

Project name:
Wonder Group, Inc.
West Orange, NJ Expansion**Date:**
August 26, 2024**To:**
Jason Bottcher
Associate Director – Governance at Wonder
Wonder Group, Inc.

Memo

Subject: Proposed Expansion of West Orange Meat Smoking Operation

Introduction

AECOM Technical Services Inc. (AECOM) was retained by Wonder Group, Inc. (Wonder) to review its proposed operational expansion at its West Orange, NJ meat smoking facility for potential impacts on local air quality. Wonder currently manages a meat smoking operation with four (4) wood-fired units and is proposing to expand its meat smoking operation by constructing a new smoking shed that will allow for the installment of additional wood-fired meat smokers. This would increase the capacity of the facility to twelve (12) wood-fired smokers total. To address public concern about this expansion's potential impact on air quality, specifically impacts of particulate matter (PM) and polycyclic aromatic hydrocarbons (PAH) AECOM has estimated the potential impacts to ambient air quality as a result of the proposed expansion. Stack testing was conducted on one of the existing smokers to obtain representative emission rates of PM and PAH, which were then used for the dispersion modeling to estimate the air quality impact of the project.

Facility Location

The Wonder facility is located in West Orange, New Jersey, as shown in **Figure 1**.

Figure 1 Wonder West Orange Facility Location



Stack Testing Methodology

Stack testing, also known as source testing or emission testing, is a procedure used to measure pollutants emitted from vents or stacks. During stack testing, samples of gases or discharges are collected from these sources and then analyzed to determine the concentrations and/or emission rates of specific compounds being emitted out of the vents or stacks.

This test program was designed to quantify emissions of PM and PAH. Testing was completed using EPA test methods. Three (3) test runs were conducted at one of the exhaust stacks while the smoker was operated at the maximum achievable load condition. During testing, a strict quality assurance/quality control (QA/QC) program adhering to the procedures outlined in the referenced EPA test methods identified above was followed. Samples taken at the stack were transferred to a laboratory in Knoxville, TN for analysis.

Emissions from the test runs were averaged and reported as an hourly mass emission rate (pounds per hour [lb/hr]). Each smoker may operate up to twelve (12) hours a day once all smokers are installed and operational. Therefore, hourly emission rates were converted to an annual emission rate (tons per year) by assuming year-round operation of the wood-fired smokers for 12 hours per day, 365 days per year (4,380 hours per year). These emission rates are shown in **Table 1**. Additional details on the stack testing methodology and results have been provided in the stack test report in **Appendix A**.

Table 1 Emission Rates Per Smoker

Pollutant	PM	
	Hourly (lb/hr)	Annual (tons/year)
PM	0.014	0.060
PAH	2.87E-04	5.28E-04

Dispersion Modeling Methodology

Air dispersion modeling is the use of mathematical formulations to simulate atmospheric processes and predict the dispersion of pollutants. This tool incorporates emissions from sources and meteorological conditions to estimate pollutant concentrations downwind from the source(s) of emissions. By doing so, the model can be used to demonstrate compliance with air quality regulations and standards.

The dispersion modeling was performed following NJDEP and United States Environmental Protection Agency (USEPA) modeling guidance, including NJDEP's *Guidance on Preparing a Risk Assessment for Air Contaminant Emissions*¹ and the USEPA's 2022 *AERMOD Implementation Guide*². The modeling analysis was conducted with meteorological data provided by NJDEP. The USEPA's AERMOD air emissions dispersion model was used to estimate concentrations ($\mu\text{g}/\text{m}^3$) of $\text{PM}_{2.5}$ and PAH from the proposed wood-fired smokers for comparison to the applicable air quality standards, which are discussed in the next section.

For the purposes of this evaluation, a cumulative assessment was conducted to account for both PM emissions from the proposed project, as well as the contribution of PM emissions from other nearby sources. Actual measured concentrations taken from a nearby representative monitor operated by the NJDEP were used to establish PM concentrations from the other nearby sources. The closest, most representative monitor for the Wonder site is the Chester monitor, located approximately 22 miles to the west-southwest of the Wonder facility. The monitored design concentrations were added to the modeled concentrations of annual and 24-hour $\text{PM}_{2.5}$.

¹ NJDEP 2018. Technical Manual 1003. Guidance on Preparing a Risk Assessment for Air Contaminant Emissions. New Jersey Department of Environmental Protection. Division of Air Quality.

² USEPA 2022. AERMOD Implementation Guide. EPA-454-B-22-008, Office of Air Quality Planning and Standards, Research Triangle Park, NC 27711. Available at: https://gaftp.epa.gov/Air/aqmg/SCRAM/models/preferred/aermod/aermod_implementation_guide.pdf

Additional details on the modeling methodology and results have been provided in the modeling report in **Appendix B**.

Applicable Air Quality Thresholds

Federal Air Quality Standards

The Clean Air Act of 1970 required the USEPA to establish ambient concentration thresholds for certain compounds based upon the identifiable effects that the compounds may have on public health and welfare. Subsequently, the USEPA promulgated regulations that set National Ambient Air Quality Standards (NAAQS) for several criteria compounds, including particulate matter. Note that a NAAQS has not been established for PAH, and therefore this NAAQS analysis only focuses on PM emissions.

For the purposes of this analysis, all stack-tested PM emissions were assumed to be particulate matter with an aerodynamic diameter of less than 2.5 microns ($PM_{2.5}$), which can be considered conservative, since $PM_{2.5}$ is a subset of total PM, and therefore assuming $PM_{2.5}$ equals total PM tends to overestimate the actual $PM_{2.5}$ emissions. The currently applicable $PM_{2.5}$ NAAQS and comparison to the modeled concentrations are detailed in the Results section below.

New Jersey Health Risk Toxicity Values

NJDEP provides guidelines for evaluating potential inhalation-based health risks for sources of HAPs. The guidelines recommend calculations of cancer and non-cancer risk be based on pollutant-specific toxicity values. Non-cancer risk encompasses potential harmful effects from exposure to pollutants such as neurodevelopmental, respiratory, cardiovascular and other health impacts. NJDEP provides toxicity values in the form of a unit risk factor (URF) or a reference concentration (RfC), for cancer and non-cancer risk, respectively. The URF is multiplied by the annual air concentration from AERMOD ($\mu\text{g}/\text{m}^3$) to establish a cancer risk. For pollutants for which NJDEP has not provided a RfC, one was developed using an extrapolation of available oral dose values which have been established to estimate risks associated with oral (ingestion) exposure from pollutants. The methodology used to extrapolate out a RfC to assess inhalation-related risks followed published guidelines by the USEPA³.

A first-level risk screening has been established by NJDEP, and is designed to evaluate a calculated risk below the “negligible” threshold which is defined as cancer risk less than or equal to one in a million (i.e. no more than one person out of a population of one million exposed to the same level of a chemical contaminant would develop cancer due to that exposure) and a hazard quotient of less than or equal to one (i.e. less than or equal to the RfC) for non-cancer risk⁴ for a facility-wide assessment. Cancer risk is based on long-term (annual) modeled concentrations and non-cancer hazard quotients are based on long-term and/or short-term modeled concentrations, depending on the pollutant.

Since PAHs are a class of numerous compounds, the individual pollutants which encompass PAHs were evaluated using their individual toxicity factors. The applicable toxicity factors for PAH constituents and comparison to the modeled concentrations are detailed in the Results section below.

Results

A summary of the NAAQS analysis is presented below in **Table 2**. The modeled concentrations presented represent the estimated downwind concentrations as a result of emissions from the twelve wood-fired smokers. The modeled concentrations were then added to the representative ambient background concentrations to estimate the total concentrations for comparison to the NAAQS. As shown, the total concentrations for 24-hour

³ USEPA 2005. *Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities, Final*. EPA520-R-05-006. Office of Waste-Hazardous Waste – Treatment & Disposal. September.

⁴ NJDEP 2018. Technical Manual 1003. *Guidance on Preparing a Risk Assessment for Air Contaminant Emissions*, Tables 2-3 & 2-4. New Jersey Department of Environmental Protection. Division of Air Quality.

and annual PM_{2.5} are less than the NAAQS. The results of this analysis indicates that the proposed project will not cause or contribute to a violation of the PM_{2.5} NAAQS.

A summary of the risk screening assessment following NJDEP guidelines is presented below in Table 3. As shown, the combined cancer inhalation risk for total PAH is below 1 in a million (1×10^{-6} or 1E-06) and all hazard quotients for individual PAH compounds are below 1, indicating negligible risk.

Table 2 Summary of NAAQS Analysis

Pollutant	Averaging Period	Rank	Modeled Concentration (µg/m³)	Ambient Background Concentration (µg/m³)	Total Concentration (µg/m³)	NAAQS (µg/m³)	Complies (Y/N)?
PM _{2.5}	24-hour	98th	2.41	17.3	19.71	35	Y
	Annual	Maximum	0.65	5.8	6.45	9	Y

Table 3 Risk Screening Assessment

Pollutant	Modeled Estimated Impacts (µg/m³)	Inhalation Unit Risk Factor (µg/m³) ⁻¹	Cancer Risk	Reference Concentration (µg/m³)	Long-Term Hazard Quotient (HQ)
2-Methylnaphthalene	9.03E-04	1.10E-06	9.9E-10	14	6.45E-05
Acenaphthene	5.19E-05	1.10E-06	5.7E-11	210	2.47E-07
Acenaphthylene	6.22E-04	1.10E-06	6.8E-10	--	--
Anthracene	1.09E-04	1.10E-05	1.2E-09	1050	1.03E-07
Benzo[a]anthracene	2.76E-05	1.10E-04	3.0E-09	--	--
Benzo[a]pyrene(1)	2.49E-05	6.00E-04	1.5E-08	0.002	1.24E-02
Benzo[b]fluoranthene	2.39E-05	1.10E-04	2.6E-09	--	--
Benzo[g,h,i]perylene	1.46E-05	1.10E-05	1.6E-10	--	--
Benzo[k]fluoranthene	9.89E-06	1.10E-04	1.1E-09	--	--
Chrysene	4.49E-05	1.10E-05	4.9E-10	--	--
Dibenz(a,h)anthracene	6.59E-06	1.20E-03	7.9E-09	--	--
Fluoranthene	1.63E-04	1.10E-06	1.8E-10	140	1.16E-06
Fluorene	2.11E-04	1.10E-06	2.3E-10	140	1.51E-06
Indeno[1,2,3-cd]pyrene	7.23E-06	1.10E-04	8.0E-10	--	--
Naphthalene	4.30E-03	3.40E-05	1.5E-07	3	1.43E-03
Phenanthrene	5.86E-04	1.10E-06	6.4E-10	--	--
Pyrene	1.44E-04	1.10E-06	1.6E-10	105	1.37E-06
Total PAH	--	--	1.8E-07	--	--

Appendix A Stack Test Report

Performance Test Report for a Wood Fired Meat Smoker

Wonder Group, Inc., West Orange, NJ

Project number: 60735150

August 23, 2024

Quality information

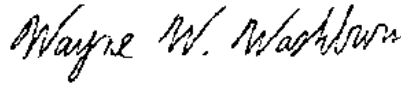
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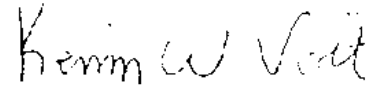
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1. Introduction

AECOM Technical Services, Inc. (AECOM) of Conshohocken, Pennsylvania was retained by Wonder Group, Inc., (Wonder) to conduct this Performance Test on one of the wood-fired Meat Smoker units located at their West Orange, New Jersey facility. Additional test program details are presented in **Table 1-1**.

Wonder currently manages a meat smoking operation with four wood-fired units at their West Orange facility. Wonder is expanding its capacity by adding new smokers and aims to assess their emissions before they are fully approved and installed. AECOM is supporting Wonder by conducting this Performance Test to evaluate particulate matter (PM) and polycyclic aromatic hydrocarbons (PAHs) emissions from one of the Meat Smokers. The data gathered from this test program will be utilized in dispersion modeling to predict the potential effects on the surrounding community.

During this program, gaseous emission parameters measured from the exhaust stack included PM and PAHs as well as fixed gases, including oxygen (O₂) and carbon dioxide (CO₂) diluent gases, which are required in conjunction with the emissions tested. Three (3) test runs were conducted at one of the exhaust stacks while the smoker was operated at the maximum achievable load condition.

Test program participants on site included: Mr. Timothy Mierop, Mr. Charlie Thompson, Ms. Jenn Sabbak and Ms. Laura Kinsey of AECOM. Mr. Jason Boltcher and Mr. Alex Smith from Wonder were present during the testing.

Additional information is contained in the Appendices as follows: **Appendix A** provides reference method field data and calculations of results for the test program and **Appendix B** contains facility data that contains fuel feed rate. **Appendix C** contains reference method quality assurance and quality control data. **Appendix D** contains laboratory analytical results.

1.1 Test Program Exceptions

1.1.1 Low Stack Gas Velocity

During the preliminary evaluation of the stack gas flow rate, it was observed that the flow rate was extremely low, as measured by both the differential pressure gauge on the standard sampling console manometer and a high-resolution digital manometer. The readings were below 0.01 inches of water. Given the low flow rate, it is reasonable to assume that the flow is laminar and non-cyclonic since there was insufficient kinetic energy in the exhaust gas stream to create cyclonic flow. AECOM conducted sampling throughout the program based on an assumed differential pressure of 0.01 inches of water as a worst-case flow rate given that readings were known to be less than 0.01 inches of water.

1.1.2 Emission Results

Given that the differential pressure for the stack gas had been measured to be less than 0.01 inches of water, sampling was conducted at an exceptionally low flow rate. This deviation from standard conditions introduces a potential bias in the test results, which likely results in overestimating the actual stack emissions. The low flow rate affects the accuracy and representativeness of the data, and as a result, the emissions measured during this test program are likely higher than they actually are under normal operating conditions.

Table 1-1: Performance Test Program Summary

Facility Information	
Facility Name:	Wonder Group, Inc.
Facility Address:	481 Eagle Rock Avenue, West Orange, NJ
Facility Contact:	Mr. Jason Bottcher
Title:	Associate Director, Real Estate Development
E-Mail:	JBottcher@wonder.com
Source Information	
Equipment:	Wood-Fired Meat Smoker 1
Measurement Parameters:	PM, PAH, O ₂ , and CO ₂ ,
Test Conditions:	Maximum Achievable Load at Normal Operating Conditions
Test Firm Information	
Test Organization:	AECOM Technical Services, Inc.
Address:	250 Apollo Drive, Chelmsford, MA 01824
Contact:	Mr. Phaneendra K. Uppalapati
Title:	Air Quality Engineer
E-Mail:	Phaneendra.Uppalapati@aecom.com
Permit Consultant	
Organization:	AECOM Technical Services, Inc
Address:	625 West Ridge Pike, Suite E-100, Conshohocken, PA 19428
Contact:	Mr. Kevin W. Voit
Title:	Manager, Air Permitting and Compliance Services
E-Mail:	Kevin.Voit@aecom.com

2. Summary and Discussion of Results

2.1 Results Summary

This section presents a detailed summary of the PM and PAH emissions results obtained during the performance test completed for the Wonder Meat Smoker on August 6 and August 7, 2024. As previously discussed in Section 1.0, three (3) test runs were completed for the purpose of quantifying PM and PAH emissions. Performance testing was performed while the meat smoker was operating at the maximum achievable load condition while combusting wood fuel. **Table 2-1** provides a summary of the emissions results for the testing program.

Note that Run 2 failed the post-leak check on the Method 5/202 train. As a result, Run 2 was voided, and an additional Run 4 was conducted to collect three representative samples. The remainder of this section provides summaries of the test results for each measured parameter.

2.1.1 Particulate Matter Results – Exhaust Stack

As shown in **Table 2-1**, filterable PM (FPM) concentrations in units of grains per dry standard cubic foot (gr/dscf) averaged 0.0024 gr/dscf during the emissions testing. Concurrent FPM mass emission rates averaged 0.011 pounds per hour (lb/hr).

Condensable PM (CPM) concentrations averaged 0.0035 gr/dscf during the emissions testing. Concurrent CPM mass emission rates averaged 0.016 pounds per hour (lb/hr).

Total PM (TPM) concentrations averaged 0.0059 gr/dscf during the emissions testing. TPM mass emission rates averaged 0.027 pounds per hour (lb/hr).

2.1.2 Polycyclic Aromatic Hydrocarbons – Exhaust Stack

PAH concentrations for individual compounds in units of nanograms per dry standard cubic foot and mass emission rates averaged in pounds per hour (lb/hr) are presented in **Table 2-2**.

Table 2-1: Wonder Meat Smoker Stack PM Emissions

Run No. Date Start Time Stop Time	Units	1 06-Aug-24 11:04 12:27	3 07-Aug-24 7:32 8:50	4 07-Aug-24 10:14 11:24	AVGS
<u>Sampling Parameters --</u>					
Barometric Pressure	in. Hg	29.42	29.40	29.43	29.42
Volume Metered	dcf	64.06	66.13	60.94	63.71
Volume of Gas Collected	dscf	59.09	62.38	59.43	60.30
Moisture	% v/v	3.0	2.4	2.2	2.6
O ₂ at Stack	% dry	20.23	20.16	20.21	20.20
CO ₂ at Stack	% dry	0.49	0.48	0.44	0.47
Avg. Stack Temp.	°F	146	137	124	136
Stack Flowrate	dscfm	537	544	551	544
Isokinetics	%	101	105	99	102
<u>M5/202 Particulate Emission Results --</u>					
Front Half Rinse	mg	1.65	2.08	1.40	1.71
Particulate Filter	mg	3.99	11.70	8.12	7.94
Total Front-Half Particulate	mg	5.64	13.78	9.52	9.65
FH Grain Loading	gr/dscf	0.0015	0.0034	0.0025	0.0024
FH Emission Rate	lb/hour	0.007	0.016	0.012	0.011
Back-Half Aqueous Phase	mg	8.14	19.50	5.97	11.20
Back-Half Organic Phase	mg	3.81	5.69	3.88	4.46
Back-Half Aqueous Blank Correct	mg	2.00	2.00	2.00	2.00
Total Back-Half Particulate	mg	11.95	25.19	9.85	15.66
Total Back-Half Particulate Blank Corr.	mg	9.95	23.19	7.85	13.66
BH Grain Loading	gr/dscf	0.0026	0.0057	0.0020	0.0035
BH Emission Rate	lb/hr	0.012	0.027	0.010	0.016
Total Emission Rate	lb/hr	0.019	0.043	0.021	0.027

Table 2-2: Wonder Meat Smoker Stack PAH Emissions

	Run No.	1	2	3	Average						
	Date	06-Aug-24	06-Aug-24	07-Aug-24	--						
	Start Time	11:04	14:00	07:32	--						
	Stop Time	12:27	16:02	08:50	--						
	Units										
Sample Volume	dscf	58.565	60.349	59.738	59.55						
Sample Volume	m³	1.66	1.71	1.69	1.69						
Moisture Content	% v/v	3.2	3.2	3.7	3.37						
O₂ Concentration	% v/v (dry)	20.23	20.16	20.16	20.18						
CO₂ Concentration	% v/v (dry)	0.49	0.58	0.48	0.52						
Isokinetics	%	99	102	100	--						
Stack Flowrate	dscfm	540	541	545	542						
PAHs by GC/MS											
PAH by GC/MS Parameters		ng	ng/m³	lb/hr	ng	ng/m³	lb/hr	ng	ng/m³	lb/hr	Average lb/hr
2-Methylnaphthalene		7810.00	4.71E+03	9.52E-06	6700.00	3.92E+03	7.94E-06	29600.00	1.75E+04	3.57E-05	1.77E-05
Acenaphthene		489.00	2.95E+02	5.96E-07	273.00	1.60E+02	3.23E-07	1700.00	1.00E+03	2.05E-06	9.90E-07
Acenaphthylene		4470.00	2.70E+03	5.45E-06	2260.00	1.32E+03	2.68E-06	20400.00	1.21E+04	2.46E-05	1.09E-05
Anthracene		1440.00	8.68E+02	1.76E-06	897.00	5.25E+02	1.06E-06	3530.00	2.10E+03	4.30E-06	2.37E-06
Benzo[a]anthracene		340.00	2.05E+02	4.15E-07	264.00	1.54E+02	3.13E-07	903.00	5.34E+02	1.09E-06	6.06E-07
Benzo[a]pyrene	< 85.00	5.13E+01	1.04E-07	80.00	4.68E+01	9.48E-08	445.00	2.63E+02	5.37E-07	< 2.45E-07	
Benzo[b]fluoranthene	< 490.00	2.95E+02	5.98E-07	224.00	1.31E+02	2.65E-07	< 784.00	4.63E+02	9.46E-07	< 6.03E-07	
Benzo[e]pyrene	< 85.00	5.13E+01	1.04E-07	91.90	5.38E+01	1.09E-07	283.00	1.67E+02	3.41E-07	< 1.85E-07	
Benzo[g,h,i]perylene	< 300.00	1.81E+02	3.66E-07	< 120.00	7.02E+01	1.42E-07	< 480.00	2.84E+02	5.79E-07	< 3.82E-07	
Benzo[k]fluoranthene	< 120.00	7.24E+01	1.46E-07	< 48.00	2.81E+01	5.69E-08	324.00	1.92E+02	3.91E-07	< 1.98E-07	
Chrysene	550.00	3.32E+02	6.71E-07	424.00	2.48E+02	5.02E-07	1470.00	8.69E+02	1.77E-06	9.82E-07	
Dibenz[a,h]anthracene	< 135.00	8.14E+01	1.65E-07	< 54.00	3.16E+01	6.40E-08	< 216.00	1.28E+02	2.61E-07	< 1.63E-07	
Fluoranthene	3020.00	1.82E+03	3.68E-06	1760.00	1.03E+03	2.09E-06	5330.00	3.15E+03	6.43E-06	4.07E-06	
Fluorene	2610.00	1.57E+03	3.18E-06	1590.00	9.30E+02	1.88E-06	6920.00	4.09E+03	8.35E-06	4.47E-06	
Indeno[1,2,3-cd]pyrene	< 95.00	5.73E+01	1.16E-07	40.70	2.38E+01	4.82E-08	237.00	1.40E+02	2.86E-07	< 1.50E-07	
Naphthalene	42400	2.56E+04	5.17E-05	32100	1.88E+04	3.80E-05	141000	8.34E+04	1.70E-04	8.66E-05	
Perylene	< 55.00	3.32E+01	6.71E-08	< 22.00	1.29E+01	2.61E-08	< 88.00	5.20E+01	1.06E-07	< 6.64E-08	
Phenanthrene	11000.00	6.63E+03	1.34E-05	6300.00	3.69E+03	7.46E-06	19200.00	1.14E+04	2.32E-05	1.47E-05	
Pyrene	2290.00	1.38E+03	2.79E-06	1420.00	8.31E+02	1.68E-06	4710.00	2.78E+03	5.68E-06	3.39E-06	

Note:

< - Value reported at MDL

3. Test Program and Sampling Methodology

3.1 Overview

This test program was designed to quantify emissions of PM and PAHs as well as measure fixed gases, including O₂ and CO₂, in order to determine the emissions. Testing was completed using EPA test methods.

The test methods are as follows:

Exhaust Stack Parameters

- Oxygen and Carbon Dioxide (O₂/CO₂) – EPA Method 3A
- Particulate Matter (PM) – EPA Methods 5/202
 - Filterable PM (FPM) – EPA Method 5
 - Condensable PM (CPM) – EPA Method 202
- Polycyclic Aromatic Hydrocarbons (PAH) – EPA Method 0010
- Exhaust Gas Volumetric Flow Rate – EPA Method 2
- Moisture – EPA Method 4

3.1.1 EPA Methods 1 and 2 for Determination of Sampling Location and Cyclonic Flow

The sampling location was measured prior to the sampling program and the traverse points for the isokinetic sampling trains determined according to EPA Method 1. According to Method 1, the stack requires a total of 16 traverse points, with 8 points on each diameter, for isokinetic sampling.

Figure 3-1 presents the traverse point locations determined for all isokinetic sampling trains in the cross section of the Meat Smoker's stack exhaust. Due to the low velocity of the flows in the stack, measuring cyclonic flow was not feasible. It is reasonable to assume that the flow is laminar and non-cyclonic. Preliminary velocity measurements were taken on August 05, 2024. The sampling data sheets for preliminary velocity are presented in **Appendix A**.

3.1.2 EPA Methods 3A for Determination of Oxygen and Carbon Dioxide (Instrumental Analyzer)

Dry gas concentrations of oxygen and carbon dioxide in the stack exhaust gas were measured using US EPA Method 3A. A gas sample was removed from the duct and the dry fraction was analyzed by an O₂/CO₂ analyzer whenever isokinetic sampling was performed. The results for oxygen and carbon dioxide by Method 3A were used in calculations for gas flow characteristics, including molecular weight, gas velocity and stack gas flow rate. US EPA Method 3A requires that O₂ and CO₂ gas analyzers be calibrated using three (3) calibration gas concentrations:

- A zero gas, such as high-purity nitrogen;
- A mid-level calibration gas, containing O₂ and CO₂ at a concentration of 40-60% of the span value; and
- A high-level calibration gas, equivalent to the span value, containing O₂ and CO₂ concentrations of 80-100% of the measurement range of the analyzer.

3.1.3 EPA Method 4 for Determination of Moisture

Gas moisture concentrations were measured concurrently with each isokinetic sampling train in accordance with EPA Method 4. Sampling train impingers were weighed before and after sample collection and moisture concentrations were determined gravimetrically.

3.1.4 EPA Method 5 for Determination of Particulate Matter and EPA Method 202 for Determination of Condensable Particulate Matter.

Samples of the Meat Smoker stack exhaust emissions for determination of filterable particulate matter (FPM), and condensable PM (CPM) were collected using a single combined methods sampling train meeting the requirements of both EPA Method 5 and EPA Method 202. Sample gas was removed isokinetically from the stack and passed through the following components:

- Glass (quartz) nozzle;
- Heated, glass (quartz)-lined probe;
- Heated Teflon® mat filter with a Teflon® filter support;
- One empty knockout short stem impinger;
- One empty modified Greenburg-Smith impinger;
- Modified Greenburg-Smith impinger containing 100 mL of water; and
- Modified Greenburg-Smith impinger containing silica gel.

After sample collection, the sampling train was recovered to provide the following fractions:

- Acetone rinse of the probe, nozzle, and front half of the filter holder;
- Filter;
- Water rinse of the back half of the filter holder and the connecting glassware along with the content of the first two impingers into the water rinse sample bottle;
- Back half of the filter holder and the connecting glassware along with first two impingers rinsed one time with acetone and two times with hexane into the organic rinse sample bottle; and
- CPM Filter;

Samples were transferred to the Eurofins Test America laboratory in Knoxville, TN for analysis. The probe rinse and filter were analyzed for determination of FPM gravimetrically according to EPA Method 5, and the impingers and the CPM filter were analyzed for CPM in according to EPA Method 202. Sampling data sheets are presented in **Appendix A**.

3.1.5 SW-846 Method 0010 for Determination of Polycyclic Aromatic Hydrocarbons Compounds.

Samples of Meat-Smoke stack exhaust emissions were collected according to SW-846 Method 0010 for determination of polycyclic aromatic hydrocarbon compounds.

According to this method, sample gas was removed isokinetically from the duct and passed through the following components:

- Glass (quartz) nozzle;
- Heated, glass (quartz)-lined probe;
- Heated quartz-fiber filter with a Teflon® filter support;
- Heated Teflon® transfer line;
- Condenser;
- Sorbent trap containing XAD-2® resin;
- One short-stem Knockout impingers empty;
- Modified Greenburg-Smith impinger containing 100 mL of water;
- Greenburg-Smith impinger containing 100 mL of water;
- Modified Greenburg-Smith impinger, empty; and
- Modified Greenburg-Smith impinger containing silica gel.

After sample collection, the sampling train was recovered to provide the following fractions:

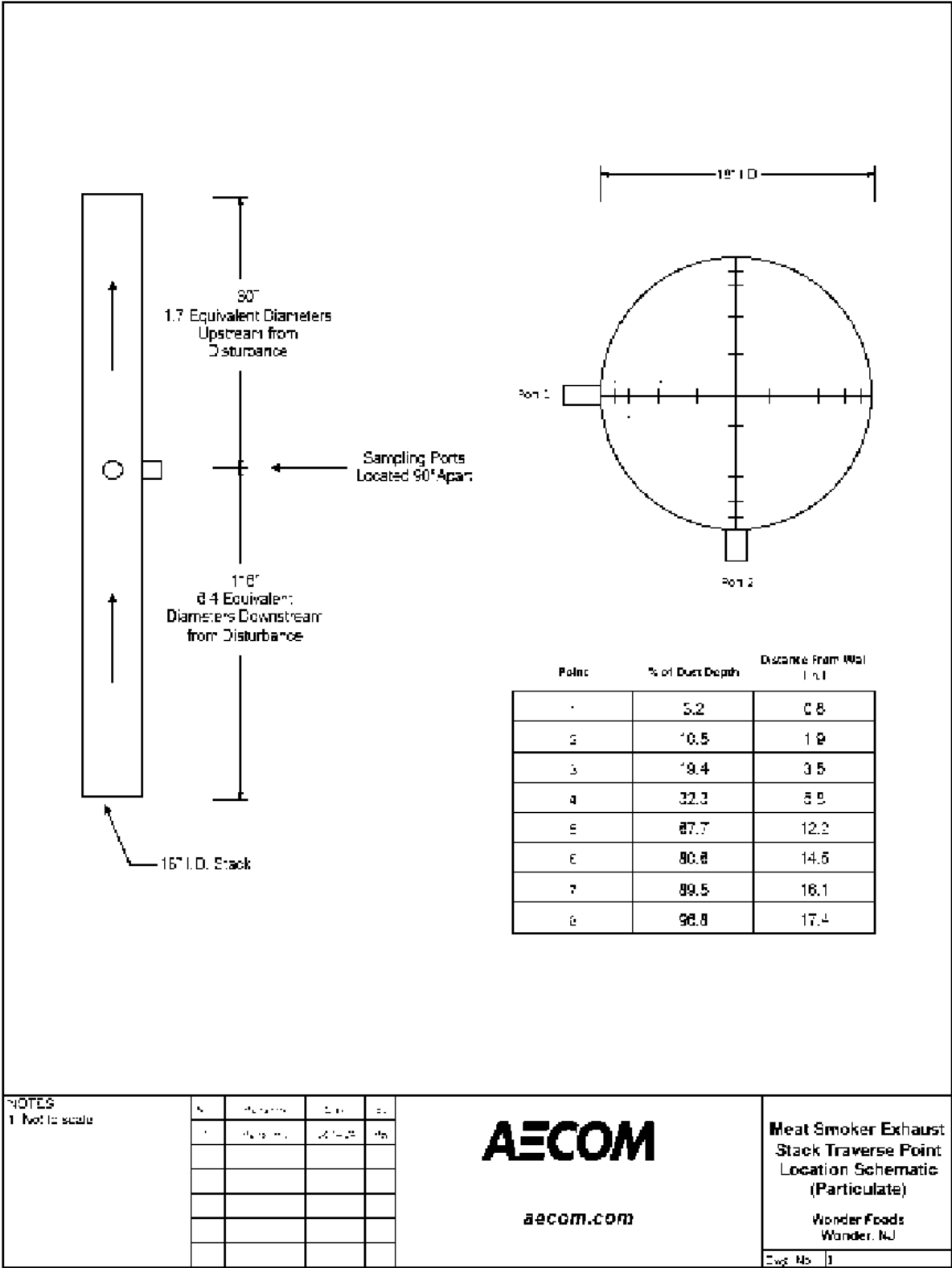
- Solvent (dichloromethane/methanol) rinse of the nozzle, probe, and front half of the filter holder;
- Filter;
- Solvent rinse (dichloromethane/methanol) of the back half of the filter holder, transfer line, and condenser;
- XAD-2® sorbent trap;
- First KO impinger catch; and
- Solvent (dichloromethane/methanol) rinse of the first KO impinger and connecting glassware.

These samples were transferred to the Eurofins Test America laboratory in Knoxville, TN for analysis as follows:

- Selected PAHs by GC/MS according to SW-846 Method 8270.

Sampling data sheets are presented in **Appendix A**.

Figure 3-1: Schematics of Meat Smoker Exhaust Stack Sampling Location



4. Quality Assurance/Quality Control and Data Reporting

During the monitoring program, a strict quality assurance/quality control (QA/QC) program adhering to the procedures outlined in the referenced methods identified in previous sections was followed. Equipment was inspected for proper operation and durability prior to calibration. Calibration of equipment is conducted in accordance with the procedures outlined in the EPA document entitled "Quality Assurance Handbook for Air Pollution Measurement Systems; Volume III—Stationary Source Specific Methods" (EPA/600/R-94/038c, September 1994). Equipment calibration is performed in accordance with EPA guidelines and/or manufacturer's recommendations. Documentation of all calibration records are kept in the project file during the field program and are attached in **Appendix C** of this test report. The QA/QC aspects of the program are discussed in the following sections below.

4.1 Pitot Tubes

[QA Handbook Section 3.1.2, pp. 1-13 - measured for appropriate spacing and dimensions or calibrate in a wind tunnel. Rejection criteria are given on the calibration sheet. Post-test check - inspect for damage.] Each S-type stainless steel Pitot tube used is designed to meet geometric configurations as defined in EPA Method 2.

4.2 Thermocouples

[QA Handbook Section 3.4.2, pp. 15-18 - verify against a mercury-in-glass thermometer at two or more points including the anticipated measurement range. Acceptance limits - impinger $\pm 2^{\circ}\text{F}$; dry gas meter (DGM) $\pm 5.4^{\circ}\text{F}$; stack ± 1.5 percent of stack temperature.] The Type K thermocouples in each meter control box, heated sample box, impinger umbilical connector, resin trap, and sample probe are calibrated against ASTM mercury-in-glass thermometers at two or more points: an ice bath, ambient temperature, and a boiling water bath.

4.3 Dry Gas Meters

[QA Handbook Section 3.4.2, pp. 1-12: calibrate against a wet test meter or calibrated orifice. Acceptance criteria - pretest $Y_i = Y \pm 0.02$; post-test $Y = \pm 0.05 Y_i$.] Dry gas meters for all sampling trains are calibrated using critical orifices. The procedure entails four runs using four separate critical orifices running at an actual vacuum 1-2 in. greater than the theoretical critical vacuum. The minimum sample volume required per orifice is 5 ft³. Meter boxes are calibrated annually.

4.4 Field Barometer

[QA Handbook Section 3.4.2, pp. 18-19 - compare against a mercury-in-glass barometer or use Airport Station Barometric Pressure (BP) and correct for elevation. Acceptance criteria - ± 0.02 in. Hg; post-test check - same.] In the absence of pressure readings from an onsite laboratory or other weather station, BP readings will be obtained from the closest airport and corrected for elevation (- 0.10 in. Hg per 100-ft of elevation increase as per Section 6.1.2 of EPA Method 5).

4.5 Field Balance

The analytical balance used in the field to determine initial and final silica gel weights was calibrated against Class M weights provided by the Mettler Corporation.

4.6 IMS Equipment and Instrumentation

IMS equipment brought to the site was housed in a dedicated trailer that was transported to the test site and set up adjacent to the sampling location. All equipment (analyzers, calibration gases, and ancillary equipment) was thoroughly checked prior to the job and the appropriated calibration standards were procured. Daily calibrations and other instrument bias checks were performed in accordance with the specific method followed.

The O₂ and CO₂ continuous instrumental analyzers used in the AECOM mobile instruments lab were first calibrated directly with nitrogen and two upscale gases. Next, the analyzers were calibrated up through the entire sampling system with purified nitrogen and one upscale US EPA Protocol 1 gas prior to and following each test run. Results of instrument calibration error, system bias, and system drift determinations are presented in the report **Appendix C**. Calibration gases used by AECOM were prepared in accordance with US EPA Protocol 1 procedures. Copies of the calibration gas certification sheets are provided in the report **Appendix C**. The criteria for a valid test run under EPA Method 3A are as follows:

- Analyzer Calibration error = +/- 2% of calibration span
- System Bias = +/- 5% of calibration span
- System Calibration Drift = +/- 3% of calibration span

The equation to be used to correct the Methods 3A data for bias and drift is presented below:

$$C_{gas} = (\bar{C} - C_o) \frac{C_{ma}}{C_m - C_o}$$

Where:

- C_{gas} = Effluent gas concentration, ppm
- $\bar{C}$ = Average gas concentration indicated by gas analyzer, ppm
- C_o = Average of initial and final system calibration bias check responses for the zero gas, ppm
- C_m = Average of initial and final system calibration bias check responses for the upscale calibration gas, ppm
- C_{ma} = Actual concentration of the upscale calibration gas, ppm

All field equipment was calibrated annually or more often if problems occurred. Copies of all calibration data for the equipment used on this test were brought to the test site and a copy was made available to the test observer, if requested. All calibration data are also included in the appendices of this final report.

4.7 Leak Check Procedures

Prior to conducting the sampling, AECOM's IMS was leak checked and verified to be leak free. Following the initial leak check, the drift criteria as specified in EPA Method 7E, 40 CFR 60, Appendix A served as a continuous sample integrity check.

All sampling, analytical and QA/QC procedures outlined in the above referenced methods were followed. The principal goal in this regard was to provide for proper collection and organization of accurate information followed by clear and concise reporting of the data. Instrument calibration data and cylinder gas certifications are provided in **Appendix C**.

The Field Team Leader reviewed the data collected from each sampling system in its entirety in the field. Field data reduction (checking sampling parameters) was accomplished using a laptop computer employing standardized Excel spreadsheets. Printouts of these finalized spreadsheets and the raw field data forms that were completed by hand during the testing program are provided in **Appendix A**.

5. Data Reduction Plan and Data Reporting

5.1 Overview

The objective of this program was to determine the PM and PAH emissions for the meat smoker stack. A discussion of the data reduction process used to arrive at those values is presented below.

5.2 PM Emission Concentration – gr/dscf

$$FH \text{ Loading } \left(\frac{gr}{dscf} \right) = \frac{(Fwg + PNR \text{ wg}) * (7000)}{1000 * 453.59 * V_{mstd}}$$

$$BH \text{ Loading } \left(\frac{gr}{dscf} \right) = \frac{(lwg) * (7000)}{1000 * 453.59 * V_{mstd}}$$

Where:

FH Loading = Front Half PM Loading (gr/dscf)

BH Loading = Back Half Impinger Catch (gr/dscf)

F_{wg} = Filter Weight Gain, mg

PNR wg = PNR Weight mg

lwg = Impinger weight gain mg

7000 = Conversion from pounds to grains

1000 = conversion from grams to mg

453.59 = Conversion of pounds to grams

V_{mstd} = Dry Gas Volume

Total PM Emission– lb/hr

$$Total \text{ PM Emissions } \left(\frac{lb}{hr} \right) = \frac{\left(Total \text{ PM Loading } \left(\frac{gr}{dscf} \right) \right) * (Q_s)}{7000}$$

Where:

Total PM Loading = Front Half and Back Half Loading (gr/dscf)

Q_s = Stack Gas Dry Volumetric Flow Rate

7000 = Conversion from pounds to grains

5.3 PAH Emission Concentration – ng/dscf

$$PAH \text{ Conc. } \left(\frac{ng}{m^3} \right) = \frac{Mass \text{ of PAH } (ng)}{V_{mstd}}$$

Where:

PAH Conc. = Individual PAH concentration (ng/m³)

Mass of PAH = Individual mass as reported by the analysis (ng)

V_{msld} = Dry Gas Volume (m^3)

5.4 PAH Emission – lb/hr

$$PAH \text{ Emissions } \left(\frac{lb}{Hr} \right) = \frac{PAH \text{ Conc. } \left(\frac{ng}{m^3} \right) * (Q_s) * 60}{10^9 * 35.31467 * 453.59}$$

Where:

35.3146 = Conversion from cubic meters to cubic feet

453.59 = Conversion from grams to pounds

10^9 = Conversion from ng to grams

Q_s = Stack Gas Dry Volumetric Flow Rate

60 = Conversion from minutes to hour

Appendix A Field Data Sheets

Method 5/202 Field Data Sheets

Calculation Summ Stack 1M5-202

Project Name
Project Number
Facility

Wonder Smokehouse Testing
60735150
Wonder NJ

Sample Type	M5/202	M5/202	M5/202	Averages
Source	Stack 1	Stack 1	Stack 1	
Condition	Max	Max	Max	
Run	1	3	4	
Date	8/6/2024	8/7/2024	8/7/2024	
Time Start	11:04	7:32	10:14	
Time Stop	12:27	8:50	11:24	
Sampling Times	11:04-12:27	07:32-08:50	10:14-11:24	
Duct Diameter (ft) (equivalent if square duct)	1.50	1.50	1.50	
Pitot Tube Correction Factor	0.84	0.84	0.84	
Nozzle Diameter (inches)	0.743	0.743	0.743	
DGMCF (Y_d)	0.998	0.998	0.993	
Orifice Factor ("wc) (ΔH_{ϕ})	1.777	1.777	1.844	
Console Identification	80754	80754	80745	
Standard Temperature (°F) (T_{std})	68	68	68	
Barometric Pressure Measured ("Hg)	29.42	29.40	29.43	
Stack Elevation (ft) (relative to Barometer)	0	0	0	
Barometric Pressure ("Hg) (P_{bar})	29.42	29.4	29.43	
Average Stack Temperature (°F) (T_s)	145.8	137.4	124.4	135.9
Average DGM Temp (°F) (T_m)	105.6	92.9	72.7	
Average Delta H ("wc) (ΔH_{avg})	2.83	2.90	2.91	
Condensed Water (g)	39.2	32.1	29.0	
Test Duration (minutes) (Θ)	64	64	64	
Static Pressure ("wc) (P_g)	0.00	0.00	0.00	
Carbon Monoxide Content (%) (%CO)	0	0	0	
Carbon Dioxide Content (%) (%CO ₂)	0.49	0.48	0.44	
Oxygen Content (%) (%O ₂)	20.23	20.16	20.21	
Hydrogen Content (%) (%H ₂)	0.0	0.0	0.0	
Methane Content (%) (%CH ₄)	0.0	0.0	0.0	
Nitrogen Content (%) (%N ₂)	79.28	79.36	79.35	
Meter Volume (dcf) (V_m)	64.059	66.130	60.941	
Average square root of ΔP ($(\sqrt{\Delta P})_{avg}$)	0.100	0.100	0.100	
Absolute Stack Pressure ("Hg) (P_s)	29.42	29.40	29.43	
Absolute Stack Temperature (°R) (T_s)	605.5	597.1	584.1	595.6
Flue Gas Moisture (%) (B_{WS})	3.03	2.37	2.25	2.55
Moisture at saturation	22.99	18.57	13.12	
Moisture used in Calculation	3.03	2.37	2.25	2.55
Gas Molecular Wt (Wet) (g/g-mole) (M_s)	28.56	28.63	28.63	
Corrected Vol of Gas Sample (dcf) ($V_{m[actual]}$)	63.93	66.00	60.51	
Volume at Meter (dscf) (V_M)	59.09	62.38	59.43	
Average Gas Velocity (ft/sec) (V_s)	6.10	6.05	5.98	6.04
Avg Flow Rate (acfh)	38,783	38,481	38,035	38,433
Avg Flow Rate (acfm)	646	641	634	641
Avg Flow Rate (scfh)	33,234	33,415	33,797	33,482
Avg Flow Rate (scfm)	554	557	563	558
Avg Flow Rate (dscfh) (Q_{std})	32,226	32,623	33,037	32,629
Avg Flow Rate (dscfm) (Q_{std})	537	544	551	544
Isokinetic Sampling Rate (%) (I)	100.90	105.21	98.98	

Calculation Summ Stack 1M5-202

Data Entry Area

Sample Type	M5/202	Pitot Tube Correction Factor	0.84
Source	Stack 1	Console ID	80754
Condition	Max	DGMCF	0.998
Run	1	ΔH_{6s}	1.777
Date	6-Aug	Nozzle Diameter (in)	0.7430
Duct Diameter (ft)	1.50	Std Temp (°F)	68
Duct Depth (ft)		Bar Press ("Hg, meas)	29.42
Duct Width (ft)		Meter Elev (ft) (rel to Brmtr)	0
		Static Press ("H ₂ O)	0.00

Entered By (initials)	PKU	
Checked by (initials)	PKU	
Corrected by (initials)		
	Value	Line Checkers
% CO	0	
% CO ₂	0.49	
% O ₂	20.23	
% H ₂		
% CH ₄		

Times		DGM Volumes (as read)		Impinger Catch (g)			
					Initial	Final	
start	11:04	start	485.747				
stop	11:36	stop	518.066	1	354.2	354.4	0.2
start	11:55	start	518.066	2	598.6	604.5	5.9
stop	12:27	stop	549.806	3	708.2	720.8	12.6
start		start		4	940.8	961.3	20.5
stop		stop		5			--
start		start		6			--
stop		stop		7			--
start		start		8			--
stop		stop		9			--
start		start		10			--
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
Duration	64	Total	64.059			Total Wt Gain	39.2

	ΔP ("H ₂ O)	ΔH ("H ₂ O)	Stack Temp (°F)	DGM Temp (°F)	∇P	∇H
Averages	0.01	2.83	146	105.6	0.1000	1.6833
Individual	0.01	2.79	149	95	0.1	1.670329309
Readings	0.01	2.79	153	99	0.1	1.670329309
	0.01	2.80	154	99	0.1	1.673320053
	0.01	2.80	150	100	0.1	1.673320053
	0.01	2.80	149	102	0.1	1.673320053
	0.01	2.84	147	105	0.1	1.685229955
	0.01	2.84	144	105	0.1	1.685229955
	0.01	2.84	149	107	0.1	1.685229955
	0.01	2.87	136	109	0.1	1.694107435
	0.01	2.87	135	109	0.1	1.694107435
	0.01	2.93	126	110	0.1	1.711724277
	0.01	2.84	144	110	0.1	1.685229955
	0.01	2.84	146	110	0.1	1.685229955
	0.01	2.84	147	110	0.1	1.685229955
	0.01	2.82	154	110	0.1	1.679285562
	0.01	2.83	150	110	0.1	1.682260384
					--	--
					--	--

Calculation Summ Stack 1M5-202

Data Entry Area

Sample Type	M5/202	Pitot Tube Correction Factor	0.84
Source	Stack 1	Console ID	80754
Condition	Max	DGMCF	0.998
Run	3	ΔH_{ex}	1.777
Date	7-Aug	Nozzle Diameter (in)	0.743
Duct Diameter (ft)	1.50	Std Temp (°F)	68
Duct Depth (ft)		Bar Press ("Hg, meas)	29.40
Duct Width (ft)		Meter Elev (ft) (rel to Brmtr)	0
		Static Press ("H ₂ O)	0

Entered By (initials)	PKU	
Checked by (initials)	PKU	
Corrected by (initials)		
	Value	Link Checker
% CO		
% CO ₂	0.48	
% O ₂	20.16	
% H ₂		
% CH ₄		

Times		DGM Volumes (as read)		Impinger Catch (g)			
		start			Initial	Final	
start	7:32	start	617.253				
stop	8:04	stop	650.451	1	345.2	348.4	3.2
start	8:18	start	650.451	2	596.3	603.5	7.2
stop	8:50	stop	683.383	3	706.7	713.1	6.4
start		start		4	897.3	912.6	15.3
stop		stop		5			--
start		start		6			--
stop		stop		7			--
start		start		8			--
stop		stop		9			--
start		start		10			--
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
				Total Wt Gain			
Duration	64	Total	66.130	32.1			

	ΔP ("H ₂ O)	ΔH ("H ₂ O)	Stack Temp (°F)	DGM Temp (°F)	$\nu\Delta P$	$\nu\Delta H$
Averages	0.01	2.90	137	92.9	0.1000	1.7029

Individual	0.01	2.90	130	87	0.1	1.702938637
Readings	0.01	2.90	122	90	0.1	1.702938637
	0.01	2.90	132	91	0.1	1.702938637
	0.01	2.90	138	91	0.1	1.702938637
	0.01	2.90	140	92	0.1	1.702938637
	0.01	2.90	144	92	0.1	1.702938637
	0.01	2.90	143	93	0.1	1.702938637
	0.01	2.90	142	94	0.1	1.702938637
	0.01	2.90	122	93	0.1	1.702938637
	0.01	2.90	131	94	0.1	1.702938637
	0.01	2.90	138	94	0.1	1.702938637
	0.01	2.90	143	95	0.1	1.702938637
	0.01	2.90	145	95	0.1	1.702938637
	0.01	2.90	144	95	0.1	1.702938637
	0.01	2.90	143	95	0.1	1.702938637
	0.01	2.90	142	95	0.1	1.702938637
		--				--
	--				--	--

Calculation Summ Stack 1M5-202

Data Entry Area

Sample Type	M5/202	Pitot Tube Correction Factor	0.84
Source	Stack 1	Console ID	80745
Condition	Max	DGMCF	0.993
Run	4	ΔH_{g}	1.844
Date	7-Aug	Nozzle Diameter (in)	0.7430
Duct Diameter (ft)	1.50	Std Temp (°F)	68
Duct Depth (ft)		Bar Press ("Hg, meas)	29.43
Duct Width (ft)		Meter Elev (ft) (rel to Brntr)	0
		Static Press ("H ₂ O)	0

Entered By (initials)	PKU	
Checked by (initials)	PKU	
Corrected by (initials)		
	Value	Line Checker
% CO		
% CO ₂	0.44	
% O ₂	20.21	
% H ₂		
% CH ₄		

Times		DGM Volumes (as read)		Impinger Catch (g)			
		start		Initial	Final		
start	10:14	start	194.911				
stop	10:46	stop	225.379	1	354.9	355.4	0.5
start	10:52	start	225.379	2	601.3	606.6	5.3
stop	11:24	stop	255.852	3	720.8	726.2	5.4
start		start		4	919.0	936.8	17.8
stop		stop		5			--
start		start		6			--
stop		stop		7			--
start		start		8			--
stop		stop		9			--
start		start		10			--
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
Duration		Total		Total Wt Gain			
64		60.941		29.0			

	ΔP ("H ₂ O)	ΔH ("H ₂ O)	Stack Temp (°F)	DGM Temp (°F)	$\nabla \Delta P$	$\nabla \Delta H$
Averages	0.01	2.91	124	72.7	0.1000	1.7066
Individual	0.01	3.00	125	68	0.1	1.732050808
Readings	0.01	3.00	121	68	0.1	1.732050808
	0.01	2.90	130	69	0.1	1.702938637
	0.01	2.90	129	70	0.1	1.702938637
	0.01	2.90	129	71	0.1	1.702938637
	0.01	2.90	129	71	0.1	1.702938637
	0.01	2.90	127	72	0.1	1.702938637
	0.01	2.90	105	73	0.1	1.702938637
	0.01	2.90	129	74	0.1	1.702938637
	0.01	2.90	130	74	0.1	1.702938637
	0.01	2.90	132	74	0.1	1.702938637
	0.01	2.90	130	75	0.1	1.702938637
	0.01	2.90	135	75	0.1	1.702938637
	0.01	2.90	130	76	0.1	1.702938637
	0.01	2.90	120	76	0.1	1.702938637
	0.01	2.90	90	77	0.1	1.702938637
					--	--
					--	--

Sample Type		Filter and Cond PM (M5/M202)		Date	8/5/2024	Barometer ID	11869R03	Page	046 of 096
Project Name		Wonder Smokehouse Testing		Cond	1	Run	ONE	Train Leak Rate (cfm @ 14")	
Project Number		60735150		Console ID	80754	Stat Press (H ₂ O)	+0.0	Initial	0.008 @ 14"
Facility		Wonder, NJ		DGMCF	0.998	Probe ID	M5-31-0	Final	0.007 @ 5.5"
Source		Stack		ΔH@	477.7	K _t	286.4	PTCF	0.84
Operator		C. Thompson		Filter No.	712544	Meter Elevation (ft) (relative to Barometer)	8'	Initial (-)	@
Duct Dimension(s)		18"		Nozzle Dia (in)	0.742			Initial (+)	@
Nozzle Calibration				Caliper Used		ID		Final (-)	N/A
						Calibration Exp Date	N/A	Final (+)	@

[illegible]

Notes: δP Relays: detection limit of 0.01"

Remember to record Final CPM Filter Temperature

SDS-36 PM (Filt & Cond) by
EPA Methods 5/202
Per: EM SOP-047
Issued: July 2024
Document reviewed biennially

Project Name	Wonder Smokehouse Testing
Project Number	60735150
Date	9/5/2024
Source	Stack

Particulate Matter (incl. Condensable) EPA Method 5/202

Condition No.	
Run No.	ONE
Balance ID	PT1201-002/40026.5
Recovered by	C. Thompson

Moisture Determination

Imp No.	Contents	Vol (mL)	Configuration	Initial Wt (g)	Final Wt (g)
1	empty	-	Short Stem	354.2	354.4
2	empty	-	Mod	598.6	604.5
3	Water	100	Mod	708.2	720.8
4	Silica Gel	~300g	Mod	940.8	961.3
5					

Filter

Filter ID Number	712844/37769
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Sample Log

Sample ID Number	Sample Container	Description
WondStk1 - R1	M5/202 PNR	250 ml Probe and Nozzle Rinse
WondStk1 - R1	-M5/202-Filt	Petri Dish Filter
WondStk1 - R1	-M5/202-WtRns	1000 ml Water Rinse
WondStk1 - R1	-M5/202-OrgRns	250 ml Organic Rinse
WondStk1 - R1	-M5/202-CPMFilt	Petri Dish CPM Filter

Sample Recovery Checklist

- ✓ Rinse and brush probe and nozzle with acetone (three times) into PNR sample bottle
- ✓ Disconnect transfer line. Transfer any water in transfer line or condenser into the knockout impinger
- ✓ Rinse transfer line and condenser with water (two times) into water rinse sample bottle.
- ✓ Rinse with acetone (one time) and hexane (two times) into the organic rinse sample bottle.
- Transfer water from knockout impinger to second impinger. Ensure that water level is at least 1 cm above stem tip. Add water if necessary
- ✓ Volume of water added: 100 mL + 100 mL = 200 mL
- ✓ If all water in knockout impinger will not fit in second impinger, replace stem on knockout impinger. Ensure that the water level in the first impinger is at least 1 cm above stem tip. Add water if necessary.
- ✓ Volume of water added: _____
- Purge with nitrogen for one hour at >14 liters per minute. Record start and end times on the data sheet.
- ✓ Start _____ Stop _____
- ✓ Separate filter holder and place filter in clean pre-rinsed glass petri dish. Complete Filt sample label.
- ✓ Rinse front half of filter holder with acetone (three times) into PNR bottle. Complete probe and nozzle rinse (PNR) sample label.
- ✓ Rinse the back half of the filter holder and any connecting glassware with water (two times) into the water rinse sample bottle.
- ✓ Rinse the back half of the filter holder and any connecting glassware with acetone (one time) and with hexane (two times) into the organic rinse sample bottle.
- ✓ Separate CPM filter holder and place CPM Filter in clean pre-rinsed glass petri dish. Complete CPM-Filt sample label.
- ✓ Disassemble sample train, wipe off excess water and weigh each impinger. Record the final weights in the Moisture Determination section of this data sheet
- ✓ Note condition of the silica gel impinger _____ % spent
- ✓ Pour the contents of the first two impingers into the water rinse catch bottle(s). Rinse impingers, connecting glassware, and the front half of the CPM filter holder two times with water into the same bottles. Complete water rinse sample label.
- ✓ Rinse the first two impingers, connecting glassware, and the front half of the CPM filter holder acetone (one time) and hexane (two times) into the organic rinse sample bottle(s)
- ✓ Log samples into logbook and store appropriately.

