QUARTERLY REPORT:

SAMPLING & ANALYSIS OF VOLATILE ORGANIC COMPOUNDS IN AIR AT FIVE LOCATIONS

March 26, 2020 through July 1, 2020

Prepared for:

Bridgeton Landfill, LLC
Bridgeton, Missouri

August 14, 2020

Prepared by:

Engineering for a Better World
FEEZOR ENGINEERING, INC.

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LIST OF ACRONYMS

C&D – Construction and Demolition Waste
COC – Chain of Custody
^{o} F – degrees Fahrenheit
FEI – Feezor Engineering, Inc.
IRIS – Integrated Risk Information System
MDL – Method Detection Limit
MDNR – Missouri Department of Natural Resources
MEK – Methyl Ethyl Ketone
MPH – Miles Per Hour
MSW – Municipal Solid Waste
OU – Operable Unit
RfC – Reference Concentration-Inhalation
RL – Reporting Limit
ug/m^3 – micrograms per cubic meter
USEPA – United States Environmental Protection Agency
VOC – Volatile Organic Compound

1.0 INTRODUCTION

This Quarterly Report describes the results of air monitoring for concentrations of volatile organic compounds (VOCs) at five locations on the Bridgeton Landfill property in Bridgeton, Missouri (**Figure 1**). This report provides a summary of sampling and analytical activities for samples deployed during the approximate 3-month period from March 26, 2020 through July 1, 2020. Sampling of air for VOCs is accomplished using passive absorption and laboratory carbon disulfide desorption of compounds collected on small cartridges of activated charcoal. Each cartridge utilizes a cylinder of stainless steel mesh to contain the charcoal and a diffusive body to house the cylinder.

Samples are collected (and new cartridges deployed) on an approximate 14-day frequency from five (5) locations (**Figure 2**). A duplicate sample, deployed at a different sampling location on a rotating basis, is collected during each sampling event and submitted for analyses. A trip blank sample accompanies each shipment of cartridges to the laboratory. During the period covered by this report, seven (7) sample collection events were performed and a total of 49 cartridges were analyzed for the compounds listed in Section 1.3.

1.1 Site Description

The closed Bridgeton Landfill is located at 13570 St. Charles Rock Road in Bridgeton, Missouri, approximately one mile north of the intersection of Interstates 70 and 270. Municipal solid waste (MSW), construction and demolition wastes (C&D) and industrial wastes were disposed at various portions of the landfill property from the early 1950s until December 31, 2004. The facility includes two closed quarry-fill areas (North Quarry and South Quarry), a closed C&D landfill unit, two closed areas (Area 1 and Area 2) that comprise the West Lake Landfill, and an inactive sanitary landfill. The West Lake Landfill areas encompass Operable Unit 1 (OU-1) at the facility, while the remaining areas collectively comprise Operable Unit 2 (OU-2). The groundwater regime underlying OU-1 and OU-2 has been designated Operable Unit 3 (OU-3).

Land use surrounding Bridgeton Landfill is primarily commercial and industrial. Residential areas in the vicinity of the landfill include the Terrisan Reste mobile home park to the southeast and the Spanish Village residential subdivision located to the south near the intersection of St. Charles Rock Road and I-270.

1.2 Program Background

Bridgeton Landfill accepted both MSW and C&D waste for disposal during its operating period. VOC monitoring was initiated in May 2015 as part of a perimeter air monitoring program developed and implemented in accordance with USEPA's Record of Decision regarding cleanup of OU-1 (West Lake Landfill). On August 15, 2019, USEPA approved a requested suspension of VOC monitoring activities at the facility (USEPA, 2019). However, pursuant to a Final Consent Judgment entered into between the Missouri Department of Natural Resources (MDNR) and Bridgeton Landfill, LLC on June 29, 2018, sampling for VOC's on the Bridgeton Landfill property will continue, and will be performed in accordance with the USEPA-approved plan (MDNR, 2018). The USEPA-approved plan requires bi-weekly sample collection/deployment of passive VOC samplers from five (5) locations (**Figure 2**) and quarterly reporting to MDNR. This report represents the third submittal to the state agency since USEPA's approval to suspend West Lake Landfill VOC monitoring.

1.3 Constituents of Concern

The constituents of concern for the VOC Sampling and Analyses program at Bridgeton Landfill is comprised of the following analytes:

Ethanol	1,1,1-Trichloroethane	Trichloroethene	m,p-Xylene
Methyl tert-butyl Ether	Cyclohexane	4-Methyl-2-Pentanone	o-Xylene
Hexane	Carbon Tetrachloride	Toluene	Styrene
Ethyl Acetate	Benzene	Tetrachloroethene	Propylbenzene
2-Butanone (MEK)	1,2-Dichloroethane	Chlorobenzene	1,4-Dichlorobenzene
Chloroform	Heptane	Ethyl Benzene	Naphthalene

This list was revised by the laboratory in 2019 and reflects common VOCs for which sampling rates have been calculated for the passive sampling media (Radiello 130).

2.0 AIR MONITORING APPROACH AND SAMPLING METHOD

An integrated system of thirteen (13) air monitoring stations has been installed around the Bridgeton Landfill/West Lake Landfill property. Twelve of these stations are located around the perimeters of the OU-1 areas. The thirteenth station is located near the southeast corner of the South Quarry of Bridgeton Landfill. These locations were selected to ensure that the air monitoring network encompassed the entirety of OU-1 and included the main entry to the property and the access road through the center of the property. **Figure 2** depicts the locations of the air monitoring stations. As previously noted, five of the thirteen stations (#1, #5, #7, #8, and #12) are equipped with passive VOC samplers.

An on-site meteorological station measures and logs air temperature (^{o}F), barometric pressure (inches water), wind speed (mph) and wind direction (degrees), precipitation rate, and total daily precipitation (inches). The station is located adjacent to the landfill office building at 13570 St. Charles Rock Road.

The air sampling locations near the center of the property are arranged in a broad line generally oriented southeast to northwest, parallel to predominant wind directions. Other stations are located transverse to this orientation, parallel to the less dominant southwest and northeast wind directions. As shown in **Figure 3**, the predominant wind direction during the monitoring period of this report was from the southwest. Wind roses for each of the seven (7) sampling periods that make up the monitoring period for this report are presented in **Figures 3a**, **3b**, and **3c**. Passive VOC samplers (and other air monitoring equipment) for the five stations so equipped are mounted under protective hoods to keep them out of direct sunlight and precipitation. Information regarding daily precipitation events that occurred during the monitoring period of this report is depicted on **Figure 4**.

2.1 Sample Collection, Shipment, and Analyses

Sampling of VOCs at the five stations so equipped is performed using the Radiello 130 chemical adsorbing cartridge diffusion samplers, left in place to be collected every fourteen (14) days (with a new cartridge deployed after collection of each "used" one). Each Radiello 130 cartridge consists of a stainless steel mesh cylinder packed with activated charcoal. The cylinder is housed in a white diffusive body that is threaded

onto a triangular plate and mounted under a protective hood. Ambient air passes through the white diffusive body and the activated charcoal cylinder inside it for approximately two weeks, at which point the diffusive body is unthreaded from the plate and the cartridge is collected into a stoppered glass tube. Unique identifier labels that include the date and time of sample deployment and collection are affixed to the glass tubes. After all the samples have been collected during an event, the labeled sample tubes are weighed individually, packaged together in a padded envelope and small sealed box, and shipped to the laboratory under chain-of-custody (COC) procedures. Each COC includes the sampler's name/signature, a list of the stations sampled, information from the unique identifier labels affixed to the glass tubes, and the air temperature at the time each sample was collected. On a rotating basis, a field duplicate sampler is mounted at one of the five stations; the duplicate is deployed and collected at the same date/time as that station's routine sample, and is included on the COC for that event. A trip blank cartridge, left in its glass tube and not deployed in the field, is also included on each COC and accompanies the samples to the laboratory. **Appendix 1** includes the COCs and shipping documents generated for the VOC sampling events performed during the monitoring period of this report.

Following receipt by the laboratory, VOCs in the air that passed through a given cartridge and were adsorbed onto the activated charcoal contained in it are recovered by carbon disulfide displacement. Gas chromatography/mass spectrometry are used to identify and quantify, if present in the sample extract above detection limits, any of the compounds listed in Section 1.3 of this report. **Table 1** lists the reporting limit (RL) applicable to each of the noted compounds detected during the monitoring period.

2.2 Data Management, Validation, and Quality Assessment

The laboratory performing VOC analyses (Eurofins Air Toxics, Inc.) supplies Level IV data packages with all analytical results to Feezor Engineering, Inc. (FEI). Level IV data packages are comprehensive reports that include analytical results, duplicate summaries, recovery information, performance checks, calibration data, and other information that allows for evaluations of data usability. The laboratory also supplies analytical results in an electronic spreadsheet to FEI.

The primary goal of data verification and validation is to ensure that decisions are supported by data of the type and quality needed and expected for the intended use. Data verification is the process of evaluating the completeness, correctness, and consistency of a laboratory package or final data to assure that laboratory conditions and operations are compliant with project plan documents. Data validation addresses the reliability of the data. VOC results are evaluated to determine the presence or absence of an analyte and the uncertainty of the measurement process for constituents of concern. Scientific and statistical evaluation of the data may be required to determine if the quality of the data can support its intended use. FEI generated data validation summary reports for the analytical results associated with the VOC sampling events performed during the monitoring period for this report (**Appendix 3**).

3.0 SUMMARY OF RESULTS

The monitoring period for this report included seven (7) sample collection/deployment events that took place between April 9, 2020 and July 1, 2020 on an approximate two-week cycle. There were no off-normal/special VOC sampling events during the monitoring period. The following information summarizes field conditions during each of the seven events:

Event Date	Avg Temp at Collection	Peak Wind Direction During Sampling Period
April 9, 2020	57.4 ºF	Southeast (**Fig 3a**)
April 23/24, 2020	62.0 ºF	Northwest (**Fig 3a**)
May 7, 2020	60.6 ºF	Northwest (**Fig 3b**)
May 21, 2020	56.4 ºF	Northwest (**Fig 3b**)
June 4, 2020	74.2 ºF	Southeast (**Fig 3b**)
June 18, 2020	84.6 ºF	East (**Fig 3c**)
July 1, 2020	76.6 ºF	Southwest (**Fig 3c**)

Changes to the air monitoring program following its approval by USEPA have occurred since the initiation of VOC sampling. Prior to August 2015, Eurofins Air Toxics, Inc. reported twenty-six (26) VOCs for Radiello 130 sample analysis. The laboratory issued a request to discontinue reporting 2-propanol (rubbing alcohol) from the Radiello 130 reporting list; USEPA approved the request via email on August 11, 2015. Also, in accordance with a USEPA suggestion of October 16, 2015, VOC sampling was moved from Station #11 to Station #12 (Auxier, 2019). Finally, on August 28, 2019 the laboratory informed FEI that acetone (a common lab contaminant) was removed from its Radiello 130 list of VOC analytes due to challenges with performance and recovery on its analytical instrumentation.

Table 1 provides a tabulation of the results obtained during analyses of the samples collected during the monitoring period for this report. In addition, the table includes a statistical summary of VOC concentrations detected above their reporting limits in analyses performed on samples deployed and collected since May 1, 2015, inclusive of results from the seven (7) events described in this report. Values in **Table 1** are presented in $\mu g/m^3$, and the statistical summary reflects the range of "detected" values only. The analytical reports from Eurofins Air Toxics, Inc. are included in **Appendix 2**.

USEPA performed off-site sampling for VOCs using passive samplers from December 2014 to March 2015. The following table presents comparisons of the results (for compounds that were analyzed/detected by both programs) obtained from the five on-site VOC sampling stations during the monitoring period for this report to the results obtained from USEPA's off-site monitoring program. Concentrations are reported in ug/m^3. The on-site concentrations during the monitoring period were noticeably less than those obtained from the off-site locations in 2014-2015. For all analytes but one (toluene), the maximum concentrations of the VOCs detected on-site during the period March 26, 2020 through July 1, 2020 were below those detected during the 2014-2015 USEPA sampling. The on-site toluene concentration of 1.7 ug/m^3 detected during the monitoring period represents a maximum value; it does not represent a regulatory exceedance. The RfC for toluene is 5,000 ug/m^3, a value provided by USEPA's Integrated Risk Information System (IRIS) that represents an estimated concentration likely to be without an appreciable risk of deleterious effects during a person's lifetime of continuous inhalation exposure.

VOC	USEPA Off-Site Conc. Range	USEPA MDL[1]	On-Site Conc. Range 3/26/20-7/1/20	On-Site RL Range 3/26/20-7/1/20
Benzene	0.41-0.70	0.05-1.0	0.25-0.41 ug/m^3	0.24-0.28 ug/m^3
Ethyl Benzene	0.13-0.37	0.05-1.0	0.075-0.17 ug/m^3	0.069-0.082 ug/m^3
m,p-Xylene	0.32-1.10	0.05-1.0	0.17-0.47 ug/m^3	0.067-0.080 ug/m^3
o-Xylene	0.12-0.39	0.05-1.0	0.077-0.17 ug/m^3	0.072-0.086 ug/m^3
Toluene	1.1-1.2	0.05-1.0	0.37-1.7 ug/m^3	0.064-0.076 ug/m^3
Tetrachloroethene	0.084-0.460	0.05-1.0	0.087-0.10 ug/m^3	0.080-0.095 ug/m^3

[1] Method Detection Limit of TO-15 for 7-day Radiello exposures (FEI, 2020)

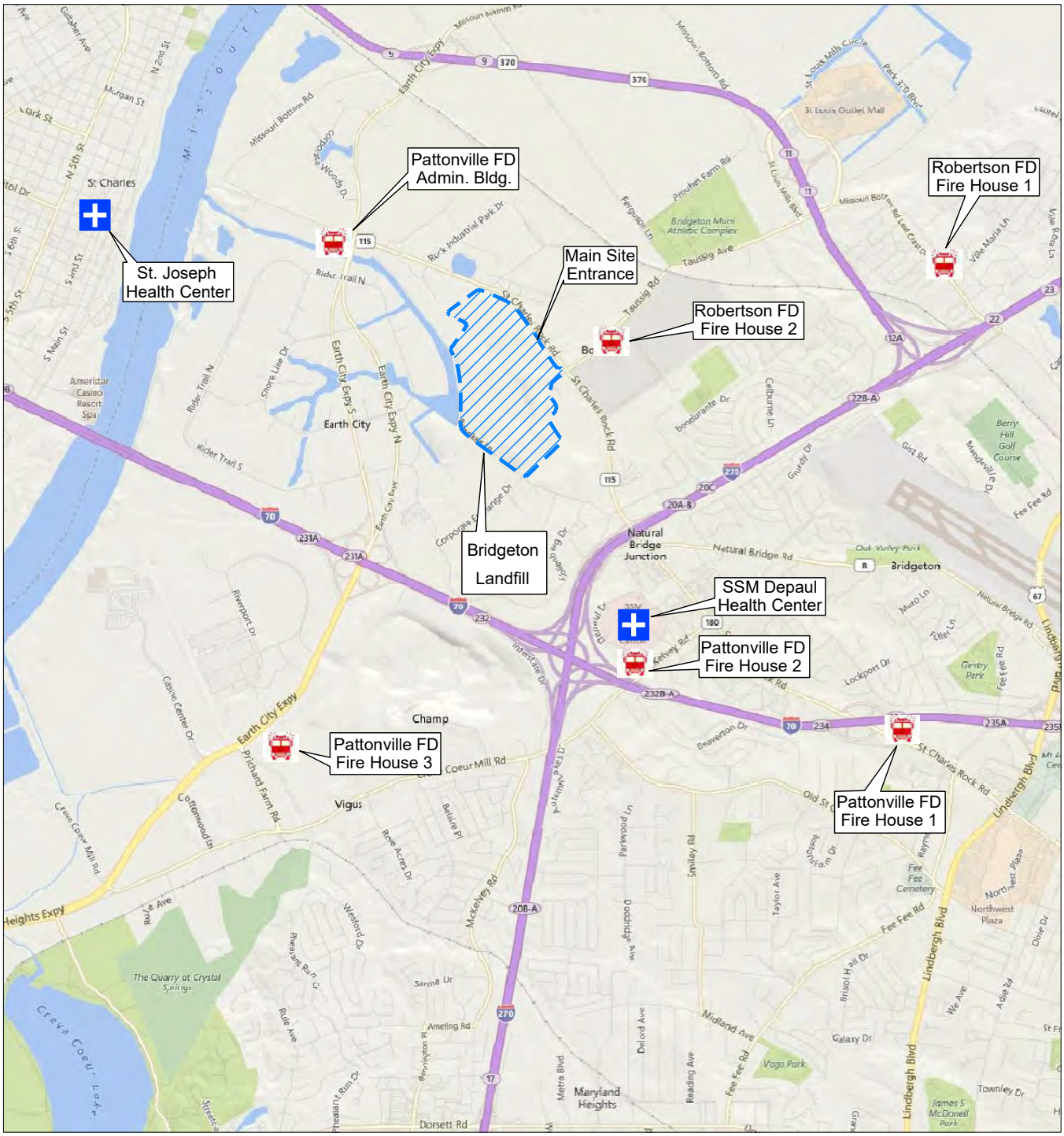
4.0 REFERENCES

FEI, 2020. Quarterly Report: Sampling & Analysis of Volatile Organic Compounds in Air at Five Locations – January 3, 2020 through March 26, 2020. Prepared for Bridgeton Landfill, LLC by Feezor Engineering, Inc. May 15, 2020.

MDNR, 2018. Final Consent Judgment, State of Missouri v. Republic Services, Inc., Allied Services, LLC, and Bridgeton Landfill, Inc., Case No. 13SL-CC01088-01. June 29, 2018.

USEPA, 2019. RE: April 12, 2019 Request to Suspend Air Quality Monitoring, West Lake Landfill Operable Unit 1, Bridgeton, Missouri. Letter to Mr. Paul Rosasco, EMSI. August 15, 2019.

FIGURES



N

0 4,000

Scale in Feet

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Figure 1

Bridgeton Landfill Site Location

Air Monitoring Station Equipped with VOC Sampler A8

Air Monitoring Station, No VOC Sampler A10

N

0 800

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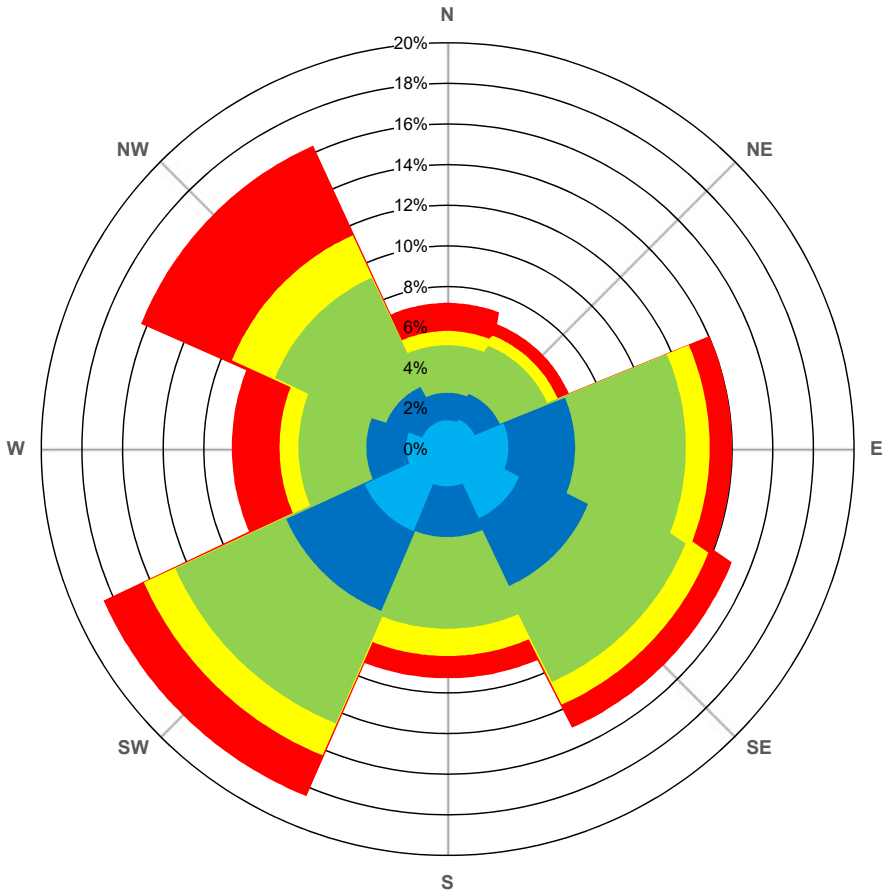
Figure 2

Air Sampling Station Locations

3/26/2020 thru 7/1/2020

Bridgeton Landfill, Bridgeton, MO



Wind speed (mph)

14.84%	10.0 to 36.0
9.95%	8.0 to 10.0
35.43%	4.0 to 8.0
20.34%	2.5 to 4.0
7.96%	1.0 to 2.5

Percent calm:	11.49%
Calm defined as:	< 1.0 mph
Peak frequency:	18.61%
Peak direction:	SW

Occurrences by Wind Direction (WD):

North	662	7.15%
Northeast	609	6.57%
East	1305	14.09%
Southeast	1406	15.18%
South	1058	11.42%
Southwest	1724	18.61%
West	987	10.65%
Northwest	1513	16.33%
	9,264	100.0%

Occurrences by Wind Speed (WS):

<1 mph	1064	11.03%
1 - 2.5 mph	737	6.95%
2.5 - 4 mph	1884	19.16%
4 - 8 mph	3282	34.57%
8 - 10 mph	922	10.97%
>10 mph	1375	17.32%
	9,264	100.0%

The Wind Rose shown is based on 9,264 wind speed/ wind direction readings taken every 15 minutes over 97.0 consecutive days from 3/26/20 14:15 to 7/1/20 15:00

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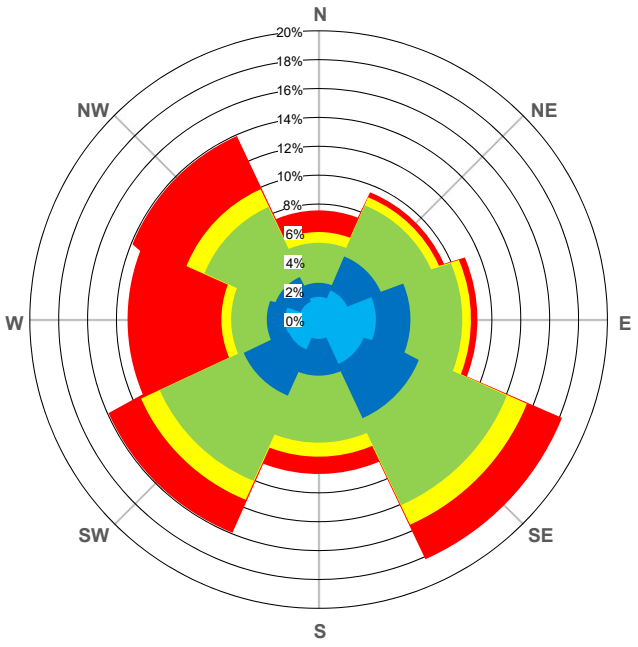
Figure 3

Bridgeton Landfill Wind Rose

March 26, 2020
through
July 1, 2020

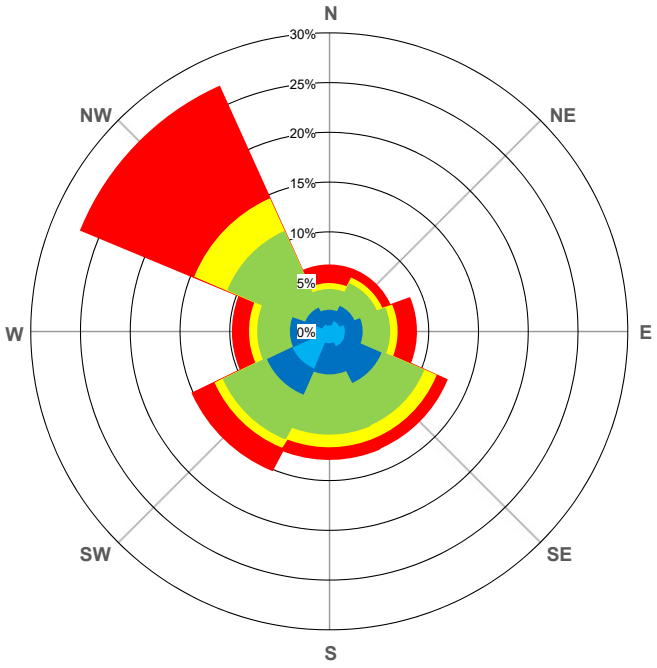


Wind speed (mph)

19.15%	10.00 to 36.00
7.85%	8.00 to 10.00
35.53%	4.00 to 8.00
19.15%	2.50 to 4.00
7.70%	1.00 to 2.50

Mean speed:	6.79
Peak frequency:	18.18%
Peak direction:	SE
Percent calm:	10.62%
Calm defined as:	< 1.00 mph

3/26/2020 thru 4/9/2020



Wind speed (mph)

23.82%	10.00 to 34.00
9.86%	8.00 to 10.00
34.58%	4.00 to 8.00
19.04%	2.50 to 4.00
6.27%	1.00 to 2.50

Mean speed:	7.53
Peak frequency:	27.04%
Peak direction:	NW
Percent calm:	6.42%
Calm defined as:	< 1.00 mph

4/9/2020 thru 4/23/2020

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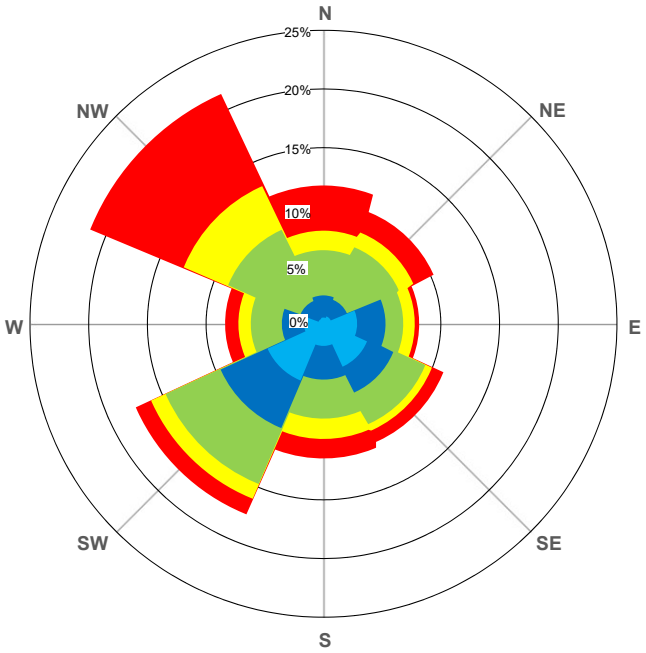
Figure 3a

Wind Roses for Sampling Periods
03/26/20 - 04/09/20
04/09/20 - 04/23/20

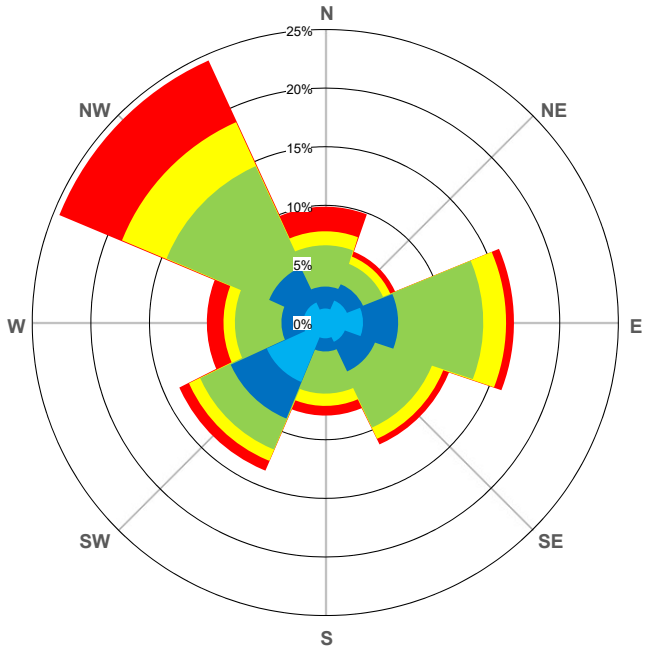


Wind speed (mph)

20.00%	10.00 to 24.00
12.83%	8.00 to 10.00
30.87%	4.00 to 8.00
19.02%	2.50 to 4.00
6.34%	1.00 to 2.50

Mean speed:	6.79
Peak frequency:	21.43%
Peak direction:	NW
Percent calm:	10.94%
Calm defined as:	< 1.00 mph

4/23/2020 thru 5/7/2020

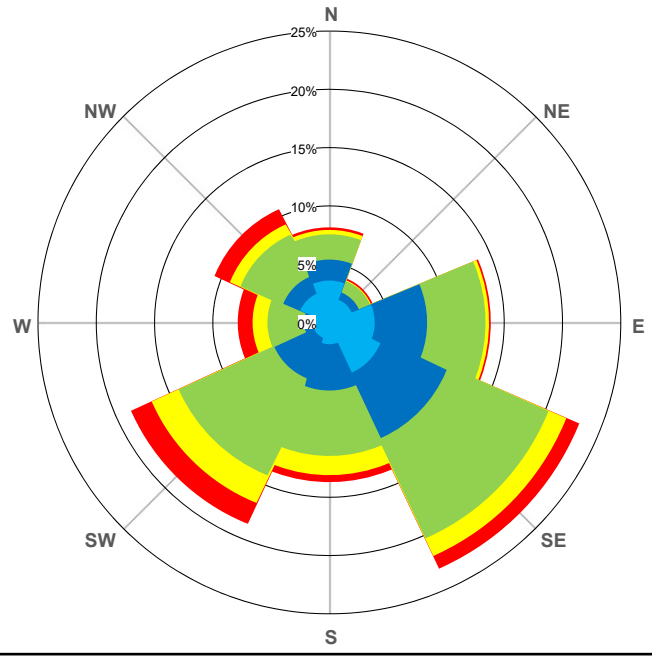


Wind speed (mph)

12.65%	10.00 to 26.00
12.05%	8.00 to 10.00
37.72%	4.00 to 8.00
18.79%	2.50 to 4.00
7.49%	1.00 to 2.50

Mean speed:	6.21
Peak frequency:	24.48%
Peak direction:	NW
Percent calm:	11.30%
Calm defined as:	< 1.00 mph

5/7/2020 thru 5/21/2020



Wind speed (mph)

6.96%	10.00 to 21.00
8.83%	8.00 to 10.00
39.37%	4.00 to 8.00
23.20%	2.50 to 4.00
8.76%	1.00 to 2.50

Mean speed:	5.26
Peak frequency:	23.13%
Peak direction:	SE
Percent calm:	12.87%
Calm defined as:	< 1.00 mph

5/21/2020 thru 6/4/2020

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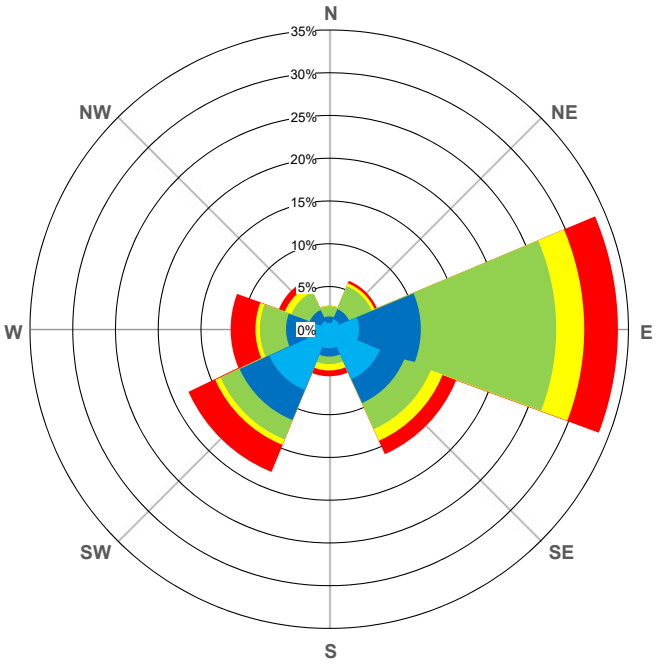
Figure 3b

Wind Roses for Sampling Periods
04/23/20 - 05/07/20
05/07/20 - 05/21/20
05/21/20 - 06/04/20

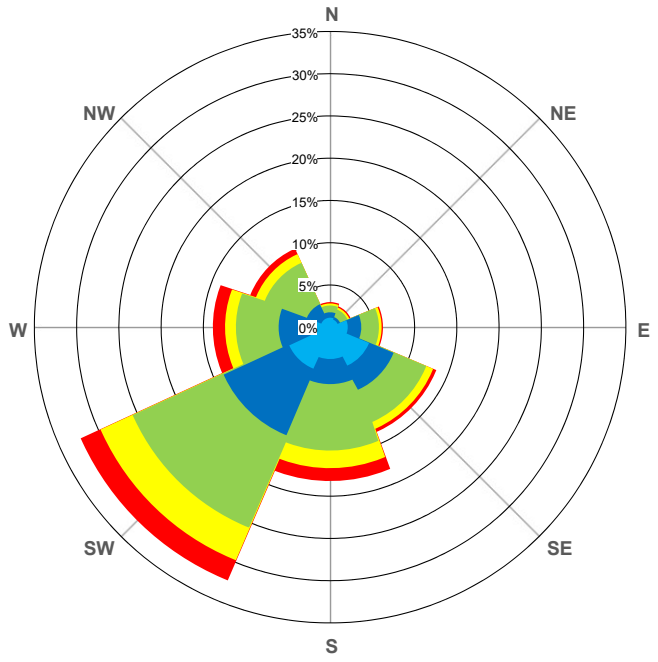


Wind speed (mph)

13.69%	10.00 to 25.00
7.96%	8.00 to 10.00
31.99%	4.00 to 8.00
20.68%	2.50 to 4.00
9.60%	1.00 to 2.50

Mean speed:	5.68
Peak frequency:	33.78%
Peak direction:	E
Percent calm:	16.07%
Calm defined as:	< 1.00 mph

6/4/2020 thru 6/18/2020



Wind speed (mph)

7.14%	10.00 to 26.00
10.34%	8.00 to 10.00
38.09%	4.00 to 8.00
22.61%	2.50 to 4.00
9.62%	1.00 to 2.50

Mean speed:	5.35
Peak frequency:	32.32%
Peak direction:	SW
Percent calm:	12.19%
Calm defined as:	< 1.00 mph

6/18/2020 thru 7/1/2020

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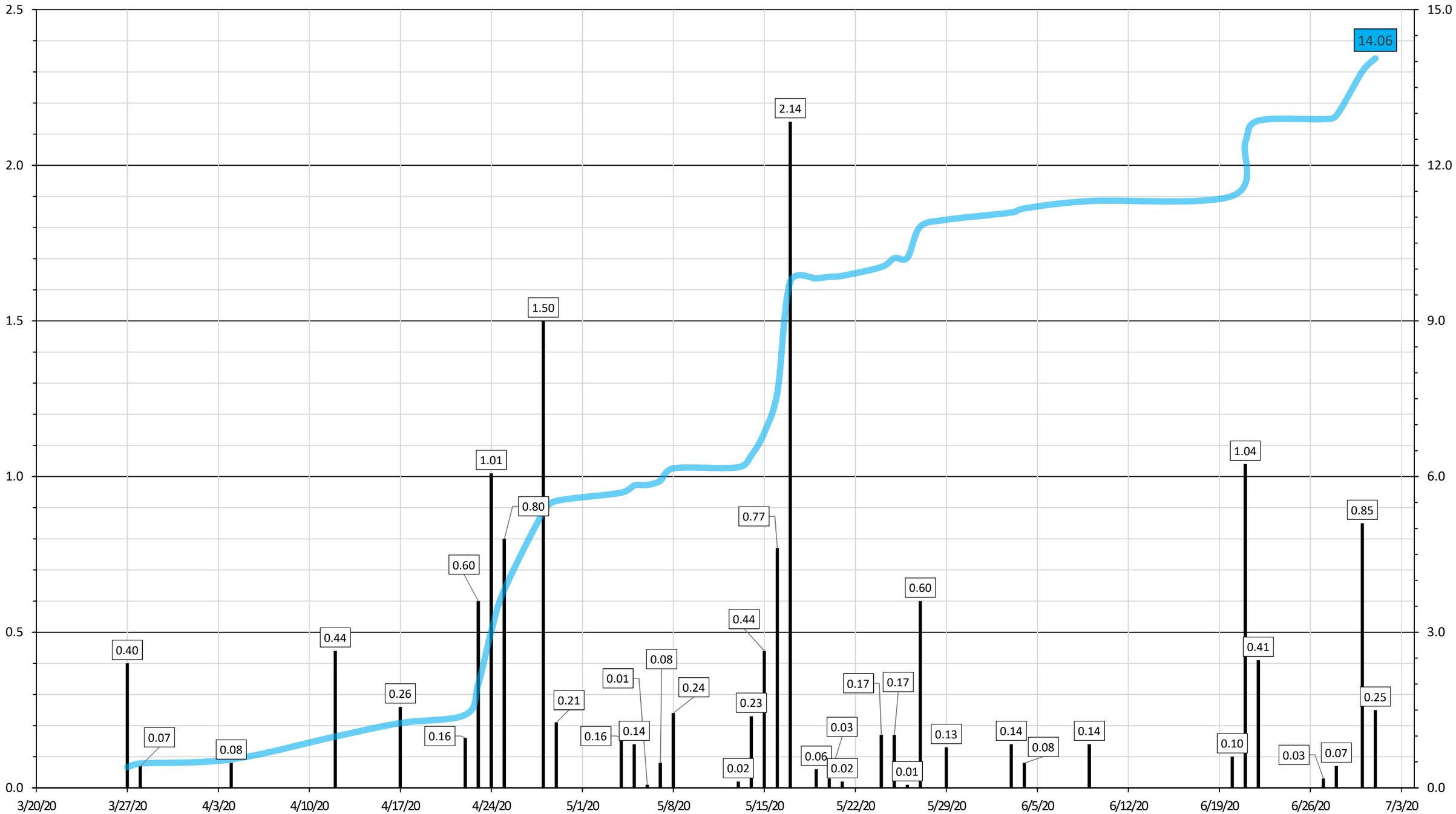
Figure 3c

