/21	9.708	12.583	10.583	10.416
01/05/21	3.083	2.5	3.125	1.291
01/06/21	3.291	4	3.166	3.166
01/07/21	1.75	2.833	1.5	1.708

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	**PM_{10} (µg/m³) (CAAQS 50 µg/m³)**	**PM_{10} (µg/m³) (CAAQS 50 µg/m³)**	**PM_{10} (µg/m³) (CAAQS 50 µg/m³)**	**PM_{10} (µg/m³) (CAAQS 50 µg/m³)**
01/08/21	0.166	5.208	4.333	4.041
01/09/21	—	14.166	12.75	13.083
01/10/21	—	3.791	2.416	2.708
01/11/21	2.12	3.125	3.291	2.625
01/12/21	4.416	4.125	3.541	5.541
01/13/21	5.625	4.166	3.833	3.416
01/14/21	4.75	4.375	2.958	5.208
01/15/21	3.416	4.916	3.333	5.416
01/16/21	3.375	4.041	2.916	3.375
01/17/21	2.208	3.125	1.333	2.375
01/18/21	4.958	6.25	4.5	5.083
01/19/21	**55.541**	**67.166**	**52.041**	**59.5**
01/20/21	10.5	10.833	8.958	10.875
01/21/21	9.625	6.846	9.958	9.458
01/22/21	13.916	—	10.166	13.739
01/23/21	5.25	—	4.666	4.208
01/24/21	6.041	—	4.666	5.291
01/25/21	6.458	—	3.25	5.75
01/26/21	4.875	—	3.458	4.583
01/27/21	9.5	—	6.75	7.291
01/28/21	9.583	—	10.25	8.208
01/29/21	9.958	—	3.541	3.833
01/30/21	8.833	—	4.75	5.416
01/31/21	3.166	—	1.583	2.041
02/01/21	7.25	—	3.333	6.208
02/02/21	4.666	—	4.541	4.583
02/03/21	7.791	7	7.208	7.041
02/04/21	13.769	5.208	5.833	6.375
02/05/21	—	3.708	4.875	3.916
02/06/21	—	8.541	7.666	10.541
02/07/21	—	12.75	11	13.083
02/08/21	—	24.208	22.083	25.583
02/09/21	—	24.458	22.833	20.791
02/10/21	—	23	22.541	22.5
02/11/21	—	15.291	14.041	14.291
02/12/21	10.866	7	7.25	7.291
02/13/21	10.541	8.583	7.875	11.416

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)
02/14/21	5.041	3.958	4	5.625
02/15/21	6.541	6.043	8.666	11.375
02/16/21	8.958	8.166	6.458	10.041
02/17/21	5.916	5.25	4.75	8.041
02/18/21	3.791	4.708	4.083	6.375
02/19/21	5.458	5.333	5.625	6.916
02/20/21	16.166	7.416	6.458	8.375
02/21/21	2.625	3.208	3.541	5.708
02/22/21	1.583	1.666	2.458	3.333
02/23/21	2.125	2.791	2.083	4.166
02/24/21	8.5	9	10.25	13.833
02/25/21	25.708	28.916	27.666	37.666
02/26/21	8.291	8.583	8.375	11.041
02/27/21	8.166	8.291	8.166	11.833
02/28/21	8.041	8.791	9.916	13
03/01/21	4	4.708	4.375	6.416
03/02/21	6.541	6.333	7.958	8.541
03/03/21	9.916	12.125	10.708	15.875
03/04/21	8.041	7	6.375	8.708
03/05/21	10.083	8.833	8.791	13.375
03/06/21	11.083	12.541	9.875	14.708
03/07/21	19.666	16.875	15.375	16.166
03/08/21	11.708	12.791	10.208	15.041
03/09/21	12.125	17.083	12.625	11.458
03/10/21	3.958	2.708	1.416	10.625
03/11/21	2.416	0.541	0.958	5.958
03/12/21	3.791	2.416	3.625	6.583
03/13/21	11	11.75	10.833	16.5
03/14/21	12.583	21.125	16.25	17.291
03/15/21	5.791	5.208	5	12.625
03/16/21	5.5	9.083	4.958	14.25
03/17/21	12.833	10.916	8.833	15.5
03/18/21	13.875	4.041	9.833	14.75
03/19/21	9.291	—	8.333	15.916
03/20/21	6.625	—	4.083	11.791
03/21/21	5.291	—	4	6.416
03/22/21	10.166	9.291	8.083	15.208

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)
03/23/21	23.583	10.75	16.375	14.333
03/24/21	12	9.333	12.708	12.541
03/25/21	14.541	12.666	11.25	22.666
03/26/21	11.875	10.666	9.666	9.583
03/27/21	7.791	6.666	6.708	7.5
03/28/21	6.583	5.833	5.375	6.958
03/29/21	10.708	10.166	9.875	23.375
03/30/21	29.208	28.458	31.208	41.291
03/31/21	11.958	20.041	13.625	16.25
Q13				
04/01/21	11.785	11.785	10.357	13.642
04/02/21	22.541	20	18.25	29.375
04/03/21	18	15.416	17.25	22.625
04/04/21	12.416	11.083	10.541	15.291
04/05/21	17.166	19.125	19.666	26.041
04/06/21	18.541	19.458	17.333	26.291
04/07/21	22.291	17.791	20.625	20.375
04/08/21	16.125	15.041	14.083	16.25
04/09/21	19.958	16.75	15.583	17.375
04/10/21	16.375	14.666	13.458	15.333
04/11/21	27	25.041	31.416	33.833
04/12/21	24.166	27.75	25.791	28.5
04/13/21	21.916	18.541	22.625	19.875
04/14/21	17.791	19.083	21.041	16.5
04/15/21	20.5	25.416	13.461	17.916
04/16/21	21.083	18.333	20.111	21.958
04/17/21	21.5	18.875	12.125	19.166
04/18/21	11.666	10.041	15.666	18.5
04/19/21	12.5	10.916	13.791	12.916
04/20/21	24.208	23.541	8.916	27.875
04/21/21	16.75	19.541	8.75	17.416
04/22/21	11.375	11.083	9.333	10.583
04/23/21	11.375	10.75	9.625	12.333
04/24/21	14.375	11.666	7.083	11
04/25/21	6.416	6.5	13.083	13.833
04/26/21	5.75	4.416	21.541	7.333
04/27/21	9.791	6.875	24.333	8.583

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)
04/28/21	7.458	5.833	22.791	9.166
04/29/21	7.5	7.041	21.583	8.416
04/30/21	13.625	48.416	19.833	14.125
05/01/21	24.791	20.166	20.125	28.666
05/02/21	16.75	17.5	25.5	15.333
05/03/21	23.25	22.875	23.187	23.458
05/04/21	22.625	19.916	17.916	19.5
05/05/21	31.416	21.416	15	19.958
05/06/21	17.958	17.75	14.708	20.166
05/07/21	14.25	15.458	17.666	15.25
05/08/21	15.291	14.833	15.041	14.791
05/09/21	16.708	15.791	15.916	17.583
05/10/21	16.125	16.166	17.666	13
05/11/21	14.5	13.333	13.375	14.291
05/12/21	14.125	12.75	10.541	25.166
05/13/21	12.041	9.416	7.291	12.125
05/14/21	12.875	9.043	7.958	20.708
05/15/21	13.583	14.083	14.791	16.791
05/16/21	5.416	4.5	14.541	9.958
05/17/21	7.916	7.333	9.9	12.166
05/18/21	12.125	12.833	30.909	16.625
05/19/21	19.083	20.333	30.208	27.041
05/20/21	23.5	24.541	20	25.666
05/21/21	24.625	20.25	7.541	26.25
05/22/21	19.25	23.583	4.625	19.25
05/23/21	14.333	11.416	6.666	12.333
05/24/21	12.291	9.458	22.208	11.416
05/25/21	14.583	12.833	12.375	16.833
05/26/21	32.083	20.375	14.375	25.875
05/27/21	21.458	24.833	24.458	23.25
05/28/21	18.333	21.041	14.625	25.375
05/29/21	12.833	12.75	4.958	14.416
05/30/21	13.833	14.458	5.708	15.958
05/31/21	16.041	16.875	3.666	17.875
06/01/21	13.458	15.291	3.5	18.208
06/02/21	14.958	15.083	7.416	14.583
06/03/21	14.166	15.125	13.375	19.375

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	**PM_{10} ($\mu g/m^3$) (CAAQS 50 $\mu g/m^3$)**	**PM_{10} ($\mu g/m^3$) (CAAQS 50 $\mu g/m^3$)**	**PM_{10} ($\mu g/m^3$) (CAAQS 50 $\mu g/m^3$)**	**PM_{10} ($\mu g/m^3$) (CAAQS 50 $\mu g/m^3$)**
06/04/21	16.47	15.416	3.75	29.458
06/05/21	15.833	13.166	7.125	24.25
06/06/21	15.75	11.208	5.666	25.333
06/07/21	11.25	7.5	24.416	7.208
06/08/21	9.333	9.583	9.666	15.041
06/09/21	37.583	15.041	9.5	16
06/10/21	22.875	14.416	18.125	17.708
06/11/21	26.333	11.708	17.5	16.25
06/12/21	27.583	13.708	9.208	17.75
06/13/21	12.333	12.458	11.833	19.208
06/14/21	21.75	9.666	5.166	12.125
06/15/21	12.458	8.166	2.5	11.041
06/16/21	9.916	21.583	2.666	27.208
06/17/21	10.208	17.458	8.5	23.291
06/18/21	12.583	23.166	3.375	20.583
06/19/21	17.166	23.041	2.833	17.791
06/20/21	21.458	16.541	3	15.5
06/21/21	23.041	18.958	3.5	18.291
06/22/21	18.833	13.375	16.958	15.083
06/23/21	16.7	15.25	15.375	**60.333**
06/24/21	6.5	11.125	6.041	12.625
06/25/21	2.958	13.041	2.291	19.5
06/26/21	15.833	18.583	5.291	15.166
06/27/21	7.625	20.666	10.25	31.625
06/28/21	1.541	28	1.666	33.333
06/29/21	2.333	23.958	2.583	32.416
06/30/21	0.708	19.2	1.25	16.9
Q14				
07/01/21	20.5	27.625	20.375	25.75
07/02/21	13.125	25.083	14.375	21.916
07/03/21	12.458	13.666	8.833	10.25
07/04/21	17.125	24.958	20.875	33.25
07/05/21	36.541	33.25	35.333	41.166
07/06/21	19.125	17.416	15.625	17.333
07/07/21	24.208	22.541	15.833	18.541
07/08/21	24.708	22.708	23.208	28.375
07/09/21	21.208	20.833	19.5	20.041

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)
07/10/21	23.333	22.666	20.208	21.25
07/11/21	25.083	23.666	21.625	21.958
07/12/21	37.708	25.916	24	32.75
07/13/21	20.208	23.666	28.041	20.125
07/14/21	17.875	20.708	36.041	20.541
07/15/21	27.041	19.666	21.333	23.291
07/16/21	18.625	19.458	14.083	16.166
07/17/21	22.166	17.25	15.208	24.166
07/18/21	10.25	10.375	11.125	14.541
07/19/21	13.166	10.25	11.375	11.75
07/20/21	13.583	11.958	13.375	13.416
07/21/21	21.75	18.833	18.333	19.333
07/22/21	25.875	26.291	33.333	29.416
07/23/21	28.375	32.625	31.541	35.916
07/24/21	22.208	22.416	24.791	22.125
07/25/21	23.125	20.291	24.583	19.625
07/26/21	17.541	13.958	21.583	17.25
07/27/21	15.166	18.833	17.125	16.708
07/28/21	10.875	9.333	10.083	11.25
07/29/21	9.833	9.875	11	11.166
07/30/21	18.875	19.166	15.166	17.541
07/31/21	17.125	14.875	14.333	13.208
08/01/21	10.791	6.5	7.833	8.666
08/02/21	11.166	7.666	8.708	10.708
08/03/21	14.333	11.791	13.041	14.541
08/04/21	19.5	16.791	18.208	20.125
08/05/21	22.833	19.458	22.041	25.791
08/06/21	22.583	25.791	26.666	25.083
08/07/21	21.333	26.541	22.583	**62.083**
08/08/21	15.958	14.875	19.708	21.75
08/09/21	23.416	15.5	15.666	16.833
08/10/21	12.083	11.208	11.666	12.333
08/11/21	15.416	14.25	17.75	14.791
08/12/21	12.791	10.375	11.916	12.416
08/13/21	15.916	11.541	14.458	13.916
08/14/21	15.583	12.791	11.916	13.541
08/15/21	14.625	14.041	17.5	15.083

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)
08/16/21	18.375	22.708	18.541	18.666
08/17/21	19.125	26.208	20.541	18.791
08/18/21	9.75	8.208	10.708	7.833
08/19/21	9.958	9.208	11.625	14.125
08/20/21	10.958	12.916	13.125	13.458
08/21/21	13.5	8.791	9.375	11.875
08/22/21	11.416	12.666	12.958	13.375
08/23/21	17.291	14.833	18.25	18.125
08/24/21	17.541	20.041	19.416	24
08/25/21	23.5	22.958	22.25	23.666
08/26/21	18.916	17.25	18.291	20.666
08/27/21	21.166	18.375	19.458	20.333
08/28/21	19.166	16.708	16.208	19.458
08/29/21	13.166	11.916	12.041	12.125
08/30/21	31.916	25.5	29.208	31.75
08/31/21	30.458	24.666	26.375	26.708
09/01/21	16.583	18.083	16.875	20.75
09/02/21	16.625	15.5	19.25	17.916
09/03/21	18.25	18.708	21.333	19.666
09/04/21	8.833	7.291	8.625	9.083
09/05/21	9.875	8.916	9.791	9.625
09/06/21	25.5	26	24.875	29
09/07/21	26.333	22.458	33.291	19.333
09/08/21	21.875	19.833	19.916	25.583
09/09/21	20.083	19.208	20.916	21.916
09/10/21	14.166	13.25	15.333	17.708
09/11/21	9.75	9.625	9.041	9.5
09/12/21	8.166	6.916	7.75	8.875
09/13/21	7.916	5.833	8.375	7.708
09/14/21	11.791	12.125	12.5	11.083
09/15/21	21.083	22.791	19.541	24.5
09/16/21	23.791	19.875	27.541	22.541
09/17/21	17.541	14.583	21.083	15.916
09/18/21	16.708	16.083	18.416	19.25
09/19/21	15.041	15.5	17.958	17.083
09/20/21	29.083	22.916	30.416	23.25
09/21/21	20.541	14.375	22.375	16.291

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)
09/22/21	9.458	7.291	12.208	8.875
09/23/21	15.041	10.916	13.833	14.416
09/24/21	23.208	13.458	28.75	16.875
09/25/21	30.083	21.291	23.375	19.5
09/26/21	15.25	14.083	15.541	18.708
09/27/21	16.75	20.541	17.416	14.958
09/28/21	12.583	11.5	15.125	14.25
09/29/21	16.625	17.791	22.25	24.5
09/30/21	18.5	15.437	15.937	19.437
Q15				
10/01/21	5	2.333	3.666	6.666
10/02/21	10.708	9.375	11.541	12.041
10/03/21	9.833	8.833	14.458	11.458
10/04/21	21	14.958	17.041	16.583
10/05/21	14.958	8.5	18.25	17.5
10/06/21	12.583	10.5	15.583	14.75
10/07/21	10.041	8.125	11.791	12.833
10/08/21	5.791	7.666	5.25	9.416
10/09/21	10.583	8.416	8.25	9.083
10/10/21	9.125	6.625	7.375	8.541
10/11/21	**66.875**	**53.166**	**57.458**	**60.708**
10/12/21	20.958	17.583	18.5	22
10/13/21	17.958	14.666	16	18.25
10/14/21	12.166	11.291	12.708	13.416
10/15/21	11.541	10.958	12.25	15.333
10/16/21	7.375	6.125	6.291	8.041
10/17/21	11.166	11.791	16.958	12.958
10/18/21	13.5	8.583	9.208	9.875
10/19/21	12.166	15.625	12.75	12.166
10/20/21	11.166	10.041	11.208	10.875
10/21/21	12.625	9.458	10.666	11.416
10/22/21	7	7.958	11.166	10.375
10/23/21	7	1.875	3.083	9.708
10/24/21	7	10.125	10.208	10.208
10/25/21	7	2.083	4.791	3.125
10/26/21	5.958	4	3.75	13.166
10/27/21	1.208	1.375	1.458	3.708

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)	PM_{10} (µg/m³) (CAAQS 50 µg/m³)
10/28/21	2.208	1.958	1.666	4.333
10/29/21	5.416	7.538	4.833	7.166
10/30/21	17.25	15.583	20.333	**58.75**
10/31/21	25.416	22.875	24.833	**50.375**
11/01/21	18.75	15.958	15.166	**52.291**
11/02/21	9	13.166	8.125	13.916
11/03/21	5.125	4.25	5.958	25.458
11/04/21	8.375	6.833	15.583	12.458
11/05/21	14.375	11.541	14.125	13.041
11/06/21	26.041	32.958	37.458	34.75
11/07/21	35.375	33.333	38.416	48.416
11/08/21	29.416	32	31.25	36.708
11/09/21	14.208	15.791	14.833	23.791
11/10/21	6.166	5.125	6.791	12.541
11/11/21	3.333	3.041	2.875	4.333
11/12/21	3	2.458	2.666	4
11/13/21	2.583	1.958	1.708	3.5
11/14/21	4.375	3.208	3.458	4.625
11/15/21	8.208	6.208	8.416	8.583
11/16/21	19.875	21	19.208	30.583
11/17/21	25.291	29.041	36.875	34.625
11/18/21	23.25	21.166	23.791	27.166
11/19/21	36.5	33.333	32.166	36.291
11/20/21	—	19.333	24.708	20.083
11/21/21	—	13.833	13.583	20.25
11/22/21	—	2.583	3.875	4.458
11/23/21	—	8.166	9.666	10
11/24/21	—	18.083	11.916	21.791
11/25/21	—	30.75	19.583	32.875
11/26/21	—	2.291	2.5	3.5
11/27/21	—	5.958	6.041	8.166
11/28/21	—	8.083	8.666	11.291
11/29/21	—	4.583	5.833	6.5
11/30/21	—	3.166	2.875	4.916
12/01/21	—	2.583	3.166	5.75
12/02/21	30.769	18.958	20.25	21.583
12/03/21	35.458	37.333	42.708	45.333

Site ID	DOE-1	DOE-2	DOE-3	DOE-4
Sample Date	**PM_{10} (µg/m³) (CAAQS 50 µg/m³)**	**PM_{10} (µg/m³) (CAAQS 50 µg/m³)**	**PM_{10} (µg/m³) (CAAQS 50 µg/m³)**	**PM_{10} (µg/m³) (CAAQS 50 µg/m³)**
12/04/21	**52**	38.708	43.833	37.875
12/05/21	**52**	6.791	6.541	7.708
12/06/21	43.958	24.375	24.166	28.041
12/07/21	20.333	19.083	20.875	22.666
12/08/21	19.166	13.583	18.416	18.166
12/09/21	4.75	4.916	4.291	5.166
12/10/21	7.166	4.625	3.583	6.208
12/11/21	3.166	3.416	2.416	3.833
12/12/21	5.666	8.041	4.041	9.083
12/13/21	6.916	7.416	6.75	10.291
12/14/21	0.666	0.125	0	0.875
12/15/21	3.416	16.708	2.25	8.208
12/16/21	2.75	3.875	5.333	6.125
12/17/21	3.541	1.291	2.833	8.291
12/18/21	0.958	2	2	2.708
12/19/21	10.666	19.166	16.375	38.333
12/20/21	9.916	15.708	10.708	12.541
12/21/21	5.791	4	4.458	5.791
12/22/21	17.375	35	17.791	20
12/23/21	1.291	15.333	1.458	2.041
12/24/21	2.083	4.833	10.416	22.875
12/25/21	2.125	3.25	3.083	2.833
12/26/21	3.166	10.375	1.541	10.541
12/27/21	4.458	5.958	3.625	7.083
12/28/21	2.333	8.375	12.541	12.791
12/29/21	3.083	2.166	2.5	3.625
12/30/21	-0.208	-1	-0.583	-0.541
12/31/21	2.761	11.666	7	13.904

Notes:

Gray-shaded boxes indicate a filter sensor pressure failure

Bold numbers indicate value exceeded CAAQS, but are below the NAAQS of 150 µg/m³

PM_{10} Monthly Statistics, Q15

Location ID	October 2021			November 2021			December 2021		
	PM_{10}			PM_{10}			PM_{10}		
	High	Low	95th PCTL	High	Low	95th PCTL	High	Low	95th PCTL
DOE-1	66.87500	1.20800	23.20800	36.50000	2.58300	35.48750	52.00000	-0.20800	48.38110
DOE-2	53.16600	1.37500	20.22900	33.33300	1.95800	33.16425	38.70800	-1.00000	36.16650
DOE-3	57.45800	1.45800	22.58300	38.41600	1.70800	37.19565	43.83300	-0.58300	33.43700
DOE-4	60.70800	3.12500	54.56250	52.29100	3.50000	43.14740	45.33300	-0.54100	38.10400

PCTL = percentile

PM_{10} Monthly Statistics, Q12 through Q15

Location ID	January 2021			February 2021			March 2021		
	PM_{10}			PM_{10}			PM_{10}		
	High	Low	95th PCTL	High	Low	95th PCTL	High	Low	95th PCTL
DOE-1	55.54100	0.00000	14.37450	25.70800	0.00000	15.80645	29.20800	2.41600	22.01620
DOE-2	67.16600	2.30000	16.29100	28.91600	1.66600	24.37050	28.45800	0.00000	20.69140
DOE-3	52.04100	0.20000	14.77050	27.66600	2.08300	22.70160	31.20800	0.95800	16.32500
DOE-4	59.50000	1.29100	13.59850	37.66600	3.33300	24.19565	41.29100	5.95800	23.09140
	April 2021			**May 2021**			**June 2021**		
	PM_{10}			PM_{10}			PM_{10}		
Location ID	High	Low	95th PCTL	High	Low	95th PCTL	High	Low	95th PCTL
DOE-1	27.00000	5.75000	24.49950	32.08300	5.41600	28.36005	37.58300	0.70800	27.02050
DOE-2	48.41600	4.41600	26.58300	24.83300	4.50000	24.10990	28.00000	7.50000	23.60160
DOE-3	31.41600	7.08300	25.06200	30.90900	3.66600	28.08940	24.41600	1.25000	17.84375
DOE-4	33.83300	7.33300	29.02050	28.66600	9.95800	26.08125	60.33300	7.20800	32.92035

	July 2021			August 2021			September 2021		
	PM_{10}			PM_{10}			PM_{10}		
Location ID	High	Low	95th PCTL	High	Low	95th PCTL	High	Low	95th PCTL
DOE-1	37.70800	9.83300	32.45800	31.91600	9.75000	26.97900	30.08300	7.91600	27.84550
DOE-2	33.25000	9.33300	30.12500	26.54100	6.50000	25.99950	26.00000	5.83300	22.85975
DOE-3	36.04100	8.83300	34.33300	29.20800	7.83300	26.52050	33.29100	7.75000	29.66630
DOE-4	41.16600	10.25000	34.58300	62.08300	7.83300	29.22900	29.00000	7.70800	25.09565
	October 2021			November 2021			December 2021		
	PM_{10}			PM_{10}			PM_{10}		
Location ID	High	Low	95th PCTL	High	Low	95th PCTL	High	Low	95th PCTL
DOE-1	66.87500	1.20800	23.20800	36.50000	2.58300	35.48750	52.00000	-0.20800	48.38110
DOE-2	53.16600	1.37500	20.22900	33.33300	1.95800	33.16425	38.70800	-1.00000	36.16650
DOE-3	57.45800	1.45800	22.58300	38.41600	1.70800	37.19565	43.83300	-0.58300	33.43700
DOE-4	60.70800	3.12500	54.56250	52.29100	3.50000	43.14740	45.33300	-0.54100	38.10400

APPENDIX B

Analytical Results for Ambient Air VOCs

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Table B-1. Ambient air VOC detection results compared to RSLs.