Notes:

RDS-47 - PM and Condensables
by EPA Method 5/202
Per: EM SOP-047
Issued: July 2023
Document reviewed biennially

Notes: <u>① Run paused due to 0010 Train not pulling rate</u> <u>② PCM Train again not up to rate, pause run</u> <u>③ Failed Final leak check</u>	* Remember to record Final CPM Filter Temperature	SDS-36. PM (Filt & Cond) by EPA Methods 5/202 Per EM SOP-047. Issued: July 2024 Document reviewed biennially
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Project Name	Wonder Smokehouse Testing
Project Number	60735150
Date	8/6/2024
Source	Stack

Particulate Matter (incl. Condensable) EPA Method 5/202

Condition No	new load
Run No.	TWO
Balance ID	4082085
Recovered by	CT

Moisture Determination

Imp No.	Contents	Vol (ml)	Configuration	Initial Wt (g)	Final Wt (g)
1	empty		Short Stem	368.4	362.5
2	empty		Mod	607.8	608.0
3	Water	100	Mod	694.5	704.8
4	Silica Gel	~300g	Mod	922.6	946.8
5					

Filter

Filter ID Number	712845 / 3289 #4
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Sample Log

Sample ID Number	Sample Container	Description
WondStk1 - P2 -	-M5/202-PNR	250 ml Probe and Nozzle Rinse
WondStk1 - P2	-M5/202 Filt	Petri Dish Filter
WondStk1 - P2	-M5/202-WtRns	1000 ml Water Rinse
WondStk1 - P2	-M5/202-OrgRns	250 ml Organic Rinse
WondStk1 - P2	-M5/202-CPMFilt	Petri Dish CPM Filter

Sample Recovery Checklist

- ☒ N/A Rinse and brush probe and nozzle with acetone (three times) into PNR sample bottle.
- ☒ N/A Disconnect transfer line. Transfer any water in transfer line or condenser into the knockout impinger.
- ☒ Rinse transfer line and condenser with water (two times) into water rinse sample bottle. Rinse with acetone (one time) and hexane (two times) into the organic rinse sample bottle.
- ☒ Transfer water from knockout impinger to second impinger. Ensure that water level is at least 1 cm above stem tip. Add water if necessary.
- ☒ Volume of water added: _____
- ☒ If all water in knockout impinger will not fit in second impinger, replace stem on knockout impinger. Ensure that the water level in the first impinger is at least 1 cm above stem tip. Add water if necessary.
- ☒ Volume of water added: _____
- ☒ Purge with nitrogen for one hour at >14 liters per minute. Record start and end times on the data sheet.
- ☒ Start _____ Stop _____
- ☒ Separate filter holder and place filter in clean pre-rinsed glass petri dish. Complete Filt sample label.
- ☒ Rinse front half of filter holder with acetone (three times) into PNR bottle. Complete probe and nozzle rinse (PNR) sample label.
- ☒ Rinse the back half of the filter holder and any connecting glassware with water (two times) into the water rinse sample bottle.
- ☒ Rinse the back half of the filter holder and any connecting glassware with acetone (one time) and with hexane (two times) into the organic rinse sample bottle.
- ☒ Separate CPM filter holder and place CPM filter in clean pre-rinsed glass petri dish. Complete CPM-Filt sample label.
- ☒ Disassemble sample train, wipe off excess water and weigh each impinger. Record the final weights in the Moisture Determination section of this data sheet.
- ☒ Note condition of the silica gel impinger. 10% spent
- ☒ Pour the contents of the first two impingers into the water rinse catch bottle(s). Rinse impingers, connecting glassware. And the front half of the CPM filter holder two times with water into the same bottles. Complete water rinse sample label.
- ☒ Rinse the first two impingers, connecting glassware, and the front half of the CPM filter holder acetone (one time) and hexane (two times) into the organic rinse sample bottle(s).
- ☒ Log samples into logbook and store appropriately.

Notes:

RDS-47 - PM and Condensables
by EPA Method 5/202
Per: EM SOP-047
Issued: July 2023
Document reviewed biennially

it and Cond PM (M5/M202)		Date	8/7/24		Barometer	11369203		Page	one		of	
Wonder Smokehouse Testing		Cond	1		Run	Thru		Bar Press		12.40		
number	60735150		Console	ID		Stat. Press		1" H ₂ O		0.0		
Wonder, NJ		DGMCF	0.998		Agency ID	113-31-0		Initial		0.009 @ 13"		
Source	Stack		AMPS	1.777		K	290.1		PTCF	0.84		
Operator	C. Thompson		Filter	No		297		Meter	Elevation (ft)		relative to	
Duct Dimension(s)	18"		Nozzle	Dia (in)		0.713		Meter	Elevation (ft)		relative to	
Nozzle	Calibration		Caliper	Used		ID		Calibration		Exp Date		
								Final (+)		N/A		

Post-Test	Reference	Ref Thermometer	Thermometer and TC	Post-Test
Stack TC Check	Thermometer ID	Exp Date	agree within 2°F	Are Pitots Damaged?
	N/A	N/A	Y/N	Y/N

Point	Clock Time	Elapsed Time (optional)	DGM Reading (ft)	ΔP ("H ₂ O)	ΔH ("H ₂ O)	Temperature (°F)						Vacuum ("Hg)
						Stack	Probe (248±25)	Filter (248±25)	CPM Filter ¹ (near but <85)	Imp Exit (<68)	DGM Outlet	
-1	7:32	0	617.253	60.01	2.90	130	258	239	82	75.6	87	4.0
-2	7:36	4	621.75		2.90	122	262	259	81	65	90	9.5
-3	7:40	8	625.50		2.90	132	262	258	80	65	91	5.0
-4	7:44	12	629.65		2.90	129	264	258	79	64	91	5.0
-5	7:48	16	634.00		2.90	140	259	264	79	64	92	5.0
-6	7:52	20	638.10		2.90	144	259	262	79	64	92	5.0
-7	7:56	24	642.08		2.90	142	260	259	79	64	93	5.0
-8	8:00	28	646.18		2.90	142	260	252	78	64	94	5.0
-9	8:04	32	650.451		2.90	122	260	232	81	64	93	4.0
-10	8:08	36	654.94	60.01	2.90	131	244	256	78	61	94	4.0
-11	8:12	40	658.54	60.01	2.90	138	242	252	79	63	94	4.0
-12	8:16	44	662.64	60.01	2.90	143	243	244	79	64	95	4.0
-13	8:20	48	666.60	60.01	2.90	145	243	244	79	64	95	4.0
-14	8:24	52	670.79	60.01	2.90	144	244	254	79	65	95	4.0
-15	8:28	56	674.94	60.01	2.90	143	244	252	81	65	95	4.0
-16	8:32	60	679.00	60.01	2.90	142	244	258	81	65	95	4.0
-17	8:36	64	683.213									

Notes:	Remember to record Final CPM Filter Temperature	SDS-36 PM (Filt & Cond) by EPA Methods 5/202 Per EM SOP-047 Issued: July 2024 Document reviewed biennially
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Project Name	Wonder Smokehouse Testing
Project Number	60735150
Date	9/17/2024
Source	Stack

Particulate Matter (incl. Condensable) EPA Method 5/202

Condition No.	max load
Run No.	Three
Balance ID	400 g
Recovered by	CT

Moisture Determination

Imp No.	Contents	Vol (ml)	Configuration	Initial Wt (g)	Final Wt (g)
1	empty	--	Short Stem	345.2	348.
2	empty	--	Mod	596.3	603.5
3	Water	100	Mod	706.7	713.1
4	Silica Gel	~300g	Mod	897.3	912.6
5					

Filter

Filter ID Number	8471 3776946
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Sample Log

Sample ID Number	Sample Container	Description
WondStk1 - R3	-M5/202-PNR	250 ml Probe and Nozzle Rinse
WondStk1 - R3	-M5/202-Filt	Petri Dish Filter
WondStk1 - R3	-M5/202 WtRns	1000 ml Water Rinse
WondStk1 - R3	-M5/202 OrgRns	250 ml Organic Rinse
WondStk1 - R3	-M5/202-CPMFilt	Petri Dish CPM Filter

Sample Recovery Checklist

- ☒ Rinse and brush probe and nozzle with acetone (three times) into PNR sample bottle.
- ☒ Disconnect transfer line. Transfer any water in transfer line or condenser into the knockout impinger.
- ☒ Rinse transfer line and condenser with water (two times) into water rinse sample bottle.
- ☒ Rinse with acetone (one time) and hexane (two times) into the organic rinse sample bottle.
- ☒ Transfer water from knockout impinger to second impinger. Ensure that water level is at least 1 cm above stem tip. Add water if necessary.
- ☒ Volume of water added: _____
- ☒ If all water in knockout impinger will not fit in second impinger, replace stem on knockout impinger. Ensure that the water level in the first impinger is at least 1 cm above stem tip. Add water if necessary.
- ☒ Volume of water added: _____
- ☒ Purge with nitrogen for one hour at >14 liters per minute. Record start and end times on the data sheet.
- ☒ Start _____ Stop _____
- ☒ Separate filter holder and place filter in clean pre-rinsed glass petri dish. Complete Filt sample label.
- ☒ Rinse front half of filter holder with acetone (three times) into PNR bottle. Complete probe and nozzle rinse (PNR) sample label.
- ☒ Rinse the back half of the filter holder and any connecting glassware with water (two times) into the water rinse sample bottle.
- ☒ Rinse the back half of the filter holder and any connecting glassware with acetone (one time) and with hexane (two times) into the organic rinse sample bottle.
- ☒ Separate CPM filter holder and place CPM filter in clean pre-rinsed glass petri dish. Complete CPM-Filt sample label.
- ☒ Disassemble sample train, wipe off excess water and weigh each impinger. Record the final weights in the Moisture Determination section of this data sheet.
- ☒ Note condition of the silica gel impinger. _____ % spent
- ☒ Pour the contents of the first two impingers into the water rinse catch bottle(s). Rinse impingers, connecting glassware, and the front half of the CPM filter holder two times with water into the same bottles. Complete water rinse sample label.
- ☒ Rinse the first two impingers, connecting glassware, and the front half of the CPM filter holder acetone (one time) and hexane (two times) into the organic rinse sample bottle(s).
- ☒ Log samples into logbook and store appropriately.

Notes:

R05-47 - PM and Condensate
by EPA Method 5
Per: EM
Issued:
Document rev:

Project Name	Wonder Smokehouse Testing
Project Number	60735150
Date	8/7/2024
Source	Stack

Particulate Matter (incl. Condensable)

EPA Method 5/202

Condition No.	max load
Run No	Four
Balance ID	6002005
Recovered by	C. Thompson

Moisture Determination

Imp No.	Contents	Vol (ml)	Configuration	Initial Wt (g)	Final Wt (g)
1	empty		Short Stem	354.9	355.4
2	empty		Mod	606.3	606.6
3	Water	100	Mod	720.8	726.2
4	Silica Gel	~300g	Mod	919.0	936.8
5					

Filter

Filter ID Number	679358/36684
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Sample Log

Sample ID Number	Sample Container	Description
WondStk1 - R4	-M5/202-FNR	250 ml Probe and Nozzle Rinse
WondStk1 - R4	-M5/202-Filt	Petri Dish Filter
WondStk1 - R4	-M5/202-WtRns	1000 ml Water Rinse
WondStk1 - R4	-M5/202-OrgRns	250 ml Organic Rinse
WondStk1 - R4	-M5/202 CPMFilt	Petri Dish CPM Filter

Sample Recovery Checklist

- ☒ Rinse and brush probe and nozzle with acetone (three times) into PNR sample bottle
- ☒ Disconnect transfer line. Transfer any water in transfer line or condenser into the knockout impinger
- ☒ Rinse transfer line and condenser with water (two times) into water rinse sample bottle
- ☒ Rinse with acetone (one time) and hexane (two times) into the organic rinse sample bottle.
- ☒ Transfer water from knockout impinger to second impinger. Ensure that water level is at least 1 cm above stem tip. Add water if necessary
- ☒ Volume of water added: _____
- ☒ If all water in knockout impinger will not fit in second impinger, replace stem on knockout impinger. Ensure that the water level in the first impinger is at least 1 cm above stem tip. Add water if necessary.
- ☒ Volume of water added: _____
- ☒ Purge with nitrogen for one hour at >14 liters per minute. Record start and end times on the data sheet
- ☒ Start _____ Stop _____
- ☒ Separate filter holder and place filter in clean pre-rinsed glass petri dish. Complete Filt sample label.
- ☒ Rinse front half of filter holder with acetone (three times) into PNR bottle. Complete probe and nozzle rinse (PNR) sample label.
- ☒ Rinse the back half of the filter holder and any connecting glassware with water (two times) into the water rinse sample bottle
- ☒ Rinse the back half of the filter holder and any connecting glassware with acetone (one time) and with hexane (two times) into the organic rinse sample bottle
- ☒ Separate CPM filter holder and place CPM filter in clean pre-rinsed glass petri dish. Complete CPM-Filt sample label.
- ☒ Disassemble sample train, wipe off excess water and weigh each impinger. Record the final weights in the Moisture Determination section of this data sheet
- ☒ Note condition of the silica gel impinger. ____ % spent
- ☒ Pour the contents of the first two impingers into the water rinse catch bottle(s). Rinse impingers, connecting glassware. And the front half of the CPM filter holder two times with water into the same bottles. Complete water rinse sample label
- ☒ Rinse the first two impingers, connecting glassware, and the front half of the CPM filter holder acetone (one time) and hexane (two times) into the organic rinse sample bottle(s)
- ☒ Log samples into logbook and store appropriately.

Notes:

RDS-47 - PM and Condensables
by EPA Method 5/202
Per: EM SOP-047
Issued: July 2023
Document reviewed biennially

Method 5/202 Emissions Data Summary

**PM (Method 5/202) Test Results
Wonder Smokehouse Testing**

Run No. Date Start Time Stop Time	Units	1 06-Aug-24 11:04 12:27	3 07-Aug-24 7:32 8:50	4 07-Aug-24 10:14 11:24	AVGS
<u>Sampling Parameters --</u>					
Barometric Pressure	in. Hg	29.42	29.40	29.43	29.42
Volume Metered	dcf	64.06	66.13	60.94	63.71
Volume of Gas Collected	dscf	59.09	62.38	59.43	60.30
Moisture	% v/v	3.0	2.4	2.2	2.6
O ₂ at Stack	% dry	20.23	20.16	20.21	20.20
CO ₂ at Stack	% dry	0.49	0.48	0.44	0.47
Avg. Stack Temp.	°F	146	137	124	136
Stack Flowrate	dscfm	537	544	551	544
Isokinetics	%	101	105	99	102
<u>M5/202 Particulate Emission Results --</u>					
Front Half Rinse	mg	1.65	2.08	1.40	1.71
Particulate Filter	mg	3.99	11.70	8.12	7.94
Total Front-Half Particulate	mg	5.64	13.78	9.52	9.65
FH Grain Loading	gr/dscf	0.0015	0.0034	0.0025	0.0024
FH Emission Rate	lb/hour	0.007	0.016	0.012	0.011
Back-Half Aqueous Phase	mg	8.14	19.50	5.97	11.20
Back-Half Organic Phase	mg	3.81	5.69	3.88	4.46
Back-Half Aqueous Blank Correct	mg	2.00	2.00	2.00	2.00
Total Back-Half Particulate	mg	11.95	25.19	9.85	15.66
Total Back-Half Particulate Blank Co	mg	9.95	23.19	7.85	13.66
BH Grain Loading	gr/dscf	0.0026	0.0057	0.0020	0.0035
BH Emission Rate	lb/hr	0.012	0.027	0.010	0.016
Total Grain Loading	gr/dscf	0.0041	0.0091	0.0045	0.0059
Total Emission Rate	lb/hr	0.0187	0.0425	0.0212	0.0275

Method 0010 Field Data Sheets

Calculation Summ Stack 1 M0010

Project Name
Project Number
Facility

Wonder Smokehouse Testing
60735150
Stack 1

Sample Type	M0010-SVOC	M0010-SVOC	M0010-SVOC	Averages
Source	Stack 1	Stack 1	Stack 1	
Condition	Max	Max	Max	
Run	1	2	3	
Date	8/6/2024	8/6/2024	8/7/2024	
Time Start	11:04	14:00	7:32	
Time Stop	12:27	16:02	8:50	
Sampling Times	11:04-12:27	14:00-16:02	07:32-08:50	
Duct Diameter (ft) (equivalent if square duct)	1.50	1.50	1.50	
Pitot Tube Correction Factor	0.84	0.84	0.84	
Nozzle Diameter (inches)	0.746	0.746	0.746	
DGMCF (Y_d)	0.993	0.993	0.993	
Orifice Factor ("wc) (ΔH_o)	1.844	1.844	1.844	
Console Identification	80745	80745	80745	
Standard Temperature (°F) (T_{std})	68	68	68	
Barometric Pressure Measured ("Hg)	29.42	29.39	29.40	
Stack Elevation (ft) (relative to Barometer)	0	0	0	
Barometric Pressure ("Hg) (P_{bar})	29.42	29.39	29.4	
Average Stack Temperature (°F) (T_s)	137.9	135.2	122.0	131.7
Average DGM Temp (°F) (T_m)	100.9	102.5	73.8	
Average Delta H ("wc) (ΔH_{avg})	3.02	2.98	2.99	
Condensed Water (g)	41.0	42.9	48.3	
Test Duration (minutes) (Θ)	64	64	64	
Static Pressure ("wc) (P_g)	0.00	0.00	0.00	
Carbon Monoxide Content (%) (%CO)	0	0	0	
Carbon Dioxide Content (%) (%CO ₂)	0.49	0.58	0.48	
Oxygen Content (%) (%O ₂)	20.23	20.16	20.16	
Hydrogen Content (%) (%H ₂)	0.0	0.0	0.0	
Methane Content (%) (%CH ₄)	0.0	0.0	0.0	
Nitrogen Content (%) (%N ₂)	79.28	79.26	79.36	
Meter Volume (dcf) (V_m)	63.247	65.429	61.430	
Average square root of ΔP ($(\sqrt{\Delta P})_{avg}$)	0.100	0.100	0.100	
Absolute Stack Pressure ("Hg) (P_s)	29.42	29.39	29.40	
Absolute Stack Temperature (°R) (T_s)	597.6	594.9	581.7	591.4
Flue Gas Moisture (%) (B_{WS})	3.20	3.24	3.67	3.37
Moisture at saturation	18.80	17.52	12.28	
Moisture used in Calculation	3.20	3.24	3.67	3.37
Gas Molecular Wt (Wet) (g/g-mole) (M_s)	28.54	28.55	28.48	
Corrected Vol of Gas Sample (dcf) ($V_{m(actual)}$)	62.80	64.97	61.00	
Volume at Meter (dscf) (V_M)	58.56	60.35	59.74	
Average Gas Velocity (ft/sec) (V_s)	6.06	6.05	5.98	6.03
Avg Flow Rate (acfh)	38,542	38,469	38,075	38,362
Avg Flow Rate (acfm)	642	641	635	639
Avg Flow Rate (scfh)	33,463	33,519	33,940	33,641
Avg Flow Rate (scfm)	558	559	566	561
Avg Flow Rate (dscfh) (Q_{std})	32,393	32,432	32,693	32,506
Avg Flow Rate (dscfm) (Q_{std})	540	541	545	542
Isokinetic Sampling Rate (%) (I)	98.68	101.56	99.73	

Calculation Summ Stack 1 M0010

Data Entry Area

Sample Type	M0010-SVQC	Pitot Tube Correction Factor	0.84
Source	Stack 1	Console ID	80745
Condition	Max	DGMCF	0.993
Run	1	ΔH_{66}	1.844
Date	6-Aug	Nozzle Diameter (in)	0.7460
Duct Diameter (ft)	1.50	Std Temp (°F)	68
Duct Depth (ft)		Bar Press ("Hg, meas)	29.42
Duct Width (ft)		Meter Elev (ft) (rel to Brmtr)	0
		Static Press ("H ₂ O)	0

Entered By (initials)	PKU	
Checked by (initials)	PKU	
Corrected by (initials)		
	Value	Line Checkers
% CO		
% CO ₂	0.49	
% O ₂	20.23	
% H ₂		
% CH ₄		

Times		DGM Volumes (as read)		Impinger Catch (g)			
					Initial	Final	
start	11:04	start	999.413				
stop	11:36	stop	1031.028	1	488.8	500.0	11.2
start	11:55	start	1031.028	2	698.8	699.1	0.3
stop	12:27	stop	1062.660	3	692.6	693.3	0.7
start		start		4	607.3	610.3	3
stop		stop		5	944.1	957.3	13.2
start		start		6	302.8	315.4	12.6
stop		stop		7			--
start		start		8			--
stop		stop		9			--
start		start		10			--
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
				Total Wt Gain 41.0			
Duration	64	Total	63.247				

	ΔP ("H ₂ O)	ΔH ("H ₂ O)	Stack Temp (°F)	DGM Temp (°F)	$\nabla \Delta P$	$\nabla \Delta H$
Averages	0.01	3.02	138	100.9	0.1000	1.7374
Individual	0.01	3.10	115	93	0.1	1.760681686
Readings	0.01	3.10	124	94	0.1	1.760681686
	0.01	3.00	132	95	0.1	1.732050808
	0.01	2.95	145	97	0.1	1.717556404
	0.01	2.95	145	96	0.1	1.717556404
	0.01	3.00	140	100	0.1	1.732050808
	0.01	3.00	145	100	0.1	1.732050808
	0.01	3.00	145	101	0.1	1.732050808
	0.01	3.00	145	102	0.1	1.732050808
	0.01	3.00	145	104	0.1	1.732050808
	0.01	3.00	145	105	0.1	1.732050808
	0.01	3.00	146	105	0.1	1.732050808
	0.01	3.00	145	105	0.1	1.732050808
	0.01	3.00	145	106	0.1	1.732050808
	0.01	3.10	125	106	0.1	1.760681686
	0.01	3.10	120	106	0.1	1.760681686
					--	--
					--	--

Calculation Summ Stack 1 M0010

Data Entry Area

Sample Type M0010-SVOC Pitot Tube Correction Factor 0.84
 Source Stack 1 Console ID 80745
 Condition Max DGMCF 0.993
 Run 2 ΔH_g 1.844
 Date 6-Aug Nozzle Diameter (in) 0.746
 Duct Diameter (ft) 1.50 Std Temp (°F) 68
 Duct Depth (ft) Bar Press ("Hg, meas) 29.39
 Duct Width (ft) Meter Elev (ft) (rel to Brmtr) 0
 Static Press ("H₂O) 0

Entered By (initials)		PKU
Checked by (initials)		PKU
Corrected by (initials)		
Value		Line Checked
% CO		
% CO ₂	0.58	
% O ₂	20.16	
% H ₂		
% CH ₄		

Times		DGM Volumes (as read)		Impinger Catch (g)			
start	14:00	start	63.062		Initial	Final	
stop	14:04	stop	66.851	1	497.7	512.2	14.5
start	14:14	start	67.027	2	709.0	709.1	0.1
stop	14:18	stop	70.862	3	670.1	670.3	0.2
start	14:48	start	72.405	4	592.7	596.1	3.4
stop	15:12	stop	96.270	5	955.3	969.6	14.3
start	15:30	start	96.270	6	278.0	288.4	10.4
stop	16:02	stop	130.210	7			--
start		start		8			--
stop		stop		9			--
start		start		10			--
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
				Total Wt Gain 42.9			
Duration	64	Total	65.429				

	ΔP ("H ₂ O)	ΔH ("H ₂ O)	Stack Temp (°F)	DGM Temp (°F)	$v\Delta P$	$v\Delta H$
Averages	0.01	2.98	135	102.5	0.1000	1.7245

Individual	0.01	3.00	140	99	0.1	1.732050808
Readings	0.01	2.90	140	101	0.1	1.702938637
	0.01	2.60	152	105	0.1	1.61245155
	0.01	3.00	153	106	0.1	1.732050808
	0.01	3.00	135	90	0.1	1.732050808
	0.01	3.00	147	106	0.1	1.732050808
	0.01	3.00	130	115	0.1	1.732050808
	0.01	3.10	105	104	0.1	1.760681686
	0.01	3.00	155	105	0.1	1.732050808
	0.01	3.00	126	106	0.1	1.732050808
	0.01	3.00	145	105	0.1	1.732050808
	0.01	3.00	145	96	0.1	1.732050808
	0.01	3.00	147	96	0.1	1.732050808
	0.01	3.00	142	101	0.1	1.732050808
	0.01	3.00	106	101	0.1	1.732050808
	0.01	3.00	95	104	0.1	1.732050808
	--				--	--
	--				--	--

Calculation Summ Stack 1 M0010

Data Entry Area

Sample Type	M0010-SVQC	Pitot Tube Correction Factor	0.84
Source	Stack 1	Console ID	80745
Condition	Max	DGMCF	0.993
Run	3	ΔH_{66}	1.844
Date	7-Aug	Nozzle Diameter (in)	0.7460
Duct Diameter (ft)	1.50	Std Temp (°F)	68
Duct Depth (ft)		Bar Press ("Hg, meas)	29.40
Duct Width (ft)		Meter Elev (ft) (rel to Brmtr)	0
		Static Press ("H ₂ O)	0

Entered By (initials)	<i>PKU</i>	
Checked by (initials)	<i>PKU</i>	
Corrected by (initials)		
	Value	Line Checkers
% CO		
% CO ₂	0.48	
% O ₂	20.16	
% H ₂		
% CH ₄		

Times		DGM Volumes (as read)		Impinger Catch (g)			
					Initial	Final	
start	7:32	start	131.375				
stop	8:04	stop	161.985	1	490.1	498.0	7.9
start	8:18	start	161.985	2	691.7	693.4	1.7
stop	8:50	stop	192.805	3	684.8	687.1	2.3
start		start		4	592.4	595.5	3.1
stop		stop		5	923.0	944.1	21.1
start		start		6	304.2	316.4	12.2
stop		stop		7			--
start		start		8			--
stop		stop		9			--
start		start		10			--
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
Duration	64	Total	61.430			Total Wt Gain	48.3

	ΔP ("H ₂ O)	ΔH ("H ₂ O)	Stack Temp (°F)	DGM Temp (°F)	$\nu\Delta P$	$\nu\Delta H$
Averages	0.01	2.99	122	73.8	0.1000	1.7302
Individual	0.01	3.00	125	74	0.1	1.732050808
Readings	0.01	3.00	125	73	0.1	1.732050808
	0.01	3.00	125	73	0.1	1.732050808
	0.01	3.00	128	72	0.1	1.732050808
	0.01	3.00	125	73	0.1	1.732050808
	0.01	3.00	130	74	0.1	1.732050808
	0.01	3.00	123	74	0.1	1.732050808
	0.01	2.90	115	75	0.1	1.702938637
	0.01	3.00	125	75	0.1	1.732050808
	0.01	3.00	128	73	0.1	1.732050808
	0.01	3.00	128	73	0.1	1.732050808
	0.01	3.00	125	73	0.1	1.732050808
	0.01	3.00	125	73	0.1	1.732050808
	0.01	3.00	120	76	0.1	1.732050808
	0.01	3.00	105	76	0.1	1.732050808
	0.01	3.00	100	73	0.1	1.732050808
					--	--
					--	--

Project Name	Wonder Smokehouse Testing	
Project Number	6	60735150
Date	8/15/2024	
Source	Smokehouse stack	

Semi-Volatile Organics

SW-846 Method 0010

Condition No.	max load
Run No.	015
Balance ID	487 2465
Recovered by	C. Thomas

Moisture Determination

Imp No.	Contents	Vol (mL)	Configuration	Initial Wt (g)	Final Wt (g)
1	-	-	KO	488.8	500.0
2	H ₂ O	100	Mod.	698.8	699.1
3	H ₂ O	100	G / S	692.6	693.3
4	-	-	Mod.	607.3	610.3
5	Silica Gel	~ 300g	Mod.	984.1	957.3
6	XAD	-	Cartridge	302.8	315.4

Sample Log

Sample ID Number	Sample Container	Description
WondStk1- R1 -M0010-Semis-PNR	250 mL	Probe and Nozzle Rinse
WondStk1- R1 -M0010-Semis-Filt	Petri Dish	Filt
WondStk1- R1 -M0010-Semis-CR	250 mL	Condenser Rinse
WondStk1 R1 -M0010-Semis-XAD	Sorbent Trap	XAD
WondStk1 R1 -M0010-Semis-Cond	1 L	Impinger Catch
WondStk1- R1 -M0010-Semis-IR	750 mL	Impinger Rinse

Sample Recovery Checklist

- ☒ Rinse and brush probe and nozzle with 50:50 mixture of dichloromethane and methanol into PNR bottle.
- ☒ Separate filter holder and place filter in clean pre-rinsed, glass petri dish. Complete Filt sample label.
- ☒ Seal XAD trap ends. Complete XAD sample label.
- ☒ Rinse front half of filter holder three times with 50:50 mixture of dichloromethane and methanol into PNR bottle. Complete PNR sample label.
- ☒ Rinse coil condenser, back half of filter holder and all connecting glassware between the filter and XAD three times with 50:50 mixture of dichloromethane and methanol into the CR (condenser rinse) bottle. Complete CR sample label.
- ☒ Disassemble sample train. remove foil from XAD cartridge, wipe off excess water and weigh each impinger and XAD. Record the final weights in the Moisture Determination section. Rewrap cartridge with foil, attach label and place in bag.
- ☒ Note condition of the silica gel impinger. 30% spent
- ☒ Pour contents of first impinger (condensate) into the Imps (impinger catch) bottle(s). Complete Cond sample label.
- ☒ Rinse the first impinger and connecting glassware with 50:50 mixture of dichloromethane and methanol three times into the IR (impinger rinse) bottle(s). Complete IR sample label.
- ☒ Discard the contents of impingers 2, 3, and 4
- ☒ Log samples into logbook and place in refrigerator or ice chest.

Notes

Sample Type	Semi-Volatile Organics (M0010)		Date	8-5-2024		Barometer ID	1189203		Page	1 of 1			
Project Name	Wonder Smokehouse Testing		Cond	1	Run	TWO		Bar Press (inHg)	29.39		Train Leak Rate (cfm @ 14.7 inHg)		
Project Number	60735150		Console ID	80745		Stat Press (inHg)	0.0		Initial	0.005 @ 17			
Facility	Wonder NJ		DGMCF	0993		Probe ID	W5-3 L		Final	0.012 @ 21			
Source	Stack		ΔH@	1844	K	305-6		PTCF	0.84		Pitot Tube Leak Check (H ₂ O @ H ₂ O)		
Operator	J.M. Rupp		Nozzle Dia (in)		0.746		Meter Elevation (ft) (relative to Barometer)		Ø		Initial (-)	0.0 @ 5	
Duct Dimension(s)	18"										Initial (+)	0.0 @ 9.4	
Nozzle Calibration	● ● ●		Caliper Used	N/A		ID		N/A		Final (-)	0.0 @ 5		
			Calibration Exp Date							Final (+)	0.0 @ 9.6		
Post-Test Stack TC Check	Reference Thermometer ID		N/A		Ref Thermometer Exp Date		N/A		Thermometer and TC agree within 2°F	Y/N	Post Test Are Pkts Damaged?	Y/N	
Point	Clock Time	Elapsed Time (optional)	DGM Reading (in)	ΔP (inHg)	ΔH (inHg)	Stack	Probe (248±25)	Filter (248±25)	Cond Exit (<68)	Imp Exit (<68)	DGM Outlet	HtTrc Exit (248±25)	Vacuum (inHg)
2A	1400	0:00	63.09	0.01	3.00	140	240	245	35	99	99	-	17.0
2A	1404	0:04	66.85										
7A	1414	0:04	66.70	0.01	2.90	140	246	250	46		101	-	19.0
2A	1418	0:08	70.86	0.01	2.60	Leak check		0.017 @ 1"					
6A	1448	0:08	72.40	0.01	3.00	152	241	255	45	62	105	-	6.5
5A	1452	0:12	77.0	0.01	3.00	153	241	256	47	62	106	-	6.5
4A	1456	0:16	81.0	0.01	3.00	135	237	236	27	45	90	-	6.5
3A	1500	0:20	84.6	0.01	3.00	147	246	254	46	61	106	-	6.5
2A	1504	0:24	88.3	0.01	3.00	130	251	254	43	61	115	-	6.5
1A	1508	0:28	92.3	0.01	3.00	105	246	255	42	61	109	-	6.5
2A	1512	0:32	96.27										
8B	1520	0:32	96.27	0.01	3.00	155	246	256	42	61	105	-	7.5
7B	1530	0:36	100.2	0.01	3.00	156	246	255	44	55	106	-	8.0
6B	1536	0:40	104.4	0.01	3.00	157	231	234	40	36	105	-	8.0
5B	1540	0:44	108.4	0.01	3.00	145	231	236	46	41	96	-	8.0
4B	1544	0:48	112.4	0.01	3.00	147	243	250	35	35	96	-	8.0
3B	1550	0:52	118.2	0.01	3.00	142	241	245	36	52	101	-	8.0
2B	1554	0:56	121.3	0.01	3.00	106	250	251	40	53	101	-	8.0
1B	1558	0:60	126.4	0.01	3.00	095	245	252	42	56	104	-	8.0
Stop	1602	0:64	130.81										

Notes: Damaged @ 1404, unable to maintain ΔH

1

1410

Fand

Kinked line

Leak check 0.010 @ 21

SDS-09: Semis by SW-846 0010

Per: EM SOP-030

Issued: December 2022

Document reviewed biennially

Project Name	Wonder Smokehouse Testing
Project Number	60735150
Date	8/6/24
Source	Smoke house stack

Semi-Volatile Organics SW-846 Method 0010

Condition No.	max load
Run No.	THO
Balance ID	498 305
Recovered by	C. Thompson

Moisture Determination

Imp No.	Contents	Vol (mL)	Configuration	Initial Wt (g)	Final Wt (g)
1		-	KO	497.7	512.2
2	H ₂ O	100	Mod.	709.0	709.1
3	H ₂ O	100	G/S	670.1	670.3
4			Mod.	592.7	595.1
5	Silica Gel	~300g	Mod.	955.3	969.6
6	XAD		Cartridge	308.6	288.4

Sample Log

2780 TDM
Broken

Sample ID Number	Sample Container	Description
WondStk1- R2 -M0010-Semis-PNR	250 mL	Probe and Nozzle Rinse
WondStk1- R2 -M0010-Semis-Filt	Petri Dish	Filter
WondStk1- R2 -M0010-Semis-CR	250 mL	Condenser Rinse
WondStk1- R2 -M0010-Semis-XAD	Sorbent Trap	XAD
WondStk1- R2 -M0010-Semis-Cond	1 L	Impinger Catch
WondStk1- R2 -M0010-Semis-IR	250 mL	Impinger Rinse

Sample Recovery Checklist

- ☒ Rinse and brush probe and nozzle with 50:50 mixture of dichloromethane and methanol into PNR bottle.
- ☒ Separate filter holder and place filter in clean pre-rinsed, glass petri dish. Complete Filt sample label
- ☒ Seal XAD trap ends. Complete XAD sample label.
- ☒ Rinse front half of filter holder three times with 50:50 mixture of dichloromethane and methanol into PNR bottle. Complete PNR sample label.
- ☒ Rinse coil condenser, back half of filter holder and all connecting glassware between the filter and XAD three times with 50:50 mixture of dichloromethane and methanol into the CR (condenser rinse) bottle. Complete CR sample label.
- ☒ Disassemble sample train, remove foil from XAD cartridge, wipe off excess water and weigh each impinger and XAD. Record the final weights in the Moisture Determination section. Rewrap cartridge with foil, attach label and place in bag.
- ☒ Note condition of the silica gel impinger. 20% spent
- ☒ Pour contents of first impinger (condensate) into the Imps (impinger catch) bottle(s). Complete Cond sample label.
- ☒ Rinse the first impinger and connecting glassware with 50:50 mixture of dichloromethane and methanol three times into the IR (impinger rinse) bottle(s). Complete IR sample label.
- ☒ Discard the contents of impingers 2, 3, and 4
- ☒ Log samples into logbook and place in refrigerator or ice chest.

Notes

Project Name	Wonder Smokehouse Testing
Project Number	60735150
Date	8/7/24
Source	Smoke house Stack

Semi-Volatile Organics

SW-846 Method 0010

Condition No.	main load
Run No	Three
Balance ID	4082805
Recovered by	C. Thompson

Moisture Determination

Imp No.	Contents	Vol (mL)	Configuration	Initial Wt (g)	Final Wt (g)
1			KO	498.1	498.0
2	H ₂ O	100	Mod.	696.7	693.4
3	H ₂ O	100	G/S	689.8	687.1
4			Mod.	592.4	595.5
5	Silica Gel	~ 300g	Mod.	927.0	944.1
6	XAD		Cartridge	304.2	316.4

Sample Log

Sample ID Number	Sample Container	Description
WondStk1 R3 -M0010-Semis-PNR	250 mL	Probe and Nozzle Rinse
WondStk1 R3 -M0010-Semis-Filt	Petri Dish	Filter
WondStk1 R3 -M0010-Semis-CR	250 mL	Condenser Rinse
WondStk1 R3 -M0010-Semis-XAD	Sorbent Trap	XAD
WondStk1 R3 -M0010-Semis-Cond	1 L	Impinger Catch
WondStk1 R3 -M0010-Semis-IR	250 mL	Impinger Rinse

Sample Recovery Checklist

- ✓ Rinse and brush probe and nozzle with 50:50 mixture of dichloromethane and methanol into PNR bottle.
- ✓ Separate filter holder and place filter in clean pre-rinsed, glass petri dish. Complete Filt sample label.
- ✓ Seal XAD trap ends. Complete XAD sample label.
- ✓ Rinse front half of filter holder three times with 50:50 mixture of dichloromethane and methanol into PNR bottle. Complete PNR sample label.
- ✓ Rinse coil condenser, back half of filter holder and all connecting glassware between the filter and XAD three times with 50:50 mixture of dichloromethane and methanol into the CR (condenser rinse) bottle. Complete CR sample label.
- ✓ Disassemble sample train, remove foil from XAD cartridge, wipe off excess water and weigh each impinger and XAD. Record the final weights in the Moisture Determination section. Rewrap cartridge with foil, attach label and place in bag.
- ✓ Note condition of the silica gel impinger. 30 % spent
- ✓ Pour contents of first impinger (condensate) into the Imps (impinger catch) bottle(s). Complete Cond sample label.
- ✓ Rinse the first impinger and connecting glassware with 50:50 mixture of dichloromethane and methanol three times into the IR (impinger rinse) bottle(s). Complete IR sample label.
- ✓ Discard the contents of impingers 2, 3, and 4
- ✓ Log samples into logbook and place in refrigerator or ice chest.

Notes

Method 0010 Emissions Summary Sheets

PAH Emission Results - Total

	Run No.	1	2	3	Average
	Date	06-Aug-24	06-Aug-24	07-Aug-24	--
	Start Time	11:04	14:00	07:32	--
	Stop Time	12:27	16:02	08:50	--
	Units				
Sample Volume	dscf	58.565	60.349	59.738	59.55
Sample Volume	m³	1.66	1.71	1.69	1.69
Moisture Content	% w/v	3.2	3.2	3.7	3.37
O₂ Concentration	% v/v (dry)	20.23	20.16	20.16	20.18
CO₂ Concentration	% v/v (dry)	0.49	0.58	0.48	0.52
Isokinetics	%	99	102	100	--
Stack Flowrate	dscfm	540	541	545	542

PAHs by GC/MS

PAH by GC/MS Parameters	ng	ng/m³	lb/hr	ng	ng/m³	lb/hr	ng	ng/m³	lb/hr	Average lb/hr
2-Methylnaphthalene	7810.00	4.71E+03	9.52E-06	6700.00	3.92E+03	7.94E-06	29600.00	1.75E+04	3.57E-05	1.77E-05
Acenaphthene	489.00	2.95E+02	5.96E-07	273.00	1.60E+02	3.23E-07	1700.00	1.00E+03	2.05E-06	9.90E-07
Acenaphthylene	4470.00	2.70E+03	5.45E-06	2260.00	1.32E+03	2.68E-06	20400.00	1.21E+04	2.46E-05	1.09E-05
Anthracene	1440.00	8.68E+02	1.76E-06	897.00	5.25E+02	1.06E-06	3560.00	2.10E+03	4.30E-06	2.37E-06
Benzo[a]anthracene	340.00	2.05E+02	4.15E-07	264.00	1.54E+02	3.13E-07	903.00	5.34E+02	1.09E-06	6.06E-07
Benzo[a]pyrene	< 85.00	5.13E+01	1.04E-07	80.00	4.68E+01	9.48E-08	445.00	2.63E+02	5.37E-07	< 2.45E-07
Benzo[b]fluoranthene	< 490.00	2.95E+02	5.98E-07	224.00	1.31E+02	2.65E-07	< 784.00	4.63E+02	9.46E-07	< 6.03E-07
Benzo[e]pyrene	< 85.00	5.13E+01	1.04E-07	91.90	5.38E+01	1.09E-07	283.00	1.67E+02	3.41E-07	< 1.85E-07
Benzo[g,h,i]perylene	< 300.00	1.81E+02	3.66E-07	< 120.00	7.02E+01	1.42E-07	< 480.00	2.84E+02	5.79E-07	< 3.62E-07
Benzo[k]fluoranthene	< 120.00	7.24E+01	1.46E-07	< 48.00	2.81E+01	5.69E-08	324.00	1.92E+02	3.91E-07	< 1.98E-07
Chrysene	550.00	3.32E+02	6.71E-07	424.00	2.48E+02	5.02E-07	1470.00	8.69E+02	1.77E-06	9.82E-07
Dibenz[a,h]anthracene	< 135.00	8.14E+01	1.65E-07	< 54.00	3.16E+01	6.40E-08	< 216.00	1.28E+02	2.61E-07	< 1.63E-07
Fluoranthene	3020.00	1.82E+03	3.68E-06	1760.00	1.03E+03	2.09E-06	5330.00	3.15E+03	6.43E-06	4.07E-06
Fluorene	2610.00	1.57E+03	3.18E-06	1590.00	9.30E+02	1.88E-06	6920.00	4.09E+03	8.35E-06	4.47E-06
Indeno[1,2,3-cd]pyrene	< 95.00	5.73E+01	1.16E-07	40.70	2.38E+01	4.82E-08	237.00	1.40E+02	2.86E-07	< 1.50E-07
Naphthalene	42400	2.56E+04	5.17E-05	32100	1.88E+04	3.80E-05	141000	8.34E+04	1.70E-04	8.66E-05
Perylene	< 55.00	3.32E+01	6.71E-08	< 22.00	1.29E+01	2.61E-08	< 88.00	5.20E+01	1.06E-07	< 6.64E-08
Phenanthrene	11000.00	6.63E+03	1.34E-05	6300.00	3.69E+03	7.46E-06	19200.00	1.14E+04	2.32E-05	1.47E-05
Pyrene	2290.00	1.38E+03	2.79E-06	1420.00	8.31E+02	1.68E-06	4710.00	2.78E+03	5.68E-06	3.39E-06

Note:

< - Value reported at MDL

Method 3A O₂, CO₂ CEMS Data

8/6/2024		
	Oxygen	CO2
ZERO1	0.01	0.07
SPAN1	22.01	19.25
MID1	10.08	10.20
PRELIM	19.92	0.73
ZERO2	0.18	0.06
SPAN2	21.92	19.35
MID2	10.07	10.16
RUN-ONE	20.23	0.49
RUN-TWO	20.16	0.58
ZERO3	0.17	0.03
SPAN3	21.83	19.14
MID3	10.01	10.09

8/7/2024		
	Oxygen	CO2
ZERO1	0.00	0.01
SPAN1	21.97	19.36
MID1	10.00	10.24
RUN-THREE	20.16	0.48
RUN-FOUR	20.21	0.44
ZERO2	0.01	0.02
SPAN2	21.77	19.51
MID2	9.93	10.30

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Worksheet name: AES2021_O2_CO2

Recording: 7:34:00 AM

Block length : 1

Delta : 10 sec.

Number of channels : 2

Date	Time	Write 0 [V]	Write 1 [V]	Phase
8/6/2024	7:37:44	0.01	0.07	ZERO1
8/6/2024	7:39:44	22.01	19.25	SPAN1
8/6/2024	7:41:34	10.08	10.2	MID1
8/6/2024	8:57:24	19.89	0.73	PRELIM
8/6/2024	8:57:34	19.9	0.73	PRELIM
8/6/2024	8:57:44	19.91	0.73	PRELIM
8/6/2024	8:57:54	19.91	0.73	PRELIM
8/6/2024	8:58:04	19.92	0.73	PRELIM
8/6/2024	8:58:14	19.92	0.73	PRELIM
8/6/2024	8:58:24	19.92	0.73	PRELIM
8/6/2024	8:58:34	19.92	0.73	PRELIM
8/6/2024	8:58:44	19.92	0.73	PRELIM
8/6/2024	8:58:54	19.93	0.73	PRELIM
8/6/2024	8:59:04	19.93	0.73	PRELIM
8/6/2024	8:59:14	19.93	0.73	PRELIM
8/6/2024	9:02:54	21.92	19.35	SPAN2
8/6/2024	9:05:34	10.07	10.16	MID2
8/6/2024	9:07:24	0.18	0.06	ZERO2
8/6/2024	12:38:34	20.23	0.49	RUN-ONE
8/6/2024	12:38:44	20.23	0.49	RUN-ONE
8/6/2024	12:38:54	20.23	0.49	RUN-ONE
8/6/2024	12:39:04	20.23	0.49	RUN-ONE
8/6/2024	12:39:14	20.23	0.49	RUN-ONE
8/6/2024	12:39:24	20.24	0.49	RUN-ONE
8/6/2024	12:39:34	20.24	0.49	RUN-ONE
8/6/2024	12:39:44	20.24	0.49	RUN-ONE
8/6/2024	12:39:54	20.24	0.49	RUN-ONE
8/6/2024	12:40:04	20.24	0.49	RUN-ONE
8/6/2024	12:40:14	20.24	0.49	RUN-ONE
8/6/2024	12:40:24	20.24	0.49	RUN-ONE
8/6/2024	12:40:34	20.24	0.49	RUN-ONE
8/6/2024	12:40:44	20.24	0.49	RUN-ONE
8/6/2024	12:40:54	20.24	0.49	RUN-ONE
8/6/2024	12:41:04	20.24	0.49	RUN-ONE
8/6/2024	12:41:14	20.24	0.49	RUN-ONE
8/6/2024	12:41:24	20.24	0.49	RUN-ONE
8/6/2024	12:41:34	20.24	0.49	RUN-ONE
8/6/2024	12:41:44	20.24	0.49	RUN-ONE

DASYLab 2020 - 2020

Worksheet name: AES2021_O2_CO2

Recording: 7:34:00 AM

Block length : 1

Delta : 10 sec.

Number of channels : 2

Date	Time	Write 0 [V]	Write 1 [V]	Phase
8/6/2024	12:41:54	20.24	0.49	RUN-ONE
8/6/2024	12:42:04	20.24	0.49	RUN-ONE
8/6/2024	12:42:14	20.24	0.49	RUN-ONE
8/6/2024	12:42:24	20.24	0.49	RUN-ONE
8/6/2024	12:42:34	20.24	0.49	RUN-ONE
8/6/2024	12:42:44	20.24	0.49	RUN-ONE
8/6/2024	12:42:54	20.24	0.49	RUN-ONE
8/6/2024	12:43:04	20.24	0.5	RUN-ONE
8/6/2024	12:43:14	20.24	0.49	RUN-ONE
8/6/2024	12:43:24	20.24	0.49	RUN-ONE
8/6/2024	12:43:34	20.24	0.49	RUN-ONE
8/6/2024	12:43:44	20.24	0.49	RUN-ONE
8/6/2024	12:43:54	20.24	0.49	RUN-ONE
8/6/2024	12:44:04	20.24	0.49	RUN-ONE
8/6/2024	12:44:14	20.24	0.49	RUN-ONE
8/6/2024	12:44:24	20.23	0.49	RUN-ONE
8/6/2024	12:44:34	20.24	0.49	RUN-ONE
8/6/2024	12:44:44	20.23	0.49	RUN-ONE
8/6/2024	12:44:54	20.24	0.49	RUN-ONE
8/6/2024	12:45:04	20.23	0.49	RUN-ONE
8/6/2024	12:45:14	20.24	0.49	RUN-ONE
8/6/2024	12:45:24	20.24	0.49	RUN-ONE
8/6/2024	12:45:34	20.24	0.49	RUN-ONE
8/6/2024	12:45:44	20.24	0.49	RUN-ONE
8/6/2024	12:45:54	20.24	0.49	RUN-ONE
8/6/2024	12:46:04	20.23	0.49	RUN-ONE
8/6/2024	12:46:14	20.23	0.49	RUN-ONE
8/6/2024	12:46:24	20.23	0.49	RUN-ONE
8/6/2024	12:46:34	20.23	0.49	RUN-ONE
8/6/2024	12:46:44	20.23	0.49	RUN-ONE
8/6/2024	12:46:54	20.23	0.49	RUN-ONE
8/6/2024	12:47:04	20.23	0.49	RUN-ONE
8/6/2024	12:47:14	20.23	0.49	RUN-ONE
8/6/2024	12:47:24	20.23	0.49	RUN-ONE
8/6/2024	12:47:34	20.23	0.49	RUN-ONE
8/6/2024	12:47:44	20.23	0.49	RUN-ONE
8/6/2024	12:47:54	20.23	0.49	RUN-ONE
8/6/2024	12:48:04	20.23	0.49	RUN-ONE

DASYLab 2020 - 2020

Worksheet name: AES2021_O2_CO2

Recording: 7:34:00 AM

Block length : 1

Delta : 10 sec.