Wind Roses for Sampling Periods
06/04/20 - 06/18/20
06/18/20 - 07/01/20

Figure 4
Bridgeton Landfill Daily Precipitation - 3/26/20 through 7/1/20



TABLE

Analytical Results for Monitoring Period 03/26/2020 through 07/01/2020

Station ID		A-1							A-5						
Sampling Period	Start	03/26 2020	04/09 2020	04/23 2020	05/07 2020	05/21 2020	06/04 2020	06/18 2020	03/26 2020	04/09 2020	04/23 2020	05/07 2020	05/21 2020	06/04 2020	06/18 2020
	End	04/09 2020	04/23 2020	05/07 2020	05/21 2020	06/04 2020	06/18 2020	07/01 2020	04/09 2020	04/23 2020	05/07 2020	05/21 2020	06/04 2020	06/18 2020	07/01 2020
2-Butanone (MEK)		0.24	0.18	0.23	0.14	0.16		0.13	0.22	0.18	0.25	0.22	0.18		0.15
Benzene		0.38	0.33	0.30			0.25		0.34	0.36	0.33			0.25	
Carbon Tetrachloride		0.30	0.36	0.32	0.26	0.30	0.36	0.35	0.29	0.38	0.34	0.27	0.32	0.34	0.24
Chloroform							0.068								
Cyclohexane		0.12					0.13	0.12			0.11		0.10	0.13	
Ethanol															
Ethyl Acetate														0.27	
Ethyl Benzene		0.12		0.093		0.083	0.12	0.099			0.091		0.10	0.12	0.088
Heptane		0.32	0.19	0.30	0.17	0.19	0.34	0.34	0.22	0.18	0.23	0.14	0.20	0.23	0.17
Hexane		0.28	0.17	0.22	0.16	0.26	0.34	0.23	0.28	0.20	0.30	0.20	0.31	0.37	0.22
m,p-Xylene		0.45	0.17	0.35	0.20	0.25	0.33	0.26	0.20	0.18	0.25	0.21	0.29	0.33	0.23
o-Xylene		0.17	0.080	0.14		0.088	0.12				0.093		0.099	0.12	
Tetrachloroethene		0.10													
Toluene		1.70	0.49	0.44	0.51	0.77	0.72	0.60	0.50	0.39	0.58	0.43	0.60	0.67	0.50

Station ID		A-7							A-8						
Sampling Period	Start	03/26 2020	04/09 2020	04/23 2020	05/07 2020	05/21 2020	06/04 2020	06/18 2020	03/26 2020	04/09 2020	04/23 2020	05/07 2020	05/21 2020	06/04 2020	06/18 2020
	End	04/09 2020	04/23 2020	05/07 2020	05/21 2020	06/04 2020	06/18 2020	07/01 2020	04/09 2020	04/23 2020	05/07 2020	05/21 2020	06/04 2020	06/18 2020	07/01 2020
2-Butanone (MEK)		0.27	0.21	0.28	0.21	0.20		0.21	0.25	0.19	0.30	0.18	0.14		0.21
Benzene		0.36	0.34	0.33			0.26		0.35	0.32	0.35			0.26	0.28
Carbon Tetrachloride		0.31	0.35	0.35	0.26	0.29	0.37	0.28	0.29	0.32	0.36	0.26	0.29	0.35	0.31
Chloroform														0.063	
Cyclohexane		0.13	0.11	0.11		0.10	0.17	0.12						0.12	
Ethanol		0.75													
Ethyl Acetate		0.47	0.29	0.30		0.42	0.64	0.43							
Ethyl Benzene		0.096	0.11	0.11	0.084	0.12	0.17	0.12				0.087	0.075	0.11	0.085
Heptane		0.26	0.23	0.24	0.16	0.22	0.33	0.28	0.27	0.21	0.24	0.18	0.20	0.23	0.23
Hexane		0.32	0.26	0.29	0.21	0.31	0.44	0.28	0.25	0.19	0.25	0.27	0.29	0.34	0.27
m,p-Xylene		0.27	0.29	0.31	0.26	0.36	0.47	0.34	0.18	0.17	0.20	0.27	0.21	0.29	0.22
o-Xylene		0.098	0.10	0.11	0.089	0.12	0.16	0.13				0.092		0.11	0.098
Tetrachloroethene		0.093					0.087								
Toluene		0.80	0.64	0.58	0.44	0.62	0.90	0.66	0.42	0.37	0.46	0.49	0.51	0.65	0.51

Station ID		A-12						
Sampling Period	Start	03/26 2020	04/09 2020	04/23 2020	05/07 2020	05/21 2020	06/04 2020	06/18 2020
	End	04/09 2020	04/23 2020	05/07 2020	05/21 2020	06/04 2020	06/18 2020	07/01 2020
2-Butanone (MEK)		0.19	0.18	0.29	0.23	0.15		0.22
Benzene		0.41	0.36	0.39		0.26	0.27	0.34
Carbon Tetrachloride		0.35	0.40	0.43	0.31	0.34	0.36	0.39
Chloroform				0.071			0.066	
Cyclohexane		0.10		0.12		0.098	0.14	0.11
Ethanol								
Ethyl Acetate								
Ethyl Benzene				0.090		0.078	0.11	0.12
Heptane		0.38	0.27	0.38	0.21	0.47	0.55	0.44
Hexane		0.29	0.19	0.31	0.20	0.28	0.34	0.30
m,p-Xylene		0.19	0.18	0.23	0.20	0.22	0.30	0.30
o-Xylene				0.085		0.077	0.11	0.11
Tetrachloroethene								
Toluene		0.42	0.40	0.54	0.42	0.45	0.65	0.53

Empty cells = Not Detected above RL

Statistical Analyses of Results for Monitoring Period 05/01/2015 through 07/01/2020

Station ID	A-1					A-5					A-7					A-8					A-12				
	No. of Detects	No. of Samples	Min. Conc.	Max. Conc.	Median Conc.	No. of Detects	No. of Samples	Min. Conc.	Max. Conc.	Median Conc.	No. of Detects	No. of Samples	Min. Conc.	Max. Conc.	Median Conc.	No. of Detects	No. of Samples	Min. Conc.	Max. Conc.	Median Conc.	No. of Detects	No. of Samples	Min. Conc.	Max. Conc.	Median Conc.
1,2-Dichloroethane *	6	135	0.060	0.096	0.072	5	135	0.066	0.079	0.072	6	128	0.064	0.097	0.073	6	135	0.062	0.110	0.067	7	122	0.066	0.096	0.078
2-Butanone (MEK)	134	135	0.070	0.450	0.162	134	135	0.080	0.460	0.190	127	128	0.100	0.560	0.200	134	135	0.070	0.490	0.185	120	122	0.090	0.770	0.195
4-Methyl-2-Pentanone *	0	135	na	na	na	0	135	na	na	na	1	128	0.410	0.410	0.410	0	135	na	na	na	1	122	0.230	0.230	0.230
Benzene	93	135	0.240	0.770	0.315	104	135	0.240	0.790	0.327	98	128	0.220	0.780	0.323	103	135	0.240	0.870	0.341	103	122	0.230	0.840	0.332
Carbon Tetrachloride	135	135	0.150	0.510	0.260	135	135	0.170	0.520	0.255	128	128	0.160	0.520	0.257	135	135	0.140	0.500	0.239	121	122	0.200	0.530	0.273
Chloroform	39	135	0.050	0.180	0.080	43	135	0.050	0.140	0.080	32	128	0.060	0.110	0.080	32	135	0.050	0.140	0.080	40	122	0.050	0.140	0.079
Cyclohexane	56	135	0.070	0.260	0.115	78	135	0.090	0.280	0.102	110	128	0.070	0.250	0.104	55	135	0.090	0.240	0.093	64	122	0.079	0.260	0.093
Ethanol	1	135	1.200	1.200	1.200	0	135	na	na	na	1	128	0.750	0.750	0.750	0	135	na	na	na	0	122	na	na	na
Ethyl Acetate	2	135	0.290	0.330	0.310	24	135	0.210	0.520	0.290	78	128	0.250	1.100	0.351	11	135	0.250	0.520	0.390	5	122	0.270	0.500	0.317
Ethyl Benzene	117	135	0.070	0.280	0.086	121	135	0.080	0.250	0.088	124	128	0.070	0.270	0.104	107	135	0.070	0.260	0.079	104	122	0.078	0.280	0.084
Heptane	135	135	0.130	0.840	0.223	135	135	0.110	0.610	0.163	128	128	0.130	0.480	0.195	135	135	0.100	0.570	0.153	120	122	0.130	0.590	0.175
Hexane	135	135	0.130	0.700	0.241	135	135	0.150	2.000	0.273	128	128	0.200	0.710	0.309	135	135	0.150	0.810	0.245	121	122	0.140	0.800	0.256
m,p-Xylene	135	135	0.130	0.920	0.238	135	135	0.160	0.620	0.228	128	128	0.150	0.900	0.302	135	135	0.140	0.590	0.199	121	122	0.140	0.660	0.201
o-Xylene	110	135	0.070	0.380	0.086	107	135	0.078	0.230	0.083	119	128	0.080	0.270	0.104	87	135	0.080	0.220	0.083	92	122	0.070	0.240	0.077
Propylbenzene *	1	135	0.130	0.130	0.130	0	135	na	na	na	0	128	na	na	na	1	135	0.110	0.110	0.110	0	122	na	na	na
Tetrachloroethene	107	135	0.080	0.840	0.147	30	135	0.060	0.180	0.074	70	128	0.070	0.250	0.102	16	135	0.070	0.170	0.091	16	122	0.080	0.170	0.091
Toluene	135	135	0.310	1.700	0.500	134	135	0.390	2.000	0.535	128	128	0.390	1.800	0.693	135	135	0.340	1.700	0.449	121	122	0.310	1.300	0.455
Trichloroethene *	0	135	na	na	na	0	135	na	na	na	2	128	0.080	0.082	0.081	0	135	na	na	na	1	122	0.062	0.062	0.062

* No detections above RLs during monitoring period for this report

APPENDICES

Appendix 1

Chains-of-Custody and Sample Shipping Documents

PASSIVE SAMPLE COLLECTION

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CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice
Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Eurofins assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922.

180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630
(916) 985-1000 FAX (916) 985-1020

Project Manager: Bill Abernathy
Collected by: (Print and Sign) WILLIAM ABERNATHY
Company: Feezor Engineering, Inc. Email: babernathy@feezorengineering.com
Address: 3377 Hollenberg Drive Bridgeton, Missouri 63044
Phone: 314-502-1299

Project Info:
P.O. #:
Project #:
Project Name: Bridgeton Landfill VOCs

Turn Around Time: ☒ Normal ☐ Rush (specify)

Reporting Units: ☐ ppmv ☐ ppbv ☒ µg/m3 ☐ mg/m3

	Lab I.D.	Field Sample I.D. (Location)	Sampler #	Date of Deployment (mm/dd/yy)	Time of Deployment (hr : min)	Date of Retrieval (mm/dd/yy)	Time of Retrieval (hr : min)	Air Temperature	Analysis Requested	Indoor Air	Outdoor Air	Workplace Monitoring	Other (not deployed)
6.54	01A	1	I980I	3/26/20	1058	4/9/20	1236	58°F	see attached	☐	☒	☐	☐
6.62	02A	5	I981I	3/26/20	1121	4/9/20	1215	58°F	see attached	☐	☒	☐	☐
6.45	03A	7	I982I	3/26/20	1116	4/9/20	1206	58°F	see attached	☐	☒	☐	☐
6.56	04A	8	I983I	3/26/20	1129	4/9/20	1255	59°F	see attached	☐	☒	☐	☐
6.41	05A	12	I984I	3/26/20	1107	4/9/20	1150	54°F	see attached	☐	☒	☐	☐
6.62	06A	Dup	I985I	3/26/20	1116	4/9/20	1206	58°F	see attached	☐	☒	☐	☐
6.47	07A	TB	I987I	left in packaging - not deployed					see attached	☐	☐	☐	☒
										☐	☐	☐	☐
										☐	☐	☐	☐
										☐	☐	☐	☐

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
	4/9/20 1500	FEDEX 7702 0404 5734	
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
		TAN	04/10/20 0950
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	FEDEX		NA	GOOD	Yes No None	2004190

PASSIVE SAMPLE COLLECTION

eurofins | Air Toxics

CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice
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180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630
(916) 985-1000 FAX (916) 985-1020

Project Manager: Bill Abernathy
Collected by: (Print and Sign) WILLIAM J. ABERNATHY
Company: Feezor Engineering, Inc. Email: babernathy@feezorengineering.com
Address: 3377 Hollenberg Drive Bridgeton, Missouri 63044
Phone: 314-502-1299

Project Info:
P.O. #:
Project #:
Project Name: Bridgeton Landfill VOCs

Turn Around Time: ☒ Normal ☐ Rush ____ specify

Reporting Units: ☐ ppmv ☐ ppbv ☒ µg/m3 ☐ mg/m3

	Lab I.D.	Field Sample I.D. (Location)	Sampler #	Date of Deployment (mm/dd/yy)	Time of Deployment (hr : min)	Date of Retrieval (mm/dd/yy)	Time of Retrieval (hr : min)	Air Temperature	Analysis Requested	Indoor Air	Outdoor Air	Workplace Monitoring	Other (not deployed)
6.77	01A	1	I 988 I	4/9/20	1241	4/23/20	1345	59° F	see attached	☐	☒	☐	☐
6.70	02A	5	I 989 I	4/9/20	1222	4/23/20	1331	59°F	see attached	☐	☒	☐	☐
6.64	03A	7	I 990 I	4/9/20	1210	4/24/20	1044	66° F	see attached	☐	☒	☐	☐
6.70	04A	8	I 991 I	4/9/20	1256	4/24/20	1050	67° F	see attached	☐	☒	☐	☐
6.73	05A	12	I 992 I	4/9/20	1157	4/23/20	1410	59°F	see attached	☐	☒	☐	☐
6.71	06A	Dup	I 993 I	4/9/20	1222	4/23/20	1331	59°F	see attached	☐	☒	☐	☐
6.51	07A	TB	0717K	left in packaging - not deployed					see attached	☐	☐	☐	☒
										☐	☐	☐	☐
										☐	☐	☐	☐
										☐	☐	☐	☐

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
	4/25/20 1420	FEDEX 770319859017	
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
		SEAG	4/28/20 0936
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	fedEx		NA	Good	Yes No (None)	2004552

PASSIVE SAMPLE COLLECTION

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CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice
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180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630
(916) 985-1000 FAX (916) 985-1020

Project Manager: Bill Abernathy
Collected by: (Print and Sign): William Abernathy
Company: Feezor Engineering, Inc. Email: babernathy@feezorengineering.com
Address: 3377 Hollenberg Drive Bridgeton, Missouri 63044
Phone: 314-502-1299

Project Info:
P.O. #:
Project #:
Project Name: Bridgeton Landfill VOCs

Turn Around Time: ☒ Normal ☐ Rush (specify)

Reporting Units: ☐ ppmv ☐ ppbv ☒ µg/m3 ☐ mg/m3

	Lab I.D.	Field Sample I.D. (Location)	Sampler #	Date of Deployment (mm/dd/yy)	Time of Deployment (hr : min)	Date of Retrieval (mm/dd/yy)	Time of Retrieval (hr : min)	Air Temperature	Analysis Requested	Indoor Air	Outdoor Air	Workplace Monitoring	Other (not deployed)
6.67	01A	1	0718K	4/23/20	1351	5/7/20	0925	57°F	see attached	☐	☒	☐	☐
6.67	02A	5	0719K	4/23/20	1332	5/7/20	1041	61°F	see attached	☐	☒	☐	☐
6.65	03A	7	0720K	4/24/20	1044	5/7/20	1034	61°F	see attached	☐	☒	☐	☐
6.61	04A	8	0721K	4/24/20	1051	5/7/20	1051	63°F	see attached	☐	☒	☐	☐
6.68	05A	12	0722K	4/23/20	1413	5/7/20	1008	61°F	see attached	☐	☒	☐	☐
6.58	06A	Dup	0723K	4/23/20	1351	5/7/20	0925	57°F	see attached	☐	☒	☐	☐
6.55	07A	TB	0762T	left in packaging - not deployed					see attached	☐	☐	☐	☒
										☐	☐	☐	☐
										☐	☐	☐	☐
										☐	☐	☐	☐

Relinquished by: (signature) Date/Time: 5/7/20 1500
Relinquished by: (signature) Date/Time:
Relinquished by: (signature) Date/Time:

Received by: (signature) Date/Time: FEDEX 7704 1102 7401
Received by: (signature) Date/Time: 5/08/20 1005
Received by: (signature) Date/Time:

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	fedex		NA	Good	Yes No (None)	2005159

PASSIVE SAMPLE COLLECTION

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CHAIN-OF-CUSTODY RECORD

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180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630
(916) 985-1000 FAX (916) 985-1020

Project Manager: Bill Abernathy
Collected by: (Print and Sign) WILLIAM T. ABERNATHY
Company: Feezor Engineering, Inc. Email: babernathy@feezorengineering.com
Address: 3377 Hollenberg Drive Bridgeton, Missouri 63044
Phone: 314-502-1299

Project Info:
P.O. #
Project #
Project Name: Bridgeton Landfill VOCs

Turn Around Time:
☒ Normal
☐ Rush
specify

Reporting Units:
☐ ppmv
☐ ppbv
☒ µg/m3
☐ mg/m3

	Lab I.D.	Field Sample I.D. (Location)	Sampler #	Date of Deployment (mm/dd/yy)	Time of Deployment (hr : min)	Date of Retrieval (mm/dd/yy)	Time of Retrieval (hr : min)	Air Temperature	Analysis Requested	Indoor Air	Outdoor Air	Workplace Monitoring	Other (not deployed)
6.84	01A	1	U763T	5/7/20	0931	5/21/20	0812	56° F	see attached	☐	☒	☐	☐
6.71	02A	5	U764T	5/7/20	1041	5/21/20	0840	56° F	see attached	☐	☒	☐	☐
6.71	03A	7	U765T	5/7/20	1038	5/21/20	0832	56° F	see attached	☐	☒	☐	☐
6.74	04A	8	U766T	5/7/20	1051	5/21/20	0851	57° F	see attached	☐	☒	☐	☐
6.79	05A	12	U767T	5/7/20	1013	5/21/20	0742	57° F	see attached	☐	☒	☐	☐
6.79	06A	Dup	U768T	5/7/20	1013	5/21/20	0742	57° F	see attached	☐	☒	☐	☐
6.62	07A	TB	L181F	left in packaging - not deployed					see attached	☐	☐	☐	☒
										☐	☐	☐	☐
										☐	☐	☐	☐
										☐	☐	☐	☐

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
WILLIAM T. ABERNATHY	5/21/20 0930	FEDEX 7705 1727 0750	
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
		TAM	05/22/20 1100
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:
2005495

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	FEDEX		NA	GOOD	Yes No None	

PASSIVE SAMPLE COLLECTION

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CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice
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180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630
(916) 985-1000 FAX (916) 985-1020

Project Manager: Bill Abernathy
Collected by: (Print and Sign) [signature] WILLIAM ABERNATHY
Company: Feezor Engineering, Inc. Email: babernathy@feezorengineering.com
Address: 3377 Hollenberg Drive Bridgeton, Missouri 63044
Phone: 314-502-1299

Project Info:
P.O. #:
Project #:
Project Name: Bridgeton Landfill VOCs

Turn Around Time: ☒ Normal ☐ Rush (specify)

Reporting Units: ☐ ppmv ☐ ppbv ☒ µg/m3 ☐ mg/m3

	Lab I.D.	Field Sample I.D. (Location)	Sampler #	Date of Deployment (mm/dd/yy)	Time of Deployment (hr : min)	Date of Retrieval (mm/dd/yy)	Time of Retrieval (hr : min)	Air Temperature	Analysis Requested	Indoor Air	Outdoor Air	Workplace Monitoring	Other (not deployed)
6.62	01A	1	L182F	5/21/20	0816	6/4/20	1008	73° F	see attached	☐	☒	☐	☐
6.58	02A	5	L183F	5/21/20	0844	6/4/20	1146	76° F	see attached	☐	☒	☐	☐
6.53	03A	7	U769T	5/21/20	0836	6/4/20	1135	75° F	see attached	☐	☒	☐	☐
6.55	04A	8	U770T	5/21/20	0852	6/4/20	0939	72° F	see attached	☐	☒	☐	☐
6.76	05A	12	U771T	5/21/20	0747	6/4/20	1116	75° F	see attached	☐	☒	☐	☐
6.78	06A	Dup	U772T	5/21/20	0852	6/4/20	0939	72° F	see attached	☐	☒	☐	☐
6.29	07A	TB	U773T	left in packaging - not deployed					see attached	☐	☐	☐	☒
										☐	☐	☐	☐
										☐	☐	☐	☐
										☐	☐	☐	☐

Relinquished by: (signature) Date/Time: [signature] 6/4/20 1315
Relinquished by: (signature) Date/Time:
Relinquished by: (signature) Date/Time:

Received by: (signature) Date/Time: FEDEX 7706 2244 7289
Received by: (signature) Date/Time: 6/5/20 SEAL 0940
Received by: (signature) Date/Time:

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	FedEx		NA	GOOD	Yes No (None)	200611?

PASSIVE SAMPLE COLLECTION

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CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice
Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Eurofins assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922.

180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630
(916) 985-1000 FAX (916) 985-1020

Project Manager: Bill Abernathy
Collected by: (Print and Sign) WILLIAM ABERNATHY
Company: Feezor Engineering, Inc. Email: babernathy@feezorengineering.com
Address: 3377 Hollenberg Drive Bridgeton, Missouri 63044
Phone: 314-502-1299

Project Info:
P.O. #:
Project #:
Project Name: Bridgeton Landfill VOCs

Turn Around Time:
☒ Normal
☐ Rush
specify

Reporting Units:
☐ ppbv
☐ ppbv
☒ µg/m3
☐ mg/m3

	Lab I.D.	Field Sample I.D. (Location)	Sampler #	Date of Deployment (mm/dd/yy)	Time of Deployment (hr : min)	Date of Retrieval (mm/dd/yy)	Time of Retrieval (hr : min)	Air Temperature	Analysis Requested	Indoor Air	Outdoor Air	Workplace Monitoring	Other ( )
6.35	01A	1	U774T	6/4/20	1013	6/18/20	0816	76°F	see attached	☐	☒	☐	☐
6.22	02A	5	0724K	6/4/20	1147	6/18/20	1529	89°F	see attached	☐	☒	☐	☐
6.26	03A	7	0725K	6/4/20	1143	6/18/20	1519	89°F	see attached	☐	☒	☐	☐
6.24	04A	8	0726K	6/4/20	0940	6/18/20	1544	90°F	see attached	☐	☒	☐	☐
6.44	05A	12	0727K	6/4/20	1122	6/18/20	0946	79°F	see attached	☐	☒	☐	☐
6.23	06A	Dup	0728K	6/4/20	1143	6/18/20	1519	89°F	see attached	☐	☒	☐	☐
6.24	07A	TB	0729K	left in packaging - not deployed					see attached	☐	☐	☐	☒
										☐	☐	☐	☐
										☐	☐	☐	☐
										☐	☐	☐	☐

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
	6/22/20 0900	FEDEX 7707 6298 7937	
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
		GATE	6/23/20 1020
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	fedEx		NA	Good	Yes No None	2006584

PASSIVE SAMPLE COLLECTION

eurofins | Air Toxics

CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice
Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Eurofins assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922.

180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630
(916) 985-1000 FAX (916) 985-1020

Project Manager: Bill Abernathy
Collected by: (Print and Sign) WILLIAM ABERNATHY
Company: Feezor Engineering, Inc. Email: babernathy@feezorengineering.com
Address: 3377 Hollenberg Drive Bridgeton, Missouri 63044
Phone: 314-502-1299

Project Info:
P.O. #:
Project #:
Project Name: Bridgeton Landfill VOCs

Turn Around Time: ☒ Normal ☐ Rush (specify)

Reporting Units: ☐ ppmv ☐ ppbv ☒ µg/m3 ☐ mg/m3

	Lab I.D.	Field Sample I.D. (Location)	Sampler #	Date of Deployment (mm/dd/yy)	Time of Deployment (hr : min)	Date of Retrieval (mm/dd/yy)	Time of Retrieval (hr : min)	Air Temperature	Analysis Requested	Indoor Air	Outdoor Air	Workplace Monitoring	Other ( )
6.41	01A	1	0730K	6/18/20	0820	7/1/20	1030	78°F	see attached	☐	☒	☐	☐
6.38	02A	5	0731K	6/18/20	1534	7/1/20	1003	76°F	see attached	☐	☒	☐	☐
6.32	03A	7	0732K	6/18/20	1524	7/1/20	0957	76°F	see attached	☐	☒	☐	☐
6.57	04A	8	0733K	6/18/20	1546	7/1/20	1013	77°F	see attached	☐	☒	☐	☐
6.42	05A	12	0734K	6/18/20	0951	7/1/20	0939	76°F	see attached	☐	☒	☐	☐
6.65	06A	Dup	0735K	6/18/20	1534	7/1/20	1003	76°F	see attached	☐	☒	☐	☐
6.33	07A	TB	Y124X	left in packaging - not deployed					see attached	☐	☐	☐	☒
										☐	☐	☐	☐
										☐	☐	☐	☐
										☐	☐	☐	☐

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
	7/1/20 1530	FEDEX 7708 4549 4199	
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
		SEAC	7/02/20 1008
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	fedEx		NA	Good	Yes No (None)	2007043

ORIGIN ID:ALNA (314) 502-1299
BILL ABERNATHY

3377 HOLLENBERG DR

BRIDGETON, MO 63044
UNITED STATES US

SHIP DATE: 09APR20
ACTWGT:
CAD: 105653986/INET4220

BILL SENDER

TO **SAMPLE RECEIVING**
AIR TOXICS LTD
180 BLUE RAVINE ROAD
SUITE B
FOLSOM CA 95630
(916) 985-1000 REF: 4-9-20 RADIELLOS
INV:
PO: DEPT:

56BJ3/9C25/FE4A

FedEx Express

J201020011301uv

FRI - 10 APR 3:00P
STANDARD OVERNIGHT

TRK# 0201 **7702 0404 5734**

XH MHRA

95630
CA-US **SMF**

ORIGIN ID:ALNA (314) 502-1299
BILL ABERNATHY

3377 HOLLENBERG DR

BRIDGETON, MO 63044
UNITED STATES US

SHIP DATE: 27APR20
ACTWGT:
CAD: 105653986/INET4220

BILL SENDER

TO **SAMPLE RECEIVING**
AIR TOXICS LTD
180 BLUE RAVINE ROAD
SUITE B
FOLSOM CA 95630
(916) 985-1000 REF: 4-23/24-20 RADIELLOS
INV:
PO: DEPT:

56BJ4/7B3A/FE4A

FedEx Express

J201020011301uv

TUE - 28 APR 3:00P
STANDARD OVERNIGHT

TRK# 0201 **7703 1985 9017**

XH MHRA

95630
CA-US **SMF**

ORIGIN ID:ALNA (314) 502-1299
BILL ABERNATHY

3377 HOLLENBERG DR

BRIDGETON, MO 63044
UNITED STATES US

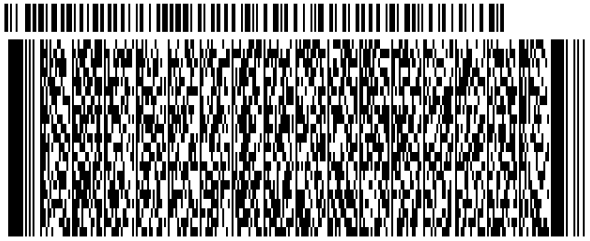
SHIP DATE: 07MAY20
ACTWGT:
CAD: 105653986/INET4220

BILL SENDER

TO **SAMPLE RECEIVING**
AIR TOXICS LTD
180 BLUE RAVINE ROAD
SUITE B
FOLSOM CA 95630

(916) 985-1000 REF: 5-7-20 RADIELLOS
INV:
PO: DEPT:

56BJ3/2925/FE4A



FedEx Express

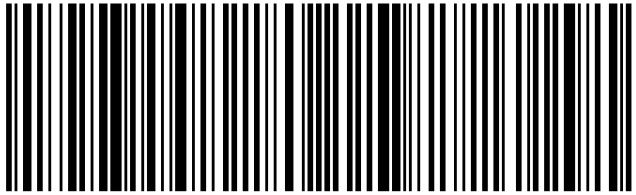
J201120042401uv

FRI - 08 MAY 3:00P
STANDARD OVERNIGHT

TRK# 0201 **7704 1102 7401**

XH MHRA

95630
CA-US **SMF**



ORIGIN ID:ALNA (314) 502-1299
BILL ABERNATHY

3377 HOLLENBERG DR

BRIDGETON, MO 63044
UNITED STATES US

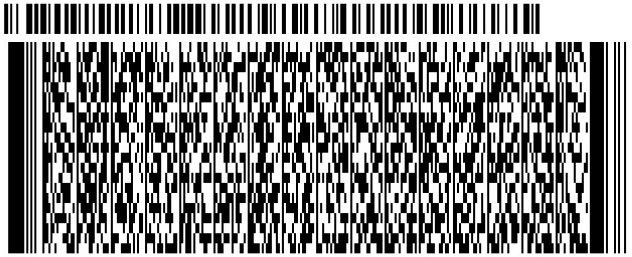
SHIP DATE: 21MAY20
ACTWGT:
CAD: 105653986/INET4220

BILL SENDER

TO **SAMPLE RECEIVING**
AIR TOXICS LTD
180 BLUE RAVINE ROAD
SUITE B
FOLSOM CA 95630

(916) 985-1000 REF: 5-21-20 RADIELLOS
INV:
PO: DEPT:

56BJ3/2925/FE4A



FedEx Express

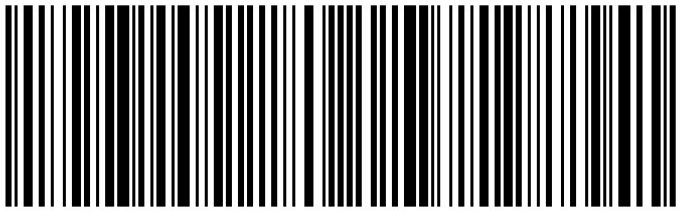
J201120042401uv

FRI - 22 MAY 3:00P
STANDARD OVERNIGHT

TRK# 0201 **7705 1727 0750**

XH MHRA

95630
CA-US **SMF**



ORIGIN ID:ALNA (314) 502-1299
BILL ABERNATHY

3377 HOLLENBERG DR

BRIDGETON, MO 63044
UNITED STATES US

SHIP DATE: 04JUN20
ACTWGT:
CAD: 105653986/INET4220

BILL SENDER

TO **SAMPLE RECEIVING**
AIR TOXICS LTD
180 BLUE RAVINE ROAD
SUITE B
FOLSOM CA 95630

(916) 985-1000 REF: 6-4-20 RADIELLOS
INV:
PO: DEPT:

56BJ1/C7DD/FE4A

FedEx Express

J201120042401uv

FRI - 05 JUN 3:00P
STANDARD OVERNIGHT

TRK# 0201 **7706 2244 7289**

XH MHRA

95630
CA-US **SMF**

ORIGIN ID:ALNA (314) 502-1299
BILL ABERNATHY

3377 HOLLENBERG DR

BRIDGETON, MO 63044
UNITED STATES US

SHIP DATE: 22JUN20
ACTWGT:
CAD: 105653986/INET4220

BILL SENDER

TO **SAMPLE RECEIVING**
AIR TOXICS LTD
180 BLUE RAVINE ROAD
SUITE B
FOLSOM CA 95630

(916) 985-1000 REF: 6-18-20 RADIELLOS
INV:
PO: DEPT:

56BJ1/C7DD/FE4A

FedEx Express

J201120042401uv

TUE - 23 JUN 3:00P
STANDARD OVERNIGHT

TRK# 0201 **7707 6298 7937**

XH MHRA

95630
CA-US **SMF**

ORIGIN ID:ALNA (314) 502-1299
BILL ABERNATHY

3377 HOLLENBERG DR

BRIDGETON, MO 63044
UNITED STATES US

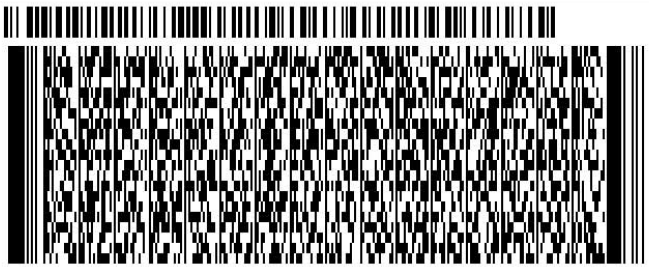
SHIP DATE: 01JUL20
ACTWGT:
CAD: 105653986/INET4220

BILL SENDER

TO **SAMPLE RECEIVING**
AIR TOXICS LTD
180 BLUE RAVINE ROAD
SUITE B
FOLSOM CA 95630

(916) 985-1000 REF: 7-1-20 RADIELLOS
INV:
PO: DEPT:

56BJ217B7/FE4A



FedEx Express

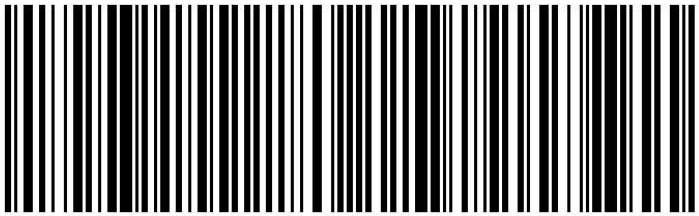
J201120042401uv

THU - 02 JUL 3:00P
STANDARD OVERNIGHT

TRK# 0201 **7708 4549 4199**

XH MHRA

95630
CA-US **SMF**



Appendix 2

Analytical Reports from Eurofins Air Toxics, Inc.

March 26, 2020 to April 9, 2020

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4/22/2020
Mr. Bill Abernathy
Feezor Engineering
3377 Hollenberg Drive

Bridgeton MO 63044

Project Name: Bridgeton Landfill VOCs
Project #:
Workorder #: 2004190

Dear Mr. Bill Abernathy

The following report includes the data for the above referenced project for sample(s) received on 4/10/2020 at Air Toxics Ltd.

The data and associated QC analyzed by Passive S.E. RAD130/SKC 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 Inc. 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: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Brian Whittaker

Project Manager

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WORK ORDER #: 2004190

Work Order Summary

CLIENT:	Mr. Bill Abernathy Feezor Engineering, Inc. 3377 Hollenberg Drive Bridgeton, MO 63044	**BILL TO:**	Accounts Payable Feezor Engineering, Inc. 406 E. Walnut Chatham, IL 62629
PHONE:	314-502-1299	**P.O. #**	BT-204
FAX:		**PROJECT #**	Bridgeton Landfill VOCs
DATE RECEIVED:	04/10/2020	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	04/15/2020		

FRACTION #	NAME	TEST
01A	1	Passive S.E. RAD130/SKC
02A	5	Passive S.E. RAD130/SKC
03A	7	Passive S.E. RAD130/SKC
04A	8	Passive S.E. RAD130/SKC
05A	12	Passive S.E. RAD130/SKC
06A	Dup	Passive S.E. RAD130/SKC
07A	TB	Passive S.E. RAD130/SKC
08A	Lab Blank	Passive S.E. RAD130/SKC
09A	LCS	Passive S.E. RAD130/SKC
09AA	LCSD	Passive S.E. RAD130/SKC

CERTIFIED BY:  DATE: 04/15/20

Technical Director

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
RAD130 Passive SE by Mod EPA TO-17
Feezor Engineering
Workorder# 2004190

Seven Radiello 130 (Solvent) samples were received on April 10, 2020. 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.

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

The uptake rates were corrected based on average field temperatures if provided. In the absence of field temperatures, the uptake rates determined at 25 deg C were used.