Location ID	Sample Date	Analyte	Result (µg/m³)	Screening Level Value (µg/m³)	Screening Level Source
DOE-1	10/15/2021	Dichlorodifluoromethane	2.4	100	US EPA RSL
DOE-1	10/15/2021	Ethyl acetate	11	73	US EPA RSL
DOE-1	10/15/2021	Tetrahydrofuran	2.3	2100	US EPA RSL
DOE-1	10/15/2021	Trichlorofluoromethane	1.3	1300	DTSC HHRA NOTE 3
DOE-2	10/15/2021	Dichlorodifluoromethane	2.3	100	US EPA RSL
DOE-2	10/15/2021	Ethyl acetate	3.2	73	US EPA RSL
DOE-2	10/15/2021	Trichlorofluoromethane	1.3	1300	DTSC HHRA NOTE 3
DOE-3	10/15/2021	Dichlorodifluoromethane	2.4	100	US EPA RSL
DOE-3	10/15/2021	Ethyl acetate	6.5	73	US EPA RSL
DOE-3	10/15/2021	Trichlorofluoromethane	1.3	1300	DTSC HHRA NOTE 3
DOE-3	10/15/2021	Dichlorodifluoromethane	2.4	100	US EPA RSL
DOE-3	10/15/2021	Ethyl acetate	4.7	73	US EPA RSL
DOE-3	10/15/2021	Trichlorofluoromethane	1.3	1300	DTSC HHRA NOTE 3
DOE-4	10/15/2021	Dichlorodifluoromethane	2.5	100	US EPA RSL
DOE-4	10/15/2021	Trichlorofluoromethane	1.3	1300	DTSC HHRA NOTE 3
DOE-1	10/28/2021	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-1	10/28/2021	Ethyl acetate	5.5	73	US EPA RSL
DOE-1	10/28/2021	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-2	10/28/2021	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-2	10/28/2021	Ethyl acetate	12	73	US EPA RSL
DOE-2	10/28/2021	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-3	10/28/2021	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-3	10/28/2021	Ethyl acetate	13	73	US EPA RSL
DOE-3	10/28/2021	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-4	10/28/2021	Dichlorodifluoromethane	3.9	100	US EPA RSL
DOE-4	10/28/2021	Ethyl acetate	12	73	US EPA RSL
DOE-4	10/28/2021	Trichlorofluoromethane	2.0	1300	DTSC HHRA NOTE 3
DOE-4	10/28/2021	2-butanone	1.6	5200	US EPA RSL
DOE-4	10/28/2021	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-4	10/28/2021	Ethyl acetate	54	73	US EPA RSL
DOE-4	10/28/2021	Methylene chloride	**1.7**	1	DTSC HHRA NOTE 3
DOE-4	10/28/2021	Toluene	1.5	310	DTSC HHRA NOTE 3
DOE-4	10/28/2021	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-1	11/11/2021	Dichlorodifluoromethane	2.5	100	US EPA RSL
DOE-1	11/11/2021	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-1	11/11/2021	Dichlorodifluoromethane	2.5	100	US EPA RSL
DOE-1	11/11/2021	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-2	11/11/2021	Dichlorodifluoromethane	2.5	100	US EPA RSL

Location ID	Sample Date	Analyte	Result (µg/m³)	Screening Level Value (µg/m³)	Screening Level Source
DOE-2	11/11/2021	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-3	11/11/2021	Dichlorodifluoromethane	2.4	100	US EPA RSL
DOE-3	11/11/2021	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-4	11/11/2021	2-butanone	2.3	5200	US EPA RSL
DOE-4	11/11/2021	Carbon disulfide	5.6	730	US EPA RSL
DOE-4	11/11/2021	Dichlorodifluoromethane	2.3	100	US EPA RSL
DOE-4	11/11/2021	Ethyl acetate	3.8	73	US EPA RSL
DOE-4	11/11/2021	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-1	11/24/2021	Dichlorodifluoromethane	2.3	100	US EPA RSL
DOE-1	11/24/2021	Ethyl acetate	9.8	73	US EPA RSL
DOE-1	11/24/2021	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-2	11/24/2021	Dichlorodifluoromethane	2.3	100	US EPA RSL
DOE-2	11/24/2021	Ethyl acetate	11	73	US EPA RSL
DOE-2	11/24/2021	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-2	11/24/2021	Dichlorodifluoromethane	2.4	100	US EPA RSL
DOE-2	11/24/2021	Ethyl acetate	8.0	73	US EPA RSL
DOE-2	11/24/2021	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-3	11/24/2021	Dichlorodifluoromethane	2.3	100	US EPA RSL
DOE-3	11/24/2021	Ethyl acetate	9.6	73	US EPA RSL
DOE-3	11/24/2021	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-4	11/24/2021	Dichlorodifluoromethane	2.4	100	US EPA RSL
DOE-4	11/24/2021	Ethyl acetate	9.0	73	US EPA RSL
DOE-4	11/24/2021	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-1	12/07/2021	Dichlorodifluoromethane	2.1	100	US EPA RSL
DOE-1	12/07/2021	Toluene	0.97	310	DTSC HHRA NOTE 3
DOE-1	12/07/2021	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-2	12/07/2021	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-2	12/07/2021	Toluene	1.1	310	DTSC HHRA NOTE 3
DOE-2	12/07/2021	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-3	12/07/2021	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-3	12/07/2021	Toluene	1.1	310	DTSC HHRA NOTE 3
DOE-3	12/07/2021	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-3	12/07/2021	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-3	12/07/2021	Toluene	1.1	310	DTSC HHRA NOTE 3
DOE-3	12/07/2021	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-4	12/07/2021	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-4	12/07/2021	Ethyl acetate	3.9	73	US EPA RSL
DOE-4	12/07/2021	Toluene	1.2	310	DTSC HHRA NOTE 3

Location ID	Sample Date	Analyte	Result (µg/m³)	Screening Level Value (µg/m³)	Screening Level Source
DOE-4	12/07/2021	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-1	12/17/2021	Dichlorodifluoromethane	2.1	100	US EPA RSL
DOE-1	12/17/2021	Ethyl acetate	12	73	US EPA RSL
DOE-1	12/17/2021	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-2	12/17/2021	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-2	12/17/2021	Ethyl acetate	3.8	73	US EPA RSL
DOE-2	12/17/2021	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-3	12/17/2021	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-3	12/17/2021	Ethyl acetate	11	73	US EPA RSL
DOE-3	12/17/2021	Trichlorofluoromethane	1.2	1300	DTSC HHRA NOTE 3
DOE-4	12/17/2021	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-4	12/17/2021	Ethyl acetate	14 (;J)	73	US EPA RSL
DOE-4	12/17/2021	Trichlorofluoromethane	1.1	1300	DTSC HHRA NOTE 3
DOE-4	12/17/2021	Dichlorodifluoromethane	2.2	100	US EPA RSL
DOE-4	12/17/2021	Ethyl acetate	8.9 (;J)	73	US EPA RSL
DOE-4	12/17/2021	Trichlorofluoromethane	1.1	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.
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

Table B-2. Year 4 Ambient air VOC detection results compared to RSLs.

Location ID	Sample Date	Analyte	Result	Qualifier	Screening Level Value	SL Source
DOE-1	01/05/2021	Dichlorodifluoromethane	1.8	------	100	US EPA RSL
DOE-1	01/05/2021	Ethyl acetate	23	L;J+	73	US EPA RSL
DOE-1	01/05/2021	Toluene	1.1	------	310	DTSC HHRA NOTE 3
DOE-2	01/05/2021	Dichlorodifluoromethane	1.9	------	100	US EPA RSL
DOE-2	01/05/2021	Ethyl acetate	14	L;J+	73	US EPA RSL
DOE-2	01/05/2021	Trichlorofluoromethane	0.96	------	1300	DTSC HHRA NOTE 3
DOE-3	01/05/2021	Benzene	**0.91**	------	0.097	DTSC HHRA NOTE 3
DOE-3	01/05/2021	Dichlorodifluoromethane	1.9	------	100	US EPA RSL
DOE-3	01/05/2021	Ethyl acetate	**150**	L;J+	73	US EPA RSL
DOE-3	01/05/2021	Toluene	4.1	;J	310	DTSC HHRA NOTE 3
DOE-3	01/05/2021	Trichlorofluoromethane	0.93	------	1300	DTSC HHRA NOTE 3
DOE-4	01/05/2021	Dichlorodifluoromethane	1.9	------	100	US EPA RSL
DOE-4	01/05/2021	Ethyl acetate	70	L;J+	73	US EPA RSL
DOE-4	01/05/2021	Toluene	2.4	------	310	DTSC HHRA NOTE 3
DOE-4	01/05/2021	Trichlorofluoromethane	0.96	------	1300	DTSC HHRA NOTE 3
DOE-1	01/20/2021	Dichlorodifluoromethane	2.3	------	100	US EPA RSL
DOE-1	01/20/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-2	01/20/2021	Dichlorodifluoromethane	2.5	------	100	US EPA RSL
DOE-2	01/20/2021	Ethyl acetate	2.0	L;	73	US EPA RSL
DOE-2	01/20/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-3	01/20/2021	Dichlorodifluoromethane	2.5	------	100	US EPA RSL
DOE-3	01/20/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-4	01/20/2021	Dichlorodifluoromethane	2.4	------	100	US EPA RSL
DOE-4	01/20/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-1	02/04/2021	Dichlorodifluoromethane	2.2	------	100	US EPA RSL
DOE-1	02/04/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-2	02/04/2021	Dichlorodifluoromethane	2.3	------	100	US EPA RSL
DOE-2	02/04/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-3	02/04/2021	Dichlorodifluoromethane	2.3	------	100	US EPA RSL
DOE-3	02/04/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-4	02/04/2021	Dichlorodifluoromethane	2.3	------	100	US EPA RSL
DOE-4	02/04/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-1	02/19/2021	Dichlorodifluoromethane	2.3	------	100	US EPA RSL
DOE-1	02/19/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-2	02/19/2021	Dichlorodifluoromethane	2.4	------	100	US EPA RSL
DOE-2	02/19/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-3	02/19/2021	Dichlorodifluoromethane	2.4	------	100	US EPA RSL
DOE-3	02/19/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-4	02/19/2021	Dichlorodifluoromethane	2.4	------	100	US EPA RSL
DOE-4	02/19/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-1	03/05/2021	Dichlorodifluoromethane	2.1	------	100	US EPA RSL

Location ID	Sample Date	Analyte	Result	Qualifier	Screening Level Value	SL Source
DOE-1	03/05/2021	Ethyl acetate	3.8	------	73	US EPA RSL
DOE-1	03/05/2021	Trichlorofluoromethane	1.0	------	1300	DTSC HHRA NOTE 3
DOE-2	03/05/2021	Dichlorodifluoromethane	2.2	------	100	US EPA RSL
DOE-2	03/05/2021	Ethyl acetate	3.3	------	73	US EPA RSL
DOE-2	03/05/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-3	03/05/2021	Dichlorodifluoromethane	2.2	------	100	US EPA RSL
DOE-3	03/05/2021	Ethyl acetate	2.6	------	73	US EPA RSL
DOE-3	03/05/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-4	03/05/2021	Dichlorodifluoromethane	2.2	------	100	US EPA RSL
DOE-4	03/05/2021	Ethyl acetate	5.4	------	73	US EPA RSL
DOE-4	03/05/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-1	03/18/2021	Dichlorodifluoromethane	2.2	------	100	US EPA RSL
DOE-1	03/18/2021	Ethyl acetate	14	------	73	US EPA RSL
DOE-1	03/18/2021	Toluene	0.87	------	310	DTSC HHRA NOTE 3
DOE-1	03/18/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-2	03/18/2021	Dichlorodifluoromethane	2.1	------	100	US EPA RSL
DOE-2	03/18/2021	Ethyl acetate	4.1	------	73	US EPA RSL
DOE-2	03/18/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-3	03/18/2021	Dichlorodifluoromethane	2.1	------	100	US EPA RSL
DOE-3	03/18/2021	Ethyl acetate	3.2	------	73	US EPA RSL
DOE-3	03/18/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-4	03/18/2021	Dichlorodifluoromethane	2.2	------	100	US EPA RSL
DOE-4	03/18/2021	Ethyl acetate	17	------	73	US EPA RSL
DOE-4	03/18/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-1	03/31/2021	2-butanone	2.4	------	5200	US EPA RSL
DOE-1	03/31/2021	Acrolein	2.5	------	0.021	US EPA RSL
DOE-1	03/31/2021	Dichlorodifluoromethane	2.4	------	100	US EPA RSL
DOE-1	03/31/2021	Dichlorodifluoromethane	2.2	------	100	US EPA RSL
DOE-1	03/31/2021	Ethyl acetate	31	------	73	US EPA RSL
DOE-1	03/31/2021	Ethyl acetate	6	------	73	US EPA RSL
DOE-1	03/31/2021	Toluene	0.84	------	310	DTSC HHRA NOTE 3
DOE-1	03/31/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-1	03/31/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-2	03/31/2021	Dichlorodifluoromethane	2.2	------	100	US EPA RSL
DOE-2	03/31/2021	Dichlorodifluoromethane	2.5	------	100	US EPA RSL
DOE-2	03/31/2021	Ethyl acetate	3.9	------	73	US EPA RSL
DOE-2	03/31/2021	Ethyl acetate	42	------	73	US EPA RSL
DOE-2	03/31/2021	Toluene	1.0	------	310	DTSC HHRA NOTE 3
DOE-2	03/31/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-2	03/31/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-3	03/31/2021	Dichlorodifluoromethane	2.1	------	100	US EPA RSL
DOE-3	03/31/2021	Dichlorodifluoromethane	2.5	------	100	US EPA RSL

Location ID	Sample Date	Analyte	Result	Qualifier	Screening Level Value	SL Source
DOE-3	03/31/2021	Ethyl acetate	11	------	73	US EPA RSL
DOE-3	03/31/2021	Ethyl acetate	28	------	73	US EPA RSL
DOE-3	03/31/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-3	03/31/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-4	03/31/2021	Dichlorodifluoromethane	2.1	------	100	US EPA RSL
DOE-4	03/31/2021	Dichlorodifluoromethane	2.5	------	100	US EPA RSL
DOE-4	03/31/2021	Ethyl acetate	1.9	------	73	US EPA RSL
DOE-4	03/31/2021	Ethyl acetate	36	------	73	US EPA RSL
DOE-4	03/31/2021	Toluene	0.90	------	310	DTSC HHRA NOTE 3
DOE-4	03/31/2021	Trichlorofluoromethane	1.3	------	1300	DTSC HHRA NOTE 3
DOE-4	03/31/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-1	04/13/2021	Dichlorodifluoromethane	2.4	------	100	US EPA RSL
DOE-1	04/13/2021	Ethyl acetate	36	------	73	US EPA RSL
DOE-1	04/13/2021	Trichlorofluoromethane	1.3	------	1300	DTSC HHRA NOTE 3
DOE-2	04/13/2021	2-butanone	2.1	------	5200	US EPA RSL
DOE-2	04/13/2021	Dichlorodifluoromethane	2.5	------	100	US EPA RSL
DOE-2	04/13/2021	Ethyl acetate	27	------	73	US EPA RSL
DOE-2	04/13/2021	Trichlorofluoromethane	1.3	------	1300	DTSC HHRA NOTE 3
DOE-3	04/13/2021	Dichlorodifluoromethane	2.5	------	100	US EPA RSL
DOE-3	04/13/2021	Ethyl acetate	46	------	73	US EPA RSL
DOE-3	04/13/2021	Trichlorofluoromethane	1.3	------	1300	DTSC HHRA NOTE 3
DOE-4	04/13/2021	Dichlorodifluoromethane	2.5	------	100	US EPA RSL
DOE-4	04/13/2021	Ethyl acetate	**100**	------	73	US EPA RSL
DOE-4	04/13/2021	Toluene	1.6	------	310	DTSC HHRA NOTE 3
DOE-4	04/13/2021	Trichlorofluoromethane	1.3	------	1300	DTSC HHRA NOTE 3
DOE-1	4/27/2021	Dichlorodifluoromethane	2.3	------	100	US EPA RSL
DOE-1	04/27/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-2	04/27/2021	Dichlorodifluoromethane	2.3	------	100	US EPA RSL
DOE-2	04/27/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-3	04/27/2021	1,4-dioxane	**3.5**	------	0.56	US EPA RSL
DOE-3	04/27/2021	2-butanone	2.6	------	5200	US EPA RSL
DOE-3	04/27/2021	Carbon disulfide	7.0	------	730	US EPA RSL
DOE-3	04/27/2021	Dichlorodifluoromethane	2.3	------	100	US EPA RSL
DOE-3	04/27/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-4	04/27/2021	2-butanone	6.2	------	5200	US EPA RSL
DOE-4	04/27/2021	Dichlorodifluoromethane	2.4	------	100	US EPA RSL
DOE-4	04/27/2021	Ethyl acetate	1.7	------	73	US EPA RSL
DOE-4	04/27/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-1	05/11/2021	Dichlorodifluoromethane	1.9	------	100	US EPA RSL
DOE-1	05/11/2021	Ethyl acetate	1.8	------	73	US EPA RSL
DOE-1	05/11/2021	Methylene chloride	0.80	------	1	DTSC HHRA NOTE 3
DOE-1	05/11/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3

Location ID	Sample Date	Analyte	Result	Qualifier	Screening Level Value	SL Source
DOE-3	05/11/2021	Dichlorodifluoromethane	1.9	------	100	US EPA RSL
DOE-3	05/11/2021	Ethyl acetate	5.0	------	73	US EPA RSL
DOE-3	05/11/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-4	05/11/2021	Dichlorodifluoromethane	1.9	------	100	US EPA RSL
DOE-4	05/11/2021	Ethyl acetate	6.1	------	73	US EPA RSL
DOE-4	05/11/2021	Methylene chloride	**1.6**	------	1	DTSC HHRA NOTE 3
DOE-4	05/11/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-1	05/28/2021	2-butanone	1.5	------	5200	US EPA RSL
DOE-1	05/28/2021	Dichlorodifluoromethane	2.5	------	100	US EPA RSL
DOE-1	05/28/2021	Ethyl acetate	3.6	------	73	US EPA RSL
DOE-1	05/28/2021	Trichlorofluoromethane	1.3	------	1300	DTSC HHRA NOTE 3
DOE-2	05/28/2021	Dichlorodifluoromethane	2.6	------	100	US EPA RSL
DOE-2	05/28/2021	Ethyl acetate	4.4	------	73	US EPA RSL
DOE-2	05/28/2021	Trichlorofluoromethane	1.3	------	1300	DTSC HHRA NOTE 3
DOE-3	05/28/2021	Dichlorodifluoromethane	2.5	------	100	US EPA RSL
DOE-3	05/28/2021	Ethyl acetate	4.3	------	73	US EPA RSL
DOE-3	05/28/2021	Methylene chloride	1.0	------	1	DTSC HHRA NOTE 3
DOE-3	05/28/2021	Toluene	1.1	------	310	DTSC HHRA NOTE 3
DOE-3	05/28/2021	Trichlorofluoromethane	1.3	------	1300	DTSC HHRA NOTE 3
DOE-4	05/28/2021	Dichlorodifluoromethane	2.5	------	100	US EPA RSL
DOE-4	05/28/2021	Ethyl acetate	1.6	------	73	US EPA RSL
DOE-4	05/28/2021	Trichlorofluoromethane	1.3	------	1300	DTSC HHRA NOTE 3
DOE-1	06/10/2021	Dichlorodifluoromethane	1.7	------	100	US EPA RSL
DOE-1	06/10/2021	Ethyl acetate	9.6	;J	73	US EPA RSL
DOE-1	06/10/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-2	06/10/2021	Dichlorodifluoromethane	1.8	------	100	US EPA RSL
DOE-2	06/10/2021	Ethyl acetate	5.7	;J	73	US EPA RSL
DOE-2	06/10/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-3	06/10/2021	Dichlorodifluoromethane	1.9	------	100	US EPA RSL
DOE-3	06/10/2021	Ethyl acetate	9.7	;J	73	US EPA RSL
DOE-3	06/10/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-4	06/10/2021	Dichlorodifluoromethane	1.8	------	100	US EPA RSL
DOE-4	06/10/2021	Ethyl acetate	7.2	;J	73	US EPA RSL
DOE-4	06/10/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-1	06/25/2021	Dichlorodifluoromethane	2.0	------	100	US EPA RSL
DOE-1	06/25/2021	Ethyl acetate	41	------	73	US EPA RSL
DOE-1	06/25/2021	Toluene	0.96	------	310	DTSC HHRA NOTE 3
DOE-1	06/25/2021	Trichlorofluoromethane	1.0	------	1300	DTSC HHRA NOTE 3
DOE-2	06/25/2021	Dichlorodifluoromethane	2.0	------	100	US EPA RSL
DOE-2	06/25/2021	Ethyl acetate	26	------	73	US EPA RSL
DOE-2	06/25/2021	Trichlorofluoromethane	1.0	------	1300	DTSC HHRA NOTE 3
DOE-3	06/25/2021	Dichlorodifluoromethane	2.1	------	100	US EPA RSL