Number of channels : 2

Date	Time	Write 0 [V]	Write 1 [V]	Phase
8/6/2024	12:48:14	20.23	0.49	RUN-ONE
8/6/2024	12:48:24	20.23	0.49	RUN-ONE
8/6/2024	12:48:34	20.23	0.49	RUN-ONE
8/6/2024	12:48:44	20.23	0.49	RUN-ONE
8/6/2024	12:48:54	20.23	0.49	RUN-ONE
8/6/2024	12:49:04	20.23	0.49	RUN-ONE
8/6/2024	12:49:14	20.23	0.49	RUN-ONE
8/6/2024	12:49:24	20.23	0.49	RUN-ONE
8/6/2024	12:49:34	20.23	0.49	RUN-ONE
8/6/2024	12:49:44	20.23	0.49	RUN-ONE
8/6/2024	12:49:54	20.23	0.49	RUN-ONE
8/6/2024	12:50:04	20.22	0.49	RUN-ONE
8/6/2024	12:50:14	20.22	0.49	RUN-ONE
8/6/2024	12:50:24	20.22	0.49	RUN-ONE
8/6/2024	12:50:34	20.22	0.49	RUN-ONE
8/6/2024	12:50:44	20.22	0.49	RUN-ONE
8/6/2024	12:50:54	20.22	0.49	RUN-ONE
8/6/2024	12:51:04	20.22	0.49	RUN-ONE
8/6/2024	12:51:14	20.22	0.49	RUN-ONE
8/6/2024	12:51:24	20.22	0.49	RUN-ONE
8/6/2024	12:51:34	20.22	0.49	RUN-ONE
8/6/2024	12:51:44	20.22	0.49	RUN-ONE
8/6/2024	12:51:54	20.22	0.49	RUN-ONE
8/6/2024	12:52:04	20.22	0.49	RUN-ONE
8/6/2024	12:52:14	20.22	0.49	RUN-ONE
8/6/2024	12:52:24	20.22	0.49	RUN-ONE
8/6/2024	12:52:34	20.22	0.49	RUN-ONE
8/6/2024	12:52:44	20.22	0.49	RUN-ONE
8/6/2024	12:52:54	20.22	0.49	RUN-ONE
8/6/2024	12:53:04	20.22	0.49	RUN-ONE
8/6/2024	12:53:14	20.22	0.49	RUN-ONE
8/6/2024	12:53:24	20.22	0.49	RUN-ONE
8/6/2024	12:53:34	20.22	0.49	RUN-ONE
8/6/2024	12:53:44	20.21	0.49	RUN-ONE
8/6/2024	12:53:54	20.21	0.49	RUN-ONE
8/6/2024	12:54:04	20.21	0.49	RUN-ONE
8/6/2024	12:54:14	20.21	0.49	RUN-ONE
8/6/2024	12:54:24	20.21	0.49	RUN-ONE

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Worksheet name: AES2021_O2_CO2

Recording: 7:34:00 AM

Block length : 1

Delta : 10 sec.

Number of channels : 2

Date	Time	Write 0 [V]	Write 1 [V]	Phase
8/6/2024	12:54:34	20.21	0.49	RUN-ONE
8/6/2024	12:54:44	20.21	0.49	RUN-ONE
8/6/2024	12:54:54	20.21	0.49	RUN-ONE
8/6/2024	16:32:44	20.12	0.59	RUN-TWO
8/6/2024	16:32:54	20.12	0.59	RUN-TWO
8/6/2024	16:33:04	20.13	0.59	RUN-TWO
8/6/2024	16:33:14	20.13	0.59	RUN-TWO
8/6/2024	16:33:24	20.13	0.59	RUN-TWO
8/6/2024	16:33:34	20.13	0.58	RUN-TWO
8/6/2024	16:33:44	20.13	0.59	RUN-TWO
8/6/2024	16:33:54	20.13	0.58	RUN-TWO
8/6/2024	16:34:04	20.13	0.58	RUN-TWO
8/6/2024	16:34:14	20.13	0.58	RUN-TWO
8/6/2024	16:34:24	20.13	0.58	RUN-TWO
8/6/2024	16:34:34	20.13	0.58	RUN-TWO
8/6/2024	16:34:44	20.13	0.58	RUN-TWO
8/6/2024	16:34:54	20.13	0.58	RUN-TWO
8/6/2024	16:35:04	20.13	0.58	RUN-TWO
8/6/2024	16:35:14	20.14	0.58	RUN-TWO
8/6/2024	16:35:24	20.14	0.58	RUN-TWO
8/6/2024	16:35:34	20.14	0.58	RUN-TWO
8/6/2024	16:35:44	20.14	0.58	RUN-TWO
8/6/2024	16:35:54	20.13	0.58	RUN-TWO
8/6/2024	16:36:04	20.13	0.58	RUN-TWO
8/6/2024	16:36:14	20.13	0.58	RUN-TWO
8/6/2024	16:36:24	20.13	0.58	RUN-TWO
8/6/2024	16:36:34	20.13	0.58	RUN-TWO
8/6/2024	16:36:44	20.13	0.58	RUN-TWO
8/6/2024	16:36:54	20.13	0.58	RUN-TWO
8/6/2024	16:37:04	20.13	0.58	RUN-TWO
8/6/2024	16:37:14	20.13	0.58	RUN-TWO
8/6/2024	16:37:24	20.13	0.58	RUN-TWO
8/6/2024	16:37:34	20.13	0.58	RUN-TWO
8/6/2024	16:37:44	20.13	0.58	RUN-TWO
8/6/2024	16:37:54	20.13	0.58	RUN-TWO
8/6/2024	16:38:04	20.13	0.58	RUN-TWO
8/6/2024	16:38:14	20.13	0.58	RUN-TWO
8/6/2024	16:38:24	20.13	0.58	RUN-TWO

DASYLab 2020 - 2020

Worksheet name: AES2021_O2_CO2

Recording: 7:34:00 AM

Block length : 1

Delta : 10 sec.

Number of channels : 2

Date	Time	Write 0 [V]	Write 1 [V]	Phase
8/6/2024	16:38:34	20.13	0.58	RUN-TWO
8/6/2024	16:38:44	20.13	0.58	RUN-TWO
8/6/2024	16:38:54	20.13	0.58	RUN-TWO
8/6/2024	16:39:04	20.13	0.58	RUN-TWO
8/6/2024	16:39:14	20.13	0.58	RUN-TWO
8/6/2024	16:39:24	20.13	0.58	RUN-TWO
8/6/2024	16:39:34	20.13	0.59	RUN-TWO
8/6/2024	16:39:44	20.13	0.58	RUN-TWO
8/6/2024	16:39:54	20.13	0.59	RUN-TWO
8/6/2024	16:40:04	20.13	0.59	RUN-TWO
8/6/2024	16:40:14	20.12	0.59	RUN-TWO
8/6/2024	16:40:24	20.12	0.58	RUN-TWO
8/6/2024	16:40:34	20.12	0.59	RUN-TWO
8/6/2024	16:40:44	20.12	0.59	RUN-TWO
8/6/2024	16:40:54	20.12	0.59	RUN-TWO
8/6/2024	16:41:04	20.12	0.59	RUN-TWO
8/6/2024	16:41:14	20.12	0.59	RUN-TWO
8/6/2024	16:41:24	20.12	0.59	RUN-TWO
8/6/2024	16:41:34	20.12	0.59	RUN-TWO
8/6/2024	16:41:44	20.12	0.59	RUN-TWO
8/6/2024	16:41:54	20.12	0.59	RUN-TWO
8/6/2024	16:42:04	20.12	0.59	RUN-TWO
8/6/2024	16:42:14	20.12	0.59	RUN-TWO
8/6/2024	16:42:24	20.11	0.59	RUN-TWO
8/6/2024	16:42:34	20.12	0.59	RUN-TWO
8/6/2024	16:42:44	20.12	0.59	RUN-TWO
8/6/2024	16:42:54	20.11	0.59	RUN-TWO
8/6/2024	16:43:04	20.11	0.58	RUN-TWO
8/6/2024	16:43:14	20.11	0.59	RUN-TWO
8/6/2024	16:43:24	20.11	0.59	RUN-TWO
8/6/2024	16:43:34	20.11	0.59	RUN-TWO
8/6/2024	16:43:44	20.11	0.59	RUN-TWO
8/6/2024	16:43:54	20.11	0.59	RUN-TWO
8/6/2024	16:44:04	20.11	0.59	RUN-TWO
8/6/2024	16:44:14	20.11	0.58	RUN-TWO
8/6/2024	16:44:24	20.1	0.59	RUN-TWO
8/6/2024	16:44:34	20.1	0.58	RUN-TWO
8/6/2024	16:44:44	20.1	0.58	RUN-TWO

DASYLab 2020 - 2020

Worksheet name: AES2021_O2_CO2

Recording: 7:34:00 AM

Block length : 1

Delta : 10 sec.

Number of channels : 2

Date	Time	Write 0 [V]	Write 1 [V]	Phase
8/6/2024	16:44:54	20.1	0.58	RUN-TWO
8/6/2024	16:45:04	20.09	0.58	RUN-TWO
8/6/2024	16:45:14	20.09	0.58	RUN-TWO
8/6/2024	16:45:24	20.09	0.58	RUN-TWO
8/6/2024	16:45:34	20.07	0.58	RUN-TWO
8/6/2024	16:45:44	20.06	0.58	RUN-TWO
8/6/2024	16:45:54	20.42	0.57	RUN-TWO
8/6/2024	16:46:04	20.51	0.57	RUN-TWO
8/6/2024	16:46:14	20.52	0.57	RUN-TWO
8/6/2024	16:46:24	20.52	0.57	RUN-TWO
8/6/2024	16:46:34	20.52	0.57	RUN-TWO
8/6/2024	16:46:44	20.52	0.57	RUN-TWO
8/6/2024	16:46:54	20.53	0.57	RUN-TWO
8/6/2024	16:47:04	20.53	0.57	RUN-TWO
8/6/2024	16:47:14	20.53	0.57	RUN-TWO
8/6/2024	18:26:24	0.17	0.03	ZERO3
8/6/2024	18:29:14	10.01	10.09	MID3
8/6/2024	18:32:14	21.83	19.14	SPAN3

DASYLab 2020 - 2020

Worksheet name: AES2021_O2_CO2

Recording: 7:04:32 AM

Block length : 1

Delta : 10 sec.

Number of channels : 2

Date	Time	Write 0 [V]	Write 1 [V]	PHASE
8/7/2024	7:06:03	0	0.01	ZERO1
8/7/2024	7:09:23	21.97	19.36	SPAN1
8/7/2024	7:11:13	10	10.24	MID1
8/7/2024	9:25:23	20.11	0.48	RUN-THREE
8/7/2024	9:25:33	20.12	0.48	RUN-THREE
8/7/2024	9:25:43	20.12	0.48	RUN-THREE
8/7/2024	9:25:53	20.13	0.48	RUN-THREE
8/7/2024	9:26:03	20.14	0.48	RUN-THREE
8/7/2024	9:26:13	20.14	0.48	RUN-THREE
8/7/2024	9:26:23	20.14	0.48	RUN-THREE
8/7/2024	9:26:33	20.14	0.48	RUN-THREE
8/7/2024	9:26:43	20.15	0.48	RUN-THREE
8/7/2024	9:26:53	20.15	0.48	RUN-THREE
8/7/2024	9:27:03	20.15	0.48	RUN-THREE
8/7/2024	9:27:13	20.15	0.48	RUN-THREE
8/7/2024	9:27:23	20.15	0.48	RUN-THREE
8/7/2024	9:27:33	20.15	0.48	RUN-THREE
8/7/2024	9:27:43	20.15	0.48	RUN-THREE
8/7/2024	9:27:53	20.15	0.48	RUN-THREE
8/7/2024	9:28:03	20.16	0.48	RUN-THREE
8/7/2024	9:28:13	20.16	0.48	RUN-THREE
8/7/2024	9:28:23	20.16	0.48	RUN-THREE
8/7/2024	9:28:33	20.16	0.48	RUN-THREE
8/7/2024	9:28:43	20.16	0.48	RUN-THREE
8/7/2024	9:28:53	20.16	0.48	RUN-THREE
8/7/2024	9:29:03	20.16	0.48	RUN-THREE
8/7/2024	9:29:13	20.16	0.48	RUN-THREE
8/7/2024	9:29:23	20.16	0.48	RUN-THREE
8/7/2024	9:29:33	20.16	0.48	RUN-THREE
8/7/2024	9:29:43	20.16	0.48	RUN-THREE
8/7/2024	9:29:53	20.16	0.48	RUN-THREE
8/7/2024	9:30:03	20.16	0.48	RUN-THREE
8/7/2024	9:30:13	20.16	0.48	RUN-THREE
8/7/2024	9:30:23	20.16	0.48	RUN-THREE
8/7/2024	9:30:33	20.16	0.48	RUN-THREE
8/7/2024	9:30:43	20.16	0.48	RUN-THREE
8/7/2024	9:30:53	20.16	0.48	RUN-THREE
8/7/2024	9:31:03	20.16	0.48	RUN-THREE

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Worksheet name: AES2021_O2_CO2

Recording: 7:04:32 AM

Block length : 1

Delta : 10 sec.

Number of channels : 2

Date	Time	Write 0 [V]	Write 1 [V]	PHASE
8/7/2024	9:31:13	20.16	0.48	RUN-THREE
8/7/2024	9:31:23	20.16	0.48	RUN-THREE
8/7/2024	9:31:33	20.17	0.48	RUN-THREE
8/7/2024	9:31:43	20.16	0.48	RUN-THREE
8/7/2024	9:31:53	20.17	0.48	RUN-THREE
8/7/2024	9:32:03	20.17	0.48	RUN-THREE
8/7/2024	9:32:13	20.17	0.48	RUN-THREE
8/7/2024	9:32:23	20.17	0.48	RUN-THREE
8/7/2024	9:32:33	20.17	0.48	RUN-THREE
8/7/2024	9:32:43	20.17	0.48	RUN-THREE
8/7/2024	9:32:53	20.17	0.48	RUN-THREE
8/7/2024	9:33:03	20.17	0.48	RUN-THREE
8/7/2024	9:33:13	20.17	0.48	RUN-THREE
8/7/2024	9:33:23	20.17	0.48	RUN-THREE
8/7/2024	9:33:33	20.17	0.48	RUN-THREE
8/7/2024	9:33:43	20.17	0.48	RUN-THREE
8/7/2024	9:33:53	20.17	0.48	RUN-THREE
8/7/2024	9:34:03	20.17	0.48	RUN-THREE
8/7/2024	9:34:13	20.17	0.48	RUN-THREE
8/7/2024	9:34:23	20.17	0.48	RUN-THREE
8/7/2024	9:34:33	20.17	0.48	RUN-THREE
8/7/2024	9:34:43	20.17	0.48	RUN-THREE
8/7/2024	9:34:53	20.17	0.48	RUN-THREE
8/7/2024	9:35:03	20.17	0.48	RUN-THREE
8/7/2024	9:35:13	20.17	0.48	RUN-THREE
8/7/2024	9:35:23	20.17	0.48	RUN-THREE
8/7/2024	9:35:33	20.17	0.48	RUN-THREE
8/7/2024	9:35:43	20.17	0.48	RUN-THREE
8/7/2024	9:35:53	20.17	0.48	RUN-THREE
8/7/2024	9:36:03	20.17	0.48	RUN-THREE
8/7/2024	9:36:13	20.17	0.48	RUN-THREE
8/7/2024	9:36:23	20.17	0.48	RUN-THREE
8/7/2024	9:36:33	20.17	0.48	RUN-THREE
8/7/2024	9:36:43	20.17	0.48	RUN-THREE
8/7/2024	9:36:53	20.17	0.48	RUN-THREE
8/7/2024	9:37:03	20.17	0.48	RUN-THREE
8/7/2024	9:37:13	20.17	0.48	RUN-THREE
8/7/2024	9:37:23	20.17	0.48	RUN-THREE

DASYLab 2020 - 2020

Worksheet name: AES2021_O2_CO2

Recording: 7:04:32 AM

Block length : 1

Delta : 10 sec.

Number of channels : 2

Date	Time	Write 0 [V]	Write 1 [V]	PHASE
8/7/2024	9:37:33	20.17	0.48	RUN-THREE
8/7/2024	9:37:43	20.17	0.48	RUN-THREE
8/7/2024	9:37:53	20.17	0.48	RUN-THREE
8/7/2024	9:38:03	20.17	0.48	RUN-THREE
8/7/2024	9:38:13	20.17	0.48	RUN-THREE
8/7/2024	9:38:23	20.17	0.48	RUN-THREE
8/7/2024	9:38:33	20.17	0.48	RUN-THREE
8/7/2024	9:38:43	20.17	0.48	RUN-THREE
8/7/2024	9:38:53	20.17	0.48	RUN-THREE
8/7/2024	9:39:03	20.17	0.48	RUN-THREE
8/7/2024	9:39:13	20.17	0.48	RUN-THREE
8/7/2024	9:39:23	20.17	0.48	RUN-THREE
8/7/2024	9:39:33	20.17	0.48	RUN-THREE
8/7/2024	9:39:43	20.17	0.48	RUN-THREE
8/7/2024	9:39:53	20.17	0.48	RUN-THREE
8/7/2024	9:40:03	20.17	0.48	RUN-THREE
8/7/2024	9:40:13	20.17	0.48	RUN-THREE
8/7/2024	9:40:23	20.17	0.48	RUN-THREE
8/7/2024	9:40:33	20.17	0.48	RUN-THREE
8/7/2024	9:40:43	20.17	0.48	RUN-THREE
8/7/2024	9:40:53	20.17	0.48	RUN-THREE
8/7/2024	9:41:03	20.17	0.48	RUN-THREE
8/7/2024	9:41:13	20.17	0.48	RUN-THREE
8/7/2024	9:41:23	20.17	0.48	RUN-THREE
8/7/2024	9:41:33	20.17	0.48	RUN-THREE
8/7/2024	9:41:43	20.17	0.48	RUN-THREE
8/7/2024	9:41:53	20.17	0.48	RUN-THREE
8/7/2024	9:42:03	20.17	0.48	RUN-THREE
8/7/2024	9:42:13	20.17	0.48	RUN-THREE
8/7/2024	9:42:23	20.17	0.48	RUN-THREE
8/7/2024	9:42:33	20.17	0.48	RUN-THREE
8/7/2024	9:42:43	20.17	0.48	RUN-THREE
8/7/2024	9:42:53	20.16	0.48	RUN-THREE
8/7/2024	9:43:03	20.16	0.48	RUN-THREE
8/7/2024	9:43:13	20.16	0.48	RUN-THREE
8/7/2024	9:43:23	20.17	0.48	RUN-THREE
8/7/2024	9:43:33	20.17	0.48	RUN-THREE
8/7/2024	9:43:43	20.17	0.48	RUN-THREE

DASYLab 2020 - 2020

Worksheet name: AES2021_O2_CO2

Recording: 7:04:32 AM

Block length : 1

Delta : 10 sec.

Number of channels : 2

Date	Time	Write 0 [V]	Write 1 [V]	PHASE
8/7/2024	9:43:53	20.16	0.48	RUN-THREE
8/7/2024	9:44:03	20.16	0.48	RUN-THREE
8/7/2024	9:44:13	20.16	0.48	RUN-THREE
8/7/2024	9:44:23	20.16	0.48	RUN-THREE
8/7/2024	9:44:33	20.16	0.48	RUN-THREE
8/7/2024	9:44:43	20.16	0.48	RUN-THREE
8/7/2024	9:44:53	20.16	0.48	RUN-THREE
8/7/2024	9:45:03	20.16	0.48	RUN-THREE
8/7/2024	9:45:13	20.16	0.48	RUN-THREE
8/7/2024	9:45:23	20.16	0.48	RUN-THREE
8/7/2024	9:45:33	20.16	0.48	RUN-THREE
8/7/2024	9:45:43	20.16	0.48	RUN-THREE
8/7/2024	9:45:53	20.16	0.48	RUN-THREE
8/7/2024	9:46:03	20.16	0.48	RUN-THREE
8/7/2024	9:46:13	20.16	0.48	RUN-THREE
8/7/2024	11:41:53	20.12	0.44	RUN-FOUR
8/7/2024	11:42:03	20.13	0.44	RUN-FOUR
8/7/2024	11:42:13	20.14	0.44	RUN-FOUR
8/7/2024	11:42:23	20.15	0.44	RUN-FOUR
8/7/2024	11:42:33	20.16	0.44	RUN-FOUR
8/7/2024	11:42:43	20.16	0.44	RUN-FOUR
8/7/2024	11:42:53	20.17	0.44	RUN-FOUR
8/7/2024	11:43:03	20.17	0.44	RUN-FOUR
8/7/2024	11:43:13	20.18	0.44	RUN-FOUR
8/7/2024	11:43:23	20.18	0.44	RUN-FOUR
8/7/2024	11:43:33	20.19	0.44	RUN-FOUR
8/7/2024	11:43:43	20.19	0.44	RUN-FOUR
8/7/2024	11:43:53	20.19	0.44	RUN-FOUR
8/7/2024	11:44:03	20.19	0.44	RUN-FOUR
8/7/2024	11:44:13	20.19	0.45	RUN-FOUR
8/7/2024	11:44:23	20.2	0.44	RUN-FOUR
8/7/2024	11:44:33	20.2	0.44	RUN-FOUR
8/7/2024	11:44:43	20.2	0.44	RUN-FOUR
8/7/2024	11:44:53	20.2	0.44	RUN-FOUR
8/7/2024	11:45:03	20.2	0.44	RUN-FOUR
8/7/2024	11:45:13	20.2	0.44	RUN-FOUR
8/7/2024	11:45:23	20.2	0.44	RUN-FOUR
8/7/2024	11:45:33	20.21	0.44	RUN-FOUR

DASYLab 2020 - 2020

Worksheet name: AES2021_O2_CO2

Recording: 7:04:32 AM

Block length : 1

Delta : 10 sec.

Number of channels : 2

Date	Time	Write 0 [V]	Write 1 [V]	PHASE
8/7/2024	11:45:43	20.21	0.44	RUN-FOUR
8/7/2024	11:45:53	20.21	0.44	RUN-FOUR
8/7/2024	11:46:03	20.21	0.44	RUN-FOUR
8/7/2024	11:46:13	20.21	0.44	RUN-FOUR
8/7/2024	11:46:23	20.21	0.44	RUN-FOUR
8/7/2024	11:46:33	20.21	0.44	RUN-FOUR
8/7/2024	11:46:43	20.21	0.44	RUN-FOUR
8/7/2024	11:46:53	20.21	0.44	RUN-FOUR
8/7/2024	11:47:03	20.21	0.44	RUN-FOUR
8/7/2024	11:47:13	20.22	0.44	RUN-FOUR
8/7/2024	11:47:23	20.22	0.44	RUN-FOUR
8/7/2024	11:47:33	20.21	0.44	RUN-FOUR
8/7/2024	11:47:43	20.22	0.44	RUN-FOUR
8/7/2024	11:47:53	20.22	0.44	RUN-FOUR
8/7/2024	11:48:03	20.22	0.44	RUN-FOUR
8/7/2024	11:48:13	20.22	0.44	RUN-FOUR
8/7/2024	11:48:23	20.22	0.44	RUN-FOUR
8/7/2024	11:48:33	20.22	0.44	RUN-FOUR
8/7/2024	11:48:43	20.22	0.44	RUN-FOUR
8/7/2024	11:48:53	20.22	0.44	RUN-FOUR
8/7/2024	11:49:03	20.22	0.44	RUN-FOUR
8/7/2024	11:49:13	20.22	0.44	RUN-FOUR
8/7/2024	11:49:23	20.22	0.45	RUN-FOUR
8/7/2024	11:49:33	20.22	0.44	RUN-FOUR
8/7/2024	11:49:43	20.22	0.44	RUN-FOUR
8/7/2024	11:49:53	20.22	0.44	RUN-FOUR
8/7/2024	11:50:03	20.22	0.45	RUN-FOUR
8/7/2024	11:50:13	20.22	0.44	RUN-FOUR
8/7/2024	11:50:23	20.22	0.44	RUN-FOUR
8/7/2024	11:50:33	20.22	0.44	RUN-FOUR
8/7/2024	11:50:43	20.22	0.44	RUN-FOUR
8/7/2024	11:50:53	20.22	0.44	RUN-FOUR
8/7/2024	11:51:03	20.22	0.44	RUN-FOUR
8/7/2024	11:51:13	20.22	0.45	RUN-FOUR
8/7/2024	11:51:23	20.22	0.44	RUN-FOUR
8/7/2024	11:51:33	20.22	0.44	RUN-FOUR
8/7/2024	11:51:43	20.22	0.45	RUN-FOUR
8/7/2024	11:51:53	20.22	0.44	RUN-FOUR

DASYLab 2020 - 2020

Worksheet name: AES2021_O2_CO2

Recording: 7:04:32 AM

Block length : 1

Delta : 10 sec.

Number of channels : 2

Date	Time	Write 0 [V]	Write 1 [V]	PHASE
8/7/2024	11:52:03	20.21	0.44	RUN-FOUR
8/7/2024	11:52:13	20.22	0.44	RUN-FOUR
8/7/2024	11:52:23	20.22	0.44	RUN-FOUR
8/7/2024	11:52:33	20.22	0.44	RUN-FOUR
8/7/2024	11:52:43	20.22	0.44	RUN-FOUR
8/7/2024	11:52:53	20.21	0.44	RUN-FOUR
8/7/2024	11:53:03	20.22	0.44	RUN-FOUR
8/7/2024	11:53:13	20.22	0.45	RUN-FOUR
8/7/2024	11:53:23	20.22	0.44	RUN-FOUR
8/7/2024	11:53:33	20.22	0.44	RUN-FOUR
8/7/2024	11:53:43	20.22	0.44	RUN-FOUR
8/7/2024	11:53:53	20.22	0.44	RUN-FOUR
8/7/2024	11:54:03	20.22	0.44	RUN-FOUR
8/7/2024	11:54:13	20.22	0.44	RUN-FOUR
8/7/2024	11:54:23	20.22	0.44	RUN-FOUR
8/7/2024	11:54:33	20.21	0.44	RUN-FOUR
8/7/2024	11:54:43	20.21	0.44	RUN-FOUR
8/7/2024	11:54:53	20.21	0.44	RUN-FOUR
8/7/2024	11:55:03	20.21	0.44	RUN-FOUR
8/7/2024	11:55:13	20.21	0.44	RUN-FOUR
8/7/2024	11:55:23	20.21	0.44	RUN-FOUR
8/7/2024	12:00:03	0.01	0.02	ZERO2
8/7/2024	12:02:03	9.93	10.3	MID2
8/7/2024	12:03:53	21.77	19.51	SPAN2

Method 1 Field Data Sheet

Determination of Traverse Points

Method 1 - Circular Duct

Project	Wonder Smokehouse Testing
Project Number	60735150
Facility	Wonder NJ
Source	Stack

Operator	T. Mirep
Date	8/5/2024
Time	18:10

☒ Velocity Only
☒ Isokinetic Sampling
Number of Ports to be sampled <u>2</u>

Duct Diameter
Diameter (ft/in) <u>18"</u>
☒ Measurement
☐ Plant Information

Upstream from Disturbance (Exit) (A)
Distance from Disturbance (ft/in) <u>30"</u>
Distance from Disturbance (diameters) <u>1.66</u>
☒ Measurement
☐ Plant Information
Downstream from Disturbance (B)
Distance from Disturbance (ft/in) <u>116"</u>
Distance from Disturbance (diameters) <u>6.44</u>
☒ Measurement
☐ Plant Information

Total number of Traverse Points (from Figure 2 (velocity) or 1 (all isokinetic sampling))	<u>16</u>
Number of traverse points per port <u>8</u>	
Port Depth	<u>0"</u>

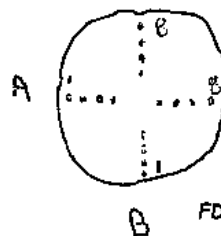
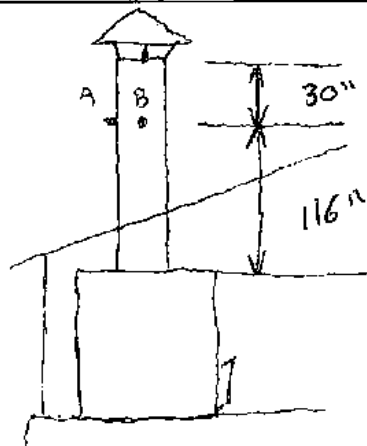
Traverse Point ¹	Percent of Diameter	Distance from Wall ² (in)	Marking Location (in)
1	3.2	5 1/8"	5 1/8"
2	10.5	1 7/8"	1 7/8"
3	19.4	3 1/4"	3 1/4"
4	32.3	5 7/8"	5 7/8"
5	67.7	12 1/8"	12 1/8"
6	80.6	14 1/2"	14 1/2"
7	89.5	16 1/8"	16 1/8"
8	96.8	17 3/8"	17 3/8"
9			
10			
11			
12			

Traverse Point	Percent of Diameter	Distance from Wall (in)	Marking Location (in)
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			

¹ - Traverse point locations can be found using the figures on data sheet FDS-03F.

² - According to Method 1, for stacks between 12 and 24", no point may be within 1/2 inch of the wall. For stacks greater than 24", no point may be within 1 inch of the wall.

Prepare a drawing of the source, showing the ports, disturbances, and the distances



FDS-03A Method 1 Circular Duct
Per EM SOP-011
Issued: December 2023
Document reviewed biennially

Appendix B Facility Process Data

Wonder to include process data

Appendix C Reference Method Calibrations

Field Equipment Calibration Sheets

DRY GAS METER CALIBRATION

Meter Box No.: 80745

Check rate:

Annual Calibration ☒ X

Recalibration ☐

Date:	02/12/2024
Operator:	Fred Sanguedolce, Jr.
Barometric Pressure:	29.54 (in Hg)
Theoretical Critical Vacuum:	13.93 (in Hg)

Pretest Leak Checks		
	Allowable	Actual
Positive (at 5 - 7 in. H ₂ O)	c	0.00
Negative (at 3 in. Hg)	c	0.00
	cfm	cfm

Manufacturer: Anderson NJTECH

Date Received/Placed in service: pre 1990

Serial No. / DiSM No.: 80745 / 2799998

DRY GAS METER DATA						CRITICAL ORIFICE DATA			
ΔH (in H ₂ O)	Time (min)	Volume			Temp		Critical Orifice	K Orifice	Actual
		Initial (ft ³)	Final (ft ³)	Total (ft ³)	Initial °F	Final °F	Series #	Calibration Coefficient	Vacuum (in Hg)
0.27	20	949.800	955.935	5.135	73.5	74.0	40	0.2359	-15
0.64	15	957.000	963.901	6.901	74.0	74.0	48	0.3464	-15
1.15	15	968.000	975.054	9.054	74.5	74.5	55	0.4558	-15
2.00	10	977.000	984.855	7.855	75.0	75.0	63	0.5877	-15
3.60	10	989.300	998.935	10.635	75.0	75.5	73	0.8012	-15
									Ambient Temperature
									Initial Final Average
									°F °F °F

CORRECTED VOLUME	
Dry Gas Meter Vol (std ft ³)	Critical Orifice Vol (std ft ³)
5.993	6.067
8.745	8.583
8.852	8.794
7.689	7.560
10.446	10.306

DRY GAS METER CALIBRATION FACTOR Y	
1.012	0.019
0.991	-0.002
0.992	-0.001
0.993	-0.010
0.987	-0.005

DRY GAS METER CALIBRATION FACTOR ΔH@	
1.350	-0.194
1.814	-0.030
1.882	0.038
1.968	0.124
1.906	0.062

Avg. Y 0.993

Avg. ΔH@ 1.844

- Notes:**
- For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above.
 - The Critical Orifice Coefficient, K', must be entered in English units, (1)°3°(deg R)°0.5 (in.Hg)°(min).
 - The minimum number of sample volume required per orifice is 3 cubic feet.
 - For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is ±0.02.
 - For Orifice Calibration Factor ΔH@, the orifice differential pressure in inches of H₂O that equates to 0.75 cfm at 1 at 58°F and 29.92 inches of Hg, acceptable tolerance of individual values from the average is ±0.2.

Dry Gas Meter Thermocouple Calibration					
Ambient Air Reference: Thomas Scientific Digital Thermometer S/N 181717335					
Hot Water Reference: Omega CL1000 Model: CL1C00B Serial No.: 07012840					
	Inlet ID#	N 80745	Outlet ID#	OU1 80745	
Ref. Source	Ref. °F	°F	Δ	°F	Δ
Amb. Air	68	67	-1	57	-1
Hot Water	120	120	0	119	-1

Potentiometer Calibration			
Reference: Omega Thermocouple Simulator			
Model: CL900-K-1600 Serial No.: 301			
Range	Ref. °F	°F	Δ
Low	50	50	0
Mid	450	449	-1
High	950	950	0

- Notes:**
- Hot Water to be in the range of 104 - 122 °F.
 - Tolerance allowed for all thermocouple individual readings : ± 0.4 °F
 - Tolerance allowed for all potentiometer individual readings : ± 2 °F

$$V_{(std)} = 17.34 \left(\frac{P_1}{P_2} \right) \left(\frac{T_2}{T_1} \right)$$

$$V_{(std)} = K' \frac{P_1 \theta}{\sqrt{t_{std} - 460}}$$

$$Y = \frac{V_{(std)}}{V_{(std)}}$$

$$\Delta H_{\theta} = \Delta H \left(\frac{75\theta}{V_{(std)}} \right)^2$$

DRY GAS METER CALIBRATION

Meter Box No.: 80754

Check rate:

Annual Calibration ☒ X

Recalibration ☐

Date:	02/12/2024
Operator:	Fred Sanguedolce, Jr.
Barometric Pressure:	29.64 (in Hg)
Theoretical Critical Vacuum:	13.98 (in Hg)

Pretest Leak Checks		
	Allowable	Actual
Positive (at 5 - 7 in. H ₂ O)	c	0.00
Negative (at 3 in. Hg)	c	0.00
	cfm	cfm

Manufacturer: Anderson NJTECH

Date Received/Placed in service: pre 1990

Serial No. / DGM No.: 80754 / 8845451

DRY GAS METER DATA					CRITICAL ORIFICE DATA				
ΔH (in H ₂ O)	Time (min)	Volume			Temp		Critical Orifice	K Orifice	Actual
		Initial (ft ³)	Final (ft ³)	Total (ft ³)	Initial °F	Final °F	Series #	Calibration Coefficient	Vacuum (in Hg)
0.28	20	432.060	438.097	8.097	73.5	74.0	40	0.2359	-15
0.63	15	439.000	445.887	6.887	74.0	74.5	48	0.3464	-15
1.12	15	447.500	458.528	9.028	74.5	74.5	55	0.4558	-15
1.90	10	458.500	468.302	7.802	75.0	74.5	63	0.5877	-15
3.50	10	468.500	480.050	10.550	75.0	75.0	73	0.8012	-15
									Ambient Temperature
									Initial °F
									Final °F
									Average °F

CORRECTED VOLUME	
Dry Gas Meter Vol (std ft ³)	Critical Orifice Vol (std ft ³)
5.975	6.082
8.751	6.700
8.855	8.817
7.884	7.580
10.400	10.334

DRY GAS METER CALIBRATION FACTOR Y	
1.018	0.020
0.993	-0.005
0.995	-0.002
0.999	-0.009
0.994	-0.004

DRY GAS METER CALIBRATION FACTOR ΔH@	
1.581	-0.195
1.778	-0.091
1.823	0.045
1.860	0.083
1.844	0.067

Avg. Y 0.998

Avg. ΔH@ 1.777

- Notes:**
- For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above.
 - The Critical Orifice Coefficient, K', must be entered in English units, (1)°3°(deg R)°0.5 (in.Hg)°(min).
 - The minimum number of sample volume required per orifice is 3 cubic feet.
 - For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is ±0.02.
 - For Orifice Calibration Factor ΔH@, the orifice differential pressure in inches of H₂O that equates to 0.75 cfm at 1 at 58°F and 29.92 inches of Hg.
- acceptable tolerance of individual values from the average is ± 0.2.

Dry Gas Meter Thermocouple Calibration					
Ambient Air Reference: Thomas Scientific Digital Thermometer S/N 181717335					
Hot Water Reference: Omega CL1000 Model: CL1C00B Serial No.: 07012840					
	Inlet ID#	N	80754	Outlet ID#	OU1 80754
Ref. Source	Ref. °F	°F	Δ	°F	Δ
Amb. Air	69	68	-1	58	-1
Hot Water	120	117	-3	118	-2

Potentiometer Calibration			
Reference: Omega Thermocouple Simulator			
Model: CL900-K-1600 Serial No.: 801			
Range	Ref. °F	°F	Δ
Low	50	52	2
Mid	450	450	0
High	950	950	0

- Notes:**
- Hot Water to be in the range of 104 - 122 °F.
 - Tolerance allowed for all thermocouple individual readings : ± 5.4 °F
 - Tolerance allowed for all potentiometer individual readings : ± 2 °F

$$P_{(100)} = 17.54 \left(\frac{P_A}{t_A - 160} \right)^{1.5}$$

$$P_{(100)} = K' \frac{P_i \theta}{\sqrt{t_{100} - 460}}$$

$$Y = \frac{V_{(100)}}{V_{(100)}}$$

$$\Delta H_{\theta} = \Delta H \left(\frac{75\theta}{V_{(100)}} \right)^2$$

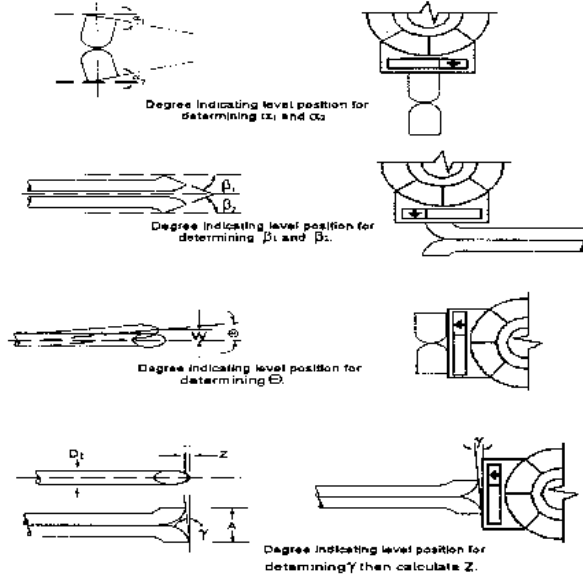
Probe Assembly Serial No.:
M5-3'-O

Date:
July 25, 2024

Type-K (Nickel Chromium vs. Nickel Aluminum) Thermocouple Calibration			
NIST Traceable Temperature Calibration Standard:	THOMAS SCIENTIFIC TRACEABLE THERMOMETER	Serial No.:	184717335
(Standard Ambient Conditions)		Calibration Date:	01/02/2024
NIST Traceable Temperature Calibration Standard:	OMEGA HOT POINT DRY BLOCK CALIBRATOR CL1000B	Serial No.:	07012840
(Temperature Conditions at 312°F and 450°F)		Calibration Date:	01/08/2024
**Thermocouple Output (Digital Read-Out) Device:	NUTECH CORPORATION DRY GAS METER CONSOLE #	Serial No.:	80612
		Calibration Date:	04/09/2024

STANDARD AMBIENT CONDITIONS				ROLLING CONDITIONS			EXTREME ROLL CONDITIONS		
Thermocouple Serial No.	*Reference Thermocouple °F	**TC Temp °F	Temp Difference 1.5% °F	*Reference Thermocouple °F	**TC Temp °F	Temp Difference 1.5% °F	*Reference Thermocouple °F	**TC Temp °F	Temp Difference 1.5% °F
M5-3'-O	76.8	79	0.3	312.0	2.4	0.9	-5.2	453	0.4
	76.8	79	0.3	212.0	2.4	0.9	-5.2	453	0.4
	76.8	79	0.3	312.0	2.4	0.9	-5.2	453	0.4
Average	76.8	79	0.3	312.0	2.4	0.9	-5.2	453	0.1

Type "S" Pitot Tube Calibration



Level and Perpendicular Observation	Yes
Damaged	No
EFFECTIVE LENGTH (Pitot Tip to Port Discontinuities)	39.0 inches
OVERALL LENGTH (Pitot Tip to End of Probe)	50.5 inches
a_1 ($-10^\circ \leq a_1 \leq 10^\circ$)	0
a_2 ($-10^\circ \leq a_2 \leq 10^\circ$)	0
β_1 ($-5^\circ < \beta_1 < 5^\circ$)	1
β_2 ($-5^\circ < \beta_2 < 5^\circ$)	3
θ	0 degrees
Q	0.0175 degrees
$x = A \tan g (\leq 0.125")$	0.000
$W = A \tan Q (\leq 0.03125")$	0.01548
D_1 ($3/16 < D_1 < 3/8")$	0.375
A	0.834
$A/2D_1$ ($1.05 < A/2D_1 < 1.5$)	1.08

PROTRACTOR Serial No: 39840

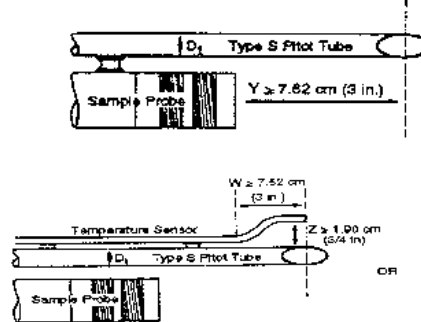
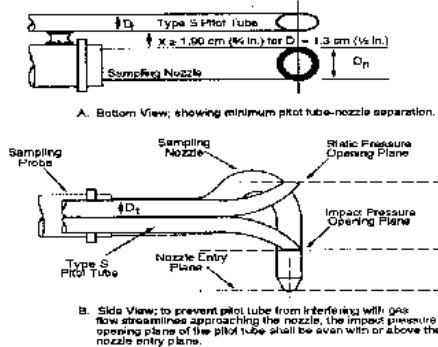
Pitot Tube to Nozzle Calibration:

			Acceptance Criteria
1) Pitot to nozzle separation	X	0.793 inch	0.75 inch (0.500 nozzle)
2) Thermocouple to pitot separation	Z	0.768 inch	>0.75 inch
3) Pitot end to probe union distance	Y	3.347 inch	>3.0 inch

NIST Traceable Electronic Caliper Standards: Vinea Digital Caliper Model DCL-A-0605

Serial No.: DCL-A0605-062016931M
Calibration Date: 09/14/2020

Pitot Tube to Nozzle Calibration



Ambient Temperature (Degrees °C): 78.8
Barometric Pressure (inches Hg): 29.71

I certify that Method 5 Probe Assembly, serial no. M5-3'-O and fixed date: Type "S" Pitot Tube, meets or exceeds all specifications, standards and applicable design features and is hereby assigned a pitot tube calibration factor (typical 0.81).

Performed & Certified By: Fred Sanguedolce, Jr.
(print name)

Quality Control Check:

Completeness ☒ Legibility ☒ Accuracy ☒ Specifications ☒ Reasonableness ☒

Checked By: Phaneendra Uppalapati
(print name)

Source: All non-minor errors found on Method 5 probe assembly calibration data are presented in Quality Assurance Guidelines for Air Pollution Measurement Systems, Volume III, Sampling Source-Spec for MCD 83A EPA 832 R-04 038c, September 1997.

Probe Assembly Serial No.:

M5-3'-M

Date:

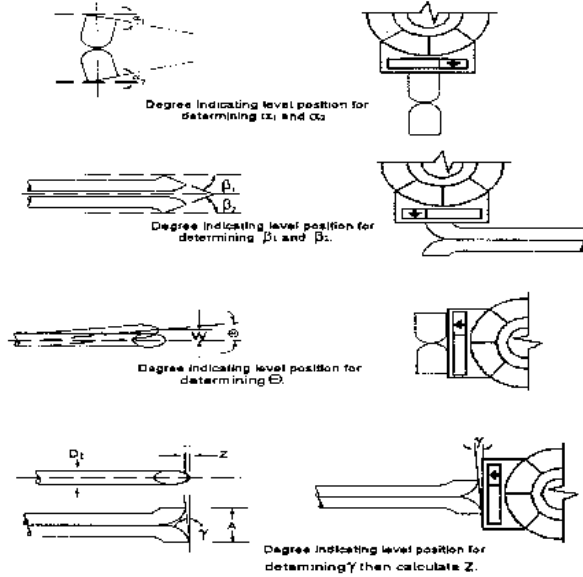
July 25, 2024

Type-K (Nickel Chromium vs. Nickel Aluminum) Thermocouple Calibration

NIST Traceable Temperature Calibration Standard:	THOMAS SCIENTIFIC TRACEABLE THERMOMETER	Serial No.:	184717335
(Standard Ambient Conditions)		Calibration Date:	01/02/2024
NIST Traceable Temperature Calibration Standard:	OMEGA HOT POINT DRY BLOCK CALIBRATOR CL1000B	Serial No.:	07012840
(Temperature Conditions at 312°F and 450°F)		Calibration Date:	01/08/2024
**Thermocouple Output (Digital Read-Out) Device:	NUTECH CORPORATION DRY GAS METER CONSOLE #	Serial No.:	80612
		Calibration Date:	04/09/2024

Thermocouple Serial No.	STANDARD AMBIENT CONDITIONS			ROLLING CONDITIONS			EXTREME ROLL CONDITIONS		
	*Reference Thermocouple (°F)	**TC Temp (°F)	Temp Difference (1.5°F)	*Reference Thermocouple (°F)	**TC Temp (°F)	Temp Difference (1.5°F)	*Reference Thermocouple (°F)	**TC Temp (°F)	Temp Difference (1.5°F)
M5-3'-M	76.6	78	-0.2	312.0	2.3	0.5	449.0	449	-0.1
	76.6	73	-0.8	212.0	2.3	0.5	449.0	449	-0.1
	76.6	78	-0.8	312.0	2.3	0.5	449.0	449	-0.1
Average	76.6	78	-0.8	312.0	2.3	0.5	449.0	449	-0.1

Type "S" Pitot Tube Calibration



Level and Perpendicular Observation	Yes
Damaged	No
EFFECTIVE LENGTH (Pitot Tip to Port Discontinuities)	39.0 inches
OVERALL LENGTH (Pitot Tip to End of Probe)	51.0 inches
a_1 ($-10^\circ \leq a_1 \leq 10^\circ$)	0
a_2 ($-10^\circ \leq a_2 \leq 10^\circ$)	0
β_1 ($-5^\circ < \beta_1 < 5^\circ$)	1
β_2 ($-5^\circ < \beta_2 < 5^\circ$)	0
θ	1.0 degrees
Q	0.0000
$x = A \tan g (\leq 0.125")$	0.033
$W = A \tan Q (\leq 0.03125")$	0.0000
D_1 ($3/16 < D_1 < 3/8")$	0.375
A	0.934
$A/2D_1$ ($1.05 < A/2D_1 < 1.5$)	1.25

PROTRACTOR Serial No: 39840

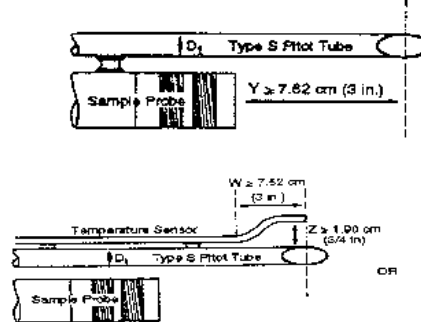
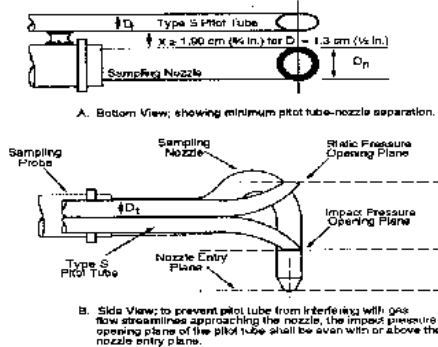
Pitot Tube to Nozzle Calibration:

1) Pitot to nozzle separation	X	0.2020 inch	Acceptance Criteria: 0.75 inch (with 0.500 nozzle)
2) Thermocouple to pitot separation	Z	0.7625 inch	>0.5 inch
3) Pitot end to probe union distance	Y	3.5315 inch	>3.0 inch

NIST Traceable Electronic Caliper Standard: Vinea Digital Caliper Model DCL-A-0605

Serial No: DCL-A0605-062016931M
Calibration Date: 09/14/2020

Pitot Tube to Nozzle Calibration



Ambient Temperature (Degrees °C)	78.6
Barometric Pressure (inches Hg)	29.92

I certify that Method 5 Probe Assembly, serial no. **M5-3'-M** and fixed date: Type "S" Pitot Tube, meets or exceeds all specifications, standards and applicable design features and is hereby assigned a pitot tube calibration factor (typical 0.81).

Performed & Certified By: **Fred Sanguedolce, Jr.**
(print name)

Quality Control Check:

Completeness ☒ Legibility ☒ Accuracy ☒ Specifications ☒ Reasonableness ☒

Checked By: **Phaneendra Uppalapati**
(print name)

Source: All non-minor entries from standard 587 are presented in Quality Assurance Guidelines for Air Pollution Measurement Systems, Volume III, Sampling Source-Spec for MCD 587A 582 R-04 038c, September 1997.

Type-K (Nickel Chromium vs. Nickel Aluminum) Thermocouple Calibration

NIST Traceable Temperature Calibration Standard:	THOMAS SCIENTIFIC TRACEABLE THERMOMETER	Serial No:	184717335
(Standard Ambient Conditions)		Calibration Date:	01/02/2024
NIST Traceable Temperature Calibration Standard:	OMEGA HOT POINT DRY BLOCK CALIBRATOR CL1000B	Serial No:	07012840
(Temperature Conditions at 312°F and 450°F)		Calibration Date:	01/08/2024
**Thermocouple Output (Digital Read-Out) Device:	NUTECH CORPORATION DRY GAS METER CONSOLE #	Serial No:	80612
		Calibration Date:	04/09/2024

Probe Assembly Serial No.:

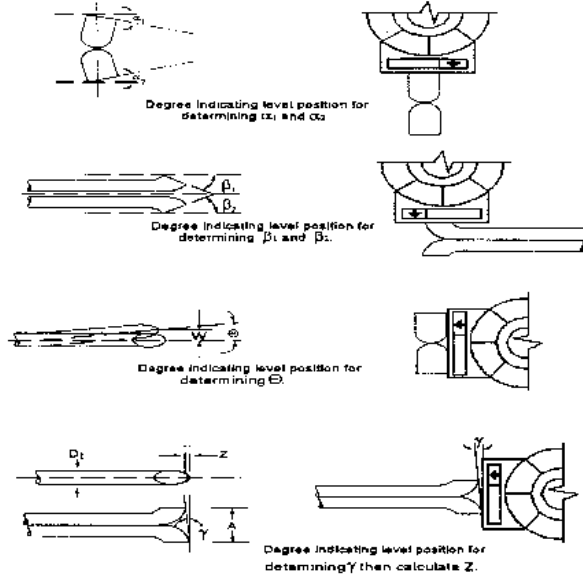
M5-3'-L

Date:

July 25, 2024

Thermocouple Serial No.	STANDARD AMBIENT CONDITIONS			ROLLING CONDITIONS			EXTREME ROLL CONDITIONS		
	*Reference Thermocouple °F	**TC Temp °F	Temp Difference 1.5% _{max}	*Reference Thermocouple °F	**TC Temp °F	Temp Difference 1.5% _{max}	*Reference Thermocouple °F	**TC Temp °F	Temp Difference 1.5% _{max}
M5-3'-L	76.8	79	0.3	312.0	2.4	0.9	449.0	448	-0.4
	76.8	79	0.3	212.0	2.4	0.9	449.0	448	-0.4
	76.8	79	0.3	312.0	2.4	0.9	449.0	448	-0.4
Average	76.8	79	0.3	312.0	2.4	0.9	449.0	448	-0.4

Type "S" Pitot Tube Calibration



Level and Perpendicular Observation	Yes
Damaged	No
EFFECTIVE LENGTH (Pitot Tip to Port Discontinuities)	39.0 inches
OVERALL LENGTH (Pitot Tip to End of Probe)	51.0 inches
α_1 ($-10^\circ \leq \alpha_1 \leq 10^\circ$)	0
α_2 ($-10^\circ \leq \alpha_2 \leq 10^\circ$)	1
β_1 ($-5^\circ < \beta_1 < 5^\circ$)	1
β_2 ($-5^\circ < \beta_2 < 5^\circ$)	2
θ	1 degrees
Q	1 degrees
$z = A \tan g (\leq 0.125^\circ)$	0.015
$W = A \tan Q (\leq 0.03125^\circ)$	-0.0154
D_1 ($3/16 < D_1 < 3/8$ ")	0.375
A	0.833
$A/2D_1$ ($1.05 < A/2D_1 < 1.5$)	1.48

PROTRACTOR Serial No: 39840

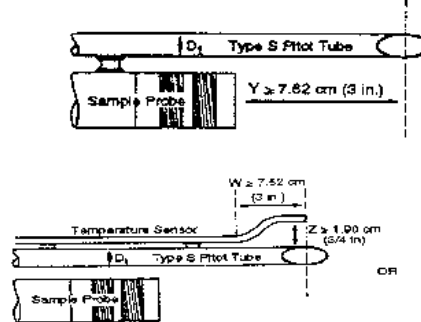
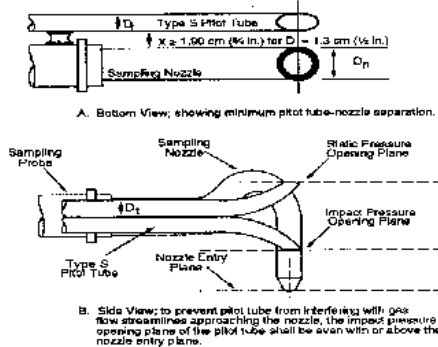
Pitot Tube to Nozzle Calibration:

1) Pitot to nozzle separation	X	0.792 inch	Acceptance Criteria: 0.75 inch (pitch 0.5/10 nozzle)
2) Thermocouple to pitot separation	Z	0.843 inch	>0.75 inch
3) Pitot end to probe union distance	Y	3.306 inch	>3.0 inch

NIST Traceable Electronic Caliper Standard: Vinea Digital Caliper Model DCL-A-0605

Serial No: DCL-A0605-062016931M
Calibration Date: 09/14/2020

Pitot Tube to Nozzle Calibration



Ambient Temperature (Degrees °C): 78.8
Barometric Pressure (inches Hg): 29.69

I certify that Method 5 Probe Assembly, serial no. M5-3'-L and fitted with: Type "S" Pitot Tube, meets or exceeds all specifications, standards and applicable design features and is hereby assigned a pitot tube calibration factor (typical 0.81).