To calculate ug/m3 concentrations in the Lab Blank and Trip Blank, a sampling duration of 20258 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
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: 1

Lab ID#: 2004190-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.079	0.36	0.28
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	0.36	0.24
Cyclohexane	0.10	0.097	0.12	0.12
Carbon Tetrachloride	0.10	0.078	0.39	0.30
Benzene	0.40	0.26	0.58	0.38
Heptane	0.10	0.090	0.36	0.32
Toluene	0.10	0.070	2.4	1.7
Tetrachloroethene	0.10	0.088	0.11	0.10
Ethyl Benzene	0.10	0.077	0.16	0.12
m,p-Xylene	0.10	0.075	0.61	0.45
o-Xylene	0.10	0.080	0.21	0.17

Client Sample ID: 5

Lab ID#: 2004190-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.079	0.35	0.28
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	0.34	0.22
Carbon Tetrachloride	0.10	0.078	0.37	0.29
Benzene	0.40	0.26	0.53	0.34
Heptane	0.10	0.090	0.24	0.22
Toluene	0.10	0.071	0.70	0.50
m,p-Xylene	0.10	0.075	0.26	0.20

Client Sample ID: 7

Lab ID#: 2004190-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	1.4	0.75
Hexane	0.10	0.079	0.40	0.32
Ethyl Acetate	0.40	0.27	0.70	0.47
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	0.41	0.27
Cyclohexane	0.10	0.097	0.13	0.13

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

Client Sample ID: 7

Lab ID#: 2004190-03A

Carbon Tetrachloride	0.10	0.078	0.40	0.31
Benzene	0.40	0.26	0.54	0.36
Heptane	0.10	0.090	0.29	0.26
Toluene	0.10	0.071	1.1	0.80
Tetrachloroethene	0.10	0.089	0.10	0.093
Ethyl Benzene	0.10	0.077	0.12	0.096
m,p-Xylene	0.10	0.075	0.36	0.27
o-Xylene	0.10	0.080	0.12	0.098

Client Sample ID: 8

Lab ID#: 2004190-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.079	0.31	0.25
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	0.38	0.25
Carbon Tetrachloride	0.10	0.078	0.37	0.29
Benzene	0.40	0.26	0.54	0.35
Heptane	0.10	0.090	0.31	0.27
Toluene	0.10	0.070	0.60	0.42
m,p-Xylene	0.10	0.074	0.24	0.18

Client Sample ID: 12

Lab ID#: 2004190-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.080	0.36	0.29
2-Butanone (Methyl Ethyl Ketone)	0.10	0.067	0.29	0.19
Cyclohexane	0.10	0.098	0.10	0.10
Carbon Tetrachloride	0.10	0.079	0.44	0.35
Benzene	0.40	0.26	0.62	0.41
Heptane	0.10	0.091	0.42	0.38
Toluene	0.10	0.072	0.58	0.42
m,p-Xylene	0.10	0.076	0.25	0.19

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

Client Sample ID: Dup

Lab ID#: 2004190-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	1.4	0.71
Hexane	0.10	0.079	0.42	0.33
Ethyl Acetate	0.40	0.27	0.68	0.46
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	0.43	0.28
Cyclohexane	0.10	0.097	0.13	0.13
Carbon Tetrachloride	0.10	0.078	0.40	0.31
Benzene	0.40	0.26	0.57	0.38
Heptane	0.10	0.090	0.31	0.28
Toluene	0.10	0.071	1.2	0.89
Tetrachloroethene	0.10	0.089	0.12	0.10
Ethyl Benzene	0.10	0.077	0.14	0.11
m,p-Xylene	0.10	0.075	0.43	0.32
o-Xylene	0.10	0.080	0.14	0.12

Client Sample ID: TB

Lab ID#: 2004190-07A

No Detections Were Found.

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Client Sample ID: 1

Lab ID#: 2004190-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c041416sim**	**Date of Collection: 4/9/20 12:36:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/14/20 02:54 PM**	
		Date of Extraction: 4/14/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	0.36	0.28
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	0.36	0.24
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.097	0.12	0.12
Carbon Tetrachloride	0.10	0.078	0.39	0.30
Benzene	0.40	0.26	0.58	0.38
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.36	0.32
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.070	2.4	1.7
Tetrachloroethene	0.10	0.088	0.11	0.10
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	0.16	0.12
m,p-Xylene	0.10	0.075	0.61	0.45
o-Xylene	0.10	0.080	0.21	0.17
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.092	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 58.0F , duration time = 20258 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

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Client Sample ID: 5

Lab ID#: 2004190-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c041417sim**	**Date of Collection: 4/9/20 12:15:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/14/20 03:20 PM**	
		Date of Extraction: 4/14/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	0.35	0.28
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	0.34	0.22
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.097	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.078	0.37	0.29
Benzene	0.40	0.26	0.53	0.34
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.24	0.22
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	0.70	0.50
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	Not Detected	Not Detected
m,p-Xylene	0.10	0.075	0.26	0.20
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.092	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 58.0F , duration time = 20214 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

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Client Sample ID: 7

Lab ID#: 2004190-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c041418sim**	**Date of Collection: 4/9/20 12:06:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/14/20 03:46 PM**	
		Date of Extraction: 4/14/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	1.4	0.75
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	0.40	0.32
Ethyl Acetate	0.40	0.27	0.70	0.47
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	0.41	0.27
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.097	0.13	0.13
Carbon Tetrachloride	0.10	0.078	0.40	0.31
Benzene	0.40	0.26	0.54	0.36
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.29	0.26
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	1.1	0.80
Tetrachloroethene	0.10	0.089	0.10	0.093
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	0.12	0.096
m,p-Xylene	0.10	0.075	0.36	0.27
o-Xylene	0.10	0.080	0.12	0.098
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.092	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 58.0F , duration time = 20210 minutes.
Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

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Client Sample ID: 8

Lab ID#: 2004190-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c041419sim**	**Date of Collection: 4/9/20 12:55:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/14/20 04:12 PM**	
		Date of Extraction: 4/14/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	0.31	0.25
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	0.38	0.25
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.078	0.37	0.29
Benzene	0.40	0.26	0.54	0.35
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.31	0.27
Trichloroethene	0.10	0.075	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.070	0.60	0.42
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	Not Detected	Not Detected
m,p-Xylene	0.10	0.074	0.24	0.18
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 59.0F , duration time = 20246 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

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Client Sample ID: 12

Lab ID#: 2004190-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c041420sim**	**Date of Collection: 4/9/20 11:50:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/14/20 04:37 PM**	
		Date of Extraction: 4/14/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.081	Not Detected	Not Detected
Hexane	0.10	0.080	0.36	0.29
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.067	0.29	0.19
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	0.10	0.10
Carbon Tetrachloride	0.10	0.079	0.44	0.35
Benzene	0.40	0.26	0.62	0.41
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.091	0.42	0.38
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.072	0.58	0.42
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	Not Detected	Not Detected
m,p-Xylene	0.10	0.076	0.25	0.19
o-Xylene	0.10	0.081	Not Detected	Not Detected
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.093	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 54.0F , duration time = 20203 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

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Client Sample ID: Dup

Lab ID#: 2004190-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c041421sim**	**Date of Collection: 4/9/20 12:06:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/14/20 05:03 PM**	
		Date of Extraction: 4/14/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	1.4	0.71
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	0.42	0.33
Ethyl Acetate	0.40	0.27	0.68	0.46
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	0.43	0.28
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.097	0.13	0.13
Carbon Tetrachloride	0.10	0.078	0.40	0.31
Benzene	0.40	0.26	0.57	0.38
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.31	0.28
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	1.2	0.89
Tetrachloroethene	0.10	0.089	0.12	0.10
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	0.14	0.11
m,p-Xylene	0.10	0.075	0.43	0.32
o-Xylene	0.10	0.080	0.14	0.12
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.092	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 58.0F , duration time = 20210 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

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Client Sample ID: TB

Lab ID#: 2004190-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c041422sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/14/20 05:29 PM**	
		Date of Extraction: 4/14/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	Not Detected	Not Detected
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	Not Detected	Not Detected
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.078	Not Detected	Not Detected
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.067	Not Detected	Not Detected
Heptane	0.10	0.090	Not Detected	Not Detected
Trichloroethene	0.10	0.075	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.070	Not Detected	Not Detected
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	Not Detected	Not Detected
m,p-Xylene	0.10	0.074	Not Detected	Not Detected
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 59.0F , duration time = 20258 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2004190-08A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c041410sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/14/20 12:19 PM**	
		Date of Extraction: 4/14/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	Not Detected	Not Detected
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	Not Detected	Not Detected
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.078	Not Detected	Not Detected
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.067	Not Detected	Not Detected
Heptane	0.10	0.090	Not Detected	Not Detected
Trichloroethene	0.10	0.075	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.070	Not Detected	Not Detected
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	Not Detected	Not Detected
m,p-Xylene	0.10	0.074	Not Detected	Not Detected
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 59.0F , duration time = 20258 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

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Client Sample ID: LCS

Lab ID#: 2004190-09A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c041408sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/14/20 11:28 AM**	
		Date of Extraction: 4/14/20	

Compound	%Recovery	Method Limits
Ethanol	46 Q	50-130
Methyl tert-butyl ether	88	70-130
Hexane	98	70-130
Ethyl Acetate	93	70-130
2-Butanone (Methyl Ethyl Ketone)	84	70-130
Chloroform	86	70-130
1,1,1-Trichloroethane	89	70-130
Cyclohexane	97	70-130
Carbon Tetrachloride	87	70-130
Benzene	88	70-130
1,2-Dichloroethane	85	70-130
Heptane	101	70-130
Trichloroethene	95	70-130
4-Methyl-2-pentanone	92	70-130
Toluene	91	70-130
Tetrachloroethene	91	70-130
Chlorobenzene	81	70-130
Ethyl Benzene	93	70-130
m,p-Xylene	89	70-130
o-Xylene	84	70-130
Styrene	57	20-100
Propylbenzene	88	70-130
1,4-Dichlorobenzene	73	50-110
Naphthalene	7.0	5-80

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

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Client Sample ID: LCSD

Lab ID#: 2004190-09AA

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c041409sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/14/20 11:53 AM**	
		Date of Extraction: 4/14/20	

Compound	%Recovery	Method Limits
Ethanol	53	50-130
Methyl tert-butyl ether	92	70-130
Hexane	99	70-130
Ethyl Acetate	96	70-130
2-Butanone (Methyl Ethyl Ketone)	86	70-130
Chloroform	89	70-130
1,1,1-Trichloroethane	90	70-130
Cyclohexane	98	70-130
Carbon Tetrachloride	88	70-130
Benzene	89	70-130
1,2-Dichloroethane	86	70-130
Heptane	100	70-130
Trichloroethene	95	70-130
4-Methyl-2-pentanone	90	70-130
Toluene	90	70-130
Tetrachloroethene	90	70-130
Chlorobenzene	79	70-130
Ethyl Benzene	91	70-130
m,p-Xylene	86	70-130
o-Xylene	81	70-130
Styrene	54	20-100
Propylbenzene	84	70-130
1,4-Dichlorobenzene	68	50-110
Naphthalene	5.9	5-80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

April 9, 2020 to April 23/24, 2020

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5/7/2020
Mr. Bill Abernathy
Feezor Engineering
3377 Hollenberg Drive

Bridgeton MO 63044

Project Name: Bridgeton Landfill VOCs
Project #:
Workorder #: 2004552

Dear Mr. Bill Abernathy

The following report includes the data for the above referenced project for sample(s) received on 4/28/2020 at Air Toxics Ltd.

The data and associated QC analyzed by Passive S.E. RAD130/SKC 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 Inc. 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: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Brian Whittaker

Project Manager

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WORK ORDER #: 2004552

Work Order Summary

CLIENT:	Mr. Bill Abernathy Feezor Engineering, Inc. 3377 Hollenberg Drive Bridgeton, MO 63044	**BILL TO:**	Accounts Payable Feezor Engineering, Inc. 406 E. Walnut Chatham, IL 62629
PHONE:	314-502-1299	**P.O. #**	BT-204
FAX:		**PROJECT #**	Bridgeton Landfill VOCs
DATE RECEIVED:	04/28/2020	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	05/07/2020		

FRACTION #	NAME	TEST
01A	1	Passive S.E. RAD130/SKC
02A	5	Passive S.E. RAD130/SKC
03A	7	Passive S.E. RAD130/SKC
04A	8	Passive S.E. RAD130/SKC
05A	12	Passive S.E. RAD130/SKC
06A	Dup	Passive S.E. RAD130/SKC
07A	TB	Passive S.E. RAD130/SKC
08A	Lab Blank	Passive S.E. RAD130/SKC
09A	LCS	Passive S.E. RAD130/SKC
09AA	LCSD	Passive S.E. RAD130/SKC

CERTIFIED BY:  DATE: 05/07/20

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209219, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-19-14, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-013, Effective date: 10/18/2019, Expiration date: 10/17/2020.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
RAD130 Passive SE by Mod EPA TO-17
Feezor Engineering
Workorder# 2004552

Seven Radiello 130 (Solvent) samples were received on April 28, 2020. 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.

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 and Trip Blank, a sampling duration of 21514 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.

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
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: 1

Lab ID#: 2004552-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.079	0.22	0.17
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.27	0.18
Carbon Tetrachloride	0.10	0.078	0.46	0.36
Benzene	0.40	0.26	0.51	0.33
Heptane	0.10	0.090	0.21	0.19
Toluene	0.10	0.070	0.70	0.49
m,p-Xylene	0.10	0.074	0.24	0.17
o-Xylene	0.10	0.080	0.10	0.080

Client Sample ID: 5

Lab ID#: 2004552-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.079	0.25	0.20
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.27	0.18
Carbon Tetrachloride	0.10	0.078	0.49	0.38
Benzene	0.40	0.26	0.55	0.36
Heptane	0.10	0.090	0.20	0.18
Toluene	0.10	0.070	0.56	0.39
m,p-Xylene	0.10	0.074	0.24	0.18

Client Sample ID: 7

Lab ID#: 2004552-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.073	0.35	0.26
Ethyl Acetate	0.40	0.24	0.47	0.29
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.35	0.21
Cyclohexane	0.10	0.089	0.13	0.11
Carbon Tetrachloride	0.10	0.072	0.49	0.35
Benzene	0.40	0.24	0.57	0.34
Heptane	0.10	0.083	0.28	0.23
Toluene	0.10	0.065	0.99	0.64

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

Client Sample ID: 7

Lab ID#: 2004552-03A

Ethyl Benzene	0.10	0.070	0.15	0.11
m,p-Xylene	0.10	0.068	0.43	0.29
o-Xylene	0.10	0.074	0.14	0.10

Client Sample ID: 8

Lab ID#: 2004552-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.073	0.26	0.19
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.31	0.19
Carbon Tetrachloride	0.10	0.072	0.45	0.32
Benzene	0.40	0.24	0.54	0.32
Heptane	0.10	0.083	0.25	0.21
Toluene	0.10	0.065	0.58	0.37
m,p-Xylene	0.10	0.068	0.25	0.17

Client Sample ID: 12

Lab ID#: 2004552-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.078	0.24	0.19
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.27	0.18
Carbon Tetrachloride	0.10	0.077	0.51	0.40
Benzene	0.40	0.26	0.56	0.36
Heptane	0.10	0.089	0.31	0.27
Toluene	0.10	0.070	0.56	0.40
m,p-Xylene	0.10	0.074	0.24	0.18

Client Sample ID: Dup

Lab ID#: 2004552-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.079	0.25	0.20
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.23	0.15

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

Client Sample ID: Dup

Lab ID#: 2004552-06A

Carbon Tetrachloride	0.10	0.078	0.46	0.36
Benzene	0.40	0.26	0.54	0.35
Heptane	0.10	0.090	0.20	0.18
Toluene	0.10	0.070	0.52	0.37
m,p-Xylene	0.10	0.074	0.23	0.17

Client Sample ID: TB

Lab ID#: 2004552-07A

No Detections Were Found.

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Client Sample ID: 1

Lab ID#: 2004552-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18043006sim**	**Date of Collection: 4/23/20 1:45:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/30/20 09:42 AM**	
		Date of Extraction: 4/30/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	0.22	0.17
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.27	0.18
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.078	0.46	0.36
Benzene	0.40	0.26	0.51	0.33
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.21	0.19
Trichloroethene	0.10	0.075	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.070	0.70	0.49
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	Not Detected	Not Detected
m,p-Xylene	0.10	0.074	0.24	0.17
o-Xylene	0.10	0.080	0.10	0.080
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 59.0F , duration time = 20224 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	89	70-130

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Client Sample ID: 5

Lab ID#: 2004552-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18043007sim**	**Date of Collection:**	**4/23/20 1:31:00 PM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**4/30/20 10:08 AM**
		Date of Extraction:	**4/30/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	0.25	0.20
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.27	0.18
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.078	0.49	0.38
Benzene	0.40	0.26	0.55	0.36
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.20	0.18
Trichloroethene	0.10	0.075	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.070	0.56	0.39
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	Not Detected	Not Detected
m,p-Xylene	0.10	0.074	0.24	0.18
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 59.0F , duration time = 20229 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130

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Client Sample ID: 7

Lab ID#: 2004552-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18043008sim**	**Date of Collection: 4/24/20 10:44:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis: 4/30/20 10:33 AM**
		Date of Extraction: 4/30/20

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.47	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.074	Not Detected	Not Detected
Hexane	0.10	0.073	0.35	0.26
Ethyl Acetate	0.40	0.24	0.47	0.29
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.35	0.21
Chloroform	0.10	0.064	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.077	Not Detected	Not Detected
Cyclohexane	0.10	0.089	0.13	0.11
Carbon Tetrachloride	0.10	0.072	0.49	0.35
Benzene	0.40	0.24	0.57	0.34
1,2-Dichloroethane	0.10	0.062	Not Detected	Not Detected
Heptane	0.10	0.083	0.28	0.23
Trichloroethene	0.10	0.069	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected
Toluene	0.10	0.065	0.99	0.64
Tetrachloroethene	0.10	0.081	Not Detected	Not Detected
Chlorobenzene	0.10	0.070	Not Detected	Not Detected
Ethyl Benzene	0.10	0.070	0.15	0.11
m,p-Xylene	0.10	0.068	0.43	0.29
o-Xylene	0.10	0.074	0.14	0.10
Styrene	0.10	0.078	Not Detected	Not Detected
Propylbenzene	0.10	0.084	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.094	Not Detected	Not Detected
Naphthalene	0.10	0.19	Not Detected	Not Detected

Temperature = 66.0F , duration time = 21514 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130

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Client Sample ID: 8

Lab ID#: 2004552-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18043009sim**	**Date of Collection: 4/24/20 10:50:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis: 4/30/20 10:59 AM**
		Date of Extraction: 4/30/20

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.47	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.074	Not Detected	Not Detected
Hexane	0.10	0.073	0.26	0.19
Ethyl Acetate	0.40	0.25	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.31	0.19
Chloroform	0.10	0.064	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.077	Not Detected	Not Detected
Cyclohexane	0.10	0.089	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.072	0.45	0.32
Benzene	0.40	0.24	0.54	0.32
1,2-Dichloroethane	0.10	0.062	Not Detected	Not Detected
Heptane	0.10	0.083	0.25	0.21
Trichloroethene	0.10	0.070	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected
Toluene	0.10	0.065	0.58	0.37
Tetrachloroethene	0.10	0.081	Not Detected	Not Detected
Chlorobenzene	0.10	0.071	Not Detected	Not Detected
Ethyl Benzene	0.10	0.071	Not Detected	Not Detected
m,p-Xylene	0.10	0.068	0.25	0.17
o-Xylene	0.10	0.074	Not Detected	Not Detected
Styrene	0.10	0.079	Not Detected	Not Detected
Propylbenzene	0.10	0.084	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.094	Not Detected	Not Detected
Naphthalene	0.10	0.19	Not Detected	Not Detected

Temperature = 67.0F , duration time = 21474 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130

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Client Sample ID: 12

Lab ID#: 2004552-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18043010sim**	**Date of Collection:**	**4/23/20 2:10:00 PM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**4/30/20 11:24 AM**
		Date of Extraction:	**4/30/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.078	0.24	0.19
Ethyl Acetate	0.40	0.26	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.27	0.18
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.077	0.51	0.40
Benzene	0.40	0.26	0.56	0.36
1,2-Dichloroethane	0.10	0.067	Not Detected	Not Detected
Heptane	0.10	0.089	0.31	0.27
Trichloroethene	0.10	0.075	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.070	0.56	0.40
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	Not Detected	Not Detected
m,p-Xylene	0.10	0.074	0.24	0.18
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 59.0F , duration time = 20293 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130

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Client Sample ID: Dup

Lab ID#: 2004552-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18043011sim**	**Date of Collection: 4/23/20 1:31:00 PM**
Dil. Factor:	**1.00**	**Date of Analysis: 4/30/20 11:50 AM**
		Date of Extraction: 4/30/20

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	0.25	0.20
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.23	0.15
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.078	0.46	0.36
Benzene	0.40	0.26	0.54	0.35
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.20	0.18
Trichloroethene	0.10	0.075	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.070	0.52	0.37
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	Not Detected	Not Detected
m,p-Xylene	0.10	0.074	0.23	0.17
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 59.0F , duration time = 20229 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	91	70-130

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Client Sample ID: TB

Lab ID#: 2004552-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18043012sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/30/20 12:15 PM**	
		Date of Extraction: 4/30/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.47	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.074	Not Detected	Not Detected
Hexane	0.10	0.073	Not Detected	Not Detected
Ethyl Acetate	0.40	0.24	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	Not Detected	Not Detected
Chloroform	0.10	0.064	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.077	Not Detected	Not Detected
Cyclohexane	0.10	0.089	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.072	Not Detected	Not Detected
Benzene	0.40	0.24	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.062	Not Detected	Not Detected
Heptane	0.10	0.083	Not Detected	Not Detected
Trichloroethene	0.10	0.069	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected
Toluene	0.10	0.065	Not Detected	Not Detected
Tetrachloroethene	0.10	0.081	Not Detected	Not Detected
Chlorobenzene	0.10	0.070	Not Detected	Not Detected
Ethyl Benzene	0.10	0.070	Not Detected	Not Detected
m,p-Xylene	0.10	0.068	Not Detected	Not Detected
o-Xylene	0.10	0.074	Not Detected	Not Detected
Styrene	0.10	0.078	Not Detected	Not Detected
Propylbenzene	0.10	0.084	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.094	Not Detected	Not Detected
Naphthalene	0.10	0.19	Not Detected	Not Detected

Temperature = 67.0F , duration time = 21514 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	89	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2004552-08A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18043005sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/30/20 09:16 AM**	
		Date of Extraction: 4/30/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.47	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.074	Not Detected	Not Detected
Hexane	0.10	0.073	Not Detected	Not Detected
Ethyl Acetate	0.40	0.24	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	Not Detected	Not Detected
Chloroform	0.10	0.064	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.077	Not Detected	Not Detected
Cyclohexane	0.10	0.089	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.072	Not Detected	Not Detected
Benzene	0.40	0.24	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.062	Not Detected	Not Detected
Heptane	0.10	0.083	Not Detected	Not Detected
Trichloroethene	0.10	0.069	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected
Toluene	0.10	0.065	Not Detected	Not Detected
Tetrachloroethene	0.10	0.081	Not Detected	Not Detected
Chlorobenzene	0.10	0.070	Not Detected	Not Detected
Ethyl Benzene	0.10	0.070	Not Detected	Not Detected
m,p-Xylene	0.10	0.068	Not Detected	Not Detected
o-Xylene	0.10	0.074	Not Detected	Not Detected
Styrene	0.10	0.078	Not Detected	Not Detected
Propylbenzene	0.10	0.084	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.094	Not Detected	Not Detected
Naphthalene	0.10	0.19	Not Detected	Not Detected

Temperature = 67.0F , duration time = 21514 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	88	70-130

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Client Sample ID: LCS

Lab ID#: 2004552-09A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18043003sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/30/20 08:25 AM**	
		Date of Extraction: 4/30/20	

Compound	%Recovery	Method Limits
Ethanol	53	50-130
Methyl tert-butyl ether	94	70-130
Hexane	96	70-130
Ethyl Acetate	96	70-130
2-Butanone (Methyl Ethyl Ketone)	84	70-130
Chloroform	97	70-130
1,1,1-Trichloroethane	101	70-130
Cyclohexane	103	70-130
Carbon Tetrachloride	100	70-130
Benzene	96	70-130
1,2-Dichloroethane	94	70-130
Heptane	104	70-130
Trichloroethene	101	70-130
4-Methyl-2-pentanone	94	70-130
Toluene	97	70-130
Tetrachloroethene	93	70-130
Chlorobenzene	87	70-130
Ethyl Benzene	97	70-130
m,p-Xylene	89	70-130
o-Xylene	88	70-130
Styrene	63	20-100
Propylbenzene	96	70-130
1,4-Dichlorobenzene	77	50-110
Naphthalene	9.3	5-80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	88	70-130

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Client Sample ID: LCSD

Lab ID#: 2004552-09AA

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18043004sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/30/20 08:51 AM**	
		Date of Extraction: 4/30/20	

Compound	%Recovery	Method Limits
Ethanol	50	50-130
Methyl tert-butyl ether	92	70-130
Hexane	94	70-130
Ethyl Acetate	94	70-130
2-Butanone (Methyl Ethyl Ketone)	80	70-130
Chloroform	94	70-130
1,1,1-Trichloroethane	98	70-130
Cyclohexane	100	70-130
Carbon Tetrachloride	98	70-130
Benzene	93	70-130
1,2-Dichloroethane	90	70-130
Heptane	102	70-130
Trichloroethene	98	70-130
4-Methyl-2-pentanone	93	70-130
Toluene	94	70-130
Tetrachloroethene	89	70-130
Chlorobenzene	83	70-130
Ethyl Benzene	95	70-130
m,p-Xylene	86	70-130
o-Xylene	85	70-130
Styrene	58	20-100
Propylbenzene	94	70-130
1,4-Dichlorobenzene	70	50-110
Naphthalene	7.2	5-80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	88	70-130

April 23/24, 2020 to May 7, 2020

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5/20/2020
Mr. Bill Abernathy
Feezor Engineering
3377 Hollenberg Drive

Bridgeton MO 63044

Project Name: Bridgeton Landfill VOCs
Project #:
Workorder #: 2005159

Dear Mr. Bill Abernathy

The following report includes the data for the above referenced project for sample(s) received on 5/8/2020 at Air Toxics Ltd.

The data and associated QC analyzed by Passive S.E. RAD130/SKC 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 Inc. 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: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Brian Whittaker

Project Manager

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WORK ORDER #: 2005159

Work Order Summary

CLIENT:	Mr. Bill Abernathy Feezor Engineering, Inc. 3377 Hollenberg Drive Bridgeton, MO 63044	**BILL TO:**	Accounts Payable Feezor Engineering, Inc. 406 E. Walnut Chatham, IL 62629
PHONE:	314-502-1299	**P.O. #**	BT-204
FAX:		**PROJECT #**	Bridgeton Landfill VOCs
DATE RECEIVED:	05/08/2020	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	05/20/2020		

FRACTION #	NAME	TEST
01A	1	Passive S.E. RAD130/SKC
02A	5	Passive S.E. RAD130/SKC
03A	7	Passive S.E. RAD130/SKC
04A	8	Passive S.E. RAD130/SKC
05A	12	Passive S.E. RAD130/SKC
06A	Dup	Passive S.E. RAD130/SKC
07A	TB	Passive S.E. RAD130/SKC
08A	Lab Blank	Passive S.E. RAD130/SKC
09A	LCS	Passive S.E. RAD130/SKC
09AA	LCSD	Passive S.E. RAD130/SKC

CERTIFIED BY:  DATE: 05/20/20

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209219, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-19-14, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-013, Effective date: 10/18/2019, Expiration date: 10/17/2020.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
RAD130 Passive SE by Mod EPA TO-17
Feezor Engineering
Workorder# 2005159

Seven Radiello 130 (Solvent) samples were received on May 08, 2020. 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.

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

The uptake rates were corrected based on average field temperatures if provided. In the absence of field temperatures, the uptake rates determined at 25 deg C were used.

To calculate ug/m3 concentrations in the Lab Blank and Trip Blank, a sampling duration of 19989 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.

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
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: 1

Lab ID#: 2005159-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.080	0.27	0.22
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.35	0.23
Carbon Tetrachloride	0.10	0.079	0.40	0.32
Benzene	0.40	0.26	0.45	0.30
Heptane	0.10	0.092	0.32	0.30
Toluene	0.10	0.072	0.62	0.44
Ethyl Benzene	0.10	0.078	0.12	0.093
m,p-Xylene	0.10	0.076	0.46	0.35
o-Xylene	0.10	0.082	0.18	0.14

Client Sample ID: 5

Lab ID#: 2005159-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.079	0.38	0.30
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.38	0.25
Cyclohexane	0.10	0.097	0.11	0.11
Carbon Tetrachloride	0.10	0.078	0.44	0.34
Benzene	0.40	0.26	0.50	0.33
Heptane	0.10	0.090	0.25	0.23
Toluene	0.10	0.071	0.82	0.58
Ethyl Benzene	0.10	0.077	0.12	0.091
m,p-Xylene	0.10	0.075	0.33	0.25
o-Xylene	0.10	0.080	0.11	0.093

Client Sample ID: 7

Lab ID#: 2005159-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.085	0.35	0.29
Ethyl Acetate	0.40	0.29	0.41	0.30
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.40	0.28
Cyclohexane	0.10	0.10	0.10	0.11

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

Client Sample ID: 7

Lab ID#: 2005159-03A

Carbon Tetrachloride	0.10	0.084	0.42	0.35
Benzene	0.40	0.28	0.47	0.33
Heptane	0.10	0.096	0.25	0.24
Toluene	0.10	0.076	0.76	0.58
Ethyl Benzene	0.10	0.082	0.14	0.11
m,p-Xylene	0.10	0.080	0.39	0.31
o-Xylene	0.10	0.086	0.13	0.11

Client Sample ID: 8

Lab ID#: 2005159-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.084	0.30	0.25
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.42	0.30
Carbon Tetrachloride	0.10	0.083	0.44	0.36
Benzene	0.40	0.28	0.50	0.35
Heptane	0.10	0.096	0.25	0.24
Toluene	0.10	0.075	0.61	0.46
m,p-Xylene	0.10	0.079	0.25	0.20

Client Sample ID: 12

Lab ID#: 2005159-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.080	0.39	0.31
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.44	0.29
Chloroform	0.10	0.070	0.10	0.071
Cyclohexane	0.10	0.097	0.12	0.12
Carbon Tetrachloride	0.10	0.078	0.55	0.43
Benzene	0.40	0.26	0.60	0.39
Heptane	0.10	0.091	0.42	0.38
Toluene	0.10	0.071	0.77	0.54
Ethyl Benzene	0.10	0.077	0.12	0.090
m,p-Xylene	0.10	0.075	0.31	0.23

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

Client Sample ID: 12

Lab ID#: 2005159-05A

o-Xylene	0.10	0.081	0.10	0.085

Client Sample ID: Dup

Lab ID#: 2005159-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.080	0.29	0.23
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.36	0.24
Carbon Tetrachloride	0.10	0.079	0.43	0.34
Benzene	0.40	0.26	0.48	0.32
Heptane	0.10	0.092	0.35	0.32
Toluene	0.10	0.072	0.67	0.48
Ethyl Benzene	0.10	0.078	0.12	0.097
m,p-Xylene	0.10	0.076	0.48	0.36
o-Xylene	0.10	0.082	0.18	0.15

Client Sample ID: TB

Lab ID#: 2005159-07A

No Detections Were Found.

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Client Sample ID: 1

Lab ID#: 2005159-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18051109sim**	**Date of Collection: 5/7/20 9:25:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis: 5/11/20 11:48 AM**
		Date of Extraction: 5/11/20

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.082	Not Detected	Not Detected
Hexane	0.10	0.080	0.27	0.22
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.35	0.23
Chloroform	0.10	0.071	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.086	Not Detected	Not Detected
Cyclohexane	0.10	0.098	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.079	0.40	0.32
Benzene	0.40	0.26	0.45	0.30
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.092	0.32	0.30
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.072	0.62	0.44
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	0.12	0.093
m,p-Xylene	0.10	0.076	0.46	0.35
o-Xylene	0.10	0.082	0.18	0.14
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.093	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 57.0F , duration time = 19894 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130

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Client Sample ID: 5

Lab ID#: 2005159-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18051110sim**	**Date of Collection: 5/7/20 10:41:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis: 5/11/20 12:14 PM**
		Date of Extraction: 5/11/20

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	0.38	0.30
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.38	0.25
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.097	0.11	0.11
Carbon Tetrachloride	0.10	0.078	0.44	0.34
Benzene	0.40	0.26	0.50	0.33
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.25	0.23
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	0.82	0.58
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	0.12	0.091
m,p-Xylene	0.10	0.075	0.33	0.25
o-Xylene	0.10	0.080	0.11	0.093
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.092	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 61.0F , duration time = 19989 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130

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Client Sample ID: 7

Lab ID#: 2005159-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18051111sim**	**Date of Collection: 5/7/20 10:34:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis: 5/11/20 12:40 PM**
		Date of Extraction: 5/11/20

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.55	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.086	Not Detected	Not Detected
Hexane	0.10	0.085	0.35	0.29
Ethyl Acetate	0.40	0.29	0.41	0.30
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.40	0.28
Chloroform	0.10	0.075	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.090	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.10	0.11
Carbon Tetrachloride	0.10	0.084	0.42	0.35
Benzene	0.40	0.28	0.47	0.33
1,2-Dichloroethane	0.10	0.073	Not Detected	Not Detected
Heptane	0.10	0.096	0.25	0.24
Trichloroethene	0.10	0.081	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.076	0.76	0.58
Tetrachloroethene	0.10	0.095	Not Detected	Not Detected
Chlorobenzene	0.10	0.082	Not Detected	Not Detected
Ethyl Benzene	0.10	0.082	0.14	0.11
m,p-Xylene	0.10	0.080	0.39	0.31
o-Xylene	0.10	0.086	0.13	0.11
Styrene	0.10	0.092	Not Detected	Not Detected
Propylbenzene	0.10	0.098	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected
Naphthalene	0.10	0.22	Not Detected	Not Detected

Temperature = 61.0F , duration time = 18710 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	89	70-130

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Client Sample ID: 8

Lab ID#: 2005159-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18051112sim**	**Date of Collection: 5/7/20 10:51:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis: 5/11/20 01:06 PM**
		Date of Extraction: 5/11/20

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.54	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.086	Not Detected	Not Detected
Hexane	0.10	0.084	0.30	0.25
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.42	0.30
Chloroform	0.10	0.074	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.090	Not Detected	Not Detected
Cyclohexane	0.10	0.10	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.083	0.44	0.36
Benzene	0.40	0.28	0.50	0.35
1,2-Dichloroethane	0.10	0.072	Not Detected	Not Detected
Heptane	0.10	0.096	0.25	0.24
Trichloroethene	0.10	0.081	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.075	0.61	0.46
Tetrachloroethene	0.10	0.094	Not Detected	Not Detected
Chlorobenzene	0.10	0.082	Not Detected	Not Detected
Ethyl Benzene	0.10	0.082	Not Detected	Not Detected
m,p-Xylene	0.10	0.079	0.25	0.20
o-Xylene	0.10	0.086	Not Detected	Not Detected
Styrene	0.10	0.091	Not Detected	Not Detected
Propylbenzene	0.10	0.098	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected
Naphthalene	0.10	0.22	Not Detected	Not Detected

Temperature = 63.0F , duration time = 18720 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	91	70-130

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Client Sample ID: 12

Lab ID#: 2005159-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18051113sim**	**Date of Collection: 5/7/20 10:08:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/11/20 01:31 PM**	
		Date of Extraction: 5/11/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.081	Not Detected	Not Detected
Hexane	0.10	0.080	0.39	0.31
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.44	0.29
Chloroform	0.10	0.070	0.10	0.071
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.097	0.12	0.12
Carbon Tetrachloride	0.10	0.078	0.55	0.43
Benzene	0.40	0.26	0.60	0.39
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.091	0.42	0.38
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	0.77	0.54
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	0.12	0.090
m,p-Xylene	0.10	0.075	0.31	0.23
o-Xylene	0.10	0.081	0.10	0.085
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.092	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 61.0F , duration time = 19915 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130

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Client Sample ID: Dup

Lab ID#: 2005159-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18051114sim**	**Date of Collection: 5/7/20 9:25:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/11/20 01:57 PM**	
		Date of Extraction: 5/11/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.082	Not Detected	Not Detected
Hexane	0.10	0.080	0.29	0.23
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.36	0.24
Chloroform	0.10	0.071	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.086	Not Detected	Not Detected
Cyclohexane	0.10	0.098	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.079	0.43	0.34
Benzene	0.40	0.26	0.48	0.32
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.092	0.35	0.32
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.072	0.67	0.48
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	0.12	0.097
m,p-Xylene	0.10	0.076	0.48	0.36
o-Xylene	0.10	0.082	0.18	0.15
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.093	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 57.0F , duration time = 19894 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130

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Client Sample ID: TB

Lab ID#: 2005159-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18051115sim**	**Date of Collection: 5/7/20**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/11/20 02:23 PM**	
		Date of Extraction: 5/11/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	Not Detected	Not Detected
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	Not Detected	Not Detected
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.078	Not Detected	Not Detected
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	Not Detected	Not Detected
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.070	Not Detected	Not Detected
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	Not Detected	Not Detected
m,p-Xylene	0.10	0.074	Not Detected	Not Detected
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 63.0F , duration time = 19989 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2005159-08A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18051105sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/11/20 09:24 AM**	
		Date of Extraction: 5/11/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	Not Detected	Not Detected
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	Not Detected	Not Detected
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.078	Not Detected	Not Detected
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	Not Detected	Not Detected
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.070	Not Detected	Not Detected
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	Not Detected	Not Detected
m,p-Xylene	0.10	0.074	Not Detected	Not Detected
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 63.0F , duration time = 19989 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	88	70-130

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Client Sample ID: LCS

Lab ID#: 2005159-09A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18051103sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/11/20 08:32 AM**	
		Date of Extraction: 5/11/20	

Compound	%Recovery	Method Limits
Ethanol	62	50-130
Methyl tert-butyl ether	108	70-130
Hexane	112	70-130
Ethyl Acetate	112	70-130
2-Butanone (Methyl Ethyl Ketone)	99	70-130
Chloroform	112	70-130
1,1,1-Trichloroethane	115	70-130
Cyclohexane	116	70-130
Carbon Tetrachloride	113	70-130
Benzene	112	70-130
1,2-Dichloroethane	111	70-130
Heptane	120	70-130
Trichloroethene	111	70-130
4-Methyl-2-pentanone	108	70-130
Toluene	110	70-130
Tetrachloroethene	98	70-130
Chlorobenzene	97	70-130
Ethyl Benzene	110	70-130
m,p-Xylene	100	70-130
o-Xylene	100	70-130
Styrene	73	20-100
Propylbenzene	111	70-130
1,4-Dichlorobenzene	85	50-110
Naphthalene	10	5-80

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	88	70-130

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Client Sample ID: LCSD

Lab ID#: 2005159-09AA

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18051104sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/11/20 08:58 AM**	
		Date of Extraction: 5/11/20	

Compound	%Recovery	Method Limits
Ethanol	60	50-130
Methyl tert-butyl ether	106	70-130
Hexane	110	70-130
Ethyl Acetate	110	70-130
2-Butanone (Methyl Ethyl Ketone)	98	70-130
Chloroform	111	70-130
1,1,1-Trichloroethane	115	70-130
Cyclohexane	116	70-130
Carbon Tetrachloride	112	70-130
Benzene	112	70-130
1,2-Dichloroethane	109	70-130
Heptane	120	70-130
Trichloroethene	112	70-130
4-Methyl-2-pentanone	110	70-130
Toluene	111	70-130
Tetrachloroethene	99	70-130
Chlorobenzene	100	70-130
Ethyl Benzene	110	70-130
m,p-Xylene	102	70-130
o-Xylene	103	70-130
Styrene	79	20-100
Propylbenzene	112	70-130
1,4-Dichlorobenzene	88	50-110
Naphthalene	9.4	5-80

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	88	70-130

May 7, 2020 to May 21, 2020

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6/5/2020
Mr. Bill Abernathy
Feezor Engineering
3377 Hollenberg Drive

Bridgeton MO 63044

Project Name: Bridgeton Landfill VOCs
Project #:
Workorder #: 2005495

Dear Mr. Bill Abernathy

The following report includes the data for the above referenced project for sample(s) received on 5/22/2020 at Air Toxics Ltd.