Location ID	Sample Date	Analyte	Result	Qualifier	Screening Level Value	SL Source
DOE-3	06/25/2021	Ethyl acetate	12	------	73	US EPA RSL
DOE-3	06/25/2021	Methylene chloride	**9.3**	------	1	DTSC HHRA NOTE 3
DOE-3	06/25/2021	Toluene	3.1	------	310	DTSC HHRA NOTE 3
DOE-3	06/25/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-4	06/25/2021	Dichlorodifluoromethane	2.0	------	100	US EPA RSL
DOE-4	06/25/2021	Ethyl acetate	7.9	------	73	US EPA RSL
DOE-4	06/25/2021	Trichlorofluoromethane	1.0	------	1300	DTSC HHRA NOTE 3
DOE-1	07/08/2021	Dichlorodifluoromethane	1.9	------	100	US EPA RSL
DOE-1	07/08/2021	Ethyl acetate	39	;J	73	US EPA RSL
DOE-1	07/08/2021	Toluene	0.83	------	310	DTSC HHRA NOTE 3
DOE-1	07/08/2021	Trichlorofluoromethane	1	------	1300	DTSC HHRA NOTE 3
DOE-2	07/08/2021	Carbon disulfide	11	------	730	US EPA RSL
DOE-2	07/08/2021	Dichlorodifluoromethane	1.9	------	100	US EPA RSL
DOE-2	07/08/2021	Ethyl acetate	**92**	;J	73	US EPA RSL
DOE-2	07/08/2021	Toluene	1.5	------	310	DTSC HHRA NOTE 3
DOE-2	07/08/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-3	07/08/2021	Dichlorodifluoromethane	1.9	------	100	US EPA RSL
DOE-3	07/08/2021	Ethyl acetate	37	;J	73	US EPA RSL
DOE-3	07/08/2021	Toluene	1.1	------	310	DTSC HHRA NOTE 3
DOE-3	07/08/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-4	07/08/2021	2-butanone	1.6	------	5200	US EPA RSL
DOE-4	07/08/2021	Dichlorodifluoromethane	1.9	------	100	US EPA RSL
DOE-4	07/08/2021	Ethyl acetate	58	;J	73	US EPA RSL
DOE-4	07/08/2021	Toluene	1.6	------	310	DTSC HHRA NOTE 3
DOE-4	07/08/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-1	07/21/2021	Dichlorodifluoromethane	2.3	------	100	US EPA RSL
DOE-1	07/21/2021	Ethyl acetate	**97**	------	73	US EPA RSL
DOE-1	07/21/2021	Toluene	2.1	------	310	DTSC HHRA NOTE 3
DOE-1	07/21/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-2	07/21/2021	cis-1,2-Dichloroethene	**22**	------	8.3	DTSC HHRA NOTE 3
DOE-2	07/21/2021	Dichlorodifluoromethane	2.3	------	100	US EPA RSL
DOE-2	07/21/2021	Ethyl acetate	58	------	73	US EPA RSL
DOE-2	07/21/2021	Tetrahydrofuran	5.0	------	2100	US EPA RSL
DOE-2	07/21/2021	Toluene	1.8	------	310	DTSC HHRA NOTE 3
DOE-3	07/21/2021	cis-1,2-Dichloroethene	**9.7**	------	8.3	DTSC HHRA NOTE 3
DOE-3	07/21/2021	Dichlorodifluoromethane	2.3	------	100	US EPA RSL
DOE-3	07/21/2021	Ethyl acetate	25	------	73	US EPA RSL
DOE-3	07/21/2021	Toluene	0.81	------	310	DTSC HHRA NOTE 3
DOE-3	07/21/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-4	07/21/2021	Dichlorodifluoromethane	2.3	------	100	US EPA RSL
DOE-4	07/21/2021	Ethyl acetate	35	------	73	US EPA RSL
DOE-4	07/21/2021	Tetrahydrofuran	16	------	2100	US EPA RSL
DOE-1	08/03/2021	Dichlorodifluoromethane	2.3	------	100	US EPA RSL

Location ID	Sample Date	Analyte	Result	Qualifier	Screening Level Value	SL Source
DOE-1	08/03/2021	Ethyl acetate	37	------	73	US EPA RSL
DOE-1	08/03/2021	Toluene	1.2	------	310	DTSC HHRA NOTE 3
DOE-1	08/03/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-2	08/03/2021	Benzene	**0.99**	------	0.097	DTSC HHRA NOTE 3
DOE-2	08/03/2021	Dichlorodifluoromethane	2.4	------	100	US EPA RSL
DOE-2	08/03/2021	Ethyl acetate	**110**	------	73	US EPA RSL
DOE-2	08/03/2021	Toluene	1.9	------	310	DTSC HHRA NOTE 3
DOE-2	08/03/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-3	08/03/2021	Dichlorodifluoromethane	2.5	------	100	US EPA RSL
DOE-3	08/03/2021	Ethyl acetate	38	------	73	US EPA RSL
DOE-3	08/03/2021	Methylene chloride	1.0	------	1	DTSC HHRA NOTE 3
DOE-3	08/03/2021	Toluene	1.1	------	310	DTSC HHRA NOTE 3
DOE-3	08/03/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-4	08/03/2021	Dichlorodifluoromethane	2.4	------	100	US EPA RSL
DOE-4	08/03/2021	Ethyl acetate	**110**	------	73	US EPA RSL
DOE-4	08/03/2021	Tetrahydrofuran	4.6	------	2100	US EPA RSL
DOE-4	08/03/2021	Toluene	2.3	------	310	DTSC HHRA NOTE 3
DOE-4	08/03/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-1	08/17/2021	Dichlorodifluoromethane	2.5	------	100	US EPA RSL
DOE-1	08/17/2021	Ethyl acetate	1.8	------	73	US EPA RSL
DOE-1	08/17/2021	Trichlorofluoromethane	1.3	------	1300	DTSC HHRA NOTE 3
DOE-2	08/17/2021	Dichlorodifluoromethane	2.5	;J	100	US EPA RSL
DOE-2	08/17/2021	Ethyl acetate	3.2	------	73	US EPA RSL
DOE-2	08/17/2021	Trichlorofluoromethane	1.3	;J	1300	DTSC HHRA NOTE 3
DOE-3	08/17/2021	Dichlorodifluoromethane	2.5	;J	100	US EPA RSL
DOE-3	08/17/2021	Ethyl acetate	8.1	------	73	US EPA RSL
DOE-3	08/17/2021	Trichlorofluoromethane	1.3	;J	1300	DTSC HHRA NOTE 3
DOE-4	08/17/2021	2-butanone	2	------	5200	US EPA RSL
DOE-4	08/17/2021	Acrolein	**1.9**	------	0.021	US EPA RSL
DOE-4	08/17/2021	Dichlorodifluoromethane	2.6	;J	100	US EPA RSL
DOE-4	08/17/2021	Ethyl acetate	1.9	------	73	US EPA RSL
DOE-4	08/17/2021	Isopropanol	1.6	;J	210	US EPA RSL
DOE-4	08/17/2021	Trichlorofluoromethane	1.3	;J	1300	DTSC HHRA NOTE 3
DOE-1	08/31/2021	Dichlorodifluoromethane	1.7	------	100	US EPA RSL
DOE-1	08/31/2021	Toluene	0.73	------	310	DTSC HHRA NOTE 3
DOE-1	08/31/2021	Trichlorofluoromethane	0.83	------	1300	DTSC HHRA NOTE 3
DOE-2	08/31/2021	Dichlorodifluoromethane	1.8	------	100	US EPA RSL
DOE-2	08/31/2021	Ethyl acetate	32	------	73	US EPA RSL
DOE-2	08/31/2021	Toluene	2.0	------	310	DTSC HHRA NOTE 3
DOE-2	08/31/2021	Trichlorofluoromethane	0.86	------	1300	DTSC HHRA NOTE 3
DOE-3	08/31/2021	Dichlorodifluoromethane	1.8	------	100	US EPA RSL
DOE-3	08/31/2021	Ethyl acetate	3.8	------	73	US EPA RSL
DOE-3	08/31/2021	Toluene	0.77	------	310	DTSC HHRA NOTE 3

Location ID	Sample Date	Analyte	Result	Qualifier	Screening Level Value	SL Source
DOE-3	08/31/2021	Trichlorofluoromethane	0.85	------	1300	DTSC HHRA NOTE 3
DOE-4	08/31/2021	Dichlorodifluoromethane	1.8	------	100	US EPA RSL
DOE-4	08/31/2021	Ethyl acetate	7.9	------	73	US EPA RSL
DOE-4	08/31/2021	Toluene	0.88	------	310	DTSC HHRA NOTE 3
DOE-4	08/31/2021	Trichlorofluoromethane	0.85	------	1300	DTSC HHRA NOTE 3
DOE-1	09/16/2021	2-butanone	2.0	------	5200	US EPA RSL
DOE-1	09/16/2021	4-isopropyltoluene	0.98	------	------	-------
DOE-1	09/16/2021	Dichlorodifluoromethane	2.2	------	100	US EPA RSL
DOE-1	09/16/2021	Toluene	0.85	------	310	DTSC HHRA NOTE 3
DOE-1	09/16/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-2	09/16/2021	Dichlorodifluoromethane	2.1	------	100	US EPA RSL
DOE-2	09/16/2021	Trichlorofluoromethane	1.0	------	1300	DTSC HHRA NOTE 3
DOE-3	09/16/2021	Carbon disulfide	2.1	------	730	US EPA RSL
DOE-3	09/16/2021	Dichlorodifluoromethane	2.2	------	100	US EPA RSL
DOE-3	09/16/2021	Ethyl acetate	3.9	------	73	US EPA RSL
DOE-3	09/16/2021	Tetrahydrofuran	1.8	------	2100	US EPA RSL
DOE-3	09/16/2021	Toluene	0.81	------	310	DTSC HHRA NOTE 3
DOE-3	09/16/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-4	09/16/2021	Dichlorodifluoromethane	2.1	------	100	US EPA RSL
DOE-4	09/16/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-1	10/15/2021	Dichlorodifluoromethane	2.4	------	100	US EPA RSL
DOE-1	10/15/2021	Ethyl acetate	11	------	73	US EPA RSL
DOE-1	10/15/2021	Tetrahydrofuran	2.3	------	2100	US EPA RSL
DOE-1	10/15/2021	Trichlorofluoromethane	1.3	------	1300	DTSC HHRA NOTE 3
DOE-2	10/15/2021	Dichlorodifluoromethane	2.3	------	100	US EPA RSL
DOE-2	10/15/2021	Ethyl acetate	3.2	------	73	US EPA RSL
DOE-2	10/15/2021	Trichlorofluoromethane	1.3	------	1300	DTSC HHRA NOTE 3
DOE-3	10/15/2021	Dichlorodifluoromethane	2.4	------	100	US EPA RSL
DOE-3	10/15/2021	Ethyl acetate	6.5	------	73	US EPA RSL
DOE-3	10/15/2021	Trichlorofluoromethane	1.3	------	1300	DTSC HHRA NOTE 3
DOE-3	10/15/2021	Dichlorodifluoromethane	2.4	------	100	US EPA RSL
DOE-3	10/15/2021	Ethyl acetate	4.7	------	73	US EPA RSL
DOE-3	10/15/2021	Trichlorofluoromethane	1.3	------	1300	DTSC HHRA NOTE 3
DOE-4	10/15/2021	Dichlorodifluoromethane	2.5	------	100	US EPA RSL
DOE-4	10/15/2021	Trichlorofluoromethane	1.3	------	1300	DTSC HHRA NOTE 3
DOE-1	10/28/2021	Dichlorodifluoromethane	2.2	------	100	US EPA RSL
DOE-1	10/28/2021	Ethyl acetate	5.5	------	73	US EPA RSL
DOE-1	10/28/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-2	10/28/2021	Dichlorodifluoromethane	2.2	------	100	US EPA RSL
DOE-2	10/28/2021	Ethyl acetate	12	------	73	US EPA RSL
DOE-2	10/28/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-3	10/28/2021	Dichlorodifluoromethane	2.2	------	100	US EPA RSL
DOE-3	10/28/2021	Ethyl acetate	13	------	73	US EPA RSL

Location ID	Sample Date	Analyte	Result	Qualifier	Screening Level Value	SL Source
DOE-3	10/28/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-4	10/28/2021	Dichlorodifluoromethane	3.9	------	100	US EPA RSL
DOE-4	10/28/2021	Ethyl acetate	12	------	73	US EPA RSL
DOE-4	10/28/2021	Trichlorofluoromethane	2.0	------	1300	DTSC HHRA NOTE 3
DOE-4	10/28/2021	2-butanone	1.6	------	5200	US EPA RSL
DOE-4	10/28/2021	Dichlorodifluoromethane	2.2	------	100	US EPA RSL
DOE-4	10/28/2021	Ethyl acetate	54	------	73	US EPA RSL
DOE-4	10/28/2021	Methylene chloride	**1.7**	------	1	DTSC HHRA NOTE 3
DOE-4	10/28/2021	Toluene	1.5	------	310	DTSC HHRA NOTE 3
DOE-4	10/28/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-1	11/11/2021	Dichlorodifluoromethane	2.5	------	100	US EPA RSL
DOE-1	11/11/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-1	11/11/2021	Dichlorodifluoromethane	2.5	------	100	US EPA RSL
DOE-1	11/11/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-2	11/11/2021	Dichlorodifluoromethane	2.5	------	100	US EPA RSL
DOE-2	11/11/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-3	11/11/2021	Dichlorodifluoromethane	2.4	------	100	US EPA RSL
DOE-3	11/11/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-4	11/11/2021	2-butanone	2.3	------	5200	US EPA RSL
DOE-4	11/11/2021	Carbon disulfide	5.6	------	730	US EPA RSL
DOE-4	11/11/2021	Dichlorodifluoromethane	2.3	------	100	US EPA RSL
DOE-4	11/11/2021	Ethyl acetate	3.8	------	73	US EPA RSL
DOE-4	11/11/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-1	11/24/2021	Dichlorodifluoromethane	2.3	------	100	US EPA RSL
DOE-1	11/24/2021	Ethyl acetate	9.8	------	73	US EPA RSL
DOE-1	11/24/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-2	11/24/2021	Dichlorodifluoromethane	2.3	------	100	US EPA RSL
DOE-2	11/24/2021	Ethyl acetate	11	------	73	US EPA RSL
DOE-2	11/24/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-2	11/24/2021	Dichlorodifluoromethane	2.4	------	100	US EPA RSL
DOE-2	11/24/2021	Ethyl acetate	8.0	------	73	US EPA RSL
DOE-2	11/24/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-3	11/24/2021	Dichlorodifluoromethane	2.3	------	100	US EPA RSL
DOE-3	11/24/2021	Ethyl acetate	9.6	------	73	US EPA RSL
DOE-3	11/24/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-4	11/24/2021	Dichlorodifluoromethane	2.4	------	100	US EPA RSL
DOE-4	11/24/2021	Ethyl acetate	9.0	------	73	US EPA RSL
DOE-4	11/24/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-1	12/07/2021	Dichlorodifluoromethane	2.1	------	100	US EPA RSL
DOE-1	12/07/2021	Toluene	0.97	------	310	DTSC HHRA NOTE 3
DOE-1	12/07/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-2	12/07/2021	Dichlorodifluoromethane	2.2	------	100	US EPA RSL
DOE-2	12/07/2021	Toluene	1.1	------	310	DTSC HHRA NOTE 3

Location ID	Sample Date	Analyte	Result	Qualifier	Screening Level Value	SL Source
DOE-2	12/07/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-3	12/07/2021	Dichlorodifluoromethane	2.2	------	100	US EPA RSL
DOE-3	12/07/2021	Toluene	1.1	------	310	DTSC HHRA NOTE 3
DOE-3	12/07/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-3	12/07/2021	Dichlorodifluoromethane	2.2	------	100	US EPA RSL
DOE-3	12/07/2021	Toluene	1.1	------	310	DTSC HHRA NOTE 3
DOE-3	12/07/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-4	12/07/2021	Dichlorodifluoromethane	2.2	------	100	US EPA RSL
DOE-4	12/07/2021	Ethyl acetate	3.9	------	73	US EPA RSL
DOE-4	12/07/2021	Toluene	1.2	------	310	DTSC HHRA NOTE 3
DOE-4	12/07/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-1	12/17/2021	Dichlorodifluoromethane	2.1	------	100	US EPA RSL
DOE-1	12/17/2021	Ethyl acetate	12	------	73	US EPA RSL
DOE-1	12/17/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-2	12/17/2021	Dichlorodifluoromethane	2.2	------	100	US EPA RSL
DOE-2	12/17/2021	Ethyl acetate	3.8	------	73	US EPA RSL
DOE-2	12/17/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-3	12/17/2021	Dichlorodifluoromethane	2.2	------	100	US EPA RSL
DOE-3	12/17/2021	Ethyl acetate	11	------	73	US EPA RSL
DOE-3	12/17/2021	Trichlorofluoromethane	1.2	------	1300	DTSC HHRA NOTE 3
DOE-4	12/17/2021	Dichlorodifluoromethane	2.2	------	100	US EPA RSL
DOE-4	12/17/2021	Ethyl acetate	14	;J	73	US EPA RSL
DOE-4	12/17/2021	Trichlorofluoromethane	1.1	------	1300	DTSC HHRA NOTE 3
DOE-4	12/17/2021	Dichlorodifluoromethane	2.2	------	100	US EPA RSL
DOE-4	12/17/2021	Ethyl acetate	8.9	;J	73	US EPA RSL
DOE-4	12/17/2021	Trichlorofluoromethane	1.1	------	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.

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

J+ = The result is an estimated quantity. The associated numerical value may be biased high.

L = Laboratory control sample recovery outside the specified limits, results may be biased high.

APPENDIX C

Radiological Results

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Table C-1. Gross alpha and gross beta air sample results for air samplers, Q15

Quarter	Air Station ID	Sample Collection Date	Gross Alpha (µCi/mL)	Gross Alpha MDC (µCi/mL)	Gross Beta (µCi/mL)	Gross Beta MDC (µCi/mL)
Sample Location – DOE-1						
Q15	DOE-1	10/04/21	2.65E-15	4.94E-15	4.58E-14	2.06E-14
Q15	DOE-1	10/07/21	1.65E-15	6.70E-15	4.64E-14	2.80E-14
Q15	DOE-1	10/11/21	3.12E-17	5.40E-15	2.88E-14	2.26E-14
Q15	DOE-1	10/14/21	-2.20E-15	6.65E-15	9.24E-15	2.78E-14
Q15	DOE-1	10/18/21	-1.69E-15	5.09E-15	3.24E-14	2.13E-14
Q15	DOE-1	10/21/21	-4.08E-15	7.13E-15	4.09E-16	2.98E-14
Q15	DOE-1	10/26/21	-2.34E-15	4.09E-15	5.68E-15	1.71E-14
Q15	DOE-1	10/28/21	-6.04E-15	1.06E-14	4.98E-14	4.41E-14
Q15	DOE-1	11/01/21	2.02E-16	5.09E-15	2.17E-14	2.25E-14
Q15	DOE-1	11/04/21	3.00E-15	6.88E-15	1.25E-14	3.04E-14
Q15	DOE-1	11/08/21	2.90E-15	4.97E-15	9.75E-14	2.20E-14
Q15	DOE-1	11/11/21	-4.09E-16	6.89E-15	4.50E-14	3.05E-14
Q15	DOE-1	11/15/21	9.63E-16	5.12E-15	1.06E-14	2.26E-14
Q15	DOE-1	11/18/21	1.29E-15	6.83E-15	5.37E-14	3.02E-14
Q15	DOE-1	11/22/21	3.58E-15	5.23E-15	7.97E-14	2.31E-14
Q15	DOE-1	11/24/21	-1.11E-15	1.02E-14	7.02E-14	4.50E-14
Q15	DOE-1	11/29/21	7.22E-16	3.83E-15	4.68E-14	1.69E-14
Q15	DOE-1	12/03/21	5.50E-15	5.26E-15	7.52E-14	2.34E-14
Q15	DOE-1	12/06/21	6.89E-15	6.28E-15	1.07E-13	2.80E-14
Q15	DOE-1	12/10/21	6.21E-15	4.98E-15	1.22E-13	2.22E-14
Q15	DOE-1	12/13/21	7.94E-15	6.63E-15	1.45E-13	2.95E-14
Q15	DOE-1	12/17/21	-2.12E-15	5.10E-15	-8.71E-15	2.27E-14
Q15	DOE-1	12/20/21	2.60E-16	6.80E-15	4.09E-14	3.02E-14
Q15	DOE-1	12/22/21	-1.16E-16	9.63E-15	9.50E-14	4.29E-14
Q15	DOE-1	12/27/21	-2.29E-15	4.05E-15	2.48E-14	1.80E-14
Q15	DOE-1	12/31/21	-3.14E-16	5.03E-15	-1.70E-14	2.24E-14
Sample Location – DOE-2						
Q15	DOE-2	10/04/21	2.88E-15	4.93E-15	3.57E-14	2.06E-14
Q15	DOE-2	10/07/21	1.01E-15	6.71E-15	4.68E-14	2.80E-14
Q15	DOE-2	10/11/21	-2.29E-16	5.40E-15	1.64E-14	2.26E-14
Q15	DOE-2	10/14/21	6.78E-16	6.64E-15	3.65E-14	2.78E-14
Q15	DOE-2	10/18/21	5.20E-16	5.10E-15	7.24E-14	2.13E-14
Q15	DOE-2	10/21/21	-3.39E-15	7.12E-15	3.11E-14	2.98E-14

Quarter	Air Station ID	Sample Collection Date	Gross Alpha (µCi/mL)	Gross Alpha MDC (µCi/mL)	Gross Beta (µCi/mL)	Gross Beta MDC (µCi/mL)
Q15	DOE-2	10/26/21	-9.61E-16	4.09E-15	3.46E-14	1.71E-14
Q15	DOE-2	10/28/21	-5.01E-15	1.05E-14	-3.12E-14	4.40E-14
Q15	DOE-2	11/01/21	4.54E-16	5.09E-15	2.33E-14	2.25E-14
Q15	DOE-2	11/04/21	6.14E-16	6.88E-15	1.98E-14	3.04E-14
Q15	DOE-2	11/08/21	3.89E-15	4.97E-15	8.62E-14	2.20E-14
Q15	DOE-2	11/11/21	5.05E-15	6.89E-15	6.99E-14	3.05E-14
Q15	DOE-2	11/15/21	-8.11E-16	5.12E-15	3.05E-14	2.26E-14
Q15	DOE-2	11/18/21	9.47E-16	6.83E-15	1.05E-13	3.02E-14
Q15	DOE-2	11/22/21	5.65E-15	5.23E-15	1.04E-13	2.31E-14
Q15	DOE-2	11/24/21	4.03E-16	1.02E-14	5.14E-14	4.50E-14
Q15	DOE-2	11/29/21	-2.27E-16	3.83E-15	5.28E-14	1.69E-14
Q15	DOE-2	12/03/21	5.51E-15	5.27E-15	7.44E-14	2.34E-14
Q15	DOE-2	12/06/21	9.10E-15	6.28E-15	1.17E-13	2.80E-14
Q15	DOE-2	12/10/21	8.98E-15	4.98E-15	1.16E-13	2.22E-14
Q15	DOE-2	12/13/21	-4.14E-16	6.63E-15	6.58E-14	2.95E-14
Q15	DOE-2	12/17/21	-8.32E-16	5.10E-15	1.80E-14	2.27E-14
Q15	DOE-2	12/20/21	4.37E-15	6.80E-15	7.77E-14	3.03E-14
Q15	DOE-2	12/22/21	1.34E-15	9.61E-15	6.93E-14	4.28E-14
Q15	DOE-2	12/27/21	3.42E-15	4.06E-15	2.53E-14	1.80E-14
Q15	DOE-2	12/31/21	9.52E-16	5.03E-15	9.25E-16	2.24E-14
Sample Location – DOE-3						
Q15	DOE-3	10/04/21	3.12E-15	4.94E-15	4.59E-14	2.07E-14
Q15	DOE-3	10/07/21	7.49E-16	7.33E-15	3.46E-14	3.07E-14
Q15	DOE-3	10/11/21	3.12E-17	5.39E-15	1.33E-14	2.25E-14
Q15	DOE-3	10/14/21	-1.24E-15	6.65E-15	3.48E-14	2.78E-14
Q15	DOE-3	10/18/21	7.66E-16	5.10E-15	7.63E-14	2.13E-14
Q15	DOE-3	10/21/21	-3.02E-16	7.12E-15	-1.05E-15	2.97E-14
Q15	DOE-3	10/26/21	-9.01E-16	4.82E-15	4.48E-15	2.02E-14
Q15	DOE-3	10/28/21	-9.56E-16	1.06E-14	-4.38E-14	4.41E-14
Q15	DOE-3	11/01/21	1.46E-15	5.09E-15	2.17E-14	2.25E-14
Q15	DOE-3	11/04/21	3.00E-15	6.88E-15	5.38E-14	3.04E-14
Q15	DOE-3	11/08/21	4.62E-15	4.97E-15	9.59E-14	2.20E-14
Q15	DOE-3	11/11/21	-4.09E-16	6.89E-15	3.66E-14	3.05E-14
Q15	DOE-3	11/15/21	-8.11E-16	5.12E-15	2.53E-14	2.26E-14
Q15	DOE-3	11/18/21	2.64E-15	6.82E-15	8.18E-14	3.02E-14

