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Project name:
Vapor Mitigation System Post-Construction Monitoring at Lakeview Technology Academy
Kenosha Innovation Neighborhood, Kensoah, WI

Project ref: 60716343

From: Tory Schultz

Date: December 2, 2024

To: Mr. Paul Grittner
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Brian Cater – Director of Public Works, City of Kenosha
Tim Casey – Director of City Development, City of Kenosha

Technical Memorandum

Subject: Vapor Intrusion Assessment – Kenosha Unified School District (KUSD) for Lakeview Technology Academy, 5533 26th Avenue, Kenosha, Wisconsin, BRRTS #02-30-000327

Introduction

In general accordance with the Wisconsin Department of Natural Resources (WDNR) RR-800 guidance for assessing vapor intrusion, AECOM conducted two sub-slab vapor sampling events for the recently constructed Lakeview Technology Academy (Lakeview Academy) in the Kenosha Innovation Neighborhood (KIN) located at 5533 26th Avenue in Kenosha, Wisconsin. All sub-slab vapor sample results from the Lakeview Academy are well below WDNR vapor risk screening levels (VRSLs). As a preventive measure, the vapor mitigation system will operate continuously disrupting the vapor pathway from the upgradient groundwater source.

Background

The City of Kenosha (City) owns two parcels (09-222-36-478-043 and 09-222-36-478-044) which are located at the east side of the former Kenosha Engine Plant brownfield site. Groundwater remediation was conducted in 2021 with a contingency application applied in 2024 to remediate volatile organic compounds (VOCs) in impacting groundwater upgradient of the Lakeview Academy. Groundwater monitoring results from July 2024 indicate the VOC plume is decreasing in size. While current conditions do not indicate a vapor intrusion risk as outlined in the WDNR Vapor Intrusion RR-800 guidance, an active mitigation system is desired by the City of Kenosha, Kenosha Area Building Alliance (KABA), and KUSD as a preventative measure against potential future migration of contaminated vapors possible due to the changing site conditions.

The Kenosha Unified School District (KUSD) contracted AECOM to design an active vapor mitigation system for the Lakeview Academy (AECOM Vapor Mitigation System Design, Rev.1, dated April 30, 2024 included in Appendix A). The general contractor, Riley Construction Company, Inc. (Riley Construction) subcontracted a professional vapor mitigation installer, Lifetime Radon Solutions Inc. (Lifetime) to install the vapor mitigation system. AECOM documented the construction of the vapor mitigation system to confirm design met, or exceeded, AECOM's mitigation system design. A Vapor Mitigation System Commissioning Report for Lakeview Technology Academy will be submitted under separate cover (Appendix B).

Figure 1 shows the Site Layout including the building location. The active vapor mitigation system is installed under the school building within the building footprint. The vapor mitigation system and vapor barrier cover approximately 35,625 square feet beneath the building footprint. Lifetime installed components of AECOM's Vapor Mitigation System Design between July-August 2024. AECOM conducted oversight of the installation to document the materials and installation

conformed to AECOM's vapor mitigation design. A component of the vapor mitigation system design included utility trench plugs to mitigate the potential for vapors to migrate along utility corridors. Clay plugs were installed and confirmed to adhere to AECOM's vapor mitigation system design. Lifetime conducted a short "test" purging the system of construction vapors and confirmed the fans function prior to system startup following sampling. The mitigation system risers were capped and the system remained off in preparation of the sampling events for a minimum of one week allowing potential sub-slab vapors to stabilized. Results from sampling event one (cooling season) were discussed with the WDNR during the week of October 28th. In preparation for a second sub-slab vapor sampling event the system risers were again capped on October 29th and system remained off through the second sampling event (heating season). On November 12th continuous operation of the vapor mitigation system was initiated and pressure field extension (PFE) readings from the monitored footprint of the building were collected. Components of the vapor mitigation system were labeled, including breakers in the electrical control panels providing power to the mitigation system fans. Laboratory analytical results from the sampling events were received by AECOM on October 24th and November 20th and presented on Table 2.

Sub-Slab Vapor Sampling Methodology

AECOM conducted vapor sampling during the cooling season in October 2024 and heating season in November 2024 for a period of approximately 1 week using passive absorption media. As described in WDNR RR-800 guidance for assessing vapor intrusion, Waterloo Membrane Sampler™ Low Uptake (WMS-LU) passive media was selected for sampling. The passive media was lowered near the bottom of the ½-inch diameter PVC test ports fitted with an open 3-way fitting in connection with the subsurface soils. In general, sampling media was placed at the approximate mid-point of the 8-inch thick layer of open graded stone. Following deployment of the sampling media, test ports were capped and sealed for a period of approximately 1 week. Collection of the sampling media was retrieved and placed in the same shipping vial originally manufactured for each WMS. The start date and time of each sample was recorded on the chain of custody (COC). The sub-slab vapor samples were delivered to Eurofins Air Toxics in Folsom, California under COC control and analyzed for VOCs by EPA Method TO-17. Wisconsin does not certify air laboratories; however, Eurofins Air Toxics is an environmental laboratory accredited by the National Environmental Laboratory Accreditation Program (NELAP) and Department of Defense (DOD-ELAP), and ISO 17025. One trip blank was included as a quality control measure that remained with the samples from each sampling event. Results of the laboratory analytical reports were received by AECOM on October 28, 2024 and November 20, 2024 and are included as in Appendix D.

All sub-slab vapor samples were reported well below WDNR VRSLs. As preventative measure, the vapor mitigation system will be operated continuously to protect building occupants against potential future migration of contaminated vapors due to the changing site conditions.

Quality Control

Monitoring Equipment Calibration

Prior to collection of field data the pressure field measurement device was field zero-calibrated to standard atmospheric pressure outside of the building and then inside the building per manufacturer's specifications. Field zero-calibration is documented in field notes in accordance with company record keeping policy. Instrument quality control documentation included the pressure monitoring device manufacturer, model, and serial number (if applicable). Instruments were filed zero-calibrated daily prior to use and again, as needed, based on field observations.

Test Port Integrity

A component during of construction documentation phase of the vapor mitigation system installation included smoke testing for of the vapor barrier. Any defects observed by AECOM were repaired and confirmed by additional smoke testing prior to installation of the overlying concrete floor. Eight test ports were constructed to allow pressure readings of the monitored footprint of the building. Those test ports also served as sub-slab vapor sampling locations. Since smoke testing confirmed all penetrations through the vapor barrier were sealed no additional leak testing (shut-in or water dam test) was performed during the deployment of sampling media. As quality control procedure the manufacturer of the same Teflon tape used to seal the laboratory provided vials containing the sampling media was applied to the test port caps and remained until the sampling media was retrieved.

Trip Blank and Laboratory Blank

One trip blank was associated with the samples collected. Benzene was the only detected compound in both the Trip Blank and Laboratory Blank. It was noted by the laboratory that "Benzene was detected in the Laboratory Blank due to the presence of Benzene in the Solvent." As a result, Benzene concentrations reported are not representative of Benzene in the vapor samples collected.

Laboratory Discrepancies

As a continual improvement process to achieve higher quality data, two laboratory discrepancies were identified during the project. Both discrepancies resulted in laboratory corrective actions and will aid in improving communications and procedures. These discrepancies do not effect the project outcome or results but are briefly summarized below and included in Appendix E for completeness.

The first discrepancy involved elevated vinyl chloride reporting limits on the second laboratory report containing the heating season results. Due to supply chain issues related to the WMS, the manufacturer of the WMS utilized a different membrane on the second sampling event vials resulting in the uptake rate for vinyl chloride approximately 3 times higher than the first sampling event. Project required screening level for vinyl chloride at 56 µg/m^3 could not be achieved during the second sampling event and the vinyl chloride reporting limit was calculated by the laboratory at 140 µg/m^3. The occurrence of elevated vinyl chloride reporting limits was discussed during a phone conversation with the WDNR on November 26th and status update with project stakeholders later the same day. Because project screening levels were achieved during the first sampling event and vinyl chloride was not detected from any test port during the first event, AECOM accepted the vinyl chloride results from the second sampling event.

The second discrepancy was related to the application of the custody seal on the shipping container during the second sampling event. The laboratory could not confirm AECOM's applied custody seal from November 12th was present on the shipping container during receipt on November 13th when shipment of the samples was received at the laboratory. The purpose of the custody seal is to ensure sample integrity during shipment and provide visual indication samples were not tampered with during transit. Because vapor sample results from the second event were similar to results from the first event, there is no indication sample integrity was compromised or tampering of samples occurred. A summary of the laboratory narrative outlining a corrective action is also provided in Appendix E.

Summary of Vapor Results

Sub-slab vapor sample results were compared to the WDNR Quick Look-Up Table (July 2024) included in Appendix C. Results were compared to residential vapor risk screening levels (VRSLs) and calculated using U.S.EPA's Vapor Intrusion Screening Level (VISL) calculator. Where VRSLs are not present on the WDNR Quick Look-up Table (July 2024), AECOM utilized U.S. EPA's VISL web based calculator. A print out of U.S. EPA's VISL calculated values is also included in Appendix C. Table 1 presents the October 2024 (cooling season) and November 2024 (heating season) results for VOCs and Figure 2 presents the sub-slab vapor detection (October and November 2024) result locations. All sub-slab vapor detections were reported well below VRSLs

First Sampling Event (cooling season)

2-Butanone (Methyl Ehtyl Ketone [MEK]) concentrations were detected in SS-1 (250 µg/m^3), SS-2 (72 µg/m^3), SS-5 (64 µg/m^3), SS-6 (34 µg/m^3), SS-7 (19 µg/m^3), and SS-8 (91 µg/m^3). The VRSL for MEK is 170,000 µg/m^3. Benzene concentrations were detected in all samples, including the Trip Blank and Laboratory Blank between 25-28 µg/m^3. Benzene results were flagged with a "B" qualifier and not representative of vapors detected in the samples collected during the 1st sampling event. All detected benzene concentrations were well below the WDNR Residential VRSL of 120 µg/m^3.

One or more petroleum related compounds were detected at in three samples SS-3, SS-6 and SS-7 well below the residential VRSL. SS-3 detected toluene at 11 µg/m3 below the VRSL 170,000 µg/m^3. SS-6 detected ethylbenzene at 3.4 µg/m^3 below the VRSL of 370 µg/m^3, and total xylene 19.6 µg/m^3 also below the VRSL 3,500 µg/m^3. SS-7 detected 1,3,5 -trimethylbenzene (1,3,5-TMB) at 2.2 µg/m^3 and 1,2,4 -trimethylbenzene (1,2,4-TMB) at 3.8 µg/m^3 both below the VRSL of 1,400 µg/m^3.

Only one chlorinated volatile organic compound (CVOC) was detected in one sample SS-3 at 8.1 µg/m^3. The VRSL for trichloroethene (TCE) is 70 µg/m^3. No other vapor samples reported COVCs in the samples collected from the 1st sampling event.

Second Sampling Event (heating season)

MEK concentrations were detected at seven of eight sample locations (SS-1 through SS-6, and SS-8) ranging from 26-310 µg/m^3.

One or more petroleum related compounds, ethylbenzene, total xylene, and toluene were detected in samples SS-3, SS-5, SS-6, SS-7 and/or SS-8 well below the respective residential VRSLs.

No CVOCs were detected in the samples collected during the November event.

A copy of the laboratory analytical reports from both sampling events are included as an Appendix C.

Post Sample Event Vapor Mitigation System Evaluation

Following the collection of the October 2024 sub-slab vapor samples, the vapor mitigation system was evaluated and balanced. Components of the system were photographed and labeled. On October 23rd, vents caps were removed, mitigation fans were powered, and AECOM engineers conducted system step tests on the fans to optimize system efficiency. The vapor mitigation system was operational from October 23rd through October 29th while results were evaluated and discussions with project stakeholders occurred. Pressure field extension readings from the monitored footprint of the building are shown on Table 2. The vapor mitigation system was turned off and capped again on October 29th to prepare for a second vapor sampling event (heating season). Similar to the first sampling event the vapor mitigation system remained off and capped allowing potential vapors to stabilize prior to the sampling event. On November 5th AECOM deployed passive sampling media in the eight test ports until November 12th when the sub-slab samples were collected. Following the 2nd sampling event, the south loop mitigation fan setting was adjusted to optimize the mitigation system. Final PFE readings were collected on November 12th and confirmed operational parameters of the monitored footprint of the building are in conformance with WDNR RR-800 guidance, as shown on Table 2. The 2nd sampling event laboratory report was received by AECOM on November 20th and discussed with stakeholder between November 21st through December 2nd.

Conclusions

All detected VOC concentrations during the sub-slab vapor sampling event from October 2024 (cooling season) and November 2024 (heating season), are well below the WDNR residential VRSL. As a preventative measure to reduce the potential for human health exposure to sub-slab vapors, the collective stakeholders identified as the City of Kenosha (property owner), Kenosha Area Building Alliance (building owner), and Kenosha Unified School District (tenant) have agreed to continuously operate the active vapor mitigation system at the Lakeview Technical Academy. Anticipated building occupancy target remains early-December 2024.

Respectfully Submitted,

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Attachments:

Tables:

Table 1 – Summary of Sub-Slab Vapor Detection Results (October and November 2024)
Table 2 – Pressure Field Extension Readings (October and November 2024)

Figures:

Figure 1 – Site Layout
Figure 2 – Sub-Slab Vapor Sampling Location Diagram

Appendices:

Appendix A – Vapor Mitigation System Design for Lakeview Technology Academy, Rev. 1, dated April 30, 2024
Appendix B – Vapor Mitigation System Construction Documentation Report for Lakeview Technology Academy (submitted under separate cover)
Appendix C – WDNR Vapor Quick Look up Table (July 2024) and U.S. EPA Vapor Intrusion Screening Level Calculations
Appendix D – Laboratory Analytical Reports (October and November 2024)
Appendix E – Laboratory Discrepancies (Workorder 2411358)

Tables

TABLE 1 - SUMMARY OF SUB-SLAB VAPOR DETECTION RESULTS
LAKEVIEW TECHNOLOGY ACADEMY
KENOSHA INNOVATION NEIGHBORHOOD, KENOSHA, WI

		Sample ID	**SS-1**		**SS-2**		**SS-3**		**SS-4**		**SS-5**		**SS-6**		**SS-7**		**SS-8**		**Trip Blank**	
		Location Name	Test Port 1		Test Port 2		Test Port 3		Test Port 4		Test Port 5		Test Port 6		Test Port 7		Test Port 8		Test Port B*	
		Sample Date	10/23/24	11/12/24	10/23/24	11/12/24	10/22/24	11/12/24	-	11/12/24	10/23/24	11/12/24	10/23/24	11/12/24	10/23/24	11/12/24	10/23/24	11/12/24	10/22/24	11/12/24
Analyte	**VRSL (µg/m3)**		Cooling Season	Heating Season	Cooling Season	Heating Season	Cooling Season	Heating Season	Cooling Season	Heating Season	Cooling Season	Heating Season	Cooling Season	Heating Season	Cooling Season	Heating Season	Cooling Season	Heating Season	Cooling Season	Heating Season
2-Butanone (Methyl Ethyl Ketone)	170,000		**250**	**310**	72	**26**	<18	**32**	--	**99**	**64**	**56**	**34**	**38**	**19**	<23	**91**	**37**	<18	<23
Benzene	120		27[B]	<28	27[B]	<28	29[B]	<28	--	<28	29[B]	<28	29[B]	<28	29[B]	<28	27[B]	<28	29[B]	<28
Ethyl Benzene	370		<3.1	<2.1	<3.1	<2.1	<3.1	<2.1	--	<2.1	<3.1	<2.1	**3.4**	<2.1	<3.1	**3.4**	<3.1	<2.1	<3.1	<2.1
Xylene, total	3,500		<6.0	<4.0	<6.0	<4.0	<6.0	**4.6**	--	<4.0	<6.0	**2.0**	**19.6**	**4.1**	<6.0	**12.7**	<6.0	<4.0	<6.0	<4.0
Toluene	170,000		<4.4	<3.3	<4.4	<3.3	**11**	<3.3	--	<3.3	<4.3	<3.3	<4.4	**5.2**	<4.4	<3.3	<4.4	**7.6**	<4.4	<3.3
Trichloroethene (TCE)	70		<5.0	<4.2	<5.0	<4.2	**8.1**	<4.2	--	<4.2	<4.9	<4.1	<5.0	<4.2	<5.0	<4.1	<5.0	<4.1	<5.0	<4.1
1,3,5-Trimethylbenzene	2,100		<2.1	<1.4	<2.1	<1.4	<2.1	<1.4	--	<1.4	<2.0	<1.4	<2.1	<1.4	**2.2**	<1.4	<2.1	<1.4	<2.1	<1.4
1,2,4-Trimethylbenzene	2,100		<1.9	<1.2	<1.9	<1.2	<1.9	<1.2	--	<1.2	<1.9	<1.2	<1.9	<1.2	**3.8**	<1.2	<1.9	<1.2	<1.9	<1.2
cis-1,2-dichloroethene (cis-DCE)	1,400		<6.8	<7.8	<6.8	<7.8	<6.8	<7.8	--	<7.8	<6.7	<7.8	<6.8	<7.8	<6.8	<7.8	<6.8	<7.8	<6.8	<7.7
trans-1,2-dichloroethene (trans-DCE)	1,400		<16	<26	<16	<26	<16	<26	--	<26	<16	<26	<16	<26	<16	<25	<16	<25	<16	<25
1,1-Dichloroethene (1,1 DCE)	7,000		<38	<74	<38	<74	<38	<74	--	<74	<37	<74	<38	<74	<38	<74	<38	<74	<38	<73
Vinyl chloride (VC)	56		<42	<140	<42	<140	<42	<140	--	<140	<42	<140	<43	<140	<43	<140	<42	<140	<42	<140

Notes:
Passive samplers deployed on October 15, 2024 (cooling season) and November 5, 2024 (heating season). Sample date reflects date sample was retrieved.
Results compared to WDNR Publication: RR-0136 Wisconsin Department of Natural Resources Guidance: Wisconsin Vapor Quick Look-up Table (July 2024). Where no VRSL listed on Vapor Quick Look-up Table, VRSL calculated using USEPA's VISL calculator.
µg/m^3 = micrograms per cubic meter
VRSL = Vapor Risk Screening Level (July 2024 U.S.EPA Regional Screening Levels) or using USEPA's VISL Calculator
[B] = Benezene detected in the Trip Blank (2410571-08A) and Laboratory Blank (2410571-09A) resulting in the font shaded grey (similiar to other non detects)
Laboratory Statement: Benzene was detected in the Laboratory Blank due to the presence of Benzene in the Solvent.
-- = No sample collected for SS-4 (October 2024) as the sampling media detached and could not be retrieved.
Laboratory analyzed the passive media following modified method EPA TO-17.
Font shaded grey indicates results are non detect and below the laboratory detection limit.
Sub-slab (SS) sample # corresponds to Test Port (TP) # (SS-1 collected from TP-1).
Xylene, total = m,p,o-Xylene (mix), if one compounds is reported > than the detection limit the total reporting result is shown without a "<" symbol.
* Trip Blank placed on a tripod near TP-8.