Performed & Certified By: Fred Sanguedolce, Jr.

(print name)

(signature)

Quality Control Check:

Completeness ☒ Legibility ☒ Accuracy ☒ Specifications ☒ Reasonableness ☒

Checked By: Phaneendra Uppalapati

(print name)

(signature)

Source: All non-minor entries from current 'S' type probe calibration standards are presented in Quality Assurance Guidelines for Air Pollution Measurement Systems, Volume III, Sampling Source-Spec for MGD SAs EPA 821-R-04-038a, September 1997.



Method 5 Filter Thermocouple Calibration

Calibrator: Fred Sanguedolce Reference Thermometer: TS 181717335 Calibration Date: 01/02/2024
Calibration Date: 01/11/2024 Reference Thermometer: Omega 06022200 Calibration Date: 09/13/2024
Nutech Dry Gas Meter TC: 80612 Calibration Date: 05/24/2023
Date Received / Placed in Service: 2003-2015 Reference Barometer: TS 181729655
Serial No.: N/A Barometric Pressure (in. Hg): 29.51
Manufacturer's Name: Apex Instruments Part #: GN8-15K Ambient Temperature (°F): 66.1

Thermocouple ID	Ice Bath			Boiling Water		
(Part ID)	Actual (°F)	Reference (°F)	Difference (°F)	Actual (°F)	Reference (°F)	Difference (°F)
M5TC-1	33	32.5	0.5	212	212.2	-0.2
M5TC-2	—	—	—	—	—	—
M5-8	33	32.5	0.5	211	212.0	-1.0
M5TC-4	—	—	—	—	—	—
M5-84	33	32.5	0.5	212	212.4	-0.4
M5 100	33	32.5	0.5	211	212.0	-1.0
M5 101	33	32.5	0.5	212	212.0	0.0
M5 102	33	32.5	0.5	212	212.0	0.0
M5 103	33	32.7	0.3	211	212.0	-1.0
M5 104	33	32.5	0.5	212	212.0	0.0
M5 105	33	32.5	0.5	212	212.4	-0.4
M5 106	33	32.7	0.3	212	211.8	0.2
M5 107	33	32.5	0.5	212	212.0	0.0
M5 108	33	32.5	0.5	212	212.0	0.0
79	—	—	—	—	—	—
451	33	32.5	0.5	212	212.0	0.0
452	33	32.5	0.5	212	212.2	-0.2
728	33	32.5	0.5	212	212.0	0.0
730	33	32.5	0.5	211	212.0	-1.0
1146	34	32.7	1.3	211	212.0	-1.0
1147	34	32.5	1.5	211	212.0	-1.0
1154	33	32.5	0.5	211	212.2	-1.2
1156	34	32.7	1.3	210	211.8	-1.8
2086	33	32.5	0.5	212	212.0	0.0
2124	33	32.5	0.5	212	212.2	-0.2
2809	33	32.5	0.5	212	212.0	0.0
4278	33	32.5	0.5	210	212.0	-2.0
4282	34	32.5	1.5	212	212.2	-0.2
4287	33	32.5	0.5	211	212.0	-1.0

Notes: — = currently not available for calibration



Method 202 CPM Filter Thermocouple Calibration

Calibrator: Fred Sanguedolce Reference Thermometer: TS 181717335 Calibration Date: 01/02/2024
Calibration Date: 01/23/2024 Reference Thermometer: Omega 06022200 Calibration Date: 09/13/2023
Nutech Dry Gas Meter TC: 80612 Calibration Date: 05/24/2023
Date Received/placed in Service: 2003-2015 Reference Barometer: TS 181729655
Serial No.: N/A Barometric Pressure (in. Hg): 30.21
Manufacturer's Name: Apex Instrument Part No. GN8-15K Ambient Temperature (°F): 66.2

Thermocouple ID (Part ID)	Ice Bath			Boiling Water		
	Actual (°F)	Reference (°F)	Difference (°F)	Actual (°F)	Reference (°F)	Difference (°F)
2727	32	32.7	-0.7	211	212.0	1.0
4041	32	32.5	-0.5	212	212.0	0.0
4042	32	32.7	-0.7	211	212.0	-1.0
4043	32	32.5	-0.5	211	212.0	-1.0
4044	32	32.5	-0.5	211	212.0	-1.0
4045	32	32.7	-0.7	211	212.0	-1.0
4046	32	32.7	-0.7	211	212.0	-1.0
4047	32	32.7	-0.7	211	212.0	-1.0
4048	32	32.7	-0.7	211	212.0	-1.0
4049	32	32.7	-0.7	211	212.0	-1.0
4050	32	32.5	-0.5	212	212.0	0.0
4051	32	32.5	-0.5	210	212.0	-2.0
4052	32	32.7	-0.7	211	212.0	-1.0
4557	32	32.5	-0.5	211	212.0	-1.0
4560	32	32.7	-0.7	212	212.0	0.0
4561	32	32.7	-0.7	212	211.8	0.2
4562	32	32.5	-0.5	211	212.0	-1.0
4564	32	32.5	-0.5	212	211.8	0.2
4565	32	32.7	-0.7	212	212.0	0.0
4567	32	32.7	-0.7	211	212.0	-1.0
4568	32	32.7	-0.7	212	212.0	0.0
4569	32	32.5	-0.5	211	212.0	-1.0
4572	32	32.5	-0.5	212	212.0	0.0
4575	32	32.7	-0.7	212	212.0	0.0
4576	32	32.7	-0.7	212	212.0	0.0

NOTES:



XAD Thermocouple Calibrations

Calibrator:	Fred Sanguedolce	Reference Thermometer:	TS 181717335	Calibration Date:	01/02/2024
Calibration Date:	01/23/2024	Nutech Dry Gas Meter TC:	80612	Calibration Date:	05/24/2023
Placed in Service:	2003-2015	Reference Barometer:	TS 181729655	Calibration Date:	01/02/2024
Serial No.:	N/A	Barometric Pressure (in. Hg):	30.16		
Manufacturer:	Apex Instruments	Part No.: GN8-15K	Ambient Temperature (°F):	65.8	

Thermocouple ID	Ice Bath			Ambient Air		
(Part ID)	Actual	Reference	Difference	Actual	Reference	Difference
XAD-1	31	32.3	-1.3	65	65.8	-0.8
XAD-2	—	—	—	—	—	—
XAD-3	31	32.3	-1.3	65	65.8	-0.8
XAD-4	31	32.3	-1.3	66	65.8	0.2
XAD-5	32	32.5	-0.5	65	65.8	-0.8
XAD-6	32	32.5	-0.5	65	65.8	-0.8
XAD-7	31	32.5	-1.5	65	65.8	-0.8
XAD-8	—	—	—	—	—	—
XAD-9	—	—	—	—	—	—
XAD-10	32	32.5	-0.5	65	65.8	-0.8
XAD-11	—	—	—	—	—	—
XAD-12	32	32.5	-0.5	65	65.8	-0.8
XAD-13	32	32.5	-0.5	65	65.8	-0.8
XAD-14	32	32.5	-0.5	65	65.8	-0.8
XAD-15	32	32.5	-0.5	66	65.8	0.2
XAD-16	32	32.5	-0.5	65	65.8	-0.8
XAD-17	32	32.5	-0.5	65	65.8	-0.8
XAD-18	31	32.3	-1.3	65	65.8	-0.8

Notes: — = currently not available for calibration

Project Name	Wonder Smokehouse Testing
Project Number	60735150

Reagent Use Log

Date 8/5-6/2024
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[illegible]

1 This code may be used: J - JTBaker, Mal - Mallinckrodt; A - Advantorg; P - Pharmco, V - VWR, F - Fisher, Mac - Macron;
R - Ricca; OS - OmniSolv; OT - OmniTrace; S - Sigma-Aldrich

2 Expiration Date is as provided by manufacturer or 12 months after opening.

Field Balance Calibration Check

Project Name	Wonder Smokehouse Testing
Project Number	60735150 - 1.1
Balance ID	PT1200-EUR/400/2005
Calibration Weight ID	500g

Date	Actual Mass (g)	Balance Reading (g)	Difference ^a (g)	Initials
8/5/2024	500.0	499.6	0.4	CMJ
8/6/2024	500.0	499.6	0.4	CMJ
8/7/2024	500.0	499.7	0.3	CMJ

^a The acceptance criteria for difference is ± 0.5 grams.

CEMS Calibration Sheets

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E03NI80E15A0138	Reference Number:	160-402489410-1
Cylinder Number:	CC83749	Cylinder Volume:	141.0 CF
Laboratory:	124 - Plumsteadville - PA	Cylinder Pressure:	2015 PSIG
PGVP Number:	A12022	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	Jul 18, 2022

Expiration Date: Jul 18, 2030

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	10.00 %	9.931 %	G1	+/- 1.4% NIST Traceable	07/18/2022
OXYGEN	10.00 %	9.975 %	G1	+/- 0.6% NIST Traceable	07/18/2022
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	06010615	K008685	7.016 % CARBON DIOXIDE/NITROGEN	+/- 0.5%	Nov 19, 2027
NTRM	09060233	CC263101	9.961 % OXYGEN/NITROGEN	+/- 0.3%	Nov 05, 2024

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
HORIBA VA5011 T5V6VU9P NDIR CO2	NDIR	Jul 07, 2022
SIEMENS OXYMAT 6 - N1-W5-951 - O2	PARAMAGNETIC	Jul 07, 2022

Triad Data Available Upon Request



Signature on file

Approved for Release

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E03NI58E15A0001	Reference Number:	160-402485273-1
Cylinder Number:	ALM004117	Cylinder Volume:	159.0 CF
Laboratory:	124 - Plumsteadville - PA	Cylinder Pressure:	2015 PSIG
PGVP Number:	A12022	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	Jul 11, 2022

Expiration Date: Jul 11, 2030

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	19.50 %	19.36 %	G1	+/- 0.4% NIST Traceable	07/11/2022
OXYGEN	22.00 %	21.95 %	G1	+/- 0.4% NIST Traceable	07/11/2022
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	200605-04	6088256Y	24.63 % CARBON DIOXIDE/NITROGEN	+/- 0.4%	Feb 03, 2027
NTRM	08010205	K001516	23.2 % OXYGEN/NITROGEN	+/- 0.4%	Jun 01, 2024

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
HORIBA VA5011 T5V6VU9P NDIR CO2	NDIR	Jul 07, 2022
SIEMENS OXYMAT 6 - N1-W5-951 - O2	PARAMAGNETIC	Jul 07, 2022

Triad Data Available Upon Request



Signature on file

Approved for Release

MeterBox Post Calibration Sheets



DRY GAS METER CALIBRATION

Meter Box No.: 80745

Check me:

Annual Calibration _____ Recalibration X

Date:	06/21/2024
Operator:	Fred Sanguadolo, Jr.
Barometric Pressure:	29.68 (in Hg)
Theoretical Critical Vacuum:	14.00 (in Hg)

Pretest Leak Checks		
	Allowable	Actual
Positive (at 5 - 7 in. H ₂ O)	0	0.00 in. H ₂ O per min.
Negative (at 3 in. Hg)	0	0.00 cfm

Manufacturer: Anderson NUTECH
Date Received/Paced in service: pre-1990
Serial No. / DGM No.: 80745 / 2280398

DRY GAS METER DATA					CRITICAL ORIFICE DATA							
ΔH (in H ₂ O)	Time (min)	Volume			Temp		Critical	Critical	Actual Vacuum (in Hg)	Ambient Temperature		
		Initial	Final	Total	Initial	Final	Orifice	Orifice		Initial	Final	Average
		(ft ³)	(ft ³)	(ft ³)	°F	°F	Serial #	Coefficient		°F	°F	°F
0.27	20	268.509	272.854	6.154	73.0	76.0	40	0.2359	-15.0	71.5	71.8	71.7
0.63	15	273.709	280.634	6.934	76.0	77.0	48	0.3484	-15.0	71.8	71.9	71.9
1.15	15	282.409	291.518	9.118	78.0	79.0	55	0.4558	-15.0	71.9	72.1	72.0
1.98	10	283.709	301.635	7.935	80.0	81.0	63	0.5877	-15.0	72.1	72.7	72.4
3.60	10	306.909	318.751	10.751	81.0	82.0	73	0.8012	-15.0	72.5	72.5	72.5

CORRECTED VOLUME	
Dry Gas Meter Vol (std ft ³)	Critical Orifice Vol (std ft ³)
6.032	6.073
6.777	6.887
8.895	8.798
7.724	7.560
10.487	10.304

DRY GAS METER CALIBRATION FACTOR Y	
1.007	0.018
0.987	-0.002
0.990	0.001
0.979	-0.010
0.983	-0.006

DRY GAS METER CALIBRATION FACTOR ΔH@	
1.647	-0.186
1.783	-0.050
1.880	0.047
1.949	0.116
1.907	0.074

Avg. Y 0.989

Avg. ΔH@ 1.833

- Notes:**
- For vac test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above.
 - The Critical Orifice Coefficient, K', must be entered in English units, (ft³/s²(deg R)^{0.5}(in.Hg)¹(min)⁻¹).
 - The minimum number of sample volume required per orifice is 5 cubic feet.
 - For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is ±0.02.
 - For Orifice Calibration Factor ΔH@, the orifice differential pressure in inches of H₂O that equates to 0.75 cfm of air at 68 F and 29.92 inches of Hg, acceptable tolerance of individual values from the average is ±0.2.

Dry Gas Meter Thermocouple Calibration					
Ambient Air Reference: Thomas Scientific Digital Thermometer S/N 181717335					
Hot Water Reference: Omega CL1000 Model: CL1000B Serial No.: 07012840					
	Inlet ID# IN 80745			Out ID# OUT 80745	
Ref. Source	Ref. °F	°F	Δ	°F	Δ
Amb. Air	71	70	-1	70	-1
Hot Water	115	112	-3	113	-2

Potentiometer Calibration			
Reference: Omega Thermocouple Simulator			
Model: CI 300-K-1000 Serial No.: 361			
Range	Ref. °F	°F	Δ
Low	50	51	1
Mid	450	450	0
High	950	950	0

- Notes:**
- Hot Water to be in the range of 101 - 122 °F.
 - Tolerance allowed for all thermocouple individual readings : ± 0.4 °F
 - Tolerance allowed for all potentiometer individual readings : ± 2 °F

$$V_{corrected} = 17.32 \left(\frac{P_b}{P_s} \right)^{0.95} \frac{\Delta H}{460}$$

$$V_{corrected} = K' \frac{P_b \theta}{\sqrt{t_{min}} + 460}$$

$$Y = \frac{V_{corrected}}{V_{std}} \left(\frac{P_b}{P_s} \right)^{0.95}$$

$$\Delta H_{std} = \Delta H \left(\frac{750}{V_{corrected}} \right)^2$$

DRY GAS METER CALIBRATION

Meter Box No.: 80754

Check one:

Annual Calibration _____

Recalibration X

Date:	08/21/2024
Operator:	Fred Sanguedolce, Jr.
Barometric Pressure:	29.89 (in Hg)
Theoretical Critical Vacuum:	14.00 (in Hg)

Protest Leak Checks		
	Allowable	Actual
Positive (at 5 - 7 in. H ₂ O)	0	0.00
Negative (at 3 in. Hg)	0	0.00

Manufacturer: Anderson NUTECH

Date Received/Placed in service: pre 1990

Serial No. DGM No.: 80754 / 5845431

DRY GAS METER DATA							CRITICAL ORIFICE DATA						
ΔH (in H ₂ O)	Time (min)	Volume			Temp		Critical Orifice	K' Orifice Calibration	Actual Vacuum	Ambient Temperature			
		Initial (ft ³)	Final (ft ³)	Total (ft ³)	Initial	Final	Serial #	Coefficient	(in Hg)	Initial	Final	Average	
					°F	°F				°F	°F	°F	
0.26	20	700.500	703.889	8.189	75.0	76.0	40	0.2339	-15	72.8	72.7	72.8	
0.30	15	709.700	715.689	6.989	77.0	77.0	48	0.3464	-15	72.7	72.7	72.7	
1.10	15	718.500	727.873	9.173	76.5	77.0	55	0.4508	-15	72.7	72.7	72.7	
1.80	10	729.700	737.639	7.939	76.5	77.0	63	0.5877	-15	72.7	72.7	72.7	
3.30	10	742.000	752.708	10.708	76.5	76.5	73	0.8012	-15	72.7	72.7	72.7	

CORRECTED VOLUME	
Dry Gas Meter Vol (std ft ³)	Critical Orifice Vol (std ft ³)
6.057	6.049
6.828	6.884
8.975	8.793
7.781	7.560
10.546	10.306

DRY GAS METER CALIBRATION FACTOR Y	
1.002	0.020
0.979	-0.003
0.980	-0.002
0.972	-0.010
0.977	-0.005

DRY GAS METER CALIBRATION FACTOR ΔH@	
1.568	-0.135
1.700	-0.053
1.800	0.047
1.772	0.018
1.906	0.153

Avg. Y 0.982

Avg. ΔH@ 1.753

- Notes:**
- For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above.
 - The Critical Orifice Coefficient, K', must be entered in English Units, (ft³)/(deg R)^{1/2}/(in.Hg)^{1/2}/(min^{1/2}).
 - The minimum number of sample volume required per orifice is 3 cubic feet.
 - For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is ±0.02.
 - For Orifice Calibration Factor ΔH@, the orifice differential pressure in inches of H₂O that equates to 0.10 cfm of air at 58 F and 29.92 inches of Hg, acceptable tolerance of individual values from the average is ±0.2.

Dry Gas Meter Thermocouple Calibration					
Ambient Air Reference: Thomas Scientific Digital Thermometer S/N 18171335					
Hot Water Reference: Omega CL1000 Model: CL1000B Serial No.: C7012810					
	Inlet D# IN 80754	Outlet D# OUT 80754			
Ref. Source	Ref. °F	°F	Δ	°F	Δ
Amb. Air	73	72	-1	72	-1
Hot Water	116	112	-3	113	-2

Potentiometer Calibration			
Reference: Omega Thermocouple Simulator			
Model: CL860-K-1000 Serial No.: 801			
Range	Ref. °F	°F	Δ
Low	50	50	0
Mid	450	448	-2
High	950	950	0

- Notes:**
- Hot Water to be in the range of 104 - 122 °F.
 - Tolerance allowed for all thermocouple individual readings: ±0.4 °F
 - Tolerance allowed for all potentiometer individual readings: ±2 °F

$$P_{\text{std}} = 17.54 \left(\frac{P_i}{T_i} \right) \left(\frac{T_{\text{std}}}{P_{\text{std}}} \right)$$

$$V_{\text{std}} = K' \frac{P_i \theta}{\sqrt{T_{\text{std}} - 460}}$$

$$Y = \frac{V_{\text{std}}}{V_{\text{std}}}$$

$$\Delta H_{\text{std}} = \Delta H \left(\frac{750}{V_{\text{std}}} \right)^2$$

Appendix D Analytical Reports

PM Analysis Results

ANALYTICAL REPORT

PREPARED FOR

Attn: Phaneendra Uppalapati
AECOM

250 Apollo Drive
Chelmsford MA 01824

Generated 8/21/2024 12:21 PM

JOB DESCRIPTION

Wonder Smokehouse - M5/202

JOB NUMBER

140-37968-1

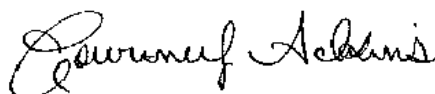
Eurofins Knoxville

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins TestAmerica Project Manager.

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Definitions/Glossary

Client: AECOM

Job ID: 140-37968-1

Project/Site: Wonder Smokehouse - M5/202

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Method Summary

Client: AECOM

Job ID: 140-37968-1

Project/Site: Wonder Smokehouse - M5/202

Method	Method Description	Protocol	Laboratory
202 InOrg CPM	Inorganic Condensable Particulate Matter	EPA	EET KNX
202 Org CPM	Organic Condensable Particulate Matter	EPA	EET KNX
5	Particulates	EPA	EET KNX

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

EET KNX = Eurofins Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Sample Summary

Client: AECOM

Job ID: 140-37968-1

Project/Site: Wonder Smokehouse - M5/202

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
140-37968-1	WONDSTK-STK-1-M5/202-PNR	Air	08/06/24 00:00	08/07/24 16:40
140-37968-2	WONDSTK-STK-1-M5/202-FILT	Air	08/06/24 00:00	08/07/24 16:40
140-37968-3	WONDSTK-STK-1-M5/202-WTRRNS	Air	08/06/24 00:00	08/07/24 16:40
140-37968-4	WONDSTK-STK-1-M5/202-ORGRNS	Air	08/06/24 00:00	08/07/24 16:40
140-37968-5	WONDSTK-STK-2-M5/202-PNR	Air	08/06/24 00:00	08/07/24 16:40
140-37968-7	WONDSTK-STK-2-M5/202-FILT	Air	08/06/24 00:00	08/07/24 16:40
140-37968-8	WONDSTK-STK-2-M5/202-WTRRNS	Air	08/06/24 00:00	08/07/24 16:40
140-37968-9	WONDSTK-STK-2-M5/202-ORGRNS	Air	08/06/24 00:00	08/07/24 16:40
140-37968-11	WONDSTK-STK-3-M5/202-PNR	Air	08/07/24 00:00	08/07/24 16:40
140-37968-12	WONDSTK-STK-3-M5/202-FILT	Air	08/07/24 00:00	08/07/24 16:40
140-37968-13	WONDSTK-STK-3-M5/202-WTRRNS	Air	08/07/24 00:00	08/07/24 16:40
140-37968-14	WONDSTK-STK-3-M5/202-ORGRNS	Air	08/07/24 00:00	08/07/24 16:40
140-37968-16	WONDSTK-STK-FB-M5/202-PNR	Air	08/07/24 00:00	08/07/24 16:40
140-37968-17	WONDSTK-STK-FB-M5/202-FILT	Air	08/07/24 00:00	08/07/24 16:40
140-37968-18	WONDSTK-STK-FB-M5/202-WTRRNS	Air	08/07/24 00:00	08/07/24 16:40
140-37968-19	WONDSTK-STK-FB-M5/202-ORGRNS	Air	08/07/24 00:00	08/07/24 16:40
140-37968-25	WONDSTK-STK-4-M5/202-PNR	Air	08/07/24 00:00	08/07/24 16:40
140-37968-26	WONDSTK-STK-4-M5/202-FILT	Air	08/07/24 00:00	08/07/24 16:40
140-37968-27	WONDSTK-STK-4-M5/202-WTRRNS	Air	08/07/24 00:00	08/07/24 16:40
140-37968-28	WONDSTK-STK-4-M5/202-ORGRNS	Air	08/07/24 00:00	08/07/24 16:40
140-37968-30	A-2323 M5 MEDIA CHECK FILTER	Air	08/06/24 00:00	08/07/24 16:40

Job Narrative
140-37968-1

Receipt

The samples were received on 8/7/2024 4:40 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 20.2° C.

General Chemistry

Total Particulates: The measurement of the mass of particulate matter trapped by the particulate filter and probe rinse derived from an M-5 sampling train was performed using SOP number KNOX-WC-0006 (based on EPA Methods 0050 and 5). Microfiber filters and 150 mL beakers are carefully inspected and tare weighed to constant weight. After sample collection, the filters are dried, and then carefully weighed to constant weight to determine the mass of particulate matter trapped on the filters. The acetone probe rinse solution is evaporated to dryness, and then weighed to constant weight to determine the total particulate mass collected in the rinse. The total particulate mass collected by an M-5 train is the sum of the particulate filter and the acetone probe rinse residue weights.

Particulate by Method 202 (December 2010): Samples derived from Method 202 require special handling. The CPE filters were extracted three times with water, which was then combined with the corresponding aqueous fraction. The filters were then extracted with hexane three times, and the extracts were combined with the solvent rinses. The aqueous fractions were then extracted three times with hexane, and the extracts were combined with the solvent rinses. The organic fractions, including the acetone and hexane reagent blanks, were air dried in a hood. The aqueous fractions, including the deionized water reagent blank, were simmered to near dryness, and then allowed to air dry.

Aqueous samples having a pH < 5 were reconstituted with boiled deionized water, and then titrated with 0.1N ammonium hydroxide to a pH 7 endpoint if the reconstituted sample had a pH <5. The titrated samples were again simmered to near dryness, and then allowed to air dry. Titration to a pH 7 endpoint was not required for samples with a pH of 6 or higher upon receipt or after the sample was reconstituted. Where applicable, the contribution from added ammonia was calculated and subtracted from the residue weight to obtain the final result for the aqueous fractions.

Residual water from both the aqueous samples and the organic solvent samples were further air dried in a forced draft oven at 28°C before transferring them to a desiccator. The air dried samples were transferred to a desiccator and dried over calcium sulfate to constant weight.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

QC Association Summary

Client: AECOM

Job ID: 140-37968-1

Project/Site: Wonder Smokehouse - M5/202

General Chemistry

Analysis Batch: 89834

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37968-3	WONDSTK-STK-1-M5/202-WTRRNS	Total/NA	Air	202 InOrg CPM	
140-37968-8	WONDSTK-STK-2-M5/202-WTRRNS	Total/NA	Air	202 InOrg CPM	
140-37968-13	WONDSTK-STK-3-M5/202-WTRRNS	Total/NA	Air	202 InOrg CPM	
140-37968-18	WONDSTK-STK-FB-M5/202-WTRRNS	Total/NA	Air	202 InOrg CPM	
140-37968-27	WONDSTK-STK-4-M5/202-WTRRNS	Total/NA	Air	202 InOrg CPM	

Analysis Batch: 89835

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37968-4	WONDSTK-STK-1-M5/202-ORGRNS	Total/NA	Air	202 Org CPM	
140-37968-9	WONDSTK-STK-2-M5/202-ORGRNS	Total/NA	Air	202 Org CPM	
140-37968-14	WONDSTK-STK-3-M5/202-ORGRNS	Total/NA	Air	202 Org CPM	
140-37968-19	WONDSTK-STK-FB-M5/202-ORGRNS	Total/NA	Air	202 Org CPM	
140-37968-28	WONDSTK-STK-4-M5/202-ORGRNS	Total/NA	Air	202 Org CPM	

Analysis Batch: 89964

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37968-1	WONDSTK-STK-1-M5/202-PNR	Total/NA	Air	5	
140-37968-2	WONDSTK-STK-1-M5/202-FILT	Total/NA	Air	5	
140-37968-6	WONDSTK-STK-2-M5/202-PNR	Total/NA	Air	5	
140-37968-7	WONDSTK-STK-2-M5/202-FILT	Total/NA	Air	5	
140-37968-11	WONDSTK-STK-3-M5/202-PNR	Total/NA	Air	5	
140-37968-12	WONDSTK-STK-3-M5/202-FILT	Total/NA	Air	5	
140-37968-16	WONDSTK-STK-FB-M5/202-PNR	Total/NA	Air	5	
140-37968-17	WONDSTK-STK-FB-M5/202-FILT	Total/NA	Air	5	
140-37968-25	WONDSTK-STK-4-M5/202-PNR	Total/NA	Air	5	
140-37968-26	WONDSTK-STK-4-M5/202-FILT	Total/NA	Air	5	
140-37968-30	A-2323 M5 MEDIA CHECK FILTER	Total/NA	Air	5	

Client Sample Results

Client: AECOM

Job ID: 140-37968-1

Project/Site: Wonder Smokehouse - M5/202

Client Sample ID: WONDSTK-STK-1-M5/202-PNR

Lab Sample ID: 140-37968-1

Date Collected: 08/06/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Sample Container: Air Train

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Particulates, Total (EPA 5)	1.65		0.500	0.500	mg/sample			08/12/24 10:56	1

Client Sample Results

Client: AECOM

Job ID: 140-37968-1

Project/Site: Wonder Smokehouse - M5/202

Client Sample ID: WONDSTK-STK-1-M5/202-FILT

Lab Sample ID: 140-37968-2

Date Collected: 08/06/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Sample Container: Air Train

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Particulates, Total (EPA 5)	3.99		0.500	0.500	mg/sample			08/12/24 10:56	1

Client Sample Results

Client: AECOM
Project/Site: Wonder Smokehouse - M5/202

Job ID: 140-37968-1

Client Sample ID: WONDSTK-STK-1-M5/202-WTRRNS
Date Collected: 08/06/24 00:00
Date Received: 08/07/24 16:40
Sample Container: Air Train

Lab Sample ID: 140-37968-3
Matrix: Air

General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Inorganic Condensable Particulate Matter (EPA 202 InOrg CPM)	8.14		1.00	0.500	mg/sample			08/12/24 13:48	1

Client Sample Results

Client: AECOM
Project/Site: Wonder Smokehouse - M5/202

Job ID: 140-37968-1

Client Sample ID: WONDSTK-STK-1-M5/202-ORGRNS
Date Collected: 08/06/24 00:00
Date Received: 08/07/24 16:40
Sample Container: Air Train

Lab Sample ID: 140-37968-4
Matrix: Air

General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Organic Condensable Particulate Matter (EPA 202 Org CPM)	3.81		1.00	0.500	mg/sample			08/12/24 13:49	1

Client Sample Results

Client: AECOM

Job ID: 140-37968-1

Project/Site: Wonder Smokehouse - M5/202

Client Sample ID: WONDSTK-STK-2-M5/202-PNR

Lab Sample ID: 140-37968-6

Date Collected: 08/06/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Sample Container: Air Train

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Particulates, Total (EPA 5)	1.17		0.500	0.500	mg/sample			08/12/24 10:56	1

Client Sample Results

Client: AECOM

Job ID: 140-37968-1

Project/Site: Wonder Smokehouse - M5/202

Client Sample ID: WONDSTK-STK-2-M5/202-FILT

Lab Sample ID: 140-37968-7

Date Collected: 08/06/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Sample Container: Air Train

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Particulates, Total (EPA 5)	3.00		0.500	0.500	mg/sample			08/12/24 10:56	1

Client Sample Results

Client: AECOM
Project/Site: Wonder Smokehouse - M5/202

Job ID: 140-37968-1

Client Sample ID: WONDSTK-STK-2-M5/202-WTRRNS
Date Collected: 08/06/24 00:00
Date Received: 08/07/24 16:40
Sample Container: Air Train

Lab Sample ID: 140-37968-8
Matrix: Air

General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Inorganic Condensable Particulate Matter (EPA 202 InOrg CPM)	5.17		1.00	0.500	mg/sample			08/12/24 13:48	1

Client Sample Results

Client: AECOM

Job ID: 140-37968-1

Project/Site: Wonder Smokehouse - M5/202

Client Sample ID: WONDSTK-STK-2-M5/202-ORGRNS

Lab Sample ID: 140-37968-9

Date Collected: 08/06/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Sample Container: Air Train

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Organic Condensable Particulate Matter (EPA 202 Org CPM)	3.96		1.00	0.500	mg/sample			08/12/24 13:49	1

Client Sample Results

Client: AECOM

Job ID: 140-37968-1

Project/Site: Wonder Smokehouse - M5/202

Client Sample ID: WONDSTK-STK-3-M5/202-PNR

Lab Sample ID: 140-37968-11

Date Collected: 08/07/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Sample Container: Air Train

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Particulates, Total (EPA 5)	2.08		0.500	0.500	mg/sample			08/12/24 10:56	1

Client Sample Results

Client: AECOM

Job ID: 140-37968-1

Project/Site: Wonder Smokehouse - M5/202

Client Sample ID: WONDSTK-STK-3-M5/202-FILT

Lab Sample ID: 140-37968-12

Date Collected: 08/07/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Sample Container: Air Train

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Particulates, Total (EPA 5)	11.7		0.500	0.500	mg/sample			08/12/24 10:56	1

Client Sample Results

Client: AECOM
Project/Site: Wonder Smokehouse - M5/202

Job ID: 140-37968-1

Client Sample ID: WONDSTK-STK-3-M5/202-WTRRNS
Date Collected: 08/07/24 00:00
Date Received: 08/07/24 16:40
Sample Container: Air Train

Lab Sample ID: 140-37968-13
Matrix: Air

General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Inorganic Condensable Particulate Matter (EPA 202 InOrg CPM)	19.5		1.00	0.500	mg/sample			08/12/24 13:48	1

Client Sample Results

Client: AECOM

Job ID: 140-37968-1

Project/Site: Wonder Smokehouse - M5/202

Client Sample ID: WONDSTK-STK-3-M5/202-ORGRNS

Lab Sample ID: 140-37968-14

Date Collected: 08/07/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Sample Container: Air Train

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Organic Condensable Particulate Matter (EPA 202 Org CPM)	5.69		1.00	0.500	mg/sample			08/12/24 13:49	1

Client Sample Results

Client: AECOM
Project/Site: Wonder Smokehouse - M5/202

Job ID: 140-37968-1

Client Sample ID: WONDSTK-STK-FB-M5/202-PNR
Date Collected: 08/07/24 00:00
Date Received: 08/07/24 16:40
Sample Container: Air Train

Lab Sample ID: 140-37968-16
Matrix: Air

General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Particulates, Total (EPA 5)	ND		0.500	0.500	mg/sample			08/12/24 10:56	1

Client Sample Results

Client: AECOM

Job ID: 140-37968-1

Project/Site: Wonder Smokehouse - M5/202

Client Sample ID: WONDSTK-STK-FB-M5/202-FILT

Lab Sample ID: 140-37968-17

Date Collected: 08/07/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Sample Container: Air Train

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Particulates, Total (EPA 5)	ND		0.500	0.500	mg/sample			08/12/24 10:56	1

Client Sample Results

Client: AECOM

Job ID: 140-37968-1

Project/Site: Wonder Smokehouse - M5/202

Client Sample ID: WONDSTK-STK-FB-M5/202-WTRRNS

Lab Sample ID: 140-37968-18

Date Collected: 08/07/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Sample Container: Air Train

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Inorganic Condensable Particulate Matter (EPA 202 InOrg CPM)	1.83		1.00	0.500	mg/sample			08/12/24 13:48	1

Client Sample Results

Client: AECOM

Job ID: 140-37968-1

Project/Site: Wonder Smokehouse - M5/202

Client Sample ID: WONDSTK-STK-FB-M5/202-ORGRNS

Lab Sample ID: 140-37968-19

Date Collected: 08/07/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Sample Container: Air Train

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Organic Condensable Particulate Matter (EPA 202 Org CPM)	2.85		1.00	0.500	mg/sample			08/12/24 13:49	1

Client Sample Results

Client: AECOM

Job ID: 140-37968-1

Project/Site: Wonder Smokehouse - M5/202

Client Sample ID: WONDSTK-STK-4-M5/202-PNR

Lab Sample ID: 140-37968-25

Date Collected: 08/07/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Sample Container: Air Train

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Particulates, Total (EPA 5)	1.40		0.500	0.500	mg/sample			08/12/24 10:56	1

Client Sample Results

Client: AECOM

Job ID: 140-37968-1

Project/Site: Wonder Smokehouse - M5/202

Client Sample ID: WONDSTK-STK-4-M5/202-FILT

Lab Sample ID: 140-37968-26

Date Collected: 08/07/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Sample Container: Air Train

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Particulates, Total (EPA 5)	8.12		0.500	0.500	mg/sample			08/12/24 10:56	1

Client Sample Results

Client: AECOM
Project/Site: Wonder Smokehouse - M5/202

Job ID: 140-37968-1

Client Sample ID: WONDSTK-STK-4-M5/202-WTRRNS
Date Collected: 08/07/24 00:00
Date Received: 08/07/24 16:40
Sample Container: Air Train

Lab Sample ID: 140-37968-27
Matrix: Air

General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Inorganic Condensable Particulate Matter (EPA 202 InOrg CPM)	5.97		1.00	0.500	mg/sample			08/12/24 13:48	1

Client Sample Results

Client: AECOM
Project/Site: Wonder Smokehouse - M5/202

Job ID: 140-37968-1

Client Sample ID: WONDSTK-STK-4-M5/202-ORGRNS
Date Collected: 08/07/24 00:00
Date Received: 08/07/24 16:40
Sample Container: Air Train

Lab Sample ID: 140-37968-28
Matrix: Air

General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Organic Condensable Particulate Matter (EPA 202 Org CPM)	3.88		1.00	0.500	mg/sample			08/12/24 13:49	1

Client Sample Results

Client: AECOM
Project/Site: Wonder Smokehouse - M5/202

Job ID: 140-37968-1

Client Sample ID: A-2323 M5 MEDIA CHECK FILTER
Date Collected: 08/06/24 00:00
Date Received: 08/07/24 16:40
Sample Container: Air Train

Lab Sample ID: 140-37968-30
Matrix: Air

General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Particulates, Total (EPA 5)	ND		0.500	0.500	mg/sample			08/12/24 10:56	1

Default Detection Limits

Client: AECOM

Job ID: 140-37968-1

Project/Site: Wonder Smokehouse - M5/202

General Chemistry

Analyte	RL	MDL	Units
Inorganic Condensable Particulate Matter	1.00	0.500	mg/sample
Organic Condensable Particulate Matter	1.00	0.500	mg/sample
Particulates, Total	0.500	0.500	mg/sample

Lab Chronicle

Client: AECOM
Project/Site: Wonder Smokehouse - M5/202

Job ID: 140-37968-1

Client Sample ID: WONDSTK-STK-1-M5/202-PNR

Lab Sample ID: 140-37968-1

Date Collected: 08/06/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	5		1			89964	08/12/24 10:56	SJF	EET KNX
Instrument ID: NOEQUIP										

Client Sample ID: WONDSTK-STK-1-M5/202-FILT

Lab Sample ID: 140-37968-2

Date Collected: 08/06/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	5		1			89964	08/12/24 10:56	SJF	EET KNX
Instrument ID: NOEQUIP										

Client Sample ID: WONDSTK-STK-1-M5/202-WTRRNS

Lab Sample ID: 140-37968-3

Date Collected: 08/06/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	202 InOrg CPM		1			89834	08/12/24 13:48	SJF	EET KNX
Instrument ID: NOEQUIP										

Client Sample ID: WONDSTK-STK-1-M5/202-ORGRNS

Lab Sample ID: 140-37968-4

Date Collected: 08/06/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	202 Org CPM		1			89835	08/12/24 13:49	SJF	EET KNX
Instrument ID: NOEQUIP										

Client Sample ID: WONDSTK-STK-2-M5/202-PNR

Lab Sample ID: 140-37968-6

Date Collected: 08/06/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	5		1			89964	08/12/24 10:56	SJF	EET KNX
Instrument ID: NOEQUIP										

Client Sample ID: WONDSTK-STK-2-M5/202-FILT

Lab Sample ID: 140-37968-7

Date Collected: 08/06/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	5		1			89964	08/12/24 10:56	SJF	EET KNX
Instrument ID: NOEQUIP										

Lab Chronicle

Client: AECOM
Project/Site: Wonder Smokehouse - M5/202

Job ID: 140-37968-1

Client Sample ID: WONDSTK-STK-2-M5/202-WTRRNS

Lab Sample ID: 140-37968-8

Date Collected: 08/06/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	202 InOrg CPM		1			89834	08/12/24 13:48	SJF	EET KNX
Instrument ID: NOEQUIP										

Client Sample ID: WONDSTK-STK-2-M5/202-ORGRNS

Lab Sample ID: 140-37968-9

Date Collected: 08/06/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	202 Org CPM		1			89835	08/12/24 13:49	SJF	EET KNX
Instrument ID: NOEQUIP										

Client Sample ID: WONDSTK-STK-3-M5/202-PNR

Lab Sample ID: 140-37968-11

Date Collected: 08/07/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	5		1			89864	08/12/24 10:56	SJF	EET KNX
Instrument ID: NOEQUIP										

Client Sample ID: WONDSTK-STK-3-M5/202-FILT

Lab Sample ID: 140-37968-12

Date Collected: 08/07/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	5		1			89864	08/12/24 10:56	SJF	EET KNX
Instrument ID: NOEQUIP										

Client Sample ID: WONDSTK-STK-3-M5/202-WTRRNS

Lab Sample ID: 140-37968-13

Date Collected: 08/07/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	202 InOrg CPM		1			89834	08/12/24 13:48	SJF	EET KNX
Instrument ID: NOEQUIP										

Client Sample ID: WONDSTK-STK-3-M5/202-ORGRNS

Lab Sample ID: 140-37968-14

Date Collected: 08/07/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	202 Org CPM		1			89835	08/12/24 13:49	SJF	EET KNX
Instrument ID: NOEQUIP										

Lab Chronicle

Client: AECOM
Project/Site: Wonder Smokehouse - M5/202

Job ID: 140-37968-1

Client Sample ID: WONDSTK-STK-FB-M5/202-PNR

Lab Sample ID: 140-37968-16

Date Collected: 08/07/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	5		1			89964	08/12/24 10:56	SJF	EET KNX
Instrument ID: NOEQUIP										

Client Sample ID: WONDSTK-STK-FB-M5/202-FILT

Lab Sample ID: 140-37968-17

Date Collected: 08/07/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	5		1			89964	08/12/24 10:56	SJF	EET KNX
Instrument ID: NOEQUIP										

Client Sample ID: WONDSTK-STK-FB-M5/202-WTRRNS

Lab Sample ID: 140-37968-18

Date Collected: 08/07/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	202 InOrg CPM		1			89834	08/12/24 13:48	SJF	EET KNX
Instrument ID: NOEQUIP										

Client Sample ID: WONDSTK-STK-FB-M5/202-ORGRNS

Lab Sample ID: 140-37968-19

Date Collected: 08/07/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	202 Org CPM		1			89835	08/12/24 13:49	SJF	EET KNX
Instrument ID: NOEQUIP										

Client Sample ID: WONDSTK-STK-4-M5/202-PNR

Lab Sample ID: 140-37968-25

Date Collected: 08/07/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	5		1			89964	08/12/24 10:56	SJF	EET KNX
Instrument ID: NOEQUIP										

Client Sample ID: WONDSTK-STK-4-M5/202-FILT

Lab Sample ID: 140-37968-26

Date Collected: 08/07/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	5		1			89964	08/12/24 10:56	SJF	EET KNX
Instrument ID: NOEQUIP										

Lab Chronicle

Client: AECOM

Job ID: 140-37968-1

Project/Site: Wonder Smokehouse - M5/202

Client Sample ID: WONDSTK-STK-4-M5/202-WTRRNS

Lab Sample ID: 140-37968-27

Date Collected: 08/07/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	202 InOrg CPM		1			89834	08/12/24 13:48	SJF	EET KNX
Instrument ID: NOEQUIP										

Client Sample ID: WONDSTK-STK-4-M5/202-ORGRNS

Lab Sample ID: 140-37968-28

Date Collected: 08/07/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	202 Org CPM		1			89835	08/12/24 13:49	SJF	EET KNX
Instrument ID: NOEQUIP										

Client Sample ID: A-2323 M5 MEDIA CHECK FILTER

Lab Sample ID: 140-37968-30

Date Collected: 08/06/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	5		1			89964	08/12/24 10:56	SJF	EET KNX
Instrument ID: NOEQUIP										

Laboratory References:

EET KNX = Eurofins Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Accreditation/Certification Summary

Client: AECOM

Job ID: 140-37968-1

Project/Site: Wonder Smokehouse - M5/202

Laboratory: Eurofins Knoxville

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-13-25
ANAB	Dept. of Energy	L2311.01	02-13-25
ANAB	ISO/IEC 17025	L2311	02-13-25
Arkansas DEQ	State	88-0688	06-17-25
Colorado	State	TN00009	02-28-25
Connecticut	State	PH-0223	10-01-26
Florida	NELAP	E87177	06-30-25
Georgia (DW)	State	906	07-27-25
Hawaii	State	NA	07-27-25
Kansas	NELAP	E-10349	10-31-24
Kentucky (DW)	State	90101	12-31-24
Louisiana (All)	NELAP	83979	06-30-25
Louisiana (DW)	State	LA019	12-31-24
Maryland	State	277	03-31-25
Michigan	State	9933	07-27-25
Nevada	State	TN00009	10-31-24
New Hampshire	NELAP	2999	01-17-25
New Jersey	NELAP	TN001	06-30-25
New York	NELAP	10781	03-31-25
North Carolina (DW)	State	21705	07-31-25
North Carolina (WW/SW)	State	64	12-31-24
Oklahoma	State	9415	08-31-24
Oregon	NELAP	TNI0189	01-01-25
Pennsylvania	NELAP	68-00576	12-31-24
Tennessee	State	02014	07-27-25
Texas	NELAP	T104704380	08-31-24
US Fish & Wildlife	US Federal Programs	058448	07-31-25
USDA	US Federal Programs	525-22-279-18762	10-06-25
Utah	NELAP	TN00009	07-31-25
Virginia	NELAP	460176	09-14-24
Washington	State	C593	01-19-25
West Virginia (DW)	State	9955C	12-31-24
West Virginia DEP	State	345	04-30-25
Wisconsin	State	998044300	08-31-25

GENERAL CHEMISTRY

COVER PAGE
GENERAL CHEMISTRY

Lab Name: Eurofins Knoxville

Job Number: 140-37968-1

SDG No.:

Project: Wonder Smokehouse - M5/202

Client Sample ID	Lab Sample ID
WONDSTK-SIK-1-M5/202-PNR	140-37968-1
WONDSTK-SIK-1-M5/202-FILT	140-37968-2
WONDSTK-SIK-1-M5/202-WTRNS	140-37968-3
WONDSTK-SIK-1-M5/202-ORGRNS	140-37968-4
WONDSTK-SIK-2-M5/202-PNR	140-37968-6
WONDSTK-SIK-2-M5/202-FILT	140-37968-7
WONDSTK-SIK-2-M5/202-WTRNS	140-37968-8
WONDSTK-SIK-2-M5/202-ORGRNS	140-37968-9
WONDSTK-SIK-3-M5/202-PNR	140-37968-11
WONDSTK-SIK-3-M5/202-FILT	140-37968-12
WONDSTK-SIK-3-M5/202-WTRNS	140-37968-13
WONDSTK-SIK-3-M5/202-ORGRNS	140-37968-14
WONDSTK-SIK-FB-M5/202-PNR	140-37968-16
WONDSTK-SIK-FB-M5/202-FILT	140-37968-17
WONDSTK-SIK-FB-M5/202-WTRNS	140-37968-18
WONDSTK-SIK-FB-M5/202-ORGRNS	140-37968-19
WONDSTK-SIK-4-M5/202-PNR	140-37968-25
WONDSTK-SIK-4-M5/202-FILT	140-37968-26
WONDSTK-SIK-4-M5/202-WTRNS	140-37968-27
WONDSTK-SIK-4-M5/202-ORGRNS	140-37968-28
A-2323 M5 MEDIA CHECK FILTER	140-37968-30

Comments:

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: WONDSTX-STK-1-M5/202-FNR

Lab Sample ID: 140-37968-1

Lab Name: Eurofins Knoxville

Job No.: 140-37968-1

SDG ID:

Matrix: Air

Date Sampled: 08/06/2024 00:00

Reporting Basis: WET

Date Received: 08/07/2024 16:40

Preparation Batch Number:

Inspection ID: NONE

CAS No.	Analyte	Result	RI	MDL	Units	C	Q	DTL	Method
	Particulates, Total	0.65	0.500	0.500	ug/sample			1	5

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: WONDSTX-STK-1-M5/202-ETLT

Lab Sample ID: 140-37968-2

Lab Name: Eurofins Knoxville

Job No.: 140-37968-1

SDG ID:

Matrix: Air

Date Sampled: 08/06/2024 00:00

Reporting Basis: WET

Date Received: 08/07/2024 16:40

Preparation Batch Number:

Inspection ID: NONE

CAS No.	Analyte	Result	U	MDL	Units	C	Q	DTL	Method
	Particulates, Total	3.93	0.500	0.500	mg/sample			1	5

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: WONDSTX-STK-1-M5/202-WTRXNS

Lab Sample ID: 140-37968-3

Lab Name: Eurofins Knoxville

Job No.: 140-37968-1

SDG ID:

Matrix: Air

Date Sampled: 08/06/2024 00:00

Reporting Basis: WET

Date Received: 08/07/2024 16:40

Preparation Batch Number:

Inspection ID: NONE

CAS No.	Analyte	Result	RI	MDL	Units	C	Q	DTL	Method
	Inorganic Condensable Particulate Matter	8.14	1.00	0.500	ug/sample			1	202 InOrg CPM

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: WONDSTX-STK-1-M5/202-ORGXNS Lab Sample ID: 140-37968-4
Lab Name: Eurofins Knoxville Job No.: 140-37968-1
SDG ID: _____
Matrix: Air Date Sampled: 08/06/2024 00:00
Reporting Basis: WET Date Received: 08/07/2024 16:40
Preparation Batch Number: _____ Insulation ID: NONE

CAS No.	Analyte	Result	RI	MDL	Units	C	Q	DTL	Method
	Organic Condensable Particulate Matter	3.87	1.00	0.500	ug/sample			1	202 Org CPM

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: WONDSTX-STK-2-M5/202-FNR

Lab Sample ID: 140-37968-6

Lab Name: Eurofins Knoxville

Job No.: 140-37968-1

SDG ID:

Matrix: Air

Date Sampled: 08/06/2024 00:00

Reporting Basis: WET

Date Received: 08/07/2024 16:40

Preparation Batch Number:

Inspection ID: NONE

CAS No.	Analyte	Result	RI	MDL	Units	C	Q	DTL	Method
	Particulates, Total	0.17	0.500	0.500	ug/sample			1	5

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: WONDSTX-STK-2-M5/202-ETLT

Lab Sample ID: 140-37968-1

Lab Name: Eurofins Knoxville

Job No.: 140-37968-1

SDG ID:

Matrix: Air

Date Sampled: 08/06/2024 00:00

Reporting Basis: WET

Date Received: 08/07/2024 16:40

Preparation Batch Number:

Inspection ID: NONE

CAS No.	Analyte	Result	RI	MDL	Units	C	Q	DTL	Method
	Particulates, Total	3.00	0.500	0.500	mg/sample			1	5

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: WONDSTX-STK-2-M5/202-WTRXNS

Lab Sample ID: 140-37968-8

Lab Name: Eurofins Knoxville

Job No.: 140-37968-1

SDG ID:

Matrix: Air

Date Sampled: 08/06/2024 00:00

Reporting Basis: WET

Date Received: 08/07/2024 16:40

Preparation Batch Number:

Inspection ID: NONE

CAS No.	Analyte	Result	RI	MDL	Units	C	Q	DTL	Method
	Inorganic Condensible Particulate Matter	5.17	1.00	0.500	ug/sample			1	202 InOrg CPM

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: WONDSTX-STK-2-M5/202-ORGXNS

Lab Sample ID: 140-37968-9

Lab Name: Eurofins Knoxville

Job No.: 140-37968-1

SDG ID:

Matrix: Air

Date Sampled: 08/06/2024 00:00

Reporting Basis: WET

Date Received: 08/07/2024 16:40

Preparation Batch Number:

Insulation ID: NONE

CAS No.	Analyte	Result	RI	MDL	Units	C	Q	DTL	Method
	Organic Condensable Particulate Matter	3.96	1.00	0.500	ug/sample			1	202 Org CPM

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: WONDSTX-STK-2-M5/202-FNR

Lab Sample ID: 140-37968-1

Lab Name: Eurofins Knoxville

Job No.: 140-37968-1

SDG ID:

Matrix: Air

Date Sampled: 08/07/2024 00:00

Reporting Basis: WET

Date Received: 08/07/2024 16:40

Preparation Batch Number:

Inspection ID: NONE

CAS No.	Analyte	Result	RI	MDL	Units	C	Q	DTL	Method
	Particulates, Total	2.08	0.500	0.500	mg/sample			1	5

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: WONDSTX-STK-2-M5/202-FTLT Lab Sample ID: 140-37968-12
Lab Name: Eurofins Knoxville Job No.: 140-37968-1
SDG ID: _____
Matrix: Air Date Sampled: 08/07/2024 00:00
Reporting Basis: WET Date Received: 08/07/2024 16:40
Preparation Batch Number: _____ Insulation ID: NONE

CAS No.	Analyte	Result	RI	MDL	Units	C	Q	DTL	Method
	Particulates, Total	11.7	0.500	0.500	mg/sample			1	5

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: WONDSTX-STK-2-M5/202-WTRXNS

Lab Sample ID: 140-37968-13

Lab Name: Eurofins Knoxville

Job No.: 140-37968-1

SDG ID:

Matrix: Air

Date Sampled: 08/07/2024 00:00

Reporting Basis: WET

Date Received: 08/07/2024 16:40

Preparation Batch Number:

Inspection ID: NONE

CAS No.	Analyte	Result	RI	MDL	Units	C	Q	DTL	Method
	Inorganic Condensable Particulate Matter	19.5	1.00	0.500	ug/sample			1	202 InOrg CPM