Quarter	Air Station ID	Sample Collection Date	Gross Alpha (µCi/mL)	Gross Alpha MDC (µCi/mL)	Gross Beta (µCi/mL)	Gross Beta MDC (µCi/mL)
Q15	DOE-3	11/22/21	-1.35E-15	5.24E-15	7.03E-14	2.32E-14
Q15	DOE-3	11/24/21	-5.14E-15	1.02E-14	5.78E-14	4.50E-14
Q15	DOE-3	11/29/21	-7.96E-16	3.82E-15	5.91E-14	1.69E-14
Q15	DOE-3	12/03/21	6.28E-15	5.25E-15	7.56E-14	2.34E-14
Q15	DOE-3	12/06/21	1.10E-14	6.30E-15	1.44E-13	2.80E-14
Q15	DOE-3	12/10/21	6.72E-15	4.98E-15	1.41E-13	2.22E-14
Q15	DOE-3	12/13/21	1.26E-15	6.63E-15	5.04E-14	2.95E-14
Q15	DOE-3	12/17/21	1.06E-15	7.62E-15	-2.46E-14	3.39E-14
Q15	DOE-3	12/20/21	6.03E-16	6.80E-15	2.00E-14	3.03E-14
Q15	DOE-3	12/22/21	3.27E-15	9.59E-15	4.33E-14	4.27E-14
Q15	DOE-3	12/27/21	-3.45E-16	5.52E-15	2.19E-14	2.46E-14
Q15	DOE-3	12/31/21	-4.40E-15	7.77E-15	-9.50E-15	3.46E-14
Sample Location – DOE-4						
Q15	DOE-4	10/04/21	2.64E-15	4.94E-15	4.61E-14	2.06E-14
Q15	DOE-4	10/07/21	1.67E-15	6.79E-15	5.01E-14	2.86E-14
Q15	DOE-4	10/11/21	3.14E-17	5.43E-15	2.30E-14	2.29E-14
Q15	DOE-4	10/14/21	-1.57E-15	6.70E-15	1.01E-14	2.82E-14
Q15	DOE-4	10/18/21	-1.70E-15	5.14E-15	4.11E-14	2.16E-14
Q15	DOE-4	10/21/21	-4.44E-15	7.16E-15	1.89E-15	3.02E-14
Q15	DOE-4	10/26/21	1.02E-15	4.12E-15	5.12E-15	1.73E-14
Q15	DOE-4	10/28/21	-3.52E-15	1.06E-14	4.73E-14	4.48E-14
Q15	DOE-4	11/01/21	2.47E-15	5.09E-15	2.54E-14	2.25E-14
Q15	DOE-4	11/04/21	9.55E-16	6.88E-15	2.02E-14	3.04E-14
Q15	DOE-4	11/08/21	4.87E-15	4.96E-15	7.38E-14	2.20E-14
Q15	DOE-4	11/11/21	-2.11E-15	6.89E-15	1.76E-14	3.04E-14
Q15	DOE-4	11/15/21	7.10E-16	5.12E-15	5.25E-14	2.26E-14
Q15	DOE-4	11/18/21	1.28E-15	6.82E-15	7.02E-14	3.01E-14
Q15	DOE-4	11/22/21	4.67E-16	5.24E-15	1.18E-13	2.32E-14
Q15	DOE-4	11/24/21	-6.05E-16	1.02E-14	3.52E-14	4.50E-14
Q15	DOE-4	11/29/21	-2.27E-16	3.82E-15	5.64E-14	1.69E-14
Q15	DOE-4	12/03/21	7.61E-15	5.25E-15	1.03E-13	2.34E-14
Q15	DOE-4	12/06/21	9.12E-15	6.30E-15	1.30E-13	2.80E-14
Q15	DOE-4	12/10/21	1.45E-15	4.99E-15	3.08E-14	2.22E-14
Q15	DOE-4	12/13/21	1.92E-15	6.63E-15	3.28E-14	2.95E-14
Q15	DOE-4	12/17/21	-1.64E-15	5.21E-15	1.82E-14	2.32E-14

Quarter	Air Station ID	Sample Collection Date	Gross Alpha (µCi/mL)	Gross Alpha MDC (µCi/mL)	Gross Beta (µCi/mL)	Gross Beta MDC (µCi/mL)
Q15	DOE-4	12/20/21	-4.20E-15	6.80E-15	3.07E-14	3.03E-14
Q15	DOE-4	12/22/21	1.81E-15	9.58E-15	1.25E-13	4.26E-14
Q15	DOE-4	12/27/21	-2.53E-16	4.05E-15	1.30E-14	1.80E-14
Q15	DOE-4	12/31/21	-6.09E-17	5.04E-15	-1.46E-14	2.24E-14

Note: Results less than the MDC are noted in the table as negative numbers.

Table C-2. Gross alpha and gross beta air sample results for air samplers, Q12–Q15.

Quarter	Air Station ID	Sample collection date	Result Alpha (µCi/mL)	MDC - Alpha (µCi/mL)	Result Beta (µCi/mL)	MDC - Beta (µCi/mL)
Sample location DOE-1						
Q12	DOE-1	1/4/2021	6.84E-15	6.72E-15	5.82E-14	2.89E-14
Q12	DOE-1	1/7/2021	1.11E-15	4.89E-15	2.46E-14	2.10E-14
Q12	DOE-1	1/11/2021	2.54E-15	6.61E-15	5.69E-14	2.84E-14
Q12	DOE-1	1/14/2021	1.08E-15	4.79E-15	5.14E-14	2.06E-14
Q12	DOE-1	1/18/2021	5.13E-15	6.80E-15	5.27E-14	2.92E-14
Q12	DOE-1	1/21/2021	3.16E-15	4.88E-15	3.16E-14	2.09E-14
Q12	DOE-1	1/25/2021	-1.44E-15	1.00E-14	-1.45E-14	4.29E-14
Q12	DOE-1	1/27/2021	7.92E-16	4.25E-15	3.39E-14	1.66E-14
Q12	DOE-1	2/1/2021	3.06E-16	7.24E-15	4.68E-14	2.82E-14
Q12	DOE-1	2/4/2021	-1.05E-15	5.32E-15	5.10E-14	2.07E-14
Q12	DOE-1	2/8/2021	1.00E-15	7.24E-15	7.67E-14	2.82E-14
Q12	DOE-1	2/11/2021	-2.44E-17	4.24E-15	3.13E-14	1.65E-14
Q12	DOE-1	2/16/2021	-1.79E-15	7.27E-15	2.68E-14	2.83E-14
Q12	DOE-1	2/19/2021	-2.08E-15	7.07E-15	1.30E-14	2.75E-14
Q12	DOE-1	2/22/2021	-1.40E-15	7.09E-15	2.20E-14	2.76E-14
Q12	DOE-1	2/25/2021	2.07E-15	5.83E-15	5.09E-14	2.35E-14
Q12	DOE-1	3/1/2021	1.66E-15	7.76E-15	3.92E-14	3.13E-14
Q12	DOE-1	3/4/2021	9.70E-16	5.80E-15	3.79E-14	2.34E-14
Q12	DOE-1	3/8/2021	-1.22E-15	5.83E-15	-2.09E-15	2.35E-14
Q12	DOE-1	3/12/2021	-2.32E-15	5.86E-15	2.64E-14	2.37E-14
Q12	DOE-1	3/16/2021	-8.36E-16	7.29E-15	4.29E-14	2.94E-14
Q12	DOE-1	3/19/2021	-1.58E-16	7.65E-15	2.84E-14	3.09E-14
Q12	DOE-1	3/22/2021	2.06E-16	7.81E-15	2.82E-14	3.15E-14
Q12	DOE-1	3/25/2021	-6.61E-16	5.76E-15	2.77E-14	2.33E-14
Q13	DOE-1	4/1/2021	3.51E-15	6.94E-15	8.38E-14	3.02E-14

Quarter	Air Station ID	Sample collection date	Result Alpha (µCi/mL)	MDC - Alpha (µCi/mL)	Result Beta (µCi/mL)	MDC - Beta (µCi/mL)
Q13	DOE-1	4/5/2021	7.23E-15	5.19E-15	7.70E-14	2.26E-14
Q13	DOE-1	4/8/2021	3.91E-15	7.01E-15	5.68E-14	3.05E-14
Q13	DOE-1	4/12/2021	2.88E-15	5.17E-15	5.35E-14	2.25E-14
Q13	DOE-1	4/15/2021	3.57E-15	7.08E-15	7.10E-14	3.08E-14
Q13	DOE-1	4/19/2021	1.81E-16	5.11E-15	7.54E-14	2.22E-14
Q13	DOE-1	4/22/2021	2.79E-15	6.96E-15	6.21E-14	3.03E-14
Q13	DOE-1	4/26/2021	3.45E-15	5.21E-15	3.91E-14	2.27E-14
Q13	DOE-1	4/29/2021	2.52E-16	7.11E-15	3.49E-14	3.10E-14
Q13	DOE-1	5/3/2021	4.06E-15	5.17E-15	3.03E-14	2.15E-14
Q13	DOE-1	5/6/2021	3.11E-15	6.99E-15	4.25E-14	2.91E-14
Q13	DOE-1	5/10/2021	3.50E-15	5.08E-15	3.14E-14	2.11E-14
Q13	DOE-1	5/13/2021	-3.18E-16	7.07E-15	1.61E-14	2.94E-14
Q13	DOE-1	5/17/2021	2.55E-15	5.16E-15	1.41E-14	2.15E-14
Q13	DOE-1	5/20/2021	3.42E-15	6.93E-15	1.22E-14	2.88E-14
Q13	DOE-1	5/24/2021	2.90E-15	4.90E-15	3.23E-14	2.04E-14
Q13	DOE-1	5/27/2021	1.10E-15	7.29E-15	6.87E-14	3.03E-14
Q13	DOE-1	6/1/2021	-2.63E-15	4.17E-15	1.51E-14	1.72E-14
Q13	DOE-1	6/4/2021	2.05E-15	6.90E-15	2.50E-14	2.84E-14
Q13	DOE-1	6/7/2021	2.02E-15	6.80E-15	1.47E-15	2.80E-14
Q13	DOE-1	6/10/2021	-2.04E-15	7.03E-15	7.60E-15	2.89E-14
Q13	DOE-1	6/14/2021	1.55E-15	5.19E-15	2.97E-14	2.14E-14
Q13	DOE-1	6/17/2021	-1.30E-15	6.77E-15	1.80E-14	2.79E-14
Q13	DOE-1	6/21/2021	2.60E-15	5.28E-15	2.72E-14	2.17E-14
Q13	DOE-1	6/24/2021	-1.34E-15	6.98E-15	5.20E-14	2.87E-14
Q13	DOE-1	6/28/2021	-2.26E-15	5.19E-15	3.71E-14	2.14E-14
Q14	DOE-1	7/1/2021	3.04E-15	6.75E-15	4.23E-14	2.84E-14
Q14	DOE-1	7/6/2021	-5.65E-16	4.12E-15	5.62E-14	1.73E-14
Q14	DOE-1	7/9/2021	1.76E-15	6.92E-15	3.32E-14	2.91E-14
Q14	DOE-1	7/12/2021	2.35E-15	6.66E-15	5.01E-14	2.80E-14
Q14	DOE-1	7/15/2021	2.15E-15	7.07E-15	3.43E-14	2.97E-14
Q14	DOE-1	7/19/2021	1.28E-15	5.04E-15	3.95E-14	2.12E-14
Q14	DOE-1	7/22/2021	1.09E-15	6.95E-15	2.86E-14	2.92E-14
Q14	DOE-1	7/27/2021	3.10E-15	4.16E-15	4.02E-14	1.75E-14
Q14	DOE-1	7/30/2021	-6.02E-16	6.82E-15	5.35E-14	2.87E-14
Q14	DOE-1	8/2/2021	3.14E-15	6.77E-15	5.18E-14	2.82E-14
Q14	DOE-1	8/5/2021	4.35E-16	6.80E-15	3.00E-14	2.83E-14

Quarter	Air Station ID	Sample collection date	Result Alpha (µCi/mL)	MDC - Alpha (µCi/mL)	Result Beta (µCi/mL)	MDC - Beta (µCi/mL)
Q14	DOE-1	8/9/2021	8.22E-16	5.02E-15	3.68E-14	2.09E-14
Q14	DOE-1	8/12/2021	3.91E-15	6.94E-15	3.61E-14	2.89E-14
Q14	DOE-1	8/16/2021	1.33E-15	5.03E-15	2.95E-14	2.09E-14
Q14	DOE-1	8/19/2021	-2.86E-15	6.56E-15	3.69E-14	2.73E-14
Q14	DOE-1	8/23/2021	5.89E-16	5.17E-15	1.28E-14	2.15E-14
Q14	DOE-1	8/26/2021	-2.47E-16	6.88E-15	6.46E-14	2.86E-14
Q14	DOE-1	8/30/2021	1.76E-15	4.84E-15	5.41E-14	2.02E-14
Q14	DOE-1	9/2/2021	-6.43E-16	7.43E-15	4.17E-14	2.83E-14
Q14	DOE-1	9/7/2021	8.26E-16	4.36E-15	4.88E-14	1.66E-14
Q14	DOE-1	9/10/2021	-1.65E-15	7.34E-15	7.71E-14	2.80E-14
Q14	DOE-1	9/13/2021	-1.64E-15	7.32E-15	3.92E-14	2.79E-14
Q14	DOE-1	9/16/2021	-3.02E-15	7.39E-15	6.09E-14	2.82E-14
Q14	DOE-1	9/20/2021	-2.96E-15	5.41E-15	3.98E-14	2.06E-14
Q14	DOE-1	9/24/2021	1.05E-15	7.33E-15	2.47E-14	2.79E-14
Q14	DOE-1	9/27/2021	2.84E-16	5.51E-15	6.89E-14	2.10E-14
Q14	DOE-1	9/30/2021	-3.51E-15	7.73E-15	3.84E-14	2.94E-14
Q15	DOE-1	10/04/21	2.65E-15	4.94E-15	4.58E-14	2.06E-14
Q15	DOE-1	10/07/21	1.65E-15	6.70E-15	4.64E-14	2.80E-14
Q15	DOE-1	10/11/21	3.12E-17	5.40E-15	2.88E-14	2.26E-14
Q15	DOE-1	10/14/21	-2.20E-15	6.65E-15	9.24E-15	2.78E-14
Q15	DOE-1	10/18/21	-1.69E-15	5.09E-15	3.24E-14	2.13E-14
Q15	DOE-1	10/21/21	-4.08E-15	7.13E-15	4.09E-16	2.98E-14
Q15	DOE-1	10/26/21	-2.34E-15	4.09E-15	5.68E-15	1.71E-14
Q15	DOE-1	10/28/21	-6.04E-15	1.06E-14	4.98E-14	4.41E-14
Q15	DOE-1	11/01/21	2.02E-16	5.09E-15	2.17E-14	2.25E-14
Q15	DOE-1	11/04/21	3.00E-15	6.88E-15	1.25E-14	3.04E-14
Q15	DOE-1	11/08/21	2.90E-15	4.97E-15	9.75E-14	2.20E-14
Q15	DOE-1	11/11/21	-4.09E-16	6.89E-15	4.50E-14	3.05E-14
Q15	DOE-1	11/15/21	9.63E-16	5.12E-15	1.06E-14	2.26E-14
Q15	DOE-1	11/18/21	1.29E-15	6.83E-15	5.37E-14	3.02E-14
Q15	DOE-1	11/22/21	3.58E-15	5.23E-15	7.97E-14	2.31E-14
Q15	DOE-1	11/24/21	-1.11E-15	1.02E-14	7.02E-14	4.50E-14
Q15	DOE-1	11/29/21	7.22E-16	3.83E-15	4.68E-14	1.69E-14
Q15	DOE-1	12/03/21	5.50E-15	5.26E-15	7.52E-14	2.34E-14
Q15	DOE-1	12/06/21	6.89E-15	6.28E-15	1.07E-13	2.80E-14
Q15	DOE-1	12/10/21	6.21E-15	4.98E-15	1.22E-13	2.22E-14

Quarter	Air Station ID	Sample collection date	Result Alpha (µCi/mL)	MDC - Alpha (µCi/mL)	Result Beta (µCi/mL)	MDC - Beta (µCi/mL)
Q15	DOE-1	12/13/21	7.94E-15	6.63E-15	1.45E-13	2.95E-14
Q15	DOE-1	12/17/21	-2.12E-15	5.10E-15	-8.71E-15	2.27E-14
Q15	DOE-1	12/20/21	2.60E-16	6.80E-15	4.09E-14	3.02E-14
Q15	DOE-1	12/22/21	-1.16E-16	9.63E-15	9.50E-14	4.29E-14
Q15	DOE-1	12/27/21	-2.29E-15	4.05E-15	2.48E-14	1.80E-14
Q15	DOE-1	12/31/21	-3.14E-16	5.03E-15	-1.70E-14	2.24E-14
Sample location DOE-2						
Q12	DOE-2	1/4/2021	4.01E-15	6.73E-15	5.89E-14	2.89E-14
Q12	DOE-2	1/7/2021	5.89E-16	4.89E-15	5.80E-14	2.10E-14
Q12	DOE-2	1/11/2021	2.20E-15	6.62E-15	8.05E-14	2.84E-14
Q12	DOE-2	1/14/2021	2.60E-15	4.79E-15	5.21E-14	2.06E-14
Q12	DOE-2	1/18/2021	4.41E-15	6.80E-15	8.96E-14	2.92E-14
Q12	DOE-2	1/21/2021	-9.57E-16	4.87E-15	4.79E-14	2.09E-14
Q12	DOE-2	1/25/2021	1.48E-16	9.98E-15	7.69E-14	4.29E-14
Q12	DOE-2	1/27/2021	1.64E-16	1.11E-14	8.29E-14	4.75E-14
Q12	DOE-2	1/29/2021	-2.07E-15	7.04E-15	-9.99E-15	2.74E-14
Q12	DOE-2	2/1/2021	2.74E-15	7.25E-15	3.91E-14	2.83E-14
Q12	DOE-2	2/4/2021	1.50E-15	5.32E-15	4.58E-14	2.07E-14
Q12	DOE-2	2/8/2021	-3.89E-16	7.24E-15	9.01E-14	2.82E-14
Q12	DOE-2	2/11/2021	1.60E-15	4.24E-15	4.35E-14	1.65E-14
Q12	DOE-2	2/16/2021	-2.83E-15	7.27E-15	3.07E-14	2.83E-14
Q12	DOE-2	2/19/2021	-4.11E-15	7.07E-15	5.81E-14	2.76E-14
Q12	DOE-2	2/22/2021	-7.21E-16	7.09E-15	6.68E-14	2.76E-14
Q12	DOE-2	2/25/2021	-1.22E-15	5.83E-15	3.49E-14	2.35E-14
Q12	DOE-2	3/1/2021	2.04E-16	7.77E-15	3.07E-14	3.14E-14
Q12	DOE-2	3/4/2021	-3.92E-16	5.80E-15	7.10E-14	2.34E-14
Q12	DOE-2	3/8/2021	-3.94E-16	5.83E-15	3.90E-14	2.35E-14
Q12	DOE-2	3/12/2021	-1.22E-15	5.86E-15	4.91E-14	2.37E-14
Q12	DOE-2	3/16/2021	-1.61E-15	7.70E-15	6.37E-14	3.11E-14
Q12	DOE-2	3/19/2021	9.20E-16	7.65E-15	5.72E-14	3.09E-14
Q12	DOE-2	3/22/2021	9.38E-16	7.80E-15	2.43E-14	3.15E-14
Q12	DOE-2	3/25/2021	-2.83E-15	5.76E-15	3.00E-14	2.33E-14
Q13	DOE-2	4/1/2021	5.30E-15	6.92E-15	4.73E-14	3.01E-14
Q13	DOE-2	4/5/2021	3.45E-15	5.21E-15	9.87E-14	2.27E-14
Q13	DOE-2	4/8/2021	2.44E-15	7.01E-15	1.13E-13	3.05E-14
Q13	DOE-2	4/12/2021	3.96E-15	5.16E-15	6.09E-14	2.25E-14