Table 2 - Vapor Mitigation System Pressure Field Extension Readings
Lakeview Technology Academy, Kenosha, WI

	North Loop/South Loop					East Loop/West Loop							
	TP-1	North Loop Riser	TP-2	TP-3	South Loop Riser	TP-4	TP-5	West Loop Riser	TP-6	TP-7	TP-8	East Loop Riser	Conformance with WDNR RR-800
Date/Time	in. wc	in. wc	in. wc	in. wc	in. wc	in. wc	in. wc	in. wc	in. wc	in. wc	in. wc	in. wc	
PASSIVE PRESSURE READINGS (SYSTEM OFF)													
10/23/24	0.008	0.000	0.011	0.005	0.000	0.004	0.003	0.000	0.005	-0.003[1]	0.015	0.000	--
11/12/24	0.009	0.000	0.017	0.007	0.000	0.005	0.008	0.000	0.000	0.004	0.012	0.000	--
PRESSURE FIELD EXTENSION (PFE) READINGS ACROSS THE MONITORED FOOTPRINT OF THE BUILDING (SYSTEM ON)													
10/24/24	0.085	0.3*	0.276	0.026	1.1*	0.036	0.029	0.586	0.039	0.026	0.168	0.501	**YES**
11/12/24	0.075	0.3*	0.22	0.038	0.6*	0.037	0.026	0.5*	0.032	0.024	0.165	0.5*	**YES**

Notes:

in. wc = Inches of water column

PFE = Pressure Field Extension

* = Pressure reading from the fixed U-tube Manometer

Readings collected during normal building operating conditions, per general conformance with Interstate Technology & Regulatory Council (ITRC)

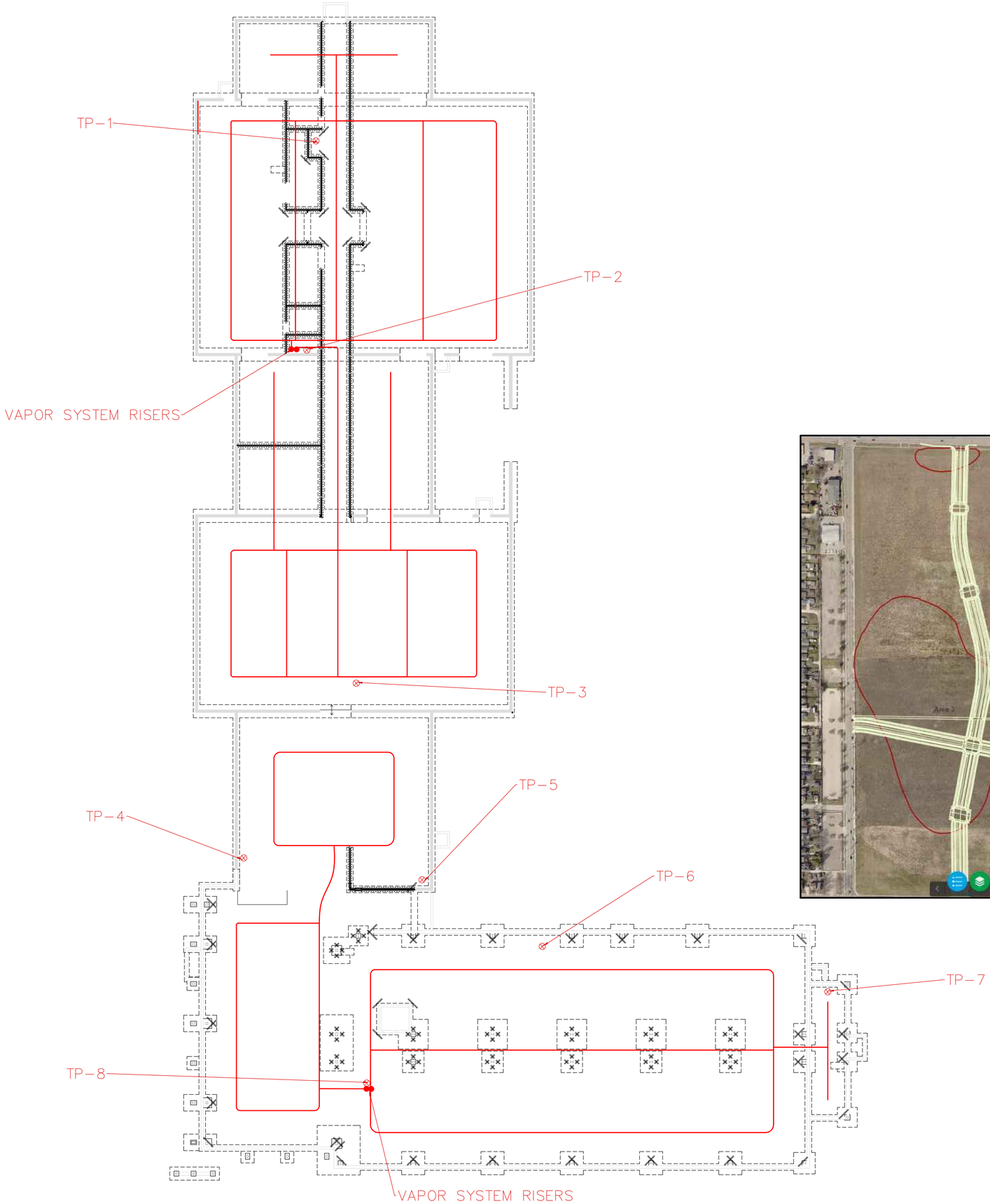
[1]TP-7 modified cap installed after initial reading collected 10/23/24

South Mitigation Fan Speed adjsuted from 6 ot 5 prior to PFE readings collected 11/12/24.

Pressure Field Monitoring Device: Dwyer 475-000-FM (range 0 to 1.000 in w.c.)

Mitigation System Fans: Fantech Model Rn4EC-3

Figures



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0 13 26 52 Feet

1:156

REFERENCES:

1. UTILITY DRAWING DATED 09/12/2023 PROVIDED BY NIELSEN, MADSEN & BARBER AND TITLED "2023.0027.02 - LAKEVIEW TECH CIVIL CAD BACKGROUND 9-12-2023.DWG".
2. CURRENT DRAWING IS TO BE USED FOR VAPOR MITIGATION SYSTEM REFERENCE ONLY. REFER TO PIERRE ENGINEERS, INC. DRAWING SET FOR PROJECT NO. 193.23.032 AND DATED 9/12/2023, OR SUBSEQUENT REVISIONS.

KEY:

VAPOR MITIGATION SYSTEM - PERFORATED PIPE

TP-1 TEST PORT (TP-#)

AECOM

PROJECT

Lakeview Technology Academy
Kenosha, Wisconsin

CLIENT

Kenosha Unified School District
3600 52nd Street
Kenosha, WI 53144

REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60716343

SHEET TITLE

VAPOR MITIGATION SYSTEM-SITE LAYOUT

SHEET NUMBER

1

Project Management Initials: Designer: CAK Checked: DSH Approved: _____

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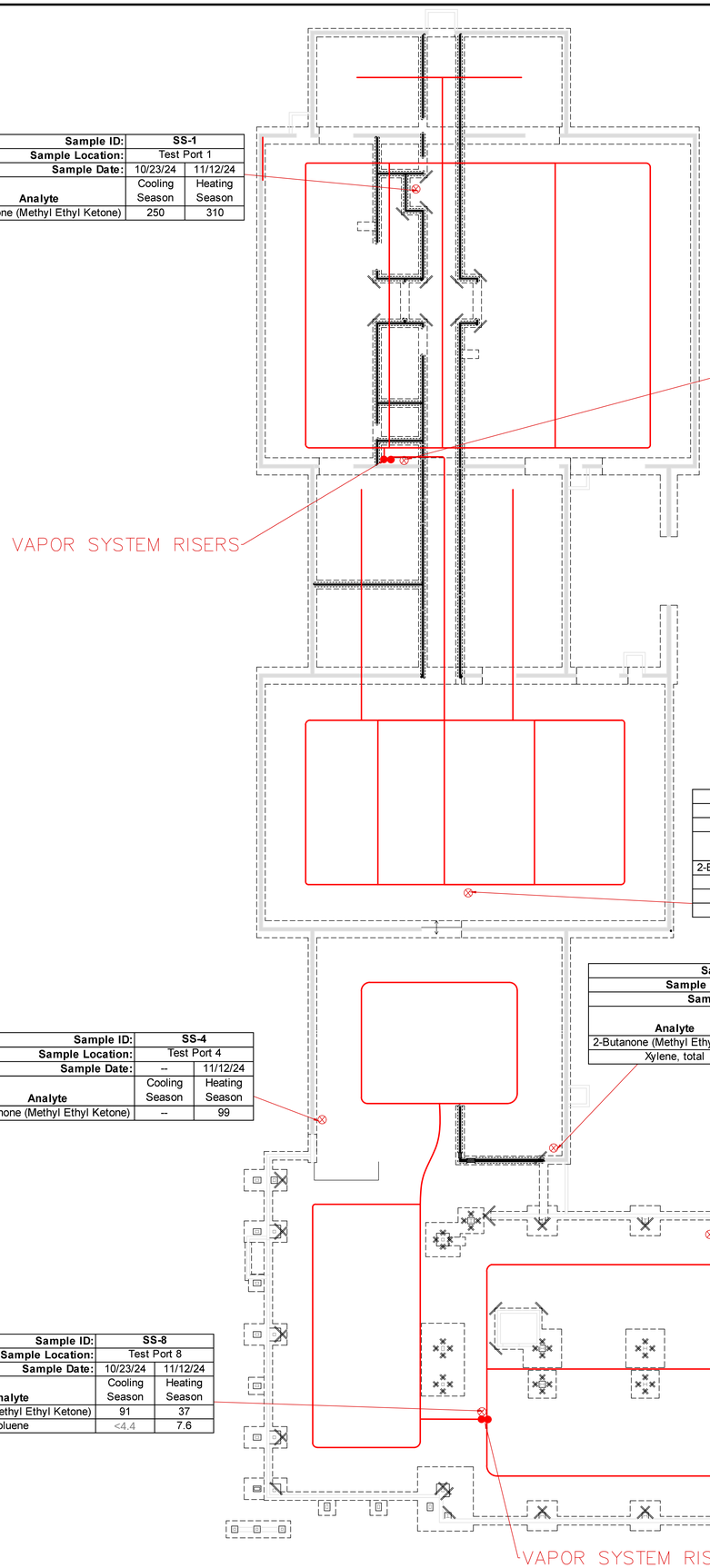

Sample ID:	SS-1	
Sample Location:	Test Port 1	
Sample Date:	10/23/24	11/12/24
Analyte	Cooling Season	Heating Season
2-Butanone (Methyl Ethyl Ketone)	250	310

Sample ID:	SS-2	
Sample Location:	Test Port 2	
Sample Date:	10/23/24	11/12/24
Analyte	Cooling Season	Heating Season
2-Butanone (Methyl Ethyl Ketone)	72	26

Sample ID:	SS-3	
Sample Location:	Test Port 3	
Sample Date:	10/22/24	11/12/24
Analyte	Cooling Season	Heating Season
2-Butanone (Methyl Ethyl Ketone)	<18	32
Xylene, total	<6.0	4.6
Toluene	11	<3.3
Trichloroethene (TCE)	8.1	<4.2

Sample ID:	SS-4	
Sample Location:	Test Port 4	
Sample Date:	--	11/12/24
Analyte	Cooling Season	Heating Season
2-Butanone (Methyl Ethyl Ketone)	--	99

Sample ID:	SS-5	
Sample Location:	Test Port 5	
Sample Date:	10/23/24	11/12/24
Analyte	Cooling Season	Heating Season
2-Butanone (Methyl Ethyl Ketone)	64	56
Xylene, total	<6.0	2.0

Sample ID:	SS-6	
Sample Location:	Test Port 6	
Sample Date:	10/23/24	11/12/24
Analyte	Cooling Season	Heating Season
2-Butanone (Methyl Ethyl Ketone)	34	38
Ethyl Benzene	3.4	<2.1
Xylene, total	19.6	4.1
Toluene	<4.4	5.2

Sample ID:	SS-7	
Sample Location:	Test Port 7	
Sample Date:	10/23/24	11/12/24
Analyte	Cooling Season	Heating Season
2-Butanone (Methyl Ethyl Ketone)	19	<23
Ethyl Benzene	<3.1	3.4
Xylene, total	<6.0	12.7
1,3,5-Trimethylbenzene	2.2	<1.4
1,2,4-Trimethylbenzene	3.8	<1.2

Sample ID:	SS-8	
Sample Location:	Test Port 8	
Sample Date:	10/23/24	11/12/24
Analyte	Cooling Season	Heating Season
2-Butanone (Methyl Ethyl Ketone)	91	37
Toluene	<4.4	7.6

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0 13 26 52 Feet

1:156

REFERENCES:

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KEY:

VAPOR MITIGATION SYSTEM - PERFORATED PIPE

TP-1 TEST PORT (TP-#)

NOTES:

1. PASSIVE SAMPLERS DEPLOYED ON OCTOBER 15, 2024 (RETRIEVED ON EITHER OCTOBER 22 OR 23, 2024) AND ON NOVEMBER 5, 2024 (RETRIEVED ON NOVEMBER 12, 2024.
2. RESULTS COMPARED TO WDNR PUBLICATION: RR-0136 WISCONSIN DEPARTMENT OF NATURAL RESOURCES GUIDANCE: WISCONSIN VAPOR QUICK LOOK-UP TABLE (JULY 2024). WHERE NO VRSL IS LISTED ON THE VAPOR QUICK LOOK-UP TABLE, VRSL CALCULATED USING USEPA'S VISL CALCULATOR."
3. RESULTS ARE REPORTING IN MICROGRAMS PER CUBIC METER ($\mu g/m^3$)
4. SS-4 = NO SAMPLE COLLECTED IN OCTOBER, MEDIA DETACHED AND COULD NOT BE RETRIEVED.
5. XYLENE,TOTAL= M,P,O-XYLENE (MIX)
6. VRSL = VAPOR RISK SCREENING LEVEL

Analyte	VRSL (µg/m3)
2-Butanone (Methyl Ethyl Ketone)	170,000
Ethyl Benzene	370
Xylene, total	3,500
Toluene	170,000
Trichloroethene (TCE)	70
1,3,5-Trimethylbenzene	2,100
1,2,4-Trimethylbenzene	2,100

7. --- = NO STANDARD LISTED

AECOM

PROJECT

Lakeview Technology Academy
Kenosha, Wisconsin

CLIENT

Kenosha Unified School District
3600 52nd Street
Kenosha, WI 53144

REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60716343

SHEET TITLE

SUB-SLAB VAPOR DETECTION RESULTS- OCTOBER (COOLING SEASON) & NOVEMBER (WARMING SEASON) 2024

SHEET NUMBER

2

Project Management Initials: Designer: CAK Checked: DSH Approved: ____

Filename: \\NA.AECOMNET.COM\LFS\AMER\MILWAUKEE-USMWK1\DCS\PROJECTS\ENV\60716343_KUSD_VI_SYS_DSN\900_CAD_GIS\VAPOR MITIGATION SYSTEM\VI SPEC_20241031_CONSTRUCTION 2.DWG
Last saved by: KULINSKIC Last Plotted: 2024-11-26

Appendix A

Vapor Mitigation System Construction Documentation Report for Lakeview Technology Academy (submitted under separate cover)

Appendix B

U.S. EPA Vapor Intrusion Screening Level Calculations for Compounds not Listed on WDNR Vapor Quick Look p Table

Default VISL Results

Variable	Value
Exposure Scenario	Resident
Temperature for Groundwater Vapor Concentration C	25
ED_{res} (exposure duration) years	26
TR (target risk) unitless	1E-05
THQ (target hazard quotient) unitless	1
LT (lifetime) years	70
EF_{res} (exposure frequency) days/year	350
ED_{0-2} (mutagenic exposure duration first phase) years	2
ED_{2-6} (mutagenic exposure duration second phase) years	4
ED_{6-16} (mutagenic exposure duration third phase) years	10
ED_{16-26} (mutagenic exposure duration fourth phase) years	10
EF_{0-2} (mutagenic exposure frequency first phase) days/year	350
EF_{2-6} (mutagenic exposure frequency second phase) days/year	350
EF_{6-16} (mutagenic exposure frequency third phase) days/year	350
EF_{16-26} (mutagenic exposure frequency fourth phase) days/year	350
ET_{res} (exposure time) hours/day	24
ET_{0-2} (mutagenic exposure time first phase) hours/day	24
ET_{2-6} (mutagenic exposure time second phase) hours/day	24
ET_{6-16} (mutagenic exposure time third phase) hours/day	24
ET_{16-26} (mutagenic exposure time fourth phase) hours/day	24
AF_{gw} (Attenuation Factor Groundwater) unitless	0.001
AF_{ss} (Attenuation Factor Sub-Slab) unitless	0.03

Resident Vapor Intrusion Screening Levels (VISL)

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; U = user provided; G = see RSL User's Guide Section 5; CA = cancer; NC = noncancer.