The data and associated QC analyzed by Passive S.E. RAD130/SKC 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 Inc. 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: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Brian Whittaker

Project Manager

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WORK ORDER #: 2005495

Work Order Summary

CLIENT:	Mr. Bill Abernathy Feezor Engineering, Inc. 3377 Hollenberg Drive Bridgeton, MO 63044	**BILL TO:**	Accounts Payable Feezor Engineering, Inc. 406 E. Walnut Chatham, IL 62629
PHONE:	314-502-1299	**P.O. #**	BT-204
FAX:		**PROJECT #**	Bridgeton Landfill VOCs
DATE RECEIVED:	05/22/2020	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	06/05/2020		

FRACTION #	NAME	TEST
01A	1	Passive S.E. RAD130/SKC
02A	5	Passive S.E. RAD130/SKC
03A	7	Passive S.E. RAD130/SKC
04A	8	Passive S.E. RAD130/SKC
05A	12	Passive S.E. RAD130/SKC
06A	Dup	Passive S.E. RAD130/SKC
07A	TB	Passive S.E. RAD130/SKC
08A	Lab Blank	Passive S.E. RAD130/SKC
09A	LCS	Passive S.E. RAD130/SKC
09AA	LCSD	Passive S.E. RAD130/SKC

CERTIFIED BY:  DATE: 06/05/20

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209219, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-19-14, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-013, Effective date: 10/18/2019, Expiration date: 10/17/2020.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
RAD130 Passive SE by Mod EPA TO-17
Feezor Engineering
Workorder# 2005495

Seven Radiello 130 (Solvent) samples were received on May 22, 2020. 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.

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

The uptake rates were corrected based on average field temperatures if provided. In the absence of field temperatures, the uptake rates determined at 25 deg C were used.

To calculate ug/m3 concentrations in the Lab Blank and Trip Blank, a sampling duration of 20081 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.

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
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: 1

Lab ID#: 2005495-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.080	0.20	0.16
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.21	0.14
Carbon Tetrachloride	0.10	0.079	0.33	0.26
Heptane	0.10	0.091	0.18	0.17
Toluene	0.10	0.072	0.72	0.51
m,p-Xylene	0.10	0.076	0.27	0.20

Client Sample ID: 5

Lab ID#: 2005495-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.080	0.26	0.20
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.32	0.22
Carbon Tetrachloride	0.10	0.079	0.34	0.27
Heptane	0.10	0.092	0.15	0.14
Toluene	0.10	0.072	0.60	0.43
m,p-Xylene	0.10	0.076	0.27	0.21

Client Sample ID: 7

Lab ID#: 2005495-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.080	0.26	0.21
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.32	0.21
Carbon Tetrachloride	0.10	0.079	0.32	0.26
Heptane	0.10	0.092	0.17	0.16
Toluene	0.10	0.072	0.61	0.44
Ethyl Benzene	0.10	0.078	0.11	0.084
m,p-Xylene	0.10	0.076	0.35	0.26
o-Xylene	0.10	0.082	0.11	0.089

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

Client Sample ID: 8

Lab ID#: 2005495-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.080	0.34	0.27
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.28	0.18
Carbon Tetrachloride	0.10	0.079	0.33	0.26
Heptane	0.10	0.091	0.20	0.18
Toluene	0.10	0.071	0.69	0.49
Ethyl Benzene	0.10	0.078	0.11	0.087
m,p-Xylene	0.10	0.075	0.36	0.27
o-Xylene	0.10	0.081	0.11	0.092

Client Sample ID: 12

Lab ID#: 2005495-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.080	0.25	0.20
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.34	0.23
Carbon Tetrachloride	0.10	0.079	0.39	0.31
Heptane	0.10	0.091	0.23	0.21
Toluene	0.10	0.071	0.59	0.42
m,p-Xylene	0.10	0.076	0.27	0.20

Client Sample ID: Dup

Lab ID#: 2005495-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.080	0.25	0.20
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.34	0.23
Carbon Tetrachloride	0.10	0.079	0.37	0.29
Heptane	0.10	0.091	0.23	0.21
Toluene	0.10	0.071	0.56	0.40
m,p-Xylene	0.10	0.076	0.28	0.22

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

Client Sample ID: TB

Lab ID#: 2005495-07A

No Detections Were Found.

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Client Sample ID: 1

Lab ID#: 2005495-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c052711sim**	**Date of Collection: 5/21/20 8:12:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/27/20 11:51 AM**	
		Date of Extraction: 5/27/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.081	Not Detected	Not Detected
Hexane	0.10	0.080	0.20	0.16
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.21	0.14
Chloroform	0.10	0.071	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.079	0.33	0.26
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.091	0.18	0.17
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.072	0.72	0.51
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	Not Detected	Not Detected
m,p-Xylene	0.10	0.076	0.27	0.20
o-Xylene	0.10	0.081	Not Detected	Not Detected
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.093	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 56.0F , duration time = 20081 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	78	70-130

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Client Sample ID: 5

Lab ID#: 2005495-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c052712sim**	**Date of Collection: 5/21/20 8:40:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/27/20 12:19 PM**	
		Date of Extraction: 5/27/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.082	Not Detected	Not Detected
Hexane	0.10	0.080	0.26	0.20
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.32	0.22
Chloroform	0.10	0.071	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.086	Not Detected	Not Detected
Cyclohexane	0.10	0.098	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.079	0.34	0.27
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.092	0.15	0.14
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.072	0.60	0.43
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	Not Detected	Not Detected
m,p-Xylene	0.10	0.076	0.27	0.21
o-Xylene	0.10	0.082	Not Detected	Not Detected
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.093	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 56.0F , duration time = 20039 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	78	70-130

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Client Sample ID: 7

Lab ID#: 2005495-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c052713sim**	**Date of Collection: 5/21/20 8:32:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/27/20 12:47 PM**	
		Date of Extraction: 5/27/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.082	Not Detected	Not Detected
Hexane	0.10	0.080	0.26	0.21
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.32	0.21
Chloroform	0.10	0.071	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.086	Not Detected	Not Detected
Cyclohexane	0.10	0.098	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.079	0.32	0.26
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.092	0.17	0.16
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.072	0.61	0.44
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	0.11	0.084
m,p-Xylene	0.10	0.076	0.35	0.26
o-Xylene	0.10	0.082	0.11	0.089
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.093	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 56.0F , duration time = 20034 minutes.
Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	78	70-130

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Client Sample ID: 8

Lab ID#: 2005495-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c052714sim**	**Date of Collection: 5/21/20 8:51:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/27/20 01:15 PM**	
		Date of Extraction: 5/27/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.081	Not Detected	Not Detected
Hexane	0.10	0.080	0.34	0.27
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.28	0.18
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.079	0.33	0.26
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.091	0.20	0.18
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	0.69	0.49
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	0.11	0.087
m,p-Xylene	0.10	0.075	0.36	0.27
o-Xylene	0.10	0.081	0.11	0.092
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.093	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 57.0F , duration time = 20040 minutes.
Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	78	70-130

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Client Sample ID: 12

Lab ID#: 2005495-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c052715sim**	**Date of Collection: 5/21/20 7:42:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/27/20 01:44 PM**	
		Date of Extraction: 5/27/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.081	Not Detected	Not Detected
Hexane	0.10	0.080	0.25	0.20
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.34	0.23
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.079	0.39	0.31
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.091	0.23	0.21
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	0.59	0.42
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	Not Detected	Not Detected
m,p-Xylene	0.10	0.076	0.27	0.20
o-Xylene	0.10	0.081	Not Detected	Not Detected
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.093	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 57.0F , duration time = 20009 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	79	70-130

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Client Sample ID: Dup

Lab ID#: 2005495-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c052716sim**	**Date of Collection: 5/21/20 7:42:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/27/20 02:13 PM**	
		Date of Extraction: 5/27/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.081	Not Detected	Not Detected
Hexane	0.10	0.080	0.25	0.20
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.34	0.23
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.079	0.37	0.29
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.091	0.23	0.21
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	0.56	0.40
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	Not Detected	Not Detected
m,p-Xylene	0.10	0.076	0.28	0.22
o-Xylene	0.10	0.081	Not Detected	Not Detected
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.093	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 57.0F , duration time = 20009 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	78	70-130

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Client Sample ID: TB

Lab ID#: 2005495-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c052717sim**	**Date of Collection: 5/21/20**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/27/20 02:42 PM**	
		Date of Extraction: 5/27/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.081	Not Detected	Not Detected
Hexane	0.10	0.080	Not Detected	Not Detected
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	Not Detected	Not Detected
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.079	Not Detected	Not Detected
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.091	Not Detected	Not Detected
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	Not Detected	Not Detected
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	Not Detected	Not Detected
m,p-Xylene	0.10	0.075	Not Detected	Not Detected
o-Xylene	0.10	0.081	Not Detected	Not Detected
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.092	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 57.0F , duration time = 20081 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	78	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2005495-08A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c052705sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/27/20 09:08 AM**	
		Date of Extraction: 5/27/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.081	Not Detected	Not Detected
Hexane	0.10	0.080	Not Detected	Not Detected
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	Not Detected	Not Detected
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.079	Not Detected	Not Detected
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.091	Not Detected	Not Detected
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	Not Detected	Not Detected
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	Not Detected	Not Detected
m,p-Xylene	0.10	0.075	Not Detected	Not Detected
o-Xylene	0.10	0.081	Not Detected	Not Detected
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.092	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 57.0F , duration time = 20081 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	76	70-130

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Client Sample ID: LCS

Lab ID#: 2005495-09A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c052703sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/27/20 08:14 AM**	
		Date of Extraction: 5/27/20	

Compound	%Recovery	Method Limits
Ethanol	60	50-130
Methyl tert-butyl ether	98	70-130
Hexane	94	70-130
Ethyl Acetate	97	70-130
2-Butanone (Methyl Ethyl Ketone)	82	70-130
Chloroform	94	70-130
1,1,1-Trichloroethane	100	70-130
Cyclohexane	98	70-130
Carbon Tetrachloride	101	70-130
Benzene	92	70-130
1,2-Dichloroethane	97	70-130
Heptane	102	70-130
Trichloroethene	95	70-130
4-Methyl-2-pentanone	95	70-130
Toluene	93	70-130
Tetrachloroethene	94	70-130
Chlorobenzene	83	70-130
Ethyl Benzene	96	70-130
m,p-Xylene	92	70-130
o-Xylene	85	70-130
Styrene	59	20-100
Propylbenzene	91	70-130
1,4-Dichlorobenzene	74	50-110
Naphthalene	10	5-80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	78	70-130

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Client Sample ID: LCSD

Lab ID#: 2005495-09AA

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c052704sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/27/20 08:41 AM**	
		Date of Extraction: 5/27/20	

Compound	%Recovery	Method Limits
Ethanol	65	50-130
Methyl tert-butyl ether	97	70-130
Hexane	90	70-130
Ethyl Acetate	96	70-130
2-Butanone (Methyl Ethyl Ketone)	82	70-130
Chloroform	91	70-130
1,1,1-Trichloroethane	97	70-130
Cyclohexane	97	70-130
Carbon Tetrachloride	96	70-130
Benzene	88	70-130
1,2-Dichloroethane	94	70-130
Heptane	96	70-130
Trichloroethene	91	70-130
4-Methyl-2-pentanone	92	70-130
Toluene	88	70-130
Tetrachloroethene	90	70-130
Chlorobenzene	80	70-130
Ethyl Benzene	91	70-130
m,p-Xylene	86	70-130
o-Xylene	82	70-130
Styrene	59	20-100
Propylbenzene	86	70-130
1,4-Dichlorobenzene	72	50-110
Naphthalene	10	5-80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	77	70-130

May 21, 2020 to June 4, 2020

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6/22/2020
Mr. Bill Abernathy
Feezor Engineering
3377 Hollenberg Drive

Bridgeton MO 63044

Project Name: Bridgeton Landfill VOCs
Project #:
Workorder #: 2006117R1

Dear Mr. Bill Abernathy

The following report includes the data for the above referenced project for sample(s) received on 6/5/2020 at Air Toxics Ltd.

The data and associated QC analyzed by Passive S.E. RAD130/SKC 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 Inc. 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: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Brian Whittaker

Project Manager

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WORK ORDER #: 2006117R1

Work Order Summary

CLIENT:	Mr. Bill Abernathy Feezor Engineering, Inc. 3377 Hollenberg Drive Bridgeton, MO 63044	**BILL TO:**	Accounts Payable Feezor Engineering, Inc. 406 E. Walnut Chatham, IL 62629
PHONE:	314-502-1299	**P.O. #**	BT-204
FAX:		**PROJECT #**	Bridgeton Landfill VOCs
DATE RECEIVED:	06/05/2020	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	06/18/2020		
DATE REISSUED:	06/22/2020		

FRACTION #	NAME	TEST
01A	1	Passive S.E. RAD130/SKC
02A	5	Passive S.E. RAD130/SKC
03A	7	Passive S.E. RAD130/SKC
04A	8	Passive S.E. RAD130/SKC
05A	12	Passive S.E. RAD130/SKC
06A	Dup	Passive S.E. RAD130/SKC
07A	TB	Passive S.E. RAD130/SKC
08A	Lab Blank	Passive S.E. RAD130/SKC
09A	LCS	Passive S.E. RAD130/SKC
09AA	LCSD	Passive S.E. RAD130/SKC

CERTIFIED BY:  DATE: 06/22/20

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209219, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-19-14, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-013, Effective date: 10/18/2019, Expiration date: 10/17/2020.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
RAD130 Passive SE by Mod EPA TO-17
Feezor Engineering
Workorder# 2006117R1

Seven Radiello 130 (Solvent) samples were received on June 05, 2020. 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.

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 June 19, 2020 to correct the date of collection due to laboratory transcription error.

Analytical Notes

The uptake rates were corrected based on average field temperatures if provided. In the absence of field temperatures, the uptake rates determined at 25 deg C were used.

To calculate ug/m3 concentrations in the Lab Blank and Trip Blank, a sampling duration of 20369 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.

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
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: 1

Lab ID#: 2006117R1-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.075	0.34	0.26
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.26	0.16
Carbon Tetrachloride	0.10	0.074	0.40	0.30
Heptane	0.10	0.086	0.22	0.19
Toluene	0.10	0.067	1.1	0.77
Ethyl Benzene	0.10	0.073	0.11	0.083
m,p-Xylene	0.10	0.071	0.35	0.25
o-Xylene	0.10	0.077	0.12	0.088

Client Sample ID: 5

Lab ID#: 2006117R1-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.075	0.42	0.31
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.28	0.18
Cyclohexane	0.10	0.091	0.11	0.10
Carbon Tetrachloride	0.10	0.074	0.43	0.32
Heptane	0.10	0.085	0.24	0.20
Toluene	0.10	0.067	0.91	0.60
Ethyl Benzene	0.10	0.073	0.14	0.10
m,p-Xylene	0.10	0.070	0.41	0.29
o-Xylene	0.10	0.076	0.13	0.099

Client Sample ID: 7

Lab ID#: 2006117R1-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.075	0.42	0.31
Ethyl Acetate	0.40	0.25	0.66	0.42
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.32	0.20
Cyclohexane	0.10	0.092	0.11	0.10
Carbon Tetrachloride	0.10	0.074	0.40	0.29
Heptane	0.10	0.085	0.25	0.22

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

Client Sample ID: 7

Lab ID#: 2006117R1-03A

Toluene	0.10	0.067	0.92	0.62
Ethyl Benzene	0.10	0.073	0.17	0.12
m,p-Xylene	0.10	0.070	0.52	0.36
o-Xylene	0.10	0.076	0.16	0.12

Client Sample ID: 8

Lab ID#: 2006117R1-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.076	0.38	0.29
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.22	0.14
Carbon Tetrachloride	0.10	0.075	0.39	0.29
Heptane	0.10	0.087	0.23	0.20
Toluene	0.10	0.068	0.76	0.51
Ethyl Benzene	0.10	0.074	0.10	0.075
m,p-Xylene	0.10	0.072	0.30	0.21

Client Sample ID: 12

Lab ID#: 2006117R1-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.075	0.37	0.28
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.24	0.15
Cyclohexane	0.10	0.091	0.11	0.098
Carbon Tetrachloride	0.10	0.074	0.46	0.34
Benzene	0.40	0.25	0.42	0.26
Heptane	0.10	0.085	0.56	0.47
Toluene	0.10	0.067	0.68	0.45
Ethyl Benzene	0.10	0.072	0.11	0.078
m,p-Xylene	0.10	0.070	0.31	0.22
o-Xylene	0.10	0.076	0.10	0.077

Client Sample ID: Dup

Lab ID#: 2006117R1-06A

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

Client Sample ID: Dup

Lab ID#: 2006117R1-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.076	0.36	0.28
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.26	0.17
Carbon Tetrachloride	0.10	0.075	0.39	0.29
Heptane	0.10	0.087	0.24	0.21
Toluene	0.10	0.068	0.82	0.56
Ethyl Benzene	0.10	0.074	0.11	0.080
m,p-Xylene	0.10	0.072	0.33	0.24
o-Xylene	0.10	0.077	0.11	0.085

Client Sample ID: TB

Lab ID#: 2006117R1-07A

No Detections Were Found.

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Client Sample ID: 1

Lab ID#: 2006117R1-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c060806sim**	**Date of Collection: 6/4/20 10:08:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/8/20 10:42 AM**	
		Date of Extraction: 6/8/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.077	Not Detected	Not Detected
Hexane	0.10	0.075	0.34	0.26
Ethyl Acetate	0.40	0.26	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.26	0.16
Chloroform	0.10	0.066	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.080	Not Detected	Not Detected
Cyclohexane	0.10	0.092	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.074	0.40	0.30
Benzene	0.40	0.25	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.065	Not Detected	Not Detected
Heptane	0.10	0.086	0.22	0.19
Trichloroethene	0.10	0.072	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.067	1.1	0.77
Tetrachloroethene	0.10	0.084	Not Detected	Not Detected
Chlorobenzene	0.10	0.073	Not Detected	Not Detected
Ethyl Benzene	0.10	0.073	0.11	0.083
m,p-Xylene	0.10	0.071	0.35	0.25
o-Xylene	0.10	0.077	0.12	0.088
Styrene	0.10	0.082	Not Detected	Not Detected
Propylbenzene	0.10	0.087	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.098	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 73.0F , duration time = 20272 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

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Client Sample ID: 5

Lab ID#: 2006117R1-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c060807sim**	**Date of Collection: 6/4/20 11:46:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/8/20 11:08 AM**	
		Date of Extraction: 6/8/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.48	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.076	Not Detected	Not Detected
Hexane	0.10	0.075	0.42	0.31
Ethyl Acetate	0.40	0.25	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.28	0.18
Chloroform	0.10	0.066	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.080	Not Detected	Not Detected
Cyclohexane	0.10	0.091	0.11	0.10
Carbon Tetrachloride	0.10	0.074	0.43	0.32
Benzene	0.40	0.25	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.064	Not Detected	Not Detected
Heptane	0.10	0.085	0.24	0.20
Trichloroethene	0.10	0.072	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.067	0.91	0.60
Tetrachloroethene	0.10	0.084	Not Detected	Not Detected
Chlorobenzene	0.10	0.073	Not Detected	Not Detected
Ethyl Benzene	0.10	0.073	0.14	0.10
m,p-Xylene	0.10	0.070	0.41	0.29
o-Xylene	0.10	0.076	0.13	0.099
Styrene	0.10	0.081	Not Detected	Not Detected
Propylbenzene	0.10	0.087	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.097	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 76.0F , duration time = 20342 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	80	70-130

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Client Sample ID: 7

Lab ID#: 2006117R1-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c060808sim**	**Date of Collection: 6/4/20 11:35:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/8/20 11:35 AM**	
		Date of Extraction: 6/8/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.48	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.076	Not Detected	Not Detected
Hexane	0.10	0.075	0.42	0.31
Ethyl Acetate	0.40	0.25	0.66	0.42
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.32	0.20
Chloroform	0.10	0.066	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.080	Not Detected	Not Detected
Cyclohexane	0.10	0.092	0.11	0.10
Carbon Tetrachloride	0.10	0.074	0.40	0.29
Benzene	0.40	0.25	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.064	Not Detected	Not Detected
Heptane	0.10	0.085	0.25	0.22
Trichloroethene	0.10	0.072	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.067	0.92	0.62
Tetrachloroethene	0.10	0.084	Not Detected	Not Detected
Chlorobenzene	0.10	0.073	Not Detected	Not Detected
Ethyl Benzene	0.10	0.073	0.17	0.12
m,p-Xylene	0.10	0.070	0.52	0.36
o-Xylene	0.10	0.076	0.16	0.12
Styrene	0.10	0.081	Not Detected	Not Detected
Propylbenzene	0.10	0.087	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.097	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 75.0F , duration time = 20339 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	80	70-130

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Client Sample ID: 8

Lab ID#: 2006117R1-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c060809sim**	**Date of Collection: 6/4/20 9:39:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/8/20 12:01 PM**	
		Date of Extraction: 6/8/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.077	Not Detected	Not Detected
Hexane	0.10	0.076	0.38	0.29
Ethyl Acetate	0.40	0.26	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.22	0.14
Chloroform	0.10	0.067	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.081	Not Detected	Not Detected
Cyclohexane	0.10	0.093	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.075	0.39	0.29
Benzene	0.40	0.25	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.065	Not Detected	Not Detected
Heptane	0.10	0.087	0.23	0.20
Trichloroethene	0.10	0.073	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.068	0.76	0.51
Tetrachloroethene	0.10	0.085	Not Detected	Not Detected
Chlorobenzene	0.10	0.074	Not Detected	Not Detected
Ethyl Benzene	0.10	0.074	0.10	0.075
m,p-Xylene	0.10	0.072	0.30	0.21
o-Xylene	0.10	0.077	Not Detected	Not Detected
Styrene	0.10	0.082	Not Detected	Not Detected
Propylbenzene	0.10	0.088	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.098	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 72.0F , duration time = 20207 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	79	70-130

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Client Sample ID: 12

Lab ID#: 2006117R1-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c060810sim**	**Date of Collection: 6/4/20 11:16:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/8/20 12:28 PM**	
		Date of Extraction: 6/8/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.48	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.076	Not Detected	Not Detected
Hexane	0.10	0.075	0.37	0.28
Ethyl Acetate	0.40	0.25	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.24	0.15
Chloroform	0.10	0.066	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.080	Not Detected	Not Detected
Cyclohexane	0.10	0.091	0.11	0.098
Carbon Tetrachloride	0.10	0.074	0.46	0.34
Benzene	0.40	0.25	0.42	0.26
1,2-Dichloroethane	0.10	0.064	Not Detected	Not Detected
Heptane	0.10	0.085	0.56	0.47
Trichloroethene	0.10	0.072	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.067	0.68	0.45
Tetrachloroethene	0.10	0.084	Not Detected	Not Detected
Chlorobenzene	0.10	0.072	Not Detected	Not Detected
Ethyl Benzene	0.10	0.072	0.11	0.078
m,p-Xylene	0.10	0.070	0.31	0.22
o-Xylene	0.10	0.076	0.10	0.077
Styrene	0.10	0.081	Not Detected	Not Detected
Propylbenzene	0.10	0.086	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.097	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 75.0F , duration time = 20369 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	80	70-130

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Client Sample ID: Dup

Lab ID#: 2006117R1-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c060811sim**	**Date of Collection: 6/4/20 9:39:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/8/20 12:55 PM**	
		Date of Extraction: 6/8/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.077	Not Detected	Not Detected
Hexane	0.10	0.076	0.36	0.28
Ethyl Acetate	0.40	0.26	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.26	0.17
Chloroform	0.10	0.067	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.081	Not Detected	Not Detected
Cyclohexane	0.10	0.093	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.075	0.39	0.29
Benzene	0.40	0.25	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.065	Not Detected	Not Detected
Heptane	0.10	0.087	0.24	0.21
Trichloroethene	0.10	0.073	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.068	0.82	0.56
Tetrachloroethene	0.10	0.085	Not Detected	Not Detected
Chlorobenzene	0.10	0.074	Not Detected	Not Detected
Ethyl Benzene	0.10	0.074	0.11	0.080
m,p-Xylene	0.10	0.072	0.33	0.24
o-Xylene	0.10	0.077	0.11	0.085
Styrene	0.10	0.082	Not Detected	Not Detected
Propylbenzene	0.10	0.088	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.098	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 72.0F , duration time = 20207 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	80	70-130

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Client Sample ID: TB

Lab ID#: 2006117R1-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c060812sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/8/20 01:21 PM**	
		Date of Extraction: 6/8/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.48	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.076	Not Detected	Not Detected
Hexane	0.10	0.075	Not Detected	Not Detected
Ethyl Acetate	0.40	0.25	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	Not Detected	Not Detected
Chloroform	0.10	0.066	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.080	Not Detected	Not Detected
Cyclohexane	0.10	0.091	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.074	Not Detected	Not Detected
Benzene	0.40	0.25	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.064	Not Detected	Not Detected
Heptane	0.10	0.085	Not Detected	Not Detected
Trichloroethene	0.10	0.072	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.067	Not Detected	Not Detected
Tetrachloroethene	0.10	0.084	Not Detected	Not Detected
Chlorobenzene	0.10	0.072	Not Detected	Not Detected
Ethyl Benzene	0.10	0.072	Not Detected	Not Detected
m,p-Xylene	0.10	0.070	Not Detected	Not Detected
o-Xylene	0.10	0.076	Not Detected	Not Detected
Styrene	0.10	0.081	Not Detected	Not Detected
Propylbenzene	0.10	0.086	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.097	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 76.0F , duration time = 20369 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	80	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2006117R1-08A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c060805sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/8/20 10:10 AM**	
		Date of Extraction: 6/8/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.48	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.076	Not Detected	Not Detected
Hexane	0.10	0.075	Not Detected	Not Detected
Ethyl Acetate	0.40	0.25	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	Not Detected	Not Detected
Chloroform	0.10	0.066	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.080	Not Detected	Not Detected
Cyclohexane	0.10	0.091	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.074	Not Detected	Not Detected
Benzene	0.40	0.25	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.064	Not Detected	Not Detected
Heptane	0.10	0.085	Not Detected	Not Detected
Trichloroethene	0.10	0.072	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.067	Not Detected	Not Detected
Tetrachloroethene	0.10	0.084	Not Detected	Not Detected
Chlorobenzene	0.10	0.072	Not Detected	Not Detected
Ethyl Benzene	0.10	0.072	Not Detected	Not Detected
m,p-Xylene	0.10	0.070	Not Detected	Not Detected
o-Xylene	0.10	0.076	Not Detected	Not Detected
Styrene	0.10	0.081	Not Detected	Not Detected
Propylbenzene	0.10	0.086	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.097	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 76.0F , duration time = 20369 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	78	70-130

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Client Sample ID: LCS

Lab ID#: 2006117R1-09A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c060803sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/8/20 09:17 AM**	
		Date of Extraction: 6/8/20	

Compound	%Recovery	Method Limits
Ethanol	61	50-130
Methyl tert-butyl ether	100	70-130
Hexane	97	70-130
Ethyl Acetate	100	70-130
2-Butanone (Methyl Ethyl Ketone)	84	70-130
Chloroform	95	70-130
1,1,1-Trichloroethane	100	70-130
Cyclohexane	97	70-130
Carbon Tetrachloride	101	70-130
Benzene	92	70-130
1,2-Dichloroethane	97	70-130
Heptane	102	70-130
Trichloroethene	96	70-130
4-Methyl-2-pentanone	96	70-130
Toluene	93	70-130
Tetrachloroethene	93	70-130
Chlorobenzene	84	70-130
Ethyl Benzene	96	70-130
m,p-Xylene	92	70-130
o-Xylene	88	70-130
Styrene	61	20-100
Propylbenzene	93	70-130
1,4-Dichlorobenzene	76	50-110
Naphthalene	10	5-80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	79	70-130

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Client Sample ID: LCSD

Lab ID#: 2006117R1-09AA

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c060804sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/8/20 09:44 AM**	
		Date of Extraction: 6/8/20	

Compound	%Recovery	Method Limits
Ethanol	60	50-130
Methyl tert-butyl ether	100	70-130
Hexane	96	70-130
Ethyl Acetate	98	70-130
2-Butanone (Methyl Ethyl Ketone)	83	70-130
Chloroform	94	70-130
1,1,1-Trichloroethane	99	70-130
Cyclohexane	100	70-130
Carbon Tetrachloride	98	70-130
Benzene	91	70-130
1,2-Dichloroethane	97	70-130
Heptane	101	70-130
Trichloroethene	94	70-130
4-Methyl-2-pentanone	94	70-130
Toluene	92	70-130
Tetrachloroethene	91	70-130
Chlorobenzene	83	70-130
Ethyl Benzene	96	70-130
m,p-Xylene	92	70-130
o-Xylene	86	70-130
Styrene	61	20-100
Propylbenzene	93	70-130
1,4-Dichlorobenzene	76	50-110
Naphthalene	11	5-80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	78	70-130

June 4, 2020 to June 18, 2020

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7/7/2020
Mr. Bill Abernathy
Feezor Engineering
3377 Hollenberg Drive

Bridgeton MO 63044

Project Name: Bridgeton Landfill VOCs
Project #:
Workorder #: 2006584

Dear Mr. Bill Abernathy

The following report includes the data for the above referenced project for sample(s) received on 6/23/2020 at Air Toxics Ltd.

The data and associated QC analyzed by Passive S.E. RAD130/SKC 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 Inc. 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: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Brian Whittaker

Project Manager

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WORK ORDER #: 2006584

Work Order Summary

CLIENT:	Mr. Bill Abernathy Feezor Engineering, Inc. 3377 Hollenberg Drive Bridgeton, MO 63044	**BILL TO:**	Accounts Payable Feezor Engineering, Inc. 406 E. Walnut Chatham, IL 62629
PHONE:	314-502-1299	**P.O. #**	BT-204
FAX:		**PROJECT #**	Bridgeton Landfill VOCs
DATE RECEIVED:	06/23/2020	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	07/07/2020		

FRACTION #	NAME	TEST
01A	1	Passive S.E. RAD130/SKC
02A	5	Passive S.E. RAD130/SKC
03A	7	Passive S.E. RAD130/SKC
04A	8	Passive S.E. RAD130/SKC
05A	12	Passive S.E. RAD130/SKC
06A	Dup	Passive S.E. RAD130/SKC
07A	TB	Passive S.E. RAD130/SKC
08A	Lab Blank	Passive S.E. RAD130/SKC
09A	LCS	Passive S.E. RAD130/SKC
09AA	LCSD	Passive S.E. RAD130/SKC

CERTIFIED BY:  DATE: 07/07/20

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209219, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-19-14, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-013, Effective date: 10/18/2019, Expiration date: 10/17/2020.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
RAD130 Passive SE by Mod EPA TO-17
Feezor Engineering
Workorder# 2006584

Seven Radiello 130 (Solvent) samples were received on June 23, 2020. 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.

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

The uptake rates were corrected based on average field temperatures if provided. In the absence of field temperatures, the uptake rates determined at 25 deg C were used.

To calculate ug/m3 concentrations in the Lab Blank and Trip Blank, a sampling duration of 20524 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.

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
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: 1

Lab ID#: 2006584-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.076	0.45	0.34
Chloroform	0.10	0.067	0.10	0.068
Cyclohexane	0.10	0.093	0.14	0.13
Carbon Tetrachloride	0.10	0.075	0.49	0.36
Benzene	0.40	0.25	0.40	0.25
Heptane	0.10	0.086	0.39	0.34
Toluene	0.10	0.068	1.1	0.72
Ethyl Benzene	0.10	0.074	0.16	0.12
m,p-Xylene	0.10	0.072	0.46	0.33
o-Xylene	0.10	0.077	0.16	0.12

Client Sample ID: 5

Lab ID#: 2006584-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.072	0.51	0.37
Ethyl Acetate	0.40	0.24	0.44	0.27
Cyclohexane	0.10	0.088	0.15	0.13
Carbon Tetrachloride	0.10	0.071	0.48	0.34
Benzene	0.40	0.24	0.42	0.25
Heptane	0.10	0.082	0.28	0.23
Toluene	0.10	0.064	1.0	0.67
Ethyl Benzene	0.10	0.070	0.17	0.12
m,p-Xylene	0.10	0.068	0.48	0.33
o-Xylene	0.10	0.073	0.17	0.12

Client Sample ID: 7

Lab ID#: 2006584-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.072	0.61	0.44
Ethyl Acetate	0.40	0.24	1.1	0.64
Cyclohexane	0.10	0.088	0.20	0.17

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

Client Sample ID: 7

Lab ID#: 2006584-03A

Carbon Tetrachloride	0.10	0.071	0.52	0.37
Benzene	0.40	0.24	0.44	0.26
Heptane	0.10	0.082	0.40	0.33
Toluene	0.10	0.064	1.4	0.90
Tetrachloroethene	0.10	0.080	0.11	0.087
Ethyl Benzene	0.10	0.070	0.24	0.17
m,p-Xylene	0.10	0.068	0.69	0.47
o-Xylene	0.10	0.073	0.23	0.16

Client Sample ID: 8

Lab ID#: 2006584-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.071	0.48	0.34
Chloroform	0.10	0.063	0.10	0.063
Cyclohexane	0.10	0.087	0.14	0.12
Carbon Tetrachloride	0.10	0.070	0.49	0.35
Benzene	0.40	0.24	0.43	0.26
Heptane	0.10	0.081	0.28	0.23
Toluene	0.10	0.064	1.0	0.65
Ethyl Benzene	0.10	0.069	0.15	0.11
m,p-Xylene	0.10	0.067	0.43	0.29
o-Xylene	0.10	0.072	0.15	0.11

Client Sample ID: 12

Lab ID#: 2006584-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.075	0.45	0.34
Chloroform	0.10	0.066	0.10	0.066
Cyclohexane	0.10	0.092	0.15	0.14
Carbon Tetrachloride	0.10	0.074	0.49	0.36
Benzene	0.40	0.25	0.43	0.27
Heptane	0.10	0.086	0.65	0.55

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

Client Sample ID: 12

Lab ID#: 2006584-05A

Toluene	0.10	0.067	0.96	0.65
Ethyl Benzene	0.10	0.073	0.15	0.11
m,p-Xylene	0.10	0.071	0.42	0.30
o-Xylene	0.10	0.076	0.14	0.11

Client Sample ID: Dup

Lab ID#: 2006584-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.072	0.59	0.42
Ethyl Acetate	0.40	0.24	1.0	0.64
Chloroform	0.10	0.063	0.10	0.063
Cyclohexane	0.10	0.088	0.19	0.17
Carbon Tetrachloride	0.10	0.071	0.50	0.36
Benzene	0.40	0.24	0.43	0.25
Heptane	0.10	0.082	0.38	0.31
Toluene	0.10	0.064	1.4	0.86
Tetrachloroethene	0.10	0.080	0.10	0.084
Ethyl Benzene	0.10	0.070	0.23	0.16
m,p-Xylene	0.10	0.068	0.65	0.44
o-Xylene	0.10	0.073	0.22	0.16

Client Sample ID: TB

Lab ID#: 2006584-07A

No Detections Were Found.