Quarter	Air Station ID	Sample collection date	Result Alpha (µCi/mL)	MDC - Alpha (µCi/mL)	Result Beta (µCi/mL)	MDC - Beta (µCi/mL)
Q13	DOE-2	4/15/2021	9.89E-16	7.07E-15	7.83E-14	3.08E-14
Q13	DOE-2	4/19/2021	4.97E-15	5.10E-15	1.05E-13	2.22E-14
Q13	DOE-2	4/22/2021	3.51E-15	6.95E-15	5.75E-14	3.03E-14
Q13	DOE-2	4/26/2021	5.90E-15	5.21E-15	4.20E-14	2.27E-14
Q13	DOE-2	4/29/2021	2.11E-15	7.11E-15	3.15E-15	3.10E-14
Q13	DOE-2	5/3/2021	2.30E-15	5.17E-15	2.72E-14	2.15E-14
Q13	DOE-2	5/6/2021	3.11E-15	7.00E-15	2.99E-14	2.91E-14
Q13	DOE-2	5/10/2021	2.51E-15	5.09E-15	3.35E-14	2.11E-14
Q13	DOE-2	5/13/2021	2.45E-15	7.07E-15	6.33E-14	2.94E-14
Q13	DOE-2	5/17/2021	3.05E-15	5.16E-15	3.80E-14	2.14E-14
Q13	DOE-2	5/20/2021	2.07E-15	6.94E-15	5.33E-14	2.89E-14
Q13	DOE-2	5/24/2021	4.34E-15	4.90E-15	4.90E-14	2.04E-14
Q13	DOE-2	5/27/2021	3.88E-16	7.34E-15	4.24E-14	3.05E-14
Q13	DOE-2	6/1/2021	-5.97E-16	4.18E-15	1.92E-14	1.72E-14
Q13	DOE-2	6/4/2021	1.38E-15	6.89E-15	3.10E-14	2.84E-14
Q13	DOE-2	6/7/2021	3.36E-15	6.81E-15	4.62E-14	2.80E-14
Q13	DOE-2	6/10/2021	-2.04E-15	7.03E-15	3.09E-14	2.89E-14
Q13	DOE-2	6/14/2021	-7.42E-16	5.20E-15	5.48E-14	2.14E-14
Q13	DOE-2	6/17/2021	-3.04E-16	6.76E-15	6.68E-14	2.78E-14
Q13	DOE-2	6/21/2021	1.31E-15	5.28E-15	2.64E-14	2.17E-14
Q13	DOE-2	6/24/2021	1.05E-15	6.98E-15	9.68E-15	2.87E-14
Q13	DOE-2	6/28/2021	2.74E-16	5.18E-15	1.65E-15	2.13E-14
Q14	DOE-2	7/1/2021	3.97E-16	6.75E-15	4.62E-14	2.84E-14
Q14	DOE-2	7/6/2021	2.87E-15	4.12E-15	4.28E-14	1.73E-14
Q14	DOE-2	7/9/2021	3.80E-15	6.92E-15	8.00E-14	2.91E-14
Q14	DOE-2	7/12/2021	2.68E-15	6.66E-15	6.97E-14	2.80E-14
Q14	DOE-2	7/15/2021	-9.70E-16	7.07E-15	6.13E-14	2.97E-14
Q14	DOE-2	7/19/2021	2.96E-16	5.03E-15	5.63E-14	2.12E-14
Q14	DOE-2	7/22/2021	7.51E-16	6.96E-15	5.45E-14	2.93E-14
Q14	DOE-2	7/27/2021	3.91E-15	4.16E-15	2.76E-14	1.75E-14
Q14	DOE-2	7/30/2021	2.41E-15	6.82E-15	4.99E-14	2.87E-14
Q14	DOE-2	8/2/2021	3.80E-15	6.75E-15	6.09E-14	2.81E-14
Q14	DOE-2	8/5/2021	1.11E-15	6.80E-15	3.57E-14	2.83E-14
Q14	DOE-2	8/9/2021	-4.31E-16	5.01E-15	5.47E-14	2.09E-14
Q14	DOE-2	8/12/2021	1.48E-15	6.94E-15	8.08E-14	2.89E-14
Q14	DOE-2	8/16/2021	-4.32E-16	5.03E-15	5.19E-14	2.09E-14

Quarter	Air Station ID	Sample collection date	Result Alpha (µCi/mL)	MDC - Alpha (µCi/mL)	Result Beta (µCi/mL)	MDC - Beta (µCi/mL)
Q14	DOE-2	8/19/2021	-5.64E-16	6.56E-15	6.19E-14	2.73E-14
Q14	DOE-2	8/23/2021	-1.86E-16	5.17E-15	3.26E-14	2.15E-14
Q14	DOE-2	8/26/2021	8.35E-15	6.88E-15	2.93E-14	2.87E-14
Q14	DOE-2	8/30/2021	1.76E-15	4.84E-15	4.70E-14	2.02E-14
Q14	DOE-2	9/2/2021	3.80E-15	7.43E-15	4.92E-14	2.83E-14
Q14	DOE-2	9/7/2021	3.43E-15	4.36E-15	5.43E-14	1.66E-14
Q14	DOE-2	9/10/2021	1.73E-15	7.33E-15	1.13E-13	2.79E-14
Q14	DOE-2	9/13/2021	-3.66E-15	7.32E-15	6.20E-14	2.79E-14
Q14	DOE-2	9/16/2021	7.21E-16	7.39E-15	6.19E-14	2.82E-14
Q14	DOE-2	9/20/2021	7.76E-16	5.41E-15	6.89E-14	2.06E-14
Q14	DOE-2	9/24/2021	-2.97E-16	7.33E-15	3.93E-14	2.79E-14
Q14	DOE-2	9/27/2021	2.56E-15	5.50E-15	5.20E-14	2.10E-14
Q14	DOE-2	9/30/2021	-5.66E-15	7.75E-15	2.50E-14	2.95E-14
Q15	DOE-2	10/4/21	2.88E-15	4.93E-15	3.57E-14	2.06E-14
Q15	DOE-2	10/7/21	1.01E-15	6.71E-15	4.68E-14	2.80E-14
Q15	DOE-2	10/11/21	-2.29E-16	5.40E-15	1.64E-14	2.26E-14
Q15	DOE-2	10/14/21	6.78E-16	6.64E-15	3.65E-14	2.78E-14
Q15	DOE-2	10/18/21	5.20E-16	5.10E-15	7.24E-14	2.13E-14
Q15	DOE-2	10/21/21	-3.39E-15	7.12E-15	3.11E-14	2.98E-14
Q15	DOE-2	10/26/21	-9.61E-16	4.09E-15	3.46E-14	1.71E-14
Q15	DOE-2	10/28/21	-5.01E-15	1.05E-14	-3.12E-14	4.40E-14
Q15	DOE-2	11/1/21	4.54E-16	5.09E-15	2.33E-14	2.25E-14
Q15	DOE-2	11/4/21	6.14E-16	6.88E-15	1.98E-14	3.04E-14
Q15	DOE-2	11/8/21	3.89E-15	4.97E-15	8.62E-14	2.20E-14
Q15	DOE-2	11/11/21	5.05E-15	6.89E-15	6.99E-14	3.05E-14
Q15	DOE-2	11/15/21	-8.11E-16	5.12E-15	3.05E-14	2.26E-14
Q15	DOE-2	11/18/21	9.47E-16	6.83E-15	1.05E-13	3.02E-14
Q15	DOE-2	11/22/21	5.65E-15	5.23E-15	1.04E-13	2.31E-14
Q15	DOE-2	11/24/21	4.03E-16	1.02E-14	5.14E-14	4.50E-14
Q15	DOE-2	11/29/21	-2.27E-16	3.83E-15	5.28E-14	1.69E-14
Q15	DOE-2	12/3/21	5.51E-15	5.27E-15	7.44E-14	2.34E-14
Q15	DOE-2	12/6/21	9.10E-15	6.28E-15	1.17E-13	2.80E-14
Q15	DOE-2	12/10/21	8.98E-15	4.98E-15	1.16E-13	2.22E-14
Q15	DOE-2	12/13/21	-4.14E-16	6.63E-15	6.58E-14	2.95E-14
Q15	DOE-2	12/17/21	-8.32E-16	5.10E-15	1.80E-14	2.27E-14
Q15	DOE-2	12/20/21	4.37E-15	6.80E-15	7.77E-14	3.03E-14

Quarter	Air Station ID	Sample collection date	Result Alpha (µCi/mL)	MDC - Alpha (µCi/mL)	Result Beta (µCi/mL)	MDC - Beta (µCi/mL)
Q15	DOE-2	12/22/21	1.34E-15	9.61E-15	6.93E-14	4.28E-14
Q15	DOE-2	12/27/21	3.42E-15	4.06E-15	2.53E-14	1.80E-14
Q15	DOE-2	12/31/21	9.52E-16	5.03E-15	9.25E-16	2.24E-14
Sample location DOE-3						
Q12	DOE-3	1/4/2021	2.59E-15	6.74E-15	6.23E-14	2.89E-14
Q12	DOE-3	1/7/2021	2.14E-15	4.89E-15	4.96E-14	2.10E-14
Q12	DOE-3	1/11/2021	4.47E-16	6.61E-15	7.76E-14	2.84E-14
Q12	DOE-3	1/14/2021	1.84E-15	4.79E-15	5.72E-14	2.05E-14
Q12	DOE-3	1/18/2021	4.60E-16	6.80E-15	6.14E-14	2.92E-14
Q12	DOE-3	1/21/2021	2.90E-15	4.87E-15	1.83E-14	2.09E-14
Q12	DOE-3	1/25/2021	-4.61E-15	1.00E-14	-2.23E-15	4.29E-14
Q12	DOE-3	1/27/2021	1.81E-15	4.25E-15	2.00E-14	1.66E-14
Q12	DOE-3	2/1/2021	-4.18E-17	7.25E-15	4.58E-14	2.83E-14
Q12	DOE-3	2/4/2021	1.50E-15	5.32E-15	5.01E-14	2.07E-14
Q12	DOE-3	2/8/2021	1.00E-15	7.24E-15	1.16E-13	2.82E-14
Q12	DOE-3	2/11/2021	-2.28E-16	4.24E-15	4.34E-14	1.65E-14
Q12	DOE-3	2/16/2021	3.07E-16	7.28E-15	1.94E-14	2.84E-14
Q12	DOE-3	2/19/2021	-1.40E-15	7.07E-15	1.44E-14	2.76E-14
Q12	DOE-3	2/22/2021	9.79E-16	7.09E-15	1.93E-14	2.76E-14
Q12	DOE-3	2/25/2021	1.52E-15	5.83E-15	3.29E-14	2.35E-14
Q12	DOE-3	3/1/2021	1.64E-15	7.64E-15	6.82E-14	3.08E-14
Q12	DOE-3	3/4/2021	2.91E-15	5.87E-15	5.53E-14	2.37E-14
Q12	DOE-3	3/8/2021	-1.40E-15	6.72E-15	-2.75E-15	2.71E-14
Q12	DOE-3	3/12/2021	-3.97E-16	5.87E-15	4.65E-14	2.37E-14
Q12	DOE-3	3/16/2021	-5.21E-16	7.71E-15	2.86E-14	3.11E-14
Q12	DOE-3	3/19/2021	-3.39E-15	7.64E-15	1.70E-14	3.08E-14
Q12	DOE-3	3/22/2021	-1.26E-15	7.80E-15	5.56E-14	3.15E-14
Q12	DOE-3	3/25/2021	-2.56E-15	5.76E-15	2.48E-14	2.33E-14
Q13	DOE-3	4/1/2021	4.94E-15	6.91E-15	6.89E-14	3.01E-14
Q13	DOE-3	4/5/2021	8.63E-15	5.22E-15	9.98E-14	2.27E-14
Q13	DOE-3	4/8/2021	6.10E-15	7.01E-15	8.27E-14	3.05E-14
Q13	DOE-3	4/12/2021	1.80E-15	5.16E-15	5.09E-14	2.25E-14
Q13	DOE-3	4/15/2021	1.73E-15	7.07E-15	3.23E-14	3.08E-14
Q13	DOE-3	4/19/2021	2.31E-15	5.10E-15	7.51E-14	2.22E-14
Q13	DOE-3	4/22/2021	5.32E-15	6.95E-15	6.47E-14	3.03E-14
Q13	DOE-3	4/26/2021	2.37E-15	5.22E-15	5.21E-14	2.28E-14

Quarter	Air Station ID	Sample collection date	Result Alpha (µCi/mL)	MDC - Alpha (µCi/mL)	Result Beta (µCi/mL)	MDC - Beta (µCi/mL)
Q13	DOE-3	4/29/2021	-1.23E-15	7.12E-15	2.94E-14	3.10E-14
Q13	DOE-3	5/3/2021	7.35E-15	5.16E-15	3.83E-14	2.15E-14
Q13	DOE-3	5/6/2021	-1.34E-15	7.00E-15	4.79E-14	2.91E-14
Q13	DOE-3	5/10/2021	6.00E-15	5.09E-15	3.12E-14	2.12E-14
Q13	DOE-3	5/13/2021	1.76E-15	7.06E-15	6.47E-14	2.94E-14
Q13	DOE-3	5/17/2021	1.79E-15	5.16E-15	3.96E-14	2.14E-14
Q13	DOE-3	5/20/2021	3.67E-16	6.95E-15	2.58E-14	2.89E-14
Q13	DOE-3	5/24/2021	-1.66E-15	4.91E-15	1.62E-14	2.04E-14
Q13	DOE-3	5/27/2021	1.83E-15	7.34E-15	2.73E-14	3.05E-14
Q13	DOE-3	6/1/2021	6.29E-16	4.17E-15	2.24E-14	1.72E-14
Q13	DOE-3	6/4/2021	3.74E-15	6.89E-15	8.11E-14	2.84E-14
Q13	DOE-3	6/7/2021	6.92E-16	6.80E-15	7.21E-14	2.80E-14
Q13	DOE-3	6/10/2021	-3.42E-15	7.04E-15	1.69E-14	2.90E-14
Q13	DOE-3	6/14/2021	2.31E-15	5.20E-15	4.50E-14	2.14E-14
Q13	DOE-3	6/17/2021	-6.35E-16	6.76E-15	1.11E-14	2.78E-14
Q13	DOE-3	6/21/2021	7.94E-16	5.27E-15	2.98E-14	2.17E-14
Q13	DOE-3	6/24/2021	-1.00E-15	7.00E-15	1.97E-14	2.88E-14
Q13	DOE-3	6/28/2021	-1.25E-15	5.18E-15	2.59E-14	2.13E-14
Q14	DOE-3	7/1/2021	5.36E-15	6.75E-15	2.57E-14	2.84E-14
Q14	DOE-3	7/6/2021	2.46E-15	4.12E-15	5.65E-14	1.73E-14
Q14	DOE-3	7/9/2021	2.11E-15	6.93E-15	6.81E-14	2.91E-14
Q14	DOE-3	7/12/2021	1.04E-15	6.66E-15	5.32E-14	2.80E-14
Q14	DOE-3	7/15/2021	3.19E-15	7.08E-15	3.47E-14	2.98E-14
Q14	DOE-3	7/19/2021	4.00E-15	5.04E-15	2.66E-14	2.12E-14
Q14	DOE-3	7/22/2021	2.46E-15	6.96E-15	2.58E-14	2.93E-14
Q14	DOE-3	7/27/2021	2.49E-15	4.16E-15	5.06E-14	1.75E-14
Q14	DOE-3	7/30/2021	6.68E-17	6.81E-15	3.95E-14	2.86E-14
Q14	DOE-3	8/2/2021	2.45E-15	6.75E-15	4.82E-14	2.81E-14
Q14	DOE-3	8/5/2021	-2.45E-16	6.80E-15	6.13E-14	2.83E-14
Q14	DOE-3	8/9/2021	-4.31E-16	5.02E-15	4.84E-14	2.09E-14
Q14	DOE-3	8/12/2021	2.18E-15	6.94E-15	4.44E-14	2.89E-14
Q14	DOE-3	8/16/2021	8.24E-16	5.03E-15	3.27E-14	2.09E-14
Q14	DOE-3	8/19/2021	9.18E-17	6.56E-15	3.07E-14	2.73E-14
Q14	DOE-3	8/23/2021	1.11E-15	5.17E-15	9.28E-15	2.15E-14
Q14	DOE-3	8/26/2021	2.85E-15	6.88E-15	4.73E-14	2.87E-14
Q14	DOE-3	8/30/2021	1.52E-15	4.84E-15	5.51E-14	2.02E-14

Quarter	Air Station ID	Sample collection date	Result Alpha (µCi/mL)	MDC - Alpha (µCi/mL)	Result Beta (µCi/mL)	MDC - Beta (µCi/mL)
Q14	DOE-3	9/2/2021	-6.42E-16	7.43E-15	3.66E-14	2.83E-14
Q14	DOE-3	9/7/2021	8.27E-16	4.36E-15	6.85E-14	1.66E-14
Q14	DOE-3	9/10/2021	1.39E-15	7.33E-15	7.63E-14	2.79E-14
Q14	DOE-3	9/13/2021	7.05E-16	7.23E-15	3.34E-14	2.80E-14
Q14	DOE-3	9/16/2021	-1.98E-15	7.31E-15	4.31E-14	2.83E-14
Q14	DOE-3	9/20/2021	-9.54E-16	5.34E-15	4.37E-14	2.07E-14
Q14	DOE-3	9/24/2021	3.73E-16	7.25E-15	3.92E-14	2.81E-14
Q14	DOE-3	9/27/2021	-1.22E-15	5.43E-15	6.34E-14	2.10E-14
Q14	DOE-3	9/30/2021	-1.72E-15	7.64E-15	4.05E-14	2.96E-14
Q15	DOE-3	10/4/21	3.12E-15	4.94E-15	4.59E-14	2.07E-14
Q15	DOE-3	10/7/21	7.49E-16	7.33E-15	3.46E-14	3.07E-14
Q15	DOE-3	10/11/21	3.12E-17	5.39E-15	1.33E-14	2.25E-14
Q15	DOE-3	10/14/21	-1.24E-15	6.65E-15	3.48E-14	2.78E-14
Q15	DOE-3	10/18/21	7.66E-16	5.10E-15	7.63E-14	2.13E-14
Q15	DOE-3	10/21/21	-3.02E-16	7.12E-15	-1.05E-15	2.97E-14
Q15	DOE-3	10/26/21	-9.01E-16	4.82E-15	4.48E-15	2.02E-14
Q15	DOE-3	10/28/21	-9.56E-16	1.06E-14	-4.38E-14	4.41E-14
Q15	DOE-3	11/1/21	1.46E-15	5.09E-15	2.17E-14	2.25E-14
Q15	DOE-3	11/4/21	3.00E-15	6.88E-15	5.38E-14	3.04E-14
Q15	DOE-3	11/8/21	4.62E-15	4.97E-15	9.59E-14	2.20E-14
Q15	DOE-3	11/11/21	-4.09E-16	6.89E-15	3.66E-14	3.05E-14
Q15	DOE-3	11/15/21	-8.11E-16	5.12E-15	2.53E-14	2.26E-14
Q15	DOE-3	11/18/21	2.64E-15	6.82E-15	8.18E-14	3.02E-14
Q15	DOE-3	11/22/21	-1.35E-15	5.24E-15	7.03E-14	2.32E-14
Q15	DOE-3	11/24/21	-5.14E-15	1.02E-14	5.78E-14	4.50E-14
Q15	DOE-3	11/29/21	-7.96E-16	3.82E-15	5.91E-14	1.69E-14
Q15	DOE-3	12/3/21	6.28E-15	5.25E-15	7.56E-14	2.34E-14
Q15	DOE-3	12/6/21	1.10E-14	6.30E-15	1.44E-13	2.80E-14
Q15	DOE-3	12/10/21	6.72E-15	4.98E-15	1.41E-13	2.22E-14
Q15	DOE-3	12/13/21	1.26E-15	6.63E-15	5.04E-14	2.95E-14
Q15	DOE-3	12/17/21	1.06E-15	7.62E-15	-2.46E-14	3.39E-14
Q15	DOE-3	12/20/21	6.03E-16	6.80E-15	2.00E-14	3.03E-14
Q15	DOE-3	12/22/21	3.27E-15	9.59E-15	4.33E-14	4.27E-14
Q15	DOE-3	12/27/21	-3.45E-16	5.52E-15	2.19E-14	2.46E-14
Q15	DOE-3	12/31/21	-4.40E-15	7.77E-15	-9.50E-15	3.46E-14

Quarter	Air Station ID	Sample collection date	Result Alpha (µCi/mL)	MDC - Alpha (µCi/mL)	Result Beta (µCi/mL)	MDC - Beta (µCi/mL)
Sample location DOE-4						
Q12	DOE-4	1/4/2021	2.59E-15	6.74E-15	5.48E-14	2.89E-14
Q12	DOE-4	1/7/2021	1.62E-15	4.89E-15	3.35E-14	2.10E-14
Q12	DOE-4	1/11/2021	3.94E-15	6.61E-15	4.98E-14	2.84E-14
Q12	DOE-4	1/14/2021	1.84E-15	4.79E-15	4.02E-14	2.05E-14
Q12	DOE-4	1/18/2021	4.77E-15	6.80E-15	5.70E-14	2.92E-14
Q12	DOE-4	1/21/2021	2.39E-15	4.87E-15	3.49E-14	2.09E-14
Q12	DOE-4	1/25/2021	3.32E-15	1.00E-14	-9.68E-15	4.30E-14
Q12	DOE-4	1/27/2021	9.96E-16	4.25E-15	1.20E-14	1.66E-14
Q12	DOE-4	2/1/2021	1.00E-15	7.26E-15	5.71E-14	2.83E-14
Q12	DOE-4	2/4/2021	5.84E-15	5.32E-15	5.76E-14	2.07E-14
Q12	DOE-4	2/8/2021	3.43E-15	7.24E-15	6.44E-14	2.82E-14
Q12	DOE-4	2/11/2021	7.89E-16	4.24E-15	2.28E-14	1.65E-14
Q12	DOE-4	2/16/2021	-1.44E-15	7.27E-15	2.05E-14	2.83E-14
Q12	DOE-4	2/19/2021	-1.74E-15	7.07E-15	2.68E-14	2.76E-14
Q12	DOE-4	2/22/2021	-3.10E-15	7.09E-15	5.10E-14	2.76E-14
Q12	DOE-4	2/25/2021	2.35E-15	5.83E-15	3.20E-14	2.35E-14
Q12	DOE-4	3/1/2021	-3.03E-15	7.65E-15	2.12E-14	3.09E-14
Q12	DOE-4	3/4/2021	4.01E-15	5.87E-15	4.45E-14	2.37E-14
Q12	DOE-4	3/8/2021	-9.38E-16	5.80E-15	5.69E-15	2.34E-14
Q12	DOE-4	3/12/2021	-1.78E-15	5.88E-15	2.56E-14	2.38E-14
Q12	DOE-4	3/16/2021	-3.06E-15	7.71E-15	2.67E-14	3.11E-14
Q12	DOE-4	3/19/2021	5.60E-16	7.64E-15	2.19E-14	3.08E-14
Q12	DOE-4	3/22/2021	-1.99E-15	7.79E-15	4.13E-14	3.15E-14
Q12	DOE-4	3/25/2021	-1.19E-16	5.76E-15	2.42E-14	2.33E-14
Q13	DOE-4	4/1/2021	4.57E-15	6.91E-15	5.98E-14	3.01E-14
Q13	DOE-4	4/5/2021	7.26E-15	5.22E-15	8.13E-14	2.27E-14
Q13	DOE-4	4/8/2021	1.71E-15	7.01E-15	5.87E-14	3.05E-14
Q13	DOE-4	4/12/2021	3.42E-15	5.16E-15	5.44E-14	2.25E-14
Q13	DOE-4	4/15/2021	3.20E-15	7.06E-15	6.07E-14	3.08E-14
Q13	DOE-4	4/19/2021	7.14E-16	5.11E-15	8.87E-14	2.22E-14
Q13	DOE-4	4/22/2021	4.22E-15	6.92E-15	6.37E-14	3.02E-14
Q13	DOE-4	4/26/2021	-6.33E-16	5.23E-15	3.60E-14	2.28E-14
Q13	DOE-4	4/29/2021	-1.23E-15	7.12E-15	1.88E-14	3.10E-14
Q13	DOE-4	5/3/2021	1.79E-15	5.16E-15	2.66E-14	2.15E-14
Q13	DOE-4	5/6/2021	4.83E-15	7.01E-15	6.28E-14	2.91E-14