Chemical	CAS Number	Does the chemical meet the definition for volatility? (HLC>1E-5 or VP>1)	Does the chemical have inhalation toxicity data? (IUR and/or RfC)	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Soil Source? ($C_{vp} > C_{i,a}$,Target?)	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Groundwater Source? ($C_{hc} > C_{i,a}$,Target?)	Target Indoor Air Concentration (TCR=1E-05 or THQ=1) MIN($C_{ia,c}$,$C_{ia,nc}$) (µg/m³)	Toxicity Basis	Target Sub-Slab and Near-source Soil Gas Concentration (TCR=1E-05 or THQ=1) C_{sg},Target (µg/m³)	Target Groundwater Concentration (TCR=1E-05 or THQ=1) C_{gw},Target (µg/L)
Methyl Ethyl Ketone (2-Butanone)	78-93-3	Yes	Yes	Yes	Yes	5.21E+03	NC	1.74E+05	2.24E+06
Toluene	108-88-3	Yes	Yes	Yes	Yes	5.21E+03	NC	1.74E+05	1.92E+04
Trimethylbenzene, 1,2,4-	95-63-6	Yes	Yes	Yes	Yes	6.26E+01	NC	2.09E+03	2.48E+02
Trimethylbenzene, 1,3,5-	108-67-8	Yes	Yes	Yes	Yes	6.26E+01	NC	2.09E+03	1.75E+02

Is Target Groundwater Concentration < MCL? (C_{gw} < MCL?)	Pure Phase Vapor Concentration C_{vp}\ (25 ℃)\ (µg/m³)	Maximum Groundwater Vapor Concentration C_{hc}\ (µg/m³)	Temperature for Maximum Groundwater Vapor Concentration (℃)	Lower Explosive Limit LEL (% by volume)	LEL Ref	IUR (ug/m³)$^{-1}$	IUR Ref	RfC (mg/m³)	RfC Ref	Mutagenic Indicator	Carcinogenic VISL TCR=1E-05 $C_{ia,c}$ (µg/m³)	Noncarcinogenic VISL THQ=1 $C_{ia,nc}$ (µg/m³)
--	3.51E+08	5.19E+08	25	1.40	CRC	-		5.00E+00	I	No	-	5.21E+03
No (1000)	1.41E+08	1.43E+08	25	1.10	CRC	-		5.00E+00	I	No	-	5.21E+03
--	1.36E+07	1.44E+07	25	0.90	CRC	-		6.00E-02	I	No	-	6.26E+01
--	1.60E+07	1.73E+07	25	1.00	CRC	-		6.00E-02	I	No	-	6.26E+01

Chemical Properties

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Chemical	CAS Number	Does the chemical meet the definition for volatility? (HLC>1E-5 or VP>1)	Does the chemical have inhalation toxicity data? (IUR and/or RfC)	MW	MW Ref	Vapor Pressure VP (mm Hg)	VP Ref	S (mg/L)	S Ref	MCL (ug/L)
Methyl Ethyl Ketone (2-Butanone)	78-93-3	Yes	Yes	72.108	PHYSPROP	9.06E+01	PHYSPROP	2.23E+05	PHYSPROP	-
Toluene	108-88-3	Yes	Yes	92.142	PHYSPROP	2.84E+01	PHYSPROP	5.26E+02	PHYSPROP	1000
Trimethylbenzene, 1,2,4-	95-63-6	Yes	Yes	120.2	PHYSPROP	2.10E+00	PHYSPROP	5.70E+01	PHYSPROP	-
Trimethylbenzene, 1,3,5-	108-67-8	Yes	Yes	120.2	PHYSPROP	2.48E+00	PHYSPROP	4.82E+01	PHYSPROP	-

HLC (atm-m^3/mole)	Henry's Law Constant (unitless)	H` and HLC Ref	Henry's Law Constant Used in Calcs (unitless)	Normal Boiling Point BP (K)	BP Ref	Critical Temperature T_c\ (K)	T_c\ Ref	Enthalpy of vaporization at the normal boiling point $\Delta H_{v,b}$\ (cal/mol)	$\Delta H_{v,b}$\ Ref	Lower Explosive Limit LEL (% by volume)	LEL Ref
5.69E-05	2.33E-03	PHYSPROP	2.33E-03	352.65	PHYSPROP	5.37E+02	CRC	7.48E+03	CRC	1.4	CRC
6.64E-03	2.71E-01	PHYSPROP	2.71E-01	383.75	PHYSPROP	5.92E+02	CRC	7.93E+03	CRC	1.1	CRC
6.16E-03	2.52E-01	PHYSPROP	2.52E-01	442.45	PHYSPROP	6.49E+02	CRC	9.37E+03	TOXNET	0.9	CRC
8.77E-03	3.59E-01	PHYSPROP	3.59E-01	437.85	PHYSPROP	6.37E+02	CRC	9.32E+03	TOXNET	1	CRC

Appendix C

Laboratory Analytical Reports (October and November 2024)

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11/6/2024
Mr. Tory Schultz
AECOM
1555 North RiverCenter Drive
Suite 214
Milwaukee WI 53212

Project Name: KUSD VI - Lakeview Tech
Project #: 60716343
Workorder #: 2410571R1

Dear Mr. Tory Schultz

The following report includes the data for the above referenced project for sample(s) received on 10/24/2024 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by Passive S.E. WMS are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Jade White at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Jade White

Project Manager

eurofins | Air Toxics

WORK ORDER #: 2410571R1

Work Order Summary

CLIENT:	Mr. Tory Schultz AECOM 1555 North RiverCenter Drive Suite 214 Milwaukee, WI 53212	**BILL TO:**	Accounts Payable Austin (non-Federal) AECOM PO Box 203970 Austin, TX 78720
PHONE:	(414)-831-4100	**P.O. #**	1679869
FAX:	(414)-831-4101	**PROJECT #**	60716343 KUSD VI - Lakeview Tech
DATE RECEIVED:	10/24/2024	**CONTACT:**	Jade White
DATE COMPLETED:	10/25/2024		
DATE REISSUED:	11/05/2024		

FRACTION #	NAME	TEST
01A	SS-1	Passive S.E. WMS
02A	SS-2	Passive S.E. WMS
03A	SS-3	Passive S.E. WMS
04A	SS-5	Passive S.E. WMS
05A	SS-6	Passive S.E. WMS
06A	SS-7	Passive S.E. WMS
07A	SS-8	Passive S.E. WMS
08A	Trip Blank	Passive S.E. WMS
09A	Lab Blank	Passive S.E. WMS
10A	CCV	Passive S.E. WMS
11A	LCS	Passive S.E. WMS
11AA	LCSD	Passive S.E. WMS

CERTIFIED BY: Heidi Hayes DATE: 11/06/24

Technical Director

Cert. No.: AZ Licensure-AZ0775, FL NELAP-E87680, LA NELAP–02089, MN NELAP-2703122, NH NELAP–209223-B, NJ NELAP-CA016, NY NELAP-11291, TX NELAP-T104704434, UT NELAP-CA009332023-16, VA NELAP-12695, WA NELAP-C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program) CA300005-20
Eurofins Environment Testing Northern California, LLC certifies that the test results contained in this report meet all requirements of the 2016 TNI Standard.

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000

LABORATORY NARRATIVE
WMS Passive SE by Mod EPA TO-17
AECOM
Workorder# 2410571R1

Eight WMS-LU samples were received on October 24, 2024. The laboratory analyzed the charcoal sorbent bed of the passive sampler following modified method EPA TO-17. The VOCs were chemically extracted using carbon disulfide and an aliquot of the extract was injected into a GC/MS for identification and quantification of volatile organic compounds (VOCs).

The mass of each target compound adsorbed by the sampler was converted to units of concentration using the sample deployment time and the sampling rate for each VOC. If sampling rates were calculated by the lab or the manufacturer, the concentration result has been flagged as an estimated value. Results are not corrected for desorption efficiency.

Please note that 1,1,2,2-Tetrachloroethane (1,1,2,2-PCA) can degrade into Trichloroethene (TCE) during storage on the charcoal-based sorbent used in the WMS device. Samples containing 1,1,2,2-PCA may yield reduced concentrations of 1,1,2,2-PCA and elevated concentrations of TCE.

The reference method used for this procedure is EPA TO-17, which describes the collection of VOCs in ambient air using sorbents and analysis by GC/MS. Because TO-17 describes active sample collection using a pump and thermal desorption as the preparation step, several modifications are required. Modifications to TO-17 are listed in the table below:

Requirement	***TO-17***	***ATL Modifications***
Sample Collection	Pump pulls measured air volume through sorbent tube	VOCs in air adsorbed onto sorbent bed passively through diffusion
Sample Preparation	Thermal extraction	Solvent extraction
Sorbent tube conditioning	Condition newly packed tubes prior to use	Charcoal-based sorbent is a single use media and conditioning is conducted by vendor.
Instrumentation	Thermal desorption introduction system	Liquid injection introduction system
Internal Standard	Gas-phase internal standard introduced on the tube or focusing trap during analysis	Liquid-phase internal standard introduced on the tube at the time of extraction
Media and sample storage	<4 deg C, 30 days	Media shelf life is determined by vendor; sample hold-time is 6 months for the RAD130 and WMS. Sample preservation requirements are storage in a cool, solvent-free refrigerator and optional use of ice during shipping.
Internal Standard Recovery	+/-40% of daily CCV area	-50% to +100% of daily CCV area

Receiving Notes

There were no receiving discrepancies.

The work order was reissued on 11/6/24 to correct identification of the project name due to laboratory transcription error.

Analytical Notes

To calculate ug/m3 concentrations in the Lab Blank, a sampling duration of 11612 minutes was applied.

Benzene was detected in the Laboratory Blank due to presence of Benzene in the Solvent. It is not possible to re-extract the associated samples. Associated results are "B" flagged.

Due to laboratory error, Chloromethane was not spiked for the LCS and LCSD.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the reporting limit.
UJ- Non-detected compound associated with low bias in the CCV
N - The identification is based on presumptive evidence.
C - Estimated concentration due to calculated sampling rate
CN - See case narrative explanation.

File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
VOC BY PASSIVE SAMPLER - GC/MS

Client Sample ID: SS-1

Lab ID#: 2410571R1-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
2-Butanone (Methyl Ethyl Ketone)	0.10	18	1.4	250
Benzene	0.20	24	0.22 B	27 B

Client Sample ID: SS-2

Lab ID#: 2410571R1-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
2-Butanone (Methyl Ethyl Ketone)	0.10	18	0.40	72
Benzene	0.20	24	0.22 B	27 B

Client Sample ID: SS-3

Lab ID#: 2410571R1-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Benzene	0.20	24	0.22 B	26 B
Trichloroethene	0.050	4.9	0.082	8.1
Toluene	0.050	4.3	0.13	11

Client Sample ID: SS-5

Lab ID#: 2410571R1-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
2-Butanone (Methyl Ethyl Ketone)	0.10	18	0.37	64
Benzene	0.20	24	0.22 B	26 B

Client Sample ID: SS-6

Lab ID#: 2410571R1-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
2-Butanone (Methyl Ethyl Ketone)	0.10	18	0.19	34
Benzene	0.20	24	0.22 B	26 B
Ethyl Benzene	0.050	3.1	0.055	3.4

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Summary of Detected Compounds
VOC BY PASSIVE SAMPLER - GC/MS

Client Sample ID: SS-6

Lab ID#: 2410571R1-05A

m,p-Xylene	0.050	3.1	0.26	16
o-Xylene	0.050	2.9	0.061	3.6

Client Sample ID: SS-7

Lab ID#: 2410571R1-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
2-Butanone (Methyl Ethyl Ketone)	0.10	18	0.10	19
Benzene	0.20	24	0.21 B	25 B
1,3,5-Trimethylbenzene	0.050	2.1	0.053	2.2
1,2,4-Trimethylbenzene	0.050	1.9	0.099	3.8

Client Sample ID: SS-8

Lab ID#: 2410571R1-07A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
2-Butanone (Methyl Ethyl Ketone)	0.10	18	0.51	91
Benzene	0.20	24	0.22 B	27 B

Client Sample ID: Trip Blank

Lab ID#: 2410571R1-08A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Benzene	0.20	24	0.23 B	28 B

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Client Sample ID: SS-1

Lab ID#: 2410571R1-01A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**c102407sim**	**Date of Collection: 10/23/24 12:00:00 P**
Dil. Factor:	**1.00**	**Date of Analysis: 10/24/24 02:32 PM**
		Date of Extraction: 10/24/24

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Chloromethane	0.20	44	Not Detected	Not Detected
Vinyl Chloride	0.20	42	Not Detected	Not Detected
1,1-Dichloroethene	0.20	38	Not Detected	Not Detected
Methyl tert-butyl ether	0.050	8.2	Not Detected	Not Detected
trans-1,2-Dichloroethene	0.10	16	Not Detected	Not Detected
Hexane	0.20	35	Not Detected	Not Detected
1,1-Dichloroethane	0.050	8.4	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	18	1.4	250
cis-1,2-Dichloroethene	0.050	6.8	Not Detected	Not Detected
Chloroform	0.050	6.7	Not Detected	Not Detected
Cyclohexane	0.050	6.6	Not Detected	Not Detected
1,1,1-Trichloroethane	0.050	8.7	Not Detected	Not Detected
Carbon Tetrachloride	0.050	7.4	Not Detected	Not Detected
Benzene	0.20	24	0.22 B	27 B
1,2-Dichloroethane	0.050	5.8	Not Detected	Not Detected
Heptane	0.050	6.2	Not Detected	Not Detected
Trichloroethene	0.050	5.0	Not Detected	Not Detected
4-Methyl-2-pentanone	0.10	10	Not Detected	Not Detected
Toluene	0.050	4.4	Not Detected	Not Detected
1,1,2-Trichloroethane	0.050	5.0	Not Detected	Not Detected
Tetrachloroethene	0.050	3.4	Not Detected	Not Detected
Chlorobenzene	0.050	3.6	Not Detected	Not Detected
Ethyl Benzene	0.050	3.1	Not Detected	Not Detected
m,p-Xylene	0.050	3.1	Not Detected	Not Detected
o-Xylene	0.050	2.9	Not Detected	Not Detected
Styrene	0.050	2.9	Not Detected	Not Detected
1,1,2,2-Tetrachloroethane	0.050	2.9	Not Detected	Not Detected
Propylbenzene	0.050	2.3	Not Detected	Not Detected
1,3,5-Trimethylbenzene	0.050	2.1	Not Detected	Not Detected
1,2,4-Trimethylbenzene	0.050	1.9	Not Detected	Not Detected
1,3-Dichlorobenzene	0.050	1.8	Not Detected	Not Detected
1,4-Dichlorobenzene	0.050	1.7	Not Detected	Not Detected
1,2-Dichlorobenzene	0.050	1.6	Not Detected	Not Detected
Naphthalene	0.050	2.9	Not Detected	Not Detected

B = Analyte present in laboratory blank greater than reporting limit.