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: WONDSTX-STK-2-M5/202-ORGXNS

Lab Sample ID: 140-37968-14

Lab Name: Eurofins Knoxville

Job No.: 140-37968-1

SDG ID:

Matrix: Air

Date Sampled: 08/07/2024 00:00

Reporting Basis: WET

Date Received: 08/07/2024 16:40

Preparation Batch Number:

Inspection ID: NONE

CAS No.	Analyte	Result	RI	MDL	Units	C	Q	DTL	Method
	Organic Condensable Particulate Matter	5.63	1.00	0.500	ug/sample			1	202 Org CPM

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: WONDSTX-STK-FB-M5/202-PK3

Lab Sample ID: 140-37968-16

Lab Name: Eurofins Knoxville

Job No.: 140-37968-1

SDG ID:

Matrix: Air

Date Sampled: 08/07/2024 00:00

Reporting Basis: WET

Date Received: 08/07/2024 16:40

Preparation Batch Number:

Inspection ID: NONE

CAS No.	Analyte	Result	RI	MDL	Units	C	Q	DTL	Method
	Particulates, Total	ND	0.500	0.500	mg/sample			1	5

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: WONDSTX-STK-FB-M5/202-PITT

Lab Sample ID: 140-37968-17

Lab Name: Eurofins Knoxville

Job No.: 140-37968-1

SDG ID:

Matrix: Air

Date Sampled: 08/07/2024 00:00

Reporting Basis: WET

Date Received: 08/07/2024 16:40

Preparation Batch Number:

Inspection ID: NONE

CAS No.	Analyte	Result	RI	MDL	Units	C	Q	DTL	Method
	Particulates, Total	ND	0.500	0.500	mg/sample			1	5

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: WONDSTX-STK-FB-M5/202-WTRKNS

Lab Sample ID: 140-37968-18

Lab Name: Eurofins Knoxville

Job No.: 140-37968-1

SDG ID:

Matrix: Air

Date Sampled: 08/07/2024 00:00

Reporting Basis: WET

Date Received: 08/07/2024 16:40

Preparation Batch Number:

Inspection ID: NONE

CAS No.	Analyte	Result	RI	MDL	Units	C	Q	DTL	Method
	Inorganic Condensable Particulate Matter	1.83	1.00	0.500	ug/sample			1	202 InOrg CPM

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: WONDSTX-STK-FB-M5/202-ORGGRNS

Lab Sample ID: 140-37968-13

Lab Name: Eurofins Knoxville

Job No.: 140-37968-1

SDG ID:

Matrix: Air

Date Sampled: 08/07/2024 00:00

Reporting Basis: NET

Date Received: 08/07/2024 16:40

Preparation Batch Number:

Insulation ID: NONE

CAS No.	Analyte	Result	RI	MDL	Units	C	Q	DTL	Method
	Organic Condensable Particulate Matter	2.85	1.00	0.500	ug/sample			1	202 Org CPM

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: WONDSTX-STK-4-M5/202-FNR

Lab Sample ID: 140-37968-25

Lab Name: Eurofins Knoxville

Job No.: 140-37968-1

SDG ID:

Matrix: Air

Date Sampled: 08/07/2024 00:00

Reporting Basis: WET

Date Received: 08/07/2024 16:40

Preparation Batch Number:

Inspection ID: NONE

CAS No.	Analyte	Result	RI	MDL	Units	C	Q	DTL	Method
	Particulates, Total	1.40	0.500	0.500	ug/sample			1	5

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: WONDSTX-STK-4-M5/202-FTLT

Lab Sample ID: 140-37968-26

Lab Name: Eurofins Knoxville

Job No.: 140-37968-1

SDG ID:

Matrix: Air

Date Sampled: 08/07/2024 00:00

Reporting Basis: WET

Date Received: 08/07/2024 16:40

Preparation Batch Number:

Inspection ID: NONE

CAS No.	Analyte	Result	RI	MDL	Units	C	Q	DTL	Method
	Particulates, Total	8.12	0.500	0.500	mg/sample			1	5

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: WONDSTX-STK-4-M5/202-WTRXNS

Lab Sample ID: 140-37968-27

Lab Name: Eurofins Knoxville

Job No.: 140-37968-1

SDG ID:

Matrix: Air

Date Sampled: 08/07/2024 00:00

Reporting Basis: WET

Date Received: 08/07/2024 16:40

Preparation Batch Number:

Inspection ID: NONE

CAS No.	Analyte	Result	RI	MDL	Units	C	Q	DTL	Method
	Inorganic Condensible Particulate Matter	5.97	1.00	0.500	ug/sample			1	202 InOrg CPM

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: WONDSTX-STK-4-M5/202-ORGXNS

Lab Sample ID: 140-37968-28

Lab Name: Eurofins Knoxville

Job No.: 140-37968-1

SDG ID:

Matrix: Air

Date Sampled: 08/07/2024 00:00

Reporting Basis: WET

Date Received: 08/07/2024 16:40

Preparation Batch Number:

Inspection ID: NONE

CAS No.	Analyte	Result	U	MDL	Units	C	Q	DTL	Method
	Organic Condensable Particulate Matter	3.88	1.00	0.500	ug/sample			1	202 Org CPM

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: A-2323 No MEDIA CHECK FILTER

Lab Sample ID: 140-37968-30

Lab Name: Eurofins Knoxville

Job No.: 140-37968-1

SDG ID:

Matrix: Air

Date Sampled: 08/06/2024 00:00

Reporting Basis: WET

Date Received: 08/07/2024 16:40

Preparation Batch Number:

Inspection ID: NONE

CAS No.	Analyte	Result	RI	MDL	Units	C	Q	DTL	Method
	Particulates, Total	ND	0.500	0.500	mg/sample			1	5

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: Eurofins Knoxville Job Number: 140-37968-1
SDG Number: _____
Matrix: Air Instrument ID: NOEQUIP
Method: 202 InOrg CPM MDL Date: 01/01/2015 17:11

Analyte	Wavelength/ Mass	RL (mg/sample)	MDL (mg/sample)
Inorganic Condensable Particulate Matter		1	0.5

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: Eurofins Knoxville Job Number: 140-37968-1
SDG Number: _____
Matrix: Air Instrument ID: NOEQUIP
Method: 202 InOrg CPM XMDL Date: 01/01/2015 17:44

Analyte	Wavelength/ Mass	XRL (mg/sample)	XMDL (mg/sample)
Inorganic Condensable Particulate Matter		1	0.5

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: Eurofins Knoxville

Job Number: 140-37968-1

SDG Number: _____

Matrix: Air

Instrument ID: NOEQUIP

Method: 202 Org CPM

MDL Date: 01/01/2015 17:11

Analyte	Wavelength/ Mass	RL (mg/sample)	MDL (mg/sample)
Organic Condensable Particulate Matter		1	0.5

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: Eurofins Knoxville Job Number: 140-37968-1
SDG Number: _____
Matrix: Air Instrument ID: NOEQUIP
Method: 202 Org CPM XMDL Date: 01/01/2015 17:44

Analyte	Wavelength/ Mass	XRL (mg/sample)	XMDL (mg/sample)
Organic Condensable Particulate Matter		1	0.5

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: Eurofins Knoxville Job Number: 140-37968-1
SDG Number: _____
Matrix: Air Instrument ID: NOEQUIP
Method: 5 RL Date: 01/11/2016 09:38

Analyte	Wavelength/ Mass	RL (mg/sample)	
Particulates, Total		0.5	

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: Eurofins Knoxville Job Number: 140-37968-1
SDG Number: _____
Matrix: Air Instrument ID: NOEQUIP
Method: 5 XRL Date: 01/11/2016 10:18

Analyte	Wavelength/ Mass	XRL (mg/sample)	
Particulates, Total		0.5	

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: Eurofins Knoxville Job No.: 140-37968-1
SDG No.: _____
Instrument ID: NCEQUIP Analysis Method: 202 InOrg CPM
Start Date: 08/12/2024 13:48 End Date: 08/12/2024 13:48

Lab Sample Id	D/F	T Y O C	Time	Analytes																									
				I C P M																									
140-37968-3	1	T	13:48	X																									
140-37968-8	1	T	13:48	X																									
140-37968-13	1	T	13:48	X																									
140-37968-18	1	T	13:48	X																									
140-37968-27	1	T	13:48	X																									

Prep Lyses: _____
T Total /NA

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: Eurofins Knoxville Job No.: 140-37968-1
SDG No.: _____
Instrument ID: NCEQUIP Analysis Method: 202 Org CPM
Start Date: 08/12/2024 13:49 End Date: 08/12/2024 13:49

Lab Sample Id	D/F	T Y O C	Time	Analytes																									
				O C P M																									
140-37968-4	1	T	13:49	X																									
140-37968-9	1	T	13:49	X																									
140-37968-14	1	T	13:49	X																									
140-37968-19	1	T	13:49	X																									
140-37968-28	1	T	13:49	X																									

Prep Lyses: _____
T Total /NA

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: Eurofins Knoxville Job No.: 140-37968-1
SOG No.: _____
Instrument ID: NCEQUIP Analysis Method: 5
Start Date: 08/12/2024 10:56 End Date: 08/12/2024 10:56

Lab Sample Id	D/F	T Y O C	Time	Analytes																									
				T P M																									
140-37968-2	1	T	10:56	X																									
140-37968-7	1	T	10:56	X																									
140-37968-12	1	T	10:56	X																									
140-37968-17	1	T	10:56	X																									
140-37968-26	1	T	10:56	X																									
140-37968-30	1	T	10:56	X																									
140-37968-1	1	T	10:56	X																									
140-37968-6	1	T	10:56	X																									
140-37968-11	1	T	10:56	X																									
140-37968-16	1	T	10:56	X																									
140-37968-25	1	T	10:56	X																									

Prep Types: _____
T = Total/NA

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: Eurofins Knoxville Job No.: 140-37968-1

SDG No.: _____

Batch Number: 89834 Batch Start Date: 08/12/24 13:48 Batch Analyst: Forrest-Bank, Solana JBatch Method: 202 InOrg CPM Batch End Date: 08/20/24 08:11

Lab Sample ID	Client Sample ID	Method Chain	Matrix	Basis	TareDate/Time	InitialAmount	Initial pL	BuretStartL	BuretStopL	TitrantVolumeL
140-37968-A-3	WONDSLK-SLK-1-M 5/202-WTRRNS	202 InOrg CPM	Air	T	08/13/2024 12:02	128.8 mL	5 SU	1 mL	1 mL	0 mL
140-37968-A-8	WONDSLK-SLK-2-M 5/202-WTRRNS	202 InOrg CPM	Air	T	08/13/2024 12:02	146.7 mL	5 SU	1 mL	1 mL	0 mL
140-37968-A-13	WONDSLK-SLK-3-M 5/202-WTRRNS	202 InOrg CPM	Air	T	08/13/2024 12:02	148.9 mL	4 SU	1 mL	1 mL	0 mL
140-37968-A-18	WONDSLK-SLK-13-M 5/202-WTRRNS	202 InOrg CPM	Air	T	08/13/2024 12:02	46.5 mL	5 SU	1 mL	1 mL	0 mL
140-37968-A-27	WONDSLK-SLK-4-M 5/202-WTRRNS	202 InOrg CPM	Air	T	08/13/2024 12:02	139.3 mL	5 SU	1 mL	1 mL	0 mL

Lab Sample ID	Client Sample ID	Method Chain	Matrix	Basis	TareDate/Time	WT1Date/Time	WT2Date/Time	WT3Date/Time	CalcMsg	AnalysisComment
140-37968-A-3	WONDSLK-SLK-1-M 5/202-WTRRNS	202 InOrg CPM	Air	T	08/15/2024 07:34	08/16/2024 10:42	08/19/2024 08:57		Tare Weight is blank.	
140-37968-A-8	WONDSLK-SLK-2-M 5/202-WTRRNS	202 InOrg CPM	Air	T	08/15/2024 07:34	08/16/2024 10:42	08/19/2024 08:57	08/19/2024 15:13	Tare Weight is blank.	
140-37968-A-13	WONDSLK-SLK-3-M 5/202-WTRRNS	202 InOrg CPM	Air	T	08/15/2024 07:34	08/16/2024 10:42	08/19/2024 08:57		Tare Weight is blank.	Reconstituted as per SOP, final pH ok. No need to dilute.
140-37968-A-18	WONDSLK-SLK-13-M 5/202-WTRRNS	202 InOrg CPM	Air	T	08/15/2024 07:34	08/16/2024 10:42	08/19/2024 08:57		Tare Weight is blank.	
140-37968-A-27	WONDSLK-SLK-4-M 5/202-WTRRNS	202 InOrg CPM	Air	T	08/15/2024 07:34	08/16/2024 10:42	08/19/2024 08:57		Tare Weight is blank.	

Batch Notes	
SH Export ID	HC329089
Balance ID	b3
Balance is Level? (Y/N)	yes
Oven ID	acs oven
Field Volume Marked (Y/N)	Y
Leakage Noted (Y/N)	n
Normality of Base	0.1 N
Batch Comment	weight set 9

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: Eurofins Knoxville Job No.: 140-37968-1

SDG No.: _____

Batch Number: 89834 Batch Start Date: 08/12/24 13:48 Batch Analyst: Forrest-Bank, Solana JBatch Method: 202 InOrg CPM Batch End Date: 08/20/24 08:11

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

202 InOrg CPM

Page 2 of 2

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: Eurofins Knoxville Job No.: 140-37968-1

SDG No.: _____

Batch Number: 89835 Batch Start Date: 08/12/24 13:49 Batch Analyst: Forrest-Bank, Solana JBatch Method: 202 Org CPM Batch End Date: 08/20/24 08:10

Lab Sample ID	Client Sample ID	Method Chain	Matrix	Basis	ParseDate/Time	DesDate/Time	Wt1Date/Time	Wt2Date/Time	CalcMsg	AnalysisComment
140-37968-A-4	WONDSLK-SLK-1-M 5/202-ORGRNS	202 Org CPM	Air	T	08/13/2024 12:02	08/15/2024 07:34	08/16/2024 10:42	08/19/2024 08:57	Tare weight is blank.	Volume: 45.5mL
140-37968-A-9	WONDSLK-SLK-2-M 5/202-ORGRNS	202 Org CPM	Air	T	08/13/2024 12:02	08/15/2024 07:34	08/16/2024 10:42	08/19/2024 08:57	Tare weight is blank.	Volume: 47.0mL
140-37968-A-14	WONDSLK-SLK-3-M 5/202-ORGRNS	202 Org CPM	Air	T	08/13/2024 12:02	08/15/2024 07:34	08/16/2024 10:42	08/19/2024 08:57	Tare weight is blank.	Volume: 32.6mL
140-37968-A-19	WONDSLK-SLK-11-M 5/202-ORGRNS	202 Org CPM	Air	T	08/13/2024 12:02	08/15/2024 07:34	08/16/2024 10:42	08/19/2024 08:57	Tare weight is blank.	Volume: 32.0mL
140-37968-A-28	WONDSLK-SLK-4-M 5/202-ORGRNS	202 Org CPM	Air	T	08/13/2024 12:02	08/15/2024 07:34	08/16/2024 10:42	08/19/2024 08:57	Tare weight is blank.	Volume: 36.6mL

Batch Notes	
Balance ID	b3
Balance is Level? (Y/N)	yes
Batch Comment	weight set 9

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: Eurofins Knoxville Job No.: 140-37968-1

SDG No.: _____

Batch Number: 89964 Batch Start Date: 08/12/24 10:56 Batch Analyst: Forrest-Bank, Solana JBatch Method: 5 Batch End Date: 08/16/24 11:03

Lab Sample ID	Client Sample ID	Method Chain	Matrix	Basis	Sample Volume					
140-37968-A-1	WONJSLK-SJA-1-M 5/202-PNR	5	Air	T	116.8 mL					
140-37968-A-6	WONJSLK-SJA-2-M 5/202-PNR	5	Air	T	63.8 mL					
140-37968-A-11	WONJSLK-SJA-3-M 5/202-PNR	5	Air	T	67.7 mL					
140-37968-A-16	WONJSLK-SJA-11-M 5/202-PNR	5	Air	T	37.8 mL					
140-37968-A-25	WONJSLK-SJA-4-M 5/202-PNR	5	Air	T	82.3 mL					

Batch Notes	
Balance ID	b3
Balance is Level? (Y/N)	yes
Oven ID	023
Thermometer ID	EC2
Date samples were placed in the oven	08/14/2024
Time samples were placed in the oven	13:39
Temperature - Start - Uncorrected	103.9 Deg. C
Date samples were removed from oven	08/14/2024
Time Samples were removed from oven	16:33
Temperature - End - Uncorrected	104.1 Deg. C
Date and Time Samples in Desiccator	08/14/2024 16:55
Date and Time Samples out of Desiccator	08/15/2024 10:45

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

General Chemistry Raw Data Report

Job ID: 140-37968-1

Batch: 89834	Analyst Initials: SJF
Method: 202 InOrg CPM	Instrument: NONE

Lab Sample ID: 140-37968-A-3					Analysis Date: Aug 12, 2024 13:48
Analyte	Detector	Dilution	Raw Result	Unit	Initial Amount
Inorganic Condensible Particulate Matter	None	1	8135	ug/Sample	128.8 mL
Lab Sample ID: 140-37968-A-8					Analysis Date: Aug 12, 2024 13:48
Analyte	Detector	Dilution	Raw Result	Unit	Initial Amount
Inorganic Condensible Particulate Matter	None	1	5165	ug/Sample	146.7 mL
Lab Sample ID: 140-37968-A-13					Analysis Date: Aug 12, 2024 13:48
Analyte	Detector	Dilution	Raw Result	Unit	Initial Amount
Inorganic Condensible Particulate Matter	None	1	19450	ug/Sample	148.9 mL
Lab Sample ID: 140-37968-A-18					Analysis Date: Aug 12, 2024 13:48
Analyte	Detector	Dilution	Raw Result	Unit	Initial Amount
Inorganic Condensible Particulate Matter	None	1	1825	ug/Sample	48.5 mL
Lab Sample ID: 140-37968-A-27					Analysis Date: Aug 12, 2024 13:48
Analyte	Detector	Dilution	Raw Result	Unit	Initial Amount
Inorganic Condensible Particulate Matter	None	1	5970	ug/Sample	139.5 mL

TestAmerica Knoxville
High Volume Particulate Filter Gross Weight Data

Analyst: SFB/TGR

Temp °C: 21.4

% Humidity: 41

weight date: 8/18/2024 8/19/2024 8/19/2024
weight time: 10:42 8:57 15:13

Balance Model: Mettler-Toledo XSE205DU

Balance SN: 412417296

Method: 5 /202

Particulates

B3

method 5

! WARNING !
report not finalized

Weight Type	LIMS Sample ID	LIMS Tare Sample ID	Filter ID Number	Tare Weight (g)	Gross Weight (g) 1	Gross Weight (g) 2	Gross Weight (g) 3	Gross Weight (g) 4	Gross Weight (g)	Reference Δ (mg)	Δ OK	Temp during Tare	Temp within Tolerance	Humid during Tare	Humidity within Tolerance	Particulate Weight (total µg)
Reference Weight 0.1g					0.09998	0.09998	0.10000		0.10000	0.00	OK					
Reference Weight 5g					4.99977	4.99978	4.99975		4.99975	0.25	OK					
Reference Weight 100g					99.99900	99.99920	99.99910		99.99910	0.90	OK					
Zero Check					0.00000	0.00000	0.00000		0.00000	0.00	OK					
Filter Weight	140-37968-A-3			63.09667	66.10473	66.10486			66.10481	0.11	OK					8135
Filter Weight	140-37968-A-8			66.95586	66.96047	66.96126	66.96079		66.96103	0.47	OK					5165
Filter Weight	140-37968-A-13			66.62202	66.64164	66.64140			66.64147	0.14	OK					19450
Filter Weight	140-37968-A-18			67.80771	67.80938	67.80969			67.80954	0.31	OK					1825
Filter Weight	140-37968-A-27			66.37929	66.58542	66.58510			66.58528	0.32	OK					5970
Filter Weight	140-37968-A-4			63.89846	63.89226	63.89226			63.89226	0.00	OK					3810
Filter Weight	140-37968-A-0			66.48228	66.48636	66.48612			66.48624	0.24	OK					3960
Filter Weight	140-37968-A-14			63.42701	63.43276	63.43263			63.43276	0.13	OK					5685
Filter Weight	140-37968-A-19			66.72400	66.72689	66.72680			66.72686	0.09	OK					2845
Filter Weight	140-37968-A-26			63.33743	63.34140	63.34127			63.34134	0.13	OK					3875
Reference Weight 0.1g					0.09995	0.09997	0.09999		0.09999	0.01	OK					
Reference Weight 5g					4.99975	4.99974	4.99978		4.99978	0.22	OK					
Reference Weight 100g					99.99900	99.99910	99.99910		99.99910	0.90	OK					
Zero Check					0.00000	0.00000	0.00000		0.00000	0.00	OK					
	weight set 9															

Eurofins Knoxville Particulate Matter Determination Data Review/Narrative Checklist
Method: EPA Method 202 by SOP KNOX-WC-0006, Rev. 14

Batch Number:	89834, 89835	Job Number(s):	37968
Analyst Name:	SFB/TMB/TGR	Method Citation:	M202
Drying Temperature	Filters Inorganic CPE (202) Organic CPE (202)	☐ Ambient ☒ Ambient ☒ Ambient	☐ Other _____ ☐ Other _____ ☐ Other _____ ☒ Extracted and Combined per Method 202

Review Items	N/A	Y	N	If No, why is data reportable?	2nd √
Section 1: Calibration					
1. Was the daily balance calibration check performed and recorded in the balance calibration check log book?		X			X
2. Was the balance zero and calibration checked with three weights that bracket the range to be measured prior to use?		X		☐ Other weights bracketing weight range were used.	X
3. Was the balance checked with 100 gram weight per 10 samples and at the end of weighing session?		X		☐ Another weight was used (____ grams)	X
4. Was the balance zero checked per 10 samples and at the end of weighing session?		X			X
5. Was the balance tared before each weighing?		X			X
6. Was the balance ID documented?		X			X
7. Was the oven ID documented?		X			X
8. Was pH paper ID documented?		X			X
Section 2: Tare Weight Procedure					
1. Were the beakers weighed in TALS batch?			X	☒ FilterTracIV	X
2. Were the beakers baked before weighing?		X			X
3. Were all tare weights performed in duplicate?			X	☒ Duplicate weights not required for baked beakers.	X
4. Were all tare weights averaged?	X				X
Section 3: Procedure					
1. Were all special project requirements met? (Review all Backlog Comments and Project Documents.)		X			X
2. Were sample IDs verified? (Review Job Numbers and Client IDs on sample labels.)		X			X
3. Were all sample weights performed in duplicate (at least)?		X			X
4. Was the average of the last two weights used?		X			X
5. Calculations checked for error? Sample 37968-a-13 (Weight 1 + Weight 2) / 2 = 36.84147g Gross Weight Average - Tare Weight Average = 0.01945g		X			X
Section 4: TALS Reporting					
1. Was Batch Information added? Correct analyst name recorded?		X			X
2. Does the analytical time match the beginning of the last set of weights?		X			X
3. Were applicable documents scanned and added?		X			X
4. Are all non-conformances documented?	X			NCM No.:	X
5. Was appropriate narrative NCM added?		X		NCM No: X [6054]	X
6. Final report acceptable? (Results, units, analysis dates are correct. Flags and/or errors were addressed.)		X			X

1st Level Reviewer: SFB	Date: 8/20/2024	2nd Level Reviewer: DCW	Date: 8/20/24
Comments:		Comments:	

General Chemistry Raw Data Report

Job ID: 140-37968-1

Batch: 89835	Analyst Initials: SJF
Method: 202 Org CPM	Instrument: NONE

Lab Sample ID: 140-37968-A-4				Analysis Date: Aug 12, 2024 13:49
Analyte	Detector	Dilution	Raw Result	Unit
Organic Condensible Particulate Matter	None	1	3810	ug/Sample
Lab Sample ID: 140-37968-A-9				Analysis Date: Aug 12, 2024 13:49
Analyte	Detector	Dilution	Raw Result	Unit
Organic Condensible Particulate Matter	None	1	3960	ug/Sample
Lab Sample ID: 140-37968-A-14				Analysis Date: Aug 12, 2024 13:49
Analyte	Detector	Dilution	Raw Result	Unit
Organic Condensible Particulate Matter	None	1	5685	ug/Sample
Lab Sample ID: 140-37968-A-19				Analysis Date: Aug 12, 2024 13:49
Analyte	Detector	Dilution	Raw Result	Unit
Organic Condensible Particulate Matter	None	1	2845	ug/Sample
Lab Sample ID: 140-37968-A-28				Analysis Date: Aug 12, 2024 13:49
Analyte	Detector	Dilution	Raw Result	Unit
Organic Condensible Particulate Matter	None	1	3875	ug/Sample

TestAmerica Knoxville
High Volume Particulate Filter Gross Weight Data

Analyst: SFB/TGR

Temp °C: 21.4

% Humidity: 41

weight date: 8/18/2024 8/19/2024 8/19/2024
weight time: 10:42 6:57 15:13

Balance Model: Mettler-Toledo XSE205DU

Balance SN: 412417296

Method: 5 /202

Particulates

B3

method 5

! WARNING !
report not finalized

Weight Type	LIMS Sample ID	LIMS Tare Sample ID	Filter ID Number	Tare Weight (g)	Gross Weight (g) 1	Gross Weight (g) 2	Gross Weight (g) 3	Gross Weight (g) 4	Gross Weight (g)	Reference Δ (mg)	Δ OK	Temp during Tare	Temp within Tolerance	Humid during Tare	Humidity within Tolerance	Particulate Weight (total µg)
Reference Weight 0.1g					0.09998	0.09998	0.10000		0.10000	0.00	OK					
Reference Weight 5g					4.99977	4.99978	4.99975		4.99975	0.25	OK					
Reference Weight 100g					99.99900	99.99920	99.99910		99.99910	0.90	OK					
Zero Check					0.00000	0.00000	0.00000		0.00000	0.00	OK					
Filter Weight	140-37968-A-3			63.09867	66.10475	66.10486			66.10481	0.11	OK					8135
Filter Weight	140-37968-A-8			66.95585	66.95047	66.96126	66.96079		66.96103	0.47	OK					5165
Filter Weight	140-37968-A-13			66.62202	66.64154	66.64140			66.64147	0.14	OK					19450
Filter Weight	140-37968-A-18			67.80771	67.80938	67.80969			67.80954	0.31	OK					1825
Filter Weight	140-37968-A-27			66.37929	66.58542	66.58510			66.58528	0.32	OK					5970
Filter Weight	140-37968-A-4			63.89845	63.89226	63.89226			63.89226	0.00	OK					3810
Filter Weight	140-37968-A-0			66.48228	66.48636	66.48812			66.48824	0.24	OK					3960
Filter Weight	140-37968-A-14			63.42701	63.43276	63.43263			63.43276	0.13	OK					5885
Filter Weight	140-37968-A-19			66.72400	66.72689	66.72680			66.72685	0.09	OK					2845
Filter Weight	140-37968-A-26			63.33743	63.34140	63.34127			63.34134	0.13	OK					3875
Reference Weight 0.1g					0.09995	0.09997	0.09999		0.09999	0.01	OK					
Reference Weight 5g					4.99975	4.99974	4.99978		4.99978	0.22	OK					
Reference Weight 100g					99.99900	99.99910	99.99910		99.99910	0.90	OK					
Zero Check					0.00000	0.00000	0.00000		0.00000	0.00	OK					
	weight set 9															

Eurofins Knoxville Particulate Matter Determination Data Review/Narrative Checklist
Method: EPA Method 202 by SOP KNOX-WC-0006, Rev. 14

Batch Number:	89834, 89835	Job Number(s):	37968
Analyst Name:	SFB/TMB/TGR	Method Citation:	M202
Drying Temperature	Filters Inorganic CPE (202) Organic CPE (202)	☐ Ambient ☒ Ambient ☒ Ambient	☐ Other _____ ☐ Other _____ ☐ Other _____

☒ Extracted and Combined per Method 202

Review Items	N/A	Y	N	If No, why is data reportable?	2nd √
Section 1: Calibration					
1. Was the daily balance calibration check performed and recorded in the balance calibration check log book?		X			X
2. Was the balance zero and calibration checked with three weights that bracket the range to be measured prior to use?		X		☐ Other weights bracketing weight range were used.	X
3. Was the balance checked with 100 gram weight per 10 samples and at the end of weighing session?		X		☐ Another weight was used (____ grams)	X
4. Was the balance zero checked per 10 samples and at the end of weighing session?		X			X
5. Was the balance tared before each weighing?		X			X
6. Was the balance ID documented?		X			X
7. Was the oven ID documented?		X			X
8. Was pH paper ID documented?		X			X
Section 2: Tare Weight Procedure					
1. Were the beakers weighed in TALS batch?			X	☒ FilterTracIV	X
2. Were the beakers baked before weighing?		X			X
3. Were all tare weights performed in duplicate?			X	☒ Duplicate weights not required for baked beakers.	X
4. Were all tare weights averaged?	X				X
Section 3: Procedure					
1. Were all special project requirements met? (Review all Backlog Comments and Project Documents.)		X			X
2. Were sample IDs verified? (Review Job Numbers and Client IDs on sample labels.)		X			X
3. Were all sample weights performed in duplicate (at least)?		X			X
4. Was the average of the last two weights used?		X			X
5. Calculations checked for error? Sample 37968-a-13 (Weight 1 + Weight 2) / 2 = 36.84147g Gross Weight Average - Tare Weight Average = 0.01945g		X			X
Section 4: TALS Reporting					
1. Was Batch Information added? Correct analyst name recorded?		X			X
2. Does the analytical time match the beginning of the last set of weights?		X			X
3. Were applicable documents scanned and added?		X			X
4. Are all non-conformances documented?	X			NCM No.:	X
5. Was appropriate narrative NCM added?		X		NCM No: X [6054]	X
6. Final report acceptable? (Results, units, analysis dates are correct. Flags and/or errors were addressed.)		X			X

1st Level Reviewer: SFB	Date: 8/20/2024	2nd Level Reviewer: DCW	Date: 8/20/24
Comments:		Comments:	

General Chemistry Raw Data Report

Job ID: 140-37968-1

Batch: 89964
Method: 5

Analyst Initials: SJF
Instrument: NONE

Lab Sample ID: 140-37968-A-2					Analysis Date: Aug 12, 2024 10:56
Analyte	Detector	Dilution	Raw Result	Unit	
Particulates, Total	None	1	3985	ug/Sample	
Lab Sample ID: 140-37968-A-7					Analysis Date: Aug 12, 2024 10:56
Analyte	Detector	Dilution	Raw Result	Unit	
Particulates, Total	None	1	3000	ug/Sample	
Lab Sample ID: 140-37968-A-12					Analysis Date: Aug 12, 2024 10:56
Analyte	Detector	Dilution	Raw Result	Unit	
Particulates, Total	None	1	11690	ug/Sample	
Lab Sample ID: 140-37968-A-17					Analysis Date: Aug 12, 2024 10:56
Analyte	Detector	Dilution	Raw Result	Unit	
Particulates, Total	None	1	-65	ug/Sample	
Lab Sample ID: 140-37968-A-26					Analysis Date: Aug 12, 2024 10:56
Analyte	Detector	Dilution	Raw Result	Unit	
Particulates, Total	None	1	8115	ug/Sample	
Lab Sample ID: 140-37968-A-30					Analysis Date: Aug 12, 2024 10:56
Analyte	Detector	Dilution	Raw Result	Unit	
Particulates, Total	None	1	215	ug/Sample	
Lab Sample ID: 140-37968-A-1					Analysis Date: Aug 12, 2024 10:56
Analyte	Detector	Dilution	Raw Result	Unit	
Particulates, Total	None	1	1650	ug/Sample	
Lab Sample ID: 140-37968-A-6					Analysis Date: Aug 12, 2024 10:56
Analyte	Detector	Dilution	Raw Result	Unit	
Particulates, Total	None	1	1165	ug/Sample	
Lab Sample ID: 140-37968-A-11					Analysis Date: Aug 12, 2024 10:56
Analyte	Detector	Dilution	Raw Result	Unit	
Particulates, Total	None	1	2080	ug/Sample	
Lab Sample ID: 140-37968-A-16					Analysis Date: Aug 12, 2024 10:56
Analyte	Detector	Dilution	Raw Result	Unit	
Particulates, Total	None	1	430	ug/Sample	
Lab Sample ID: 140-37968-A-25					Analysis Date: Aug 12, 2024 10:56
Analyte	Detector	Dilution	Raw Result	Unit	
Particulates, Total	None	1	1400	ug/Sample	

TestAmerica Knoxville
High Volume Particulate Filter Gross Weight Data

Analyst: SFB:TMB

Temp °C: 22.4

% Humidity: 41

weight date: 8/15/2024 8/15/2024 8/15/2024
weight time: 10:45 14:48 8:45

Balance Model: Mettler-Toledo XSE205DU

Balance SN: 412417295

Method: 5

Particulates

B3

method 5

! WARNING !
report not finalized

Weight Type	LIMS Sample ID	LIMS Tare Sample ID	Filter ID Number	Tare Weight (g)	Gross Weight (g) 1	Gross Weight (g) 2	Gross Weight (g) 3	Gross Weight (g) 4	Gross Weight (g)	Reference Δ (mg)	Δ OK	Temp during Tare	Temp within Tolerance	Humid during Tare	Humidity within Tolerance	Particulate Weight (total µg)
Reference Weight 0.1g					0.09995	0.09999			0.09995	0.04	OK					
Reference Weight 5g					4.99975	4.99974			4.99974	0.29	OK					
Reference Weight 100g					99.99910	99.99980			99.99980	1.20	OK					
Zero Check					0.00000	0.00000			0.00000	0.00	OK					
Filter Weight	140-37968-A-2	89357	712844	0.49452	0.49852	0.49849			0.49851	0.03	OK					3985
Filter Weight	140-37968-A-7		712845	0.50733	0.51026	0.51040			0.51033	0.14	OK					3000
Filter Weight	140-37968-A-12		712847	0.51134	0.52594	0.52512			0.52503	0.19	OK					11590
Filter Weight	140-37968-A-17	87317	895834	0.50777	0.50737	0.50774			0.50771	0.07	OK					-65
Filter Weight	140-37968-A-29	85112	879358	0.51720	0.52530	0.52533			0.52532	0.03	OK					8115
Filter Weight	140-37968-A-30	89357	712842	0.51855	0.51890	0.51893			0.51877	0.33	OK					215
Reference Weight 0.1g					0.09998	0.10000	0.10000		0.10000	0.00	OK					
Reference Weight 5g					4.99977	4.99978	4.99978		4.99978	0.22	OK					
Reference Weight 100g					99.99900	99.99980	99.99920		99.99920	0.80	OK					
Zero Check					0.00000	0.00000	0.00000		0.00000	0.00	OK					
Filter Weight	140-37968-A-1			88.54208	88.54438	88.54378	88.54338		88.54373	0.10	OK					1350
Filter Weight	140-37968-A-6			88.14742	88.14858	88.14849			88.14859	0.19	OK					1165
Filter Weight	140-37968-A-11			88.05111	88.05339	88.05299			88.05319	0.40	OK					2080
Filter Weight	140-37968-A-19			88.08968	88.07014	88.07008			88.07011	0.04	OK					430
Filter Weight	140-37968-A-25			88.24982	88.25131	88.25113			88.25122	0.18	OK					1400
Reference Weight 0.1g					0.10000	0.09999	0.09999		0.09999	0.01	OK					
Reference Weight 5g					4.99970	4.99978	4.99975		4.99975	0.25	OK					
Reference Weight 100g					99.99900	99.99890	99.99900		99.99900	1.00	OK					
Zero Check					0.00000	0.00000	0.00000		0.00000	0.00	OK					
	weight set 8															

Eurofins Knoxville Particulate Matter Determination Data Review/Narrative Checklist
Method: SW-846 Method 0050 by SOP KNOX-WC-0006, Rev. 14

Batch Number:	89964	Job Number(s):	37968
Analyst Name:	SFB/TMB	Method Citation	☒ M5 ☐ M5B ☐ M5I ☐ M17 ☐ M201A ☐ CTM-039 ☐ Other
Drying Temperature	Filters ☐ Ambient ☒ 105°C ☐ 160°C ☐ Other _____ Probe & Nozzle Rinses ☐ Ambient ☒ 105°C ☐ 160°C ☐ Other _____		

Review Items	N/A	Y	N	If No, why is data reportable?	2nd ✓
Section 1: Calibration					
1. Was the daily balance calibration check performed and recorded in the balance calibration check log book?		☒			☒
2. Was the balance zero and calibration checked with three weights that bracket the range to be measured immediately prior to use?		☒			☒
3. Was balance calibration checked with a bracketing weight above the highest sample weight once per 10 samples and at end of weighing session?		☒		☐ Another weight was used.(grams)	☒
4. Was balance zero checked per 10 samples and at end of weighing session?		☒			☒
5. Was the balance tared before each weighing?		☒			☒
6. Was the balance ID documented?		☒			☒
7. If used, was the oven ID documented?		☒			☒
Section 2: Tare Weight Procedure					
1. Were filters and/or beakers weighed in FilterTracIV?		☒			☒
2. Was a TALS job created for tracking the tared filters and their weights?		☒			☒
3. Was tare weight data uploaded to TALS?		☒			☒
4. Were all sample weights performed in duplicate (at least)?		☒			☒
Section 3: Sample Procedure					
5. Were all special project requirements met? (<i>Review all Backlog Comments and Project Documents.</i>)		☒			☒
6. Were sample IDs verified? (<i>Review Filter ID, Job Numbers and Client IDs on sample labels.</i>)		☒			☒
7. Was tare weight data entered directly from TALS?		☒		<i>If no, scan documents for tare weights.</i>	☒
8. Were all sample weights performed in duplicate (at least)?		☒			☒
9. Was the average of the last two weights used?		☒			☒
10. Calculations checked for error? Sample 37968-a-1 (Weight 1 + Weight 2) / 2 = 66.54373g Gross Weight Average – Tare Weight Average = 0.00165g		☒			☒
Section 4: TALS Reporting					
1. Was Equipment ID entered?		☒			☒
2. Is the correct analyst name recorded?		☒			☒
3. Does analytical date time match last weighing sequence in FilterTracIV?		☒			☒
4. Did FilterTracIV correctly upload data to TALS?			☒		☒
5. Were applicable documents scanned and added?		☒			☒
6. Are all non-conformances documented?	☒			NCM No.: _____	☒
7. Was appropriate narrative NCM added?		☒		NCM No.: ☒ [5893(M5)] [6053(201A)] [18822(5A)] [23035(039)] [Other] _____	☒
8. Final report acceptable? (Results, units, analysis dates are correct. Flags and/or errors were addressed.)		☒			☒

1st Level Reviewer: SFB	Date: 8/16/2024	2nd Level Reviewer: DCW	Date: 8/20/24
Comments:		Comments:	

Shipping and Receiving Documents

Project Wonder Smokehouse Testing			Particulate Matter - Gravimetric Determination							
Site Wonder NJ										
Project Number 60735150										
Prepared by <i>C. Thompson</i>										
Sample ID Code	Sample Matrix	Date/Time					Hold	MS/MSD	Comments	
WondStk-Stk-1-M5/202-PNR	Probe and Nozzle Rinse	8/6	X							
WondStk-Stk-1-M5/202-Filt	Filter	8/6								
WondStk-Stk-1-M5/202-WtrRns	Water Rinse	8/6								
WondStk-Stk-1-M5/202-OrgRns	Organic Rinse	8/6								
WondStk-Stk-1-M5/202-CPMFilt	CPM Filter	8/6								
WondStk-Stk-2-M5/202-PNR	Probe and Nozzle Rinse	8/6								
WondStk-Stk-2-M5/202-Filt	Filter	8/6								
WondStk-Stk-2-M5/202-WtrRns	Water Rinse	8/6								
WondStk-Stk-2-M5/202-OrgRns	Organic Rinse	8/6								
WondStk-Stk-2-M5/202-CPMFilt	CPM Filter	8/6								
WondStk-Stk-3-M5/202-PNR	Probe and Nozzle Rinse	8/7								
WondStk-Stk-3-M5/202-Filt	Filter	8/7								
WondStk-Stk-3-M5/202-WtrRns	Water Rinse	8/7								
WondStk-Stk-3-M5/202-OrgRns	Organic Rinse	8/7							HAND DELIVERED NO CUSTODY SEALS RECEIVED AMBENT RTAD.01 CTAD.01	
WondStk-Stk-3-M5/202-CPMFilt	CPM Filter	8/7							AND 8924	
Remarks: Provide results in total milligrams per sample. Provide raw data package										
Relinquished by: <i>C. Thompson</i>	Date/Time 8/7/24 16:40	Relinquished by:	Date/Time	Relinquished by:	Date/Time	Relinquished by:	Date/Time	Relinquished by:	Date/Time	
Received by: <i>[Signature]</i>	Date/Time 8-7-24 16:40	Received by:	Date/Time	Received by:	Date/Time	Received by:	Date/Time	Received by:	Date/Time	
Remarks (Laboratory Only)										

Project Wonder Smokehouse Testing			Particulate Matter - Gravimetric Determination						
Site Wonder NJ									
Project Number 60735150									
Prepared by <i>C. Thompson</i>									
Sample ID Code	Sample Matrix	Date/Time					Hold	MS/MSD	Comments
WondStk-Stk-FB-M5/202-PNR	Probe and Nozzle Rinse	8/7	X						
WondStk-Stk-FB-M5/202-Filt	Filter	8/7							
WondStk-Stk-FB-M5/202-WtrRns	Water Rinse	8/7							
WondStk-Stk-FB-M5/202-OrgRns	Organic Rinse	8/7							
WondStk-Stk-FB-M5/202-CPMFilt	CPM Filter	8/7							
WondStk-Stk-RB-M5/202-Ace	Acetone	8/7							
WondStk-Stk-RB-M5/202-Hex	Hexane	8/7							
11-Stk-4-M5/202-PNR	Probe and Nozzle Rinse	8/7							
WondStk-Stk-RB-M5/202-Filt	Filter	8/7							
WondStk-Stk-RB-M5/202-Water	Water	8/7							
WondStk-Stk-RB-M5/202-CPMFilt	CPM Filter	---							
11-Stk-4-M5/202-Filt	Filter	8/7							
11-Stk-4-M5/202-WtrRns	Water Rinse	8/7							
11-Stk-4-M5/202-OrgRns	Organic Rinse	8/7							
11-Stk-4-M5/202-CPMFilt	CPM Filter	8/7							
Remarks: Provide results in total milligrams per sample. Provide raw data package									
Relinquished by: <i>C. Thompson</i>	Date/Time 8/7/24/5:40	Relinquished by:	Date/Time	Relinquished by:	Date/Time				
Received by: <i>Ramona</i>	Date/Time 8-7-24 16:40	Received by:	Date/Time	Received by:	Date/Time				
Remarks (Laboratory Only)									

EUROFINS KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST Log In Number:

Loc: 140
37968

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Are the shipping containers intact?	☒	☐	☐	☐ Containers, Broken	
2. Were ambient air containers received intact?	☐	☐	☒	☐ Checked in lab	
3. The cooler(s)/containers custody seal if present, is it intact?	☐	☐	☒	☐ Yes ☐ NA	
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10 °C) Thermometer ID: <u>5674</u> Correction factor: <u>40.2 °C</u>	☐	☐	☒	☐ Cooler Out of Temp, Client Contacted, Proceed/Cancel ☐ Cooler Out of Temp, Same Day Receipt	
5. Were all of the sample containers received intact?	☒	☐	☐	☐ Containers, Broken	
6. Were samples received in appropriate containers?	☒	☐	☐	☐ Containers, Improper; Client Contacted; Proceed/Cancel	
7. Do sample container labels match COC? (IDs, Dates, Times)	☒	☐	☐	☐ COC & Samples Do Not Match ☐ COC Incorrect/Incomplete ☐ COC Not Received	
8. Were all of the samples listed on the COC received?	☒	☐	☐	☐ Sample Received, Not on COC ☐ Sample on COC, Not Received	
9. Is the date/time of sample collection noted?	☒	☐	☐	☐ COC; No Date/Time; Client Contacted	
10. Was the sampler identified on the COC?	☒	☐	☒	☐ Sampler Not Listed on COC	
11. Is the client and project name/# identified?	☒	☐	☐	☐ COC Incorrect/Incomplete	
12. Are test/parameters listed for each sample?	☒	☐	☐	☐ COC No tests on COC	
13. Is the matrix of the samples noted?	☒	☐	☐	☐ COC Incorrect/Incomplete	
14. Was COC relinquished? (Signed/Dated/Timed)	☒	☐	☐	☐ COC Incorrect/Incomplete	
15. Were samples received within holding time?	☒	☐	☐	☐ Holding Time - Receipt	
16. Were samples received with correct chemical preservative (excluding Encore)?	☐	☐	☒	☐ pH Adjusted, pH Included (See box 16A) ☐ Incorrect Preservative	
17. Were VOA samples received without headspace?	☐	☐	☒	☐ Headspace (VOA only)	
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:	☐	☐	☒	☐ Residual Chlorine	
19. For 1613B water samples is pH<9?	☐	☐	☒	☐ If no, notify lab to adjust	
20. For rad samples was sample activity info. Provided?	☐	☐	☐	☐ Project missing info	
Project #: _____				PM Instructions: _____	

Preservative: _____	Box 16A: pH Preservation	Box 18A: Residual Chlorine
Lot Number: _____		
Exp Date: _____		
Analyst: _____		
Date: _____		
Time: _____		

Labeling Verified by: _____ Date: _____

pH test strip lot number: _____

Sample Receiving Associate: R. WilliamsDate: 8/9/24

QA026R33.doc, 11/10/23

Method 0010 Analysis Results

ANALYTICAL REPORT

PREPARED FOR

Attn: Mr. Phaneendra Uppalapati
AECOM
250 Apollo Drive
Chelmsford, Massachusetts 01824

Generated 8/15/2024 8:19:49 PM

JOB DESCRIPTION

Wonder Smokehouse - M0010

JOB NUMBER

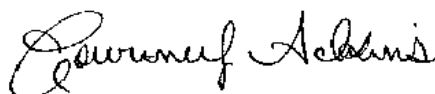
140-37967-1

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins TestAmerica Project Manager.

Authorization



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8/15/2024 8:19:49 PM

Authorized for release by
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Definitions/Glossary

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*5+	Isotope dilution analyte is outside acceptance limits, high biased.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC/MS Semi VOA TICs

Qualifier	Qualifier Description
J	Indicates an Estimated Value for TICs
N	Presumptive evidence of material.
T	Result is a tentatively identified compound (TIC) and an estimated value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: AECOM
Project: Wonder Smokehouse - M0010

Job ID: 140-37967-1

Job ID: 140-37967-1

Eurofins Knoxville

Job Narrative 140-37967-1

4

Receipt

The samples were received on 8/7/2024 4:40 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.9° C and 2.5° C.

Receipt Exceptions

The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. COC list 9057 and Ammonia analysis, not required per project requirements.

GC/MS Semi VOA

Method 0010/8270C: The laboratory control sample duplicate (LCSD) for preparation batch 140-89750 and 140-89784 and analytical batch 140-89818 recovered outside control limits for the following analytes: Hexachlorobutadiene. These analytes were biased high in the LCSD and were not detected in the associated samples; therefore, the data have been reported.

Method ID-0016: Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for the following samples: (LCS 140-89750/9-B), (LCSD 140-89750/10-B) and (MB 140-89750/1-C). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method ID-0016: Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for the following samples: WONDSTK-STK-1-M0010-PNR,FILT,CR,XAD,COND,IR-COMBINED (140-37967-1) and A-2321,A-2322 M0010 MEDIA CHECK XAD,FILTER (140-37967-9). Since the high recovery is due to matrix interferences, the analytes associated with this IDA may have a low bias.

Method ID-0016: The following samples were diluted to bring the concentration of target analytes within the calibration range: WONDSTK-STK-1-M0010-PNR,FILT,CR,XAD,COND,IR-COMBINED (140-37967-1) and WONDSTK-STK-2-M0010-PNR,FILT,CR,XAD,COND,IR-COMBINED (140-37967-2). Elevated reporting limits (RLs) are provided.