Quarter	Air Station ID	Sample collection date	Result Alpha (µCi/mL)	MDC - Alpha (µCi/mL)	Result Beta (µCi/mL)	MDC - Beta (µCi/mL)
Q13	DOE-4	5/10/2021	3.26E-15	5.09E-15	3.54E-14	2.12E-14
Q13	DOE-4	5/13/2021	3.15E-15	7.08E-15	4.38E-14	2.94E-14
Q13	DOE-4	5/17/2021	2.29E-15	5.16E-15	3.51E-15	2.14E-14
Q13	DOE-4	5/20/2021	1.05E-15	6.95E-15	2.69E-14	2.89E-14
Q13	DOE-4	5/24/2021	4.99E-16	4.90E-15	9.14E-15	2.04E-14
Q13	DOE-4	5/27/2021	1.46E-15	7.34E-15	5.78E-14	3.05E-14
Q13	DOE-4	6/1/2021	2.67E-15	4.17E-15	1.81E-14	1.72E-14
Q13	DOE-4	6/4/2021	2.70E-17	6.89E-15	4.04E-14	2.84E-14
Q13	DOE-4	6/7/2021	-1.97E-15	6.80E-15	3.51E-14	2.80E-14
Q13	DOE-4	6/10/2021	3.73E-16	7.06E-15	2.16E-14	2.91E-14
Q13	DOE-4	6/14/2021	-1.51E-15	5.20E-15	1.73E-14	2.14E-14
Q13	DOE-4	6/17/2021	2.67E-15	6.76E-15	2.87E-14	2.78E-14
Q13	DOE-4	6/21/2021	1.82E-15	5.27E-15	4.94E-14	2.17E-14
Q13	DOE-4	6/24/2021	1.74E-15	6.99E-15	2.93E-14	2.88E-14
Q13	DOE-4	6/28/2021	-9.95E-16	5.19E-15	9.30E-15	2.13E-14
Q14	DOE-4	7/1/2021	-9.27E-16	6.75E-15	4.62E-14	2.84E-14
Q14	DOE-4	7/6/2021	2.46E-15	4.12E-15	4.05E-14	1.73E-14
Q14	DOE-4	7/9/2021	6.79E-17	6.93E-15	4.85E-14	2.91E-14
Q14	DOE-4	7/12/2021	6.53E-17	6.66E-15	4.38E-14	2.80E-14
Q14	DOE-4	7/15/2021	-1.32E-15	7.08E-15	6.26E-14	2.98E-14
Q14	DOE-4	7/19/2021	-9.38E-16	5.03E-15	3.71E-14	2.12E-14
Q14	DOE-4	7/22/2021	6.83E-17	6.96E-15	4.73E-14	2.93E-14
Q14	DOE-4	7/27/2021	1.47E-15	4.16E-15	4.48E-14	1.75E-14
Q14	DOE-4	7/30/2021	7.35E-16	6.81E-15	3.45E-14	2.87E-14
Q14	DOE-4	8/2/2021	3.80E-15	6.74E-15	3.26E-14	2.81E-14
Q14	DOE-4	8/5/2021	2.81E-15	6.80E-15	2.68E-14	2.83E-14
Q14	DOE-4	8/9/2021	1.82E-15	5.02E-15	4.55E-14	2.09E-14
Q14	DOE-4	8/12/2021	5.29E-15	6.94E-15	4.15E-14	2.89E-14
Q14	DOE-4	8/16/2021	5.73E-16	5.03E-15	7.01E-14	2.09E-14
Q14	DOE-4	8/19/2021	7.48E-16	6.57E-15	1.21E-14	2.73E-14
Q14	DOE-4	8/23/2021	5.89E-16	5.17E-15	4.69E-14	2.15E-14
Q14	DOE-4	8/26/2021	3.88E-15	6.89E-15	2.79E-14	2.87E-14
Q14	DOE-4	8/30/2021	1.04E-15	4.84E-15	5.16E-14	2.02E-14
Q14	DOE-4	9/2/2021	4.05E-17	7.34E-15	4.51E-14	2.84E-14
Q14	DOE-4	9/7/2021	1.41E-15	4.32E-15	5.27E-14	1.67E-14
Q14	DOE-4	9/10/2021	5.04E-15	7.24E-15	6.45E-14	2.81E-14

Quarter	Air Station ID	Sample collection date	Result Alpha (µCi/mL)	MDC - Alpha (µCi/mL)	Result Beta (µCi/mL)	MDC - Beta (µCi/mL)
Q14	DOE-4	9/13/2021	-1.62E-15	7.24E-15	4.48E-14	2.80E-14
Q14	DOE-4	9/16/2021	-2.65E-15	7.31E-15	6.33E-14	2.83E-14
Q14	DOE-4	9/20/2021	2.95E-17	5.35E-15	3.89E-14	2.07E-14
Q14	DOE-4	9/24/2021	-2.29E-15	7.25E-15	8.60E-14	2.81E-14
Q14	DOE-4	9/27/2021	2.99E-17	5.42E-15	3.46E-14	2.10E-14
Q14	DOE-4	9/30/2021	-4.54E-15	7.66E-15	3.35E-14	2.97E-14
Q15	DOE-4	10/4/21	2.64E-15	4.94E-15	4.61E-14	2.06E-14
Q15	DOE-4	10/7/21	1.67E-15	6.79E-15	5.01E-14	2.86E-14
Q15	DOE-4	10/11/21	3.14E-17	5.43E-15	2.30E-14	2.29E-14
Q15	DOE-4	10/14/21	-1.57E-15	6.70E-15	1.01E-14	2.82E-14
Q15	DOE-4	10/18/21	-1.70E-15	5.14E-15	4.11E-14	2.16E-14
Q15	DOE-4	10/21/21	-4.44E-15	7.16E-15	1.89E-15	3.02E-14
Q15	DOE-4	10/26/21	1.02E-15	4.12E-15	5.12E-15	1.73E-14
Q15	DOE-4	10/28/21	-3.52E-15	1.06E-14	4.73E-14	4.48E-14
Q15	DOE-4	11/1/21	2.47E-15	5.09E-15	2.54E-14	2.25E-14
Q15	DOE-4	11/4/21	9.55E-16	6.88E-15	2.02E-14	3.04E-14
Q15	DOE-4	11/8/21	4.87E-15	4.96E-15	7.38E-14	2.20E-14
Q15	DOE-4	11/11/21	-2.11E-15	6.89E-15	1.76E-14	3.04E-14
Q15	DOE-4	11/15/21	7.10E-16	5.12E-15	5.25E-14	2.26E-14
Q15	DOE-4	11/18/21	1.28E-15	6.82E-15	7.02E-14	3.01E-14
Q15	DOE-4	11/22/21	4.67E-16	5.24E-15	1.18E-13	2.32E-14
Q15	DOE-4	11/24/21	-6.05E-16	1.02E-14	3.52E-14	4.50E-14
Q15	DOE-4	11/29/21	-2.27E-16	3.82E-15	5.64E-14	1.69E-14
Q15	DOE-4	12/3/21	7.61E-15	5.25E-15	1.03E-13	2.34E-14
Q15	DOE-4	12/6/21	9.12E-15	6.30E-15	1.30E-13	2.80E-14
Q15	DOE-4	12/10/21	1.45E-15	4.99E-15	3.08E-14	2.22E-14
Q15	DOE-4	12/13/21	1.92E-15	6.63E-15	3.28E-14	2.95E-14
Q15	DOE-4	12/17/21	-1.64E-15	5.21E-15	1.82E-14	2.32E-14
Q15	DOE-4	12/20/21	-4.20E-15	6.80E-15	3.07E-14	3.03E-14
Q15	DOE-4	12/22/21	1.81E-15	9.58E-15	1.25E-13	4.26E-14
Q15	DOE-4	12/27/21	-2.53E-16	4.05E-15	1.30E-14	1.80E-14
Q15	DOE-4	12/31/21	-6.09E-17	5.04E-15	-1.46E-14	2.24E-14

Note: Results less than the MDC are noted in the table as negative numbers.

Table C-3. Individual radionuclide analysis for composite filter samples, Q15.

Radionuclide	Result (pCi/sample)	MDC (pCi/sample)	Data Qualifier[1]	Airborne Concentration (µCi/mL)
Location DOE-1 – Air volume/sample = 9.95E+08				**9.95E+08**
Cesium-137	1.06	7.38	U U	1.065E-15
Strontium-90	3.60	1.42	UJ	3.618E-15
Cobalt-60	-0.105	8.28	U U	-1.055E-16
Potassium-40	-3.09	135	U U	-3.106E-15
Beryllium-7	149	73.7	U U	1.497E-13
Plutonium-238	0.0254	0.335	U U	2.553E-17
Polonium-210	11.6	0.107		1.166E-14
Plutonium-241	1.66	24.8	U U	1.668E-15
Thorium-230	0.771	0.514		7.749E-16
Thorium-228	0.555	0.562	U U	5.578E-16
Actinium-228	13.6	38.7	U U	1.367E-14
Americium-241	0.00521	0.858	U U	5.236E-18
Plutonium-239	-0.107	0.440	U U	-1.075E-16
Ra-228 - total	0.491	5.19	U U	4.935E-16
Radium-226, -228 combined	2.82	13.1	U U	2.834E-15
Thorium-232	0.377	0.275	UJ	3.789E-16
Uranium-238	0.712	0.227	UJ	7.156E-16
Uranium-233/234	0.655	0.331	UJ	6.583E-16
Uranium-235/236	0.0257	0.213	U U	2.583E-17
Location DOE-2 – Air volume/sample =9.95E+08				**9.95E+08**
Cesium-137	4.67	9.49	U U	4.693E-15
Strontium-90	4.17	1.33	UJ	4.191E-15
Cobalt-60	-2.49	5.19	U U	-2.503E-15
Potassium-40	71.5	76.9	U U	7.186E-14
Beryllium-7	119	90.7		1.196E-13
Plutonium-238	0.166	0.490	U U	1.668E-16
Polonium-210	11.5	0.110		1.156E-14
Plutonium-241	14.2	46.1	U U	1.427E-14
Thorium-230	0.677	0.529		6.804E-16
Thorium-228	0.834	0.538		8.382E-16
Actinium-228	-21.1	32.3	U U	-2.121E-14
Americium-241	-0.160	1.36	U UJ	-1.608E-16
Plutonium-239	-0.196	0.568	U U	-1.970E-16
Ra-228 - total	4.01	5.16	U U	4.030E-15
Radium-226, -228 combined	0.400	16.3	U U	4.020E-16
Thorium-232	0.657	0.398	UJ	6.603E-16
Uranium-238	0.404	0.249	UJ	4.060E-16

Radionuclide	Result (pCi/sample)	MDC (pCi/sample)	Data Qualifier[1]	Airborne Concentration (µCi/mL)
Uranium-233/234	0.651	0.363	UJ	6.543E-16
Uranium-235/236	0.0999	0.201	U U	1.004E-16
Location DOE-3 – Air volume/sample = 9.41E+08				**9.41E+08**
Cesium-137	-2.58	7.04	U U	-2.742E-15
Strontium-90	4.44	2.01	UJ	4.718E-15
Cobalt-60	-0.560	8.37	U U	-5.951E-16
Potassium-40	1.21	134	U U	1.286E-15
Beryllium-7	85.1	70.9	UI UJ	9.044E-14
Plutonium-238	-0.0503	0.345	U U	-5.345E-17
Polonium-210	9.66	0.130		1.027E-14
Plutonium-241	15.1	27.9	U U	1.605E-14
Thorium-230	0.537	0.588	U U	5.707E-16
Thorium-228	0.539	0.547	U U	5.728E-16
Actinium-228	31.6	38.8	U U	3.358E-14
Americium-241	0.109	0.686	U UJ	1.158E-16
Plutonium-239	0.0692	0.406	U U	7.354E-17
Ra-228 - total	4.25	3.88		4.516E-15
Radium-226, -228 combined	10.2	11.8	U U	1.084E-14
Thorium-232	0.318	0.404	U U	3.379E-16
Uranium-238	0.620	0.227	UJ	6.589E-16
Uranium-233/234	0.857	0.230	UJ	9.107E-16
Uranium-235/236	0.0662	0.241	U U	7.035E-17
Location DOE-4 – Air volume/sample = 9.94E+08				**9.94E+08**
Cesium-137	-0.121	6.82	U U	-1.217E-16
Strontium-90	2.55	3.45	U U	2.565E-15
Cobalt-60	-1.53	9.05	U U	-1.539E-15
Potassium-40	92.2	88.2	UI UJ	9.276E-14
Beryllium-7	105	81.1		1.056E-13
Plutonium-238	-0.0213	0.245	U U	-2.143E-17
Polonium-210	10.1	0.0373		1.016E-14
Plutonium-241	9.97	26.4	U U	1.003E-14
Thorium-230	0.913	0.451		9.185E-16
Thorium-228	0.714	0.450		7.183E-16
Actinium-228	13.9	38.0	U U	1.398E-14
Americium-241	0.224	1.07	U U	2.254E-16
Plutonium-239	0.0567	0.271	U U	5.704E-17
Ra-228 - total	-1.12	10.4	U U	-1.127E-15
Radium-226, -228 combined	7.18	17.7	U U	7.223E-15
Thorium-232	0.753	0.265	UJ	7.575E-16
Uranium-238	0.775	0.199	UJ	7.797E-16

Radionuclide	Result (pCi/sample)	MDC (pCi/sample)	Data Qualifier[1]	Airborne Concentration (µCi/mL)
Uranium-233/234	0.648	0.416	UJ	6.519E-16
Uranium-235/236	-0.00371	0.324	U U	-3.732E-18

[1] Qualifier column contains laboratory flags ; validation qualifiers.

Notes:

U = Sample result is less than MDC and/or two sigma uncertainty

UU = Sample was analyzed for but not detected and is qualified as a non-detect

UI = Sample results were rejected by the laboratory due to spectra issues

UJ = Sample was rejected by laboratory due to spectra issues and was determined to be an estimated value

Table C-4. Individual radionuclide analysis for composite filter samples, Q12 through Q15.

Quarter	Radionuclide	Result (pCi/sample)	MDC (pCi/sample)	Data Qualifier[1]	Airborne Concentration (µCi/mL)
Q12					
Location DOE-1 – Air volume/sample = 9.64E+08					**9.64E+08**
Q12	Cesium-137	0.968	6.40	U	1.004E-15
Q12	Strontium-90	0.498	2.26	U	5.166E-16
Q12	Cobalt-60	0.453	6.33	U	4.699E-16
Q12	Potassium-40	53.8	59.7	U	5.581E-14
Q12	Beryllium-7	117	72.8		1.214E-13
Q12	Plutonium-238	0.121	0.713	U	1.255E-16
Q12	Polonium-210	8.34	0.783		8.651E-15
Q12	Plutonium-241	7.51	33.8	U	7.790E-15
Q12	Thorium-230	0.995	0.926		1.032E-15
Q12	Thorium-228	0.709	1.14	U	7.355E-16
Q12	Actinium-228	-11.7	25.2	U	-1.214E-14
Q12	Americium-241	0.000	1.19	U	0.000E+0
Q12	Plutonium-239	-0.0110	0.870	U	-1.141E-17
Q12	Ra-228 - total	5.11	4.38		5.301E-15
Q12	Radium-226, -228 combined	2.00	0.710		2.075E-15
Q12	Thorium-232	0.661	0.555		6.857E-16
Q12	Uranium-238	0.868	0.308		9.004E-16
Q12	Uranium-233/234	0.917	0.404		9.512E-16
Q12	Uranium-235/236	-0.0614	0.323	U	-6.369E-17
Location DOE-2 – Air volume/sample = 9.59E+08					**9.59E+08**
Q12	Cesium-137	-4.01	8.48	U	-4.181E-15
Q12	Strontium-90	3.37	3.33		3.514E-15
Q12	Cobalt-60	0.855	7.54	U	8.916E-16
Q12	Potassium-40	-29.2	140	U	-3.045E-14
Q12	Beryllium-7	202	88.0		2.106E-13
Q12	Plutonium-238	-0.0159	0.556	U	-1.658E-17
Q12	Polonium-210	9.84	0.707		1.026E-14
Q12	Plutonium-241	11.3	27.7	U	1.178E-14
Q12	Thorium-230	1.19	1.06		1.241E-15
Q12	Thorium-228	0.265	1.13	U	2.763E-16
Q12	Actinium-228	-8.55	47.1	U	-8.916E-15
Q12	Americium-241	0.396	1.22	U	4.129E-16
Q12	Plutonium-239	0.0222	0.484	U	2.315E-17
Q12	Ra-228 - total	7.85	3.96		8.186E-15

Quarter	Radionuclide	Result (pCi/sample)	MDC (pCi/sample)	Data Qualifier[1]	Airborne Concentration (µCi/mL)
Q12	Radium-226, -228 combined	2.28	0.547		2.377E-15
Q12	Thorium-232	0.597	0.639	U	6.225E-16
Q12	Uranium-238	0.794	0.262		8.279E-16
Q12	Uranium-233/234	0.423	0.310		4.411E-16
Q12	Uranium-235/236	0.0345	0.103	U	3.597E-17
Location DOE-3 – Air volume/sample = 9.56E+08					**9.56E+08**
Q12	Cesium-137	-3.58	5.74	U	-3.745E-15
Q12	Strontium-90	0.248	2.99	U	2.594E-16
Q12	Cobalt-60	2.03	9.65	U	2.123E-15
Q12	Potassium-40	61.8	82.5	U	6.464E-14
Q12	Beryllium-7	177	70.4		1.851E-13
Q12	Plutonium-238	-0.0461	0.531	U	-4.822E-17
Q12	Polonium-210	9.71	0.702		1.016E-14
Q12	Plutonium-241	20.1	36.4	U	2.103E-14
Q12	Thorium-230	1.40	1.29		1.464E-15
Q12	Thorium-228	0.457	1.18	U	4.780E-16
Q12	Actinium-228	-4.10	34.3	U	-4.289E-15
Q12	Americium-241	-0.415	1.85	U	-4.341E-16
Q12	Plutonium-239	-0.0882	0.774	U	-9.226E-17
Q12	Ra-228 - total	5.38	4.16		5.628E-15
Q12	Radium-226, -228 combined	1.71	1.37		1.789E-15
Q12	Thorium-232	0.422	1.05	U	4.414E-16
Q12	Uranium-238	0.656	0.441		6.862E-16
Q12	Uranium-233/234	0.924	0.552		9.665E-16
Q12	Uranium-235/236	0.0224	0.265	U	2.343E-17
Location DOE-4 – Air volume/sample = 9.62E+08					**9.62E+08**
Q12	Cesium-137	1.29	6.72	U	1.341E-15
Q12	Strontium-90	1.50	2.88	U	1.559E-15
Q12	Cobalt-60	-1.25	5.84	U	-1.299E-15
Q12	Potassium-40	33.1	72.5	U	3.441E-14
Q12	Beryllium-7	162	71.9		1.684E-13
Q12	Plutonium-238	0.210	0.562	U	2.183E-16
Q12	Polonium-210	9.63	0.565		1.001E-14
Q12	Plutonium-241	15.0	31.8	U	1.559E-14
Q12	Thorium-230	0.835	0.734		8.680E-16
Q12	Thorium-228	0.416	0.650	U	4.324E-16
Q12	Actinium-228	7.52	30.3	U	7.817E-15

Quarter	Radionuclide	Result (pCi/sample)	MDC (pCi/sample)	Data Qualifier[1]	Airborne Concentration (µCi/mL)
Q12	Americium-241	-0.106	1.53	U	-1.102E-16
Q12	Plutonium-239	-0.264	0.846	U	-2.744E-16
Q12	Ra-228 - total	2.65	3.93	U	2.755E-15
Q12	Radium-226, -228 combined	1.85	1.53		1.923E-15
Q12	Thorium-232	0.492	0.457		5.114E-16
Q12	Uranium-238	0.401	0.374		4.168E-16
Q12	Uranium-233/234	0.286	0.527	U	2.973E-16
Q12	Uranium-235/236	-0.0387	0.270	U	-4.023E-17
Q13					
Location DOE-1 – Air volume/sample = 9.84E+08					**9.84E+08**
Q13	Cesium-137	-0.0285	6.29	U U	-2.896E-17
Q13	Strontium-90	1.27	2.97	U U	1.291E-15
Q13	Cobalt-60	0.0626	5.91	U U	6.362E-17
Q13	Potassium-40	79.8	59.7	UI UJ	8.110E-14
Q13	Beryllium-7	99.4	89.5	UI UJ	1.010E-13
Q13	Plutonium-238	-0.383	1.83	U U	-3.892E-16
Q13	Polonium-210	7.69	1.05		7.815E-15
Q13	Plutonium-241	-91.2	408	U U	-9.268E-14
Q13	Thorium-230	1.23	0.484	UJ	1.250E-15
Q13	Thorium-228	0.657	0.603	UJ	6.677E-16
Q13	Actinium-228	6.53	23.9	U U	6.636E-15
Q13	Americium-241	-0.037	0.427	U UJ	-3.760E-17
Q13	Plutonium-239	-1.15	3.24	U U	-1.169E-15
Q13	Ra-228 - total	4.66	3.7		4.736E-15
Q13	Radium-226, -228 combined	7.53	7		7.652E-15
Q13	Thorium-232	0.603	0.378		6.128E-16
Q13	Uranium-238	0.688	0.13	UJ	6.992E-16
Q13	Uranium-233/234	0.608	0.182	UJ	6.179E-16
Q13	Uranium-235/236	-0.00632	0.126	U U	-6.423E-18
Location DOE-2 – Air volume/sample = 9.84E+08					**9.84E+08**
Q13	Cesium-137	0.123	4.27	U U	1.250E-16
Q13	Strontium-90	0.0349	1.5	U U	3.547E-17
Q13	Cobalt-60	2.68	4.69	U U	2.724E-15
Q13	Potassium-40	78.8	43.5		8.008E-14
Q13	Beryllium-7	128	45.9		1.301E-13
Q13	Plutonium-238	0.0148	0.195	U U	1.504E-17
Q13	Polonium-210	6.07	1.08		6.169E-15