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Client Sample ID: 1

Lab ID#: 2006584-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18062418sim**	**Date of Collection: 6/18/20 8:16:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/24/20 04:00 PM**	
		Date of Extraction: 6/24/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.077	Not Detected	Not Detected
Hexane	0.10	0.076	0.45	0.34
Ethyl Acetate	0.40	0.26	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	Not Detected	Not Detected
Chloroform	0.10	0.067	0.10	0.068
1,1,1-Trichloroethane	0.10	0.081	Not Detected	Not Detected
Cyclohexane	0.10	0.093	0.14	0.13
Carbon Tetrachloride	0.10	0.075	0.49	0.36
Benzene	0.40	0.25	0.40	0.25
1,2-Dichloroethane	0.10	0.065	Not Detected	Not Detected
Heptane	0.10	0.086	0.39	0.34
Trichloroethene	0.10	0.073	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.068	1.1	0.72
Tetrachloroethene	0.10	0.085	Not Detected	Not Detected
Chlorobenzene	0.10	0.074	Not Detected	Not Detected
Ethyl Benzene	0.10	0.074	0.16	0.12
m,p-Xylene	0.10	0.072	0.46	0.33
o-Xylene	0.10	0.077	0.16	0.12
Styrene	0.10	0.082	Not Detected	Not Detected
Propylbenzene	0.10	0.088	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.098	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 76.0F , duration time = 20043 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	88	70-130

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Client Sample ID: 5

Lab ID#: 2006584-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18062419sim**	**Date of Collection: 6/18/20 3:29:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/24/20 04:26 PM**	
		Date of Extraction: 6/24/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.46	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.073	Not Detected	Not Detected
Hexane	0.10	0.072	0.51	0.37
Ethyl Acetate	0.40	0.24	0.44	0.27
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	Not Detected	Not Detected
Chloroform	0.10	0.063	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.076	Not Detected	Not Detected
Cyclohexane	0.10	0.088	0.15	0.13
Carbon Tetrachloride	0.10	0.071	0.48	0.34
Benzene	0.40	0.24	0.42	0.25
1,2-Dichloroethane	0.10	0.062	Not Detected	Not Detected
Heptane	0.10	0.082	0.28	0.23
Trichloroethene	0.10	0.069	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected
Toluene	0.10	0.064	1.0	0.67
Tetrachloroethene	0.10	0.080	Not Detected	Not Detected
Chlorobenzene	0.10	0.070	Not Detected	Not Detected
Ethyl Benzene	0.10	0.070	0.17	0.12
m,p-Xylene	0.10	0.068	0.48	0.33
o-Xylene	0.10	0.073	0.17	0.12
Styrene	0.10	0.078	Not Detected	Not Detected
Propylbenzene	0.10	0.083	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.093	Not Detected	Not Detected
Naphthalene	0.10	0.19	Not Detected	Not Detected

Temperature = 89.0F , duration time = 20382 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	88	70-130

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Client Sample ID: 7

Lab ID#: 2006584-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18062420sim**	**Date of Collection: 6/18/20 3:19:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/24/20 04:52 PM**	
		Date of Extraction: 6/24/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.46	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.073	Not Detected	Not Detected
Hexane	0.10	0.072	0.61	0.44
Ethyl Acetate	0.40	0.24	1.1	0.64
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	Not Detected	Not Detected
Chloroform	0.10	0.063	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.076	Not Detected	Not Detected
Cyclohexane	0.10	0.088	0.20	0.17
Carbon Tetrachloride	0.10	0.071	0.52	0.37
Benzene	0.40	0.24	0.44	0.26
1,2-Dichloroethane	0.10	0.062	Not Detected	Not Detected
Heptane	0.10	0.082	0.40	0.33
Trichloroethene	0.10	0.069	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected
Toluene	0.10	0.064	1.4	0.90
Tetrachloroethene	0.10	0.080	0.11	0.087
Chlorobenzene	0.10	0.070	Not Detected	Not Detected
Ethyl Benzene	0.10	0.070	0.24	0.17
m,p-Xylene	0.10	0.068	0.69	0.47
o-Xylene	0.10	0.073	0.23	0.16
Styrene	0.10	0.078	Not Detected	Not Detected
Propylbenzene	0.10	0.083	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.093	Not Detected	Not Detected
Naphthalene	0.10	0.19	Not Detected	Not Detected

Temperature = 89.0F , duration time = 20376 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	88	70-130

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Client Sample ID: 8

Lab ID#: 2006584-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18062421sim**	**Date of Collection: 6/18/20 3:44:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/24/20 05:19 PM**	
		Date of Extraction: 6/24/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.46	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.072	Not Detected	Not Detected
Hexane	0.10	0.071	0.48	0.34
Ethyl Acetate	0.40	0.24	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	Not Detected	Not Detected
Chloroform	0.10	0.063	0.10	0.063
1,1,1-Trichloroethane	0.10	0.076	Not Detected	Not Detected
Cyclohexane	0.10	0.087	0.14	0.12
Carbon Tetrachloride	0.10	0.070	0.49	0.35
Benzene	0.40	0.24	0.43	0.26
1,2-Dichloroethane	0.10	0.061	Not Detected	Not Detected
Heptane	0.10	0.081	0.28	0.23
Trichloroethene	0.10	0.068	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected
Toluene	0.10	0.064	1.0	0.65
Tetrachloroethene	0.10	0.080	Not Detected	Not Detected
Chlorobenzene	0.10	0.069	Not Detected	Not Detected
Ethyl Benzene	0.10	0.069	0.15	0.11
m,p-Xylene	0.10	0.067	0.43	0.29
o-Xylene	0.10	0.072	0.15	0.11
Styrene	0.10	0.077	Not Detected	Not Detected
Propylbenzene	0.10	0.082	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.092	Not Detected	Not Detected
Naphthalene	0.10	0.19	Not Detected	Not Detected

Temperature = 90.0F , duration time = 20524 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	87	70-130

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Client Sample ID: 12

Lab ID#: 2006584-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18062422sim**	**Date of Collection: 6/18/20 9:46:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/24/20 05:44 PM**	
		Date of Extraction: 6/24/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.076	Not Detected	Not Detected
Hexane	0.10	0.075	0.45	0.34
Ethyl Acetate	0.40	0.25	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	Not Detected	Not Detected
Chloroform	0.10	0.066	0.10	0.066
1,1,1-Trichloroethane	0.10	0.080	Not Detected	Not Detected
Cyclohexane	0.10	0.092	0.15	0.14
Carbon Tetrachloride	0.10	0.074	0.49	0.36
Benzene	0.40	0.25	0.43	0.27
1,2-Dichloroethane	0.10	0.064	Not Detected	Not Detected
Heptane	0.10	0.086	0.65	0.55
Trichloroethene	0.10	0.072	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.067	0.96	0.65
Tetrachloroethene	0.10	0.084	Not Detected	Not Detected
Chlorobenzene	0.10	0.073	Not Detected	Not Detected
Ethyl Benzene	0.10	0.073	0.15	0.11
m,p-Xylene	0.10	0.071	0.42	0.30
o-Xylene	0.10	0.076	0.14	0.11
Styrene	0.10	0.081	Not Detected	Not Detected
Propylbenzene	0.10	0.087	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.097	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 79.0F , duration time = 20064 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	86	70-130

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Client Sample ID: Dup

Lab ID#: 2006584-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18062423sim**	**Date of Collection: 6/18/20 3:19:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/24/20 06:10 PM**	
		Date of Extraction: 6/24/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.46	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.073	Not Detected	Not Detected
Hexane	0.10	0.072	0.59	0.42
Ethyl Acetate	0.40	0.24	1.0	0.64
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	Not Detected	Not Detected
Chloroform	0.10	0.063	0.10	0.063
1,1,1-Trichloroethane	0.10	0.076	Not Detected	Not Detected
Cyclohexane	0.10	0.088	0.19	0.17
Carbon Tetrachloride	0.10	0.071	0.50	0.36
Benzene	0.40	0.24	0.43	0.25
1,2-Dichloroethane	0.10	0.062	Not Detected	Not Detected
Heptane	0.10	0.082	0.38	0.31
Trichloroethene	0.10	0.069	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected
Toluene	0.10	0.064	1.4	0.86
Tetrachloroethene	0.10	0.080	0.10	0.084
Chlorobenzene	0.10	0.070	Not Detected	Not Detected
Ethyl Benzene	0.10	0.070	0.23	0.16
m,p-Xylene	0.10	0.068	0.65	0.44
o-Xylene	0.10	0.073	0.22	0.16
Styrene	0.10	0.078	Not Detected	Not Detected
Propylbenzene	0.10	0.083	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.093	Not Detected	Not Detected
Naphthalene	0.10	0.19	Not Detected	Not Detected

Temperature = 89.0F , duration time = 20376 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	86	70-130

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Client Sample ID: TB

Lab ID#: 2006584-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18062424sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/24/20 06:36 PM**	
		Date of Extraction: 6/24/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.46	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.072	Not Detected	Not Detected
Hexane	0.10	0.071	Not Detected	Not Detected
Ethyl Acetate	0.40	0.24	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	Not Detected	Not Detected
Chloroform	0.10	0.063	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.076	Not Detected	Not Detected
Cyclohexane	0.10	0.087	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.070	Not Detected	Not Detected
Benzene	0.40	0.24	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.061	Not Detected	Not Detected
Heptane	0.10	0.081	Not Detected	Not Detected
Trichloroethene	0.10	0.068	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected
Toluene	0.10	0.064	Not Detected	Not Detected
Tetrachloroethene	0.10	0.080	Not Detected	Not Detected
Chlorobenzene	0.10	0.069	Not Detected	Not Detected
Ethyl Benzene	0.10	0.069	Not Detected	Not Detected
m,p-Xylene	0.10	0.067	Not Detected	Not Detected
o-Xylene	0.10	0.072	Not Detected	Not Detected
Styrene	0.10	0.077	Not Detected	Not Detected
Propylbenzene	0.10	0.082	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.092	Not Detected	Not Detected
Naphthalene	0.10	0.19	Not Detected	Not Detected

Temperature = 90.0F , duration time = 20524 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	86	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2006584-08A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18062405sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/24/20 09:43 AM**	
		Date of Extraction: 6/24/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.46	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.072	Not Detected	Not Detected
Hexane	0.10	0.071	Not Detected	Not Detected
Ethyl Acetate	0.40	0.24	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	Not Detected	Not Detected
Chloroform	0.10	0.063	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.076	Not Detected	Not Detected
Cyclohexane	0.10	0.087	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.070	Not Detected	Not Detected
Benzene	0.40	0.24	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.061	Not Detected	Not Detected
Heptane	0.10	0.081	Not Detected	Not Detected
Trichloroethene	0.10	0.068	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected
Toluene	0.10	0.064	Not Detected	Not Detected
Tetrachloroethene	0.10	0.080	Not Detected	Not Detected
Chlorobenzene	0.10	0.069	Not Detected	Not Detected
Ethyl Benzene	0.10	0.069	Not Detected	Not Detected
m,p-Xylene	0.10	0.067	Not Detected	Not Detected
o-Xylene	0.10	0.072	Not Detected	Not Detected
Styrene	0.10	0.077	Not Detected	Not Detected
Propylbenzene	0.10	0.082	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.092	Not Detected	Not Detected
Naphthalene	0.10	0.19	Not Detected	Not Detected

Temperature = 90.0F , duration time = 20524 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130

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Client Sample ID: LCS

Lab ID#: 2006584-09A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18062403sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/24/20 08:51 AM**	
		Date of Extraction: 6/24/20	

Compound	%Recovery	Method Limits
Ethanol	73	50-130
Methyl tert-butyl ether	105	70-130
Hexane	106	70-130
Ethyl Acetate	108	70-130
2-Butanone (Methyl Ethyl Ketone)	95	70-130
Chloroform	111	70-130
1,1,1-Trichloroethane	110	70-130
Cyclohexane	112	70-130
Carbon Tetrachloride	109	70-130
Benzene	104	70-130
1,2-Dichloroethane	103	70-130
Heptane	111	70-130
Trichloroethene	108	70-130
4-Methyl-2-pentanone	104	70-130
Toluene	102	70-130
Tetrachloroethene	97	70-130
Chlorobenzene	94	70-130
Ethyl Benzene	103	70-130
m,p-Xylene	95	70-130
o-Xylene	93	70-130
Styrene	68	20-100
Propylbenzene	104	70-130
1,4-Dichlorobenzene	76	50-110
Naphthalene	9.9	5-80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	89	70-130

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Client Sample ID: LCSD

Lab ID#: 2006584-09AA

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18062404sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/24/20 09:17 AM**	
		Date of Extraction: 6/24/20	

Compound	%Recovery	Method Limits
Ethanol	74	50-130
Methyl tert-butyl ether	102	70-130
Hexane	102	70-130
Ethyl Acetate	104	70-130
2-Butanone (Methyl Ethyl Ketone)	92	70-130
Chloroform	106	70-130
1,1,1-Trichloroethane	106	70-130
Cyclohexane	108	70-130
Carbon Tetrachloride	104	70-130
Benzene	101	70-130
1,2-Dichloroethane	99	70-130
Heptane	107	70-130
Trichloroethene	104	70-130
4-Methyl-2-pentanone	102	70-130
Toluene	99	70-130
Tetrachloroethene	94	70-130
Chlorobenzene	91	70-130
Ethyl Benzene	99	70-130
m,p-Xylene	91	70-130
o-Xylene	90	70-130
Styrene	65	20-100
Propylbenzene	102	70-130
1,4-Dichlorobenzene	75	50-110
Naphthalene	8.0	5-80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	88	70-130

June 18, 2020 to July 1, 2020

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7/16/2020
Mr. Bill Abernathy
Feezor Engineering
3377 Hollenberg Drive

Bridgeton MO 63044

Project Name: Bridgeton Landfill VOCs
Project #:
Workorder #: 2007043

Dear Mr. Bill Abernathy

The following report includes the data for the above referenced project for sample(s) received on 7/2/2020 at Air Toxics Ltd.

The data and associated QC analyzed by Passive S.E. RAD130/SKC 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 Inc. 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: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Brian Whittaker

Project Manager

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WORK ORDER #: 2007043

Work Order Summary

CLIENT:	Mr. Bill Abernathy Feezor Engineering, Inc. 3377 Hollenberg Drive Bridgeton, MO 63044	**BILL TO:**	Accounts Payable Feezor Engineering, Inc. 406 E. Walnut Chatham, IL 62629
PHONE:	314-502-1299	**P.O. #**	BT-204
FAX:		**PROJECT #**	Bridgeton Landfill VOCs
DATE RECEIVED:	07/02/2020	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	07/16/2020		

FRACTION #	NAME	TEST
01A	1	Passive S.E. RAD130/SKC
02A	5	Passive S.E. RAD130/SKC
03A	7	Passive S.E. RAD130/SKC
04A	8	Passive S.E. RAD130/SKC
05A	12	Passive S.E. RAD130/SKC
06A	Dup	Passive S.E. RAD130/SKC
07A	TB	Passive S.E. RAD130/SKC
08A	Lab Blank	Passive S.E. RAD130/SKC
09A	LCS	Passive S.E. RAD130/SKC
09AA	LCSD	Passive S.E. RAD130/SKC

CERTIFIED BY:  DATE: 07/16/20

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209219, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-19-14, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-013, Effective date: 10/18/2019, Expiration date: 10/17/2020.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
RAD130 Passive SE by Mod EPA TO-17
Feezor Engineering
Workorder# 2007043

Seven Radiello 130 (Solvent) samples were received on July 02, 2020. 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.

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

The uptake rates were corrected based on average field temperatures if provided. In the absence of field temperatures, the uptake rates determined at 25 deg C were used.

To calculate ug/m3 concentrations in the Lab Blank and Trip Blank, a sampling duration of 18850 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.

The Relative Percent Difference (RPD) of the LCS/LCSD exceeded acceptance limits for Naphthalene.

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
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: 1

Lab ID#: 2007043-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.080	0.29	0.23
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.20	0.13
Cyclohexane	0.10	0.098	0.12	0.12
Carbon Tetrachloride	0.10	0.079	0.44	0.35
Heptane	0.10	0.091	0.37	0.34
Toluene	0.10	0.071	0.84	0.60
Ethyl Benzene	0.10	0.078	0.13	0.099
m,p-Xylene	0.10	0.075	0.34	0.26

Client Sample ID: 5

Lab ID#: 2007043-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.083	0.27	0.22
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.22	0.15
Carbon Tetrachloride	0.10	0.082	0.30	0.24
Heptane	0.10	0.094	0.18	0.17
Toluene	0.10	0.074	0.67	0.50
Ethyl Benzene	0.10	0.080	0.11	0.088
m,p-Xylene	0.10	0.078	0.30	0.23

Client Sample ID: 7

Lab ID#: 2007043-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.083	0.33	0.28
Ethyl Acetate	0.40	0.28	0.61	0.43
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.31	0.21
Cyclohexane	0.10	0.10	0.12	0.12
Carbon Tetrachloride	0.10	0.082	0.35	0.28
Heptane	0.10	0.094	0.30	0.28
Toluene	0.10	0.074	0.90	0.66
Ethyl Benzene	0.10	0.080	0.15	0.12

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

Client Sample ID: 7

Lab ID#: 2007043-03A

m,p-Xylene	0.10	0.078	0.44	0.34
o-Xylene	0.10	0.084	0.15	0.13

Client Sample ID: 8

Lab ID#: 2007043-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.082	0.32	0.27
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.30	0.21
Carbon Tetrachloride	0.10	0.081	0.39	0.31
Benzene	0.40	0.27	0.42	0.28
Heptane	0.10	0.094	0.25	0.23
Toluene	0.10	0.073	0.70	0.51
Ethyl Benzene	0.10	0.080	0.11	0.085
m,p-Xylene	0.10	0.078	0.28	0.22
o-Xylene	0.10	0.084	0.12	0.098

Client Sample ID: 12

Lab ID#: 2007043-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.081	0.37	0.30
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.32	0.22
Cyclohexane	0.10	0.099	0.11	0.11
Carbon Tetrachloride	0.10	0.080	0.49	0.39
Benzene	0.40	0.27	0.51	0.34
Heptane	0.10	0.093	0.48	0.44
Toluene	0.10	0.072	0.73	0.53
Ethyl Benzene	0.10	0.079	0.15	0.12
m,p-Xylene	0.10	0.077	0.39	0.30
o-Xylene	0.10	0.083	0.13	0.11

Client Sample ID: Dup

Lab ID#: 2007043-06A

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

Client Sample ID: Dup

Lab ID#: 2007043-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.083	0.34	0.28
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.31	0.22
Cyclohexane	0.10	0.10	0.10	0.10
Carbon Tetrachloride	0.10	0.082	0.45	0.37
Benzene	0.40	0.27	0.45	0.31
Heptane	0.10	0.094	0.26	0.25
Toluene	0.10	0.074	0.89	0.66
Ethyl Benzene	0.10	0.080	0.11	0.092
m,p-Xylene	0.10	0.078	0.31	0.24
o-Xylene	0.10	0.084	0.10	0.088

Client Sample ID: TB

Lab ID#: 2007043-07A

No Detections Were Found.

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Client Sample ID: 1

Lab ID#: 2007043-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18070616sim**	**Date of Collection: 7/1/20 10:30:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/6/20 03:16 PM**	
		Date of Extraction: 7/6/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.081	Not Detected	Not Detected
Hexane	0.10	0.080	0.29	0.23
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.20	0.13
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	0.12	0.12
Carbon Tetrachloride	0.10	0.079	0.44	0.35
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.091	0.37	0.34
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	0.84	0.60
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	0.13	0.099
m,p-Xylene	0.10	0.075	0.34	0.26
o-Xylene	0.10	0.081	Not Detected	Not Detected
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.093	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 78.0F , duration time = 18850 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	87	70-130

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Client Sample ID: 5

Lab ID#: 2007043-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18070617sim**	**Date of Collection: 7/1/20 10:03:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/6/20 03:42 PM**	
		Date of Extraction: 7/6/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.54	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.084	Not Detected	Not Detected
Hexane	0.10	0.083	0.27	0.22
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.22	0.15
Chloroform	0.10	0.073	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.088	Not Detected	Not Detected
Cyclohexane	0.10	0.10	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.082	0.30	0.24
Benzene	0.40	0.27	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.071	Not Detected	Not Detected
Heptane	0.10	0.094	0.18	0.17
Trichloroethene	0.10	0.079	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.074	0.67	0.50
Tetrachloroethene	0.10	0.093	Not Detected	Not Detected
Chlorobenzene	0.10	0.080	Not Detected	Not Detected
Ethyl Benzene	0.10	0.080	0.11	0.088
m,p-Xylene	0.10	0.078	0.30	0.23
o-Xylene	0.10	0.084	Not Detected	Not Detected
Styrene	0.10	0.090	Not Detected	Not Detected
Propylbenzene	0.10	0.096	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected
Naphthalene	0.10	0.22	Not Detected	Not Detected

Temperature = 76.0F , duration time = 18389 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	86	70-130

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Client Sample ID: 7

Lab ID#: 2007043-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18070618sim**	**Date of Collection: 7/1/20 9:57:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/6/20 04:08 PM**	
		Date of Extraction: 7/6/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.54	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.084	Not Detected	Not Detected
Hexane	0.10	0.083	0.33	0.28
Ethyl Acetate	0.40	0.28	0.61	0.43
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.31	0.21
Chloroform	0.10	0.073	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.088	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.12	0.12
Carbon Tetrachloride	0.10	0.082	0.35	0.28
Benzene	0.40	0.27	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.071	Not Detected	Not Detected
Heptane	0.10	0.094	0.30	0.28
Trichloroethene	0.10	0.079	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.074	0.90	0.66
Tetrachloroethene	0.10	0.093	Not Detected	Not Detected
Chlorobenzene	0.10	0.080	Not Detected	Not Detected
Ethyl Benzene	0.10	0.080	0.15	0.12
m,p-Xylene	0.10	0.078	0.44	0.34
o-Xylene	0.10	0.084	0.15	0.13
Styrene	0.10	0.090	Not Detected	Not Detected
Propylbenzene	0.10	0.096	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected
Naphthalene	0.10	0.22	Not Detected	Not Detected

Temperature = 76.0F , duration time = 18393 minutes.
Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	84	70-130

eurofins | Air Toxics

Client Sample ID: 8

Lab ID#: 2007043-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18070619sim**	**Date of Collection: 7/1/20 10:13:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/6/20 04:34 PM**	
		Date of Extraction: 7/6/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.53	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.084	Not Detected	Not Detected
Hexane	0.10	0.082	0.32	0.27
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.30	0.21
Chloroform	0.10	0.072	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.088	Not Detected	Not Detected
Cyclohexane	0.10	0.10	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.081	0.39	0.31
Benzene	0.40	0.27	0.42	0.28
1,2-Dichloroethane	0.10	0.071	Not Detected	Not Detected
Heptane	0.10	0.094	0.25	0.23
Trichloroethene	0.10	0.079	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.073	0.70	0.51
Tetrachloroethene	0.10	0.092	Not Detected	Not Detected
Chlorobenzene	0.10	0.080	Not Detected	Not Detected
Ethyl Benzene	0.10	0.080	0.11	0.085
m,p-Xylene	0.10	0.078	0.28	0.22
o-Xylene	0.10	0.084	0.12	0.098
Styrene	0.10	0.089	Not Detected	Not Detected
Propylbenzene	0.10	0.095	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected
Naphthalene	0.10	0.22	Not Detected	Not Detected

Temperature = 77.0F , duration time = 18387 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130

eurofins | Air Toxics

Client Sample ID: 12

Lab ID#: 2007043-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18070620sim**	**Date of Collection: 7/1/20 9:39:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/6/20 04:59 PM**	
		Date of Extraction: 7/6/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.53	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.083	Not Detected	Not Detected
Hexane	0.10	0.081	0.37	0.30
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.32	0.22
Chloroform	0.10	0.072	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.087	Not Detected	Not Detected
Cyclohexane	0.10	0.099	0.11	0.11
Carbon Tetrachloride	0.10	0.080	0.49	0.39
Benzene	0.40	0.27	0.51	0.34
1,2-Dichloroethane	0.10	0.070	Not Detected	Not Detected
Heptane	0.10	0.093	0.48	0.44
Trichloroethene	0.10	0.078	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.072	0.73	0.53
Tetrachloroethene	0.10	0.091	Not Detected	Not Detected
Chlorobenzene	0.10	0.079	Not Detected	Not Detected
Ethyl Benzene	0.10	0.079	0.15	0.12
m,p-Xylene	0.10	0.077	0.39	0.30
o-Xylene	0.10	0.083	0.13	0.11
Styrene	0.10	0.088	Not Detected	Not Detected
Propylbenzene	0.10	0.094	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 76.0F , duration time = 18708 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130

eurofins | Air Toxics

Client Sample ID: Dup

Lab ID#: 2007043-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18070621sim**	**Date of Collection: 7/1/20 10:03:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis: 7/6/20 05:25 PM**
		Date of Extraction: 7/6/20

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.54	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.084	Not Detected	Not Detected
Hexane	0.10	0.083	0.34	0.28
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.31	0.22
Chloroform	0.10	0.073	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.088	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.10	0.10
Carbon Tetrachloride	0.10	0.082	0.45	0.37
Benzene	0.40	0.27	0.45	0.31
1,2-Dichloroethane	0.10	0.071	Not Detected	Not Detected
Heptane	0.10	0.094	0.26	0.25
Trichloroethene	0.10	0.079	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.074	0.89	0.66
Tetrachloroethene	0.10	0.093	Not Detected	Not Detected
Chlorobenzene	0.10	0.080	Not Detected	Not Detected
Ethyl Benzene	0.10	0.080	0.11	0.092
m,p-Xylene	0.10	0.078	0.31	0.24
o-Xylene	0.10	0.084	0.10	0.088
Styrene	0.10	0.090	Not Detected	Not Detected
Propylbenzene	0.10	0.096	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected
Naphthalene	0.10	0.22	Not Detected	Not Detected

Temperature = 76.0F , duration time = 18389 minutes.

Container Type: Radiello 130 (Solvent)

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

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Client Sample ID: TB

Lab ID#: 2007043-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18070622sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/6/20 05:51 PM**	
		Date of Extraction: 7/6/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.081	Not Detected	Not Detected
Hexane	0.10	0.080	Not Detected	Not Detected
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	Not Detected	Not Detected
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.079	Not Detected	Not Detected
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.091	Not Detected	Not Detected
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	Not Detected	Not Detected
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	Not Detected	Not Detected
m,p-Xylene	0.10	0.075	Not Detected	Not Detected
o-Xylene	0.10	0.081	Not Detected	Not Detected
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.093	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 78.0F , duration time = 18850 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	88	70-130

eurofins | Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 2007043-08A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18070605sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/6/20 10:12 AM**	
		Date of Extraction: 7/6/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.081	Not Detected	Not Detected
Hexane	0.10	0.080	Not Detected	Not Detected
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	Not Detected	Not Detected
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.079	Not Detected	Not Detected
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.091	Not Detected	Not Detected
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	Not Detected	Not Detected
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	Not Detected	Not Detected
m,p-Xylene	0.10	0.075	Not Detected	Not Detected
o-Xylene	0.10	0.081	Not Detected	Not Detected
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.093	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 78.0F , duration time = 18850 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	87	70-130

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Client Sample ID: LCS

Lab ID#: 2007043-09A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18070603sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/6/20 09:19 AM**	
		Date of Extraction: 7/6/20	

Compound	%Recovery	Method Limits
Ethanol	74	50-130
Methyl tert-butyl ether	115	70-130
Hexane	116	70-130
Ethyl Acetate	119	70-130
2-Butanone (Methyl Ethyl Ketone)	103	70-130
Chloroform	114	70-130
1,1,1-Trichloroethane	114	70-130
Cyclohexane	117	70-130
Carbon Tetrachloride	111	70-130
Benzene	108	70-130
1,2-Dichloroethane	109	70-130
Heptane	113	70-130
Trichloroethene	106	70-130
4-Methyl-2-pentanone	100	70-130
Toluene	100	70-130
Tetrachloroethene	91	70-130
Chlorobenzene	115	70-130
Ethyl Benzene	119	70-130
m,p-Xylene	109	70-130
o-Xylene	109	70-130
Styrene	84	20-100
Propylbenzene	118	70-130
1,4-Dichlorobenzene	94	50-110
Naphthalene	11	5-80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130

eurofins | Air Toxics

Client Sample ID: LCSD

Lab ID#: 2007043-09AA

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18070604sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/6/20 09:45 AM**	
		Date of Extraction: 7/6/20	

Compound	%Recovery	Method Limits
Ethanol	73	50-130
Methyl tert-butyl ether	113	70-130
Hexane	115	70-130
Ethyl Acetate	112	70-130
2-Butanone (Methyl Ethyl Ketone)	102	70-130
Chloroform	113	70-130
1,1,1-Trichloroethane	112	70-130
Cyclohexane	115	70-130
Carbon Tetrachloride	114	70-130
Benzene	119	70-130
1,2-Dichloroethane	112	70-130
Heptane	122	70-130
Trichloroethene	130	70-130
4-Methyl-2-pentanone	106	70-130
Toluene	105	70-130
Tetrachloroethene	92	70-130
Chlorobenzene	91	70-130
Ethyl Benzene	94	70-130
m,p-Xylene	88	70-130
o-Xylene	87	70-130
Styrene	68	20-100
Propylbenzene	97	70-130
1,4-Dichlorobenzene	73	50-110
Naphthalene	7.5	5-80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	92	70-130

Appendix 3

Level IV Data Validation Summary Reports

April 9, 2020 Sampling Event

Data Validation Summary Report for the Bridgeton Landfill April 9th, 2020 VOC Air Monitoring Event

Prepared by Jonathan Wilkinson
Residuals Management Team Member
Feezor Engineering, Inc.

July 29th, 2020

1 INTRODUCTION

Five (5) outdoor air samples, one (1) field duplicate sample, and one (1) trip blank sample were collected at the Bridgeton Landfill on April 9th, 2020. The samples were sent to the Eurofins / Air Toxics Laboratory in Folsom, California and analyzed for Volatile Organic Compounds (VOCs) by EPA Compendium Method TO-17 (modified).

The analytical results were validated using laboratory acceptance criteria and the procedures and guidelines contained in the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, revised January 2017 and USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, dated October 1999.

Items checked included holding times, instrument performance check results, initial and continuing calibration procedures and results, method and field blank results, deuterated monitoring compound (DMC) recoveries, Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Laboratory Control Sample (LCS) recoveries, internal standard recoveries, field duplicate results, target compound identification, compound quantitation, and transcriptions from raw data.

All data necessary to complete the data review were provided by the laboratory. Based on the guidelines referenced above, results were qualified as:

- "U": The analyte was not detected at a value greater than the associated analyte quantitation limit;
- "J": An estimated analyte result, "J+" or "J-" used to indicate a high or low bias;
- "NJ": The analyte has been tentatively identified, or is presumed to be present at the associated numerical value;
- "UJ": The analyte was not detected. The reported analyte quantitation limit is approximate and may be inaccurate or imprecise; and
- "R": The result is unusable. The result was rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

2 SAMPLE SUMMARY

Sample results were reported in a Contract Laboratory Program (CLP)-like format data package. Review of the Chain of Custody (COC) form indicates that samples collected on April 9th, 2020 were shipped for delivery to the laboratory on April 10th, 2020 and were received by the laboratory in good condition via Federal Express (the courier used to deliver the samples to the laboratory). **Table 2.1** provides general information about the laboratory and data package, **Table 2.2** lists the samples validated and their respective laboratory identification numbers.

Table 2.1 General Information

Contract Laboratory:	Eurofins / Air Toxics, Inc. Folsom, California
Total # of Samples:	7
Sample Matrix:	Radiello™ 130 activated charcoal sorbent bed passive air sampler

Table 2.2 Sample Identification

Field Sample ID	QA Sample ID	Laboratory ID
1		2004190-01A
5		2004190-02A
7		2004190-03A
8		2004190-04A
12		2004190-05A
Dup	Field Duplicate @ 7	2004190-06A
TB	Trip Blank	2004190-07A

3 VOLATILE ORGANIC COMPOUNDS (EPA METHOD TO-17 MODIFIED)

Analysis of VOCs is accomplished by chemical extraction of target analytes using carbon disulfide followed by injection into a Gas Chromatograph / Mass Spectrometer (GC/MS) for identification and quantitation of analytes.

3.1 HOLDING TIMES

No holding times are specified by the method. Per the manufacturer, the shelf life of the Radiello™ 130 unit is six (6) months. Samples were analyzed according to the times shown in **Table 3.1**

Table 3.1 EPA Method TO-17 (Modified) Sample Holding Times

Field Sample ID	Date Collected	Date Extracted	Date Analyzed	# Days from Collection to Extraction	# Days from Extraction to Analysis
1	4/9/2020	4/14/2020	4/14/2020	5	0
5	4/9/2020	4/14/2020	4/14/2020	5	0
7	4/9/2020	4/14/2020	4/14/2020	5	0
8	4/9/2020	4/14/2020	4/14/2020	5	0
12	4/9/2020	4/14/2020	4/14/2020	5	0
Dup	4/9/2020	4/14/2020	4/14/2020	5	0
TB	4/9/2020	4/14/2020	4/14/2020	5	0

No qualifications were required based on holding times.

3.2 GC INSTRUMENT PERFORMANCE CHECKS

GC/MS instrument performance check results were reported for each 12-hour period when samples were analyzed. Ion abundance acceptance criteria for performance check compound Bromofluorobenzene (BFB) used by the laboratory were similar to ion abundance acceptance criteria provided in ion abundance acceptance criteria provided in Table 3 of the Functional Guidelines, as presented in **Table 3.2**. Using raw GC/MS instrument performance check results provided by the laboratory, ion abundance results were verified to be within each set of acceptance criteria provided in **Table 3.2**.

Table 3.2 BFB Ion Abundance Acceptance Criteria

Ion Mass	Laboratory-Provided Criteria	USEPA CLP Criteria
50	8% to 40% of Mass 95	15% to 40% of Mass 95
75	30% to 66% of Mass 95	30% to 80% of Mass 95
95	Base Peak, 100% Relative Abundance	Base Peak, 100% Relative Abundance
96	5% to 9% of Mass 95	5% to 9% of Mass 95
173	Less than 2% of Mass 174	Less than 2% of Mass 174
174	50% to 120% of Mass 95	50% to 120% of Mass 95
175	4% to 9% of Mass 174	5% to 9% of Mass 174
176	93% to 101% of Mass 174	95% to 101% of Mass 174
177	5% to 9% of Mass 176	5% to 9% of Mass 176

No qualifications were required based on GC/MS instrument performance check results.

3.3 INITIAL CALIBRATION PROCEDURES AND RESULTS

Initial calibration was performed for Instrument MSD-C on February 8th, 2020 using eleven (11) standards for one (1) analyte, ten (10) standards for seventeen (17) analytes, nine (9) standards for three (3) analytes, eight (8) standards for two (2) analytes, and seven (7) standards for one (1) analyte. Based upon a review of raw calibration results provided by the laboratory, no errors were detected with the calculation of Percent Relative Standard Deviations (%RSDs), relative response factors (RRFs), or mean relative response factors ($\overline{\text{RRFs}}$).

RRFs and $\overline{\text{RRFs}}$ for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.3**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.3**. Analytes listed in **Table 3.3** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results. %RSDs for individual analytes were verified to be less than or equal to analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines and were less than or equal to laboratory-provided criteria for other analytes without an EPA-specified maximum value.

Table 3.3 Initial Calibration Relative Response Factors Outside of Control Limits

Initial Cal. Date and Instrument	Compound, $\overline{\text{RRF}}$, and EPA Minimum	Associated Samples
2/8/2020 MSD-C	Ethylbenzene: 0.398, EPA Table 4 Min = 0.500 1,4-Dichlorobenzene: RF100 = 0.682, RF200 = 0.662; EPA Table 4 Min = 0.700	All

No other qualifications were required based on initial calibration procedures or results.

3.4 INITIAL CALIBRATION VERIFCIATION

An initial calibration verification (ICV) sample was analyzed after the initial calibration samples on February 8th, 2020. As required by the Functional Guidelines, the ICV sample solution was obtained from another source than the sources used for the initial calibration. Also as required by the Functional Guidelines, the concentration of the ICV was at or near the midpoint value of the calibration standards used for the initial calibration.

The ICV RRFs for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.4**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.4**. Results for analytes listed in **Table 3.4** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results.

Table 3.4 ICV Relative Response Factors Outside of Control Limits

ICV Date / Time and Instrument	Compound, RRF, and EPA Minimum	Associated Samples
2/8/2020 16:04 MSD-C	Ethylbenzene = 0.402, EPA Table 4 Min = 0.500	All

The ICV Percent Differences (%Ds) for target analytes were verified to be less than analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be less than laboratory-provided criteria for other analytes without an EPA-specified value.

No other qualifications were required based on initial calibration procedures or results.

3.5 CONTINUING CALIBRATION VERIFCIATION

A continuing calibration verification (CCV) sample was analyzed prior to analysis of samples on April 14th, 2020. As required by the Functional Guidelines, the concentration of the CCV was at or near the midpoint value of the calibration standards used for the initial calibration.

The CCV RRFs for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.5**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.5**. Results for analytes listed in **Table 3.5** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results.

Table 3.5 CCV Relative Response Factors Outside of Control Limits

CCV Date / Time and Instrument	Compound, RRF, and EPA Minimum	Associated Samples
4/14/2020 11:02 MSD-C	Ethylbenzene = 0.367, EPA Table 4 Min = 0.500 1,4-Dichlorobenzene = 0.687, EPA Table 4 Min = 0.700	All

The CCV %Ds for target analytes were verified to be less than analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be less than laboratory-provided criteria.

No other qualifications were required based on continuing calibration procedures or results.

3.6 BLANKS

Samples were analyzed within one (1) twelve (12)-hour time period. A method blank was analyzed after the CCV sample and prior to the primary samples as required by the Functional Guidelines. Method blank results were reported as non-detect by the laboratory and were verified to be non-detect based on a review of raw results provided by the laboratory.

One (1) trip blank sample was submitted to the laboratory and analyzed with the primary samples. No analytes were detected in the trip blank sample.

No qualifications were required based on blank results.

3.7 DEUTERATED MONITORING COMPOUNDS (SURROGATES)

One (1) deuterated monitoring compound (DMC, or surrogate), Toluene-d8, was added to each sample and used for evaluation of analysis efficiency. The laboratory compared recoveries for Toluene-d8 to the same criteria listed in the Functional Guidelines (70% - 130%). Toluene-d8 recoveries for the primary samples, method blank, and Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) pair were verified to be within 70% - 130%.

No qualifications were required based on DMC results.