Method ID-0016: Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for the following samples: WONDSTK-STK-FB-M0010-PNR,FILT,CR,XAD,COND,IR-COMBINED (140-37967-4). Since the high recovery is due to matrix interferences, the analytes associated with this IDA may have a low bias.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Client Sample Results

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Client Sample ID:

Lab Sample ID: 140-37967-1

WONDSTK-STK-1-M0010-PNR,FILT,CR,XAD,COND,IR-COMBI

NED

Date Collected: 08/06/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Sample Container: Air Train

5

Method: SW846 0010/8270C - Semivolatile Organic Compounds (Stationary Source)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		20.0	3.40	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Acenaphthylene	ND		20.0	5.20	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Acetophenone	ND		20.0	5.20	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Aniline	ND		40.0	8.80	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Anthracene	ND		20.0	5.20	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Benzidine	ND		200	100	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Benzo[a]anthracene	ND		20.0	4.00	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Benzo[a]pyrene	5.32	J	20.0	5.20	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Benzo[b]fluoranthene	ND		20.0	4.20	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Benzo[g,h,i]perylene	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Benzoic acid	ND		200	122	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Benzo[k]fluoranthene	ND		20.0	3.80	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Benzyl alcohol	ND		200	4.80	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Bis(2-chloroethoxy)methane	ND		20.0	3.60	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Bis(2-chloroethyl)ether	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Bis(2-ethylhexyl) phthalate	ND		100	44.0	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
4-Bromophenyl phenyl ether	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Butyl benzyl phthalate	ND		20.0	8.40	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Carbazole	ND		20.0	7.60	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
4-Chloroaniline	ND		40.0	4.80	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
4-Chloro-3-methylphenol	ND		20.0	4.20	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
2-Chloronaphthalene	ND		20.0	4.00	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
2-Chlorophenol	ND		20.0	4.40	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
4-Chlorophenyl phenyl ether	ND		20.0	3.80	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Chrysene	ND		20.0	3.40	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Dibenz(a,h)anthracene	ND		20.0	5.20	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Dibenzofuran	8.81	J	20.0	4.00	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
1,2-Dichlorobenzene	ND		20.0	5.80	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
1,3-Dichlorobenzene	ND		20.0	6.40	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
1,4-Dichlorobenzene	ND		20.0	6.00	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
3,3'-Dichlorobenzidine	ND		100	28.0	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
2,4-Dichlorophenol	ND		20.0	4.00	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Diethyl phthalate	ND		20.0	3.80	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
2,4-Dimethylphenol	ND		40.0	6.20	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Dimethyl phthalate	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Di-n-butyl phthalate	12.9	J	20.0	7.20	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
4,6-Dinitro-2-methylphenol	ND		100	11.2	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
2,4-Dinitrophenol	ND		100	7.60	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
2,4-Dinitrotoluene	ND		20.0	5.80	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
2,6-Dinitrotoluene	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Di-n-octyl phthalate	22.3		20.0	9.20	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
1,2-Diphenylhydrazine (as Azobenzene)	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Fluoranthene	6.08	J	20.0	5.60	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Fluorene	ND		20.0	4.40	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Hexachlorobenzene	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/14/24 12:07	1

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Client Sample Results

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Client Sample ID:

Lab Sample ID: 140-37967-1

WONDSTK-STK-1-M0010-PNR,FILT,CR,XAD,COND,IR-COMBI
NED

Date Collected: 08/06/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Sample Container: Air Train

5

Method: SW846 0010/8270C - Semivolatile Organic Compounds (Stationary Source) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorobutadiene	ND	+	20.0	9.40	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Hexachlorocyclopentadiene	ND		100	7.60	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Hexachloroethane	ND		20.0	7.80	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Indeno[1,2,3-cd]pyrene	ND		20.0	6.80	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Isophorone	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
2-Methylnaphthalene	7.27	J	20.0	3.80	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
2-Methylphenol	23.6		20.0	4.80	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
3 & 4 Methylphenol	51.4		20.0	5.40	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Naphthalene	37.3		20.0	4.20	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
2-Nitroaniline	ND		100	5.60	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
3-Nitroaniline	ND		100	10.4	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
4-Nitroaniline	ND		100	8.20	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Nitrobenzene	ND		20.0	4.00	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
2-Nitrophenol	ND		20.0	6.40	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
4-Nitrophenol	ND		100	11.0	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
N-Nitrosodimethylamine	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
N-Nitrosodi-n-propylamine	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
N-Nitrosodiphenylamine	ND		20.0	4.40	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
2,2'-oxybis[1-chloropropane]	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Pentachlorobenzene	ND		20.0	6.00	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Pentachloronitrobenzene	ND		100	6.80	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Pentachlorophenol	ND		100	24.0	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Phenanthrene	12.3	J	20.0	4.60	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Phenol	113		20.0	4.80	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Pyrene	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
Pyridine	ND		40.0	10.8	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
1,2,4-Trichlorobenzene	ND		20.0	5.20	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
2,4,5-Trichlorophenol	ND		20.0	4.00	ug/Sample		08/09/24 11:56	08/14/24 12:07	1
2,4,6-Trichlorophenol	ND		20.0	5.80	ug/Sample		08/09/24 11:56	08/14/24 12:07	1

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Butanoic acid, methyl ester	26.3	T J N	ug/Sample		2.39	623-42-7	08/09/24 11:56	08/14/24 12:07	1
Unknown	18.2	T J	ug/Sample		2.72	N/A	08/09/24 11:56	08/14/24 12:07	1
Hexanal	35.7	T J N	ug/Sample		2.88	66-25-1	08/09/24 11:56	08/14/24 12:07	1
Unknown	21.4	T J	ug/Sample		3.06	N/A	08/09/24 11:56	08/14/24 12:07	1
Furfural	293	T J N	ug/Sample		3.10	98-01-1	08/09/24 11:56	08/14/24 12:07	1
Unknown	45.3	T J	ug/Sample		3.20	N/A	08/09/24 11:56	08/14/24 12:07	1
2-Furanmethanol	20.7	T J N	ug/Sample		3.24	98-00-0	08/09/24 11:56	08/14/24 12:07	1
Unknown	53.8	T J	ug/Sample		3.26	N/A	08/09/24 11:56	08/14/24 12:07	1
Styrene	18.0	T J N	ug/Sample		3.59	100-42-5	08/09/24 11:56	08/14/24 12:07	1
Unknown	25.9	T J	ug/Sample		3.67	N/A	08/09/24 11:56	08/14/24 12:07	1
Unknown	21.0	T J	ug/Sample		3.70	N/A	08/09/24 11:56	08/14/24 12:07	1
2-Furancarboxaldehyde, 5-methyl-	59.0	T J N	ug/Sample		4.12	620-02-0	08/09/24 11:56	08/14/24 12:07	1
Benzaldehyde	31.0	T J N	ug/Sample		4.16	100-52-7	08/09/24 11:56	08/14/24 12:07	1
Benzofuran	27.0	T J N	ug/Sample		4.46	271-89-6	08/09/24 11:56	08/14/24 12:07	1
Unknown	20.9	T J	ug/Sample		5.10	N/A	08/09/24 11:56	08/14/24 12:07	1

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Client Sample Results

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Client Sample ID:

Lab Sample ID: 140-37967-1

WONDSTK-STK-1-M0010-PNR,FILT,CR,XAD,COND,IR-COMBI
NED

Date Collected: 08/06/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Sample Container: Air Train

5

Method: SW846 0010/8270C - Semivolatile Organic Compounds (Stationary Source) (Continued)

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Unknown	35.6	T J	ug/Sample		5.37	N/A	08/09/24 11:56	08/14/24 12:07	1
5-Hydroxymethylfurfural	40.7	T J N	ug/Sample		6.46	67-47-0	08/09/24 11:56	08/14/24 12:07	1
Phenol, 2,6-dimethoxy-	35.7	T J N	ug/Sample		7.69	91-10-1	08/09/24 11:56	08/14/24 12:07	1
Vanillin	26.1	T J N	ug/Sample		8.12	121-33-5	08/09/24 11:56	08/14/24 12:07	1
Unknown	24.5	T J	ug/Sample		8.77	N/A	08/09/24 11:56	08/14/24 12:07	1
Unknown	20.7	T J	ug/Sample		8.89	N/A	08/09/24 11:56	08/14/24 12:07	1
Hexadecane	28.9	T J N	ug/Sample		9.29	544-76-3	08/09/24 11:56	08/14/24 12:07	1
Unknown	20.2	T J	ug/Sample		10.26	N/A	08/09/24 11:56	08/14/24 12:07	1
Oxybenzone	19.9	T J N	ug/Sample		10.84	131-57-7	08/09/24 11:56	08/14/24 12:07	1
Hexanedioic acid, bis(2-ethylhexyl) ester	242	T J N	ug/Sample		11.69	103-23-1	08/09/24 11:56	08/14/24 12:07	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	82		48 - 111	08/09/24 11:56	08/14/24 12:07	1
2-Fluorophenol	77		22 - 105	08/09/24 11:56	08/14/24 12:07	1
Nitrobenzene-d5	77		43 - 110	08/09/24 11:56	08/14/24 12:07	1
Phenol-d5	87		48 - 118	08/09/24 11:56	08/14/24 12:07	1
2,4,6-Tribromophenol	103		34 - 125	08/09/24 11:56	08/14/24 12:07	1

Method: ID-0016 - PAH Emissions (Stationary Source)(GC/MS Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	489	J	1000	320	ng/Sample		08/09/24 11:56	08/13/24 16:21	25
Acenaphthylene	4470		1000	95.0	ng/Sample		08/09/24 11:56	08/13/24 16:21	25
Anthracene	1440		500	140	ng/Sample		08/09/24 11:56	08/13/24 16:21	25
Benzo[a]anthracene	340	J	500	145	ng/Sample		08/09/24 11:56	08/13/24 16:21	25
Benzo[a]pyrene	ND		500	85.0	ng/Sample		08/09/24 11:56	08/13/24 16:21	25
Benzo[b]fluoranthene	ND		5000	490	ng/Sample		08/09/24 11:56	08/13/24 16:21	25
Benzo[e]pyrene	ND		500	85.0	ng/Sample		08/09/24 11:56	08/13/24 16:21	25
Benzo[g,h,i]perylene	ND		500	300	ng/Sample		08/09/24 11:56	08/13/24 16:21	25
Benzo[k]fluoranthene	ND		5000	120	ng/Sample		08/09/24 11:56	08/13/24 16:21	25
Chrysene	550		500	190	ng/Sample		08/09/24 11:56	08/13/24 16:21	25
Dibenz(a,h)anthracene	ND		500	135	ng/Sample		08/09/24 11:56	08/13/24 16:21	25
Fluoranthene	3020		500	345	ng/Sample		08/09/24 11:56	08/13/24 16:21	25
Fluorene	2610	B	500	290	ng/Sample		08/09/24 11:56	08/13/24 16:21	25
Indeno[1,2,3-cd]pyrene	ND		500	95.0	ng/Sample		08/09/24 11:56	08/13/24 16:21	25
2-Methylnaphthalene	7810		2500	1350	ng/Sample		08/09/24 11:56	08/13/24 16:21	25
Naphthalene	42400		20000	4050	ng/Sample		08/09/24 11:56	08/13/24 16:21	25
Perylene	ND		500	55.0	ng/Sample		08/09/24 11:56	08/13/24 16:21	25
Phenanthrene	11000		1500	1000	ng/Sample		08/09/24 11:56	08/13/24 16:21	25
Pyrene	2290	J	3000	265	ng/Sample		08/09/24 11:56	08/13/24 16:21	25

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Benzo(a)pyrene-d12	129	*5+	30 - 120	08/09/24 11:56	08/13/24 16:21	25
Benzo(b)fluoranthene-d12	114		30 - 120	08/09/24 11:56	08/13/24 16:21	25
Benzo(k)fluoranthene-d12	111		30 - 120	08/09/24 11:56	08/13/24 16:21	25
Chrysene-d12	91		30 - 120	08/09/24 11:56	08/13/24 16:21	25
Dibenz(a,h)anthracene-d14	98		30 - 120	08/09/24 11:56	08/13/24 16:21	25

Eurofins Knoxville

Client Sample Results

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Client Sample ID:

Lab Sample ID: 140-37967-1

WONDSTK-STK-1-M0010-PNR,FILT,CR,XAD,COND,IR-COMBI
NED

Date Collected: 08/06/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Sample Container: Air Train

5

Method: ID-0016 - PAH Emissions (Stationary Source)(GC/MS Isotope Dilution) (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Indeno[1,2,3-cd]pyrene-d12	104		30 - 120	08/09/24 11:56	08/13/24 16:21	25
Naphthalene-d8	93		30 - 120	08/09/24 11:56	08/13/24 16:21	25
2-methylnaphthalene-d10	92		30 - 120	08/09/24 11:56	08/13/24 16:21	25
Fluorene -d10	97		30 - 120	08/09/24 11:56	08/13/24 16:21	25
Anthracene-d10	106		30 - 120	08/09/24 11:56	08/13/24 16:21	25
Acenaphthylene-d8	111		30 - 120	08/09/24 11:56	08/13/24 16:21	25
Benzo(ghi)perylene-d12	95		30 - 120	08/09/24 11:56	08/13/24 16:21	25
Phenanthrene-d10	101		30 - 120	08/09/24 11:56	08/13/24 16:21	25
Fluoranthene-d10	111		30 - 120	08/09/24 11:56	08/13/24 16:21	25
Perylene-d12	109		30 - 120	08/09/24 11:56	08/13/24 16:21	25
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C6-Naphthalene	96		50 - 150	08/09/24 11:56	08/13/24 16:21	25

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Client Sample Results

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Client Sample ID:

Lab Sample ID: 140-37967-2

WONDSTK-STK-2-M0010-PNR,FILT,CR,XAD,COND,IR-COMBI

NED

Date Collected: 08/06/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Sample Container: Air Train

5

Method: SW846 0010/8270C - Semivolatile Organic Compounds (Stationary Source)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		20.0	3.40	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Acenaphthylene	ND		20.0	5.20	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Acetophenone	6.01	J	20.0	5.20	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Aniline	ND		40.0	8.80	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Anthracene	ND		20.0	5.20	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Benzidine	ND		200	100	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Benzo[a]anthracene	ND		20.0	4.00	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Benzo[a]pyrene	5.23	J	20.0	5.20	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Benzo[b]fluoranthene	ND		20.0	4.20	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Benzo[g,h,i]perylene	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Benzoic acid	ND		200	122	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Benzo[k]fluoranthene	ND		20.0	3.80	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Benzyl alcohol	ND		200	4.80	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Bis(2-chloroethoxy)methane	ND		20.0	3.60	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Bis(2-chloroethyl)ether	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Bis(2-ethylhexyl) phthalate	ND		100	44.0	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
4-Bromophenyl phenyl ether	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Butyl benzyl phthalate	ND		20.0	8.40	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Carbazole	ND		20.0	7.60	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
4-Chloroaniline	ND		40.0	4.80	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
4-Chloro-3-methylphenol	ND		20.0	4.20	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
2-Chloronaphthalene	ND		20.0	4.00	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
2-Chlorophenol	ND		20.0	4.40	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
4-Chlorophenyl phenyl ether	ND		20.0	3.80	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Chrysene	ND		20.0	3.40	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Dibenz(a,h)anthracene	ND		20.0	5.20	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Dibenzofuran	6.75	J	20.0	4.00	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
1,2-Dichlorobenzene	ND		20.0	5.80	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
1,3-Dichlorobenzene	ND		20.0	6.40	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
1,4-Dichlorobenzene	ND		20.0	6.00	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
3,3'-Dichlorobenzidine	ND		100	28.0	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
2,4-Dichlorophenol	ND		20.0	4.00	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Diethyl phthalate	ND		20.0	3.80	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
2,4-Dimethylphenol	ND		40.0	6.20	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Dimethyl phthalate	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Di-n-butyl phthalate	ND		20.0	7.20	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
4,6-Dinitro-2-methylphenol	ND		100	11.2	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
2,4-Dinitrophenol	ND		100	7.60	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
2,4-Dinitrotoluene	ND		20.0	5.80	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
2,6-Dinitrotoluene	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Di-n-octyl phthalate	12.5	J	20.0	9.20	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
1,2-Diphenylhydrazine (as Azobenzene)	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Fluoranthene	ND		20.0	5.60	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Fluorene	ND		20.0	4.40	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Hexachlorobenzene	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/14/24 12:34	1

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Client Sample Results

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Client Sample ID:

Lab Sample ID: 140-37967-2

WONDSTK-STK-2-M0010-PNR,FILT,CR,XAD,COND,IR-COMBI

NED

Date Collected: 08/06/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Sample Container: Air Train

5

Method: SW846 0010/8270C - Semivolatile Organic Compounds (Stationary Source) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorobutadiene	ND	+	20.0	9.40	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Hexachlorocyclopentadiene	ND		100	7.60	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Hexachloroethane	ND		20.0	7.80	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Indeno[1,2,3-cd]pyrene	ND		20.0	6.80	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Isophorone	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
2-Methylnaphthalene	5.79	J	20.0	3.80	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
2-Methylphenol	23.7		20.0	4.80	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
3 & 4 Methylphenol	53.6		20.0	5.40	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Naphthalene	26.6		20.0	4.20	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
2-Nitroaniline	5.64	J	100	5.60	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
3-Nitroaniline	ND		100	10.4	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
4-Nitroaniline	ND		100	8.20	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Nitrobenzene	ND		20.0	4.00	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
2-Nitrophenol	ND		20.0	6.40	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
4-Nitrophenol	ND		100	11.0	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
N-Nitrosodimethylamine	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
N-Nitrosodi-n-propylamine	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
N-Nitrosodiphenylamine	ND		20.0	4.40	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
2,2'-oxybis[1-chloropropane]	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Pentachlorobenzene	ND		20.0	6.00	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Pentachloronitrobenzene	ND		100	6.80	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Pentachlorophenol	ND		100	24.0	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Phenanthrene	6.34	J	20.0	4.60	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Phenol	111		20.0	4.80	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Pyrene	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
Pyridine	ND		40.0	10.8	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
1,2,4-Trichlorobenzene	ND		20.0	5.20	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
2,4,5-Trichlorophenol	ND		20.0	4.00	ug/Sample		08/09/24 11:56	08/14/24 12:34	1
2,4,6-Trichlorophenol	ND		20.0	5.80	ug/Sample		08/09/24 11:56	08/14/24 12:34	1

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Unknown	49.6	T J	ug/Sample		2.61	N/A	08/09/24 11:56	08/14/24 12:34	1
Unknown	13.6	T J	ug/Sample		2.65	N/A	08/09/24 11:56	08/14/24 12:34	1
Hexanal	33.5	T J N	ug/Sample		2.87	66-25-1	08/09/24 11:56	08/14/24 12:34	1
Unknown	12.7	T J	ug/Sample		3.00	N/A	08/09/24 11:56	08/14/24 12:34	1
Furfural	340	T J N	ug/Sample		3.10	98-01-1	08/09/24 11:56	08/14/24 12:34	1
Unknown	13.2	T J	ug/Sample		3.20	N/A	08/09/24 11:56	08/14/24 12:34	1
2-Furanmethanol	24.4	T J N	ug/Sample		3.24	98-00-0	08/09/24 11:56	08/14/24 12:34	1
Unknown	27.4	T J	ug/Sample		3.26	N/A	08/09/24 11:56	08/14/24 12:34	1
Ethylbenzene	12.7	T J N	ug/Sample		3.36	100-41-4	08/09/24 11:56	08/14/24 12:34	1
1,3,5,7-Cyclooctatetraene	14.3	T J N	ug/Sample		3.59	629-20-9	08/09/24 11:56	08/14/24 12:34	1
Unknown	14.4	T J	ug/Sample		3.63	N/A	08/09/24 11:56	08/14/24 12:34	1
Unknown	27.9	T J	ug/Sample		3.67	N/A	08/09/24 11:56	08/14/24 12:34	1
Unknown	24.8	T J	ug/Sample		4.08	N/A	08/09/24 11:56	08/14/24 12:34	1
2-Furancarboxaldehyde, 5-methyl-	64.4	T J N	ug/Sample		4.12	620-02-0	08/09/24 11:56	08/14/24 12:34	1
Benzaldehyde	33.1	T J N	ug/Sample		4.16	100-52-7	08/09/24 11:56	08/14/24 12:34	1

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Client Sample Results

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Client Sample ID:

Lab Sample ID: 140-37967-2

WONDSTK-STK-2-M0010-PNR,FILT,CR,XAD,COND,IR-COMBI
NED

Date Collected: 08/06/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Sample Container: Air Train

5

Method: SW846 0010/8270C - Semivolatile Organic Compounds (Stationary Source) (Continued)

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Unknown	17.4	T J	ug/Sample		4.43	N/A	08/09/24 11:56	08/14/24 12:34	1
Benzofuran	28.1	T J N	ug/Sample		4.46	271-89-6	08/09/24 11:56	08/14/24 12:34	1
2-Cyclopenten-1-one, 2-hydroxy-3-methyl-	14.1	T J N	ug/Sample		4.63	80-71-7	08/09/24 11:56	08/14/24 12:34	1
Unknown	26.8	T J	ug/Sample		5.10	N/A	08/09/24 11:56	08/14/24 12:34	1
Unknown	32.2	T J	ug/Sample		5.37	N/A	08/09/24 11:56	08/14/24 12:34	1
1,4:3,6-Dianhydro- α -D-glucopyr anose	17.4	T J N	ug/Sample		6.40	1000098-14- 8	08/09/24 11:56	08/14/24 12:34	1
5-Hydroxymethylfurfural	37.6	T J N	ug/Sample		6.45	67-47-0	08/09/24 11:56	08/14/24 12:34	1
Phenol, 2,6-dimethoxy-	22.9	T J N	ug/Sample		7.69	91-10-1	08/09/24 11:56	08/14/24 12:34	1
Vanillin	12.6	T J N	ug/Sample		8.12	121-33-5	08/09/24 11:56	08/14/24 12:34	1
Hexanedioic acid, bis(2-ethylhexyl) ester	76.3	T J N	ug/Sample		11.69	103-23-1	08/09/24 11:56	08/14/24 12:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	78		48 - 111	08/09/24 11:56	08/14/24 12:34	1
2-Fluorophenol	77		22 - 105	08/09/24 11:56	08/14/24 12:34	1
Nitrobenzene-d5	77		43 - 110	08/09/24 11:56	08/14/24 12:34	1
Phenol-d5	85		48 - 118	08/09/24 11:56	08/14/24 12:34	1
2,4,6-Tribromophenol	96		34 - 125	08/09/24 11:56	08/14/24 12:34	1

Method: ID-0016 - PAH Emissions (Stationary Source)(GC/MS Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	273	J	400	128	ng/Sample		08/09/24 11:56	08/13/24 16:44	10
Acenaphthylene	2260		400	38.0	ng/Sample		08/09/24 11:56	08/13/24 16:44	10
Anthracene	897		200	56.0	ng/Sample		08/09/24 11:56	08/13/24 16:44	10
Benzo[a]anthracene	264		200	58.0	ng/Sample		08/09/24 11:56	08/13/24 16:44	10
Benzo[a]pyrene	80.0	J	200	34.0	ng/Sample		08/09/24 11:56	08/13/24 16:44	10
Benzo[b]fluoranthene	224	J	2000	196	ng/Sample		08/09/24 11:56	08/13/24 16:44	10
Benzo[e]pyrene	91.9	J	200	34.0	ng/Sample		08/09/24 11:56	08/13/24 16:44	10
Benzo[g,h,i]perylene	ND		200	120	ng/Sample		08/09/24 11:56	08/13/24 16:44	10
Benzo[k]fluoranthene	ND		2000	48.0	ng/Sample		08/09/24 11:56	08/13/24 16:44	10
Chrysene	424		200	76.0	ng/Sample		08/09/24 11:56	08/13/24 16:44	10
Dibenz(a,h)anthracene	ND		200	54.0	ng/Sample		08/09/24 11:56	08/13/24 16:44	10
Fluoranthene	1760		200	138	ng/Sample		08/09/24 11:56	08/13/24 16:44	10
Fluorene	1590	B	200	116	ng/Sample		08/09/24 11:56	08/13/24 16:44	10
Indeno[1,2,3-cd]pyrene	40.7	J	200	38.0	ng/Sample		08/09/24 11:56	08/13/24 16:44	10
2-Methylnaphthalene	6700		1000	540	ng/Sample		08/09/24 11:56	08/13/24 16:44	10
Naphthalene	32100		8000	1620	ng/Sample		08/09/24 11:56	08/13/24 16:44	10
Perylene	ND		200	22.0	ng/Sample		08/09/24 11:56	08/13/24 16:44	10
Phenanthrene	6300		600	400	ng/Sample		08/09/24 11:56	08/13/24 16:44	10
Pyrene	1420		1200	106	ng/Sample		08/09/24 11:56	08/13/24 16:44	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Benzo(a)pyrene-d12	118		30 - 120	08/09/24 11:56	08/13/24 16:44	10
Benzo(b)fluoranthene-d12	119		30 - 120	08/09/24 11:56	08/13/24 16:44	10
Benzo(k)fluoranthene-d12	108		30 - 120	08/09/24 11:56	08/13/24 16:44	10

Eurofins Knoxville

Client Sample Results

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Client Sample ID:

Lab Sample ID: 140-37967-2

WONDSTK-STK-2-M0010-PNR,FILT,CR,XAD,COND,IR-COMBI
NED

Date Collected: 08/06/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Sample Container: Air Train

5

Method: ID-0016 - PAH Emissions (Stationary Source)(GC/MS Isotope Dilution) (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Chrysene-d12	100		30 - 120	08/09/24 11:56	08/13/24 16:44	10
Dibenz(a,h)anthracene-d14	94		30 - 120	08/09/24 11:56	08/13/24 16:44	10
Indeno[1,2,3-cd]pyrene-d12	104		30 - 120	08/09/24 11:56	08/13/24 16:44	10
Naphthalene-d8	94		30 - 120	08/09/24 11:56	08/13/24 16:44	10
2-methylnaphthalene-d10	95		30 - 120	08/09/24 11:56	08/13/24 16:44	10
Fluorene -d10	97		30 - 120	08/09/24 11:56	08/13/24 16:44	10
Anthracene-d10	105		30 - 120	08/09/24 11:56	08/13/24 16:44	10
Acenaphthylene-d8	117		30 - 120	08/09/24 11:56	08/13/24 16:44	10
Benzo(ghi)perylene-d12	101		30 - 120	08/09/24 11:56	08/13/24 16:44	10
Phenanthrene-d10	101		30 - 120	08/09/24 11:56	08/13/24 16:44	10
Fluoranthene-d10	114		30 - 120	08/09/24 11:56	08/13/24 16:44	10
Perylene-d12	104		30 - 120	08/09/24 11:56	08/13/24 16:44	10
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C6-Naphthalene	101		50 - 150	08/09/24 11:56	08/13/24 16:44	10

Eurofins Knoxville

Client Sample Results

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Client Sample ID:

Lab Sample ID: 140-37967-4

WONDSTK-STK-FB-M0010-PNR,FILT,CR,XAD,COND,IR-COMB
INED

Date Collected: 08/07/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Sample Container: Air Train

5

Method: SW846 0010/8270C - Semivolatile Organic Compounds (Stationary Source)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		20.0	3.40	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Acenaphthylene	ND		20.0	5.20	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Acetophenone	ND		20.0	5.20	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Aniline	ND		40.0	8.80	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Anthracene	ND		20.0	5.20	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Benzidine	ND		200	100	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Benzo[a]anthracene	ND		20.0	4.00	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Benzo[a]pyrene	ND		20.0	5.20	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Benzo[b]fluoranthene	ND		20.0	4.20	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Benzo[g,h,i]perylene	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Benzoic acid	ND		200	122	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Benzo[k]fluoranthene	ND		20.0	3.80	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Benzyl alcohol	ND		200	4.80	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Bis(2-chloroethoxy)methane	ND		20.0	3.60	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Bis(2-chloroethyl)ether	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Bis(2-ethylhexyl) phthalate	ND		100	44.0	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
4-Bromophenyl phenyl ether	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Butyl benzyl phthalate	ND		20.0	8.40	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Carbazole	ND		20.0	7.60	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
4-Chloroaniline	ND		40.0	4.80	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
4-Chloro-3-methylphenol	ND		20.0	4.20	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
2-Chloronaphthalene	ND		20.0	4.00	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
2-Chlorophenol	ND		20.0	4.40	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
4-Chlorophenyl phenyl ether	ND		20.0	3.80	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Chrysene	ND		20.0	3.40	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Dibenz(a,h)anthracene	ND		20.0	5.20	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Dibenzofuran	ND		20.0	4.00	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
1,2-Dichlorobenzene	ND		20.0	5.80	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
1,3-Dichlorobenzene	ND		20.0	6.40	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
1,4-Dichlorobenzene	ND		20.0	6.00	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
3,3'-Dichlorobenzidine	ND		100	28.0	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
2,4-Dichlorophenol	ND		20.0	4.00	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Diethyl phthalate	ND		20.0	3.80	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
2,4-Dimethylphenol	ND		40.0	6.20	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Dimethyl phthalate	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Di-n-butyl phthalate	ND		20.0	7.20	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
4,6-Dinitro-2-methylphenol	ND		100	11.2	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
2,4-Dinitrophenol	ND		100	7.60	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
2,4-Dinitrotoluene	ND		20.0	5.80	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
2,6-Dinitrotoluene	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Di-n-octyl phthalate	ND		20.0	9.20	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
1,2-Diphenylhydrazine (as Azobenzene)	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Fluoranthene	ND		20.0	5.60	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Fluorene	ND		20.0	4.40	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Hexachlorobenzene	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/12/24 15:12	1

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Client Sample Results

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Client Sample ID:

Lab Sample ID: 140-37967-4

WONDSTK-STK-FB-M0010-PNR,FILT,CR,XAD,COND,IR-COMB
INED

Date Collected: 08/07/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Sample Container: Air Train

5

Method: SW846 0010/8270C - Semivolatile Organic Compounds (Stationary Source) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorobutadiene	ND	+	20.0	9.40	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Hexachlorocyclopentadiene	ND		100	7.60	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Hexachloroethane	ND		20.0	7.80	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Indeno[1,2,3-cd]pyrene	ND		20.0	6.80	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Isophorone	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
2-Methylnaphthalene	ND		20.0	3.80	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
2-Methylphenol	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
3 & 4 Methylphenol	ND		20.0	5.40	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Naphthalene	ND		20.0	4.20	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
2-Nitroaniline	ND		100	5.60	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
3-Nitroaniline	ND		100	10.4	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
4-Nitroaniline	ND		100	8.20	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Nitrobenzene	ND		20.0	4.00	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
2-Nitrophenol	ND		20.0	6.40	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
4-Nitrophenol	ND		100	11.0	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
N-Nitrosodimethylamine	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
N-Nitrosodi-n-propylamine	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
N-Nitrosodiphenylamine	ND		20.0	4.40	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
2,2'-oxybis[1-chloropropane]	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Pentachlorobenzene	ND		20.0	6.00	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Pentachloronitrobenzene	ND		100	6.80	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Pentachlorophenol	ND		100	24.0	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Phenanthrene	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Phenol	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Pyrene	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
Pyridine	ND		40.0	10.8	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
1,2,4-Trichlorobenzene	ND		20.0	5.20	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
2,4,5-Trichlorophenol	ND		20.0	4.00	ug/Sample		08/09/24 11:56	08/12/24 15:12	1
2,4,6-Trichlorophenol	ND		20.0	5.80	ug/Sample		08/09/24 11:56	08/12/24 15:12	1

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Unknown	8.20	T J	ug/Sample		2.40	N/A	08/09/24 11:56	08/12/24 15:12	1
Unknown	16.8	T J	ug/Sample		2.63	N/A	08/09/24 11:56	08/12/24 15:12	1
Hexanedioic acid, bis(2-ethylhexyl) ester	32.3	T J N	ug/Sample		11.80	103-23-1	08/09/24 11:56	08/12/24 15:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	63		48 - 111	08/09/24 11:56	08/12/24 15:12	1
2-Fluorophenol	62		22 - 105	08/09/24 11:56	08/12/24 15:12	1
Nitrobenzene-d5	67		43 - 110	08/09/24 11:56	08/12/24 15:12	1
Phenol-d5	65		48 - 118	08/09/24 11:56	08/12/24 15:12	1
2,4,6-Tribromophenol	72		34 - 125	08/09/24 11:56	08/12/24 15:12	1

Method: ID-0016 - PAH Emissions (Stationary Source)(GC/MS Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	32.3	J	40.0	12.8	ng/Sample		08/09/24 11:56	08/14/24 12:18	1
Acenaphthylene	ND		40.0	3.80	ng/Sample		08/09/24 11:56	08/14/24 12:18	1

Eurofins Knoxville

Client Sample Results

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Client Sample ID:

Lab Sample ID: 140-37967-4

WONDSTK-STK-FB-M0010-PNR,FILT,CR,XAD,COND,IR-COMB
INED

Date Collected: 08/07/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Sample Container: Air Train

5

Method: ID-0016 - PAH Emissions (Stationary Source)(GC/MS Isotope Dilution) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Anthracene	66.3		20.0	5.60	ng/Sample		08/09/24 11:56	08/14/24 12:18	1
Benzo[a]anthracene	18.6	J	20.0	5.80	ng/Sample		08/09/24 11:56	08/14/24 12:18	1
Benzo[a]pyrene	10.0	J	20.0	3.40	ng/Sample		08/09/24 11:56	08/14/24 12:18	1
Benzo[b]fluoranthene	ND		200	19.6	ng/Sample		08/09/24 11:56	08/14/24 12:18	1
Benzo[e]pyrene	6.83	J	20.0	3.40	ng/Sample		08/09/24 11:56	08/14/24 12:18	1
Benzo[g,h,i]perylene	ND		20.0	12.0	ng/Sample		08/09/24 11:56	08/14/24 12:18	1
Benzo[k]fluoranthene	6.23	J	200	4.80	ng/Sample		08/09/24 11:56	08/14/24 12:18	1
Chrysene	24.9		20.0	7.60	ng/Sample		08/09/24 11:56	08/14/24 12:18	1
Dibenz(a,h)anthracene	ND		20.0	5.40	ng/Sample		08/09/24 11:56	08/14/24 12:18	1
Fluoranthene	140		20.0	13.8	ng/Sample		08/09/24 11:56	08/14/24 12:18	1
Fluorene	126	B	20.0	11.6	ng/Sample		08/09/24 11:56	08/14/24 12:18	1
Indeno[1,2,3-cd]pyrene	8.35	J	20.0	3.80	ng/Sample		08/09/24 11:56	08/14/24 12:18	1
2-Methylnaphthalene	74.2	J	100	54.0	ng/Sample		08/09/24 11:56	08/14/24 12:18	1
Naphthalene	ND		800	162	ng/Sample		08/09/24 11:56	08/14/24 12:18	1
Perylene	ND		20.0	2.20	ng/Sample		08/09/24 11:56	08/14/24 12:18	1
Phenanthrene	543		60.0	40.0	ng/Sample		08/09/24 11:56	08/14/24 12:18	1
Pyrene	96.6	J	120	10.6	ng/Sample		08/09/24 11:56	08/14/24 12:18	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Benzo(a)pyrene-d12	131	*5+	30 - 120				08/09/24 11:56	08/14/24 12:18	1
Benzo(b)fluoranthene-d12	127	*5+	30 - 120				08/09/24 11:56	08/14/24 12:18	1
Benzo(k)fluoranthene-d12	97		30 - 120				08/09/24 11:56	08/14/24 12:18	1
Chrysene-d12	99		30 - 120				08/09/24 11:56	08/14/24 12:18	1
Dibenz(a,h)anthracene-d14	103		30 - 120				08/09/24 11:56	08/14/24 12:18	1
Indeno[1,2,3-cd]pyrene-d12	112		30 - 120				08/09/24 11:56	08/14/24 12:18	1
Naphthalene-d8	97		30 - 120				08/09/24 11:56	08/14/24 12:18	1
2-methylnaphthalene-d10	102		30 - 120				08/09/24 11:56	08/14/24 12:18	1
Fluorene -d10	105		30 - 120				08/09/24 11:56	08/14/24 12:18	1
Anthracene-d10	105		30 - 120				08/09/24 11:56	08/14/24 12:18	1
Acenaphthylene-d8	119		30 - 120				08/09/24 11:56	08/14/24 12:18	1
Benzo(ghi)perylene-d12	97		30 - 120				08/09/24 11:56	08/14/24 12:18	1
Phenanthrene-d10	98		30 - 120				08/09/24 11:56	08/14/24 12:18	1
Fluoranthene-d10	111		30 - 120				08/09/24 11:56	08/14/24 12:18	1
Perylene-d12	111		30 - 120				08/09/24 11:56	08/14/24 12:18	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C6-Naphthalene	100		50 - 150				08/09/24 11:56	08/14/24 12:18	1

Eurofins Knoxville

Client Sample Results

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Client Sample ID: A-2321,A-2322 M0010 MEDIA CHECK

Lab Sample ID: 140-37967-9

XAD,FILTER

Date Collected: 08/06/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Sample Container: Air Train

5

Method: SW846 0010/8270C - Semivolatile Organic Compounds (Stationary Source)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		20.0	3.40	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Acenaphthylene	ND		20.0	5.20	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Acetophenone	ND		20.0	5.20	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Aniline	ND		40.0	8.80	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Anthracene	ND		20.0	5.20	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Benzidine	ND		200	100	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Benzo[a]anthracene	ND		20.0	4.00	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Benzo[a]pyrene	ND		20.0	5.20	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Benzo[b]fluoranthene	ND		20.0	4.20	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Benzo[g,h,i]perylene	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Benzoic acid	ND		200	122	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Benzo[k]fluoranthene	ND		20.0	3.80	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Benzyl alcohol	ND		200	4.80	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Bis(2-chloroethoxy)methane	ND		20.0	3.60	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Bis(2-chloroethyl)ether	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Bis(2-ethylhexyl) phthalate	ND		100	44.0	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
4-Bromophenyl phenyl ether	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Butyl benzyl phthalate	ND		20.0	8.40	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Carbazole	ND		20.0	7.60	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
4-Chloroaniline	ND		40.0	4.80	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
4-Chloro-3-methylphenol	ND		20.0	4.20	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
2-Chloronaphthalene	ND		20.0	4.00	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
2-Chlorophenol	ND		20.0	4.40	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
4-Chlorophenyl phenyl ether	ND		20.0	3.80	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Chrysene	ND		20.0	3.40	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Dibenz(a,h)anthracene	ND		20.0	5.20	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Dibenzofuran	ND		20.0	4.00	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
1,2-Dichlorobenzene	ND		20.0	5.80	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
1,3-Dichlorobenzene	ND		20.0	6.40	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
1,4-Dichlorobenzene	ND		20.0	6.00	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
3,3'-Dichlorobenzidine	ND		100	28.0	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
2,4-Dichlorophenol	ND		20.0	4.00	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Diethyl phthalate	ND		20.0	3.80	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
2,4-Dimethylphenol	ND		40.0	6.20	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Dimethyl phthalate	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Di-n-butyl phthalate	ND		20.0	7.20	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
4,6-Dinitro-2-methylphenol	ND		100	11.2	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
2,4-Dinitrophenol	ND		100	7.60	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
2,4-Dinitrotoluene	ND		20.0	5.80	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
2,6-Dinitrotoluene	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Di-n-octyl phthalate	ND		20.0	9.20	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
1,2-Diphenylhydrazine (as Azobenzene)	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Fluoranthene	ND		20.0	5.60	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Fluorene	ND		20.0	4.40	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Hexachlorobenzene	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Hexachlorobutadiene	ND	+	20.0	9.40	ug/Sample		08/09/24 11:56	08/12/24 15:37	1

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Client Sample Results

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Client Sample ID: A-2321,A-2322 M0010 MEDIA CHECK

Lab Sample ID: 140-37967-9

XAD,FILTER

Date Collected: 08/06/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Sample Container: Air Train

5

Method: SW846 0010/8270C - Semivolatile Organic Compounds (Stationary Source) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorocyclopentadiene	ND		100	7.60	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Hexachloroethane	ND		20.0	7.80	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Indeno[1,2,3-cd]pyrene	7.74	J	20.0	6.80	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Isophorone	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
2-Methylnaphthalene	ND		20.0	3.80	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
2-Methylphenol	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
3 & 4 Methylphenol	ND		20.0	5.40	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Naphthalene	ND		20.0	4.20	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
2-Nitroaniline	ND		100	5.60	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
3-Nitroaniline	ND		100	10.4	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
4-Nitroaniline	ND		100	8.20	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Nitrobenzene	ND		20.0	4.00	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
2-Nitrophenol	ND		20.0	6.40	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
4-Nitrophenol	ND		100	11.0	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
N-Nitrosodimethylamine	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
N-Nitrosodi-n-propylamine	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
N-Nitrosodiphenylamine	ND		20.0	4.40	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
2,2'-oxybis[1-chloropropane]	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Pentachlorobenzene	ND		20.0	6.00	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Pentachloronitrobenzene	ND		100	6.80	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Pentachlorophenol	ND		100	24.0	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Phenanthrene	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Phenol	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Pyrene	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
Pyridine	ND		40.0	10.8	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
1,2,4-Trichlorobenzene	ND		20.0	5.20	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
2,4,5-Trichlorophenol	ND		20.0	4.00	ug/Sample		08/09/24 11:56	08/12/24 15:37	1
2,4,6-Trichlorophenol	ND		20.0	5.80	ug/Sample		08/09/24 11:56	08/12/24 15:37	1

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Unknown	8.74	T J	ug/Sample		2.03	N/A	08/09/24 11:56	08/12/24 15:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	83		48 - 111	08/09/24 11:56	08/12/24 15:37	1
2-Fluorophenol	83		22 - 105	08/09/24 11:56	08/12/24 15:37	1
Nitrobenzene-d5	85		43 - 110	08/09/24 11:56	08/12/24 15:37	1
Phenol-d5	83		48 - 118	08/09/24 11:56	08/12/24 15:37	1
2,4,6-Tribromophenol	91		34 - 125	08/09/24 11:56	08/12/24 15:37	1

Method: ID-0016 - PAH Emissions (Stationary Source)(GC/MS Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		40.0	12.8	ng/Sample		08/09/24 11:56	08/13/24 17:52	1
Acenaphthylene	ND		40.0	3.80	ng/Sample		08/09/24 11:56	08/13/24 17:52	1
Anthracene	ND		20.0	5.60	ng/Sample		08/09/24 11:56	08/13/24 17:52	1
Benzo[a]anthracene	ND		20.0	5.80	ng/Sample		08/09/24 11:56	08/13/24 17:52	1
Benzo[a]pyrene	ND		20.0	3.40	ng/Sample		08/09/24 11:56	08/13/24 17:52	1
Benzo[b]fluoranthene	ND		200	19.6	ng/Sample		08/09/24 11:56	08/13/24 17:52	1
Benzo[e]pyrene	ND		20.0	3.40	ng/Sample		08/09/24 11:56	08/13/24 17:52	1

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Client Sample Results

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Client Sample ID: A-2321,A-2322 M0010 MEDIA CHECK

Lab Sample ID: 140-37967-9

XAD,FILTER

Date Collected: 08/06/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Sample Container: Air Train

5

Method: ID-0016 - PAH Emissions (Stationary Source)(GC/MS Isotope Dilution) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[g,h,i]perylene	ND		20.0	12.0	ng/Sample		08/09/24 11:56	08/13/24 17:52	1
Benzo[k]fluoranthene	ND		200	4.80	ng/Sample		08/09/24 11:56	08/13/24 17:52	1
Chrysene	ND		20.0	7.60	ng/Sample		08/09/24 11:56	08/13/24 17:52	1
Dibenz[a,h]anthracene	ND		20.0	5.40	ng/Sample		08/09/24 11:56	08/13/24 17:52	1
Fluoranthene	ND		20.0	13.8	ng/Sample		08/09/24 11:56	08/13/24 17:52	1
Fluorene	ND		20.0	11.6	ng/Sample		08/09/24 11:56	08/13/24 17:52	1
Indeno[1,2,3-cd]pyrene	ND		20.0	3.80	ng/Sample		08/09/24 11:56	08/13/24 17:52	1
2-Methylnaphthalene	ND		100	54.0	ng/Sample		08/09/24 11:56	08/13/24 17:52	1
Naphthalene	ND		800	162	ng/Sample		08/09/24 11:56	08/13/24 17:52	1
Perylene	ND		20.0	2.20	ng/Sample		08/09/24 11:56	08/13/24 17:52	1
Phenanthrene	ND		60.0	40.0	ng/Sample		08/09/24 11:56	08/13/24 17:52	1
Pyrene	ND		120	10.6	ng/Sample		08/09/24 11:56	08/13/24 17:52	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Benzo[a]pyrene-d12	128	*5+	30 - 120	08/09/24 11:56	08/13/24 17:52	1
Benzo[b]fluoranthene-d12	127	*5+	30 - 120	08/09/24 11:56	08/13/24 17:52	1
Benzo[k]fluoranthene-d12	92		30 - 120	08/09/24 11:56	08/13/24 17:52	1
Chrysene-d12	99		30 - 120	08/09/24 11:56	08/13/24 17:52	1
Dibenz[a,h]anthracene-d14	103		30 - 120	08/09/24 11:56	08/13/24 17:52	1
Indeno[1,2,3-cd]pyrene-d12	108		30 - 120	08/09/24 11:56	08/13/24 17:52	1
Naphthalene-d8	103		30 - 120	08/09/24 11:56	08/13/24 17:52	1
2-methylnaphthalene-d10	107		30 - 120	08/09/24 11:56	08/13/24 17:52	1
Fluorene -d10	108		30 - 120	08/09/24 11:56	08/13/24 17:52	1
Anthracene-d10	102		30 - 120	08/09/24 11:56	08/13/24 17:52	1
Acenaphthylene-d8	119		30 - 120	08/09/24 11:56	08/13/24 17:52	1
Benzo[ghi]perylene-d12	96		30 - 120	08/09/24 11:56	08/13/24 17:52	1
Phenanthrene-d10	96		30 - 120	08/09/24 11:56	08/13/24 17:52	1
Fluoranthene-d10	110		30 - 120	08/09/24 11:56	08/13/24 17:52	1
Perylene-d12	109		30 - 120	08/09/24 11:56	08/13/24 17:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C6-Naphthalene				08/09/24 11:56	08/13/24 17:52	1

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Default Detection Limits

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Method: 0010/8270C - Semivolatile Organic Compounds (Stationary Source)

Prep: Combined Prep

Analyte	RL	MDL	Units
1,2,4-Trichlorobenzene	10.0	2.60	ug/Sample
1,2-Dichlorobenzene	10.0	2.90	ug/Sample
1,2-Diphenylhydrazine (as Azobenzene)	10.0	2.40	ug/Sample
1,3-Dichlorobenzene	10.0	3.20	ug/Sample
1,4-Dichlorobenzene	10.0	3.00	ug/Sample
2,2'-oxybis[1-chloropropane]	10.0	2.30	ug/Sample
2,4,5-Trichlorophenol	10.0	2.00	ug/Sample
2,4,6-Trichlorophenol	10.0	2.90	ug/Sample
2,4-Dichlorophenol	10.0	2.00	ug/Sample
2,4-Dimethylphenol	20.0	3.10	ug/Sample
2,4-Dinitrophenol	50.0	3.80	ug/Sample
2,4-Dinitrotoluene	10.0	2.90	ug/Sample
2,6-Dinitrotoluene	10.0	2.40	ug/Sample
2-Chloronaphthalene	10.0	2.00	ug/Sample
2-Chlorophenol	10.0	2.20	ug/Sample
2-Methylnaphthalene	10.0	1.90	ug/Sample
2-Methylphenol	10.0	2.40	ug/Sample
2-Nitroaniline	50.0	2.80	ug/Sample
2-Nitrophenol	10.0	3.20	ug/Sample
3 & 4 Methylphenol	10.0	2.70	ug/Sample
3,3'-Dichlorobenzidine	50.0	14.0	ug/Sample
3-Nitroaniline	50.0	5.20	ug/Sample
4,6-Dinitro-2-methylphenol	50.0	5.60	ug/Sample
4-Bromophenyl phenyl ether	10.0	2.30	ug/Sample
4-Chloro-3-methylphenol	10.0	2.10	ug/Sample
4-Chloroaniline	20.0	2.40	ug/Sample
4-Chlorophenyl phenyl ether	10.0	1.90	ug/Sample
4-Nitroaniline	50.0	4.10	ug/Sample
4-Nitrophenol	50.0	5.50	ug/Sample
Acenaphthene	10.0	1.70	ug/Sample
Acenaphthylene	10.0	2.60	ug/Sample
Acetophenone	10.0	2.60	ug/Sample
Aniline	20.0	4.40	ug/Sample
Anthracene	10.0	2.60	ug/Sample
Benzidine	100	50.0	ug/Sample
Benzo[a]anthracene	10.0	2.00	ug/Sample
Benzo[a]pyrene	10.0	2.60	ug/Sample
Benzo[b]fluoranthene	10.0	2.10	ug/Sample
Benzo[g,h,i]perylene	10.0	2.30	ug/Sample
Benzo[k]fluoranthene	10.0	1.90	ug/Sample
Benzoic acid	100	61.0	ug/Sample
Benzyl alcohol	100	2.40	ug/Sample
Bis(2-chloroethoxy)methane	10.0	1.80	ug/Sample
Bis(2-chloroethyl)ether	10.0	2.40	ug/Sample
Bis(2-ethylhexyl) phthalate	50.0	22.0	ug/Sample
Butyl benzyl phthalate	10.0	4.20	ug/Sample
Carbazole	10.0	3.80	ug/Sample
Chrysene	10.0	1.70	ug/Sample
Dibenz(a,h)anthracene	10.0	2.60	ug/Sample
Dibenzofuran	10.0	2.00	ug/Sample
Diethyl phthalate	10.0	1.90	ug/Sample
Dimethyl phthalate	10.0	2.40	ug/Sample

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Default Detection Limits

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Method: 0010/8270C - Semivolatile Organic Compounds (Stationary Source) (Continued)

Prep: Combined Prep

Analyte	RL	MDL	Units
Di-n-butyl phthalate	10.0	3.60	ug/Sample
Di-n-octyl phthalate	10.0	4.60	ug/Sample
Fluoranthene	10.0	2.80	ug/Sample
Fluorene	10.0	2.20	ug/Sample
Hexachlorobenzene	10.0	2.30	ug/Sample
Hexachlorobutadiene	10.0	4.70	ug/Sample
Hexachlorocyclopentadiene	50.0	3.80	ug/Sample
Hexachloroethane	10.0	3.90	ug/Sample
Indeno[1,2,3-cd]pyrene	10.0	3.40	ug/Sample
Isophorone	10.0	2.30	ug/Sample
Naphthalene	10.0	2.10	ug/Sample
Nitrobenzene	10.0	2.00	ug/Sample
N-Nitrosodimethylamine	10.0	2.30	ug/Sample
N-Nitrosodi-n-propylamine	10.0	2.40	ug/Sample
N-Nitrosodiphenylamine	10.0	2.20	ug/Sample
Pentachlorobenzene	10.0	3.00	ug/Sample
Pentachloronitrobenzene	50.0	3.40	ug/Sample
Pentachlorophenol	50.0	12.0	ug/Sample
Phenanthrene	10.0	2.30	ug/Sample
Phenol	10.0	2.40	ug/Sample
Pyrene	10.0	2.30	ug/Sample
Pyridine	20.0	5.40	ug/Sample

Method: ID-0016 - PAH Emissions (Stationary Source)(GC/MS Isotope Dilution)

Prep: Combined Prep

Analyte	RL	MDL	Units
2-Methylnaphthalene	50.0	27.0	ng/Sample
Acenaphthene	20.0	6.40	ng/Sample
Acenaphthylene	20.0	1.90	ng/Sample
Anthracene	10.0	2.80	ng/Sample
Benzo[a]anthracene	10.0	2.90	ng/Sample
Benzo[a]pyrene	10.0	1.70	ng/Sample
Benzo[b]fluoranthene	100	9.80	ng/Sample
Benzo[e]pyrene	10.0	1.70	ng/Sample
Benzo[g,h,i]perylene	10.0	6.00	ng/Sample
Benzo[k]fluoranthene	100	2.40	ng/Sample
Chrysene	10.0	3.80	ng/Sample
Dibenz(a,h)anthracene	10.0	2.70	ng/Sample
Fluoranthene	10.0	6.90	ng/Sample
Fluorene	10.0	5.80	ng/Sample
Indeno[1,2,3-cd]pyrene	10.0	1.90	ng/Sample
Naphthalene	400	81.0	ng/Sample
Perylene	10.0	1.10	ng/Sample
Phenanthrene	30.0	20.0	ng/Sample
Pyrene	60.0	5.30	ng/Sample

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Surrogate Summary

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Method: 0010/8270C - Semivolatile Organic Compounds (Stationary Source)

Matrix: Air

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)					
		FBP (48-111)	2FP (22-105)	NBZ (43-110)	PHL (48-118)	TPHL (67-112)	TBP (34-125)
140-37967-1	WONDSTK-STK-1-M0010-PNR	82	77	77	87		103
140-37967-2	WONDSTK-STK-2-M0010-PNR FILT,CR,XAD,COND,IR-COMBI ED	78	77	77	85		96
140-37967-4	WONDSTK-STK-FB-M0010-PN R,FILT,CR,XAD,COND,IR-COM NED	63	62	67	65		72
140-37967-9	A-2321,A-2322 M0010 MEDIA CHECK XAD,FILTER	83	83	85	83		91
LCS 140-89750/2-B	Lab Control Sample	90	91	96	89		101
LCSD 140-89750/3-B	Lab Control Sample Dup	93	95	100	92		100
MB 140-89750/1-B	Method Blank	71	70	75	73	69	81
Surrogate Legend							
FBP = 2-Fluorobiphenyl (Surr)							
2FP = 2-Fluorophenol							
NBZ = Nitrobenzene-d5							
PHL = Phenol-d5							
TPHL = Terphenyl-d14							
TBP = 2,4,6-Tribromophenol							

Method: ID-0016 - PAH Emissions (Stationary Source)(GC/MS Isotope Dilution)

Matrix: Air

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)					
		C6N (50-150)					
140-37967-1	WONDSTK-STK-1-M0010-PNR	96					
140-37967-2	WONDSTK-STK-2-M0010-PNR FILT,CR,XAD,COND,IR-COMBI ED	101					
140-37967-4	WONDSTK-STK-FB-M0010-PN R,FILT,CR,XAD,COND,IR-COM NED	100					
Surrogate Legend							
C6N = 13C6-Naphthalene							

Method: ID-0016 - PAH Emissions (Stationary Source)(GC/MS Isotope Dilution)

Matrix: Air

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)					
		C6N					
140-37967-9	A-2321,A-2322 M0010 MEDIA C						
MB 140-89750/1-C	Method Blank						
Surrogate Legend							
C6N = 13C6-Naphthalene							

Eurofins Knoxville

Isotope Dilution Summary

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Method: ID-0016 - PAH Emissions (Stationary Source)(GC/MS Isotope Dilution)

Matrix: Air

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	BNAPd12 (30-120)	BBFd12 (30-120)	BKFd12 (30-120)	CRY (30-120)	DBAd14 (30-120)	IDPd12 (30-120)	NPT (30-120)	2MN (30-120)
140-37967-1	WONDSTK-STK-1-M0010-PNR	129 *5+	114	111	91	98	104	93	92
140-37967-2	WONDSTK-STK-2-M0010-PNR FILT,CR,XAD,COND,IR-COMBI ED	118	119	108	100	94	104	94	95
140-37967-4	WONDSTK-STK-FB-M0010-PN R,FILT,CR,XAD,COND,IR-COM NED	131 *5+	127 *5+	97	99	103	112	97	102
140-37967-9	A-2321,A-2322 M0010 MEDIA CHECK XAD,FILTER	128 *5+	127 *5+	92	99	103	108	103	107
LCS 140-89750/9-B	Lab Control Sample	124 *5+	122 *5+	93	98	103	110	98	99
LCSD 140-89750/10-B	Lab Control Sample Dup	127 *5+	126 *5+	97	99	106	113	101	102
MB 140-89750/1-C	Method Blank	126 *5+	125 *5+	96	103	93	99	103	108

		Percent Isotope Dilution Recovery (Acceptance Limits)						
Lab Sample ID	Client Sample ID	FLd10 (30-120)	ANC (30-120)	ACY (30-120)	BNGHI12 (30-120)	PHN (30-120)	FLN (30-120)	PRY (30-120)
140-37967-1	WONDSTK-STK-1-M0010-PNR	97	106	111	95	101	111	109
140-37967-2	WONDSTK-STK-2-M0010-PNR FILT,CR,XAD,COND,IR-COMBI ED	97	105	117	101	101	114	104
140-37967-4	WONDSTK-STK-FB-M0010-PN R,FILT,CR,XAD,COND,IR-COM NED	105	105	119	97	98	111	111
140-37967-9	A-2321,A-2322 M0010 MEDIA CHECK XAD,FILTER	108	102	119	96	96	110	109
LCS 140-89750/9-B	Lab Control Sample	102	100	116	97	97	110	105
LCSD 140-89750/10-B	Lab Control Sample Dup	107	107	120	98	100	112	108
MB 140-89750/1-C	Method Blank	109	104	116	88	99	112	109

Surrogate Legend

BNAPd12 = Benzo(a)pyrene-d12
BBFd12 = Benzo(b)fluoranthene-d12
BKFd12 = Benzo(k)fluoranthene-d12
CRY = Chrysene-d12
DBAd14 = Dibenzo(a,h)anthracene-d14
IDPd12 = Indeno[1,2,3-cd]pyrene-d12
NPT = Naphthalene-d8
2MN = 2-methylnaphthalene-d10
FLd10 = Fluorene -d10
ANC = Anthracene-d10
ACY = Acenaphthylene-d8
BNGHI12 = Benzo(ghi)perylene-d12
PHN = Phenanthrene-d10
FLN = Fluoranthene-d10
PRY = Perylene-d12