Temperature = 77.0F , duration time = 11465 minutes.
Container Type: WMS-LU

Surrogates	%Recovery	Method Limits

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Client Sample ID: SS-1

Lab ID#: 2410571R1-01A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**c102407sim**	**Date of Collection: 10/23/24 12:00:00 P**
Dil. Factor:	**1.00**	**Date of Analysis: 10/24/24 02:32 PM**
		Date of Extraction: 10/24/24

Surrogates	**%Recovery**	**Method Limits**
Toluene-d8	100	70-130

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Client Sample ID: SS-2

Lab ID#: 2410571R1-02A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**c102408sim**	**Date of Collection: 10/23/24 11:25:00 A**
Dil. Factor:	**1.00**	**Date of Analysis: 10/24/24 03:01 PM**
		Date of Extraction: 10/24/24

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Chloromethane	0.20	44	Not Detected	Not Detected
Vinyl Chloride	0.20	42	Not Detected	Not Detected
1,1-Dichloroethene	0.20	38	Not Detected	Not Detected
Methyl tert-butyl ether	0.050	8.2	Not Detected	Not Detected
trans-1,2-Dichloroethene	0.10	16	Not Detected	Not Detected
Hexane	0.20	35	Not Detected	Not Detected
1,1-Dichloroethane	0.050	8.4	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	18	0.40	72
cis-1,2-Dichloroethene	0.050	6.8	Not Detected	Not Detected
Chloroform	0.050	6.7	Not Detected	Not Detected
Cyclohexane	0.050	6.6	Not Detected	Not Detected
1,1,1-Trichloroethane	0.050	8.7	Not Detected	Not Detected
Carbon Tetrachloride	0.050	7.4	Not Detected	Not Detected
Benzene	0.20	24	0.22 B	27 B
1,2-Dichloroethane	0.050	5.8	Not Detected	Not Detected
Heptane	0.050	6.2	Not Detected	Not Detected
Trichloroethene	0.050	5.0	Not Detected	Not Detected
4-Methyl-2-pentanone	0.10	10	Not Detected	Not Detected
Toluene	0.050	4.4	Not Detected	Not Detected
1,1,2-Trichloroethane	0.050	5.0	Not Detected	Not Detected
Tetrachloroethene	0.050	3.4	Not Detected	Not Detected
Chlorobenzene	0.050	3.6	Not Detected	Not Detected
Ethyl Benzene	0.050	3.1	Not Detected	Not Detected
m,p-Xylene	0.050	3.1	Not Detected	Not Detected
o-Xylene	0.050	2.9	Not Detected	Not Detected
Styrene	0.050	2.9	Not Detected	Not Detected
1,1,2,2-Tetrachloroethane	0.050	2.9	Not Detected	Not Detected
Propylbenzene	0.050	2.3	Not Detected	Not Detected
1,3,5-Trimethylbenzene	0.050	2.1	Not Detected	Not Detected
1,2,4-Trimethylbenzene	0.050	1.9	Not Detected	Not Detected
1,3-Dichlorobenzene	0.050	1.8	Not Detected	Not Detected
1,4-Dichlorobenzene	0.050	1.7	Not Detected	Not Detected
1,2-Dichlorobenzene	0.050	1.6	Not Detected	Not Detected
Naphthalene	0.050	2.9	Not Detected	Not Detected

B = Analyte present in laboratory blank greater than reporting limit.

Temperature = 77.0F , duration time = 11455 minutes.
Container Type: WMS-LU

Surrogates	%Recovery	Method Limits

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Client Sample ID: SS-2

Lab ID#: 2410571R1-02A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**c102408sim**	**Date of Collection: 10/23/24 11:25:00 A**
Dil. Factor:	**1.00**	**Date of Analysis: 10/24/24 03:01 PM**
		Date of Extraction: 10/24/24

Surrogates	**%Recovery**	**Method Limits**
Toluene-d8	100	70-130

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Client Sample ID: SS-3

Lab ID#: 2410571R1-03A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**c102409sim**	**Date of Collection: 10/22/24 12:20:00 P**
Dil. Factor:	**1.00**	**Date of Analysis: 10/24/24 03:29 PM**
		Date of Extraction: 10/24/24

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Chloromethane	0.20	43	Not Detected	Not Detected
Vinyl Chloride	0.20	42	Not Detected	Not Detected
1,1-Dichloroethene	0.20	38	Not Detected	Not Detected
Methyl tert-butyl ether	0.050	8.2	Not Detected	Not Detected
trans-1,2-Dichloroethene	0.10	16	Not Detected	Not Detected
Hexane	0.20	35	Not Detected	Not Detected
1,1-Dichloroethane	0.050	8.4	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	18	Not Detected	Not Detected
cis-1,2-Dichloroethene	0.050	6.8	Not Detected	Not Detected
Chloroform	0.050	6.7	Not Detected	Not Detected
Cyclohexane	0.050	6.6	Not Detected	Not Detected
1,1,1-Trichloroethane	0.050	8.7	Not Detected	Not Detected
Carbon Tetrachloride	0.050	7.4	Not Detected	Not Detected
Benzene	0.20	24	0.22 B	26 B
1,2-Dichloroethane	0.050	5.8	Not Detected	Not Detected
Heptane	0.050	6.2	Not Detected	Not Detected
Trichloroethene	0.050	4.9	0.082	8.1
4-Methyl-2-pentanone	0.10	10	Not Detected	Not Detected
Toluene	0.050	4.3	0.13	11
1,1,2-Trichloroethane	0.050	5.0	Not Detected	Not Detected
Tetrachloroethene	0.050	3.3	Not Detected	Not Detected
Chlorobenzene	0.050	3.6	Not Detected	Not Detected
Ethyl Benzene	0.050	3.1	Not Detected	Not Detected
m,p-Xylene	0.050	3.1	Not Detected	Not Detected
o-Xylene	0.050	2.9	Not Detected	Not Detected
Styrene	0.050	2.9	Not Detected	Not Detected
1,1,2,2-Tetrachloroethane	0.050	2.9	Not Detected	Not Detected
Propylbenzene	0.050	2.3	Not Detected	Not Detected
1,3,5-Trimethylbenzene	0.050	2.1	Not Detected	Not Detected
1,2,4-Trimethylbenzene	0.050	1.9	Not Detected	Not Detected
1,3-Dichlorobenzene	0.050	1.8	Not Detected	Not Detected
1,4-Dichlorobenzene	0.050	1.7	Not Detected	Not Detected
1,2-Dichlorobenzene	0.050	1.6	Not Detected	Not Detected
Naphthalene	0.050	2.9	Not Detected	Not Detected

B = Analyte present in laboratory blank greater than reporting limit.

Temperature = 77.0F , duration time = 11500 minutes.
Container Type: WMS-LU

Surrogates	%Recovery	Method Limits

eurofins | Air Toxics

Client Sample ID: SS-3

Lab ID#: 2410571R1-03A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**c102409sim**	**Date of Collection: 10/22/24 12:20:00 P**
Dil. Factor:	**1.00**	**Date of Analysis: 10/24/24 03:29 PM**
		Date of Extraction: 10/24/24

Surrogates	**%Recovery**	**Method Limits**
Toluene-d8	100	70-130

eurofins | Air Toxics

Client Sample ID: SS-5

Lab ID#: 2410571R1-04A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**c102410sim**	**Date of Collection: 10/23/24 11:17:00 A**
Dil. Factor:	**1.00**	**Date of Analysis: 10/24/24 03:58 PM**
		Date of Extraction: 10/24/24

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Chloromethane	0.20	43	Not Detected	Not Detected
Vinyl Chloride	0.20	42	Not Detected	Not Detected
1,1-Dichloroethene	0.20	37	Not Detected	Not Detected
Methyl tert-butyl ether	0.050	8.1	Not Detected	Not Detected
trans-1,2-Dichloroethene	0.10	16	Not Detected	Not Detected
Hexane	0.20	34	Not Detected	Not Detected
1,1-Dichloroethane	0.050	8.3	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	18	0.37	64
cis-1,2-Dichloroethene	0.050	6.7	Not Detected	Not Detected
Chloroform	0.050	6.6	Not Detected	Not Detected
Cyclohexane	0.050	6.5	Not Detected	Not Detected
1,1,1-Trichloroethane	0.050	8.6	Not Detected	Not Detected
Carbon Tetrachloride	0.050	7.3	Not Detected	Not Detected
Benzene	0.20	24	0.22 B	26 B
1,2-Dichloroethane	0.050	5.7	Not Detected	Not Detected
Heptane	0.050	6.2	Not Detected	Not Detected
Trichloroethene	0.050	4.9	Not Detected	Not Detected
4-Methyl-2-pentanone	0.10	10	Not Detected	Not Detected
Toluene	0.050	4.3	Not Detected	Not Detected
1,1,2-Trichloroethane	0.050	4.9	Not Detected	Not Detected
Tetrachloroethene	0.050	3.3	Not Detected	Not Detected
Chlorobenzene	0.050	3.6	Not Detected	Not Detected
Ethyl Benzene	0.050	3.1	Not Detected	Not Detected
m,p-Xylene	0.050	3.1	Not Detected	Not Detected
o-Xylene	0.050	2.9	Not Detected	Not Detected
Styrene	0.050	2.9	Not Detected	Not Detected
1,1,2,2-Tetrachloroethane	0.050	2.9	Not Detected	Not Detected
Propylbenzene	0.050	2.3	Not Detected	Not Detected
1,3,5-Trimethylbenzene	0.050	2.0	Not Detected	Not Detected
1,2,4-Trimethylbenzene	0.050	1.9	Not Detected	Not Detected
1,3-Dichlorobenzene	0.050	1.8	Not Detected	Not Detected
1,4-Dichlorobenzene	0.050	1.7	Not Detected	Not Detected
1,2-Dichlorobenzene	0.050	1.6	Not Detected	Not Detected
Naphthalene	0.050	2.9	Not Detected	Not Detected

B = Analyte present in laboratory blank greater than reporting limit.

Temperature = 77.0F , duration time = 11612 minutes.
Container Type: WMS-LU

Surrogates	%Recovery	Method Limits

eurofins | Air Toxics

Client Sample ID: SS-5

Lab ID#: 2410571R1-04A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**c102410sim**	**Date of Collection: 10/23/24 11:17:00 A**
Dil. Factor:	**1.00**	**Date of Analysis: 10/24/24 03:58 PM**
		Date of Extraction: 10/24/24

Surrogates	**%Recovery**	**Method Limits**
Toluene-d8	100	70-130

eurofins | Air Toxics

Client Sample ID: SS-6

Lab ID#: 2410571R1-05A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**c102411sim**	**Date of Collection: 10/23/24 11:00:00 A**
Dil. Factor:	**1.00**	**Date of Analysis: 10/24/24 04:27 PM**
		Date of Extraction: 10/24/24

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Chloromethane	0.20	44	Not Detected	Not Detected
Vinyl Chloride	0.20	43	Not Detected	Not Detected
1,1-Dichloroethene	0.20	38	Not Detected	Not Detected
Methyl tert-butyl ether	0.050	8.3	Not Detected	Not Detected
trans-1,2-Dichloroethene	0.10	16	Not Detected	Not Detected
Hexane	0.20	35	Not Detected	Not Detected
1,1-Dichloroethane	0.050	8.4	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	18	0.19	34
cis-1,2-Dichloroethene	0.050	6.8	Not Detected	Not Detected
Chloroform	0.050	6.8	Not Detected	Not Detected
Cyclohexane	0.050	6.6	Not Detected	Not Detected
1,1,1-Trichloroethane	0.050	8.8	Not Detected	Not Detected
Carbon Tetrachloride	0.050	7.4	Not Detected	Not Detected
Benzene	0.20	24	0.22 B	26 B
1,2-Dichloroethane	0.050	5.8	Not Detected	Not Detected
Heptane	0.050	6.3	Not Detected	Not Detected
Trichloroethene	0.050	5.0	Not Detected	Not Detected
4-Methyl-2-pentanone	0.10	10	Not Detected	Not Detected
Toluene	0.050	4.4	Not Detected	Not Detected
1,1,2-Trichloroethane	0.050	5.0	Not Detected	Not Detected
Tetrachloroethene	0.050	3.4	Not Detected	Not Detected
Chlorobenzene	0.050	3.6	Not Detected	Not Detected
Ethyl Benzene	0.050	3.1	0.055	3.4
m,p-Xylene	0.050	3.1	0.26	16
o-Xylene	0.050	2.9	0.061	3.6
Styrene	0.050	2.9	Not Detected	Not Detected
1,1,2,2-Tetrachloroethane	0.050	2.9	Not Detected	Not Detected
Propylbenzene	0.050	2.3	Not Detected	Not Detected
1,3,5-Trimethylbenzene	0.050	2.1	Not Detected	Not Detected
1,2,4-Trimethylbenzene	0.050	1.9	Not Detected	Not Detected
1,3-Dichlorobenzene	0.050	1.8	Not Detected	Not Detected
1,4-Dichlorobenzene	0.050	1.8	Not Detected	Not Detected
1,2-Dichlorobenzene	0.050	1.6	Not Detected	Not Detected
Naphthalene	0.050	2.9	Not Detected	Not Detected

B = Analyte present in laboratory blank greater than reporting limit.

Temperature = 77.0F , duration time = 11395 minutes.
Container Type: WMS-LU

Surrogates	%Recovery	Method Limits

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Client Sample ID: SS-6

Lab ID#: 2410571R1-05A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**c102411sim**	**Date of Collection: 10/23/24 11:00:00 A**
Dil. Factor:	**1.00**	**Date of Analysis: 10/24/24 04:27 PM**
		Date of Extraction: 10/24/24

Surrogates	**%Recovery**	**Method Limits**
Toluene-d8	100	70-130

eurofins | Air Toxics

Client Sample ID: SS-7

Lab ID#: 2410571R1-06A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**c102412sim**	**Date of Collection: 10/23/24 11:38:00 A**
Dil. Factor:	**1.00**	**Date of Analysis: 10/24/24 04:55 PM**
		Date of Extraction: 10/24/24

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Chloromethane	0.20	44	Not Detected	Not Detected
Vinyl Chloride	0.20	43	Not Detected	Not Detected
1,1-Dichloroethene	0.20	38	Not Detected	Not Detected
Methyl tert-butyl ether	0.050	8.3	Not Detected	Not Detected
trans-1,2-Dichloroethene	0.10	16	Not Detected	Not Detected
Hexane	0.20	35	Not Detected	Not Detected
1,1-Dichloroethane	0.050	8.4	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	18	0.10	19
cis-1,2-Dichloroethene	0.050	6.8	Not Detected	Not Detected
Chloroform	0.050	6.7	Not Detected	Not Detected
Cyclohexane	0.050	6.6	Not Detected	Not Detected
1,1,1-Trichloroethane	0.050	8.8	Not Detected	Not Detected
Carbon Tetrachloride	0.050	7.4	Not Detected	Not Detected
Benzene	0.20	24	0.21 B	25 B
1,2-Dichloroethane	0.050	5.8	Not Detected	Not Detected
Heptane	0.050	6.2	Not Detected	Not Detected
Trichloroethene	0.050	5.0	Not Detected	Not Detected
4-Methyl-2-pentanone	0.10	10	Not Detected	Not Detected
Toluene	0.050	4.4	Not Detected	Not Detected
1,1,2-Trichloroethane	0.050	5.0	Not Detected	Not Detected
Tetrachloroethene	0.050	3.4	Not Detected	Not Detected
Chlorobenzene	0.050	3.6	Not Detected	Not Detected
Ethyl Benzene	0.050	3.1	Not Detected	Not Detected
m,p-Xylene	0.050	3.1	Not Detected	Not Detected
o-Xylene	0.050	2.9	Not Detected	Not Detected
Styrene	0.050	2.9	Not Detected	Not Detected
1,1,2,2-Tetrachloroethane	0.050	2.9	Not Detected	Not Detected
Propylbenzene	0.050	2.3	Not Detected	Not Detected
1,3,5-Trimethylbenzene	0.050	2.1	0.053	2.2
1,2,4-Trimethylbenzene	0.050	1.9	0.099	3.8
1,3-Dichlorobenzene	0.050	1.8	Not Detected	Not Detected
1,4-Dichlorobenzene	0.050	1.8	Not Detected	Not Detected
1,2-Dichlorobenzene	0.050	1.6	Not Detected	Not Detected
Naphthalene	0.050	2.9	Not Detected	Not Detected

B = Analyte present in laboratory blank greater than reporting limit.