3.8 MATRIX SPIKE / MATRIX SPIKE DUPLICATE

No Matrix Spike / Matrix Spike Duplicate (MS/MSD) samples were analyzed.

No qualifications were required based on MS/MSD results.

3.9 LABORATORY CONTROL SAMPLE / LABORATORY CONTROL SAMPLE DUPLICATE

One (1) Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) sample pair was analyzed with the primary samples. LCS/LCSD sample results were verified to be within laboratory-provided control limits and the Relative Percent Difference (RPD) between individual analyte results from the LCS and LCSD were verified be less than 20%, except the results listed in **Table 3.9**.

Table 3.9 LCS / LCSD Results Outside of Laboratory Control Limits

Date & time	Compound	% Recovery		RPD	Acceptance Criteria		Associated Samples
		LCS	LCSD		% Rec	RPD	
LCS 4/14/2020 11:28 LCSD 4/14/2020 11:53	Ethanol	45.8%	53.1%	14.6%	50% - 130%	0% - 20%	All

Analytes listed in **Table 3.9** were qualified as estimated ("J") for positive results and were qualified as estimated non-detect ("UJ") for non-detect results in the associated samples. No other qualifications were required based on LCS/LCSD results.

3.10 INTERNAL STANDARDS

Internal standard area counts and retention times for the samples and blanks were within the Functional Guidelines control limits of 50% to 200% and ±10.0 seconds, respectively, of the corresponding counts and times for the most recent continuing calibration verification sample or midpoint standard from the associated initial calibration. The laboratory-provided internal standard control limit calculations were verified, and the individual sample internal standard results were verified to be within the applicable control limits.

No qualifications were required based on internal standards.

3.11 FIELD DUPLICATES

One (1) field duplicate sample pair (7 / DUP) was collected. Relative Percent Differences (RPDs) between the original and field duplicate samples were calculated to be less than 20% for detected analytes reported above five (5) times the applicable reporting limit (RL) and results were within ±RL for analytes reported at positive values less than five (5) times the RL.

No qualifications were performed based on field duplicate results.

3.12 TARGET ANALYTE IDENTIFICATION

Based on a review of raw sample results provided by the laboratory, no errors were observed with identification of target analytes. Relative intensities of primary and secondary ions for detected analytes were verified to be within ±20% of the laboratory-provided standard relative ion intensities for each analyte. Relative Retention Times (RRTs) were within the EPA-recommended control limits of ±0.06 RRT units of the RRT for the same analyte in the associated opening CCV sample.

No qualifications were performed based on target analyte identification criteria.

3.13 ANALYTE QUANTITATION AND TRANSCRIPTIONS FROM RAW DATA

Compound quantitation was checked for the primary samples, the field duplicate sample, the trip blank sample, and the LCS/LCSD sample pair. No errors were detected in sample quantitation methods or transcriptions from the raw data to the summary forms.

4 PRECISION, ACCURACY, AND COMPLETENESS

Results of the data validation were reviewed to evaluate the precision, accuracy, and completeness of the analyses.

Precision measures the agreement among a set of replicate measurements. Field precision is assessed through the collection and analysis of field duplicates. Analytical precision is estimated by duplicate / replicate analyses, usually on LCS samples, spiked samples, and/or field samples. For this project, precision was assessed by tabulating the results of the relative percent differences (RPDs) of the laboratory control sample/laboratory control sample duplicate (LCS/LCSD) and original sample / field duplicate sample analyses. RPDs that fall within the project or laboratory-specified QA control limits indicate acceptable precision. The precision number given indicates the percentage of RPDs that were within control limits.

Accuracy is the closeness of a measured result to an accepted reference value. Quality Control (QC) analyses used to measure accuracy include internal standard recoveries, LCS samples, spiked samples, and DMC recoveries. For this project, accuracy was assessed by tabulating the results of the percent recoveries for internal standards, LCS/LCSD samples, DMCs, and results for the laboratory method blank sample. The reported accuracy indicates the percentage of recoveries and blank results within the project or QA control limits.

Completeness is a measure of the amount of valid data collected compared to the amount planned. Measurements are considered to be valid if they are unqualified or qualified as estimated during data validation. Rejected results are considered to be invalid. The reported completeness is the number of valid results divided by the total number of results.

4.1 OVERALL PROJECT PRECISION

The overall project precision for the Bridgeton Landfill April 9th, 2020 VOC air monitoring event, based on the percentage of RPD results within control limits, was 100% (48 of 48 results in control).

4.2 OVERALL PROJECT ACCURACY

The overall project accuracy for the Bridgeton Landfill April 9th, 2020 VOC air monitoring event, based on the percentage of internal standard recoveries, LCS sample recoveries, and DMC recoveries within control limits, and laboratory method blank non-detects, was 98.9% (91 of 92 results in control).

4.3 OVERALL PROJECT COMPLETENESS

The overall project completeness for the Bridgeton Landfill April 9th, 2020 VOC air monitoring event, defined as the percentage of data not rejected, was 93.5% (157 of 168 results not rejected).

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Client Sample ID: 1

Lab ID#: 2004190-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c041416sim**	**Date of Collection: 4/9/20 12:36:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/14/20 02:54 PM**	
		Date of Extraction: 4/14/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.51	Not Detected	Not Detected	UJ
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected	
Hexane	0.10	0.079	0.36	0.28	
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected	
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	0.36	0.24	
Chloroform	0.10	0.070	Not Detected	Not Detected	
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected	
Cyclohexane	0.10	0.097	0.12	0.12	
Carbon Tetrachloride	0.10	0.078	0.39	0.30	
Benzene	0.40	0.26	0.58	0.38	
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected	
Heptane	0.10	0.090	0.36	0.32	
Trichloroethene	0.10	0.076	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected	
Toluene	0.10	0.070	2.4	1.7	
Tetrachloroethene	0.10	0.088	0.11	0.10	
Chlorobenzene	0.10	0.077	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.077	0.16	0.12	J+
m,p-Xylene	0.10	0.075	0.61	0.45	
o-Xylene	0.10	0.080	0.21	0.17	
Styrene	0.10	0.086	Not Detected	Not Detected	
Propylbenzene	0.10	0.092	Not Detected	Not Detected	
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected	R
Naphthalene	0.10	0.21	Not Detected	Not Detected	

Temperature = 58.0F , duration time = 20258 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

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Client Sample ID: 5

Lab ID#: 2004190-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c041417sim**	**Date of Collection:**	**4/9/20 12:15:00 PM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**4/14/20 03:20 PM**
		Date of Extraction:	**4/14/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected UJ
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	0.35	0.28
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	0.34	0.22
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.097	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.078	0.37	0.29
Benzene	0.40	0.26	0.53	0.34
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.24	0.22
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	0.70	0.50
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	Not Detected	Not Detected R
m,p-Xylene	0.10	0.075	0.26	0.20
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.092	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected R
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 58.0F , duration time = 20214 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

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Client Sample ID: 7

Lab ID#: 2004190-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c041418sim**	**Date of Collection:**	**4/9/20 12:06:00 PM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**4/14/20 03:46 PM**
		Date of Extraction:	**4/14/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	1.4	0.75 J
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	0.40	0.32
Ethyl Acetate	0.40	0.27	0.70	0.47
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	0.41	0.27
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.097	0.13	0.13
Carbon Tetrachloride	0.10	0.078	0.40	0.31
Benzene	0.40	0.26	0.54	0.36
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.29	0.26
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	1.1	0.80
Tetrachloroethene	0.10	0.089	0.10	0.093
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	0.12	0.096 J+
m,p-Xylene	0.10	0.075	0.36	0.27
o-Xylene	0.10	0.080	0.12	0.098
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.092	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected R
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 58.0F , duration time = 20210 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

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Client Sample ID: 8

Lab ID#: 2004190-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c041419sim**	**Date of Collection: 4/9/20 12:55:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/14/20 04:12 PM**	
		Date of Extraction: 4/14/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	0.31	0.25
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	0.38	0.25
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.078	0.37	0.29
Benzene	0.40	0.26	0.54	0.35
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.31	0.27
Trichloroethene	0.10	0.075	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.070	0.60	0.42
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	Not Detected	Not Detected
m,p-Xylene	0.10	0.074	0.24	0.18
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 59.0F , duration time = 20246 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

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Client Sample ID: 12

Lab ID#: 2004190-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c041420sim**	**Date of Collection:**	**4/9/20 11:50:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**4/14/20 04:37 PM**
		Date of Extraction:	**4/14/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.081	Not Detected	Not Detected
Hexane	0.10	0.080	0.36	0.29
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.067	0.29	0.19
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	0.10	0.10
Carbon Tetrachloride	0.10	0.079	0.44	0.35
Benzene	0.40	0.26	0.62	0.41
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.091	0.42	0.38
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.072	0.58	0.42
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	Not Detected	Not Detected
m,p-Xylene	0.10	0.076	0.25	0.19
o-Xylene	0.10	0.081	Not Detected	Not Detected
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.093	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 54.0F , duration time = 20203 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

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Client Sample ID: Dup

Lab ID#: 2004190-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c041421sim**	**Date of Collection: 4/9/20 12:06:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/14/20 05:03 PM**	
		Date of Extraction: 4/14/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	1.4	0.71 J
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	0.42	0.33
Ethyl Acetate	0.40	0.27	0.68	0.46
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	0.43	0.28
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.097	0.13	0.13
Carbon Tetrachloride	0.10	0.078	0.40	0.31
Benzene	0.40	0.26	0.57	0.38
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.31	0.28
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	1.2	0.89
Tetrachloroethene	0.10	0.089	0.12	0.10
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	0.14	0.11 J+
m,p-Xylene	0.10	0.075	0.43	0.32
o-Xylene	0.10	0.080	0.14	0.12
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.092	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected R
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 58.0F , duration time = 20210 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

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Client Sample ID: TB

Lab ID#: 2004190-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c041422sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/14/20 05:29 PM**	
		Date of Extraction: 4/14/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	Not Detected	Not Detected
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	Not Detected	Not Detected
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.078	Not Detected	Not Detected
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.067	Not Detected	Not Detected
Heptane	0.10	0.090	Not Detected	Not Detected
Trichloroethene	0.10	0.075	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.070	Not Detected	Not Detected
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	Not Detected	Not Detected
m,p-Xylene	0.10	0.074	Not Detected	Not Detected
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 59.0F , duration time = 20258 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

4/29/2020

April 23/24, 2020 Sampling Event

Data Validation Summary Report for the Bridgeton Landfill April 23rd – 24th, 2020 VOC Air Monitoring Event

Prepared by Jonathan Wilkinson
Residuals Management Team Member
Feezor Engineering, Inc.

July 30th, 2020

1 INTRODUCTION

Five (5) outdoor air samples, one (1) field duplicate sample, and one (1) trip blank sample were collected at the Bridgeton Landfill on April 23rd and 24th, 2020. The samples were sent to the Eurofins / Air Toxics Laboratory in Folsom, California and analyzed for Volatile Organic Compounds (VOCs) by EPA Compendium Method TO-17 (modified).

The analytical results were validated using laboratory acceptance criteria and the procedures and guidelines contained in the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, revised January 2017 and USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, dated October 1999.

Items checked included holding times, instrument performance check results, initial and continuing calibration procedures and results, method and field blank results, deuterated monitoring compound (DMC) recoveries, Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Laboratory Control Sample (LCS) recoveries, internal standard recoveries, field duplicate results, target compound identification, compound quantitation, and transcriptions from raw data.

All data necessary to complete the data review were provided by the laboratory. Based on the guidelines referenced above, results were qualified as:

- "U": The analyte was not detected at a value greater than the associated analyte quantitation limit;
- "J": An estimated analyte result, "J+" or "J-" used to indicate a high or low bias;
- "NJ": The analyte has been tentatively identified, or is presumed to be present at the associated numerical value;
- "UJ": The analyte was not detected. The reported analyte quantitation limit is approximate and may be inaccurate or imprecise; and
- "R": The result is unusable. The result was rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

2 SAMPLE SUMMARY

Sample results were reported in a Contract Laboratory Program (CLP)-like format data package. Review of the Chain of Custody (COC) form indicates that samples collected on April 23rd and 24th, 2020 were shipped for delivery to the laboratory on April 28th, 2020 and were received by the laboratory in good condition via Federal Express (the courier used to deliver the samples to the laboratory). **Table 2.1** provides general information about the laboratory and data package, **Table 2.2** lists the samples validated and their respective laboratory identification numbers.

Table 2.1 General Information

Contract Laboratory:	Eurofins / Air Toxics, Inc. Folsom, California
Total # of Samples:	7
Sample Matrix:	Radiello™ 130 activated charcoal sorbent bed passive air sampler

Table 2.2 Sample Identification

Field Sample ID	QA Sample ID	Laboratory ID
1		2004552-01A
5		2004552-02A
7		2004552-03A
8		2004552-04A
12		2004552-05A
Dup	Field Duplicate @ 5	2004552-06A
TB	Trip Blank	2004552-07A

3 VOLATILE ORGANIC COMPOUNDS (EPA METHOD TO-17 MODIFIED)

Analysis of VOCs is accomplished by chemical extraction of target analytes using carbon disulfide followed by injection into a Gas Chromatograph / Mass Spectrometer (GC/MS) for identification and quantitation of analytes.

3.1 HOLDING TIMES

No holding times are specified by the method. Per the manufacturer, the shelf life of the Radiello™ 130 unit is six (6) months. Samples were analyzed according to the times shown in **Table 3.1**

Table 3.1 EPA Method TO-17 (Modified) Sample Holding Times

Field Sample ID	Date Collected	Date Extracted	Date Analyzed	# Days from Collection to Extraction	# Days from Extraction to Analysis
1	4/23/2020	4/30/2020	4/30/2020	7	0
5	4/23/2020	4/30/2020	4/30/2020	7	0
7	4/24/2020	4/30/2020	4/30/2020	6	0
8	4/24/2020	4/30/2020	4/30/2020	6	0
12	4/23/2020	4/30/2020	4/30/2020	7	0
Dup	4/23/2020	4/30/2020	4/30/2020	7	0
TB	4/23/2020	4/30/2020	4/30/2020	7	0

No qualifications were required based on holding times.

3.2 GC INSTRUMENT PERFORMANCE CHECKS

GC/MS instrument performance check results were reported for each 12-hour period when samples were analyzed. Ion abundance acceptance criteria for performance check compound Bromofluorobenzene (BFB) used by the laboratory were similar to ion abundance acceptance criteria provided in ion abundance acceptance criteria provided in Table 3 of the Functional Guidelines, as presented in **Table 3.2**. Using raw GC/MS instrument performance check results provided by the laboratory, ion abundance results were verified to be within each set of acceptance criteria provided in **Table 3.2**.

Table 3.2 BFB Ion Abundance Acceptance Criteria

Ion Mass	Laboratory-Provided Criteria	USEPA CLP Criteria
50	8% to 40% of Mass 95	15% to 40% of Mass 95
75	30% to 66% of Mass 95	30% to 80% of Mass 95
95	Base Peak, 100% Relative Abundance	Base Peak, 100% Relative Abundance
96	5% to 9% of Mass 95	5% to 9% of Mass 95
173	Less than 2% of Mass 174	Less than 2% of Mass 174
174	50% to 120% of Mass 95	50% to 120% of Mass 95
175	4% to 9% of Mass 174	5% to 9% of Mass 174
176	93% to 101% of Mass 174	95% to 101% of Mass 174
177	5% to 9% of Mass 176	5% to 9% of Mass 176

No qualifications were required based on GC/MS instrument performance check results.

3.3 INITIAL CALIBRATION PROCEDURES AND RESULTS

Initial calibration was performed for Instrument MSD-18 on April 15th, 2020 using eleven (11) standards for one (1) analyte, ten (10) standards for seventeen (17) analytes, nine (9) standards for three (3) analytes, eight (8) standards for two (2) analytes, and seven (7) standards for one (1) analyte. Based upon a review of raw calibration results provided by the laboratory, no errors were detected with the calculation of Percent Relative Standard Deviations (%RSDs), relative response factors (RRFs), or mean relative response factors ($\overline{\text{RRFs}}$).

RRFs and $\overline{\text{RRFs}}$ for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.3**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.3**. Analytes listed in **Table 3.3** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results. %RSDs for individual analytes were verified to be less than or equal to analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines and were less than or equal to laboratory-provided criteria for other analytes without an EPA-specified maximum value.

Table 3.3 Initial Calibration Relative Response Factors Outside of Control Limits

Initial Cal. Date and Instrument	Compound, $\overline{\text{RRF}}$, and EPA Minimum	Associated Samples
4/15/2020 MSD-18	Ethyl Acetate: 0.046; Laboratory-provided Min = 0.05 Ethylbenzene: 0.403, EPA Table 4 Min = 0.500 1,4-Dichlorobenzene: RF0.5 = 0.693, RF1.0 = 0.675, RF5.0 = .696; EPA Table 4 Min = 0.700	All

No other qualifications were required based on initial calibration procedures or results.

3.4 INITIAL CALIBRATION VERIFCIATION

An initial calibration verification (ICV) sample was analyzed after the initial calibration samples on April 15th, 2020. As required by the Functional Guidelines, the ICV sample solution was obtained from another source than the sources used for the initial calibration. Also as required by the Functional Guidelines, the concentration of the ICV was at or near the midpoint value of the calibration standards used for the initial calibration.

The ICV RRFs for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.4**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.4**.

Results for analytes listed in **Table 3.4** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results.

Table 3.4 ICV Relative Response Factors Outside of Control Limits

ICV Date / Time and Instrument	Compound, RRF, and EPA Minimum	Associated Samples
4/15/2020 13:54 MSD-18	Ethylbenzene = 0.408, EPA Table 4 Min = 0.500	All

The ICV Percent Differences (%Ds) for target analytes were verified to be less than analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be less than laboratory-provided criteria for other analytes without an EPA-specified value.

No other qualifications were required based on initial calibration procedures or results.

3.5 CONTINUING CALIBRATION VERIFCIATION

A continuing calibration verification (CCV) sample was analyzed prior to analysis of samples on April 30th, 2020. As required by the Functional Guidelines, the concentration of the CCV was at or near the midpoint value of the calibration standards used for the initial calibration.

The CCV RRFs for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.5**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.5**. Results for analytes listed in **Table 3.5** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results.

Table 3.5 CCV Relative Response Factors Outside of Control Limits

CCV Date / Time and Instrument	Compound, RRF, and EPA Minimum	Associated Samples
4/30/2020 07:42 MSD-18	Ethyl Acetate: 0.047; Laboratory-provided Min = 0.05 Ethylbenzene = 0.382, EPA Table 4 Min = 0.500 1,4-Dichlorobenzene = 0.679, EPA Table 4 Min = 0.700	All

The CCV %Ds for target analytes were verified to be less than analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be less than laboratory-provided criteria.

No other qualifications were required based on continuing calibration procedures or results.

3.6 BLANKS

Samples were analyzed within one (1) twelve (12)-hour time period. A method blank was analyzed after the CCV sample and prior to the primary samples as required by the Functional Guidelines. Method blank results were reported as non-detect by the laboratory and were verified to be non-detect based on a review of raw results provided by the laboratory.

One (1) trip blank sample was submitted to the laboratory and analyzed with the primary samples. No analytes were detected in the trip blank sample.

No qualifications were required based on blank results.

3.7 DEUTERATED MONITORING COMPOUNDS (SURROGATES)

One (1) deuterated monitoring compound (DMC, or surrogate), Toluene-d8, was added to each sample and used for evaluation of analysis efficiency. The laboratory compared recoveries for Toluene-d8 to the same criteria listed in the Functional Guidelines (70% - 130%). Toluene-d8 recoveries for the primary samples, method blank, and Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) pair were verified to be within 70% - 130%.

No qualifications were required based on DMC results.

3.8 MATRIX SPIKE / MATRIX SPIKE DUPLICATE

No Matrix Spike / Matrix Spike Duplicate (MS/MSD) samples were analyzed.

No qualifications were required based on MS/MSD results.

3.9 LABORATORY CONTROL SAMPLE / LABORATORY CONTROL SAMPLE DUPLICATE

One (1) Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) sample pair was analyzed with the primary samples. LCS/LCSD sample results were verified to be within laboratory-provided control limits and the Relative Percent Difference (RPD) between individual analyte results from the LCS and LCSD were verified be less than 20%, except the results listed in **Table 3.9**.

Table 3.9 LCS / LCSD Results Outside of Laboratory Control Limits

Date & time	Compound	% Recovery		RPD	Acceptance Criteria		Associated Samples
		LCS	LCSD		% Rec	RPD	
LCS 4/30/2020 08:25 LCSD 4/30/2020 08:51	Naphthalene	9.3%	7.2%	25.5%	5% - 80%	0% - 20%	All

Analytes listed in **Table 3.9** were qualified as estimated ("J") for positive results and were qualified as estimated non-detect ("UJ") for non-detect results in the associated samples. No other qualifications were required based on LCS/LCSD results.

3.10 INTERNAL STANDARDS

Internal standard area counts and retention times for the samples and blanks were within the Functional Guidelines control limits of 50% to 200% and ±10.0 seconds, respectively, of the corresponding counts and times for the most recent continuing calibration verification sample or midpoint standard from the associated initial calibration. The laboratory-provided internal standard control limit calculations were verified, and the individual sample internal standard results were verified to be within the applicable control limits.

No qualifications were required based on internal standards.

3.11 FIELD DUPLICATES

One (1) field duplicate sample pair (5 / DUP) was collected. Relative Percent Differences (RPDs) between the original and field duplicate samples were calculated to be less than 20% for detected analytes reported above five (5) times the applicable reporting limit (RL) and results were within ±RL for analytes reported at positive values less than five (5) times the RL.

No qualifications were performed based on field duplicate results.

3.12 TARGET ANALYTE IDENTIFICATION

Based on a review of raw sample results provided by the laboratory, no errors were observed with identification of target analytes. Relative intensities of primary and secondary ions for detected analytes were verified to be within ±20% of the laboratory-provided standard relative ion intensities for each analyte. Relative Retention Times (RRTs) were within the EPA-recommended control limits of ±0.06 RRT units of the RRT for the same analyte in the associated opening CCV sample.

No qualifications were performed based on target analyte identification criteria.

3.13 ANALYTE QUANTITATION AND TRANSCRIPTIONS FROM RAW DATA

Compound quantitation was checked for the primary samples, the field duplicate sample, the trip blank sample, and the LCS/LCSD sample pair. No errors were detected in sample quantitation methods or transcriptions from the raw data to the summary forms.

4 PRECISION, ACCURACY, AND COMPLETENESS

Results of the data validation were reviewed to evaluate the precision, accuracy, and completeness of the analyses.

Precision measures the agreement among a set of replicate measurements. Field precision is assessed through the collection and analysis of field duplicates. Analytical precision is estimated by duplicate / replicate analyses, usually on LCS samples, spiked samples, and/or field samples. For this project, precision was assessed by tabulating the results of the relative percent differences (RPDs) of the laboratory control sample/laboratory control sample duplicate (LCS/LCSD) and original sample / field duplicate sample analyses. RPDs that fall within the project or laboratory-specified QA control limits indicate acceptable precision. The precision number given indicates the percentage of RPDs that were within control limits.

Accuracy is the closeness of a measured result to an accepted reference value. Quality Control (QC) analyses used to measure accuracy include internal standard recoveries, LCS samples, spiked samples, and DMC recoveries. For this project, accuracy was assessed by tabulating the results of the percent recoveries for internal standards, LCS/LCSD samples, DMCs, and results for the laboratory method blank sample. The reported accuracy indicates the percentage of recoveries and blank results within the project or QA control limits.

Completeness is a measure of the amount of valid data collected compared to the amount planned. Measurements are considered to be valid if they are unqualified or qualified as estimated during data validation. Rejected results are considered to be invalid. The reported completeness is the number of valid results divided by the total number of results.

4.1 OVERALL PROJECT PRECISION

The overall project precision for the Bridgeton Landfill April 23rd – 24th, 2020 VOC air monitoring event, based on the percentage of RPD results within control limits, was 97.9% (47 of 48 results in control).

4.2 OVERALL PROJECT ACCURACY

The overall project accuracy for the Bridgeton Landfill April 23rd – 24th, 2020 VOC air monitoring event, based on the percentage of internal standard recoveries, LCS sample recoveries, and DMC recoveries within control limits, and laboratory method blank non-detects, was 100% (92 of 92 results in control).

4.3 OVERALL PROJECT COMPLETENESS

The overall project completeness for the Bridgeton Landfill April 23rd – 24th, 2020 VOC air monitoring event, defined as the percentage of data not rejected, was 88.7% (149 of 168 results not rejected).

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Client Sample ID: 1

Lab ID#: 2004552-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18043006sim**	**Date of Collection:**	**4/23/20 1:45:00 PM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**4/30/20 09:42 AM**
		Date of Extraction:	**4/30/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	0.22	0.17
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.27	0.18
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.078	0.46	0.36
Benzene	0.40	0.26	0.51	0.33
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.21	0.19
Trichloroethene	0.10	0.075	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.070	0.70	0.49
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	Not Detected	Not Detected R
m,p-Xylene	0.10	0.074	0.24	0.17
o-Xylene	0.10	0.080	0.10	0.080
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected R
Naphthalene	0.10	0.21	Not Detected	Not Detected UJ

Temperature = 59.0F , duration time = 20224 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	89	70-130

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Client Sample ID: 5

Lab ID#: 2004552-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18043007sim**	**Date of Collection:**	**4/23/20 1:31:00 PM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**4/30/20 10:08 AM**
		Date of Extraction:	**4/30/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	0.25	0.20
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.27	0.18
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.078	0.49	0.38
Benzene	0.40	0.26	0.55	0.36
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.20	0.18
Trichloroethene	0.10	0.075	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.070	0.56	0.39
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	Not Detected	Not Detected R
m,p-Xylene	0.10	0.074	0.24	0.18
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected R
Naphthalene	0.10	0.21	Not Detected	Not Detected UJ

Temperature = 59.0F , duration time = 20229 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130

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Client Sample ID: 7

Lab ID#: 2004552-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18043008sim**	**Date of Collection: 4/24/20 10:44:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/30/20 10:33 AM**	
		Date of Extraction: 4/30/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.47	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.074	Not Detected	Not Detected
Hexane	0.10	0.073	0.35	0.26
Ethyl Acetate	0.40	0.24	0.47	0.29 J+
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.35	0.21
Chloroform	0.10	0.064	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.077	Not Detected	Not Detected
Cyclohexane	0.10	0.089	0.13	0.11
Carbon Tetrachloride	0.10	0.072	0.49	0.35
Benzene	0.40	0.24	0.57	0.34
1,2-Dichloroethane	0.10	0.062	Not Detected	Not Detected
Heptane	0.10	0.083	0.28	0.23
Trichloroethene	0.10	0.069	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected
Toluene	0.10	0.065	0.99	0.64
Tetrachloroethene	0.10	0.081	Not Detected	Not Detected
Chlorobenzene	0.10	0.070	Not Detected	Not Detected
Ethyl Benzene	0.10	0.070	0.15	0.11
m,p-Xylene	0.10	0.068	0.43	0.29 J+
o-Xylene	0.10	0.074	0.14	0.10
Styrene	0.10	0.078	Not Detected	Not Detected
Propylbenzene	0.10	0.084	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.094	Not Detected	Not Detected R
Naphthalene	0.10	0.19	Not Detected	Not Detected LLJ

Temperature = 66.0F , duration time = 21514 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130

7/30/2020

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Client Sample ID: 8

Lab ID#: 2004552-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18043009sim**	**Date of Collection:**	**4/24/20 10:50:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**4/30/20 10:59 AM**
		Date of Extraction:	**4/30/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.47	Not Detected	Not Detected	
Methyl tert-butyl ether	0.10	0.074	Not Detected	Not Detected	
Hexane	0.10	0.073	0.26	0.19	
Ethyl Acetate	0.40	0.25	Not Detected	Not Detected	R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.31	0.19	
Chloroform	0.10	0.064	Not Detected	Not Detected	
1,1,1-Trichloroethane	0.10	0.077	Not Detected	Not Detected	
Cyclohexane	0.10	0.089	Not Detected	Not Detected	
Carbon Tetrachloride	0.10	0.072	0.45	0.32	
Benzene	0.40	0.24	0.54	0.32	
1,2-Dichloroethane	0.10	0.062	Not Detected	Not Detected	
Heptane	0.10	0.083	0.25	0.21	
Trichloroethene	0.10	0.070	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected	
Toluene	0.10	0.065	0.58	0.37	
Tetrachloroethene	0.10	0.081	Not Detected	Not Detected	
Chlorobenzene	0.10	0.071	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.071	Not Detected	Not Detected	R
m,p-Xylene	0.10	0.068	0.25	0.17	
o-Xylene	0.10	0.074	Not Detected	Not Detected	
Styrene	0.10	0.079	Not Detected	Not Detected	
Propylbenzene	0.10	0.084	Not Detected	Not Detected	
1,4-Dichlorobenzene	0.10	0.094	Not Detected	Not Detected	R
Naphthalene	0.10	0.19	Not Detected	Not Detected	UJ

Temperature = 67.0F , duration time = 21474 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130

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Client Sample ID: 12

Lab ID#: 2004552-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18043010sim**	**Date of Collection: 4/23/20 2:10:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/30/20 11:24 AM**	
		Date of Extraction: 4/30/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.078	0.24	0.19
Ethyl Acetate	0.40	0.26	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.27	0.18
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.077	0.51	0.40
Benzene	0.40	0.26	0.56	0.36
1,2-Dichloroethane	0.10	0.067	Not Detected	Not Detected
Heptane	0.10	0.089	0.31	0.27
Trichloroethene	0.10	0.075	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.070	0.56	0.40
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	Not Detected	Not Detected R
m,p-Xylene	0.10	0.074	0.24	0.18
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected R
Naphthalene	0.10	0.21	Not Detected	Not Detected UJ

Temperature = 59.0F , duration time = 20293 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130

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Client Sample ID: Dup
Lab ID#: 2004552-06A
VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18043011sim**	**Date of Collection: 4/23/20 1:31:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/30/20 11:50 AM**	
		Date of Extraction: 4/30/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.51	Not Detected	Not Detected	
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected	
Hexane	0.10	0.079	0.25	0.20	
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected	R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.23	0.15	
Chloroform	0.10	0.069	Not Detected	Not Detected	
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected	
Cyclohexane	0.10	0.096	Not Detected	Not Detected	
Carbon Tetrachloride	0.10	0.078	0.46	0.36	
Benzene	0.40	0.26	0.54	0.35	
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected	
Heptane	0.10	0.090	0.20	0.18	
Trichloroethene	0.10	0.075	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected	
Toluene	0.10	0.070	0.52	0.37	
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected	
Chlorobenzene	0.10	0.076	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.076	Not Detected	Not Detected	R
m,p-Xylene	0.10	0.074	0.23	0.17	
o-Xylene	0.10	0.080	Not Detected	Not Detected	
Styrene	0.10	0.085	Not Detected	Not Detected	
Propylbenzene	0.10	0.091	Not Detected	Not Detected	
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected	R
Naphthalene	0.10	0.21	Not Detected	Not Detected	UJ

Temperature = 59.0F , duration time = 20229 minutes.
Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	91	70-130

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Client Sample ID: TB

Lab ID#: 2004552-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18043012sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/30/20 12:15 PM**	
		Date of Extraction: 4/30/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.47	Not Detected	Not Detected	
Methyl tert-butyl ether	0.10	0.074	Not Detected	Not Detected	
Hexane	0.10	0.073	Not Detected	Not Detected	
Ethyl Acetate	0.40	0.24	Not Detected	Not Detected	R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	Not Detected	Not Detected	
Chloroform	0.10	0.064	Not Detected	Not Detected	
1,1,1-Trichloroethane	0.10	0.077	Not Detected	Not Detected	
Cyclohexane	0.10	0.089	Not Detected	Not Detected	
Carbon Tetrachloride	0.10	0.072	Not Detected	Not Detected	
Benzene	0.40	0.24	Not Detected	Not Detected	
1,2-Dichloroethane	0.10	0.062	Not Detected	Not Detected	
Heptane	0.10	0.083	Not Detected	Not Detected	
Trichloroethene	0.10	0.069	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected	
Toluene	0.10	0.065	Not Detected	Not Detected	
Tetrachloroethene	0.10	0.081	Not Detected	Not Detected	
Chlorobenzene	0.10	0.070	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.070	Not Detected	Not Detected	R
m,p-Xylene	0.10	0.068	Not Detected	Not Detected	
o-Xylene	0.10	0.074	Not Detected	Not Detected	
Styrene	0.10	0.078	Not Detected	Not Detected	
Propylbenzene	0.10	0.084	Not Detected	Not Detected	
1,4-Dichlorobenzene	0.10	0.094	Not Detected	Not Detected	R
Naphthalene	0.10	0.19	Not Detected	Not Detected	UJ

Temperature = 67.0F , duration time = 21514 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	89	70-130

4/30/2020

May 7, 2020 Sampling Event

Data Validation Summary Report for the Bridgeton Landfill May 7th, 2020 VOC Air Monitoring Event

Prepared by Jonathan Wilkinson
Residuals Management Team Member
Feezor Engineering, Inc.

July 30th, 2020

1 INTRODUCTION

Five (5) outdoor air samples, one (1) field duplicate sample, and one (1) trip blank sample were collected at the Bridgeton Landfill on May 7th, 2020. The samples were sent to the Eurofins / Air Toxics Laboratory in Folsom, California and analyzed for Volatile Organic Compounds (VOCs) by EPA Compendium Method TO-17 (modified).

The analytical results were validated using laboratory acceptance criteria and the procedures and guidelines contained in the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, revised January 2017 and USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, dated October 1999.

Items checked included holding times, instrument performance check results, initial and continuing calibration procedures and results, method and field blank results, deuterated monitoring compound (DMC) recoveries, Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Laboratory Control Sample (LCS) recoveries, internal standard recoveries, field duplicate results, target compound identification, compound quantitation, and transcriptions from raw data.

All data necessary to complete the data review were provided by the laboratory. Based on the guidelines referenced above, results were qualified as:

- "U": The analyte was not detected at a value greater than the associated analyte quantitation limit;
- "J": An estimated analyte result, "J+" or "J-" used to indicate a high or low bias;
- "NJ": The analyte has been tentatively identified, or is presumed to be present at the associated numerical value;
- "UJ": The analyte was not detected. The reported analyte quantitation limit is approximate and may be inaccurate or imprecise; and
- "R": The result is unusable. The result was rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

2 SAMPLE SUMMARY

Sample results were reported in a Contract Laboratory Program (CLP)-like format data package. Review of the Chain of Custody (COC) form indicates that samples collected on May 7th, 2020 were shipped for delivery to the laboratory on May 8th, 2020 and were received by the laboratory in good condition via Federal Express (the courier used to deliver the samples to the laboratory). **Table 2.1** provides general information about the laboratory and data package, **Table 2.2** lists the samples validated and their respective laboratory identification numbers.

Table 2.1 General Information

Contract Laboratory:	Eurofins / Air Toxics, Inc. Folsom, California
Total # of Samples:	7
Sample Matrix:	Radiello™ 130 activated charcoal sorbent bed passive air sampler

Table 2.2 Sample Identification

Field Sample ID	QA Sample ID	Laboratory ID
1		2005159-01A
5		2005159-02A
7		2005159-03A
8		2005159-04A
12		2005159-05A
Dup	Field Duplicate @ 1	2005159-06A
TB	Trip Blank	2005159-07A

3 VOLATILE ORGANIC COMPOUNDS (EPA METHOD TO-17 MODIFIED)

Analysis of VOCs is accomplished by chemical extraction of target analytes using carbon disulfide followed by injection into a Gas Chromatograph / Mass Spectrometer (GC/MS) for identification and quantitation of analytes.

3.1 HOLDING TIMES

No holding times are specified by the method. Per the manufacturer, the shelf life of the Radiello™ 130 unit is six (6) months. Samples were analyzed according to the times shown in **Table 3.1**

Table 3.1 EPA Method TO-17 (Modified) Sample Holding Times

Field Sample ID	Date Collected	Date Extracted	Date Analyzed	# Days from Collection to Extraction	# Days from Extraction to Analysis
1	5/7/2020	5/11/2020	5/11/2020	4	0
5	5/7/2020	5/11/2020	5/11/2020	4	0
7	5/7/2020	5/11/2020	5/11/2020	4	0
8	5/7/2020	5/11/2020	5/11/2020	4	0
12	5/7/2020	5/11/2020	5/11/2020	4	0
Dup	5/7/2020	5/11/2020	5/11/2020	4	0
TB	5/7/2020	5/11/2020	5/11/2020	4	0

No qualifications were required based on holding times.

3.2 GC INSTRUMENT PERFORMANCE CHECKS

GC/MS instrument performance check results were reported for each 12-hour period when samples were analyzed. Ion abundance acceptance criteria for performance check compound Bromofluorobenzene (BFB) used by the laboratory were similar to ion abundance acceptance criteria provided in ion abundance acceptance criteria provided in Table 3 of the Functional Guidelines, as presented in **Table 3.2**. Using raw GC/MS instrument performance check results provided by the laboratory, ion abundance results were verified to be within each set of acceptance criteria provided in **Table 3.2**.

Table 3.2 BFB Ion Abundance Acceptance Criteria

Ion Mass	Laboratory-Provided Criteria	USEPA CLP Criteria
50	8% to 40% of Mass 95	15% to 40% of Mass 95
75	30% to 66% of Mass 95	30% to 80% of Mass 95
95	Base Peak, 100% Relative Abundance	Base Peak, 100% Relative Abundance
96	5% to 9% of Mass 95	5% to 9% of Mass 95
173	Less than 2% of Mass 174	Less than 2% of Mass 174
174	50% to 120% of Mass 95	50% to 120% of Mass 95
175	4% to 9% of Mass 174	5% to 9% of Mass 174
176	93% to 101% of Mass 174	95% to 101% of Mass 174
177	5% to 9% of Mass 176	5% to 9% of Mass 176

No qualifications were required based on GC/MS instrument performance check results.