QC Sample Results

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Method: 0010/8270C - Semivolatile Organic Compounds (Stationary Source)

Lab Sample ID: MB 140-89750/1-B

Matrix: Air

Analysis Batch: 89818

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 89750

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		20.0	3.40	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Acenaphthylene	ND		20.0	5.20	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Acetophenone	ND		20.0	5.20	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Aniline	ND		40.0	8.80	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Anthracene	ND		20.0	5.20	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Benzidine	ND		200	100	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Benzo[a]anthracene	ND		20.0	4.00	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Benzo[a]pyrene	ND		20.0	5.20	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Benzo[b]fluoranthene	ND		20.0	4.20	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Benzo[g,h,i]perylene	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Benzoic acid	ND		200	122	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Benzo[k]fluoranthene	ND		20.0	3.80	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Benzyl alcohol	ND		200	4.80	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Bis(2-chloroethoxy)methane	ND		20.0	3.60	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Bis(2-chloroethyl)ether	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Bis(2-ethylhexyl) phthalate	ND		100	44.0	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
4-Bromophenyl phenyl ether	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Butyl benzyl phthalate	ND		20.0	8.40	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Carbazole	ND		20.0	7.60	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
4-Chloroaniline	ND		40.0	4.80	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
4-Chloro-3-methylphenol	ND		20.0	4.20	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
2-Chloronaphthalene	ND		20.0	4.00	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
2-Chlorophenol	ND		20.0	4.40	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
4-Chlorophenyl phenyl ether	ND		20.0	3.80	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Chrysene	ND		20.0	3.40	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Dibenz(a,h)anthracene	ND		20.0	5.20	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Dibenzofuran	ND		20.0	4.00	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
1,2-Dichlorobenzene	ND		20.0	5.80	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
1,3-Dichlorobenzene	ND		20.0	6.40	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
1,4-Dichlorobenzene	ND		20.0	6.00	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
3,3'-Dichlorobenzidine	ND		100	28.0	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
2,4-Dichlorophenol	ND		20.0	4.00	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Diethyl phthalate	ND		20.0	3.80	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
2,4-Dimethylphenol	ND		40.0	6.20	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Dimethyl phthalate	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Di-n-butyl phthalate	ND		20.0	7.20	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
4,6-Dinitro-2-methylphenol	ND		100	11.2	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
2,4-Dinitrophenol	ND		100	7.60	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
2,4-Dinitrotoluene	ND		20.0	5.80	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
2,6-Dinitrotoluene	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Di-n-octyl phthalate	ND		20.0	9.20	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
1,2-Diphenylhydrazine (as Azobenzene)	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Fluoranthene	ND		20.0	5.60	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Fluorene	ND		20.0	4.40	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Hexachlorobenzene	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Hexachlorobutadiene	ND		20.0	9.40	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Hexachlorocyclopentadiene	ND		100	7.60	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Hexachloroethane	ND		20.0	7.80	ug/Sample		08/09/24 11:56	08/12/24 13:57	1

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QC Sample Results

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Method: 0010/8270C - Semivolatile Organic Compounds (Stationary Source) (Continued)

Lab Sample ID: MB 140-89750/1-B

Client Sample ID: Method Blank

Matrix: Air

Prep Type: Total/NA

Analysis Batch: 89818

Prep Batch: 89750

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Indeno[1,2,3-cd]pyrene	ND		20.0	6.80	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Isophorone	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
2-Methylnaphthalene	ND		20.0	3.80	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
2-Methylphenol	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
3 & 4 Methylphenol	ND		20.0	5.40	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Naphthalene	ND		20.0	4.20	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
2-Nitroaniline	ND		100	5.60	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
3-Nitroaniline	ND		100	10.4	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
4-Nitroaniline	ND		100	8.20	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Nitrobenzene	ND		20.0	4.00	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
2-Nitrophenol	ND		20.0	6.40	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
4-Nitrophenol	ND		100	11.0	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
N-Nitrosodimethylamine	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
N-Nitrosodi-n-propylamine	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
N-Nitrosodiphenylamine	ND		20.0	4.40	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
2,2'-oxybis[1-chloropropane]	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Pentachlorobenzene	ND		20.0	6.00	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Pentachloronitrobenzene	ND		100	6.80	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Pentachlorophenol	ND		100	24.0	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Phenanthrene	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Phenol	ND		20.0	4.80	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Pyrene	ND		20.0	4.60	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
Pyridine	ND		40.0	10.8	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
1,2,4-Trichlorobenzene	ND		20.0	5.20	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
2,4,5-Trichlorophenol	ND		20.0	4.00	ug/Sample		08/09/24 11:56	08/12/24 13:57	1
2,4,6-Trichlorophenol	ND		20.0	5.80	ug/Sample		08/09/24 11:56	08/12/24 13:57	1

Tentatively Identified Compound	MB Est. Result	MB Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Tentatively Identified Compound	None		ug/Sample			N/A	08/09/24 11:56	08/12/24 13:57	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	71		48 - 111	08/09/24 11:56	08/12/24 13:57	1
2-Fluorophenol	70		22 - 105	08/09/24 11:56	08/12/24 13:57	1
Nitrobenzene-d5	75		43 - 110	08/09/24 11:56	08/12/24 13:57	1
Phenol-d5	73		48 - 118	08/09/24 11:56	08/12/24 13:57	1
Terphenyl-d14	69		67 - 112	08/09/24 11:56	08/12/24 13:57	1
2,4,6-Tribromophenol	81		34 - 125	08/09/24 11:56	08/12/24 13:57	1

Lab Sample ID: LCS 140-89750/2-B

Client Sample ID: Lab Control Sample

Matrix: Air

Prep Type: Total/NA

Analysis Batch: 89818

Prep Batch: 89750

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acenaphthene	100	82.56		ug/Sample		83	67 - 111
Acenaphthylene	100	83.84		ug/Sample		84	69 - 114
Acetophenone	100	91.50		ug/Sample		92	
Aniline	100	56.05		ug/Sample		56	48 - 110
Anthracene	100	90.35		ug/Sample		90	65 - 119

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QC Sample Results

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Method: 0010/8270C - Semivolatile Organic Compounds (Stationary Source) (Continued)

Lab Sample ID: LCS 140-89750/2-B

Matrix: Air

Analysis Batch: 89818

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 89750

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzidine	100	ND		ug/Sample		0	
Benzo[a]anthracene	100	95.81		ug/Sample		96	72 - 123
Benzo[a]pyrene	100	95.39		ug/Sample		95	66 - 112
Benzo[b]fluoranthene	100	101.5		ug/Sample		102	66 - 120
Benzo[g,h,i]perylene	100	91.02		ug/Sample		91	56 - 129
Benzoic acid	100	149.7		ug/Sample		150	10 - 170
Benzo[k]fluoranthene	100	89.69		ug/Sample		90	67 - 114
Benzyl alcohol	100	94.50	J	ug/Sample		95	58 - 118
Bis(2-chloroethoxy)methane	100	84.93		ug/Sample		85	58 - 113
Bis(2-chloroethyl)ether	100	79.86		ug/Sample		80	58 - 110
Bis(2-ethylhexyl) phthalate	100	118.4		ug/Sample		118	63 - 145
4-Bromophenyl phenyl ether	100	99.54		ug/Sample		100	66 - 124
Butyl benzyl phthalate	100	109.2		ug/Sample		109	64 - 138
Carbazole	100	62.79		ug/Sample		63	43 - 111
4-Chloroaniline	100	73.68		ug/Sample		74	36 - 116
4-Chloro-3-methylphenol	100	106.1		ug/Sample		106	70 - 121
2-Chloronaphthalene	100	88.34		ug/Sample		88	63 - 113
2-Chlorophenol	100	89.86		ug/Sample		90	54 - 118
4-Chlorophenyl phenyl ether	100	94.25		ug/Sample		94	67 - 116
Chrysene	100	94.91		ug/Sample		95	65 - 116
Dibenz(a,h)anthracene	100	91.47		ug/Sample		91	62 - 122
Dibenzofuran	100	93.29		ug/Sample		93	67 - 112
1,2-Dichlorobenzene	100	84.25		ug/Sample		84	48 - 107
1,3-Dichlorobenzene	100	83.56		ug/Sample		84	42 - 110
1,4-Dichlorobenzene	100	83.24		ug/Sample		83	45 - 108
3,3'-Dichlorobenzidine	100	63.97		ug/Sample		64	7 - 85
2,4-Dichlorophenol	100	93.41		ug/Sample		93	62 - 122
Diethyl phthalate	100	96.19		ug/Sample		96	70 - 119
2,4-Dimethylphenol	100	68.47		ug/Sample		68	48 - 114
Dimethyl phthalate	100	92.57		ug/Sample		93	69 - 118
Di-n-butyl phthalate	100	97.85		ug/Sample		98	71 - 118
4,6-Dinitro-2-methylphenol	200	187.4		ug/Sample		94	33 - 145
2,4-Dinitrophenol	200	184.8		ug/Sample		92	53 - 112
2,4-Dinitrotoluene	100	98.22		ug/Sample		98	70 - 117
2,6-Dinitrotoluene	100	102.3		ug/Sample		102	68 - 120
Di-n-octyl phthalate	100	106.6		ug/Sample		107	63 - 135
1,2-Diphenylhydrazine (as Azobenzene)	100	88.71		ug/Sample		89	59 - 121
Fluoranthene	100	98.78		ug/Sample		99	62 - 121
Fluorene	100	80.80		ug/Sample		81	66 - 115
Hexachlorobenzene	100	98.83		ug/Sample		99	67 - 117
Hexachlorobutadiene	100	97.70		ug/Sample		98	39 - 102
Hexachlorocyclopentadiene	100	33.02	J	ug/Sample		33	20 - 103
Hexachloroethane	100	93.48		ug/Sample		93	35 - 116
Indeno[1,2,3-cd]pyrene	100	96.66		ug/Sample		97	65 - 119
Isophorone	100	93.18		ug/Sample		93	59 - 119
2-Methylnaphthalene	100	99.00		ug/Sample		99	64 - 114
2-Methylphenol	100	89.49		ug/Sample		89	58 - 130
3 & 4 Methylphenol	100	87.36		ug/Sample		87	61 - 123

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QC Sample Results

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Method: 0010/8270C - Semivolatile Organic Compounds (Stationary Source) (Continued)

Lab Sample ID: LCS 140-89750/2-B

Matrix: Air

Analysis Batch: 89818

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 89750

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Naphthalene	100	98.09		ug/Sample		98	60 - 109
2-Nitroaniline	100	101.5		ug/Sample		101	66 - 118
3-Nitroaniline	100	76.63		ug/Sample		77	2 - 110
4-Nitroaniline	100	59.14		ug/Sample		59	19 - 92
Nitrobenzene	100	89.16		ug/Sample		89	59 - 108
2-Nitrophenol	100	90.75		ug/Sample		91	64 - 117
4-Nitrophenol	200	215.1		ug/Sample		108	55 - 127
N-Nitrosodimethylamine	100	88.15		ug/Sample		88	51 - 113
N-Nitrosodi-n-propylamine	100	87.20		ug/Sample		87	60 - 122
N-Nitrosodiphenylamine	100	89.92		ug/Sample		90	61 - 115
2,2'-oxybis[1-chloropropane]	100	63.93		ug/Sample		64	51 - 118
Pentachlorophenol	200	217.2		ug/Sample		109	50 - 121
Phenanthrene	100	93.13		ug/Sample		93	67 - 115
Phenol	100	82.44		ug/Sample		82	55 - 122
Pyrene	100	99.60		ug/Sample		100	61 - 125
Pyridine	200	121.6		ug/Sample		61	34 - 111
1,2,4-Trichlorobenzene	100	89.92		ug/Sample		90	58 - 113
2,4,5-Trichlorophenol	100	98.64		ug/Sample		99	66 - 124
2,4,6-Trichlorophenol	100	98.68		ug/Sample		99	66 - 124

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorobiphenyl (Surr)	90		48 - 111
2-Fluorophenol	91		22 - 105
Nitrobenzene-d5	96		43 - 110
Phenol-d5	89		48 - 118
2,4,6-Tribromophenol	101		34 - 125

Lab Sample ID: LCSD 140-89750/3-B

Matrix: Air

Analysis Batch: 89818

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 89750

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Acenaphthene	100	86.34		ug/Sample		86	67 - 111	4	25
Acenaphthylene	100	87.70		ug/Sample		88	69 - 114	5	25
Acetophenone	100	93.85		ug/Sample		94		3	
Aniline	100	58.15		ug/Sample		58	48 - 110	4	31
Anthracene	100	95.27		ug/Sample		95	65 - 119	5	25
Benzidine	100	ND		ug/Sample		0		NC	
Benzo[a]anthracene	100	98.71		ug/Sample		99	72 - 123	3	25
Benzo[a]pyrene	100	96.01		ug/Sample		96	66 - 112	1	25
Benzo[b]fluoranthene	100	98.35		ug/Sample		98	66 - 120	3	42
Benzo[g,h,i]perylene	100	91.98		ug/Sample		92	56 - 129	1	28
Benzoic acid	100	145.4		ug/Sample		145	10 - 170	3	50
Benzo[k]fluoranthene	100	93.04		ug/Sample		93	67 - 114	4	26
Benzyl alcohol	100	101.9		ug/Sample		102	58 - 118	8	28
Bis(2-chloroethoxy)methane	100	88.83		ug/Sample		89	58 - 113	4	26
Bis(2-chloroethyl)ether	100	83.73		ug/Sample		84	58 - 110	5	26
Bis(2-ethylhexyl) phthalate	100	122.1		ug/Sample		122	63 - 145	3	25

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QC Sample Results

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Method: 0010/8270C - Semivolatile Organic Compounds (Stationary Source) (Continued)

Lab Sample ID: LCSD 140-89750/3-B			Client Sample ID: Lab Control Sample Dup							
Matrix: Air			Prep Type: Total/NA							
Analysis Batch: 89818			Prep Batch: 89750							
Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit	
4-Bromophenyl phenyl ether	100	103.3		ug/Sample		103	66 - 124	4	25	
Butyl benzyl phthalate	100	111.9		ug/Sample		112	64 - 138	2	25	
Carbazole	100	53.08		ug/Sample		53	43 - 111	17	25	
4-Chloroaniline	100	71.22		ug/Sample		71	36 - 116	3	50	
4-Chloro-3-methylphenol	100	107.2		ug/Sample		107	70 - 121	1	25	
2-Chloronaphthalene	100	94.94		ug/Sample		95	63 - 113	7	25	
2-Chlorophenol	100	95.08		ug/Sample		95	54 - 118	6	25	
4-Chlorophenyl phenyl ether	100	96.81		ug/Sample		97	67 - 116	3	25	
Chrysene	100	98.05		ug/Sample		98	65 - 116	3	25	
Dibenz(a,h)anthracene	100	93.30		ug/Sample		93	62 - 122	2	27	
Dibenzofuran	100	99.29		ug/Sample		99	67 - 112	6	25	
1,2-Dichlorobenzene	100	89.03		ug/Sample		89	48 - 107	6	25	
1,3-Dichlorobenzene	100	88.29		ug/Sample		88	42 - 110	5	25	
1,4-Dichlorobenzene	100	89.53		ug/Sample		90	45 - 108	7	25	
3,3'-Dichlorobenzidine	100	47.50	J	ug/Sample		48	7 - 85	30	34	
2,4-Dichlorophenol	100	98.23		ug/Sample		98	62 - 122	5	25	
Diethyl phthalate	100	99.93		ug/Sample		100	70 - 119	4	25	
2,4-Dimethylphenol	100	70.39		ug/Sample		70	48 - 114	3	26	
Dimethyl phthalate	100	95.22		ug/Sample		95	69 - 118	3	25	
Di-n-butyl phthalate	100	104.6		ug/Sample		105	71 - 118	7	25	
4,6-Dinitro-2-methylphenol	200	198.9		ug/Sample		99	33 - 145	6	34	
2,4-Dinitrophenol	200	194.5		ug/Sample		97	53 - 112	5	50	
2,4-Dinitrotoluene	100	100.9		ug/Sample		101	70 - 117	3	25	
2,6-Dinitrotoluene	100	104.5		ug/Sample		104	68 - 120	2	25	
Di-n-octyl phthalate	100	106.8		ug/Sample		107	63 - 135	0	25	
1,2-Diphenylhydrazine (as Azobenzene)	100	93.21		ug/Sample		93	59 - 121	5	25	
Fluoranthene	100	105.9		ug/Sample		106	62 - 121	7	25	
Fluorene	100	82.51		ug/Sample		83	66 - 115	2	25	
Hexachlorobenzene	100	101.6		ug/Sample		102	67 - 117	3	25	
Hexachlorobutadiene	100	102.8	*+	ug/Sample		103	39 - 102	5	29	
Hexachlorocyclopentadiene	100	38.10	J	ug/Sample		38	20 - 103	14	33	
Hexachloroethane	100	98.19		ug/Sample		98	35 - 116	5	29	
Indeno[1,2,3-cd]pyrene	100	97.97		ug/Sample		98	65 - 119	1	28	
Isophorone	100	98.07		ug/Sample		98	59 - 119	5	25	
2-Methylnaphthalene	100	102.7		ug/Sample		103	64 - 114	4	25	
2-Methylphenol	100	91.07		ug/Sample		91	58 - 130	2	25	
3 & 4 Methylphenol	100	88.68		ug/Sample		89	61 - 123	1	25	
Naphthalene	100	105.5		ug/Sample		105	60 - 109	7	25	
2-Nitroaniline	100	105.3		ug/Sample		105	66 - 118	4	25	
3-Nitroaniline	100	60.81		ug/Sample		61	2 - 110	23	25	
4-Nitroaniline	100	60.05		ug/Sample		60	19 - 92	2	27	
Nitrobenzene	100	93.83		ug/Sample		94	59 - 108	5	25	
2-Nitrophenol	100	97.26		ug/Sample		97	64 - 117	7	26	
4-Nitrophenol	200	231.7		ug/Sample		116	55 - 127	7	33	
N-Nitrosodimethylamine	100	93.22		ug/Sample		93	51 - 113	6	25	
N-Nitrosodi-n-propylamine	100	88.86		ug/Sample		89	60 - 122	2	25	
N-Nitrosodiphenylamine	100	93.59		ug/Sample		94	61 - 115	4	25	
2,2'-oxybis[1-chloropropane]	100	66.85		ug/Sample		67	51 - 118	4	27	

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QC Sample Results

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Method: 0010/8270C - Semivolatile Organic Compounds (Stationary Source) (Continued)

Lab Sample ID: LCSD 140-89750/3-B

Client Sample ID: Lab Control Sample Dup

Matrix: Air

Prep Type: Total/NA

Analysis Batch: 89818

Prep Batch: 89750

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Pentachlorophenol	200	228.7		ug/Sample		114	50 - 121	5	30
Phenanthrene	100	96.10		ug/Sample		96	67 - 115	3	25
Phenol	100	87.82		ug/Sample		88	55 - 122	6	25
Pyrene	100	102.0		ug/Sample		102	61 - 125	2	25
Pyridine	200	133.3		ug/Sample		67	34 - 111	9	29
1,2,4-Trichlorobenzene	100	94.47		ug/Sample		94	58 - 113	5	26
2,4,5-Trichlorophenol	100	103.4		ug/Sample		103	66 - 124	5	25
2,4,6-Trichlorophenol	100	103.6		ug/Sample		104	66 - 124	5	25

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
2-Fluorobiphenyl (Surr)	93		48 - 111
2-Fluorophenol	95		22 - 105
Nitrobenzene-d5	100		43 - 110
Phenol-d5	92		48 - 118
2,4,6-Tribromophenol	100		34 - 125

Method: ID-0016 - PAH Emissions (Stationary Source)(GC/MS Isotope Dilution)

Lab Sample ID: MB 140-89750/1-C

Client Sample ID: Method Blank

Matrix: Air

Prep Type: Total/NA

Analysis Batch: 89886

Prep Batch: 89750

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		40.0	12.8	ng/Sample		08/09/24 11:56	08/13/24 15:12	1
Acenaphthylene	ND		40.0	3.80	ng/Sample		08/09/24 11:56	08/13/24 15:12	1
Anthracene	ND		20.0	5.60	ng/Sample		08/09/24 11:56	08/13/24 15:12	1
Benzo[a]anthracene	ND		20.0	5.80	ng/Sample		08/09/24 11:56	08/13/24 15:12	1
Benzo[a]pyrene	ND		20.0	3.40	ng/Sample		08/09/24 11:56	08/13/24 15:12	1
Benzo[b]fluoranthene	ND		200	19.6	ng/Sample		08/09/24 11:56	08/13/24 15:12	1
Benzo[e]pyrene	ND		20.0	3.40	ng/Sample		08/09/24 11:56	08/13/24 15:12	1
Benzo[g,h,i]perylene	ND		20.0	12.0	ng/Sample		08/09/24 11:56	08/13/24 15:12	1
Benzo[k]fluoranthene	ND		200	4.80	ng/Sample		08/09/24 11:56	08/13/24 15:12	1
Chrysene	ND		20.0	7.60	ng/Sample		08/09/24 11:56	08/13/24 15:12	1
Dibenz(a,h)anthracene	ND		20.0	5.40	ng/Sample		08/09/24 11:56	08/13/24 15:12	1
Fluoranthene	ND		20.0	13.8	ng/Sample		08/09/24 11:56	08/13/24 15:12	1
Fluorene	15.67	J	20.0	11.6	ng/Sample		08/09/24 11:56	08/13/24 15:12	1
Indeno[1,2,3-cd]pyrene	ND		20.0	3.80	ng/Sample		08/09/24 11:56	08/13/24 15:12	1
2-Methylnaphthalene	ND		100	54.0	ng/Sample		08/09/24 11:56	08/13/24 15:12	1
Naphthalene	ND		800	162	ng/Sample		08/09/24 11:56	08/13/24 15:12	1
Perylene	ND		20.0	2.20	ng/Sample		08/09/24 11:56	08/13/24 15:12	1
Phenanthrene	ND		60.0	40.0	ng/Sample		08/09/24 11:56	08/13/24 15:12	1
Pyrene	ND		120	10.6	ng/Sample		08/09/24 11:56	08/13/24 15:12	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Benzo[a]pyrene-d12	126	*5+	30 - 120	08/09/24 11:56	08/13/24 15:12	1
Benzo[b]fluoranthene-d12	125	*5+	30 - 120	08/09/24 11:56	08/13/24 15:12	1
Benzo[k]fluoranthene-d12	96		30 - 120	08/09/24 11:56	08/13/24 15:12	1
Chrysene-d12	103		30 - 120	08/09/24 11:56	08/13/24 15:12	1
Dibenz(a,h)anthracene-d14	93		30 - 120	08/09/24 11:56	08/13/24 15:12	1

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QC Sample Results

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Method: ID-0016 - PAH Emissions (Stationary Source)(GC/MS Isotope Dilution) (Continued)

Lab Sample ID: MB 140-89750/1-C

Matrix: Air

Analysis Batch: 89886

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 89750

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Indeno[1,2,3-cd]pyrene-d12	99		30 - 120	08/09/24 11:56	08/13/24 15:12	1
Naphthalene-d8	103		30 - 120	08/09/24 11:56	08/13/24 15:12	1
2-methylnaphthalene-d10	108		30 - 120	08/09/24 11:56	08/13/24 15:12	1
Fluorene -d10	109		30 - 120	08/09/24 11:56	08/13/24 15:12	1
Anthracene-d10	104		30 - 120	08/09/24 11:56	08/13/24 15:12	1
Acenaphthylene-d8	116		30 - 120	08/09/24 11:56	08/13/24 15:12	1
Benzo(ghi)perylene-d12	88		30 - 120	08/09/24 11:56	08/13/24 15:12	1
Phenanthrene-d10	99		30 - 120	08/09/24 11:56	08/13/24 15:12	1
Fluoranthene-d10	112		30 - 120	08/09/24 11:56	08/13/24 15:12	1
Perylene-d12	109		30 - 120	08/09/24 11:56	08/13/24 15:12	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C6-Naphthalene				08/09/24 11:56	08/13/24 15:12	1

Lab Sample ID: LCS 140-89750/9-B

Matrix: Air

Analysis Batch: 89886

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 89750

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acenaphthene	250	205.4		ng/Sample		82	60 - 140
Acenaphthylene	250	206.6		ng/Sample		83	60 - 140
Anthracene	250	224.6		ng/Sample		90	60 - 140
Benzo[a]anthracene	250	265.8		ng/Sample		106	60 - 140
Benzo[a]pyrene	250	203.8		ng/Sample		82	60 - 140
Benzo[b]fluoranthene	250	175.7		ng/Sample		70	60 - 140
Benzo[e]pyrene	250	181.1		ng/Sample		72	60 - 140
Benzo[g,h,i]perylene	250	210.0		ng/Sample		84	60 - 140
Benzo[k]fluoranthene	250	256.5		ng/Sample		103	60 - 140
Chrysene	250	227.2		ng/Sample		91	60 - 140
Dibenz(a,h)anthracene	250	213.4		ng/Sample		85	60 - 140
Fluoranthene	250	214.8		ng/Sample		86	60 - 140
Fluorene	250	237.8		ng/Sample		95	60 - 140
Indeno[1,2,3-cd]pyrene	250	193.4		ng/Sample		77	60 - 140
2-Methylnaphthalene	250	247.4		ng/Sample		99	60 - 140
Naphthalene	2130	1802		ng/Sample		85	60 - 140
Perylene	250	230.2		ng/Sample		92	60 - 140
Phenanthrene	250	244.5		ng/Sample		98	60 - 140
Pyrene	250	212.8		ng/Sample		85	60 - 140

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
Benzo(a)pyrene-d12	124	*5+	30 - 120
Benzo(b)fluoranthene-d12	122	*5+	30 - 120
Benzo(k)fluoranthene-d12	93		30 - 120
Chrysene-d12	98		30 - 120
Dibenz(a,h)anthracene-d14	103		30 - 120
Indeno[1,2,3-cd]pyrene-d12	110		30 - 120
Naphthalene-d8	98		30 - 120
2-methylnaphthalene-d10	99		30 - 120

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QC Sample Results

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Method: ID-0016 - PAH Emissions (Stationary Source)(GC/MS Isotope Dilution) (Continued)

Lab Sample ID: LCS 140-89750/9-B

Client Sample ID: Lab Control Sample

Matrix: Air

Prep Type: Total/NA

Analysis Batch: 89886

Prep Batch: 89750

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
Fluorene -d10	102		30 - 120
Anthracene-d10	100		30 - 120
Acenaphthylene-d8	116		30 - 120
Benzo(ghi)perylene-d12	97		30 - 120
Phenanthrene-d10	97		30 - 120
Fluoranthene-d10	110		30 - 120
Perylene-d12	105		30 - 120

Lab Sample ID: LCSD 140-89750/10-B

Client Sample ID: Lab Control Sample Dup

Matrix: Air

Prep Type: Total/NA

Analysis Batch: 89886

Prep Batch: 89750

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
							Limits	RPD		
Acenaphthene	250	203.5		ng/Sample		81	60 - 140	1		25
Acenaphthylene	250	207.1		ng/Sample		83	60 - 140	0		25
Anthracene	250	205.6		ng/Sample		82	60 - 140	9		25
Benzo[a]anthracene	250	266.3		ng/Sample		107	60 - 140	0		25
Benzo[a]pyrene	250	201.8		ng/Sample		81	60 - 140	1		25
Benzo[b]fluoranthene	250	174.2		ng/Sample		70	60 - 140	1		25
Benzo[e]pyrene	250	182.0		ng/Sample		73	60 - 140	1		25
Benzo[g,h,i]perylene	250	211.3		ng/Sample		85	60 - 140	1		25
Benzo[k]fluoranthene	250	247.3		ng/Sample		99	60 - 140	4		25
Chrysene	250	225.9		ng/Sample		90	60 - 140	1		25
Dibenz(a,h)anthracene	250	211.9		ng/Sample		85	60 - 140	1		25
Fluoranthene	250	213.9		ng/Sample		86	60 - 140	0		25
Fluorene	250	237.9		ng/Sample		95	60 - 140	0		25
Indeno[1,2,3-cd]pyrene	250	193.9		ng/Sample		78	60 - 140	0		25
2-Methylnaphthalene	250	247.4		ng/Sample		99	60 - 140	0		25
Naphthalene	2130	1796		ng/Sample		85	60 - 140	0		25
Perylene	250	230.4		ng/Sample		92	60 - 140	0		25
Phenanthrene	250	243.8		ng/Sample		98	60 - 140	0		25
Pyrene	250	211.9		ng/Sample		85	60 - 140	0		25

Isotope Dilution	LCSD LCSD		Limits
	%Recovery	Qualifier	
Benzo(a)pyrene-d12	127	*5+	30 - 120
Benzo(b)fluoranthene-d12	126	*5+	30 - 120
Benzo(k)fluoranthene-d12	97		30 - 120
Chrysene-d12	99		30 - 120
Dibenz(a,h)anthracene-d14	106		30 - 120
Indeno[1,2,3-cd]pyrene-d12	113		30 - 120
Naphthalene-d8	101		30 - 120
2-methylnaphthalene-d10	102		30 - 120
Fluorene -d10	107		30 - 120
Anthracene-d10	107		30 - 120
Acenaphthylene-d8	120		30 - 120
Benzo(ghi)perylene-d12	98		30 - 120
Phenanthrene-d10	100		30 - 120
Fluoranthene-d10	112		30 - 120
Perylene-d12	108		30 - 120

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QC Association Summary

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

GC/MS Semi VOA

Prep Batch: 89750

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37967-1	WONDSTK-STK-1-M0010-PNR,FILT,CR,XAD,C	Total/NA	Air	Combined Prep	
140-37967-2	WONDSTK-STK-2-M0010-PNR,FILT,CR,XAD,C	Total/NA	Air	Combined Prep	
140-37967-4	WONDSTK-STK-FB-M0010-PNR,FILT,CR,XAD,C	Total/NA	Air	Combined Prep	
140-37967-9	A-2321,A-2322 M0010 MEDIA CHECK XAD,FILT	Total/NA	Air	Combined Prep	
MB 140-89750/1-B	Method Blank	Total/NA	Air	Combined Prep	
MB 140-89750/1-C	Method Blank	Total/NA	Air	Combined Prep	
LCS 140-89750/2-B	Lab Control Sample	Total/NA	Air	Combined Prep	
LCS 140-89750/9-B	Lab Control Sample	Total/NA	Air	Combined Prep	
LCSD 140-89750/10-B	Lab Control Sample Dup	Total/NA	Air	Combined Prep	
LCSD 140-89750/3-B	Lab Control Sample Dup	Total/NA	Air	Combined Prep	

Cleanup Batch: 89784

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37967-1	WONDSTK-STK-1-M0010-PNR,FILT,CR,XAD,C	Total/NA	Air	Split	89750
140-37967-2	WONDSTK-STK-2-M0010-PNR,FILT,CR,XAD,C	Total/NA	Air	Split	89750
140-37967-4	WONDSTK-STK-FB-M0010-PNR,FILT,CR,XAD,C	Total/NA	Air	Split	89750
140-37967-9	A-2321,A-2322 M0010 MEDIA CHECK XAD,FILT	Total/NA	Air	Split	89750
MB 140-89750/1-B	Method Blank	Total/NA	Air	Split	89750
LCS 140-89750/2-B	Lab Control Sample	Total/NA	Air	Split	89750
LCSD 140-89750/3-B	Lab Control Sample Dup	Total/NA	Air	Split	89750

Cleanup Batch: 89785

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37967-1	WONDSTK-STK-1-M0010-PNR,FILT,CR,XAD,C	Total/NA	Air	Split	89750
140-37967-2	WONDSTK-STK-2-M0010-PNR,FILT,CR,XAD,C	Total/NA	Air	Split	89750
140-37967-4	WONDSTK-STK-FB-M0010-PNR,FILT,CR,XAD,C	Total/NA	Air	Split	89750
140-37967-9	A-2321,A-2322 M0010 MEDIA CHECK XAD,FILT	Total/NA	Air	Split	89750
MB 140-89750/1-C	Method Blank	Total/NA	Air	Split	89750
LCS 140-89750/9-B	Lab Control Sample	Total/NA	Air	Split	89750
LCSD 140-89750/10-B	Lab Control Sample Dup	Total/NA	Air	Split	89750

Analysis Batch: 89818

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37967-4	WONDSTK-STK-FB-M0010-PNR,FILT,CR,XAD,C	Total/NA	Air	0010/8270C	89784
140-37967-9	A-2321,A-2322 M0010 MEDIA CHECK XAD,FILT	Total/NA	Air	0010/8270C	89784
MB 140-89750/1-B	Method Blank	Total/NA	Air	0010/8270C	89784
LCS 140-89750/2-B	Lab Control Sample	Total/NA	Air	0010/8270C	89784
LCSD 140-89750/3-B	Lab Control Sample Dup	Total/NA	Air	0010/8270C	89784

Analysis Batch: 89886

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37967-1	WONDSTK-STK-1-M0010-PNR,FILT,CR,XAD,C	Total/NA	Air	ID-0016	89785
140-37967-2	WONDSTK-STK-2-M0010-PNR,FILT,CR,XAD,C	Total/NA	Air	ID-0016	89785
140-37967-9	A-2321,A-2322 M0010 MEDIA CHECK XAD,FILT	Total/NA	Air	ID-0016	89785
MB 140-89750/1-C	Method Blank	Total/NA	Air	ID-0016	89785
LCS 140-89750/9-B	Lab Control Sample	Total/NA	Air	ID-0016	89785
LCSD 140-89750/10-B	Lab Control Sample Dup	Total/NA	Air	ID-0016	89785

Analysis Batch: 89933

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37967-1	WONDSTK-STK-1-M0010-PNR,FILT,CR,XAD,C	Total/NA	Air	0010/8270C	89784

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QC Association Summary

Client: AECOM
Project/Site: Wonder Smokehouse - M0010

Job ID: 140-37967-1

GC/MS Semi VOA (Continued)

Analysis Batch: 89933 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37967-2	WONDSTK-STK-2-M0010-PNR,FILT,CR,XAD,C	Total/NA	Air	0010/8270C	89784

Analysis Batch: 89942

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37967-4	WONDSTK-STK-FB-M0010-PNR,FILT,CR,XAD,C	Total/NA	Air	ID-0016	89785

Lab Chronicle

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Client Sample ID:

Lab Sample ID: 140-37967-1

WONDSTK-STK-1-M0010-PNR,FILT,CR,XAD,COND,IR-COMBI
NED

Date Collected: 08/06/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Combined Prep			1 Sample	20 mL	89750	08/09/24 11:56	DWS	EET KNX
Total/NA	Cleanup	Split			10 mL	1 mL	89784	08/11/24 10:24	DWS	EET KNX
Total/NA	Analysis	0010/8270C		1			89933	08/14/24 12:07	CPO	EET KNX
		Instrument ID: MY								
Total/NA	Prep	Combined Prep			1 Sample	20 mL	89750	08/09/24 11:56	DWS	EET KNX
Total/NA	Cleanup	Split			10 mL	500 uL	89785	08/11/24 10:25	DWS	EET KNX
Total/NA	Analysis	ID-0016		25	1 mL	1 mL	89886	08/13/24 16:21	GEM	EET KNX
		Instrument ID: GCMS1								

Client Sample ID:

Lab Sample ID: 140-37967-2

WONDSTK-STK-2-M0010-PNR,FILT,CR,XAD,COND,IR-COMBI
NED

Date Collected: 08/06/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Combined Prep			1 Sample	20 mL	89750	08/09/24 11:56	DWS	EET KNX
Total/NA	Cleanup	Split			10 mL	1 mL	89784	08/11/24 10:24	DWS	EET KNX
Total/NA	Analysis	0010/8270C		1			89933	08/14/24 12:34	CPO	EET KNX
		Instrument ID: MY								
Total/NA	Prep	Combined Prep			1 Sample	20 mL	89750	08/09/24 11:56	DWS	EET KNX
Total/NA	Cleanup	Split			10 mL	500 uL	89785	08/11/24 10:25	DWS	EET KNX
Total/NA	Analysis	ID-0016		10	1 mL	1 mL	89886	08/13/24 16:44	GEM	EET KNX
		Instrument ID: GCMS1								

Client Sample ID:

Lab Sample ID: 140-37967-4

WONDSTK-STK-FB-M0010-PNR,FILT,CR,XAD,COND,IR-COMB
INED

Date Collected: 08/07/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Combined Prep			1 Sample	20 mL	89750	08/09/24 11:56	DWS	EET KNX
Total/NA	Cleanup	Split			10 mL	1 mL	89784	08/11/24 10:24	DWS	EET KNX
Total/NA	Analysis	0010/8270C		1			89818	08/12/24 15:12	CPO	EET KNX
		Instrument ID: GCMS2								
Total/NA	Prep	Combined Prep			1 Sample	20 mL	89750	08/09/24 11:56	DWS	EET KNX
Total/NA	Cleanup	Split			10 mL	500 uL	89785	08/11/24 10:25	DWS	EET KNX
Total/NA	Analysis	ID-0016		1	1 mL	1 mL	89942	08/14/24 12:18	GEM	EET KNX
		Instrument ID: GCMS1								

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Lab Chronicle

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Client Sample ID: A-2321,A-2322 M0010 MEDIA CHECK

Lab Sample ID: 140-37967-9

XAD,FILTER

Date Collected: 08/06/24 00:00

Matrix: Air

Date Received: 08/07/24 16:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Combined Prep			1 Sample	20 mL	89750	08/09/24 11:56	DWS	EET KNX
Total/NA	Cleanup	Split			10 mL	1 mL	89784	08/11/24 10:24	DWS	EET KNX
Total/NA	Analysis	0010/8270C		1			89818	08/12/24 15:37	CPO	EET KNX
Instrument ID: GCMS2										
Total/NA	Prep	Combined Prep			1 Sample	20 mL	89750	08/09/24 11:56	DWS	EET KNX
Total/NA	Cleanup	Split			10 mL	500 uL	89785	08/11/24 10:25	DWS	EET KNX
Total/NA	Analysis	ID-0016		1	1 mL	1 mL	89886	08/13/24 17:52	GEM	EET KNX
Instrument ID: GCMS1										

Client Sample ID: Method Blank

Lab Sample ID: MB 140-89750/1-B

Date Collected: N/A

Matrix: Air

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Combined Prep			1 Sample	20 mL	89750	08/09/24 11:56	DWS	EET KNX
Total/NA	Cleanup	Split			10 mL	1 mL	89784	08/11/24 10:24	DWS	EET KNX
Total/NA	Analysis	0010/8270C		1			89818	08/12/24 13:57	CPO	EET KNX
Instrument ID: GCMS2										

Client Sample ID: Method Blank

Lab Sample ID: MB 140-89750/1-C

Date Collected: N/A

Matrix: Air

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Combined Prep			1 Sample	20 mL	89750	08/09/24 11:56	DWS	EET KNX
Total/NA	Cleanup	Split			10 mL	500 uL	89785	08/11/24 10:25	DWS	EET KNX
Total/NA	Analysis	ID-0016		1	1 mL	1 mL	89886	08/13/24 15:12	GEM	EET KNX
Instrument ID: GCMS1										

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-89750/2-B

Date Collected: N/A

Matrix: Air

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Combined Prep			1 Sample	10 mL	89750	08/09/24 11:56	DWS	EET KNX
Total/NA	Cleanup	Split			10 mL	1 mL	89784	08/11/24 10:24	DWS	EET KNX
Total/NA	Analysis	0010/8270C		1			89818	08/12/24 14:22	CPO	EET KNX
Instrument ID: GCMS2										

Eurofins Knoxville

Lab Chronicle

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-89750/9-B

Date Collected: N/A

Matrix: Air

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Combined Prep			1 Sample	10 mL	89750	08/09/24 11:56	DWS	EET KNX
Total/NA	Cleanup	Split			10 mL	500 uL	89785	08/11/24 10:25	DWS	EET KNX
Total/NA	Analysis	ID-0016		1	1 mL	1 mL	89886	08/13/24 15:35	GEM	EET KNX
Instrument ID: GCMS1										

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-89750/10-B

Date Collected: N/A

Matrix: Air

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Combined Prep			1 Sample	10 mL	89750	08/09/24 11:56	DWS	EET KNX
Total/NA	Cleanup	Split			10 mL	500 uL	89785	08/11/24 10:25	DWS	EET KNX
Total/NA	Analysis	ID-0016		1	1 mL	1 mL	89886	08/13/24 15:58	GEM	EET KNX
Instrument ID: GCMS1										

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-89750/3-B

Date Collected: N/A

Matrix: Air

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Combined Prep			1 Sample	10 mL	89750	08/09/24 11:56	DWS	EET KNX
Total/NA	Cleanup	Split			10 mL	1 mL	89784	08/11/24 10:24	DWS	EET KNX
Total/NA	Analysis	0010/8270C		1			89818	08/12/24 14:47	CPO	EET KNX
Instrument ID: GCMS2										

Laboratory References:

EET KNX = Eurofins Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Accreditation/Certification Summary

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Laboratory: Eurofins Knoxville

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-13-25
ANAB	Dept. of Energy	L2311.01	02-13-25
ANAB	ISO/IEC 17025	L2311	02-13-25
Arkansas DEQ	State	88-0688	06-17-25
Colorado	State	TN00009	02-28-25
Connecticut	State	PH-0223	10-01-26
Florida	NELAP	E87177	06-30-25
Georgia (DW)	State	906	07-27-25
Hawaii	State	NA	07-27-25
Kansas	NELAP	E-10349	10-31-24
Kentucky (DW)	State	90101	12-31-24
Louisiana (All)	NELAP	83979	06-30-25
Louisiana (DW)	State	LA019	12-31-24
Maryland	State	277	03-31-25
Michigan	State	9933	07-27-25
Nevada	State	TN00009	10-31-24
New Hampshire	NELAP	2999	01-17-25
New Jersey	NELAP	TN001	06-30-25
New York	NELAP	10781	03-31-25
North Carolina (DW)	State	21705	07-31-25
North Carolina (WW/SW)	State	64	12-31-24
Oklahoma	State	9415	08-31-24
Oregon	NELAP	TNI0189	01-01-25
Pennsylvania	NELAP	68-00576	12-31-24
Tennessee	State	02014	07-27-25
Texas	NELAP	T104704380-23-18	08-31-24
US Fish & Wildlife	US Federal Programs	058448	07-31-25
USDA	US Federal Programs	525-22-279-18762	10-06-25
Utah	NELAP	TN00009	07-31-24 *
Virginia	NELAP	460176	09-14-24
Washington	State	C593	01-19-25
West Virginia (DW)	State	9955C	12-31-24
West Virginia DEP	State	345	04-30-25
Wisconsin	State	998044300	08-31-24

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins Knoxville

Method Summary

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Method	Method Description	Protocol	Laboratory
0010/8270C	Semivolatile Organic Compounds (Stationary Source)	SW846	EET KNX
ID-0018	PAH Emissions (Stationary Source)(GC/MS Isotope Dilution)	None	EET KNX
Combined Prep	Extraction, Source Air Samples (Combined)	None	EET KNX
Split	Source Air Split	None	EET KNX

Protocol References:

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET KNX = Eurofins Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Sample Summary

Client: AECOM

Job ID: 140-37967-1

Project/Site: Wonder Smokehouse - M0010

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
140-37967-1	WONDSTK-STK-1-M0010-PNR,FILT,CR,XAD,Cx ND,IR-COMBINED	Air	08/06/24 00:00	08/07/24 16:40
140-37967-2	WONDSTK-STK-2-M0010-PNR,FILT,CR,XAD,Cx ND,IR-COMBINED	Air	08/06/24 00:00	08/07/24 16:40
140-37967-4	WONDSTK-STK-FB-M0010-PNR,FILT,CR,XAD,Cx OND,IR-COMBINED	Air	08/07/24 00:00	08/07/24 16:40
140-37967-9	A-2321,A-2322 M0010 MEDIA CHECK XAD,FILTER	Air	08/06/24 00:00	08/07/24 16:40

Chain of Custody Record Semivolatiles from M0010 Sampling Train

Page 1 of 4

Project Wonder Smokehouse Testing			Semivolatile Organic Compounds by GC/MS - SW-846 Method 8270C Chloride, Fluoride by Ion Chromatography, per SW-846 Method 9057 Ammonia by Ion Chromatography Chloride by Ion Chromatography, per SW-846 Method 9057	Hold	MS/MSD	Comments
Site Wonder NJ						
Project Number 60735150						
Prepared by <i>C. Thomas</i>						
Sample ID Code	Sample Matrix	Date/Time				
WondStk-Stk-1-M0010-PNR	Probe and Nozzle Rinse	8/6	X	X	X	X
WondStk-Stk-1-M0010-Filt	Filter	8/6				
WondStk-Stk-1-M0010-CR	Condenser Rinse	8/6				
WondStk-Stk-1-M0010-XAD	XAD Sorbent Cartridge	8/6				
WondStk-Stk-1-M0010-Cond	Condensate	8/6				
WondStk-Stk-1-M0010-IR	Impinger Rinse	8/6				
WondStk-Stk-2-M0010-PNR	Probe and Nozzle Rinse	8/6				
WondStk-Stk-2-M0010-Filt	Filter	8/6				
WondStk-Stk-2-M0010-CR	Condenser Rinse	8/6				
WondStk-Stk-2-M0010-XAD	XAD Sorbent Cartridge	8/6				
WondStk-Stk-2-M0010-Cond	Condensate	8/6				
WondStk-Stk-2-M0010-IR	Impinger Rinse	8/6				
WondStk-Stk-3-M0010-PNR	Probe and Nozzle Rinse	8/6/7				
WondStk-Stk-3-M0010-Filt	Filter	8/6/7				
WondStk-Stk-3-M0010-CR	Condenser Rinse	8/6/7				


 140-37967 Chain of Custody

HAND DELIVERED
 NO CUSTODY SEALS
 RECEIVED AT RT 17, 23°C
 CT 19, 25°C
 DKO 8-9-24

Remarks: Provide results in total mass per sample. Raw data package required

Relinquished by: <i>C. Thomas</i>	Date/Time 8/17/24 16:40	Relinquished by:	Date/Time	Relinquished by:	Date/Time
Received by: <i>[Signature]</i>	Date/Time 8-7-24 16:40	Received by:	Date/Time	Received by:	Date/Time

Remarks (Laboratory Only)

Chain of Custody Record Semivolatiles from M0010 Sampling Train

Project Wonder Smokehouse Testing			Semivolatile Organic Compounds by GC/MS - SW-846 Method 8270C Chloride, Fluoride by Ion Chromatography, per SW-846 Method 9057 Ammonia by Ion Chromatography Chloride by Ion Chromatography, per SW-846 Method 9057	Hold	MS/MSD	Comments
Site Wonder NJ						
Project Number 60735150						
Prepared by <i>C. Thompson</i>						
Sample ID Code	Sample Matrix	Date/Time				
WondStk-Stk-3-M0010-XAD	XAD Sorbent Cartridge	8/7	X	X	X	X
WondStk-Stk-3-M0010-Cond	Condensate	8/7				
WondStk-Stk-3-M0010-IR	Impinger Rinse	8/7				
WondStk-Stk-FB-M0010-PNR	Probe and Nozzle Rinse	8/7				
WondStk-Stk-FB-M0010-Filt	Filter	8/7				
WondStk-Stk-FB-M0010-CR	Condenser Rinse	8/7				
WondStk-Stk-FB-M0010-XAD	XAD Sorbent Cartridge	8/7				
WondStk-Stk-FB-M0010-Cond	Condensate	8/7				
WondStk-Stk-FB-M0010-IR	Impinger Rinse	8/7				
WondStk-Stk-RB-M0010-MeOH	Methanol	8/7				
WondStk-Stk-RB-M0010-DCM	Dichloromethane	8/7				
WondStk-Stk-RB-M0010-Filt	Filter	8/7				
WondStk-Stk-RB-M0010-XAD	XAD Sorbent Cartridge	---				
WondStk-Stk-RB-M0010-Water	Water	8/7				

Remarks: Provide results in total mass per sample. Raw data package required

Relinquished by: <i>C. Thompson</i>	Date/Time 8/7/24 16:40	Relinquished by:	Date/Time	Relinquished by:	Date/Time
Received by: <i>R. [Signature]</i>	Date/Time 8-7-24 16:40	Received by:	Date/Time	Received by:	Date/Time

Remarks (Laboratory Only)

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Are the shipping containers intact?	☒			☐ Containers, Broken	7. COC HIST 9457 AND AMMONIA ANALYSIS, NOT RECOVERED PER PROJECT REQUIREMENTS
2. Were ambient air containers received intact?			☒	☐ Checked in lab	
3. The coolers/containers custody seal if present, is it intact?			☒	☐ Yes ☐ NA	
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10 °C) Thermometer ID: <u>SC7L</u> Correction factor: <u>+0.2 °C</u>	☒			☐ Cooler Out of Temp, Client Contacted, Proceed/Cancel ☐ Cooler Out of Temp, Same Day Receipt	
5. Were all of the sample containers received intact?	☒			☐ Containers, Broken	
6. Were samples received in appropriate containers?	☒			☐ Containers, Improper; Client Contacted; Proceed/Cancel	
7. Do sample container labels match COC? (IDs, Dates, Times)	☒			☐ COC & Samples Do Not Match ☒ COC Incorrect/Incomplete ☐ COC Not Received	
8. Were all of the samples listed on the COC received?	☒			☐ Sample Received, Not on COC ☐ Sample on COC, Not Received	
9. Is the date/time of sample collection noted?	☒			☐ COC; No Date/Time; Client Contacted	
10. Was the sampler identified on the COC?	☒		☒	☐ Sampler Not Listed on COC	
11. Is the client and project name/# identified?	☒			☐ COC Incorrect/Incomplete	
12. Are tests/parameters listed for each sample?	☒			☐ COC No tests on COC	
13. Is the matrix of the samples noted?	☒			☐ COC Incorrect/Incomplete	
14. Was COC relinquished? (Signed/Dated/Timed)	☒			☐ COC Incorrect/Incomplete	
15. Were samples received within holding time?	☒			☐ Holding Time - Receipt	
16. Were samples received with correct chemical preservative (excluding Zincore)?	☒			☐ pH Adjusted, pH Included (See box 16A) ☐ Incorrect Preservative	Preservative: _____ Lot Number: _____ Exp Date: _____ Analyst: _____ Date: _____ Time: _____
17. Were VOA samples received without headspace?	☒			☐ Headspace (VOA only)	
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number: _____	☒			☐ Residual Chlorine	
19. For 1613B water samples is pH < 9?	☒			☐ If no, notify lab to adjust	
20. For rad samples was sample activity info. Provided?	☒			☐ Project missing info	
Project #: _____ PM Instructions: _____					

Box 16A: pH Preservation
Box 18A: Residual Chlorine

Sample Receiving Associate: ThompsonDate: 8/9/24

QA026R33.doc, 11/10/23

Phaneendra Uppalapati
Air Quality Engineer
E: Phaneendra.Uppalapati@aecom.com

AECOM
250 Apollo Drive
Chelmsford, MA 01824

Appendix B Dispersion Modeling Report

Air Quality Modeling Report

Hazardous Air Pollutants Risk Assessment

Wonder Group, Inc.
West Orange, NJ

August 26, 2024

Quality information

Prepared by	Approved by		
Kimberly Zuk Air Quality Scientist kim.zuk@aecom.com	Amanda MacNutt Air Quality Scientist amanda.macnutt@aecom.com		

Revision History

Revision	Revision date	Details	Authorized	Name	Position

Prepared for:

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Prepared by:

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1. Project Overview

Wonder Group, Inc. (Wonder) is proposing to expand their West Orange, New Jersey meat smoking operation, located on Eagle Rock Avenue. The proposed expansion includes construction of a new smoking shed that will allow for the operation of twelve (12) total wood-fired meat smokers, increasing the capacity of the facility from the current four (4) wood-fired smokers that are being operated (the "Project"). Each smoker may operate up to twelve (12) hours a day once all smokers are installed and operational. To address public concern about this expansion's impact on air quality, specifically impacts of particulate matter (PM) and polycyclic aromatic hydrocarbons (PAHs), which are classified as hazardous air pollutants (HAPs) by the New Jersey Department of Environmental Protection (NJDEP), stack testing and air dispersion modeling was conducted to estimate potential impacts due to the proposed expansion. Stack testing on one of the existing smokers provided actual emission rates of PM and PAH that were used for the dispersion modeling. For the purposes of this analysis, all PM emissions were conservatively assumed to be particulate matter with an aerodynamic diameter of less than 2.5 microns (PM_{2.5}).

1.1 Purpose of the Report

The purpose of the air quality evaluation and modeling report is as follows:

- To present the sources of air emissions and their stack-tested emission rates;
- To detail the air dispersion modeling methodology, meteorological data, and receptor locations that were used to assess the air quality impacts of the emission sources; and
- To present resultant modeled concentrations of PM_{2.5} and PAH and their comparison to appropriate federal National Ambient Air Quality Standards (NAAQS) and state health risk assessment thresholds.

This report was prepared based on NJDEP and United States Environmental Protection Agency (USEPA) modeling guidance, including NJDEP's Guidance on Preparing a Risk Assessment for Air Contaminant Emissions (Technical Manual 1003, 2018) and the USEPA's 2022 *AERMOD Implementation Guide* (USEPA 2022).