Temperature = 77.0F , duration time = 11413 minutes.
Container Type: WMS-LU

Surrogates	%Recovery	Method Limits

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Client Sample ID: SS-7

Lab ID#: 2410571R1-06A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**c102412sim**	**Date of Collection: 10/23/24 11:38:00 A**
Dil. Factor:	**1.00**	**Date of Analysis: 10/24/24 04:55 PM**
		Date of Extraction: 10/24/24

Surrogates	**%Recovery**	**Method Limits**
Toluene-d8	100	70-130

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Client Sample ID: SS-8

Lab ID#: 2410571R1-07A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**c102413sim**	**Date of Collection: 10/23/24 11:20:00 A**
Dil. Factor:	**1.00**	**Date of Analysis: 10/24/24 05:24 PM**
		Date of Extraction: 10/24/24

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Chloromethane	0.20	44	Not Detected	Not Detected
Vinyl Chloride	0.20	42	Not Detected	Not Detected
1,1-Dichloroethene	0.20	38	Not Detected	Not Detected
Methyl tert-butyl ether	0.050	8.2	Not Detected	Not Detected
trans-1,2-Dichloroethene	0.10	16	Not Detected	Not Detected
Hexane	0.20	35	Not Detected	Not Detected
1,1-Dichloroethane	0.050	8.4	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	18	0.51	91
cis-1,2-Dichloroethene	0.050	6.8	Not Detected	Not Detected
Chloroform	0.050	6.7	Not Detected	Not Detected
Cyclohexane	0.050	6.6	Not Detected	Not Detected
1,1,1-Trichloroethane	0.050	8.7	Not Detected	Not Detected
Carbon Tetrachloride	0.050	7.4	Not Detected	Not Detected
Benzene	0.20	24	0.22 B	27 B
1,2-Dichloroethane	0.050	5.8	Not Detected	Not Detected
Heptane	0.050	6.2	Not Detected	Not Detected
Trichloroethene	0.050	5.0	Not Detected	Not Detected
4-Methyl-2-pentanone	0.10	10	Not Detected	Not Detected
Toluene	0.050	4.4	Not Detected	Not Detected
1,1,2-Trichloroethane	0.050	5.0	Not Detected	Not Detected
Tetrachloroethene	0.050	3.4	Not Detected	Not Detected
Chlorobenzene	0.050	3.6	Not Detected	Not Detected
Ethyl Benzene	0.050	3.1	Not Detected	Not Detected
m,p-Xylene	0.050	3.1	Not Detected	Not Detected
o-Xylene	0.050	2.9	Not Detected	Not Detected
Styrene	0.050	2.9	Not Detected	Not Detected
1,1,2,2-Tetrachloroethane	0.050	2.9	Not Detected	Not Detected
Propylbenzene	0.050	2.3	Not Detected	Not Detected
1,3,5-Trimethylbenzene	0.050	2.1	Not Detected	Not Detected
1,2,4-Trimethylbenzene	0.050	1.9	Not Detected	Not Detected
1,3-Dichlorobenzene	0.050	1.8	Not Detected	Not Detected
1,4-Dichlorobenzene	0.050	1.7	Not Detected	Not Detected
1,2-Dichlorobenzene	0.050	1.6	Not Detected	Not Detected
Naphthalene	0.050	2.9	Not Detected	Not Detected

B = Analyte present in laboratory blank greater than reporting limit.

Temperature = 77.0F , duration time = 11465 minutes.
Container Type: WMS-LU

Surrogates	%Recovery	Method Limits

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Client Sample ID: SS-8

Lab ID#: 2410571R1-07A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**c102413sim**	**Date of Collection: 10/23/24 11:20:00 A**
Dil. Factor:	**1.00**	**Date of Analysis: 10/24/24 05:24 PM**
		Date of Extraction: 10/24/24

Surrogates	**%Recovery**	**Method Limits**
Toluene-d8	100	70-130

eurofins | Air Toxics

Client Sample ID: Trip Blank

Lab ID#: 2410571R1-08A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**c102406sim**	**Date of Collection: 10/22/24 12:00:00 P**
Dil. Factor:	**1.00**	**Date of Analysis: 10/24/24 02:04 PM**
		Date of Extraction: 10/24/24

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Chloromethane	0.20	44	Not Detected	Not Detected
Vinyl Chloride	0.20	43	Not Detected	Not Detected
1,1-Dichloroethene	0.20	38	Not Detected	Not Detected
Methyl tert-butyl ether	0.050	8.2	Not Detected	Not Detected
trans-1,2-Dichloroethene	0.10	16	Not Detected	Not Detected
Hexane	0.20	35	Not Detected	Not Detected
1,1-Dichloroethane	0.050	8.4	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	18	Not Detected	Not Detected
cis-1,2-Dichloroethene	0.050	6.8	Not Detected	Not Detected
Chloroform	0.050	6.7	Not Detected	Not Detected
Cyclohexane	0.050	6.6	Not Detected	Not Detected
1,1,1-Trichloroethane	0.050	8.7	Not Detected	Not Detected
Carbon Tetrachloride	0.050	7.4	Not Detected	Not Detected
Benzene	0.20	24	0.23 B	28 B
1,2-Dichloroethane	0.050	5.8	Not Detected	Not Detected
Heptane	0.050	6.2	Not Detected	Not Detected
Trichloroethene	0.050	5.0	Not Detected	Not Detected
4-Methyl-2-pentanone	0.10	10	Not Detected	Not Detected
Toluene	0.050	4.4	Not Detected	Not Detected
1,1,2-Trichloroethane	0.050	5.0	Not Detected	Not Detected
Tetrachloroethene	0.050	3.4	Not Detected	Not Detected
Chlorobenzene	0.050	3.6	Not Detected	Not Detected
Ethyl Benzene	0.050	3.1	Not Detected	Not Detected
m,p-Xylene	0.050	3.1	Not Detected	Not Detected
o-Xylene	0.050	2.9	Not Detected	Not Detected
Styrene	0.050	2.9	Not Detected	Not Detected
1,1,2,2-Tetrachloroethane	0.050	2.9	Not Detected	Not Detected
Propylbenzene	0.050	2.3	Not Detected	Not Detected
1,3,5-Trimethylbenzene	0.050	2.1	Not Detected	Not Detected
1,2,4-Trimethylbenzene	0.050	1.9	Not Detected	Not Detected
1,3-Dichlorobenzene	0.050	1.8	Not Detected	Not Detected
1,4-Dichlorobenzene	0.050	1.7	Not Detected	Not Detected
1,2-Dichlorobenzene	0.050	1.6	Not Detected	Not Detected
Naphthalene	0.050	2.9	Not Detected	Not Detected

B = Analyte present in laboratory blank greater than reporting limit.

Temperature = 77.0F , duration time = 11435 minutes.
Container Type: WMS-LU

Surrogates	%Recovery	Method Limits

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Client Sample ID: Trip Blank

Lab ID#: 2410571R1-08A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**c102406sim**	**Date of Collection: 10/22/24 12:00:00 P**
Dil. Factor:	**1.00**	**Date of Analysis: 10/24/24 02:04 PM**
		Date of Extraction: 10/24/24

Surrogates	**%Recovery**	**Method Limits**
Toluene-d8	99	70-130

eurofins | Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 2410571R1-09A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**c102405sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/24/24 01:31 PM**	
		Date of Extraction: 10/24/24	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Chloromethane	0.20	43	Not Detected	Not Detected
Vinyl Chloride	0.20	42	Not Detected	Not Detected
1,1-Dichloroethene	0.20	37	Not Detected	Not Detected
Methyl tert-butyl ether	0.050	8.1	Not Detected	Not Detected
trans-1,2-Dichloroethene	0.10	16	Not Detected	Not Detected
Hexane	0.20	34	Not Detected	Not Detected
1,1-Dichloroethane	0.050	8.3	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	18	Not Detected	Not Detected
cis-1,2-Dichloroethene	0.050	6.7	Not Detected	Not Detected
Chloroform	0.050	6.6	Not Detected	Not Detected
Cyclohexane	0.050	6.5	Not Detected	Not Detected
1,1,1-Trichloroethane	0.050	8.6	Not Detected	Not Detected
Carbon Tetrachloride	0.050	7.3	Not Detected	Not Detected
Benzene	0.20	24	0.23	27
1,2-Dichloroethane	0.050	5.7	Not Detected	Not Detected
Heptane	0.050	6.2	Not Detected	Not Detected
Trichloroethene	0.050	4.9	Not Detected	Not Detected
4-Methyl-2-pentanone	0.10	10	Not Detected	Not Detected
Toluene	0.050	4.3	Not Detected	Not Detected
1,1,2-Trichloroethane	0.050	4.9	Not Detected	Not Detected
Tetrachloroethene	0.050	3.3	Not Detected	Not Detected
Chlorobenzene	0.050	3.6	Not Detected	Not Detected
Ethyl Benzene	0.050	3.1	Not Detected	Not Detected
m,p-Xylene	0.050	3.1	Not Detected	Not Detected
o-Xylene	0.050	2.9	Not Detected	Not Detected
Styrene	0.050	2.9	Not Detected	Not Detected
1,1,2,2-Tetrachloroethane	0.050	2.9	Not Detected	Not Detected
Propylbenzene	0.050	2.3	Not Detected	Not Detected
1,3,5-Trimethylbenzene	0.050	2.0	Not Detected	Not Detected
1,2,4-Trimethylbenzene	0.050	1.9	Not Detected	Not Detected
1,3-Dichlorobenzene	0.050	1.8	Not Detected	Not Detected
1,4-Dichlorobenzene	0.050	1.7	Not Detected	Not Detected
1,2-Dichlorobenzene	0.050	1.6	Not Detected	Not Detected
Naphthalene	0.050	2.9	Not Detected	Not Detected

Temperature = 77.0F , duration time = 11612 minutes.

Container Type: WMS-LU

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2410571R1-09A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	c102405sim	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 10/24/24 01:31 PM
		Date of Extraction: 10/24/24

eurofins | Air Toxics

Client Sample ID: CCV

Lab ID#: 2410571R1-10A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**c102402sim**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 10/24/24 12:06 PM**
		Date of Extraction: NA

Compound	**%Recovery**
Chloromethane	65
Vinyl Chloride	83
1,1-Dichloroethene	110
Methyl tert-butyl ether	106
trans-1,2-Dichloroethene	108
Hexane	91
1,1-Dichloroethane	105
2-Butanone (Methyl Ethyl Ketone)	113
cis-1,2-Dichloroethene	109
Chloroform	113
Cyclohexane	100
1,1,1-Trichloroethane	109
Carbon Tetrachloride	108
Benzene	108
1,2-Dichloroethane	111
Heptane	101
Trichloroethene	103
4-Methyl-2-pentanone	105
Toluene	103
1,1,2-Trichloroethane	108
Tetrachloroethene	92
Chlorobenzene	106
Ethyl Benzene	103
m,p-Xylene	103
o-Xylene	103
Styrene	104
1,1,2,2-Tetrachloroethane	113
Propylbenzene	109
1,3,5-Trimethylbenzene	106
1,2,4-Trimethylbenzene	106
1,3-Dichlorobenzene	101
1,4-Dichlorobenzene	100
1,2-Dichlorobenzene	102
Naphthalene	108

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
Toluene-d8	102	70-130

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Client Sample ID: LCS

Lab ID#: 2410571R1-11A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**c102403sim**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 10/24/24 12:34 PM**
		Date of Extraction: 10/24/24

Compound	%Recovery	Method Limits
Chloromethane	Not Spiked	
Vinyl Chloride	92	50-140
1,1-Dichloroethene	111	70-130
Methyl tert-butyl ether	112	70-130
trans-1,2-Dichloroethene	110	70-130
Hexane	100	70-130
1,1-Dichloroethane	107	70-130
2-Butanone (Methyl Ethyl Ketone)	105	70-130
cis-1,2-Dichloroethene	108	70-130
Chloroform	114	70-130
Cyclohexane	109	70-130
1,1,1-Trichloroethane	114	70-130
Carbon Tetrachloride	113	70-130
Benzene	113	70-130
1,2-Dichloroethane	110	70-130
Heptane	112	70-130
Trichloroethene	114	70-130
4-Methyl-2-pentanone	106	70-130
Toluene	108	70-130
1,1,2-Trichloroethane	109	70-130
Tetrachloroethene	95	70-130
Chlorobenzene	102	70-130
Ethyl Benzene	111	70-130
m,p-Xylene	105	70-130
o-Xylene	102	70-130
Styrene	72	20-100
1,1,2,2-Tetrachloroethane	100	60-130
Propylbenzene	115	70-130
1,3,5-Trimethylbenzene	110	70-130
1,2,4-Trimethylbenzene	103	70-130
1,3-Dichlorobenzene	88	60-130
1,4-Dichlorobenzene	85	60-130
1,2-Dichlorobenzene	81	60-130
Naphthalene	27	5-80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130

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Client Sample ID: LCSD

Lab ID#: 2410571R1-11AA

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**c102404sim**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 10/24/24 01:03 PM**
		Date of Extraction: 10/24/24

Compound	%Recovery	Method Limits
Chloromethane	Not Spiked	
Vinyl Chloride	98	50-140
1,1-Dichloroethene	117	70-130
Methyl tert-butyl ether	114	70-130
trans-1,2-Dichloroethene	113	70-130
Hexane	102	70-130
1,1-Dichloroethane	110	70-130
2-Butanone (Methyl Ethyl Ketone)	108	70-130
cis-1,2-Dichloroethene	112	70-130
Chloroform	116	70-130
Cyclohexane	110	70-130
1,1,1-Trichloroethane	116	70-130
Carbon Tetrachloride	115	70-130
Benzene	114	70-130
1,2-Dichloroethane	112	70-130
Heptane	112	70-130
Trichloroethene	114	70-130
4-Methyl-2-pentanone	106	70-130
Toluene	107	70-130
1,1,2-Trichloroethane	109	70-130
Tetrachloroethene	94	70-130
Chlorobenzene	101	70-130
Ethyl Benzene	110	70-130
m,p-Xylene	106	70-130
o-Xylene	101	70-130
Styrene	72	20-100
1,1,2,2-Tetrachloroethane	100	60-130
Propylbenzene	115	70-130
1,3,5-Trimethylbenzene	111	70-130
1,2,4-Trimethylbenzene	104	70-130
1,3-Dichlorobenzene	88	60-130
1,4-Dichlorobenzene	87	60-130
1,2-Dichlorobenzene	81	60-130
Naphthalene	29	5-80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130

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Method : Passive SE GC/MS WMS

CAS Number	Compound	Rpt. Limit (ug)
74-87-3	Chloromethane	0.20
75-01-4	Vinyl Chloride	0.20
75-35-4	1,1-Dichloroethene	0.20
1634-04-4	Methyl tert-butyl ether	0.050
156-60-5	trans-1,2-Dichloroethene	0.10
110-54-3	Hexane	0.20
75-34-3	1,1-Dichloroethane	0.050
78-93-3	2-Butanone (Methyl Ethyl Ketone)	0.10
156-59-2	cis-1,2-Dichloroethene	0.050
67-66-3	Chloroform	0.050
110-82-7	Cyclohexane	0.050
71-55-6	1,1,1-Trichloroethane	0.050
56-23-5	Carbon Tetrachloride	0.050
71-43-2	Benzene	0.20
107-06-2	1,2-Dichloroethane	0.050
142-82-5	Heptane	0.050
79-01-6	Trichloroethene	0.050
108-10-1	4-Methyl-2-pentanone	0.10
108-88-3	Toluene	0.050
79-00-5	1,1,2-Trichloroethane	0.050
127-18-4	Tetrachloroethene	0.050
108-90-7	Chlorobenzene	0.050
100-41-4	Ethyl Benzene	0.050
108-38-3	m,p-Xylene	0.050
95-47-6	o-Xylene	0.050
100-42-5	Styrene	0.050
79-34-5	1,1,2,2-Tetrachloroethane	0.050
103-65-1	Propylbenzene	0.050
108-67-8	1,3,5-Trimethylbenzene	0.050
95-63-6	1,2,4-Trimethylbenzene	0.050
541-73-1	1,3-Dichlorobenzene	0.050
106-46-7	1,4-Dichlorobenzene	0.050
95-50-1	1,2-Dichlorobenzene	0.050
91-20-3	Naphthalene	0.050

	Surrogate	Method Limits
2037-26-5	Toluene-d8	70-130

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Analysis Request / Passive Sorbent Chain of Custody

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Eurofins Environment Testing Northern California, LLC
180 Blue Ravine Rd. Suite B, Folsom, CA 95630
Phone (800) 985-5955; Fax (916) 351-8279

Workorder #: TBD 2410571

page 1 of 1

Client: AECOM
Site Name: KUSD Lakeview Tech
Project Manager: Tony Schultz
Sampler: Laura Dykstra

Project Name: KUSD VI-Lakeview Tech
Project #: 60716343
PO#:

Turnaround Time (Specify Below)
Standard X 5-day | Rush _____ (Surcharges will apply, per availability)
Samples received after 3PM PST are considered to be received on the following workday.
Requested Date (mm/dd/yy): 10/28/24
OR Number of Days: 5-day