3.3 INITIAL CALIBRATION PROCEDURES AND RESULTS

Initial calibration was performed for Instrument MSD-18 on April 15th, 2020 using eleven (11) standards for one (1) analyte, ten (10) standards for seventeen (17) analytes, nine (9) standards for three (3) analytes, eight (8) standards for two (2) analytes, and seven (7) standards for one (1) analyte. Based upon a review of raw calibration results provided by the laboratory, no errors were detected with the calculation of Percent Relative Standard Deviations (%RSDs), relative response factors (RRFs), or mean relative response factors ($\overline{\text{RRFs}}$).

RRFs and $\overline{\text{RRFs}}$ for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.3**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.3**. Analytes listed in **Table 3.3** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results. %RSDs for individual analytes were verified to be less than or equal to analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines and were less than or equal to laboratory-provided criteria for other analytes without an EPA-specified maximum value.

Table 3.3 Initial Calibration Relative Response Factors Outside of Control Limits

Initial Cal. Date and Instrument	Compound, $\overline{\text{RRF}}$, and EPA Minimum	Associated Samples
4/15/2020 MSD-18	Ethyl Acetate: 0.046; Laboratory-provided Min = 0.05 Ethylbenzene: 0.403, EPA Table 4 Min = 0.500 1,4-Dichlorobenzene: RF0.5 = 0.693, RF1.0 = 0.675, RF5.0 = .696; EPA Table 4 Min = 0.700	All

No other qualifications were required based on initial calibration procedures or results.

3.4 INITIAL CALIBRATION VERIFCIATION

An initial calibration verification (ICV) sample was analyzed after the initial calibration samples on April 15th, 2020. As required by the Functional Guidelines, the ICV sample solution was obtained from another source than the sources used for the initial calibration. Also as required by the Functional Guidelines, the concentration of the ICV was at or near the midpoint value of the calibration standards used for the initial calibration.

The ICV RRFs for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.4**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.4**.

Results for analytes listed in **Table 3.4** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results.

Table 3.4 ICV Relative Response Factors Outside of Control Limits

ICV Date / Time and Instrument	Compound, RRF, and EPA Minimum	Associated Samples
4/15/2020 13:54 MSD-18	Ethylbenzene = 0.408, EPA Table 4 Min = 0.500	All

The ICV Percent Differences (%Ds) for target analytes were verified to be less than analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be less than laboratory-provided criteria for other analytes without an EPA-specified value.

No other qualifications were required based on initial calibration procedures or results.

3.5 CONTINUING CALIBRATION VERIFCIATION

A continuing calibration verification (CCV) sample was analyzed prior to analysis of samples on May 11th, 2020. As required by the Functional Guidelines, the concentration of the CCV was at or near the midpoint value of the calibration standards used for the initial calibration.

The CCV RRFs for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.5**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.5**. Results for analytes listed in **Table 3.5** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results.

Table 3.5 CCV Relative Response Factors Outside of Control Limits

CCV Date / Time and Instrument	Compound, RRF, and EPA Minimum	Associated Samples
4/30/2020 07:42 MSD-18	Ethyl Acetate: 0.047; Laboratory-provided Min = 0.05 Ethylbenzene = 0.373, EPA Table 4 Min = 0.500 1,4-Dichlorobenzene = 0.642, EPA Table 4 Min = 0.700	All

The CCV %Ds for target analytes were verified to be less than analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be less than laboratory-provided criteria.

No other qualifications were required based on continuing calibration procedures or results.

3.6 BLANKS

Samples were analyzed within one (1) twelve (12)-hour time period. A method blank was analyzed after the CCV sample and prior to the primary samples as required by the Functional Guidelines. Method blank results were reported as non-detect by the laboratory and were verified to be non-detect based on a review of raw results provided by the laboratory.

One (1) trip blank sample was submitted to the laboratory and analyzed with the primary samples. No analytes were detected in the trip blank sample.

No qualifications were required based on blank results.

3.7 DEUTERATED MONITORING COMPOUNDS (SURROGATES)

One (1) deuterated monitoring compound (DMC, or surrogate), Toluene-d8, was added to each sample and used for evaluation of analysis efficiency. The laboratory compared recoveries for Toluene-d8 to the same criteria listed in the Functional Guidelines (70% - 130%). Toluene-d8 recoveries for the primary samples, method blank, and Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) pair were verified to be within 70% - 130%.

No qualifications were required based on DMC results.

3.8 MATRIX SPIKE / MATRIX SPIKE DUPLICATE

No Matrix Spike / Matrix Spike Duplicate (MS/MSD) samples were analyzed.

No qualifications were required based on MS/MSD results.

3.9 LABORATORY CONTROL SAMPLE / LABORATORY CONTROL SAMPLE DUPLICATE

One (1) Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) sample pair was analyzed with the primary samples. LCS/LCSD sample results were verified to be within laboratory-provided control limits and the Relative Percent Difference (RPD) between individual analyte results from the LCS and LCSD were verified be less than 20%. No qualifications were required based on LCS/LCSD results.

3.10 INTERNAL STANDARDS

Internal standard area counts and retention times for the samples and blanks were within the Functional Guidelines control limits of 50% to 200% and ±10.0 seconds, respectively, of the corresponding counts and times for the most recent continuing calibration verification sample or midpoint standard from the associated initial calibration. The laboratory-provided internal

standard control limit calculations were verified, and the individual sample internal standard results were verified to be within the applicable control limits.

No qualifications were required based on internal standards.

3.11 FIELD DUPLICATES

One (1) field duplicate sample pair (1 / DUP) was collected. Relative Percent Differences (RPDs) between the original and field duplicate samples were calculated to be less than 20% for detected analytes reported above five (5) times the applicable reporting limit (RL) and results were within ±RL for analytes reported at positive values less than five (5) times the RL.

No qualifications were performed based on field duplicate results.

3.12 TARGET ANALYTE IDENTIFICATION

Based on a review of raw sample results provided by the laboratory, no errors were observed with identification of target analytes. Relative intensities of primary and secondary ions for detected analytes were verified to be within ±20% of the laboratory-provided standard relative ion intensities for each analyte. Relative Retention Times (RRTs) were within the EPA-recommended control limits of ±0.06 RRT units of the RRT for the same analyte in the associated opening CCV sample.

No qualifications were performed based on target analyte identification criteria.

3.13 ANALYTE QUANTITATION AND TRANSCRIPTIONS FROM RAW DATA

Compound quantitation was checked for the primary samples, the field duplicate sample, the trip blank sample, and the LCS/LCSD sample pair. No errors were detected in sample quantitation methods or transcriptions from the raw data to the summary forms.

4 PRECISION, ACCURACY, AND COMPLETENESS

Results of the data validation were reviewed to evaluate the precision, accuracy, and completeness of the analyses.

Precision measures the agreement among a set of replicate measurements. Field precision is assessed through the collection and analysis of field duplicates. Analytical precision is estimated by duplicate / replicate analyses, usually on LCS samples, spiked samples, and/or field samples. For this project, precision was assessed by tabulating the results of the relative percent differences (RPDs) of the laboratory control sample/laboratory control sample duplicate (LCS/LCSD) and original sample / field duplicate sample analyses. RPDs that fall within the project

or laboratory-specified QA control limits indicate acceptable precision. The precision number given indicates the percentage of RPDs that were within control limits.

Accuracy is the closeness of a measured result to an accepted reference value. Quality Control (QC) analyses used to measure accuracy include internal standard recoveries, LCS samples, spiked samples, and DMC recoveries. For this project, accuracy was assessed by tabulating the results of the percent recoveries for internal standards, LCS/LCSD samples, DMCs, and results for the laboratory method blank sample. The reported accuracy indicates the percentage of recoveries and blank results within the project or QA control limits.

Completeness is a measure of the amount of valid data collected compared to the amount planned. Measurements are considered to be valid if they are unqualified or qualified as estimated during data validation. Rejected results are considered to be invalid. The reported completeness is the number of valid results divided by the total number of results.

4.1 OVERALL PROJECT PRECISION

The overall project precision for the Bridgeton Landfill May 7th, 2020 VOC air monitoring event, based on the percentage of RPD results within control limits, was 100% (48 of 48 results in control).

4.2 OVERALL PROJECT ACCURACY

The overall project accuracy for the Bridgeton Landfill May 7th, 2020 VOC air monitoring event, based on the percentage of internal standard recoveries, LCS sample recoveries, and DMC recoveries within control limits, and laboratory method blank non-detects, was 100% (92 of 92 results in control).

4.3 OVERALL PROJECT COMPLETENESS

The overall project completeness for the Bridgeton Landfill May 7th, 2020 VOC air monitoring event, defined as the percentage of data not rejected, was 91.1% (153 of 168 results not rejected).

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Client Sample ID: 1

Lab ID#: 2005159-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18051109sim**	**Date of Collection:**	**5/7/20 9:25:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**5/11/20 11:48 AM**
		Date of Extraction:	**5/11/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.082	Not Detected	Not Detected
Hexane	0.10	0.080	0.27	0.22
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.35	0.23
Chloroform	0.10	0.071	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.086	Not Detected	Not Detected
Cyclohexane	0.10	0.098	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.079	0.40	0.32
Benzene	0.40	0.26	0.45	0.30
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.092	0.32	0.30
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.072	0.62	0.44
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	0.12	0.093 J+
m,p-Xylene	0.10	0.076	0.46	0.35
o-Xylene	0.10	0.082	0.18	0.14
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.093	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected R
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 57.0F , duration time = 19894 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130

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Client Sample ID: 5

Lab ID#: 2005159-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18051110sim**	**Date of Collection:**	**5/7/20 10:41:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**5/11/20 12:14 PM**
		Date of Extraction:	**5/11/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	0.38	0.30
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.38	0.25
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.097	0.11	0.11
Carbon Tetrachloride	0.10	0.078	0.44	0.34
Benzene	0.40	0.26	0.50	0.33
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.25	0.23
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	0.82	0.58
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	0.12	0.091 J+
m,p-Xylene	0.10	0.075	0.33	0.25
o-Xylene	0.10	0.080	0.11	0.093
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.092	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected R
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 61.0F , duration time = 19989 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130

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Client Sample ID: 7

Lab ID#: 2005159-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18051111sim**	**Date of Collection:**	**5/7/20 10:34:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**5/11/20 12:40 PM**
		Date of Extraction:	**5/11/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.55	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.086	Not Detected	Not Detected
Hexane	0.10	0.085	0.35	0.29
Ethyl Acetate	0.40	0.29	0.41	0.30 J+
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.40	0.28
Chloroform	0.10	0.075	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.090	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.10	0.11
Carbon Tetrachloride	0.10	0.084	0.42	0.35
Benzene	0.40	0.28	0.47	0.33
1,2-Dichloroethane	0.10	0.073	Not Detected	Not Detected
Heptane	0.10	0.096	0.25	0.24
Trichloroethene	0.10	0.081	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.076	0.76	0.58
Tetrachloroethene	0.10	0.095	Not Detected	Not Detected
Chlorobenzene	0.10	0.082	Not Detected	Not Detected
Ethyl Benzene	0.10	0.082	0.14	0.11 J+
m,p-Xylene	0.10	0.080	0.39	0.31
o-Xylene	0.10	0.086	0.13	0.11
Styrene	0.10	0.092	Not Detected	Not Detected
Propylbenzene	0.10	0.098	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected R
Naphthalene	0.10	0.22	Not Detected	Not Detected

Temperature = 61.0F , duration time = 18710 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	89	70-130

7/30/2020

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Client Sample ID: 8

Lab ID#: 2005159-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18051112sim**	**Date of Collection:**	**5/7/20 10:51:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**5/11/20 01:06 PM**
		Date of Extraction:	**5/11/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.54	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.086	Not Detected	Not Detected
Hexane	0.10	0.084	0.30	0.25
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.42	0.30
Chloroform	0.10	0.074	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.090	Not Detected	Not Detected
Cyclohexane	0.10	0.10	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.083	0.44	0.36
Benzene	0.40	0.28	0.50	0.35
1,2-Dichloroethane	0.10	0.072	Not Detected	Not Detected
Heptane	0.10	0.096	0.25	0.24
Trichloroethene	0.10	0.081	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.075	0.61	0.46
Tetrachloroethene	0.10	0.094	Not Detected	Not Detected
Chlorobenzene	0.10	0.082	Not Detected	Not Detected
Ethyl Benzene	0.10	0.082	Not Detected	Not Detected R
m,p-Xylene	0.10	0.079	0.25	0.20
o-Xylene	0.10	0.086	Not Detected	Not Detected
Styrene	0.10	0.091	Not Detected	Not Detected
Propylbenzene	0.10	0.098	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected R
Naphthalene	0.10	0.22	Not Detected	Not Detected

Temperature = 63.0F , duration time = 18720 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	91	70-130

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Client Sample ID: 12

Lab ID#: 2005159-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18051113sim**	**Date of Collection: 5/7/20 10:08:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/11/20 01:31 PM**	
		Date of Extraction: 5/11/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.081	Not Detected	Not Detected
Hexane	0.10	0.080	0.39	0.31
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.44	0.29
Chloroform	0.10	0.070	0.10	0.071
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.097	0.12	0.12
Carbon Tetrachloride	0.10	0.078	0.55	0.43
Benzene	0.40	0.26	0.60	0.39
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.091	0.42	0.38
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	0.77	0.54
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	0.12	0.090 J+
m,p-Xylene	0.10	0.075	0.31	0.23
o-Xylene	0.10	0.081	0.10	0.085
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.092	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected R
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 61.0F , duration time = 19915 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130

7/30/2020

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Client Sample ID: Dup
Lab ID#: 2005159-06A
VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18051114sim**	**Date of Collection:**	**5/7/20 9:25:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**5/11/20 01:57 PM**
		Date of Extraction:	**5/11/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.082	Not Detected	Not Detected
Hexane	0.10	0.080	0.29	0.23
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.36	0.24
Chloroform	0.10	0.071	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.086	Not Detected	Not Detected
Cyclohexane	0.10	0.098	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.079	0.43	0.34
Benzene	0.40	0.26	0.48	0.32
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.092	0.35	0.32
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.072	0.67	0.48
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	0.12	0.097 J+
m,p-Xylene	0.10	0.076	0.48	0.36
o-Xylene	0.10	0.082	0.18	0.15
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.093	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected R
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 57.0F , duration time = 19894 minutes.
Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130

7/30/2020

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Client Sample ID: TB

Lab ID#: 2005159-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18051115sim**	**Date of Collection: 5/7/20**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/11/20 02:23 PM**	
		Date of Extraction: 5/11/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	Not Detected	Not Detected
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	Not Detected	Not Detected
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.078	Not Detected	Not Detected
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	Not Detected	Not Detected
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.070	Not Detected	Not Detected
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	Not Detected	Not Detected R
m,p-Xylene	0.10	0.074	Not Detected	Not Detected
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected R
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 63.0F , duration time = 19989 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130

5/30/2020

May 21, 2020 Sampling Event

Data Validation Summary Report for the Bridgeton Landfill May 21st, 2020 VOC Air Monitoring Event

Prepared by Jonathan Wilkinson
Residuals Management Team Member
Feezor Engineering, Inc.

August 1st, 2020

1 INTRODUCTION

Five (5) outdoor air samples, one (1) field duplicate sample, and one (1) trip blank sample were collected at the Bridgeton Landfill on May 21st, 2020. The samples were sent to the Eurofins / Air Toxics Laboratory in Folsom, California and analyzed for Volatile Organic Compounds (VOCs) by EPA Compendium Method TO-17 (modified).

The analytical results were validated using laboratory acceptance criteria and the procedures and guidelines contained in the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, revised January 2017 and USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, dated October 1999.

Items checked included holding times, instrument performance check results, initial and continuing calibration procedures and results, method and field blank results, deuterated monitoring compound (DMC) recoveries, Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Laboratory Control Sample (LCS) recoveries, internal standard recoveries, field duplicate results, target compound identification, compound quantitation, and transcriptions from raw data.

All data necessary to complete the data review were provided by the laboratory. Based on the guidelines referenced above, results were qualified as:

- "U": The analyte was not detected at a value greater than the associated analyte quantitation limit;
- "J": An estimated analyte result, "J+" or "J-" used to indicate a high or low bias;
- "NJ": The analyte has been tentatively identified, or is presumed to be present at the associated numerical value;
- "UJ": The analyte was not detected. The reported analyte quantitation limit is approximate and may be inaccurate or imprecise; and
- "R": The result is unusable. The result was rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

2 SAMPLE SUMMARY

Sample results were reported in a Contract Laboratory Program (CLP)-like format data package. Review of the Chain of Custody (COC) form indicates that samples collected on May 21st, 2020 were shipped for delivery to the laboratory on May 22nd, 2020 and were received by the laboratory in good condition via Federal Express (the courier used to deliver the samples to the laboratory). **Table 2.1** provides general information about the laboratory and data package, **Table 2.2** lists the samples validated and their respective laboratory identification numbers.

Table 2.1 General Information

Contract Laboratory:	Eurofins / Air Toxics, Inc. Folsom, California
Total # of Samples:	7
Sample Matrix:	Radiello™ 130 activated charcoal sorbent bed passive air sampler

Table 2.2 Sample Identification

Field Sample ID	QA Sample ID	Laboratory ID
1		2005495-01A
5		2005495-02A
7		2005495-03A
8		2005495-04A
12		2005495-05A
Dup	Field Duplicate @ 12	2005495-06A
TB	Trip Blank	2005495-07A

3 VOLATILE ORGANIC COMPOUNDS (EPA METHOD TO-17 MODIFIED)

Analysis of VOCs is accomplished by chemical extraction of target analytes using carbon disulfide followed by injection into a Gas Chromatograph / Mass Spectrometer (GC/MS) for identification and quantitation of analytes.

3.1 HOLDING TIMES

No holding times are specified by the method. Per the manufacturer, the shelf life of the Radiello™ 130 unit is six (6) months. Samples were analyzed according to the times shown in **Table 3.1**

Table 3.1 EPA Method TO-17 (Modified) Sample Holding Times

Field Sample ID	Date Collected	Date Extracted	Date Analyzed	# Days from Collection to Extraction	# Days from Extraction to Analysis
1	5/21/2020	5/27/2020	5/27/2020	6	0
5	5/21/2020	5/27/2020	5/27/2020	6	0
7	5/21/2020	5/27/2020	5/27/2020	6	0
8	5/21/2020	5/27/2020	5/27/2020	6	0
12	5/21/2020	5/27/2020	5/27/2020	6	0
Dup	5/21/2020	5/27/2020	5/27/2020	6	0
TB	5/21/2020	5/27/2020	5/27/2020	6	0

No qualifications were required based on holding times.

3.2 GC INSTRUMENT PERFORMANCE CHECKS

GC/MS instrument performance check results were reported for each 12-hour period when samples were analyzed. Ion abundance acceptance criteria for performance check compound Bromofluorobenzene (BFB) used by the laboratory were similar to ion abundance acceptance criteria provided in ion abundance acceptance criteria provided in Table 3 of the Functional Guidelines, as presented in **Table 3.2**. Using raw GC/MS instrument performance check results provided by the laboratory, ion abundance results were verified to be within each set of acceptance criteria provided in **Table 3.2**.

Table 3.2 BFB Ion Abundance Acceptance Criteria

Ion Mass	Laboratory-Provided Criteria	USEPA CLP Criteria
50	8% to 40% of Mass 95	15% to 40% of Mass 95
75	30% to 66% of Mass 95	30% to 80% of Mass 95
95	Base Peak, 100% Relative Abundance	Base Peak, 100% Relative Abundance
96	5% to 9% of Mass 95	5% to 9% of Mass 95
173	Less than 2% of Mass 174	Less than 2% of Mass 174
174	50% to 120% of Mass 95	50% to 120% of Mass 95
175	4% to 9% of Mass 174	5% to 9% of Mass 174
176	93% to 101% of Mass 174	95% to 101% of Mass 174
177	5% to 9% of Mass 176	5% to 9% of Mass 176

No qualifications were required based on GC/MS instrument performance check results.

3.3 INITIAL CALIBRATION PROCEDURES AND RESULTS

Initial calibration was performed for Instrument MSD-C on May 13th, 2020 using eleven (11) standards for one (1) analyte, ten (10) standards for seventeen (17) analytes, nine (9) standards for three (3) analytes, eight (8) standards for two (2) analytes, and seven (7) standards for one (1) analyte. Based upon a review of raw calibration results provided by the laboratory, no errors were detected with the calculation of Percent Relative Standard Deviations (%RSDs), relative response factors (RRFs), or mean relative response factors ($\overline{RRFs}$).

RRFs and $\overline{RRFs}$ for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.3**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.3**. Analytes listed in **Table 3.3** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results. %RSDs for individual analytes were verified to be less than or equal to analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines and were less than or equal to laboratory-provided criteria for other analytes without an EPA-specified maximum value.

Table 3.3 Initial Calibration Relative Response Factors Outside of Control Limits

Initial Cal. Date and Instrument	Compound, $\overline{RRF}$, and EPA Minimum	Associated Samples
5/13/2020 MSD-C	Ethylbenzene: 0.449, EPA Table 4 Min = 0.500 1,4-Dichlorobenzene: RF200 = 0.611, EPA Table 4 Min = 0.700	All

No other qualifications were required based on initial calibration procedures or results.

3.4 INITIAL CALIBRATION VERIFCIATION

An initial calibration verification (ICV) sample was analyzed after the initial calibration samples on May 13th, 2020. As required by the Functional Guidelines, the ICV sample solution was obtained from another source than the sources used for the initial calibration. Also as required by the Functional Guidelines, the concentration of the ICV was at or near the midpoint value of the calibration standards used for the initial calibration.

The ICV RRFs for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.4**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.4**. Results for analytes listed in **Table 3.4** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results.

Table 3.4 ICV Relative Response Factors Outside of Control Limits

ICV Date / Time and Instrument	Compound, RRF, and EPA Minimum	Associated Samples
5/13/2020 13:27 MSD-C	Ethylbenzene = 0.425, EPA Table 4 Min = 0.500	All

The ICV Percent Differences (%Ds) for target analytes were verified to be less than analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be less than laboratory-provided criteria for other analytes without an EPA-specified value.

No other qualifications were required based on initial calibration procedures or results.

3.5 CONTINUING CALIBRATION VERIFCIATION

A continuing calibration verification (CCV) sample was analyzed prior to analysis of samples on May 27th, 2020. As required by the Functional Guidelines, the concentration of the CCV was at or near the midpoint value of the calibration standards used for the initial calibration.

The CCV RRFs for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.5**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.5**. Results for analytes listed in **Table 3.5** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results.

Table 3.5 CCV Relative Response Factors Outside of Control Limits

CCV Date / Time and Instrument	Compound, RRF, and EPA Minimum	Associated Samples
5/27/2020 07:43 MSD-C	Ethylbenzene = 0.428, EPA Table 4 Min = 0.500 1,4-Dichlorobenzene = 0.696, EPA Table 4 Min = 0.700	All

The CCV %Ds for target analytes were verified to be less than analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be less than laboratory-provided criteria.

No other qualifications were required based on continuing calibration procedures or results.

3.6 BLANKS

Samples were analyzed within one (1) twelve (12)-hour time period. A method blank was analyzed after the CCV sample and prior to the primary samples as required by the Functional Guidelines. Method blank results were reported as non-detect by the laboratory and were verified to be non-detect based on a review of raw results provided by the laboratory.

One (1) trip blank sample was submitted to the laboratory and analyzed with the primary samples. No analytes were detected in the trip blank sample.

No qualifications were required based on blank results.

3.7 DEUTERATED MONITORING COMPOUNDS (SURROGATES)

One (1) deuterated monitoring compound (DMC, or surrogate), Toluene-d8, was added to each sample and used for evaluation of analysis efficiency. The laboratory compared recoveries for Toluene-d8 to the same criteria listed in the Functional Guidelines (70% - 130%). Toluene-d8 recoveries for the primary samples, method blank, and Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) pair were verified to be within 70% - 130%.

No qualifications were required based on DMC results.

3.8 MATRIX SPIKE / MATRIX SPIKE DUPLICATE

No Matrix Spike / Matrix Spike Duplicate (MS/MSD) samples were analyzed.

No qualifications were required based on MS/MSD results.

3.9 LABORATORY CONTROL SAMPLE / LABORATORY CONTROL SAMPLE DUPLICATE

One (1) Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) sample pair was analyzed with the primary samples. LCS/LCSD sample results were verified to be within laboratory-provided control limits and the Relative Percent Difference (RPD) between individual analyte results from the LCS and LCSD were verified be less than 20%. No qualifications were required based on LCS/LCSD results.

3.10 INTERNAL STANDARDS

Internal standard area counts and retention times for the samples and blanks were within the Functional Guidelines control limits of 50% to 200% and ±10.0 seconds, respectively, of the corresponding counts and times for the most recent continuing calibration verification sample or midpoint standard from the associated initial calibration. The laboratory-provided internal standard control limit calculations were verified, and the individual sample internal standard results were verified to be within the applicable control limits.

No qualifications were required based on internal standards.

3.11 FIELD DUPLICATES

One (1) field duplicate sample pair (12 / DUP) was collected. Relative Percent Differences (RPDs) between the original and field duplicate samples were calculated to be less than 20% for detected analytes reported above five (5) times the applicable reporting limit (RL) and results were within ±RL for analytes reported at positive values less than five (5) times the RL.

No qualifications were performed based on field duplicate results.

3.12 TARGET ANALYTE IDENTIFICATION

Based on a review of raw sample results provided by the laboratory, no errors were observed with identification of target analytes. Relative intensities of primary and secondary ions for detected analytes were verified to be within ±20% of the laboratory-provided standard relative ion intensities for each analyte. Relative Retention Times (RRTs) were within the EPA-recommended control limits of ±0.06 RRT units of the RRT for the same analyte in the associated opening CCV sample.

No qualifications were performed based on target analyte identification criteria.

3.13 ANALYTE QUANTITATION AND TRANSCRIPTIONS FROM RAW DATA

Compound quantitation was checked for the primary samples, the field duplicate sample, the trip blank sample, and the LCS/LCSD sample pair. No errors were detected in sample quantitation methods or transcriptions from the raw data to the summary forms.

4 PRECISION, ACCURACY, AND COMPLETENESS

Results of the data validation were reviewed to evaluate the precision, accuracy, and completeness of the analyses.

Precision measures the agreement among a set of replicate measurements. Field precision is assessed through the collection and analysis of field duplicates. Analytical precision is estimated by duplicate / replicate analyses, usually on LCS samples, spiked samples, and/or field samples. For this project, precision was assessed by tabulating the results of the relative percent differences (RPDs) of the laboratory control sample/laboratory control sample duplicate (LCS/LCSD) and original sample / field duplicate sample analyses. RPDs that fall within the project or laboratory-specified QA control limits indicate acceptable precision. The precision number given indicates the percentage of RPDs that were within control limits.

Accuracy is the closeness of a measured result to an accepted reference value. Quality Control (QC) analyses used to measure accuracy include internal standard recoveries, LCS samples, spiked samples, and DMC recoveries. For this project, accuracy was assessed by tabulating the results of the percent recoveries for internal standards, LCS/LCSD samples, DMCs, and results for the laboratory method blank sample. The reported accuracy indicates the percentage of recoveries and blank results within the project or QA control limits.

Completeness is a measure of the amount of valid data collected compared to the amount planned. Measurements are considered to be valid if they are unqualified or qualified as estimated during data validation. Rejected results are considered to be invalid. The reported completeness is the number of valid results divided by the total number of results.

4.1 OVERALL PROJECT PRECISION

The overall project precision for the Bridgeton Landfill May 21st, 2020 VOC air monitoring event, based on the percentage of RPD results within control limits, was 100% (48 of 48 results in control).

4.2 OVERALL PROJECT ACCURACY

The overall project accuracy for the Bridgeton Landfill May 21st, 2020 VOC air monitoring event, based on the percentage of internal standard recoveries, LCS sample recoveries, and DMC recoveries within control limits, and laboratory method blank non-detects, was 100% (92 of 92 results in control).

4.3 OVERALL PROJECT COMPLETENESS

The overall project completeness for the Bridgeton Landfill May 21st, 2020 VOC air monitoring event, defined as the percentage of data not rejected, was 92.9% (156 of 168 results not rejected).

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Client Sample ID: 1

Lab ID#: 2005495-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c052711sim**	**Date of Collection:**	**5/21/20 8:12:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**5/27/20 11:51 AM**
		Date of Extraction:	**5/27/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.081	Not Detected	Not Detected
Hexane	0.10	0.080	0.20	0.16
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.21	0.14
Chloroform	0.10	0.071	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.079	0.33	0.26
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.091	0.18	0.17
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.072	0.72	0.51
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	Not Detected	Not Detected R
m,p-Xylene	0.10	0.076	0.27	0.20
o-Xylene	0.10	0.081	Not Detected	Not Detected
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.093	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected R
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 56.0F , duration time = 20081 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	78	70-130

8/1/2020

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Client Sample ID: 5

Lab ID#: 2005495-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c052712sim**	**Date of Collection:**	**5/21/20 8:40:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**5/27/20 12:19 PM**
		Date of Extraction:	**5/27/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.082	Not Detected	Not Detected
Hexane	0.10	0.080	0.26	0.20
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.32	0.22
Chloroform	0.10	0.071	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.086	Not Detected	Not Detected
Cyclohexane	0.10	0.098	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.079	0.34	0.27
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.092	0.15	0.14
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.072	0.60	0.43
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	Not Detected	Not Detected R
m,p-Xylene	0.10	0.076	0.27	0.21
o-Xylene	0.10	0.082	Not Detected	Not Detected
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.093	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected R
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 56.0F , duration time = 20039 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	78	70-130

5/1/2020

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Client Sample ID: 7

Lab ID#: 2005495-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c052713sim**	**Date of Collection:**	**5/21/20 8:32:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**5/27/20 12:47 PM**
		Date of Extraction:	**5/27/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.082	Not Detected	Not Detected
Hexane	0.10	0.080	0.26	0.21
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.32	0.21
Chloroform	0.10	0.071	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.086	Not Detected	Not Detected
Cyclohexane	0.10	0.098	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.079	0.32	0.26
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.092	0.17	0.16
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.072	0.61	0.44
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	0.11	0.084 JH
m,p-Xylene	0.10	0.076	0.35	0.26
o-Xylene	0.10	0.082	0.11	0.089
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.093	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected R
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 56.0F , duration time = 20034 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	78	70-130

6/1/2020

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Client Sample ID: 8

Lab ID#: 2005495-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c052714sim**	**Date of Collection:**	**5/21/20 8:51:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**5/27/20 01:15 PM**
		Date of Extraction:	**5/27/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.081	Not Detected	Not Detected
Hexane	0.10	0.080	0.34	0.27
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.28	0.18
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.079	0.33	0.26
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.091	0.20	0.18
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	0.69	0.49
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	0.11	0.087 J+
m,p-Xylene	0.10	0.075	0.36	0.27
o-Xylene	0.10	0.081	0.11	0.092
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.093	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected R
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 57.0F , duration time = 20040 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	78	70-130

8/1/2020

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Client Sample ID: 12

Lab ID#: 2005495-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c052715sim**	**Date of Collection: 5/21/20 7:42:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/27/20 01:44 PM**	
		Date of Extraction: 5/27/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.081	Not Detected	Not Detected
Hexane	0.10	0.080	0.25	0.20
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.34	0.23
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.079	0.39	0.31
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.091	0.23	0.21
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	0.59	0.42
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	Not Detected	Not Detected R
m,p-Xylene	0.10	0.076	0.27	0.20
o-Xylene	0.10	0.081	Not Detected	Not Detected
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.093	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected R
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 57.0F , duration time = 20009 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	79	70-130

6/1/2020

eurofins | Air Toxics

Client Sample ID: Dup

Lab ID#: 2005495-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c052716sim**	**Date of Collection: 5/21/20 7:42:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/27/20 02:13 PM**	
		Date of Extraction: 5/27/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.081	Not Detected	Not Detected
Hexane	0.10	0.080	0.25	0.20
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.34	0.23
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.079	0.37	0.29
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.091	0.23	0.21
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	0.56	0.40
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	Not Detected	Not Detected R
m,p-Xylene	0.10	0.076	0.28	0.22
o-Xylene	0.10	0.081	Not Detected	Not Detected
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.093	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected R
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 57.0F , duration time = 20009 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	78	70-130

8/1/2020

eurofins | Air Toxics

Client Sample ID: TB

Lab ID#: 2005495-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c052717sim**	**Date of Collection:**	**5/21/20**
Dil. Factor:	**1.00**	**Date of Analysis:**	**5/27/20 02:42 PM**
		Date of Extraction:	**5/27/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.081	Not Detected	Not Detected
Hexane	0.10	0.080	Not Detected	Not Detected
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	Not Detected	Not Detected
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.079	Not Detected	Not Detected
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.091	Not Detected	Not Detected
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	Not Detected	Not Detected
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	Not Detected	Not Detected R
m,p-Xylene	0.10	0.075	Not Detected	Not Detected
o-Xylene	0.10	0.081	Not Detected	Not Detected
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.092	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected R
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 57.0F , duration time = 20081 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	78	70-130

6/1/2020

June 4, 2020 Sampling Event

Data Validation Summary Report for the Bridgeton Landfill June 4th, 2020 VOC Air Monitoring Event

Prepared by Jonathan Wilkinson
Residuals Management Team Member
Feezor Engineering, Inc.

August 2nd, 2020

1 INTRODUCTION

Five (5) outdoor air samples, one (1) field duplicate sample, and one (1) trip blank sample were collected at the Bridgeton Landfill on June 4th, 2020. The samples were sent to the Eurofins / Air Toxics Laboratory in Folsom, California and analyzed for Volatile Organic Compounds (VOCs) by EPA Compendium Method TO-17 (modified).

The analytical results were validated using laboratory acceptance criteria and the procedures and guidelines contained in the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, revised January 2017 and USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, dated October 1999.

Items checked included holding times, instrument performance check results, initial and continuing calibration procedures and results, method and field blank results, deuterated monitoring compound (DMC) recoveries, Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Laboratory Control Sample (LCS) recoveries, internal standard recoveries, field duplicate results, target compound identification, compound quantitation, and transcriptions from raw data.

All data necessary to complete the data review were provided by the laboratory. Based on the guidelines referenced above, results were qualified as:

- "U": The analyte was not detected at a value greater than the associated analyte quantitation limit;
- "J": An estimated analyte result, "J+" or "J-" used to indicate a high or low bias;
- "NJ": The analyte has been tentatively identified, or is presumed to be present at the associated numerical value;
- "UJ": The analyte was not detected. The reported analyte quantitation limit is approximate and may be inaccurate or imprecise; and
- "R": The result is unusable. The result was rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

2 SAMPLE SUMMARY

Sample results were reported in a Contract Laboratory Program (CLP)-like format data package. Review of the Chain of Custody (COC) form indicates that samples collected on June 4th, 2020 were shipped for delivery to the laboratory on June 5th, 2020 and were received by the laboratory in good condition via Federal Express (the courier used to deliver the samples to the laboratory). **Table 2.1** provides general information about the laboratory and data package, **Table 2.2** lists the samples validated and their respective laboratory identification numbers.

Table 2.1 General Information

Contract Laboratory:	Eurofins / Air Toxics, Inc. Folsom, California
Total # of Samples:	7
Sample Matrix:	Radiello™ 130 activated charcoal sorbent bed passive air sampler

Table 2.2 Sample Identification

Field Sample ID	QA Sample ID	Laboratory ID
1		2006117-01A
5		2006117-02A
7		2006117-03A
8		2006117-04A
12		2006117-05A
Dup	Field Duplicate @ 8	2006117-06A
TB	Trip Blank	2006117-07A

3 VOLATILE ORGANIC COMPOUNDS (EPA METHOD TO-17 MODIFIED)

Analysis of VOCs is accomplished by chemical extraction of target analytes using carbon disulfide followed by injection into a Gas Chromatograph / Mass Spectrometer (GC/MS) for identification and quantitation of analytes.

3.1 HOLDING TIMES

No holding times are specified by the method. Per the manufacturer, the shelf life of the Radiello™ 130 unit is six (6) months. Samples were analyzed according to the times shown in **Table 3.1**

Table 3.1 EPA Method TO-17 (Modified) Sample Holding Times

Field Sample ID	Date Collected	Date Extracted	Date Analyzed	# Days from Collection to Extraction	# Days from Extraction to Analysis
1	6/4/2020	6/8/2020	6/8/2020	4	0
5	6/4/2020	6/8/2020	6/8/2020	4	0
7	6/4/2020	6/8/2020	6/8/2020	4	0
8	6/4/2020	6/8/2020	6/8/2020	4	0
12	6/4/2020	6/8/2020	6/8/2020	4	0
Dup	6/4/2020	6/8/2020	6/8/2020	4	0
TB	6/4/2020	6/8/2020	6/8/2020	4	0

No qualifications were required based on holding times.

3.2 GC INSTRUMENT PERFORMANCE CHECKS

GC/MS instrument performance check results were reported for each 12-hour period when samples were analyzed. Ion abundance acceptance criteria for performance check compound Bromofluorobenzene (BFB) used by the laboratory were similar to ion abundance acceptance criteria provided in ion abundance acceptance criteria provided in Table 3 of the Functional Guidelines, as presented in **Table 3.2.1**. Using raw GC/MS instrument performance check results provided by the laboratory, ion abundance results were verified to be within each set of acceptance criteria provided in **Table 3.2.1**, except for the result presented in **Table 3.2.2**.