1.2 Organization of the Report

The report includes the following sections:

Section 2 – Source Description provides the site location and description, source stack parameters, and emission rates that were modeled.

Section 3 – Applicable Emission Standards addresses the federal and state emission standards used to evaluate potential air quality impacts.

Section 4 – Modeling Analysis describes the modeling approach and model selection, NAAQS analysis, and air toxics risk analysis.

Section 5 – Modeling Results provides the resultant modeled concentrations and their comparison to appropriate standards.

Section 6 – References.

2. Source Description

2.1 Site Location and Description

The Wonder facility is located in West Orange, New Jersey. **Figure 2-1** shows its location in northern New Jersey.

Figure 2-1 Wonder (West Orange) Location



2.2 Source Data

PM and PAH will be emitted from each of the 12 wood-fired smokers. The parameters for the wood-fired smoker stacks are described in **Table 2-1**. The emissions and exhaust parameters input to the dispersion modeling, derived from stack testing of one of the existing wood-fired smokers, are provided in **Table 2-2**. PAH emissions represent the maximum emission rate measured over three (3) separate stack test runs, based on recommendations in USEPA's Human Health Risk Assessment Protocol (HHRAP) (USEPA, 2005). PM emission rates represent the average emissions over 3 separate stack test runs, based on USEPA requirements for criteria pollutant and hazardous air pollutant compliance testing¹. Emission rates used in the model were based on stack test results as well as the future operation of the smokers, planned to be 12 hours a day for 365 days per year.

Table 2-1 Stack Parameters for Wood-Fired Smokers

Source ID	Description	Stack Height Above Ground (ft)	Stack Temperature (°F)	Flow Rate (acfm)	Exit Velocity (m/sec)	Stack Diameter (m)
WFS1-WFS12	Wood-Fired Smokers	19	131.7	639.36	1.84	0.46

Table 2-2 Emissions Per Stack

Source ID	Source Description	Particulate Matter		Total PAH Emissions	
		Short-Term ⁽¹⁾ (lb/hr)	Annual ⁽²⁾ (tons/yr)	Hourly (lb/hr)	Annual ⁽²⁾ (tons/yr)
WFS1-WFS12	Wood-Fired Smokers	0.014	0.060	2.87E-04	6.28E-04

Notes:

- (1) For PM modeling, short-term is based on 24 hours consistent with the 24-hour $PM_{2.5}$ NAAQS. Since the smokers will only operate 12 hours a day, modeled emissions are based on an average testing lb/hr rate of 0.028 lb/hr and ratioed to account for operating less than 24 hours a day.
- (2) Annual emissions assume 12 hours a day operation for 365 days a year – 4,380 hours per year.

¹ 40 CFR 60.8(f)(1) [New Source Performance Standards] and 40 CFR 63.7(e)(3) [National Emission Standards for Hazardous Air Pollutants]

3. Applicable Air Quality and Risk Thresholds

3.1 Federal Air Quality Standards

The Clean Air Act of 1970 required the USEPA to establish ambient concentration thresholds for certain compounds based upon the identifiable effects that the compounds may have on public health and welfare. Subsequently, the USEPA promulgated regulations that set National Ambient Air Quality Standards (NAAQS) for several criteria compounds, including particulate matter (for this analysis, focus is on $PM_{2.5}$). Two classes of ambient air quality standards have been established: (1) primary standards defining levels of air quality that the USEPA has judged as necessary to protect public health; and (2) secondary standards defining levels for protecting soils, vegetation, wildlife, and other aspects of public welfare.

For this analysis, all stack-tested PM is assumed to be $PM_{2.5}$, which is conservative as the $PM_{2.5}$ NAAQS are the limiting standards for evaluating PM emissions. Furthermore, since $PM_{2.5}$ is a subset of total PM, assuming $PM_{2.5}$ equals total PM overestimates the actual $PM_{2.5}$ emissions. **Table 3-1** lists the currently applicable $PM_{2.5}$ NAAQS (in concentration units of micrograms per cubic meter [$\mu\text{g}/\text{m}^3$]).

Table 3-1 National Ambient Air Quality Standards

Pollutant	Averaging Period	Primary Standard ($\mu\text{g}/\text{m}^3$)	Secondary Standard ($\mu\text{g}/\text{m}^3$)
$PM_{2.5}$	24-hour ⁽¹⁾	35	35
	Annual ⁽²⁾	9	15

Source: EPA 40 CFR 50

Notes:

- (1) Compliance with the 24-hour standard is demonstrated when the 98th-percentile (8th High) 24-hour concentration at each receptor, based on 5 years of modeling, is predicted below the standard.
- (2) Not to be exceeded by the arithmetic average of the annual arithmetic averages from 3 successive years.

3.2 New Jersey Health Risk Toxicity Values

The NJDEP Risk Assessment Protocol (Technical Manual 1003, (NJDEP, 2018)) includes guidelines for evaluating potential inhalation-based health risks for sources of HAPs. The guidelines recommend calculations of cancer and non-cancer risk be based on air concentrations determined from NJDEP's Risk Screening Worksheet or refined dispersion modeling together with pollutant-specific toxicity values. NJDEP provides toxicity values in the form of the unit risk factor (URF, cancer risk) or the reference concentration (RfC, non-cancer risk) based on available information from USEPA's Integrated Risk Information System (IRIS) and other appropriate sources (NJDEP, 2023)

The first-level risk screening is designed to evaluate a calculated risk below the "negligible" threshold which is defined as total cancer risk less than or equal to one (1) in a million and a hazard quotient of less than or equal to one for non-cancer risk (NJDEP, 2018, Tables 2-3 & 2-4). Cancer risk is based on long-term (annual) modeled concentrations and non-cancer hazard quotients are based on both long-term and short-term (where applicable) modeled concentrations. The cancer risk is calculated using a specific pollutant's URF. The hazard quotient is calculated using a specific pollutant's RfC.

For this analysis, the individual PAHs were evaluated using their individual toxicity factors. The various URF and RfC values are provided in **Table 3-2** below. Note, benzo[e]pyrene and perylene do not have any individual URFs so they were conservatively treated as benzo[a]pyrene in the risk analysis. Also note that the PAHs do not have any associated short term RfCs so only annual (long-term) effects were evaluated.

Table 3-2 Inhalation Risk Toxicity Factors

Pollutant	Long-Term URF ($\mu\text{g}/\text{m}^3$) ⁽¹⁾	Long-Term RfC ($\mu\text{g}/\text{m}^3$)
2-Methylnaphthalene ⁽²⁾	1.10E-06	14
Acenaphthene ⁽²⁾	1.10E-06	210
Acenaphthylene	1.10E-06	N/A
Anthracene ⁽¹⁾	1.10E-05	1,050
Benzo[a]anthracene	1.10E-04	N/A
Benzo[a]pyrene	6.00E-04	0.002
Benzo[b]fluoranthene	1.10E-04	N/A
Benzo[e]pyrene ⁽¹⁾	N/A	N/A
Benzo[g,h,i]perylene	1.10E-05	N/A
Benzo[k]fluoranthene	1.10E-04	N/A
Chrysene	1.10E-05	N/A
Dibenz(a,h)anthracene	1.20E-03	N/A
Fluoranthene ⁽²⁾	1.10E-06	140
Fluorene ⁽²⁾	1.10E-06	140
Indeno[1,2,3-cd]pyrene	1.10E-04	N/A
Naphthalene	3.40E-05	3
Perylene ⁽¹⁾	N/A	N/A
Phenanthrene	1.10E-06	N/A
Pyrene ⁽²⁾	1.10E-06	105

Source: NJDEP Division of Air Quality Toxicity Values for Inhalation Exposure (April 2023).
<https://dep.nj.gov/wp-content/uploads/boss/risk-screening/toxall-04-2023.pdf>

Notes:

N/A: Not Available

(1) Per NJDEP's memo containing guidance on estimating risk from PAHs (NJDEP, 2012), benzo[e]pyrene and perylene emissions were included as part of benzo[a]pyrene since these PAHs did not have individual URFs.

(2) RfC factors were calculated for these PAHs in accordance with the methodologies described in Section 3.3 of this report.

3.3 Route-to-Route Extrapolation for Additional RfC Values

The NJDEP does not provide a RfC value for every PAH. In order to establish RfC values for additional compounds, the methodology used in USEPA's HHRAP (USEPA, 2005) was followed where a RfC was calculated using route-to-route extrapolation of available oral reference dose values (RfDs). This approach multiplies the RfD by an average human inhalation rate of 20 m³/day and then divides by the average human body weight of 70 kg to estimate the RfC. This methodology assumes that, for a given compound, the toxicity following oral exposure will be equivalent to the toxicity following inhalation exposure. Table 3-3 lists the PAHs for which RfD values were available and RfCs were calculated using route-to-route extrapolation. If there are no RfDs available from USEPA's IRIS database (USEPA, 2024), then it is assumed that the compound is not considered to be important from an oral or inhalation human exposure standpoint.

Table 3-3 Calculated RfCs

Pollutant	RfD (mg/kg-day)	Calculated RfC (µg/m³)
2-Methylnaphthalene	1.10E-06	14
Acenaphthene	1.10E-06	210
Anthracene	1.10E-05	1,050
Fluoranthene	1.10E-06	140
Fluorene	1.10E-06	140
Pyrene	1.10E-06	105

Source: USEPA HHRAP, Section 7.2 (USEPA, 2005), USEPA IRIS – RfDs. (USEPA, 2024)

4. Modeling Analysis

The USEPA's AERMOD air emissions dispersion model (version 23132) was used to estimate concentrations ($\mu\text{g}/\text{m}^3$) of $\text{PM}_{2.5}$ and PAH from the proposed wood-fired smokers for comparison to USEPA NAAQS and NJDEP health screening risk thresholds. AERMOD is USEPA's recommended dispersion model for evaluating industrial air emission sources.

The suitability of an air quality dispersion model for a particular application is dependent upon several factors. The selection and application of AERMOD was based upon analysis of the following criteria:

- stack height relative to nearby structures;
- dispersion environment;
- local terrain; and
- representative meteorological data.

The modeling analysis was conducted in accordance with the NJDEP air quality modeling guidance provided in Technical Manual 1002 (NJDEP, 2021) and the USEPA Guideline on Air Quality Models ("GAQM"; USEPA, 2017).

4.1 Land Use Analysis and Local Topography

The application of AERMOD requires characterization of the local (within 3 kilometers (km)) dispersion environment as either urban or rural based on prevalent land use. According to USEPA modeling guidelines (USEPA, 2017), if more than 50 percent of an area within a 3-km radius of the proposed project is classified as rural, then a rural modeling application is required. Conversely, if more than 50% of the area is urban, an urban dispersion adjustment can be used.

Using the Auer method recommended by the USEPA (2017), urban land use types are classified as categories I1, I2, C1, R2, and R3. Table 4-1 describes these categories and maps them to reasonably equivalent USGS 2016 National Land Cover Database (NLCD) categories. While the two sources do not use the same terms to define their categories, the similarities between the five Auer categories and NLCD categories 23 and 24 are apparent. Thus, it is reasonable to classify NLCD categories 23 and 24 as urban land use. Figure 4-1 displays the 2016 NLCD data superimposed over aerial imagery within 3 km of the facility.

The NLCD data were processed with USEPA's AERSURFACE processor to determine the different land use types within 3 km of the facility. AERSURFACE is typically used to process NLCD data for input to AERMET, the AERMOD model's meteorological data processor. In this case, AERSURFACE output in the form of the pixel count for each of NLCD's land use types was used to determine the total pixel count of urban land use types within 3 km.

As noted above, urban land use types were assumed to be NLCD categories 23 and 24: "Developed, Medium Intensity" and "Developed, High Intensity", respectively. The pixel count for these categories was 20.3% of the total pixel count for all categories. Thus, a majority (79.7%) of the 3 km area around the facility can be classified as rural land use and AERMOD was not applied with the urban model option. Table 4-2 provides the pixel counts as reported in the AERSURFACE output.

Table 4-1 Comparison of Auer and NLCD Land Use Categories

<u>Auer Urban Land Use Categories⁽¹⁾</u>			<u>USGS 2016 NLCD Categories⁽²⁾</u>	
Type	Use and Structure	Vegetation	Category	Description
R2	Dense single/multi-family	< 30%	23	<u>Developed, Medium Intensity</u> – Areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50% to 79% of the total cover. These areas most commonly include single-family housing units.
R3	Multi-family, two story	< 35%	24	<u>Developed, High Intensity</u> – Highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses and commercial/industrial. Impervious surfaces account for 80% to 100% of the total cover.
I1	Heavy Industrial	< 5%		
I2	Light/moderate industrial	< 5%		
C1	Commercial	< 15%		

Notes:

⁽¹⁾ USEPA, 2017.⁽²⁾ Multi-Resolution Land Characteristics Consortium (MRLC).<https://www.mrlc.gov/data/legends/national-land-cover-database-class-legend-and-description>

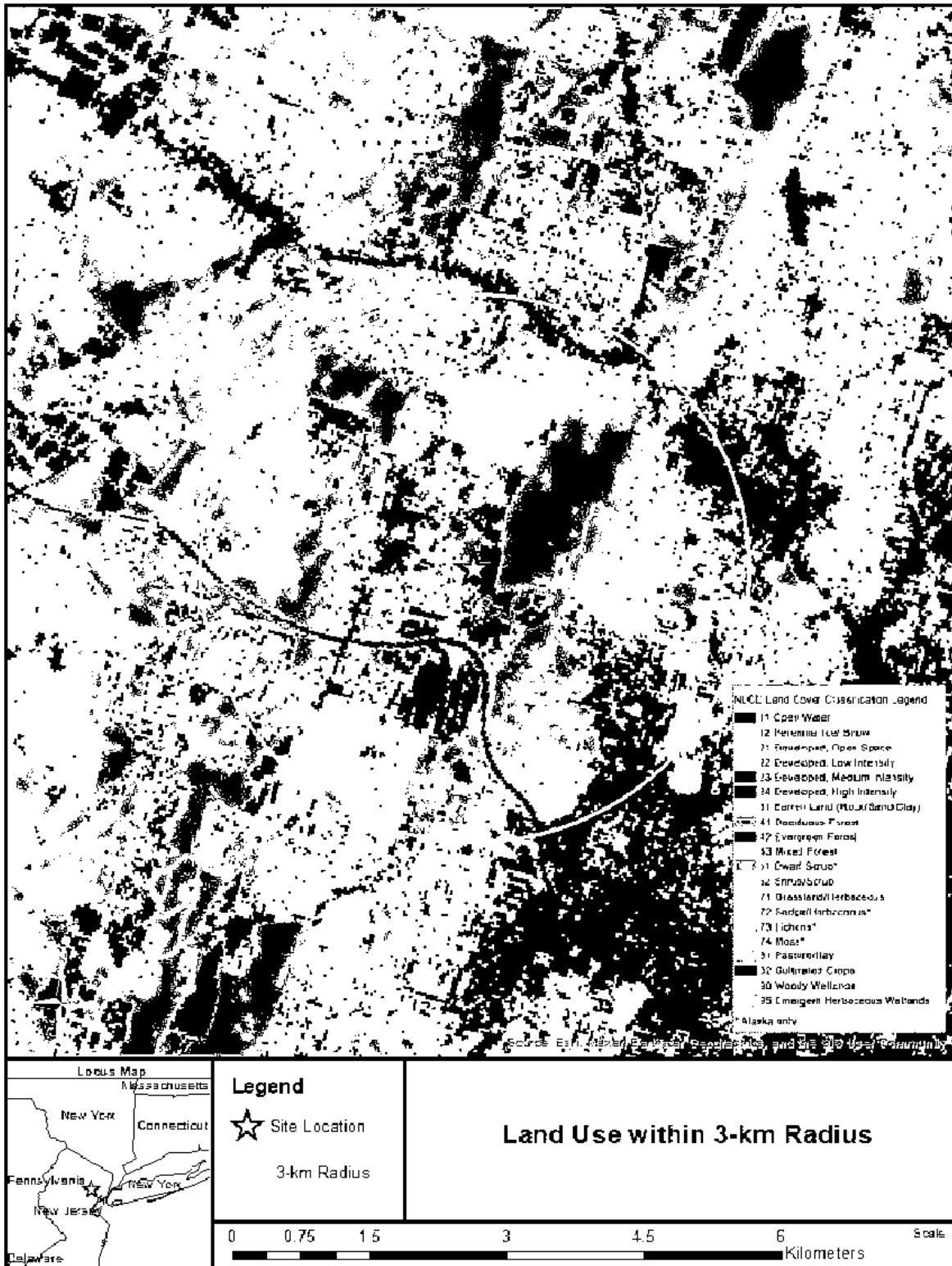
Table 4-2 Rural/Urban Determination – Pixel Counts

NLCD Category	Description	Pixel Count (within 3 km)⁽¹⁾
0	Missing, Out-of-Bounds, or Undetermined:	0
11	Open Water:	98
12	Perennial Ice/Snow:	0
21	Developed, Open Space:	11648
22	Developed, Low Intensity:	7997
23	Developed, Medium Intensity⁽²⁾:	4885
24	Developed, High Intensity⁽²⁾:	1483
31	Barren Land (Rock/Sand/Clay):	0
32	Unconsolidated Shore:	0
41	Deciduous Forest:	4343
42	Evergreen Forest:	8
43	Mixed Forest:	426
51	Dwarf Scrub:	0
52	Shrub/Scrub:	26
71	Grasslands/Herbaceous:	40
72	Sedge/Herbaceous:	0
73	Lichens:	0
74	Moss:	0
81	Pasture/Hay:	158
82	Cultivated Crops:	16
90	Woody Wetlands:	276
91	Palustrine Forested Wetland:	0
92	Palustrine Scrub/Shrub Wetland:	0
93	Estuarine Forested Wetland:	0
94	Estuarine Scrub/Shrub Wetland:	0
95	Emergent Herbaceous Wetland:	10
96	Palustrine Emergent Wetland:	0
97	Estuarine Emergent Wetland:	0
98	Palustrine Aquatic Bed:	0
99	Estuarine Aquatic Bed:	0
Total Pixels:		31414
# Urban Pixels:		6368
% Urban:		20.3%

Notes:

⁽¹⁾ Obtained from AERSURFACE output log file.⁽²⁾ Assumed urban land use.

Figure 4-1 Land Use within 3 km of the Wonder (West Orange) Site



4.2 GEP Stack Height Analysis

Good engineering practice ("GEP") stack height is defined as the stack height necessary to ensure that emissions from the stack do not result in excessive concentrations of any air pollutant as a result of atmospheric downwash, wakes, or eddy effects created by the source, nearby structures, or terrain features. A GEP stack height analysis was conducted for the modeled point sources with the USEPA's Building Profile Input Processor ("BPIP") in accordance with USEPA's guidelines (USEPA, 1985). The site layout depicting the location of the point sources and buildings is provided in **Figure 4-2**. Note that the adjacent shopping center buildings were also included in the analysis given their proximity to the Wonder facility. The GEP height for the modeled stacks, H_{GEP} , is determined from the dimensions of all buildings which are within the region of influence:

$$H_{GEP} = H + 1.5L$$

where:

H = height of the structure within 5L of the stack which maximizes H_{GEP} , and

L = lesser dimension (height or projected width) of the structure.

For a squat structure, i.e., height less than projected width, the formula reduces to:

$$H_{GEP} = 2.5H$$

As required by AERMOD, the PRIME version of the BPIP program was employed. The direction-specific building dimensions generated by BPIP-PRIME were input to AERMOD.

Figure 4-2 Facility & Local Building AERMOD Mapping



4.3 Meteorological Data

The modeling analysis was conducted with the latest pre-processed, AERMOD-ready meteorological data provided by NJDEP, consisting of 5-years (2016-2020) of surface data from Caldwell Airport (Essex County Airport) and concurrent upper air data from Brookhaven, New York. Located approximately six (6) miles to the northwest of the Wonder site, the Caldwell Airport is the closest, most representative surface data station to the site. The more rural setting of Caldwell Airport more closely represents the land use around the Wonder site, as compared to the urban setting of next closest surface station, Newark International Airport (approximately 10 miles from Wonder).

4.4 AERMOD Receptors

To address public concern regarding the potential impact of the smoker emissions on local air quality, concentrations of PAH and $PM_{2.5}$ were estimated at sensitive locations including residential housing, schools, medical facilities, senior living facilities, hotels, and outdoor recreational areas with USEPA's AERMOD dispersion model. A Cartesian grid was used in the AERMOD modeling that covered these sensitive areas with receptors spaced 50 meters apart, spanning approximately one (1) mile from the center of the facility.

Receptor height scales at each receptor location were developed using AERMAP (version 18081), the USEPA's terrain preprocessor for AERMOD. The receptor coordinates are referenced to North American Datum (NAD) 1983. The near field and far field receptors are shown in **Figures 4-3** and **4-4**, respectively.

Figure 4-3 Near Field Receptors

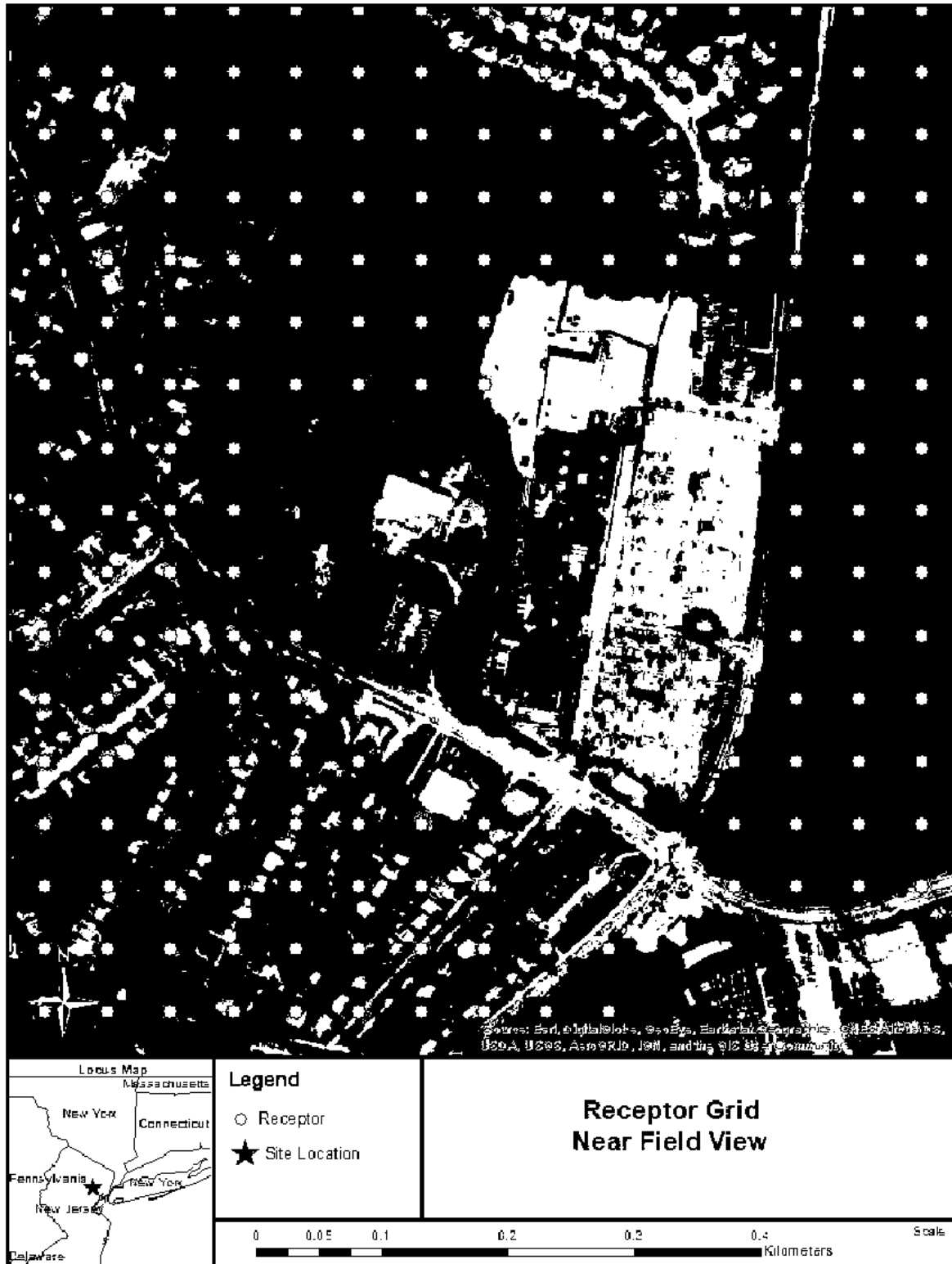
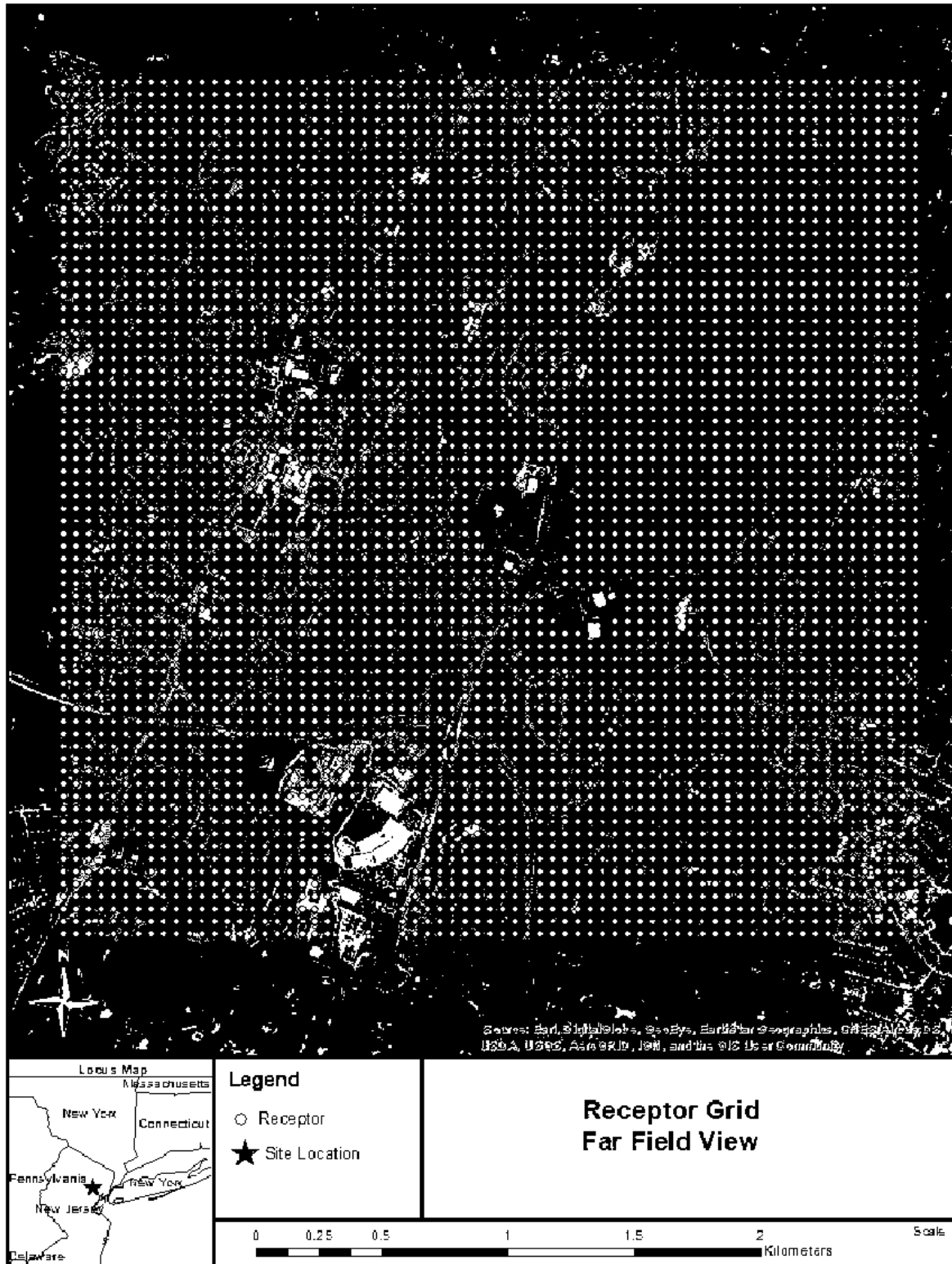


Figure 4-4 Far Field Receptors



4.5 PM_{2.5} NAAQS Evaluation

Compliance with NAAQS is based on the sum of the following:

- Modeled concentrations attributable to the proposed Project and existing sources; and
- Representative ambient background concentration.

AERMOD dispersion modeling was conducted based on the model data noted in **Sections 4.1 through 4.4** to determine the maximum design concentration of annual and 24-hour PM_{2.5} from the Wonder stacks. Per the USEPA's definition of the 24-hour PM_{2.5} NAAQS, the maximum 24-hour PM_{2.5} concentration for comparison to the NAAQS is based on the 98th-percentile (8th High) 24-hour concentration at each modeled receptor, averaged over five years of modeling results/meteorological data. For annual PM_{2.5}, the maximum design concentration is based on the highest average annual concentration at each receptor, averaged over five years of meteorological data.

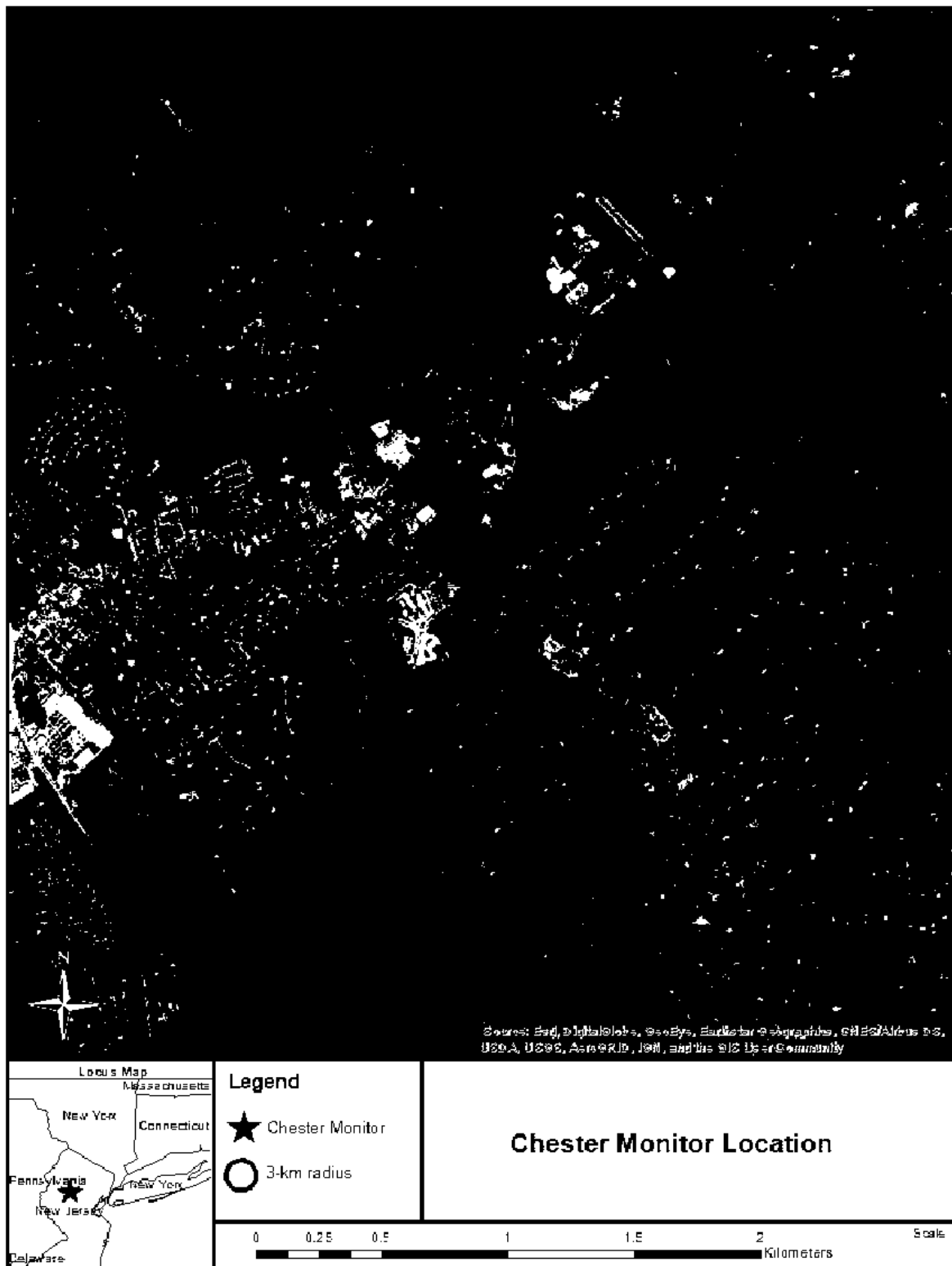
In a NAAQS evaluation, the background monitor concentration accounts for other nearby sources not explicitly included in the modeling, and compliance with the NAAQS is based on the sum of the maximum modeled design concentration and representative background design concentration. The PM_{2.5} monitored design concentrations are based on the 3-year average of the daily 98th percentile 24-hour concentration and the 3-year average of the annual average concentration from the representative background monitor.

The selection of the most representative monitor was based on consideration of land use, wind patterns and population density as discussed as follows. There are two PM_{2.5} monitors operated by NJDEP in the vicinity of the Wonder site. The Paterson monitor (AQS Site ID 340310005), located in Passaic County, New Jersey, approximately nine (9) miles to the north-northeast of the Wonder site, and the Chester monitor (AQS Site ID 340273001), located in Morris County, New Jersey, approximately 22-miles to the west-southwest of the Wonder site. To establish which monitor is more representative of the Wonder site, land use within 3 km of each monitor was first examined for comparison to land use surrounding the Wonder site. **Figure 4-5** shows the land use around the Wonder site is predominantly suburban but with a significant rural area comprised of the Eagle Rock Reservation and Montclair Golf Club as well as the wooded area to the north of the facility. **Figure 4-6** shows the land use around the Paterson monitor is virtually all urban, with higher density residences and buildings compared to the area in the vicinity of the Wonder site. **Figure 4-7** shows the land use around the Chester monitor is a mix of suburban housing and rural areas consisting of farms, wooded areas, and recreation areas. Comparing the three locations, the land use surrounding the Chester monitor more closely resembles the vicinity of the Wonder site as compared to the urban area around the Paterson monitor.

Figure 4-5 Wonder Site Location

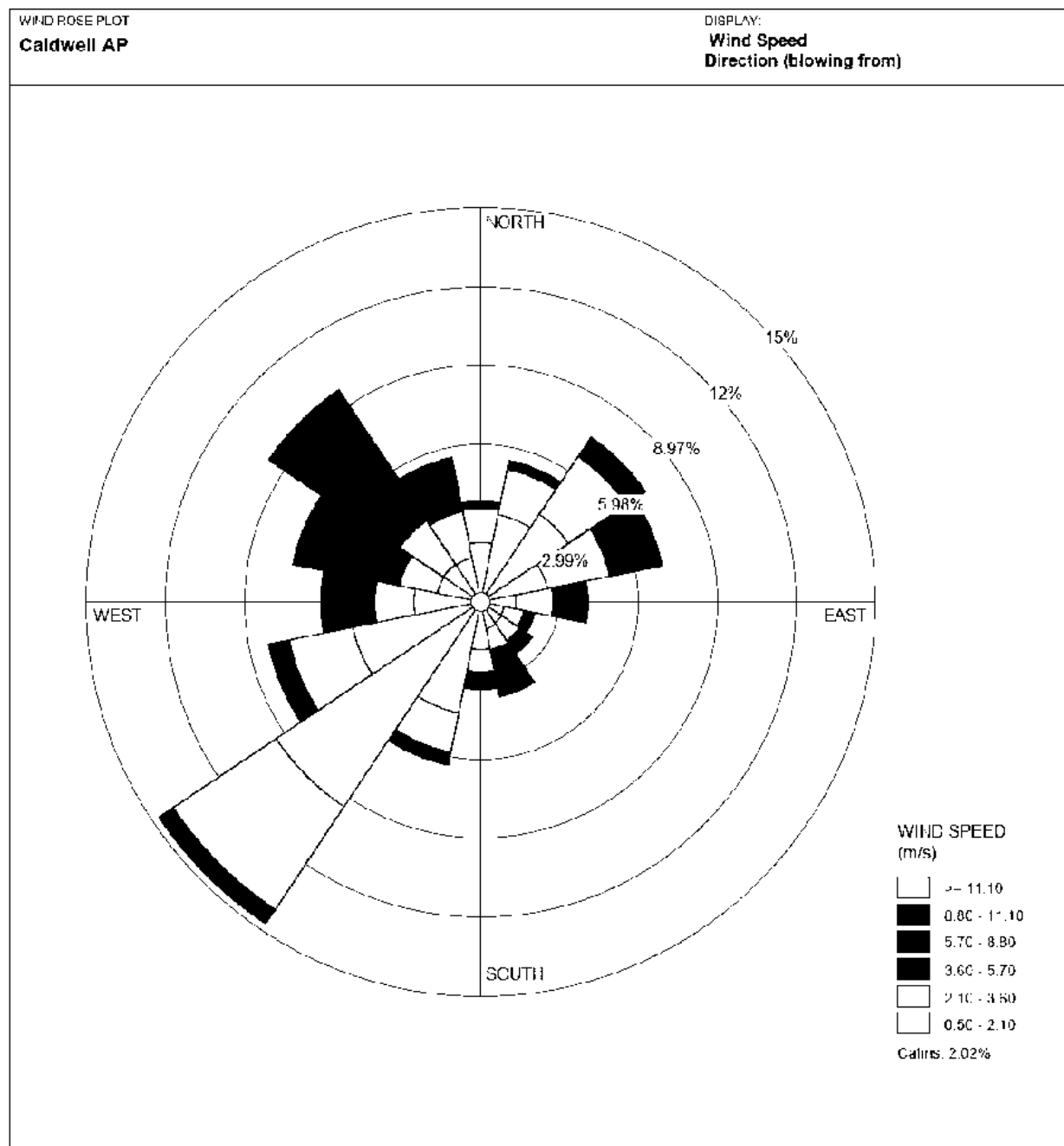


Figure 4-7 Chester Monitor Location



In addition to a review of the land-use in the vicinity of each monitor in comparison to the landuse surrounding the Wonder facility, an evaluation of predominant wind direction was also conducted, as the most representative monitor is ideally located upwind of the modeled location. A wind rose for the Caldwell Airport is presented in **Figure 4-8**. As the wind rose indicates, winds are predominantly from the southwest through the northwest directions. This aligns better with the location of the Chester monitor when looking for an upwind monitor.

Figure 4-8 Caldwell Airport Windrose



Lastly, the population around each monitor location was compared to that around the Wonder site. Using the online Maps tool (<https://www.maps.ie/population/>), the population within 1-km radius of the Paterson monitor is 28,700. The population within 1-km radius of the Chester monitor is 725. The population within 1-km radius of the Wonder site is

3,673. While the Wonder site is more populated than the area surrounding the Chester monitor, the Wonder site is closer in population to the Chester monitor as compared to the much more populated area around the Paterson monitor.

Based on the land use comparison, the direction of the predominant winds, and the population around each monitor, the Chester monitor was deemed the most representative background monitor to use for this analysis.

In addition to the above evaluation, it should also be noted that the Paterson monitor had USEPA-deemed invalid data (an inadequate number of days of valid measurements) for 2020, 2021 and 2022, while the Chester monitor had valid data for all three of the most recent years.

Table 4-3 provides the 24-hour and annual PM_{2.5} monitor design concentrations for use in the NAAQS analysis. These values were taken from the USEPA Monitor Values Report².

Table 4-3 Chester Monitor Design Concentrations (2021-2023)

Pollutant	Averaging Period	Rank	Ambient Background Concentration ¹ (µg/m ³) ⁽¹⁾
PM _{2.5}	24-hour	98th	17.3
	Annual	Maximum	5.8

Notes:

⁽¹⁾ Based on 2021- 2023 monitor concentrations (Chester monitor, AQS Site ID 340273001)

Source: USEPA monitor values report (<https://www.epa.gov/outdoor-air-quality-data/monitor-values-report>)

4.6 Health Risk Evaluation

A refined risk assessment of PAH emissions was conducted using AERMOD dispersion modeling results. AERMOD dispersion modeling was conducted based on the model data noted in Section 4.1 through 4.4.

Pursuant to NJDEP Technical Manual 1003 (NJDEP, 2018), the cancer risk of each PAH was calculated and summed together to compare against the negligible risk threshold of ≤ 1 in a million (1×10^{-6} or $1E-06$) using the following calculation methodology:

$$\text{Individual Cancer Risk} = C \times \text{URF}$$

Where:

C = annual air concentration from AERMOD (µg/m³)

URF = inhalation unit risk factor ((µg/m³)⁻¹), unique to PAH

To determine the non-cancer long-term (annual) hazard quotient and verify if ≤ 1 , the following calculation was conducted, based on Technical Manual 1003 (NJDEP, 2018):

$$\text{Hazard Quotient} = C / \text{RfC}$$

Where:

C = annual air concentration from AERMOD (µg/m³)

RfC = reference concentration (µg/m³), unique to air toxic

² <https://www.epa.gov/outdoor-air-quality-data/monitor-values-report>

Given the number of individual PAHs evaluated in the analysis, to simplify the health risk modeling, each stack was modeled with a unit emission rate (1 gram per second [g/sec]) and the total maximum modeled concentration for all twelve (12) sources over the five years of meteorological data, in units of $\mu\text{g}/\text{m}^3$ per g/sec was scaled by the respective annual PAH emission rate (in g/sec) for a single source. These concentrations ($\mu\text{g}/\text{m}^3$) were then used to calculate the cancer and non-cancer risks.

5. Modeling and Health Risk Analysis Results

A summary of the PM_{2.5} NAAQS analysis is presented below in **Table 5-1**. The modeled concentrations presented represent the twelve (12) wood-fired smokers operating 12 hours per day for 365 days each year and the five years of meteorological data used in AERMOD. The maximum modeled concentrations were then added to representative ambient background concentrations to estimate the total concentrations compared to the NAAQS. As shown, the total concentrations for 24-hour and annual PM_{2.5} are less than the NAAQS. **Figure 5-1** and **Figure 5-2** depict the 24-hour and annual PM_{2.5} modeled concentration isopleths, respectively, showing the location of maximum concentrations and distribution of the modeled concentrations. The result of this analysis indicates that the Project will not cause or contribute to a violation of the PM_{2.5} NAAQS.

Table 5-1 Summary of PM_{2.5} NAAQS Analysis

Pollutant	Averaging Period	Rank	Modeled Concentration (µg/m ³)	Ambient Background Concentration ¹ (µg/m ³)	Total Concentration ² (µg/m ³)	NAAQS (µg/m ³)	Complies (Y/N)?
PM _{2.5}	24-hour	98th	2.41	17.3	19.71	35	Y
	Annual	Maximum	0.65	5.8	6.45	9	Y

(1) Ambient background concentrations from the Chester, NJ monitor.

(2) Total concentration includes project and monitored background concentrations.

Source: EPA 40 CFR 50

Figure 5-1 24-Hour PM_{2.5} Modeled Concentrations

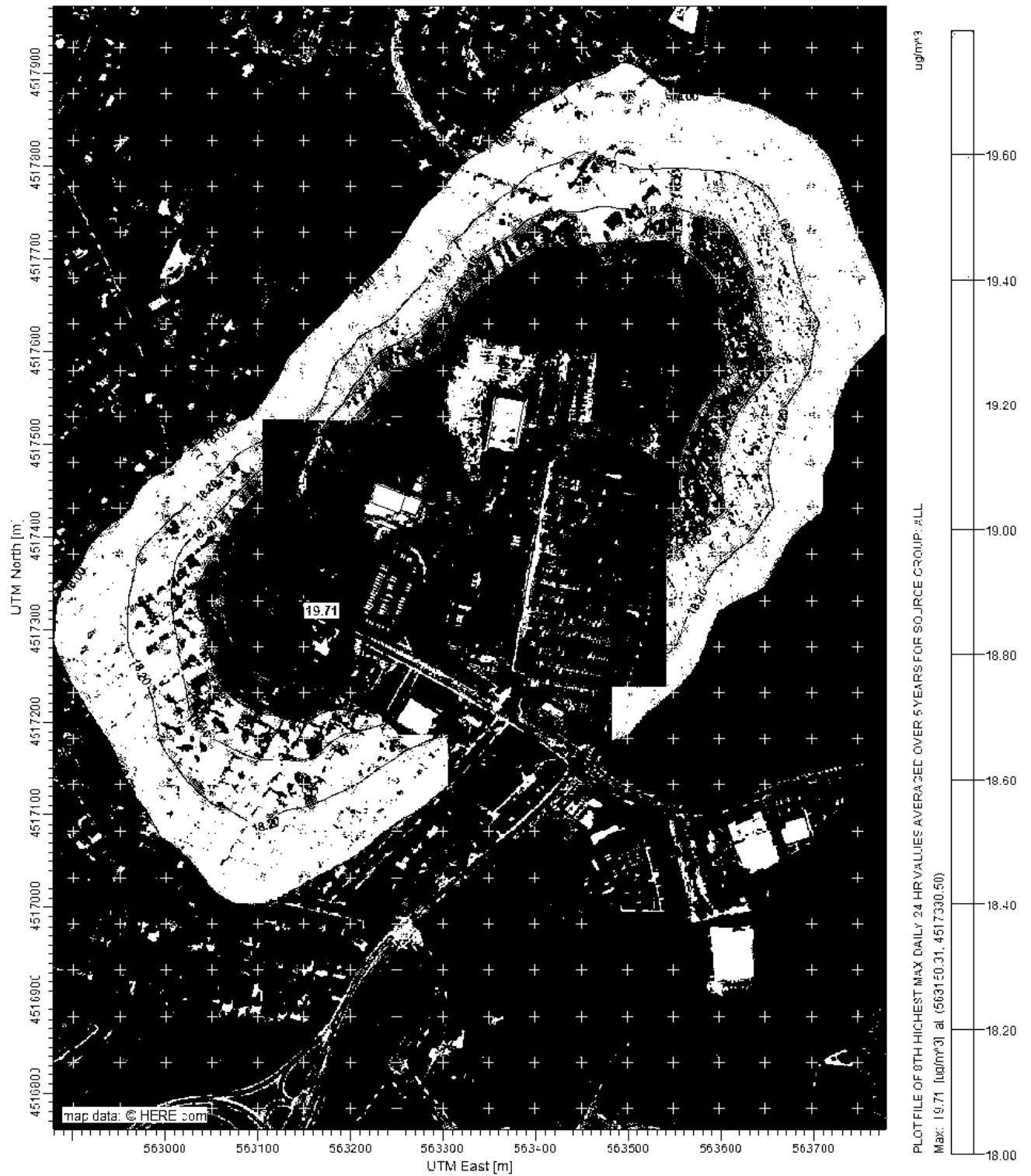
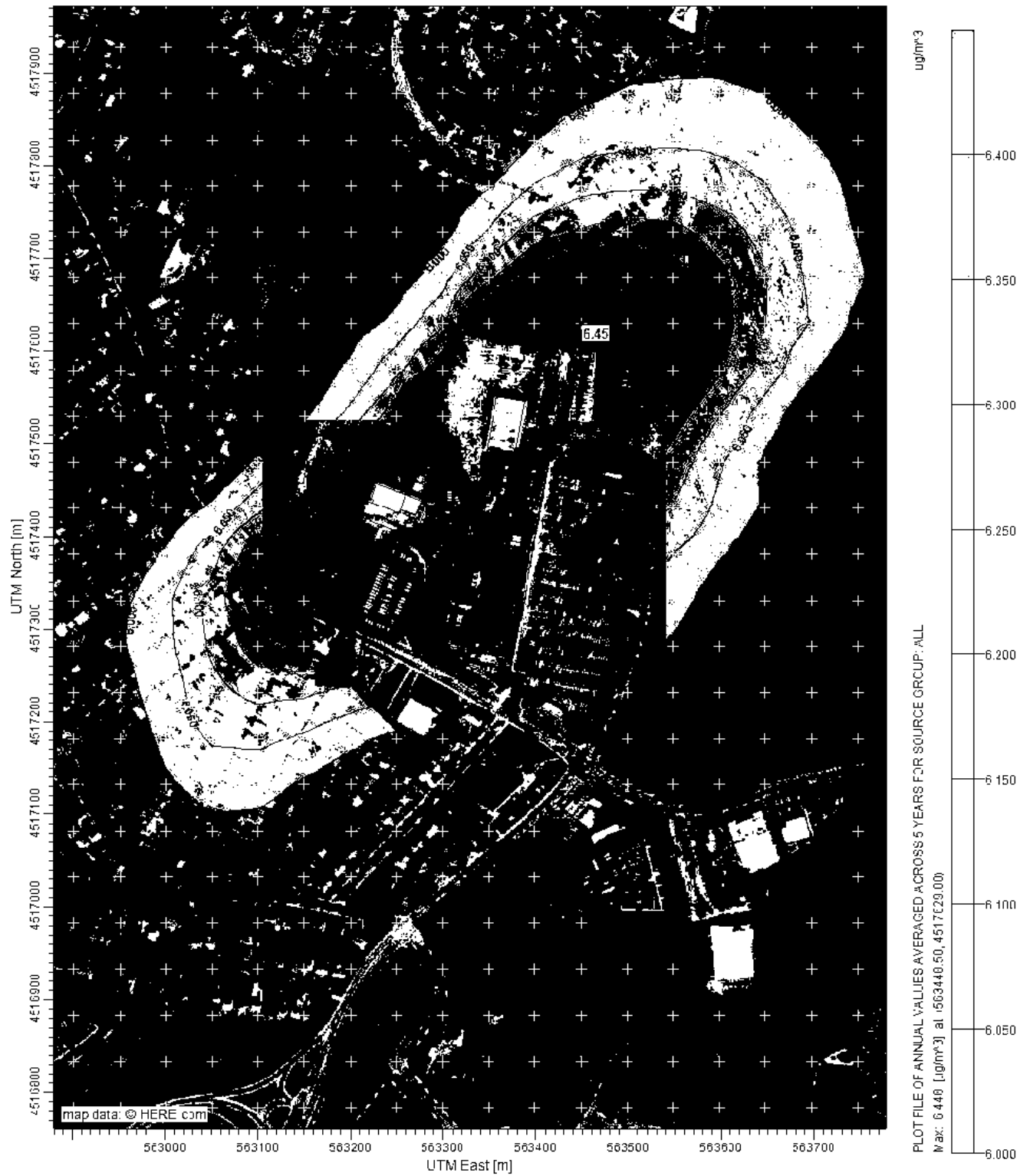


Figure 5-2 Annual PM_{2.5} Modeled Concentrations



A summary of the health risk assessment is presented below in **Table 5-2**. As shown, the total combined cancer inhalation risk for total PAH is below 1 in a million (1×10^{-6} or $1\text{E-}06$) and the hazard quotient for each individual PAH with a corresponding RfC is below 1, indicating negligible risk.

Table 5-2 Model Output Summary: Annual Average Concentration and Risk Assessment

Pollutant	Modeled Estimated Impacts ($\mu\text{g}/\text{m}^3$)	Inhalation Unit Risk Factor ($\mu\text{g}/\text{m}^3$) ⁻¹	Cancer Risk	Reference Concentration ($\mu\text{g}/\text{m}^3$)	Long-Term Hazard Quotient (HQ)
2-Methylnaphthalene	9.03E-04	1.10E-06	9.9E-10	14	6.45E-05
Acenaphthene	5.19E-05	1.10E-06	5.7E-11	210	2.47E-07
Acenaphthylene	6.22E-04	1.10E-06	6.8E-10	--	--
Anthracene	1.09E-04	1.10E-05	1.2E-09	1050	1.03E-07
Benzo[a]anthracene	2.76E-05	1.10E-04	3.0E-09	--	--
Benzo[a]pyrene(1)	2.49E-05	3.00E-04	1.5E-08	0.002	1.24E-02
Benzo[b]fluoranthene	2.39E-05	1.10E-04	2.6E-09	--	--
Benzo[g,h,i]perylene	1.46E-05	1.10E-05	1.6E-10	--	--
Benzo[k]fluoranthene	9.89E-06	1.10E-04	1.1E-09	--	--
Chrysene	4.49E-05	1.10E-05	4.9E-10	--	--
Dibenz(a,h)anthracene	6.59E-06	1.20E-03	7.9E-09	--	--
Fluoranthene	1.63E-04	1.10E-06	1.8E-10	140	1.16E-06
Fluorene	2.11E-04	1.10E-06	2.3E-10	140	1.51E-06
Indeno[1,2,3-cd]pyrene	7.23E-06	1.10E-04	8.0E-10	--	--
Naphthalene	4.30E-03	3.40E-05	1.5E-07	3	1.43E-03
Phenanthrene	5.86E-04	1.10E-06	6.4E-10	--	--
Pyrene	1.44E-04	1.10E-06	1.6E-10	105	1.37E-06
Total PAH	--	--	1.8E-07	--	--

6. References

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