Quarter	Radionuclide	Result (pCi/sample)	MDC (pCi/sample)	Data Qualifier[1]	Airborne Concentration (µCi/mL)
Q13	Plutonium-241	7.3	11.3	U U	7.419E-15
Q13	Thorium-230	1.21	0.612	UJ	1.230E-15
Q13	Thorium-228	0.591	0.674	U U	6.006E-16
Q13	Actinium-228	-5.68	19.6	U U	-5.772E-15
Q13	Americium-241	0	6.8	U U	0.000E+0
Q13	Plutonium-239	0.0284	0.213	U U	2.886E-17
Q13	Ra-228 - total	-0.926	4.8	U U	-9.411E-16
Q13	Radium-226, -228 combined	4.18	5.65	U U	4.248E-15
Q13	Thorium-232	1.11	0.291		1.128E-15
Q13	Uranium-238	0.921	0.12	UJ	9.360E-16
Q13	Uranium-233/234	0.807	0.155	UJ	8.201E-16
Q13	Uranium-235/236	0.00593	0.129	U U	6.026E-18
Location DOE-3 – Air volume/sample = 9.84E+08					**9.84E+08**
Q13	Cesium-137	2.14	4.63	U U	2.175E-15
Q13	Strontium-90	2	2.38	U U	2.033E-15
Q13	Cobalt-60	-1.16	3.98	U U	-1.179E-15
Q13	Potassium-40	58.2	40.5		5.915E-14
Q13	Beryllium-7	134	49.7		1.362E-13
Q13	Plutonium-238	4.07E-07	7.52	U U	4.136E-22
Q13	Polonium-210	8.72	0.525		8.862E-15
Q13	Plutonium-241	-164	1300	U U	-1.667E-13
Q13	Thorium-230	0.791	0.56	UJ	8.039E-16
Q13	Thorium-228	0.387	0.549	U U	3.933E-16
Q13	Actinium-228	26.3	21.1	UI UJ	2.673E-14
Q13	Americium-241	-1.1	6.52	U U	-1.118E-15
Q13	Plutonium-239	0.61	6.75	U U	6.199E-16
Q13	Ra-228 - total	1.46	4.93	U U	1.484E-15
Q13	Radium-226, -228 combined	4.84	8.07	U U	4.919E-15
Q13	Thorium-232	1.28	0.249		1.301E-15
Q13	Uranium-238	-1.97	6.96	U U	-2.002E-15
Q13	Uranium-233/234	-4.05	8.3	U U	-4.116E-15
Q13	Uranium-235/236	1.94	4.66	U U	1.972E-15
Location DOE-4 – Air volume/sample = 9.83E+08					**9.83E+08**
Q13	Cesium-137	-0.529	4.82	U U	-5.381E-16
Q13	Strontium-90	0.0115	2.07	U U	1.170E-17
Q13	Cobalt-60	3.16	7.62	U U	3.215E-15
Q13	Potassium-40	-21.7	87.9	U U	-2.208E-14

Quarter	Radionuclide	Result (pCi/sample)	MDC (pCi/sample)	Data Qualifier[1]	Airborne Concentration (µCi/mL)
Q13	Beryllium-7	75.6	61.9		7.691E-14
Q13	Plutonium-238	0.0648	0.409	U UJ	6.592E-17
Q13	Polonium-210	7.96	0.784		8.098E-15
Q13	Plutonium-241	4.25	32.5	U UJ	4.323E-15
Q13	Thorium-230	0.729	0.527	UJ	7.416E-16
Q13	Thorium-228	0.385	0.402	U U	3.917E-16
Q13	Actinium-228	-3.45	21.6	U U	-3.510E-15
Q13	Americium-241	-0.0199	0.398	U UJ	-2.024E-17
Q13	Plutonium-239	-0.143	0.66	U UJ	-1.455E-16
Q13	Ra-228 - total	3.06	4.41	U U	3.113E-15
Q13	Radium-226, -228 combined	13.7	16.7	U U	1.394E-14
Q13	Thorium-232	1.09	0.234		1.109E-15
Q13	Uranium-238	0.951	0.119	UJ	9.674E-16
Q13	Uranium-233/234	0.79	0.149	UJ	8.037E-16
Q13	Uranium-235/236	0.0691	0.129	U U	7.030E-17
Q14					
Location DOE-1 – Air volume/sample = 1.54+08					**1.54E+08**
Q14	Cesium-137	0.391	6.79	U U	2.539E-15
Q14	Strontium-90	-0.0567	2.04	U U	-3.682E-16
Q14	Cobalt-60	1.54	8.18	U U	1.000E-14
Q14	Potassium-40	4.26	102	U U	2.766E-14
Q14	Beryllium-7	82.1	83.2	U U	5.331E-13
Q14	Plutonium-238	0.0467	0.223	U U	3.032E-16
Q14	Polonium-210	0.919	0.385		5.968E-15
Q14	Plutonium-241	-0.664	25.5	U U	-4.312E-15
Q14	Thorium-230	0.91	0.465	UJ	5.909E-15
Q14	Thorium-228	-0.0992	0.708	U U	-6.442E-16
Q14	Actinium-228	7.91	31.3	U U	5.136E-14
Q14	Americium-241	0.0594	0.283	U U	3.857E-16
Q14	Plutonium-239	-0.0684	0.336	U U	-4.442E-16
Q14	Ra-228 - total	0.231	4.93	U U	1.500E-15
Q14	Radium-226, -228 combined	1.4	1.81	U UJ	9.091E-15
Q14	Thorium-232	0.188	0.3	U U	1.221E-15
Q14	Uranium-238	0.0402	0.3	U U	2.610E-16
Q14	Uranium-233/234	-0.0197	0.361	U U	-1.279E-16
Q14	Uranium-235/236	0.046	0.138	U U	2.987E-16

Quarter	Radionuclide	Result (pCi/sample)	MDC (pCi/sample)	Data Qualifier[1]	Airborne Concentration (µCi/mL)
Location DOE-2 – Air volume/sample =1.54+08					**1.54E+08**
Q14	Cesium-137	-0.0906	7.37	U U	-5.883E-16
Q14	Strontium-90	1.57	2.06	U U	1.019E-14
Q14	Cobalt-60	3.48	11.5	U U	2.260E-14
Q14	Potassium-40	52.2	90.7	U U	3.390E-13
Q14	Beryllium-7	83.2	149	U U	5.403E-13
Q14	Plutonium-238	-0.0219	0.249	U U	-1.422E-16
Q14	Polonium-210	2.22	0.438		1.442E-14
Q14	Plutonium-241	-2.27	22.4	U U	-1.474E-14
Q14	Thorium-230	1.07	0.396	UJ	6.948E-15
Q14	Thorium-228	0.832	0.364		5.403E-15
Q14	Actinium-228	17.1	34.3	U U	1.110E-13
Q14	Americium-241	-0.0399	0.274	U U	-2.591E-16
Q14	Plutonium-239	-0.0759	0.312	U U	-4.929E-16
Q14	Ra-228 - total	1.69	4.34	U U	1.097E-14
Q14	Radium-226, -228 combined	-0.776	3.04	U UJ	-5.039E-15
Q14	Thorium-232	0.687	0.289		4.461E-15
Q14	Uranium-238	-0.00902	0.316	U U	-5.857E-17
Q14	Uranium-233/234	0.0296	0.474	U U	1.922E-16
Q14	Uranium-235/236	-0.0134	0.267	U U	-8.701E-17
Location DOE-3 – Air volume/sample = 1.51+08					**1.51E+08**
Q14	Cesium-137	0.257	5.98	U U	1.702E-15
Q14	Strontium-90	-1.64	2.18	U U	-1.086E-14
Q14	Cobalt-60	0.419	6.42	U U	2.775E-15
Q14	Potassium-40	13.4	56.8	U U	8.874E-14
Q14	Beryllium-7	35.8	102	U U	2.371E-13
Q14	Plutonium-238	-0.00948	0.189	U U	-6.278E-17
Q14	Polonium-210	1.49	0.396		9.868E-15
Q14	Plutonium-241	9.17	26.6	U U	6.073E-14
Q14	Thorium-230	2.65	0.453	UJ	1.755E-14
Q14	Thorium-228	0.0234	0.5	U U	1.550E-16
Q14	Actinium-228	11.1	29.1	U U	7.351E-14
Q14	Americium-241	0.0247	0.326	U U	1.636E-16
Q14	Plutonium-239	-0.0142	0.383	U U	-9.404E-17
Q14	Ra-228 - total	1.2	7.42	U U	7.947E-15
Q14	Radium-226, -228 combined	1.53	3.4	U UJ	1.013E-14
Q14	Thorium-232	0.0954	0.227	U U	6.318E-16

Quarter	Radionuclide	Result (pCi/sample)	MDC (pCi/sample)	Data Qualifier[1]	Airborne Concentration (µCi/mL)
Q14	Uranium-238	0.0126	0.304	U U	8.344E-17
Q14	Uranium-233/234	0.0199	0.38	U U	1.318E-16
Q14	Uranium-235/236	0	0.146	U U	0.000E+0
Location DOE-4 – Air volume/sample = 1.54+08					**1.54E+08**
Q14	Cesium-137	-0.666	6.95	U U	-4.325E-15
Q14	Strontium-90	0.959	2.81	U U	6.227E-15
Q14	Cobalt-60	-1.78	7.37	U U	-1.156E-14
Q14	Potassium-40	-15.8	88	U U	-1.026E-13
Q14	Beryllium-7	55.6	125	U U	3.610E-13
Q14	Plutonium-238	-0.0257	0.218	U U	-1.669E-16
Q14	Polonium-210	1.28	0.504		8.312E-15
Q14	Plutonium-241	6.05	25.1	U U	3.929E-14
Q14	Thorium-230	1.22	0.468	J	7.922E-15
Q14	Thorium-228	0.26	0.513	U U	1.688E-15
Q14	Actinium-228	-13.2	29.7	U U	-8.571E-14
Q14	Americium-241	-0.0331	0.227	U U	-2.149E-16
Q14	Plutonium-239	0.0826	0.276	U U	5.364E-16
Q14	Ra-228 - total	1.36	4.54	U U	8.831E-15
Q14	Radium-226, -228 combined	3.25	3.44	U UJ	2.110E-14
Q14	Thorium-232	0.103	0.349	U U	6.688E-16
Q14	Uranium-238	0.269	0.386	U U	1.747E-15
Q14	Uranium-233/234	0.00255	0.364	U U	1.656E-17
Q14	Uranium-235/236	-0.0273	0.315	U U	-1.773E-16
Q15					
Location DOE-1 – Air volume/sample = 9.95E+08					**9.95E+08**
Q15	Cesium-137	1.06	7.38	U U	1.065E-15
Q15	Strontium-90	3.60	1.42	UJ	3.618E-15
Q15	Cobalt-60	-0.105	8.28	U U	-1.055E-16
Q15	Potassium-40	-3.09	135	U U	-3.106E-15
Q15	Beryllium-7	149	73.7	U U	1.497E-13
Q15	Plutonium-238	0.0254	0.335	U U	2.553E-17
Q15	Polonium-210	11.6	0.107		1.166E-14
Q15	Plutonium-241	1.66	24.8	U U	1.668E-15
Q15	Thorium-230	0.771	0.514		7.749E-16
Q15	Thorium-228	0.555	0.562	U U	5.578E-16
Q15	Actinium-228	13.6	38.7	U U	1.367E-14
Q15	Americium-241	0.00521	0.858	U U	5.236E-18
Q15	Plutonium-239	-0.107	0.440	U U	-1.075E-16

Quarter	Radionuclide	Result (pCi/sample)	MDC (pCi/sample)	Data Qualifier[1]	Airborne Concentration (µCi/mL)
Q15	Ra-228 - total	0.491	5.19	U U	4.935E-16
Q15	Radium-226, -228 combined	2.82	13.1	U U	2.834E-15
Q15	Thorium-232	0.377	0.275	UJ	3.789E-16
Q15	Uranium-238	0.712	0.227	UJ	7.156E-16
Q15	Uranium-233/234	0.655	0.331	UJ	6.583E-16
Q15	Uranium-235/236	0.0257	0.213	U U	2.583E-17
Location DOE-2 – Air volume/sample = 9.95E+08					**9.95E+08**
Q15	Cesium-137	4.67	9.49	U U	4.693E-15
Q15	Strontium-90	4.17	1.33	UJ	4.191E-15
Q15	Cobalt-60	-2.49	5.19	U U	-2.503E-15
Q15	Potassium-40	71.5	76.9	U U	7.186E-14
Q15	Beryllium-7	119	90.7		1.196E-13
Q15	Plutonium-238	0.166	0.490	U U	1.668E-16
Q15	Polonium-210	11.5	0.110		1.156E-14
Q15	Plutonium-241	14.2	46.1	U U	1.427E-14
Q15	Thorium-230	0.677	0.529		6.804E-16
Q15	Thorium-228	0.834	0.538		8.382E-16
Q15	Actinium-228	-21.1	32.3	U U	-2.121E-14
Q15	Americium-241	-0.160	1.36	U UJ	-1.608E-16
Q15	Plutonium-239	-0.196	0.568	U U	-1.970E-16
Q15	Ra-228 - total	4.01	5.16	U U	4.030E-15
Q15	Radium-226, -228 combined	0.400	16.3	U U	4.020E-16
Q15	Thorium-232	0.657	0.398	UJ	6.603E-16
Q15	Uranium-238	0.404	0.249	UJ	4.060E-16
Q15	Uranium-233/234	0.651	0.363	UJ	6.543E-16
Q15	Uranium-235/236	0.0999	0.201	U U	1.004E-16
Location DOE-3 – Air volume/sample = 9.41E+08					**9.41E+08**
Q15	Cesium-137	-2.58	7.04	U U	-2.742E-15
Q15	Strontium-90	4.44	2.01	UJ	4.718E-15
Q15	Cobalt-60	-0.560	8.37	U U	-5.951E-16
Q15	Potassium-40	1.21	134	U U	1.286E-15
Q15	Beryllium-7	85.1	70.9	UI UJ	9.044E-14
Q15	Plutonium-238	-0.0503	0.345	U U	-5.345E-17
Q15	Polonium-210	9.66	0.130		1.027E-14
Q15	Plutonium-241	15.1	27.9	U U	1.605E-14
Q15	Thorium-230	0.537	0.588	U U	5.707E-16
Q15	Thorium-228	0.539	0.547	U U	5.728E-16

Quarter	Radionuclide	Result (pCi/sample)	MDC (pCi/sample)	Data Qualifier[1]	Airborne Concentration (µCi/mL)
Q15	Actinium-228	31.6	38.8	U U	3.358E-14
Q15	Americium-241	0.109	0.686	U UJ	1.158E-16
Q15	Plutonium-239	0.0692	0.406	U U	7.354E-17
Q15	Ra-228 - total	4.25	3.88		4.516E-15
Q15	Radium-226, -228 combined	10.2	11.8	U U	1.084E-14
Q15	Thorium-232	0.318	0.404	U U	3.379E-16
Q15	Uranium-238	0.620	0.227	UJ	6.589E-16
Q15	Uranium-233/234	0.857	0.230	UJ	9.107E-16
Q15	Uranium-235/236	0.0662	0.241	U U	7.035E-17
Location DOE-4 – Air volume/sample = 9.94E+08					**9.94E+08**
Q15	Cesium-137	-0.121	6.82	U U	-1.217E-16
Q15	Strontium-90	2.55	3.45	U U	2.565E-15
Q15	Cobalt-60	-1.53	9.05	U U	-1.539E-15
Q15	Potassium-40	92.2	88.2	UI UJ	9.276E-14
Q15	Beryllium-7	105	81.1		1.056E-13
Q15	Plutonium-238	-0.0213	0.245	U U	-2.143E-17
Q15	Polonium-210	10.1	0.0373		1.016E-14
Q15	Plutonium-241	9.97	26.4	U U	1.003E-14
Q15	Thorium-230	0.913	0.451		9.185E-16
Q15	Thorium-228	0.714	0.450		7.183E-16
Q15	Actinium-228	13.9	38.0	U U	1.398E-14
Q15	Americium-241	0.224	1.07	U U	2.254E-16
Q15	Plutonium-239	0.0567	0.271	U U	5.704E-17
Q15	Ra-228 - total	-1.12	10.4	U U	-1.127E-15
Q15	Radium-226, -228 combined	7.18	17.7	U U	7.223E-15
Q15	Thorium-232	0.753	0.265	UJ	7.575E-16
Q15	Uranium-238	0.775	0.199	UJ	7.797E-16
Q15	Uranium-233/234	0.648	0.416	UJ	6.519E-16
Q15	Uranium-235/236	-0.00371	0.324	U U	-3.732E-18

[1] Qualifier column contains laboratory flags ; validation qualifiers.

Notes:

U = Sample result is less than MDC and/or two sigma uncertainty

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

UU = Sample was analyzed for but not detected and is qualified as a non-detect

UI = Sample results were rejected by the laboratory due to spectra issues

UJ = Sample was rejected by laboratory due to spectra issues and was determined to be an estimated value

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APPENDIX D

Q15 PM_{10} Monthly Audit Reports and Flow Verification Results

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NORTHWIND PORTAGE, INC.

One-Point Flow Rate Bias Estimate

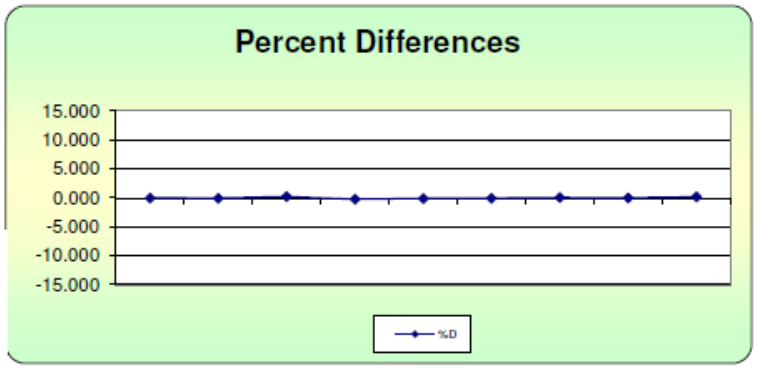
ETEC Site: DOE-1	Pollutant type: PM10	Bias (%)

Quarter	E-BAM	Date	Meas Val (Y)	Audit Val (X)	d (Eqn. 1)	Percentile	d^2	|d|	$\|d\|^2$
15	W23314	10/19/2021	14.00	14.00	0.000		0.000	0.000	0.000
			16.70	16.71	-0.060	**25th**	0.004	0.060	0.004
			17.50	17.46	0.229	-0.060	0.052	0.229	0.052
15	W23314	11/17/2021	14.00	14.03	-0.214		0.046	0.214	0.046
			16.70	16.72	-0.120	**75th**	0.014	0.120	0.014
			17.50	17.51	-0.057	0.071	0.003	0.057	0.003
15	W23314	12/17/2021	14.00	13.99	0.071		0.005	0.071	0.005
			16.70	16.70	0.000		0.000	0.000	0.000
			17.50	17.47	0.172		0.029	0.172	0.029

n	$\Sigma\|d\|$	"AB" (Eqn 4)
9	0.923	0.103
n-1	$\Sigma\|d\|^2$	**"AS" (Eqn 5)**
8	0.154	0.086

Bias (%) (Eqn 3)	Both Signs Positive
0.16	FALSE
Signed Bias (%)	Both Signs Negative
+/-0.16	FALSE

Note: No issues encountered with this E-BAM unit during this quarter.



Reference: U.S. EPA, Ambient Monitoring Technology Information Center (AMTIC)
Quality Indicator Assessment Reports
Data Assessment Statisical Calculator - Software to calculate precision and bias statistics
MS Excel filename - *"11/3/2017 (dasc_11_3_17.xls)"*
https://www3.epa.gov/ttn/amtic/qareport.html

NORTHWIND PORTAGE, INC.

One-Point Flow Rate Bias Estimate

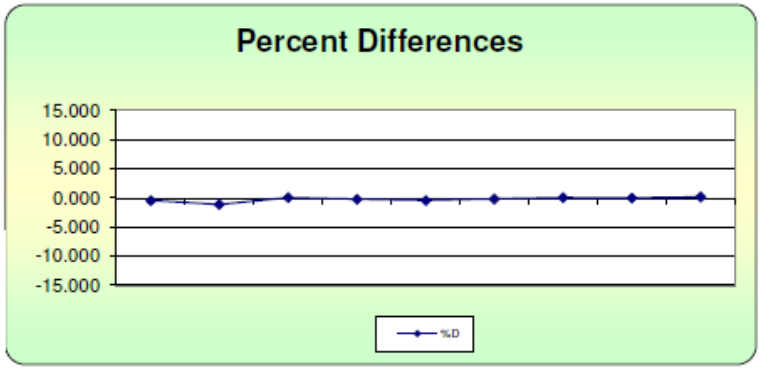
ETEC Site: DOE-2	Pollutant type: PM10	Bias (%)

Quarter	E-BAM	Date	Meas Val (Y)	Audit Val (X)	d (Eqn. 1)	Percentile	d^2	|d|	$\|d\|^2$
15	Y12096	10/19/2021	14.00	14.06	-0.427		0.182	0.427	0.182
			16.70	16.89	-1.125	**25th**	1.265	1.125	1.265
			17.50	17.49	0.057	-0.417	0.003	0.057	0.003
15	Y12096	11/17/2021	14.00	14.03	-0.214		0.046	0.214	0.046
			16.70	16.77	-0.417	**75th**	0.174	0.417	0.174
			17.50	17.53	-0.171	0.057	0.029	0.171	0.029
15	Y12096	12/17/2021	14.00	13.99	0.071		0.005	0.071	0.005
			16.70	16.70	0.000		0.000	0.000	0.000
			17.50	17.47	0.172		0.029	0.172	0.029

n	$\Sigma\|d\|$	"AB" (Eqn 4)
9	2.654	0.295
n-1	$\Sigma\|d\|^2$	**"AS" (Eqn 5)**
8	1.735	0.345

Bias (%) (Eqn 3)	Both Signs Positive
0.51	FALSE
Signed Bias (%)	Both Signs Negative
+/-0.51	FALSE

Note: No issues encountered with this E-BAM unit during this quarter.



Reference: U.S. EPA, Ambient Monitoring Technology Information Center (AMTIC)
Quality Indicator Assessment Reports
Data Assessment Statisical Calculator - Software to calculate precision and bias statistics
MS Excel filename - *"11/3/2017 (dasc_11_3_17.xls)"*
https://www3.epa.gov/ttn/amtic/qareport.html

NORTHWIND PORTAGE, INC.

One-Point Flow Rate Bias Estimate

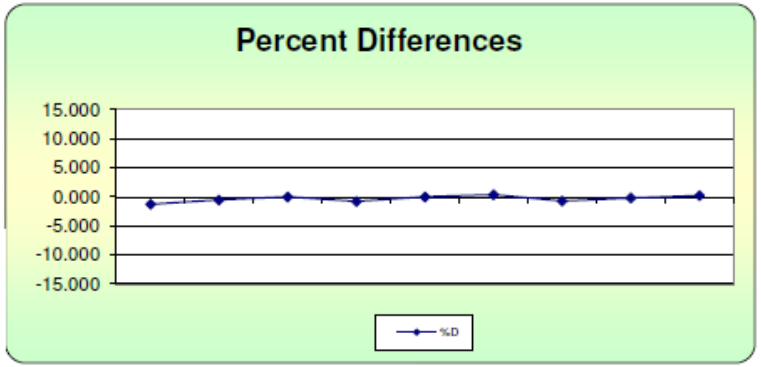
ETEC Site: DOE-3	Pollutant type: PM10	Bias (%)

Quarter	E-BAM	Date	Meas Val (Y)	Audit Val (X)	d (Eqn. 1)	Percentile	d^2	|d|	$\|d\|^2$
15	W23313	10/19/2021	14.00	14.18	-1.269		1.611	1.269	1.611
			16.70	16.79	-0.536	25th	0.287	0.536	0.287
			17.50	17.50	0.000	-0.709	0.000	0.000	0.000
15	W23313	11/17/2021	14.00	14.11	-0.780		0.608	0.780	0.608
			16.70	16.70	0.000	75th	0.000	0.000	0.000
			17.50	17.43	0.402	0.000	0.161	0.402	0.161
15	W23313	12/17/2021	14.00	14.10	-0.709		0.503	0.709	0.503
			16.70	16.73	-0.179		0.032	0.179	0.032
			17.50	17.46	0.229		0.052	0.229	0.052

n	$\Sigma\|d\|$	"AB" (Eqn 4)
9	4.104	0.456
n-1	$\Sigma\|d\|^2$	"AS" (Eqn 5)
8	3.255	0.416

Bias (%) (Eqn 3)	Both Signs Positive
0.71	FALSE
Signed Bias (%)	Both Signs Negative
-0.71	TRUE

Note: No issues encountered with this E-BAM unit during this quarter.