Reporting Units (Circle One): ppbv | µg/m³ | µg | ppmv | ng | mg/m³

Times are military unless am/pm is indicated

Lab ID	Field Sample Identification (Location)	Tube # / Sampler ID	Deployment Information Date	Deployment Information Time	Retrieval Information 2024 Date	Retrieval Information Time	Indoor/Outdoor Air	Soil Gas	Workplace Monitoring	(Other) ____	Temperature	Analysis Requested	Sample Comments:
	SS-1	1840	10/15/24	1255	10/23	1200		X					
	SS-2	1835		1230	10/23	1125		X					
	SS-3	1838		1240	10/22	1220		X					
	SS-5	1839		0945	10/23	1117		X					
	SS-6	1833		1305	10/23	1100		X					
	SS-7	1834		1325	10/23	1138		X					
	SS-8	1837		1215	10/23	1120		X					
	Trip Blank			1325	10/22	1200		X					unopened

Special Instructions/Notes: Reporting List: Full List VOC's *SS-4 Not collected*

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Laura Dykstra AECOM	10/23	1500	[signature] Eurofins	10/24/24	9:48
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

Lab Use Only

Shipper Name: Fedex | Custody Seals Intact? Yes No None | Temperature: N/A | Condition: Good

Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, of shipping of samples. D.O.T Hotline (800) 467-4922

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11/20/2024
Mr. Tory Schultz
AECOM
1555 North RiverCenter Drive
Suite 214
Milwaukee WI 53212

Project Name: KUSD VI - Lakeview Tech
Project #: 60716343
Workorder #: 2411358

Dear Mr. Tory Schultz

The following report includes the data for the above referenced project for sample(s) received on 11/13/2024 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by Passive S.E. WMS are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Jade White at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Jade White

Project Manager

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WORK ORDER #: 2411358

Work Order Summary

CLIENT:	Mr. Tory Schultz AECOM 1555 North RiverCenter Drive Suite 214 Milwaukee, WI 53212	**BILL TO:**	Accounts Payable Austin (non-Federal) AECOM PO Box 203970 Austin, TX 78720
PHONE:	(414)-831-4100	**P.O. #**	1679869
FAX:	(414)-831-4101	**PROJECT #**	60716343 KUSD VI - Lakeview Tech
DATE RECEIVED:	11/13/2024	**CONTACT:**	Jade White
DATE COMPLETED:	11/20/2024		

FRACTION #	NAME	TEST
01A	SS-7	Passive S.E. WMS
02A	SS-8	Passive S.E. WMS
03A	SS-6	Passive S.E. WMS
04A	SS-5	Passive S.E. WMS
05A	SS-4	Passive S.E. WMS
06A	SS-3	Passive S.E. WMS
07A	SS-2	Passive S.E. WMS
08A	Trip Blank	Passive S.E. WMS
09A	SS-1	Passive S.E. WMS
10A	Lab Blank	Passive S.E. WMS
11A	CCV	Passive S.E. WMS
12A	LCS	Passive S.E. WMS
12AA	LCSD	Passive S.E. WMS

CERTIFIED BY: Heidi Hayes DATE: 11/20/24

Technical Director

Cert. No.: AZ Licensure-AZ0775, FL NELAP-E87680, LA NELAP–02089, MN NELAP-2703122, NH NELAP–209223-B, NJ NELAP-CA016, NY NELAP-11291, TX NELAP-T104704434, UT NELAP-CA009332023-16, VA NELAP-12695, WA NELAP-C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program) CA300005-20
Eurofins Environment Testing Northern California, LLC certifies that the test results contained in this report meet all requirements of the 2016 TNI Standard.

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000

LABORATORY NARRATIVE
WMS Passive SE by Mod EPA TO-17
AECOM
Workorder# 2411358

Nine WMS-LU-V2 samples were received on November 13, 2024. The laboratory analyzed the charcoal sorbent bed of the passive sampler following modified method EPA TO-17. The VOCs were chemically extracted using carbon disulfide and an aliquot of the extract was injected into a GC/MS for identification and quantification of volatile organic compounds (VOCs).

The mass of each target compound adsorbed by the sampler was converted to units of concentration using the sample deployment time and the sampling rate for each VOC. If sampling rates were calculated by the lab or the manufacturer, the concentration result has been flagged as an estimated value. Results are not corrected for desorption efficiency.

Please note that 1,1,2,2-Tetrachloroethane (1,1,2,2-PCA) can degrade into Trichloroethene (TCE) during storage on the charcoal-based sorbent used in the WMS device. Samples containing 1,1,2,2-PCA may yield reduced concentrations of 1,1,2,2-PCA and elevated concentrations of TCE.

The reference method used for this procedure is EPA TO-17, which describes the collection of VOCs in ambient air using sorbents and analysis by GC/MS. Because TO-17 describes active sample collection using a pump and thermal desorption as the preparation step, several modifications are required. Modifications to TO-17 are listed in the table below:

Requirement	***TO-17***	***ATL Modifications***
Sample Collection	Pump pulls measured air volume through sorbent tube	VOCs in air adsorbed onto sorbent bed passively through diffusion
Sample Preparation	Thermal extraction	Solvent extraction
Sorbent tube conditioning	Condition newly packed tubes prior to use	Charcoal-based sorbent is a single use media and conditioning is conducted by vendor.
Instrumentation	Thermal desorption introduction system	Liquid injection introduction system
Internal Standard	Gas-phase internal standard introduced on the tube or focusing trap during analysis	Liquid-phase internal standard introduced on the tube at the time of extraction
Media and sample storage	<4 deg C, 30 days	Media shelf life is determined by vendor; sample hold-time is 6 months for the RAD130 and WMS. Sample preservation requirements are storage in a cool, solvent-free refrigerator and optional use of ice during shipping.
Internal Standard Recovery	+/-40% of daily CCV area	-50% to +100% of daily CCV area

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

To calculate ug/m3 concentrations in the Lab Blank, a sampling duration of 10099 minutes was applied. The assumed temperature used for the uptake rate is listed on the data page. If the field temperatures were provided, the rate was adjusted in the same manner as the field samples.

All Quality Control Limit exceedances and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the reporting limit.
UJ- Non-detected compound associated with low bias in the CCV
N - The identification is based on presumptive evidence.
C - Estimated concentration due to calculated sampling rate
CN - See case narrative explanation.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
VOC BY PASSIVE SAMPLER - GC/MS

Client Sample ID: SS-7

Lab ID#: 2411358-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethyl Benzene	0.050	2.1	0.082	3.4
m,p-Xylene	0.050	1.8	0.28	10
o-Xylene	0.050	2.2	0.062	2.7

Client Sample ID: SS-8

Lab ID#: 2411358-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
2-Butanone (Methyl Ethyl Ketone)	0.10	23	0.16	37
Toluene	0.050	3.3	0.11	7.6

Client Sample ID: SS-6

Lab ID#: 2411358-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
2-Butanone (Methyl Ethyl Ketone)	0.10	23	0.16	38
Toluene	0.050	3.3	0.079	5.2
m,p-Xylene	0.050	1.8	0.053	1.9

Client Sample ID: SS-5

Lab ID#: 2411358-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
2-Butanone (Methyl Ethyl Ketone)	0.10	23	0.24	56
m,p-Xylene	0.050	1.8	0.054	2.0

Client Sample ID: SS-4

Lab ID#: 2411358-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
2-Butanone (Methyl Ethyl Ketone)	0.10	23	0.43	99

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Summary of Detected Compounds
VOC BY PASSIVE SAMPLER - GC/MS

Client Sample ID: SS-3

Lab ID#: 2411358-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
2-Butanone (Methyl Ethyl Ketone)	0.10	23	0.14	32
m,p-Xylene	0.050	1.8	0.064	2.4

Client Sample ID: SS-2

Lab ID#: 2411358-07A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
2-Butanone (Methyl Ethyl Ketone)	0.10	23	0.11	26

Client Sample ID: Trip Blank

Lab ID#: 2411358-08A

No Detections Were Found.

Client Sample ID: SS-1

Lab ID#: 2411358-09A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
2-Butanone (Methyl Ethyl Ketone)	0.10	23	1.3	310

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Client Sample ID: SS-7

Lab ID#: 2411358-01A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**18111820sim**	**Date of Collection: 11/12/24 8:10:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis: 11/18/24 04:49 PM**
		Date of Extraction: 11/18/24

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Chloromethane	0.20	180	Not Detected	Not Detected
Vinyl Chloride	0.20	140	Not Detected	Not Detected
1,1-Dichloroethene	0.20	74	Not Detected	Not Detected
Methyl tert-butyl ether	0.050	12	Not Detected	Not Detected
trans-1,2-Dichloroethene	0.10	25	Not Detected	Not Detected
Hexane	0.20	45	Not Detected	Not Detected
1,1-Dichloroethane	0.050	12	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	23	Not Detected	Not Detected
cis-1,2-Dichloroethene	0.050	7.8	Not Detected	Not Detected
Chloroform	0.050	9.6	Not Detected	Not Detected
Cyclohexane	0.050	7.1	Not Detected	Not Detected
1,1,1-Trichloroethane	0.050	12	Not Detected	Not Detected
Carbon Tetrachloride	0.050	9.9	Not Detected	Not Detected
Benzene	0.20	28	Not Detected	Not Detected
1,2-Dichloroethane	0.050	5.8	Not Detected	Not Detected
Heptane	0.050	6.1	Not Detected	Not Detected
Trichloroethene	0.050	4.1	Not Detected	Not Detected
4-Methyl-2-pentanone	0.10	9.9	Not Detected	Not Detected
Toluene	0.050	3.3	Not Detected	Not Detected
1,1,2-Trichloroethane	0.050	4.5	Not Detected	Not Detected
Tetrachloroethene	0.050	2.8	Not Detected	Not Detected
Chlorobenzene	0.050	2.8	Not Detected	Not Detected
Ethyl Benzene	0.050	2.1	0.082	3.4
m,p-Xylene	0.050	1.8	0.28	10
o-Xylene	0.050	2.2	0.062	2.7
Styrene	0.050	1.8	Not Detected	Not Detected
1,1,2,2-Tetrachloroethane	0.050	2.1	Not Detected	Not Detected
Propylbenzene	0.050	1.3	Not Detected	Not Detected
1,3,5-Trimethylbenzene	0.050	1.4	Not Detected	Not Detected
1,2,4-Trimethylbenzene	0.050	1.2	Not Detected	Not Detected
1,3-Dichlorobenzene	0.050	1.2	Not Detected	Not Detected
1,4-Dichlorobenzene	0.050	1.2	Not Detected	Not Detected
1,2-Dichlorobenzene	0.050	1.0	Not Detected	Not Detected
Naphthalene	0.050	1.6	Not Detected	Not Detected

Temperature = 58.0F , duration time = 10059 minutes.

Container Type: WMS-LU-V2

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130

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Client Sample ID: SS-7

Lab ID#: 2411358-01A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	18111820sim	Date of Collection: 11/12/24 8:10:00 AM
Dil. Factor:	1.00	Date of Analysis: 11/18/24 04:49 PM
		Date of Extraction: 11/18/24

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Client Sample ID: SS-8

Lab ID#: 2411358-02A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**18111821sim**	**Date of Collection: 11/12/24 8:28:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis: 11/18/24 05:16 PM**
		Date of Extraction: 11/18/24

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Chloromethane	0.20	180	Not Detected	Not Detected
Vinyl Chloride	0.20	140	Not Detected	Not Detected
1,1-Dichloroethene	0.20	74	Not Detected	Not Detected
Methyl tert-butyl ether	0.050	12	Not Detected	Not Detected
trans-1,2-Dichloroethene	0.10	25	Not Detected	Not Detected
Hexane	0.20	45	Not Detected	Not Detected
1,1-Dichloroethane	0.050	12	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	23	0.16	37
cis-1,2-Dichloroethene	0.050	7.8	Not Detected	Not Detected
Chloroform	0.050	9.6	Not Detected	Not Detected
Cyclohexane	0.050	7.1	Not Detected	Not Detected
1,1,1-Trichloroethane	0.050	12	Not Detected	Not Detected
Carbon Tetrachloride	0.050	9.9	Not Detected	Not Detected
Benzene	0.20	28	Not Detected	Not Detected
1,2-Dichloroethane	0.050	5.8	Not Detected	Not Detected
Heptane	0.050	6.1	Not Detected	Not Detected
Trichloroethene	0.050	4.1	Not Detected	Not Detected
4-Methyl-2-pentanone	0.10	9.9	Not Detected	Not Detected
Toluene	0.050	3.3	0.11	7.6
1,1,2-Trichloroethane	0.050	4.5	Not Detected	Not Detected
Tetrachloroethene	0.050	2.8	Not Detected	Not Detected
Chlorobenzene	0.050	2.8	Not Detected	Not Detected
Ethyl Benzene	0.050	2.1	Not Detected	Not Detected
m,p-Xylene	0.050	1.8	Not Detected	Not Detected
o-Xylene	0.050	2.2	Not Detected	Not Detected
Styrene	0.050	1.8	Not Detected	Not Detected
1,1,2,2-Tetrachloroethane	0.050	2.1	Not Detected	Not Detected
Propylbenzene	0.050	1.3	Not Detected	Not Detected
1,3,5-Trimethylbenzene	0.050	1.4	Not Detected	Not Detected
1,2,4-Trimethylbenzene	0.050	1.2	Not Detected	Not Detected
1,3-Dichlorobenzene	0.050	1.2	Not Detected	Not Detected
1,4-Dichlorobenzene	0.050	1.2	Not Detected	Not Detected
1,2-Dichlorobenzene	0.050	1.0	Not Detected	Not Detected
Naphthalene	0.050	1.6	Not Detected	Not Detected

Temperature = 58.0F , duration time = 10066 minutes.

Container Type: WMS-LU-V2

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130

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Client Sample ID: SS-8

Lab ID#: 2411358-02A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	18111821sim	Date of Collection: 11/12/24 8:28:00 AM
Dil. Factor:	1.00	Date of Analysis: 11/18/24 05:16 PM
		Date of Extraction: 11/18/24

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Client Sample ID: SS-6

Lab ID#: 2411358-03A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**18111822sim**	**Date of Collection: 11/12/24 8:18:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis: 11/18/24 05:43 PM**
		Date of Extraction: 11/18/24

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Chloromethane	0.20	180	Not Detected	Not Detected
Vinyl Chloride	0.20	140	Not Detected	Not Detected
1,1-Dichloroethene	0.20	74	Not Detected	Not Detected
Methyl tert-butyl ether	0.050	12	Not Detected	Not Detected
trans-1,2-Dichloroethene	0.10	26	Not Detected	Not Detected
Hexane	0.20	45	Not Detected	Not Detected
1,1-Dichloroethane	0.050	12	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	23	0.16	38
cis-1,2-Dichloroethene	0.050	7.8	Not Detected	Not Detected
Chloroform	0.050	9.6	Not Detected	Not Detected
Cyclohexane	0.050	7.1	Not Detected	Not Detected
1,1,1-Trichloroethane	0.050	12	Not Detected	Not Detected
Carbon Tetrachloride	0.050	10	Not Detected	Not Detected
Benzene	0.20	28	Not Detected	Not Detected
1,2-Dichloroethane	0.050	5.8	Not Detected	Not Detected
Heptane	0.050	6.2	Not Detected	Not Detected
Trichloroethene	0.050	4.2	Not Detected	Not Detected
4-Methyl-2-pentanone	0.10	10	Not Detected	Not Detected
Toluene	0.050	3.3	0.079	5.2
1,1,2-Trichloroethane	0.050	4.5	Not Detected	Not Detected
Tetrachloroethene	0.050	2.8	Not Detected	Not Detected
Chlorobenzene	0.050	2.8	Not Detected	Not Detected
Ethyl Benzene	0.050	2.1	Not Detected	Not Detected
m,p-Xylene	0.050	1.8	0.053	1.9
o-Xylene	0.050	2.2	Not Detected	Not Detected
Styrene	0.050	1.8	Not Detected	Not Detected
1,1,2,2-Tetrachloroethane	0.050	2.1	Not Detected	Not Detected
Propylbenzene	0.050	1.3	Not Detected	Not Detected
1,3,5-Trimethylbenzene	0.050	1.4	Not Detected	Not Detected
1,2,4-Trimethylbenzene	0.050	1.2	Not Detected	Not Detected
1,3-Dichlorobenzene	0.050	1.2	Not Detected	Not Detected
1,4-Dichlorobenzene	0.050	1.2	Not Detected	Not Detected
1,2-Dichlorobenzene	0.050	1.0	Not Detected	Not Detected
Naphthalene	0.050	1.7	Not Detected	Not Detected

Temperature = 58.0F , duration time = 10037 minutes.

Container Type: WMS-LU-V2

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130

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Client Sample ID: SS-6

Lab ID#: 2411358-03A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	18111822sim	Date of Collection: 11/12/24 8:18:00 AM
Dil. Factor:	1.00	Date of Analysis: 11/18/24 05:43 PM
		Date of Extraction: 11/18/24

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Client Sample ID: SS-5

Lab ID#: 2411358-04A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**18111823sim**	**Date of Collection: 11/12/24 8:31:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis: 11/18/24 06:10 PM**
		Date of Extraction: 11/18/24

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Chloromethane	0.20	180	Not Detected	Not Detected
Vinyl Chloride	0.20	140	Not Detected	Not Detected
1,1-Dichloroethene	0.20	74	Not Detected	Not Detected
Methyl tert-butyl ether	0.050	12	Not Detected	Not Detected
trans-1,2-Dichloroethene	0.10	26	Not Detected	Not Detected
Hexane	0.20	45	Not Detected	Not Detected
1,1-Dichloroethane	0.050	12	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	23	0.24	56
cis-1,2-Dichloroethene	0.050	7.8	Not Detected	Not Detected
Chloroform	0.050	9.6	Not Detected	Not Detected
Cyclohexane	0.050	7.1	Not Detected	Not Detected
1,1,1-Trichloroethane	0.050	12	Not Detected	Not Detected
Carbon Tetrachloride	0.050	10	Not Detected	Not Detected
Benzene	0.20	28	Not Detected	Not Detected
1,2-Dichloroethane	0.050	5.8	Not Detected	Not Detected
Heptane	0.050	6.1	Not Detected	Not Detected
Trichloroethene	0.050	4.1	Not Detected	Not Detected
4-Methyl-2-pentanone	0.10	10	Not Detected	Not Detected
Toluene	0.050	3.3	Not Detected	Not Detected
1,1,2-Trichloroethane	0.050	4.5	Not Detected	Not Detected
Tetrachloroethene	0.050	2.8	Not Detected	Not Detected
Chlorobenzene	0.050	2.8	Not Detected	Not Detected
Ethyl Benzene	0.050	2.1	Not Detected	Not Detected
m,p-Xylene	0.050	1.8	0.054	2.0
o-Xylene	0.050	2.2	Not Detected	Not Detected
Styrene	0.050	1.8	Not Detected	Not Detected
1,1,2,2-Tetrachloroethane	0.050	2.1	Not Detected	Not Detected
Propylbenzene	0.050	1.3	Not Detected	Not Detected
1,3,5-Trimethylbenzene	0.050	1.4	Not Detected	Not Detected
1,2,4-Trimethylbenzene	0.050	1.2	Not Detected	Not Detected
1,3-Dichlorobenzene	0.050	1.2	Not Detected	Not Detected
1,4-Dichlorobenzene	0.050	1.2	Not Detected	Not Detected
1,2-Dichlorobenzene	0.050	1.0	Not Detected	Not Detected
Naphthalene	0.050	1.6	Not Detected	Not Detected

Temperature = 58.0F , duration time = 10041 minutes.

Container Type: WMS-LU-V2

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130

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Client Sample ID: SS-5

Lab ID#: 2411358-04A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	18111823sim	Date of Collection: 11/12/24 8:31:00 AM
Dil. Factor:	1.00	Date of Analysis: 11/18/24 06:10 PM
		Date of Extraction: 11/18/24

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Client Sample ID: SS-4

Lab ID#: 2411358-05A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**18111824sim**	**Date of Collection: 11/12/24 8:33:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis: 11/18/24 06:36 PM**
		Date of Extraction: 11/18/24

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Chloromethane	0.20	180	Not Detected	Not Detected
Vinyl Chloride	0.20	140	Not Detected	Not Detected
1,1-Dichloroethene	0.20	74	Not Detected	Not Detected
Methyl tert-butyl ether	0.050	12	Not Detected	Not Detected
trans-1,2-Dichloroethene	0.10	26	Not Detected	Not Detected
Hexane	0.20	45	Not Detected	Not Detected
1,1-Dichloroethane	0.050	12	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	23	0.43	99
cis-1,2-Dichloroethene	0.050	7.8	Not Detected	Not Detected
Chloroform	0.050	9.6	Not Detected	Not Detected
Cyclohexane	0.050	7.1	Not Detected	Not Detected
1,1,1-Trichloroethane	0.050	12	Not Detected	Not Detected
Carbon Tetrachloride	0.050	10	Not Detected	Not Detected
Benzene	0.20	28	Not Detected	Not Detected
1,2-Dichloroethane	0.050	5.8	Not Detected	Not Detected
Heptane	0.050	6.2	Not Detected	Not Detected
Trichloroethene	0.050	4.2	Not Detected	Not Detected
4-Methyl-2-pentanone	0.10	10	Not Detected	Not Detected
Toluene	0.050	3.3	Not Detected	Not Detected
1,1,2-Trichloroethane	0.050	4.5	Not Detected	Not Detected
Tetrachloroethene	0.050	2.8	Not Detected	Not Detected
Chlorobenzene	0.050	2.8	Not Detected	Not Detected
Ethyl Benzene	0.050	2.1	Not Detected	Not Detected
m,p-Xylene	0.050	1.8	Not Detected	Not Detected
o-Xylene	0.050	2.2	Not Detected	Not Detected
Styrene	0.050	1.8	Not Detected	Not Detected
1,1,2,2-Tetrachloroethane	0.050	2.1	Not Detected	Not Detected
Propylbenzene	0.050	1.3	Not Detected	Not Detected
1,3,5-Trimethylbenzene	0.050	1.4	Not Detected	Not Detected
1,2,4-Trimethylbenzene	0.050	1.2	Not Detected	Not Detected
1,3-Dichlorobenzene	0.050	1.2	Not Detected	Not Detected
1,4-Dichlorobenzene	0.050	1.2	Not Detected	Not Detected
1,2-Dichlorobenzene	0.050	1.0	Not Detected	Not Detected
Naphthalene	0.050	1.7	Not Detected	Not Detected

Temperature = 58.0F , duration time = 10033 minutes.

Container Type: WMS-LU-V2

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130

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Client Sample ID: SS-4

Lab ID#: 2411358-05A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	18111824sim	Date of Collection: 11/12/24 8:33:00 AM
Dil. Factor:	1.00	Date of Analysis: 11/18/24 06:36 PM
		Date of Extraction: 11/18/24

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Client Sample ID: SS-3

Lab ID#: 2411358-06A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**18111825sim**	**Date of Collection: 11/12/24 8:43:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis: 11/18/24 07:03 PM**
		Date of Extraction: 11/18/24

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Chloromethane	0.20	180	Not Detected	Not Detected
Vinyl Chloride	0.20	140	Not Detected	Not Detected
1,1-Dichloroethene	0.20	74	Not Detected	Not Detected
Methyl tert-butyl ether	0.050	12	Not Detected	Not Detected
trans-1,2-Dichloroethene	0.10	26	Not Detected	Not Detected
Hexane	0.20	45	Not Detected	Not Detected
1,1-Dichloroethane	0.050	12	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	23	0.14	32
cis-1,2-Dichloroethene	0.050	7.8	Not Detected	Not Detected
Chloroform	0.050	9.6	Not Detected	Not Detected
Cyclohexane	0.050	7.1	Not Detected	Not Detected
1,1,1-Trichloroethane	0.050	12	Not Detected	Not Detected
Carbon Tetrachloride	0.050	10	Not Detected	Not Detected
Benzene	0.20	28	Not Detected	Not Detected
1,2-Dichloroethane	0.050	5.8	Not Detected	Not Detected
Heptane	0.050	6.1	Not Detected	Not Detected
Trichloroethene	0.050	4.2	Not Detected	Not Detected
4-Methyl-2-pentanone	0.10	10	Not Detected	Not Detected
Toluene	0.050	3.3	Not Detected	Not Detected
1,1,2-Trichloroethane	0.050	4.5	Not Detected	Not Detected
Tetrachloroethene	0.050	2.8	Not Detected	Not Detected
Chlorobenzene	0.050	2.8	Not Detected	Not Detected
Ethyl Benzene	0.050	2.1	Not Detected	Not Detected
m,p-Xylene	0.050	1.8	0.064	2.4
o-Xylene	0.050	2.2	Not Detected	Not Detected
Styrene	0.050	1.8	Not Detected	Not Detected
1,1,2,2-Tetrachloroethane	0.050	2.1	Not Detected	Not Detected
Propylbenzene	0.050	1.3	Not Detected	Not Detected
1,3,5-Trimethylbenzene	0.050	1.4	Not Detected	Not Detected
1,2,4-Trimethylbenzene	0.050	1.2	Not Detected	Not Detected
1,3-Dichlorobenzene	0.050	1.2	Not Detected	Not Detected
1,4-Dichlorobenzene	0.050	1.2	Not Detected	Not Detected
1,2-Dichlorobenzene	0.050	1.0	Not Detected	Not Detected
Naphthalene	0.050	1.7	Not Detected	Not Detected

Temperature = 58.0F , duration time = 10038 minutes.

Container Type: WMS-LU-V2

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130

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Client Sample ID: SS-3

Lab ID#: 2411358-06A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	18111825sim	Date of Collection: 11/12/24 8:43:00 AM
Dil. Factor:	1.00	Date of Analysis: 11/18/24 07:03 PM
		Date of Extraction: 11/18/24

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Client Sample ID: SS-2

Lab ID#: 2411358-07A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**18111826sim**	**Date of Collection: 11/12/24 8:35:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis: 11/18/24 07:30 PM**
		Date of Extraction: 11/18/24

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Chloromethane	0.20	180	Not Detected	Not Detected
Vinyl Chloride	0.20	140	Not Detected	Not Detected
1,1-Dichloroethene	0.20	74	Not Detected	Not Detected
Methyl tert-butyl ether	0.050	12	Not Detected	Not Detected
trans-1,2-Dichloroethene	0.10	26	Not Detected	Not Detected
Hexane	0.20	45	Not Detected	Not Detected
1,1-Dichloroethane	0.050	12	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	23	0.11	26
cis-1,2-Dichloroethene	0.050	7.8	Not Detected	Not Detected
Chloroform	0.050	9.6	Not Detected	Not Detected
Cyclohexane	0.050	7.1	Not Detected	Not Detected
1,1,1-Trichloroethane	0.050	12	Not Detected	Not Detected
Carbon Tetrachloride	0.050	10	Not Detected	Not Detected
Benzene	0.20	28	Not Detected	Not Detected
1,2-Dichloroethane	0.050	5.8	Not Detected	Not Detected
Heptane	0.050	6.2	Not Detected	Not Detected
Trichloroethene	0.050	4.2	Not Detected	Not Detected
4-Methyl-2-pentanone	0.10	10	Not Detected	Not Detected
Toluene	0.050	3.3	Not Detected	Not Detected
1,1,2-Trichloroethane	0.050	4.5	Not Detected	Not Detected
Tetrachloroethene	0.050	2.8	Not Detected	Not Detected
Chlorobenzene	0.050	2.8	Not Detected	Not Detected
Ethyl Benzene	0.050	2.1	Not Detected	Not Detected
m,p-Xylene	0.050	1.8	Not Detected	Not Detected
o-Xylene	0.050	2.2	Not Detected	Not Detected
Styrene	0.050	1.8	Not Detected	Not Detected
1,1,2,2-Tetrachloroethane	0.050	2.1	Not Detected	Not Detected
Propylbenzene	0.050	1.3	Not Detected	Not Detected
1,3,5-Trimethylbenzene	0.050	1.4	Not Detected	Not Detected
1,2,4-Trimethylbenzene	0.050	1.2	Not Detected	Not Detected
1,3-Dichlorobenzene	0.050	1.2	Not Detected	Not Detected
1,4-Dichlorobenzene	0.050	1.2	Not Detected	Not Detected
1,2-Dichlorobenzene	0.050	1.0	Not Detected	Not Detected
Naphthalene	0.050	1.7	Not Detected	Not Detected

Temperature = 58.0F , duration time = 10021 minutes.

Container Type: WMS-LU-V2

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130

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Client Sample ID: SS-2

Lab ID#: 2411358-07A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	18111826sim	Date of Collection: 11/12/24 8:35:00 AM
Dil. Factor:	1.00	Date of Analysis: 11/18/24 07:30 PM
		Date of Extraction: 11/18/24

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Client Sample ID: Trip Blank

Lab ID#: 2411358-08A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**18111827sim**	**Date of Collection: 11/12/24 8:48:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis: 11/18/24 07:56 PM**
		Date of Extraction: 11/18/24

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Chloromethane	0.20	180	Not Detected	Not Detected
Vinyl Chloride	0.20	140	Not Detected	Not Detected
1,1-Dichloroethene	0.20	73	Not Detected	Not Detected
Methyl tert-butyl ether	0.050	12	Not Detected	Not Detected
trans-1,2-Dichloroethene	0.10	25	Not Detected	Not Detected
Hexane	0.20	45	Not Detected	Not Detected
1,1-Dichloroethane	0.050	12	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	23	Not Detected	Not Detected
cis-1,2-Dichloroethene	0.050	7.7	Not Detected	Not Detected
Chloroform	0.050	9.5	Not Detected	Not Detected
Cyclohexane	0.050	7.1	Not Detected	Not Detected
1,1,1-Trichloroethane	0.050	12	Not Detected	Not Detected
Carbon Tetrachloride	0.050	9.9	Not Detected	Not Detected
Benzene	0.20	28	Not Detected	Not Detected
1,2-Dichloroethane	0.050	5.8	Not Detected	Not Detected
Heptane	0.050	6.1	Not Detected	Not Detected
Trichloroethene	0.050	4.1	Not Detected	Not Detected
4-Methyl-2-pentanone	0.10	9.9	Not Detected	Not Detected
Toluene	0.050	3.3	Not Detected	Not Detected
1,1,2-Trichloroethane	0.050	4.5	Not Detected	Not Detected
Tetrachloroethene	0.050	2.8	Not Detected	Not Detected
Chlorobenzene	0.050	2.8	Not Detected	Not Detected
Ethyl Benzene	0.050	2.1	Not Detected	Not Detected
m,p-Xylene	0.050	1.8	Not Detected	Not Detected
o-Xylene	0.050	2.2	Not Detected	Not Detected
Styrene	0.050	1.8	Not Detected	Not Detected
1,1,2,2-Tetrachloroethane	0.050	2.1	Not Detected	Not Detected
Propylbenzene	0.050	1.3	Not Detected	Not Detected
1,3,5-Trimethylbenzene	0.050	1.4	Not Detected	Not Detected
1,2,4-Trimethylbenzene	0.050	1.2	Not Detected	Not Detected
1,3-Dichlorobenzene	0.050	1.2	Not Detected	Not Detected
1,4-Dichlorobenzene	0.050	1.2	Not Detected	Not Detected
1,2-Dichlorobenzene	0.050	1.0	Not Detected	Not Detected
Naphthalene	0.050	1.6	Not Detected	Not Detected

Temperature = 58.0F , duration time = 10099 minutes.

Container Type: WMS-LU-V2

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130

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Client Sample ID: Trip Blank

Lab ID#: 2411358-08A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	18111827sim	Date of Collection: 11/12/24 8:48:00 AM
Dil. Factor:	1.00	Date of Analysis: 11/18/24 07:56 PM
		Date of Extraction: 11/18/24

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Client Sample ID: SS-1

Lab ID#: 2411358-09A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**18111828sim**	**Date of Collection: 11/12/24 8:40:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis: 11/18/24 08:23 PM**
		Date of Extraction: 11/18/24

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Chloromethane	0.20	180	Not Detected	Not Detected
Vinyl Chloride	0.20	140	Not Detected	Not Detected
1,1-Dichloroethene	0.20	74	Not Detected	Not Detected
Methyl tert-butyl ether	0.050	12	Not Detected	Not Detected
trans-1,2-Dichloroethene	0.10	26	Not Detected	Not Detected
Hexane	0.20	45	Not Detected	Not Detected
1,1-Dichloroethane	0.050	12	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	23	1.3	310
cis-1,2-Dichloroethene	0.050	7.8	Not Detected	Not Detected
Chloroform	0.050	9.6	Not Detected	Not Detected
Cyclohexane	0.050	7.1	Not Detected	Not Detected
1,1,1-Trichloroethane	0.050	12	Not Detected	Not Detected
Carbon Tetrachloride	0.050	10	Not Detected	Not Detected
Benzene	0.20	28	Not Detected	Not Detected
1,2-Dichloroethane	0.050	5.8	Not Detected	Not Detected
Heptane	0.050	6.2	Not Detected	Not Detected
Trichloroethene	0.050	4.2	Not Detected	Not Detected
4-Methyl-2-pentanone	0.10	10	Not Detected	Not Detected
Toluene	0.050	3.3	Not Detected	Not Detected
1,1,2-Trichloroethane	0.050	4.5	Not Detected	Not Detected
Tetrachloroethene	0.050	2.8	Not Detected	Not Detected
Chlorobenzene	0.050	2.8	Not Detected	Not Detected
Ethyl Benzene	0.050	2.1	Not Detected	Not Detected
m,p-Xylene	0.050	1.8	Not Detected	Not Detected
o-Xylene	0.050	2.2	Not Detected	Not Detected
Styrene	0.050	1.8	Not Detected	Not Detected
1,1,2,2-Tetrachloroethane	0.050	2.1	Not Detected	Not Detected
Propylbenzene	0.050	1.4	Not Detected	Not Detected
1,3,5-Trimethylbenzene	0.050	1.4	Not Detected	Not Detected
1,2,4-Trimethylbenzene	0.050	1.2	Not Detected	Not Detected
1,3-Dichlorobenzene	0.050	1.2	Not Detected	Not Detected
1,4-Dichlorobenzene	0.050	1.2	Not Detected	Not Detected
1,2-Dichlorobenzene	0.050	1.0	Not Detected	Not Detected
Naphthalene	0.050	1.7	Not Detected	Not Detected

Temperature = 58.0F , duration time = 10009 minutes.