Reference: U.S. EPA, Ambient Monitoring Technology Information Center (AMTIC)
Quality Indicator Assessment Reports
Data Assessment Statisical Calculator - Software to calculate precision and bias statistics
MS Excel filename - *"11/3/2017 (dasc_11_3_17.xls)"*
https://www3.epa.gov/ttn/amtic/qareport.html

NORTHWIND PORTAGE, INC.

One-Point Flow Rate Bias Estimate

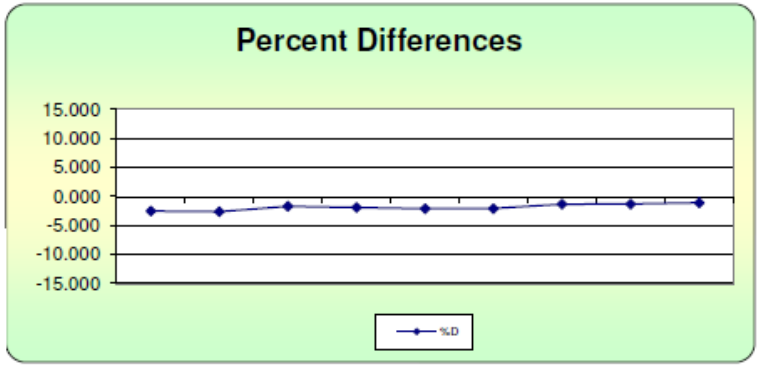
ETEC Site: DOE-4	Pollutant type: PM10	Bias (%)

Quarter	E-BAM	Date	Meas Val (Y)	Audit Val (X)	d (Eqn. 1)	Percentile	d^2	|d|	$\|d\|^2$
15	X16067	10/19/2021	14.00	14.36	-2.507		6.285	2.507	6.285
			16.70	17.15	-2.624	**25th**	6.885	2.624	6.885
			17.50	17.80	-1.685	-2.110	2.841	1.685	2.841
15	X16067	11/17/2021	14.00	14.27	-1.892		3.580	1.892	3.580
			16.70	17.06	-2.110	**75th**	4.453	2.110	4.453
			17.50	17.87	-2.071	-1.339	4.287	2.071	4.287
15	X16067	12/17/2021	14.00	14.19	-1.339		1.793	1.339	1.793
			16.70	16.92	-1.300		1.691	1.300	1.691
			17.50	17.69	-1.074		1.154	1.074	1.154

n	$\Sigma\|d\|$	"AB" (Eqn 4)
9	16.602	1.845
n-1	$\Sigma\|d\|^2$	"AS" (Eqn 5)
8	32.967	0.541

Bias (%) (Eqn 3)	Both Signs Positive
2.18	FALSE
Signed Bias (%)	Both Signs Negative
-2.18	TRUE

Note: No issues encountered with this E-BAM unit during this quarter.



Reference: U.S. EPA, Ambient Monitoring Technology Information Center (AMTIC)
Quality Indicator Assessment Reports
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MS Excel filename - *"11/3/2017 (dasc_11_3_17.xls)"*
https://www3.epa.gov/ttn/amtic/qareport.html

NORTHWIND INC.

Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-1 Serial # W23314

Audit Date: 10/19/21 Audited By: T.S. Williford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/25/2021

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

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	19.3 °C	18.6 °C	as left:	19.3 °C	18.6 °C
Barometric Pressure:	as found:	713.9 mmHg	713.0 mmHg	as left:	713.9 mmHg	713.0 mmHg
16.7 lpm Flow Rate	as found:	16.7 lpm	16.71 lpm	as left:	16.7 lpm	16.71 lpm
14.0 lpm Flow Rate	as found:	14.0 lpm	14.00 lpm	as left:	14.0 lpm	14.00 lpm
17.5 lpm Flow Rate	as found:	17.5 lpm	17.46 lpm	as left:	17.5 lpm	17.46 lpm

Mechanical Audits (Y = Yes N = No)

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

Manual Span Membrane Test	Pump Test		
Expected Span Mass (mg/cm2) : 0.919	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2) : 0.926			
Difference (mg/cm2) : 0.007			
% Difference / (Pass) or Fail: 0.76%	14.1	412.3	Marginal

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	1107	1107	Analog Mode	Hourly	Hourly	Flow Type	Actual	Act
Location	1	1	Baud Rate	9600	9600	Restart Voltage	12.5 v	12.5V
Tape Advance	24 hrs	24hr	RH Setpoint	45%	45%	Std Cond Temp	25 C	25C
Realtime Avg	60 mins	60min	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	1.0V	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 Message	10/19/21	1226	4		
2			5		
3			6		

Audit Notes:

NORTHWIND INC.

Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-2 Serial # Y12096

Audit Date: 10/19/21 Audited By: T.S. Williford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/25/2021

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

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	20.5 °C	20.9 °C	as left:	20.5 °C	20.9 °C
Barometric Pressure:	as found:	710.1 mmHg	710.0 mmHg	as left:	710.1 mmHg	710.0 mmHg
16.7 lpm Flow Rate	as found:	16.7 lpm	16.89 lpm	as left:	16.7 lpm	16.89 lpm
14.0 lpm Flow Rate	as found:	14.0 lpm	14.06 lpm	as left:	14.0 lpm	14.06 lpm
17.5 lpm Flow Rate	as found:	17.5 lpm	17.49 lpm	as left:	17.5 lpm	17.49 lpm

Mechanical Audits (Y = Yes N = No)

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

Manual Span Membrane Test	Pump Test		
Expected Span Mass (mg/cm2): 0.891	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2): 0.895			
Difference (mg/cm2): 0.004			
% Difference / Pass or Fail: 0.45%	14.2	416.9	Marginal

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	1149	1149	Analog Mode	Hourly	Hourly	Flow Type	Actual	
Location	Z	Z	Baud Rate	9600	9600	Restart Voltage	12.5 v	12.V
Tape Advance	24 hrs	24hr	RH Setpoint	45%	45%	Std Cond Temp	25 C	25C
Realtime Avg	60 mins	60min	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	1.0V	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	1301	10/19/21	4		
2			5		
3			6		

Audit Notes:

NORTHWIND INC.

Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-3 Serial # W23313

Audit Date: 10/19/21 Audited By: T.S. Williford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/25/2021

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

		E-BAM		Ref. Std.			E-BAM		Ref. Std.	
Ambient Temperature:	as found:	20.9	°C	20.4	°C	as left:	20.9	°C	20.4	°C
Barometric Pressure:	as found:	712.1	mmHg	711.5	mmHg	as left:	712.1	mmHg	711.5	mmHg
16.7 lpm Flow Rate	as found:	16.7	lpm	16.79	lpm	as left:	16.7	lpm	16.79	lpm
14.0 lpm Flow Rate	as found:	14.0	lpm	14.18	lpm	as left:	14.0	lpm	14.18	lpm
17.5 lpm Flow Rate	as found:	17.5	lpm	17.5	lpm	as left:	17.5	lpm	17.5	lpm

Mechanical Audits (Y = Yes N = No)

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

Manual Span Membrane Test	Pump Test		
Expected Span Mass (mg/cm2) : 0.885	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2) : 0.878			
Difference (mg/cm2) : 0.007			
% Difference / (Pass) or Fail: 0.79 %	14.0	410.7	Marginal

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	1235	1235	Analog Mode	Hourly	Hourly	Flow Type	Actual	Act
Location	3	3	Baud Rate	9600	9600	Restart Voltage	12.5 v	12.5V
Tape Advance	24 hrs	24hr	RH Setpoint	45%	45%	Std Cond Temp	25 C	25C
Realtime Avg	60 mins	60 min	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	1.0V	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	10/19/21	1340	4		
2			5		
3			6		

Audit Notes:

NORTHWIND INC.

Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-4 Serial # X16067

Audit Date: 10/19/21 Audited By: T.S. Williford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/25/2021

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

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	23.3 °C	21.8 °C	as left:	23.3 °C	21.8 °C
Barometric Pressure:	as found:	705.2 mmHg	703.0 mmHg	as left:	705.2 mmHg	703.0 mmHg
16.7 lpm Flow Rate	as found:	16.7 lpm	17.15 lpm	as left:	16.7 lpm	17.15 lpm
14.0 lpm Flow Rate	as found:	14.0 lpm	14.36 lpm	as left:	14.0 lpm	14.36 lpm
17.5 lpm Flow Rate	as found:	17.5 lpm	17.80 lpm	as left:	17.5 lpm	17.80 lpm

Mechanical Audits (Y = Yes N = No)

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

Manual Span Membrane Test		Pump Test		
Expected Span Mass (mg/cm2) :	0.914	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2) :	0.925			
Difference (mg/cm2) :	0.011			
% Difference / Pass or Fail:	1.2%	14.0	415.3	Marginal

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	1315	135	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	24hr	RH Setpoint	45%	45%	Std Cond Temp	25 C	25C
Realtime Avg	60 mins	60mn	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	1.0V	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	10/19/21	1428	4		
2			5		
3			6		

Audit Notes:

NORTHWIND INC.

Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-1 Serial # W23314

Audit Date: 11/17/2021 Audited By: T.S. Williford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/25/2021

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

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	15.2 °C	14.6 °C	as left:	15.2 °C	14.6 °C
Barometric Pressure:	as found:	713.7 mmHg	713.0 mmHg	as left:	713.7 mmHg	713.0 mmHg
16.7 lpm Flow Rate	as found:	16.7 lpm	16.72 lpm	as left:	16.7 lpm	16.72 lpm
14.0 lpm Flow Rate	as found:	14.0 lpm	14.03 lpm	as left:	14.0 lpm	14.03 lpm
17.5 lpm Flow Rate	as found:	17.5 lpm	17.51 lpm	as left:	17.5 lpm	17.51 lpm

Mechanical Audits (Y = Yes N = No)

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

Manual Span Membrane Test	Pump Test		
Expected Span Mass (mg/cm2): 0.919	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2): 0.913			
Difference (mg/cm2): 0.006			
% Difference / (Pass) or Fail: 0.66%	14.0	391.6	Good

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	1201	1201	Analog Mode	Hourly	Hourly	Flow Type	Actual	Act
Location	1	1	Baud Rate	9600	9600	Restart Voltage	12.5 v	12.5V
Tape Advance	24 hrs	24hrs	RH Setpoint	45%	45%	Std Cond Temp	25 C	25C
Realtime Avg	60 mins	60mm	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	1.0V	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 Power Outage	11/10/21	11:03	4		
2 Nozzle Failed Up	10/22/21	0116	5		
3			6		

Audit Notes:

① Cleaned Sample Nozzle and tape Support Vane then turned back on.

② Cleaned Sample Nozzle and tape Support Vane then turned back on.

NORTHWIND INC.

Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-2 Serial # Y 12096

Audit Date: 11/17/2021 Audited By: T.S. Williford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/25/2021

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

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	17.2 °C	16.1 °C	as left:	17.2 °C	16.1 °C
Barometric Pressure:	as found:	710.0 mmHg	710.0 mmHg	as left:	710.0 mmHg	710.0 mmHg
16.7 lpm Flow Rate	as found:	16.7 lpm	16.77 lpm	as left:	16.7 lpm	16.77 lpm
14.0 lpm Flow Rate	as found:	14.0 lpm	14.03 lpm	as left:	14.0 lpm	14.03 lpm
17.5 lpm Flow Rate	as found:	17.5 lpm	17.53 lpm	as left:	17.5 lpm	17.53 lpm

Mechanical Audits (Y = Yes N = No)

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

Manual Span Membrane Test	Pump Test		
Expected Span Mass (mg/cm2) : 0.891	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2) : 0.899			
Difference (mg/cm2) : 0.008			
% Difference / (Pass) or Fail: 0.89%	14.0	407.1	Marginal

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	1253	1253	Analog Mode	Hourly	Hourly	Flow Type	Actual	Act
Location	2	2	Baud Rate	9600	9600	Restart Voltage	12.5 v	12.5v
Tape Advance	24 hrs	24hr	RH Setpoint	45%	45%	Std Cond Temp	25 C	25C
Realtime Avg	60 mins	60min	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	1.0V	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	11/17/21	1256	4		
2			5		
3			6		

Audit Notes:

NORTHWIND

Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-3 Serial # W23317

Audit Date: 11/17/2021 Audited By: TSwafford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/25/2021

Leak Check Value: as found: 0.5 as left: 0.5

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	21.0 °C	20.31 °C	as left:	21.0 °C	20.31 °C
Barometric Pressure:	as found:	711.0 mmHg	711.9 mmHg	as left:	711.0 mmHg	711.9 mmHg
16.7 lpm Flow Rate	as found:	16.7 lpm	16.70 lpm	as left:	16.7 lpm	16.70 lpm
14.0 lpm Flow Rate	as found:	14.0 lpm	14.11 lpm	as left:	14.0 lpm	14.11 lpm
17.5 lpm Flow Rate	as found:	17.5 lpm	17.43 lpm	as left:	17.5 lpm	17.43 lpm

Mechanical Audits (Y = Yes N = No)

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

Manual Span Membrane Test	Pump Test		
Expected Span Mass (mg/cm2): 0.885	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2): 0.888			
Difference (mg/cm2): 0.003			
% Difference / Pass or Fail: 0.34%	14.0	405.3	Marginal

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	1351	1351	Analog Mode	Hourly	Hourly	Flow Type	Actual	Act
Location	3	3	Baud Rate	9600	9600	Restart Voltage	12.5 v	12.5V
Tape Advance	24 hrs	24 hr	RH Setpoint	45%	45%	Std Cond Temp	25 C	25C
Realtime Avg	60 mins	60 min	Delta T Setpoint	15 C	15C	DAC	8.0 v	8.0 V
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	11/17/21	1355	4			
2				5			
3				6			

Audit Notes:

NORTHWIND INC

Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-4 Serial # X 16067

Audit Date: 11/17/2021 Audited By: TS Williford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/25/2021

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

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	20.8 °C	19.6 °C	as left:	20.8 °C	19.6 °C
Barometric Pressure:	as found:	705.4 mmHg	703.0 mmHg	as left:	705.4 mmHg	703.0 mmHg
16.7 lpm Flow Rate	as found:	16.7 lpm	17.06 lpm	as left:	16.7 lpm	17.06 lpm
14.0 lpm Flow Rate	as found:	14.0 lpm	14.27 lpm	as left:	14.0 lpm	14.27 lpm
17.5 lpm Flow Rate	as found:	17.5 lpm	17.87 lpm	as left:	17.5 lpm	17.87 lpm

Mechanical Audits (Y = Yes N = No)

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

Manual Span Membrane Test	Pump Test		
Expected Span Mass (mg/cm2) : 0.914	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2) : 0.919			
Difference (mg/cm2) : 0.005			
% Difference / Pass or Fail: 0.55%	14.9	433.4	Marginal

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	1437	1437	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	60min	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	1.0v	Flow Setpoint	16.7	16.7	Pump Protect	Off	of

Last 6 Errors in E-BAM Error Log

Error	Date	Time	Error	Date	Time
1 No New Messages	11/17/21	1441	4		
2			5		
3			6		

Audit Notes:

NORTHWIND INC.

Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-1 Serial # W23314

Audit Date: 12/17/21 Audited By: TS Williford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/25/2021

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

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	10.1 °C	10.0 °C	as left:	10.1 °C	10.0 °C
Barometric Pressure:	as found:	715.9 mmHg	715.0 mmHg	as left:	715.9 mmHg	715.0 mmHg
16.7 lpm Flow Rate	as found:	16.7 lpm	16.7 lpm	as left:	16.7 lpm	16.7 lpm
14.0 lpm Flow Rate	as found:	14.0 lpm	13.99 lpm	as left:	14.0 lpm	13.99 lpm
17.5 lpm Flow Rate	as found:	17.5 lpm	17.47 lpm	as left:	17.5 lpm	17.47 lpm

Mechanical Audits (Y = Yes N = No)

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

Manual Span Membrane Test	Pump Test		
Expected Span Mass (mg/cm2): 0.919	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2): 0.932			
Difference (mg/cm2): 0.013			
% Difference / (Pass) or Fail: 1.41%	14.0	402.4	Marginal

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	0843	0843	Analog Mode	Hourly	Hourly	Flow Type	Actual	Act
Location	1	1	Baud Rate	9600	9600	Restart Voltage	12.5 v	12.5
Tape Advance	24 hrs	24hr	RH Setpoint	45%	45%	Std Cond Temp	25 C	25C
Realtime Avg	60 mins	60min	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	1.0v	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	12/17/21	0849	4		
2			5		
3			6		

Audit Notes:

NORTHWIND INC.

Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-2 Serial # Y12096

Audit Date: 12/17/2021 Audited By: T.S. Williford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/25/2021

Leak Check Value: as found: 0.6 as left: 0.6

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	10.8 °C	10.3 °C	as left:	10.8 °C	10.3 °C
Barometric Pressure:	as found:	712.9 mmHg	712.0 mmHg	as left:	712.9 mmHg	712.0 mmHg
16.7 lpm Flow Rate	as found:	16.7 lpm	16.71 lpm	as left:	16.7 lpm	16.71 lpm
14.0 lpm Flow Rate	as found:	14.0 lpm	14.04 lpm	as left:	14.0 lpm	14.04 lpm
17.5 lpm Flow Rate	as found:	17.5 lpm	17.5 lpm	as left:	17.5 lpm	17.5 lpm

Mechanical Audits (Y = Yes N = No)

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

Manual Span Membrane Test	Pump Test		
Expected Span Mass (mg/cm2): 0.891	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2): 0.912			
Difference (mg/cm2): 0.021			
% Difference / (Pass) or Fail: 2.33%	14.4	400.3	Good

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	0933	0933	Analog Mode	Hourly	Hourly	Flow Type	Actual	Act
Location	2	2	Baud Rate	9600	9600	Restart Voltage	12.5 v	12.5
Tape Advance	24 hrs	24 hr	RH Setpoint	45%	45%	Std Cond Temp	25 C	25C
Realtime Avg	60 mins	60min	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	1.0v	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	12/17/21	0940	4		
2			5		
3			6		

Audit Notes:

NORTHWIND INC.

Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-3 Serial # W23313

Audit Date: 12/17/21 Audited By: TS Williford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/25/2021

Leak Check Value: as found: 0.6 as left: 0.6

		E-BAM		Ref. Std.			E-BAM		Ref. Std.	
Ambient Temperature:	as found:	12.6	°C	12.3	°C	as left:	12.6	°C	12.3	°C
Barometric Pressure:	as found:	715.4	mmHg	714.0	mmHg	as left:	715.4	mmHg	714.0	mmHg
16.7 lpm Flow Rate	as found:	16.7	lpm	16.73	lpm	as left:	16.7	lpm	16.73	lpm
14.0 lpm Flow Rate	as found:	14.0	lpm	14.1	lpm	as left:	14.0	lpm	14.1	lpm
17.5 lpm Flow Rate	as found:	17.5	lpm	17.46	lpm	as left:	17.5	lpm	17.46	lpm

Mechanical Audits (Y = Yes N = No)

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

Manual Span Membrane Test	Pump Test		
Expected Span Mass (mg/cm2) : 0.885	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2) : 0.883			
Difference (mg/cm2) : 0.002			
% Difference / (Pass) or Fail: 0.23%	14.0	408.3	Marginal

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	1024	1024	Analog Mode	Hourly	Hourly	Flow Type	Actual	Act
Location	3	3	Baud Rate	9600	9600	Restart Voltage	12.5 v	12.5 v
Tape Advance	24 hrs	24hr	RH Setpoint	45%	45%	Std Cond Temp	25 C	25C
Realtime Avg	60 mins	60mn	Delta T Setpoint	15 C	15C	DAC	8.0 v	8.0 v
Machine Type	PM-10	PM-10	RH Control	On	on	RH Connect	No	NO
Analog FS	1.0 v	1.0V	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	12/17/21	1029	4		
2			5		
3			6		

Audit Notes:

NORTHWIND INC.

Baseline Air Monitoring Program - DOE

E-BAM Monthly Audit and Maintenance

Station # DOE-4 Serial # X160167

Audit Date: 12/17/21 Audited By: TS W. Ilford

Flow Audit

Flow Audit Device Model: BGI Delta Cal DC-1A Serial No: 158047 Calibration Date: 2/25/2021

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

		E-BAM	Ref. Std.		E-BAM	Ref. Std.
Ambient Temperature:	as found:	14.5 °C	13.8 °C	as left:	14.5 °C	13.8 °C
Barometric Pressure:	as found:	707.7 mmHg	705.9 mmHg	as left:	707.7 mmHg	705.9 mmHg
16.7 lpm Flow Rate	as found:	16.7 lpm	16.92 lpm	as left:	16.7 lpm	16.92 lpm
14.0 lpm Flow Rate	as found:	14.0 lpm	14.19 lpm	as left:	14.0 lpm	14.19 lpm
17.5 lpm Flow Rate	as found:	17.5 lpm	17.69 lpm	as left:	17.5 lpm	17.69 lpm

Mechanical Audits (Y = Yes N = No)

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

Manual Span Membrane Test	Pump Test		
Expected Span Mass (mg/cm2): 0.914	Flow Rate 14.0 - 15.0 (lpm)	Vacuum Value (Hg)	Quality Category Good / Marginal / Poor
Measured Span Mass (mg/cm2): 0.915			
Difference (mg/cm2): 0.001			
% Difference / (Pass) or Fail: 0.11%	14.4	419.4	Marginal

Setup and Calibration Values

Parameter	Expected	Found	Parameter	Expected	Found	Parameter	Expected	Found
Clock	1214	1214	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 hr	RH Setpoint	45%	45%	Std Cond Temp	25 C	25C
Realtime Avg	60 mins	60 min	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	1.0v	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	12/17/21	1217	4		
2			5		
3			6		

Audit Notes:

APPENDIX E

VOC Analytical Data Packages, Q12 through Q15

Appendix E is available via separate attachment.

APPENDIX F

Radiological Analytical Data Packages, Q12 through Q15

Appendix F is available via separate attachment.