Container Type: WMS-LU-V2

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130

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Client Sample ID: SS-1

Lab ID#: 2411358-09A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	18111828sim	Date of Collection: 11/12/24 8:40:00 AM
Dil. Factor:	1.00	Date of Analysis: 11/18/24 08:23 PM
		Date of Extraction: 11/18/24

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Client Sample ID: Lab Blank

Lab ID#: 2411358-10A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**18111808sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/18/24 11:25 AM**	
		Date of Extraction: 11/18/24	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Chloromethane	0.20	180	Not Detected	Not Detected
Vinyl Chloride	0.20	140	Not Detected	Not Detected
1,1-Dichloroethene	0.20	73	Not Detected	Not Detected
Methyl tert-butyl ether	0.050	12	Not Detected	Not Detected
trans-1,2-Dichloroethene	0.10	25	Not Detected	Not Detected
Hexane	0.20	45	Not Detected	Not Detected
1,1-Dichloroethane	0.050	12	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	23	Not Detected	Not Detected
cis-1,2-Dichloroethene	0.050	7.7	Not Detected	Not Detected
Chloroform	0.050	9.5	Not Detected	Not Detected
Cyclohexane	0.050	7.1	Not Detected	Not Detected
1,1,1-Trichloroethane	0.050	12	Not Detected	Not Detected
Carbon Tetrachloride	0.050	9.9	Not Detected	Not Detected
Benzene	0.20	28	Not Detected	Not Detected
1,2-Dichloroethane	0.050	5.8	Not Detected	Not Detected
Heptane	0.050	6.1	Not Detected	Not Detected
Trichloroethene	0.050	4.1	Not Detected	Not Detected
4-Methyl-2-pentanone	0.10	9.9	Not Detected	Not Detected
Toluene	0.050	3.3	Not Detected	Not Detected
1,1,2-Trichloroethane	0.050	4.5	Not Detected	Not Detected
Tetrachloroethene	0.050	2.8	Not Detected	Not Detected
Chlorobenzene	0.050	2.8	Not Detected	Not Detected
Ethyl Benzene	0.050	2.1	Not Detected	Not Detected
m,p-Xylene	0.050	1.8	Not Detected	Not Detected
o-Xylene	0.050	2.2	Not Detected	Not Detected
Styrene	0.050	1.8	Not Detected	Not Detected
1,1,2,2-Tetrachloroethane	0.050	2.1	Not Detected	Not Detected
Propylbenzene	0.050	1.3	Not Detected	Not Detected
1,3,5-Trimethylbenzene	0.050	1.4	Not Detected	Not Detected
1,2,4-Trimethylbenzene	0.050	1.2	Not Detected	Not Detected
1,3-Dichlorobenzene	0.050	1.2	Not Detected	Not Detected
1,4-Dichlorobenzene	0.050	1.2	Not Detected	Not Detected
1,2-Dichlorobenzene	0.050	1.0	Not Detected	Not Detected
Naphthalene	0.050	1.6	Not Detected	Not Detected

Temperature = 58.0F , duration time = 10099 minutes.

Container Type: WMS-LU-V2

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2411358-10A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	18111808sim	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 11/18/24 11:25 AM
		Date of Extraction: 11/18/24

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Client Sample ID: CCV

Lab ID#: 2411358-11A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**18111805sim**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 11/18/24 10:04 AM**
		Date of Extraction: NA

Compound	%Recovery
Chloromethane	196 Q
Vinyl Chloride	97
1,1-Dichloroethene	118
Methyl tert-butyl ether	117
trans-1,2-Dichloroethene	119
Hexane	107
1,1-Dichloroethane	111
2-Butanone (Methyl Ethyl Ketone)	116
cis-1,2-Dichloroethene	114
Chloroform	112
Cyclohexane	110
1,1,1-Trichloroethane	112
Carbon Tetrachloride	115
Benzene	113
1,2-Dichloroethane	108
Heptane	108
Trichloroethene	113
4-Methyl-2-pentanone	111
Toluene	107
1,1,2-Trichloroethane	108
Tetrachloroethene	113
Chlorobenzene	108
Ethyl Benzene	105
m,p-Xylene	103
o-Xylene	103
Styrene	103
1,1,2,2-Tetrachloroethane	104
Propylbenzene	103
1,3,5-Trimethylbenzene	102
1,2,4-Trimethylbenzene	102
1,3-Dichlorobenzene	104
1,4-Dichlorobenzene	103
1,2-Dichlorobenzene	104
Naphthalene	103

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	108	70-130

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Client Sample ID: LCS

Lab ID#: 2411358-12A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**18111806sim**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 11/18/24 10:31 AM**
		Date of Extraction: 11/18/24

Compound	%Recovery	Method Limits
Chloromethane	139	50-140
Vinyl Chloride	95	50-140
1,1-Dichloroethene	107	70-130
Methyl tert-butyl ether	111	70-130
trans-1,2-Dichloroethene	108	70-130
Hexane	106	70-130
1,1-Dichloroethane	102	70-130
2-Butanone (Methyl Ethyl Ketone)	100	70-130
cis-1,2-Dichloroethene	104	70-130
Chloroform	104	70-130
Cyclohexane	108	70-130
1,1,1-Trichloroethane	106	70-130
Carbon Tetrachloride	108	70-130
Benzene	103	70-130
1,2-Dichloroethane	97	70-130
Heptane	108	70-130
Trichloroethene	109	70-130
4-Methyl-2-pentanone	104	70-130
Toluene	102	70-130
1,1,2-Trichloroethane	101	70-130
Tetrachloroethene	107	70-130
Chlorobenzene	95	70-130
Ethyl Benzene	105	70-130
m,p-Xylene	99	70-130
o-Xylene	95	70-130
Styrene	76	20-100
1,1,2,2-Tetrachloroethane	94	60-130
Propylbenzene	102	70-130
1,3,5-Trimethylbenzene	101	70-130
1,2,4-Trimethylbenzene	94	70-130
1,3-Dichlorobenzene	85	60-130
1,4-Dichlorobenzene	83	60-130
1,2-Dichlorobenzene	79	60-130
Naphthalene	25	5-80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130

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Client Sample ID: LCSD

Lab ID#: 2411358-12AA

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**18111807sim**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 11/18/24 10:58 AM**
		Date of Extraction: 11/18/24

Compound	%Recovery	Method Limits
Chloromethane	144 Q	50-140
Vinyl Chloride	98	50-140
1,1-Dichloroethene	105	70-130
Methyl tert-butyl ether	108	70-130
trans-1,2-Dichloroethene	104	70-130
Hexane	103	70-130
1,1-Dichloroethane	98	70-130
2-Butanone (Methyl Ethyl Ketone)	97	70-130
cis-1,2-Dichloroethene	100	70-130
Chloroform	100	70-130
Cyclohexane	106	70-130
1,1,1-Trichloroethane	103	70-130
Carbon Tetrachloride	106	70-130
Benzene	102	70-130
1,2-Dichloroethane	95	70-130
Heptane	107	70-130
Trichloroethene	108	70-130
4-Methyl-2-pentanone	103	70-130
Toluene	102	70-130
1,1,2-Trichloroethane	101	70-130
Tetrachloroethene	109	70-130
Chlorobenzene	97	70-130
Ethyl Benzene	106	70-130
m,p-Xylene	101	70-130
o-Xylene	98	70-130
Styrene	78	20-100
1,1,2,2-Tetrachloroethane	96	60-130
Propylbenzene	106	70-130
1,3,5-Trimethylbenzene	104	70-130
1,2,4-Trimethylbenzene	98	70-130
1,3-Dichlorobenzene	89	60-130
1,4-Dichlorobenzene	87	60-130
1,2-Dichlorobenzene	83	60-130
Naphthalene	25	5-80

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130

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Method : Passive SE GC/MS WMS

CAS Number	Compound	Rpt. Limit (ug)
74-87-3	Chloromethane	0.20
75-01-4	Vinyl Chloride	0.20
75-35-4	1,1-Dichloroethene	0.20
1634-04-4	Methyl tert-butyl ether	0.050
156-60-5	trans-1,2-Dichloroethene	0.10
110-54-3	Hexane	0.20
75-34-3	1,1-Dichloroethane	0.050
78-93-3	2-Butanone (Methyl Ethyl Ketone)	0.10
156-59-2	cis-1,2-Dichloroethene	0.050
67-66-3	Chloroform	0.050
110-82-7	Cyclohexane	0.050
71-55-6	1,1,1-Trichloroethane	0.050
56-23-5	Carbon Tetrachloride	0.050
71-43-2	Benzene	0.20
107-06-2	1,2-Dichloroethane	0.050
142-82-5	Heptane	0.050
79-01-6	Trichloroethene	0.050
108-10-1	4-Methyl-2-pentanone	0.10
108-88-3	Toluene	0.050
79-00-5	1,1,2-Trichloroethane	0.050
127-18-4	Tetrachloroethene	0.050
108-90-7	Chlorobenzene	0.050
100-41-4	Ethyl Benzene	0.050
108-38-3	m,p-Xylene	0.050
95-47-6	o-Xylene	0.050
100-42-5	Styrene	0.050
79-34-5	1,1,2,2-Tetrachloroethane	0.050
103-65-1	Propylbenzene	0.050
108-67-8	1,3,5-Trimethylbenzene	0.050
95-63-6	1,2,4-Trimethylbenzene	0.050
541-73-1	1,3-Dichlorobenzene	0.050
106-46-7	1,4-Dichlorobenzene	0.050
95-50-1	1,2-Dichlorobenzene	0.050
91-20-3	Naphthalene	0.050

	Surrogate	Method Limits
2037-26-5	Toluene-d8	70-130

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Analysis Request / Passive Sorbent Chain of Custody

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Eurofins Environment Testing Northern California, LLC
180 Blue Ravine Rd. Suite B, Folsom, CA 95630
Phone (800) 985-5955; Fax (916) 351-8279

Workorder #: 2411358

Client: AECOM
Site Name: KUSD Lakeview Tech
Project Manager: Tory Schulte
Sampler: T. Schulte

Project Name: KUSD VI - Lakeview Tech
Project #: 60716343
PO#: 1679869

Turnaround Time (Specify Below)
Standard X Rush _____ (Surcharges will apply, per availability)
Samples received after 3PM PST are considered to be received on the following workday.
Requested Date (mm/dd/yy):
OR Number of Days: 5-DAY

Sample Matrix (Check One): Indoor/Outdoor Air | Soil Gas | Workplace Monitoring | (Other) ____

Reporting Units (Circle One): ppbv | µg/m³ | ppmv | mg/m³ | µg | ng

Times are military unless am/pm is indicated

Lab ID	Field Sample Identification (Location)	Tube # / Sampler ID	Deployment Date	Deployment Time	Retrieval Date	Retrieval Time	Indoor/Outdoor Air	Soil Gas	Workplace Monitoring	(Other)	Temperature	Analysis Requested	Sample Comments:
01A	SS-7	AN-LU-24-1084	11/5/24	0831	11/12/24	0810		X			58°F	TO-17	50% Relative Humidity
02A	SS-8	~~AN-LU~~ AN-LU-24-1088	11/5/24	0842	11/12/24	0828		X			↓	↓	↓
03A	SS-6	AN-LU-24-1086	11/5/24	0901	11/12/24	0818		X			↓	↓	↓
04A	SS-5	AN-LU-24-1087	11/5/24	0910	11/12/24	0831		X			↓	↓	↓
05A	SS-4	AN-LU-24-1089	11/5/24	0920	11/12/24	0833		X			↓	↓	↓
06A	SS-3	AN-LU-24-1092	11/5/24	0925	11/12/24	0843		X			↓	↓	↓
07A	SS-2	AN-LU-24-1085	11/5/24	0934	11/12/24	0835		X			↓	↓	↓
08A	Trip Blank	AN-LU-24-1090	11/5/24	0829	11/12/24	0848		—			↓	↓	↓
09A	SS-1	AN-LU-24-1091	11/5/24	0951	11/12/24	0840		X			↓	↓	↓

TAS 11/12/24

Special Instructions/Notes: FULL LIST VOC ANALYSIS

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Tom A. Schulte	11/12/24	1510	BTS EATL	11/13/24	1036
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

Lab Use Only

Shipper Name: Fedex | Custody Seals Intact? Yes No None | Temperature: | Condition: Good

Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, of shipping of samples. D.O.T Hotline (800) 467-4922

Appendix D

Laboratory Discrepancies (Workorder 2411358)

eurofins | Environment Testing

MEMO

To: Tory Schultz, Senior Project Manager, AECOM
From: Heidi Hayes, Technical Director, Eurofins Environment Testing Northern California, LLC
Date: November 27, 2024
Re: Project KUSD VI-Lakeview Tech Laboratory Discrepancies (Workorder 2411358)

The purpose of this memo is to provide the technical basis behind the elevated vinyl chloride reporting limits for the WMS-LU samples reported in the laboratory workorder 2411358 and steps taken to effectively manage and communicate these technology changes moving forward. Additionally, the memo addresses AECOM's concerns regarding laboratory procedures regarding custody seals related to samples received and assigned to workorder 2411358 and summarizes the laboratory's response.

Elevated Vinyl Chloride WMS-LU Reporting Limits

Description: During project set-up, the laboratory communicated a vinyl chloride reporting limit of 48 µg/m^3 using a WMS-LU sample deployment duration of 7 days to achieve the project required screening level of 56 µg/m^3. However, the 7-day vinyl chloride reporting limit for the WMS-LU samples reported in workorder 2411358 was 140 µg/m^3, resulting in non-detects for vinyl chloride well above the targeted screening level.

Investigation: The manufacturer of the WMS sampler switched the supplier of the membrane used to fabricate the sampler due to supply chain issues. The uptake rates of the VOCs using this new supplier's membrane changed, affecting the calculated sample reporting limits. While the WMS-LU uptake rates using the new membrane were generally consistent with the previous supplier's membranes, the uptake rate for vinyl chloride was significantly lower resulting in a calculated sample reporting limit approximately 3 times higher than planned. The laboratory failed to proactively manage and communicate this technology change and its potential impact to AECOM and clients using the WMS-LU for ongoing projects.

Corrective Action: The laboratory's reporting limit calculators for the WMS-LU samplers have been updated to reflect the revised uptake rates using the new membranes to accurately determine the required sample duration to meet project screening levels. Updates will also be implemented across the other WMS configurations when current inventory is eventually replaced with the samplers fabricated using the new membranes. The laboratory is identifying clients currently using WMS-LU and those with quotes pending for notification of the technology change as needed. Furthermore, the laboratory's system for implementing technical changes is undergoing review and enhancement to ensure inclusion of technology changes that do not impact standard operating procedures but impact the expected results received by the client. (Corrective Action #373)

Custody Seal Procedures

Description: Per feedback from AECOM, a custody seal supplied by AECOM was applied to the sample package sent to the laboratory. However, the receiving analyst initially circled "Yes" to indicate that the custody seal was intact, but subsequently crossed out this selection with initials and date and circled "None" instead, raising questions regarding the laboratory's procedures and assessment of custody seals.

Investigation: The receiving analyst was interviewed and indicated that he did not observe the seal and mistakenly had marked "Yes" prior to changing it to "None". Unfortunately, the receipt packaging had been disposed of prior to the investigation, such that the presence of a custody seal could not be independently confirmed. The laboratory procedures documented in SOP#50 revision 32 *Sample Receiving/Login Procedures* describe the criteria for assessing the status of custody seals upon receipt as listed below:

Yes = Custody seals present, intact, signed and dated.
No = Custody seals present, but not intact or not covering an opening or not signed and dated.
None = Custody seals not present.

The analyst had been trained on this SOP. However, it is unclear whether the receiving analyst did not recognize the custody seal supplied by AECOM as a custody seal or if the seal did not adequately adhere to the shipping box and was dislodged prior to receipt at the laboratory.

Opportunity for improvement: To ensure recognition of the custody seal by the receiving team, our standard generic custody seals will be provided with media shipped to the project moving forward. This detail is included in the project profile shipping information.

Please let us know if you have any additional questions or concerns regarding the information provided and the laboratory's actions to address discrepancies noted in the workorder 2411358.