Table 3.2.1 BFB Ion Abundance Acceptance Criteria

Ion Mass	Laboratory-Provided Criteria	USEPA CLP Criteria
50	8% to 40% of Mass 95	15% to 40% of Mass 95
75	30% to 66% of Mass 95	30% to 80% of Mass 95
95	Base Peak, 100% Relative Abundance	Base Peak, 100% Relative Abundance
96	5% to 9% of Mass 95	5% to 9% of Mass 95
173	Less than 2% of Mass 174	Less than 2% of Mass 174
174	50% to 120% of Mass 95	50% to 120% of Mass 95
175	4% to 9% of Mass 174	5% to 9% of Mass 174
176	93% to 101% of Mass 174	95% to 101% of Mass 174
177	5% to 9% of Mass 176	5% to 9% of Mass 176

Table 3.2.2 BFB Ion Abundance Results Outside of Acceptance Criteria

Sample Date/Time	Ion Mass	Lab / EPA Criteria	Result
2810-1660; BFB 6/8/2020 08:34	176	93% to 101% / 95% to 101% of Mass 174	94.48%

As stated in the Functional Guidelines, if abundance criteria are not met, professional judgement is used to qualify results. Because the above-listed result met lab acceptance criteria and was just outside of EPA acceptance criteria, no qualifications were required based on GC/MS instrument performance check results.

3.3 INITIAL CALIBRATION PROCEDURES AND RESULTS

Initial calibration was performed for Instrument MSD-C on May 13th, 2020 using eleven (11) standards for one (1) analyte, ten (10) standards for seventeen (17) analytes, nine (9) standards for three (3) analytes, eight (8) standards for two (2) analytes, and seven (7) standards for one (1) analyte. Based upon a review of raw calibration results provided by the laboratory, no errors were detected with the calculation of Percent Relative Standard Deviations (%RSDs), relative response factors (RRFs), or mean relative response factors ($\overline{\text{RRFs}}$).

RRFs and $\overline{\text{RRFs}}$ for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.3**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.3**. Analytes listed in **Table 3.3** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results. %RSDs for individual analytes were verified to be less than or equal to analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines and were less than or equal to laboratory-provided criteria for other analytes without an EPA-specified maximum value.

Table 3.3 Initial Calibration Relative Response Factors Outside of Control Limits

Initial Cal. Date and Instrument	Compound, $\overline{\text{RRF}}$, and EPA Minimum	Associated Samples
5/13/2020 MSD-C	Ethylbenzene: 0.449, EPA Table 4 Min = 0.500 1,4-Dichlorobenzene: RF200 = 0.611, EPA Table 4 Min = 0.700	All

No other qualifications were required based on initial calibration procedures or results.

3.4 INITIAL CALIBRATION VERIFCIATION

An initial calibration verification (ICV) sample was analyzed after the initial calibration samples on May 13th, 2020. As required by the Functional Guidelines, the ICV sample solution was obtained

from another source than the sources used for the initial calibration. Also as required by the Functional Guidelines, the concentration of the ICV was at or near the midpoint value of the calibration standards used for the initial calibration.

The ICV RRFs for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.4**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.4**. Results for analytes listed in **Table 3.4** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results.

Table 3.4 ICV Relative Response Factors Outside of Control Limits

ICV Date / Time and Instrument	Compound, RRF, and EPA Minimum	Associated Samples
5/13/2020 13:27 MSD-C	Ethylbenzene = 0.425, EPA Table 4 Min = 0.500	All

The ICV Percent Differences (%Ds) for target analytes were verified to be less than analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be less than laboratory-provided criteria for other analytes without an EPA-specified value.

No other qualifications were required based on initial calibration procedures or results.

3.5 CONTINUING CALIBRATION VERIFCIATION

A continuing calibration verification (CCV) sample was analyzed prior to analysis of samples on June 8th, 2020. As required by the Functional Guidelines, the concentration of the CCV was at or near the midpoint value of the calibration standards used for the initial calibration.

The CCV RRFs for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.5.1**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.5.1**. Results for analytes listed in **Table 3.5.1** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results.

Table 3.5.1 CCV Relative Response Factors Outside of Control Limits

CCV Date / Time and Instrument	Compound, RRF, and EPA Minimum	Associated Samples
6/8/2020 08:44 MSD-C	Ethylbenzene = 0.420, EPA Table 4 Min = 0.500 1,4-Dichlorobenzene = 0.669, EPA Table 4 Min = 0.700	All

The CCV %Ds for target analytes were verified to be less than analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be less than laboratory-provided criteria except for the results listed in **Table 3.5.2**. Results for analytes listed in **Table 3.5.2** were qualified as estimated ("J") for positive results and as estimated non-detect ("UJ") for non-detect results.

Table 3.5.2 CCV %Ds Outside of Control Limits

CCV Date / Time and Instrument	Compound, %D, and Maximum	Associated Samples
6/8/2020 08:44 MSD-C	Ethanol = 30.99%, Laboratory Max Criteria = 30%	All

No other qualifications were required based on continuing calibration procedures or results.

3.6 BLANKS

Samples were analyzed within one (1) twelve (12)-hour time period. A method blank was analyzed after the CCV sample and prior to the primary samples as required by the Functional Guidelines. Method blank results were reported as non-detect by the laboratory and were verified to be non-detect based on a review of raw results provided by the laboratory.

One (1) trip blank sample was submitted to the laboratory and analyzed with the primary samples. No analytes were detected in the trip blank sample.

No qualifications were required based on blank results.

3.7 DEUTERATED MONITORING COMPOUNDS (SURROGATES)

One (1) deuterated monitoring compound (DMC, or surrogate), Toluene-d8, was added to each sample and used for evaluation of analysis efficiency. The laboratory compared recoveries for Toluene-d8 to the same criteria listed in the Functional Guidelines (70% - 130%). Toluene-d8 recoveries for the primary samples, method blank, and Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) pair were verified to be within 70% - 130%.

No qualifications were required based on DMC results.

3.8 MATRIX SPIKE / MATRIX SPIKE DUPLICATE

No Matrix Spike / Matrix Spike Duplicate (MS/MSD) samples were analyzed.

No qualifications were required based on MS/MSD results.

3.9 LABORATORY CONTROL SAMPLE / LABORATORY CONTROL SAMPLE DUPLICATE

One (1) Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) sample pair was analyzed with the primary samples. LCS/LCSD sample results were verified to be within laboratory-provided control limits and the Relative Percent Difference (RPD) between individual analyte results from the LCS and LCSD were verified be less than 20%. No qualifications were required based on LCS/LCSD results.

3.10 INTERNAL STANDARDS

Internal standard area counts and retention times for the samples and blanks were within the Functional Guidelines control limits of 50% to 200% and ±10.0 seconds, respectively, of the corresponding counts and times for the most recent continuing calibration verification sample or midpoint standard from the associated initial calibration. The laboratory-provided internal standard control limit calculations were verified, and the individual sample internal standard results were verified to be within the applicable control limits.

No qualifications were required based on internal standards.

3.11 FIELD DUPLICATES

One (1) field duplicate sample pair (8 / DUP) was collected. Relative Percent Differences (RPDs) between the original and field duplicate samples were calculated to be less than 20% for detected analytes reported above five (5) times the applicable reporting limit (RL) and results were within ±RL for analytes reported at positive values less than five (5) times the RL.

No qualifications were performed based on field duplicate results.

3.12 TARGET ANALYTE IDENTIFICATION

Based on a review of raw sample results provided by the laboratory, no errors were observed with identification of target analytes. Relative intensities of primary and secondary ions for detected analytes were verified to be within ±20% of the laboratory-provided standard relative ion intensities for each analyte. Relative Retention Times (RRTs) were within the EPA-recommended control limits of ±0.06 RRT units of the RRT for the same analyte in the associated opening CCV sample.

No qualifications were performed based on target analyte identification criteria.

3.13 ANALYTE QUANTITATION AND TRANSCRIPTIONS FROM RAW DATA

Compound quantitation was checked for the primary samples, the field duplicate sample, the trip blank sample, and the LCS/LCSD sample pair. No errors were detected in sample quantitation methods or transcriptions from the raw data to the summary forms.

4 PRECISION, ACCURACY, AND COMPLETENESS

Results of the data validation were reviewed to evaluate the precision, accuracy, and completeness of the analyses.

Precision measures the agreement among a set of replicate measurements. Field precision is assessed through the collection and analysis of field duplicates. Analytical precision is estimated by duplicate / replicate analyses, usually on LCS samples, spiked samples, and/or field samples. For this project, precision was assessed by tabulating the results of the relative percent differences (RPDs) of the laboratory control sample/laboratory control sample duplicate (LCS/LCSD) and original sample / field duplicate sample analyses. RPDs that fall within the project or laboratory-specified QA control limits indicate acceptable precision. The precision number given indicates the percentage of RPDs that were within control limits.

Accuracy is the closeness of a measured result to an accepted reference value. Quality Control (QC) analyses used to measure accuracy include internal standard recoveries, LCS samples, spiked samples, and DMC recoveries. For this project, accuracy was assessed by tabulating the results of the percent recoveries for internal standards, LCS/LCSD samples, DMCs, and results for the laboratory method blank sample. The reported accuracy indicates the percentage of recoveries and blank results within the project or QA control limits.

Completeness is a measure of the amount of valid data collected compared to the amount planned. Measurements are considered to be valid if they are unqualified or qualified as estimated during data validation. Rejected results are considered to be invalid. The reported completeness is the number of valid results divided by the total number of results.

4.1 OVERALL PROJECT PRECISION

The overall project precision for the Bridgeton Landfill June 4th, 2020 VOC air monitoring event, based on the percentage of RPD results within control limits, was 100% (48 of 48 results in control).

4.2 OVERALL PROJECT ACCURACY

The overall project accuracy for the Bridgeton Landfill June 4th, 2020 VOC air monitoring event, based on the percentage of internal standard recoveries, LCS sample recoveries, and DMC

recoveries within control limits, and laboratory method blank non-detects, was 100% (92 of 92 results in control).

4.3 OVERALL PROJECT COMPLETENESS

The overall project completeness for the Bridgeton Landfill June 4th, 2020 VOC air monitoring event, defined as the percentage of data not rejected, was 95.2% (160 of 168 results not rejected).

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Client Sample ID: 1

Lab ID#: 2006117R1-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c060806sim**	**Date of Collection: 6/4/20 10:08:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/8/20 10:42 AM**	
		Date of Extraction: 6/8/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	Not Detected	Not Detected UJ
Methyl tert-butyl ether	0.10	0.077	Not Detected	Not Detected
Hexane	0.10	0.075	0.34	0.26
Ethyl Acetate	0.40	0.26	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.26	0.16
Chloroform	0.10	0.066	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.080	Not Detected	Not Detected
Cyclohexane	0.10	0.092	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.074	0.40	0.30
Benzene	0.40	0.25	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.065	Not Detected	Not Detected
Heptane	0.10	0.086	0.22	0.19
Trichloroethene	0.10	0.072	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.067	1.1	0.77
Tetrachloroethene	0.10	0.084	Not Detected	Not Detected
Chlorobenzene	0.10	0.073	Not Detected	Not Detected
Ethyl Benzene	0.10	0.073	0.11	0.083 J+
m,p-Xylene	0.10	0.071	0.35	0.25
o-Xylene	0.10	0.077	0.12	0.088
Styrene	0.10	0.082	Not Detected	Not Detected
Propylbenzene	0.10	0.087	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.098	Not Detected	Not Detected R
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 73.0F , duration time = 20272 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

8/2/2020

eurofins | Air Toxics

Client Sample ID: 5

Lab ID#: 2006117R1-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c060807sim**	**Date of Collection: 6/4/20 11:46:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/8/20 11:08 AM**	
		Date of Extraction: 6/8/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.48	Not Detected	Not Detected UJ
Methyl tert-butyl ether	0.10	0.076	Not Detected	Not Detected
Hexane	0.10	0.075	0.42	0.31
Ethyl Acetate	0.40	0.25	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.28	0.18
Chloroform	0.10	0.066	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.080	Not Detected	Not Detected
Cyclohexane	0.10	0.091	0.11	0.10
Carbon Tetrachloride	0.10	0.074	0.43	0.32
Benzene	0.40	0.25	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.064	Not Detected	Not Detected
Heptane	0.10	0.085	0.24	0.20
Trichloroethene	0.10	0.072	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.067	0.91	0.60
Tetrachloroethene	0.10	0.084	Not Detected	Not Detected
Chlorobenzene	0.10	0.073	Not Detected	Not Detected
Ethyl Benzene	0.10	0.073	0.14	0.10 J
m,p-Xylene	0.10	0.070	0.41	0.29
o-Xylene	0.10	0.076	0.13	0.099
Styrene	0.10	0.081	Not Detected	Not Detected
Propylbenzene	0.10	0.087	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.097	Not Detected	Not Detected R
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 76.0F , duration time = 20342 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	80	70-130

8/2/2020

eurofins | Air Toxics

Client Sample ID: 7

Lab ID#: 2006117R1-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c060808sim**	**Date of Collection: 6/4/20 11:35:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/8/20 11:35 AM**	
		Date of Extraction: 6/8/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.48	Not Detected	Not Detected UJ
Methyl tert-butyl ether	0.10	0.076	Not Detected	Not Detected
Hexane	0.10	0.075	0.42	0.31
Ethyl Acetate	0.40	0.25	0.66	0.42
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.32	0.20
Chloroform	0.10	0.066	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.080	Not Detected	Not Detected
Cyclohexane	0.10	0.092	0.11	0.10
Carbon Tetrachloride	0.10	0.074	0.40	0.29
Benzene	0.40	0.25	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.064	Not Detected	Not Detected
Heptane	0.10	0.085	0.25	0.22
Trichloroethene	0.10	0.072	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.067	0.92	0.62
Tetrachloroethene	0.10	0.084	Not Detected	Not Detected
Chlorobenzene	0.10	0.073	Not Detected	Not Detected
Ethyl Benzene	0.10	0.073	0.17	0.12 J+
m,p-Xylene	0.10	0.070	0.52	0.36
o-Xylene	0.10	0.076	0.16	0.12
Styrene	0.10	0.081	Not Detected	Not Detected
Propylbenzene	0.10	0.087	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.097	Not Detected	Not Detected R
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 75.0F , duration time = 20339 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	80	70-130

8/2/2020

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Client Sample ID: 8

Lab ID#: 2006117R1-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c060809sim**	**Date of Collection: 6/4/20 9:39:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/8/20 12:01 PM**	
		Date of Extraction: 6/8/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	Not Detected	Not Detected UJ
Methyl tert-butyl ether	0.10	0.077	Not Detected	Not Detected
Hexane	0.10	0.076	0.38	0.29
Ethyl Acetate	0.40	0.26	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.22	0.14
Chloroform	0.10	0.067	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.081	Not Detected	Not Detected
Cyclohexane	0.10	0.093	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.075	0.39	0.29
Benzene	0.40	0.25	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.065	Not Detected	Not Detected
Heptane	0.10	0.087	0.23	0.20
Trichloroethene	0.10	0.073	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.068	0.76	0.51
Tetrachloroethene	0.10	0.085	Not Detected	Not Detected
Chlorobenzene	0.10	0.074	Not Detected	Not Detected
Ethyl Benzene	0.10	0.074	0.10	0.075 J+
m,p-Xylene	0.10	0.072	0.30	0.21
o-Xylene	0.10	0.077	Not Detected	Not Detected
Styrene	0.10	0.082	Not Detected	Not Detected
Propylbenzene	0.10	0.088	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.098	Not Detected	Not Detected R
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 72.0F , duration time = 20207 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	79	70-130

6/2/2020

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Client Sample ID: 12

Lab ID#: 2006117R1-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c060810sim**	**Date of Collection:**	**6/4/20 11:16:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**6/8/20 12:28 PM**
		Date of Extraction:	**6/8/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.48	Not Detected	Not Detected UJ
Methyl tert-butyl ether	0.10	0.076	Not Detected	Not Detected
Hexane	0.10	0.075	0.37	0.28
Ethyl Acetate	0.40	0.25	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.24	0.15
Chloroform	0.10	0.066	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.080	Not Detected	Not Detected
Cyclohexane	0.10	0.091	0.11	0.098
Carbon Tetrachloride	0.10	0.074	0.46	0.34
Benzene	0.40	0.25	0.42	0.26
1,2-Dichloroethane	0.10	0.064	Not Detected	Not Detected
Heptane	0.10	0.085	0.56	0.47
Trichloroethene	0.10	0.072	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.067	0.68	0.45
Tetrachloroethene	0.10	0.084	Not Detected	Not Detected
Chlorobenzene	0.10	0.072	Not Detected	Not Detected
Ethyl Benzene	0.10	0.072	0.11	0.078 J+
m,p-Xylene	0.10	0.070	0.31	0.22
o-Xylene	0.10	0.076	0.10	0.077
Styrene	0.10	0.081	Not Detected	Not Detected
Propylbenzene	0.10	0.086	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.097	Not Detected	Not Detected R
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 75.0F , duration time = 20369 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	80	70-130

6/2/2020

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Client Sample ID: Dup

Lab ID#: 2006117R1-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c060811sim**	**Date of Collection: 6/4/20 9:39:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/8/20 12:55 PM**	
		Date of Extraction: 6/8/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.49	Not Detected	Not Detected	UJ
Methyl tert-butyl ether	0.10	0.077	Not Detected	Not Detected	
Hexane	0.10	0.076	0.36	0.28	
Ethyl Acetate	0.40	0.26	Not Detected	Not Detected	
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.26	0.17	
Chloroform	0.10	0.067	Not Detected	Not Detected	
1,1,1-Trichloroethane	0.10	0.081	Not Detected	Not Detected	
Cyclohexane	0.10	0.093	Not Detected	Not Detected	
Carbon Tetrachloride	0.10	0.075	0.39	0.29	
Benzene	0.40	0.25	Not Detected	Not Detected	
1,2-Dichloroethane	0.10	0.065	Not Detected	Not Detected	
Heptane	0.10	0.087	0.24	0.21	
Trichloroethene	0.10	0.073	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected	
Toluene	0.10	0.068	0.82	0.56	
Tetrachloroethene	0.10	0.085	Not Detected	Not Detected	
Chlorobenzene	0.10	0.074	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.074	0.11	0.080	J+
m,p-Xylene	0.10	0.072	0.33	0.24	
o-Xylene	0.10	0.077	0.11	0.085	
Styrene	0.10	0.082	Not Detected	Not Detected	
Propylbenzene	0.10	0.088	Not Detected	Not Detected	
1,4-Dichlorobenzene	0.10	0.098	Not Detected	Not Detected	R
Naphthalene	0.10	0.20	Not Detected	Not Detected	

Temperature = 72.0F , duration time = 20207 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	80	70-130

8/2/2020

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Client Sample ID: TB

Lab ID#: 2006117R1-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c060812sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/8/20 01:21 PM**	
		Date of Extraction: 6/8/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.48	Not Detected	Not Detected	UJ
Methyl tert-butyl ether	0.10	0.076	Not Detected	Not Detected	
Hexane	0.10	0.075	Not Detected	Not Detected	
Ethyl Acetate	0.40	0.25	Not Detected	Not Detected	
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	Not Detected	Not Detected	
Chloroform	0.10	0.066	Not Detected	Not Detected	
1,1,1-Trichloroethane	0.10	0.080	Not Detected	Not Detected	
Cyclohexane	0.10	0.091	Not Detected	Not Detected	
Carbon Tetrachloride	0.10	0.074	Not Detected	Not Detected	
Benzene	0.40	0.25	Not Detected	Not Detected	
1,2-Dichloroethane	0.10	0.064	Not Detected	Not Detected	
Heptane	0.10	0.085	Not Detected	Not Detected	
Trichloroethene	0.10	0.072	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected	
Toluene	0.10	0.067	Not Detected	Not Detected	
Tetrachloroethene	0.10	0.084	Not Detected	Not Detected	
Chlorobenzene	0.10	0.072	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.072	Not Detected	Not Detected	
m,p-Xylene	0.10	0.070	Not Detected	Not Detected	R
o-Xylene	0.10	0.076	Not Detected	Not Detected	
Styrene	0.10	0.081	Not Detected	Not Detected	
Propylbenzene	0.10	0.086	Not Detected	Not Detected	
1,4-Dichlorobenzene	0.10	0.097	Not Detected	Not Detected	R
Naphthalene	0.10	0.20	Not Detected	Not Detected	

Temperature = 76.0F , duration time = 20369 minutes.
Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	80	70-130

8/12/2020

June 18, 2020 Sampling Event

Data Validation Summary Report for the Bridgeton Landfill June 18th, 2020 VOC Air Monitoring Event

Prepared by Jonathan Wilkinson
Residuals Management Team Member
Feezor Engineering, Inc.

August 2nd, 2020

1 INTRODUCTION

Five (5) outdoor air samples, one (1) field duplicate sample, and one (1) trip blank sample were collected at the Bridgeton Landfill on June 18th, 2020. The samples were sent to the Eurofins / Air Toxics Laboratory in Folsom, California and analyzed for Volatile Organic Compounds (VOCs) by EPA Compendium Method TO-17 (modified).

The analytical results were validated using laboratory acceptance criteria and the procedures and guidelines contained in the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, revised January 2017 and USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, dated October 1999.

Items checked included holding times, instrument performance check results, initial and continuing calibration procedures and results, method and field blank results, deuterated monitoring compound (DMC) recoveries, Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Laboratory Control Sample (LCS) recoveries, internal standard recoveries, field duplicate results, target compound identification, compound quantitation, and transcriptions from raw data.

All data necessary to complete the data review were provided by the laboratory. Based on the guidelines referenced above, results were qualified as:

- "U": The analyte was not detected at a value greater than the associated analyte quantitation limit;
- "J": An estimated analyte result, "J+" or "J-" used to indicate a high or low bias;
- "NJ": The analyte has been tentatively identified, or is presumed to be present at the associated numerical value;
- "UJ": The analyte was not detected. The reported analyte quantitation limit is approximate and may be inaccurate or imprecise; and
- "R": The result is unusable. The result was rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

2 SAMPLE SUMMARY

Sample results were reported in a Contract Laboratory Program (CLP)-like format data package. Review of the Chain of Custody (COC) form indicates that samples collected on June 18th, 2020 were shipped for delivery to the laboratory on June 23rd, 2020 and were received by the laboratory in good condition via Federal Express (the courier used to deliver the samples to the laboratory). **Table 2.1** provides general information about the laboratory and data package, **Table 2.2** lists the samples validated and their respective laboratory identification numbers.

Table 2.1 General Information

Contract Laboratory:	Eurofins / Air Toxics, Inc. Folsom, California
Total # of Samples:	7
Sample Matrix:	Radiello™ 130 activated charcoal sorbent bed passive air sampler

Table 2.2 Sample Identification

Field Sample ID	QA Sample ID	Laboratory ID
1		2006584-01A
5		2006584-02A
7		2006584-03A
8		2006584-04A
12		2006584-05A
Dup	Field Duplicate @ 7	2006584-06A
TB	Trip Blank	2006584-07A

3 VOLATILE ORGANIC COMPOUNDS (EPA METHOD TO-17 MODIFIED)

Analysis of VOCs is accomplished by chemical extraction of target analytes using carbon disulfide followed by injection into a Gas Chromatograph / Mass Spectrometer (GC/MS) for identification and quantitation of analytes.

3.1 HOLDING TIMES

No holding times are specified by the method. Per the manufacturer, the shelf life of the Radiello™ 130 unit is six (6) months. Samples were analyzed according to the times shown in **Table 3.1**

Table 3.1 EPA Method TO-17 (Modified) Sample Holding Times

Field Sample ID	Date Collected	Date Extracted	Date Analyzed	# Days from Collection to Extraction	# Days from Extraction to Analysis
1	6/18/2020	6/24/2020	6/24/2020	6	0
5	6/18/2020	6/24/2020	6/24/2020	6	0
7	6/18/2020	6/24/2020	6/24/2020	6	0
8	6/18/2020	6/24/2020	6/24/2020	6	0
12	6/18/2020	6/24/2020	6/24/2020	6	0
Dup	6/18/2020	6/24/2020	6/24/2020	6	0
TB	6/18/2020	6/24/2020	6/24/2020	6	0

No qualifications were required based on holding times.

3.2 GC INSTRUMENT PERFORMANCE CHECKS

GC/MS instrument performance check results were reported for each 12-hour period when samples were analyzed. Ion abundance acceptance criteria for performance check compound Bromofluorobenzene (BFB) used by the laboratory were similar to ion abundance acceptance criteria provided in ion abundance acceptance criteria provided in Table 3 of the Functional Guidelines, as presented in **Table 3.2**. Using raw GC/MS instrument performance check results provided by the laboratory, ion abundance results were verified to be within each set of acceptance criteria provided in **Table 3.2**.

Table 3.2 BFB Ion Abundance Acceptance Criteria

Ion Mass	Laboratory-Provided Criteria	USEPA CLP Criteria
50	8% to 40% of Mass 95	15% to 40% of Mass 95
75	30% to 66% of Mass 95	30% to 80% of Mass 95
95	Base Peak, 100% Relative Abundance	Base Peak, 100% Relative Abundance
96	5% to 9% of Mass 95	5% to 9% of Mass 95
173	Less than 2% of Mass 174	Less than 2% of Mass 174
174	50% to 120% of Mass 95	50% to 120% of Mass 95
175	4% to 9% of Mass 174	5% to 9% of Mass 174
176	93% to 101% of Mass 174	95% to 101% of Mass 174
177	5% to 9% of Mass 176	5% to 9% of Mass 176

No qualifications were required based on GC/MS instrument performance check results.

3.3 INITIAL CALIBRATION PROCEDURES AND RESULTS

Initial calibration was performed for Instrument MSD-18 on April 15th, 2020 using eleven (11) standards for one (1) analyte, ten (10) standards for seventeen (17) analytes, nine (9) standards for three (3) analytes, eight (8) standards for two (2) analytes, and seven (7) standards for one (1) analyte. Based upon a review of raw calibration results provided by the laboratory, no errors were detected with the calculation of Percent Relative Standard Deviations (%RSDs), relative response factors (RRFs), or mean relative response factors ($\overline{\text{RRFs}}$).

RRFs and $\overline{\text{RRFs}}$ for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.3**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.3**. Analytes listed in **Table 3.3** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results. %RSDs for individual analytes were verified to be less than or equal to analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines and were less than or equal to laboratory-provided criteria for other analytes without an EPA-specified maximum value.

Table 3.3 Initial Calibration Relative Response Factors Outside of Control Limits

Initial Cal. Date and Instrument	Compound, $\overline{\text{RRF}}$, and EPA Minimum	Associated Samples
4/15/2020 MSD-18	Ethyl Acetate: 0.046; Laboratory-provided Min = 0.05 Ethylbenzene: 0.403, EPA Table 4 Min = 0.500 1,4-Dichlorobenzene: RF0.5 = 0.693, RF1.0 = 0.675, RF5.0 = .696; EPA Table 4 Min = 0.700	All

No other qualifications were required based on initial calibration procedures or results.

3.4 INITIAL CALIBRATION VERIFCIATION

An initial calibration verification (ICV) sample was analyzed after the initial calibration samples on April 15th, 2020. As required by the Functional Guidelines, the ICV sample solution was obtained from another source than the sources used for the initial calibration. Also as required by the Functional Guidelines, the concentration of the ICV was at or near the midpoint value of the calibration standards used for the initial calibration.

The ICV RRFs for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.4**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.4**.

Results for analytes listed in **Table 3.4** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results.

Table 3.4 ICV Relative Response Factors Outside of Control Limits

ICV Date / Time and Instrument	Compound, RRF, and EPA Minimum	Associated Samples
4/15/2020 13:54 MSD-18	Ethylbenzene = 0.408, EPA Table 4 Min = 0.500	All

The ICV Percent Differences (%Ds) for target analytes were verified to be less than analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be less than laboratory-provided criteria for other analytes without an EPA-specified value.

No other qualifications were required based on initial calibration procedures or results.

3.5 CONTINUING CALIBRATION VERIFCIATION

A continuing calibration verification (CCV) sample was analyzed prior to analysis of samples on June 24th, 2020. As required by the Functional Guidelines, the concentration of the CCV was at or near the midpoint value of the calibration standards used for the initial calibration.

The CCV RRFs for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.5**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.5**. Results for analytes listed in **Table 3.5** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results.

Table 3.5 CCV Relative Response Factors Outside of Control Limits

CCV Date / Time and Instrument	Compound, RRF, and EPA Minimum	Associated Samples
6/24/2020 08:13 MSD-18	Ethylbenzene = 0.433, EPA Table 4 Min = 0.500	All

The CCV %Ds for target analytes were verified to be less than analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be less than laboratory-provided criteria.

No other qualifications were required based on continuing calibration procedures or results.

3.6 BLANKS

Samples were analyzed within one (1) twelve (12)-hour time period. A method blank was analyzed after the CCV sample and prior to the primary samples as required by the Functional Guidelines. Method blank results were reported as non-detect by the laboratory and were verified to be non-detect based on a review of raw results provided by the laboratory.

One (1) trip blank sample was submitted to the laboratory and analyzed with the primary samples. No analytes were detected in the trip blank sample.

No qualifications were required based on blank results.

3.7 DEUTERATED MONITORING COMPOUNDS (SURROGATES)

One (1) deuterated monitoring compound (DMC, or surrogate), Toluene-d8, was added to each sample and used for evaluation of analysis efficiency. The laboratory compared recoveries for Toluene-d8 to the same criteria listed in the Functional Guidelines (70% - 130%). Toluene-d8 recoveries for the primary samples, method blank, and Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) pair were verified to be within 70% - 130%.

No qualifications were required based on DMC results.

3.8 MATRIX SPIKE / MATRIX SPIKE DUPLICATE

No Matrix Spike / Matrix Spike Duplicate (MS/MSD) samples were analyzed.

No qualifications were required based on MS/MSD results.

3.9 LABORATORY CONTROL SAMPLE / LABORATORY CONTROL SAMPLE DUPLICATE

One (1) Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) sample pair was analyzed with the primary samples. LCS/LCSD sample results were verified to be within laboratory-provided control limits and the Relative Percent Difference (RPD) between individual analyte results from the LCS and LCSD were verified be less than 20%, except the results listed in **Table 3.9**.

Table 3.9 LCS / LCSD Results Outside of Laboratory Control Limits

Date & time	Compound	% Recovery		RPD	Acceptance Criteria		Associated Samples
		LCS	LCSD		% Rec	RPD	
LCS 6/24/2020 08:51 LCSD 6/24/2020 09:17	Naphthalene	9.9%	8.1%	20.2%	5% - 80%	0% - 20%	All

Analytes listed in **Table 3.9** were qualified as estimated ("J") for positive results and were qualified as estimated non-detect ("UJ") for non-detect results in the associated samples. No other qualifications were required based on LCS/LCSD results.

3.10 INTERNAL STANDARDS

Internal standard area counts and retention times for the samples and blanks were within the Functional Guidelines control limits of 50% to 200% and ±10.0 seconds, respectively, of the corresponding counts and times for the most recent continuing calibration verification sample or midpoint standard from the associated initial calibration. The laboratory-provided internal standard control limit calculations were verified, and the individual sample internal standard results were verified to be within the applicable control limits.

No qualifications were required based on internal standards.

3.11 FIELD DUPLICATES

One (1) field duplicate sample pair (7 / DUP) was collected. Relative Percent Differences (RPDs) between the original and field duplicate samples were calculated to be less than 20% for detected analytes reported above five (5) times the applicable reporting limit (RL) and results were within ±RL for analytes reported at positive values less than five (5) times the RL.

No qualifications were performed based on field duplicate results.

3.12 TARGET ANALYTE IDENTIFICATION

Based on a review of raw sample results provided by the laboratory, no errors were observed with identification of target analytes. Relative intensities of primary and secondary ions for detected analytes were verified to be within ±20% of the laboratory-provided standard relative ion intensities for each analyte. Relative Retention Times (RRTs) were within the EPA-recommended control limits of ±0.06 RRT units of the RRT for the same analyte in the associated opening CCV sample.

No qualifications were performed based on target analyte identification criteria.

3.13 ANALYTE QUANTITATION AND TRANSCRIPTIONS FROM RAW DATA

Compound quantitation was checked for the primary samples, the field duplicate sample, the trip blank sample, and the LCS/LCSD sample pair. No errors were detected in sample quantitation methods or transcriptions from the raw data to the summary forms.

4 PRECISION, ACCURACY, AND COMPLETENESS

Results of the data validation were reviewed to evaluate the precision, accuracy, and completeness of the analyses.

Precision measures the agreement among a set of replicate measurements. Field precision is assessed through the collection and analysis of field duplicates. Analytical precision is estimated by duplicate / replicate analyses, usually on LCS samples, spiked samples, and/or field samples. For this project, precision was assessed by tabulating the results of the relative percent differences (RPDs) of the laboratory control sample/laboratory control sample duplicate (LCS/LCSD) and original sample / field duplicate sample analyses. RPDs that fall within the project or laboratory-specified QA control limits indicate acceptable precision. The precision number given indicates the percentage of RPDs that were within control limits.

Accuracy is the closeness of a measured result to an accepted reference value. Quality Control (QC) analyses used to measure accuracy include internal standard recoveries, LCS samples, spiked samples, and DMC recoveries. For this project, accuracy was assessed by tabulating the results of the percent recoveries for internal standards, LCS/LCSD samples, DMCs, and results for the laboratory method blank sample. The reported accuracy indicates the percentage of recoveries and blank results within the project or QA control limits.

Completeness is a measure of the amount of valid data collected compared to the amount planned. Measurements are considered to be valid if they are unqualified or qualified as estimated during data validation. Rejected results are considered to be invalid. The reported completeness is the number of valid results divided by the total number of results.

4.1 OVERALL PROJECT PRECISION

The overall project precision for the Bridgeton Landfill June 18th, 2020 VOC air monitoring event, based on the percentage of RPD results within control limits, was 97.9% (47 of 48 results in control).

4.2 OVERALL PROJECT ACCURACY

The overall project accuracy for the Bridgeton Landfill June 18th, 2020 VOC air monitoring event, based on the percentage of internal standard recoveries, LCS sample recoveries, and DMC recoveries within control limits, and laboratory method blank non-detects, was 100% (92 of 92 results in control).

4.3 OVERALL PROJECT COMPLETENESS

The overall project completeness for the Bridgeton Landfill June 18th, 2020 VOC air monitoring event, defined as the percentage of data not rejected, was 92.9% (156 of 168 results not rejected).

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Client Sample ID: 1

Lab ID#: 2006584-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18062418sim**	**Date of Collection: 6/18/20 8:16:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/24/20 04:00 PM**	
		Date of Extraction: 6/24/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.077	Not Detected	Not Detected
Hexane	0.10	0.076	0.45	0.34
Ethyl Acetate	0.40	0.26	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	Not Detected	Not Detected
Chloroform	0.10	0.067	0.10	0.068
1,1,1-Trichloroethane	0.10	0.081	Not Detected	Not Detected
Cyclohexane	0.10	0.093	0.14	0.13
Carbon Tetrachloride	0.10	0.075	0.49	0.36
Benzene	0.40	0.25	0.40	0.25
1,2-Dichloroethane	0.10	0.065	Not Detected	Not Detected
Heptane	0.10	0.086	0.39	0.34
Trichloroethene	0.10	0.073	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.068	1.1	0.72
Tetrachloroethene	0.10	0.085	Not Detected	Not Detected
Chlorobenzene	0.10	0.074	Not Detected	Not Detected
Ethyl Benzene	0.10	0.074	0.16	0.12 Jt
m,p-Xylene	0.10	0.072	0.46	0.33
o-Xylene	0.10	0.077	0.16	0.12
Styrene	0.10	0.082	Not Detected	Not Detected
Propylbenzene	0.10	0.088	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.098	Not Detected	Not Detected R
Naphthalene	0.10	0.20	Not Detected	Not Detected UJ

Temperature = 76.0F , duration time = 20043 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	88	70-130

8/7/2020

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Client Sample ID: 5

Lab ID#: 2006584-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18062419sim**	**Date of Collection: 6/18/20 3:29:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/24/20 04:26 PM**	
		Date of Extraction: 6/24/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.46	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.073	Not Detected	Not Detected
Hexane	0.10	0.072	0.51	0.37
Ethyl Acetate	0.40	0.24	0.44	0.27 J+
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	Not Detected	Not Detected
Chloroform	0.10	0.063	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.076	Not Detected	Not Detected
Cyclohexane	0.10	0.088	0.15	0.13
Carbon Tetrachloride	0.10	0.071	0.48	0.34
Benzene	0.40	0.24	0.42	0.25
1,2-Dichloroethane	0.10	0.062	Not Detected	Not Detected
Heptane	0.10	0.082	0.28	0.23
Trichloroethene	0.10	0.069	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected
Toluene	0.10	0.064	1.0	0.67
Tetrachloroethene	0.10	0.080	Not Detected	Not Detected
Chlorobenzene	0.10	0.070	Not Detected	Not Detected
Ethyl Benzene	0.10	0.070	0.17	0.12 J+
m,p-Xylene	0.10	0.068	0.48	0.33
o-Xylene	0.10	0.073	0.17	0.12
Styrene	0.10	0.078	Not Detected	Not Detected
Propylbenzene	0.10	0.083	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.093	Not Detected	Not Detected R UJ
Naphthalene	0.10	0.19	Not Detected	Not Detected

Temperature = 89.0F , duration time = 20382 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	88	70-130

8/4/2020

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Client Sample ID: 7

Lab ID#: 2006584-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18062420sim**	**Date of Collection:**	**6/18/20 3:19:00 PM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**6/24/20 04:52 PM**
		Date of Extraction:	**6/24/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.46	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.073	Not Detected	Not Detected
Hexane	0.10	0.072	0.61	0.44
Ethyl Acetate	0.40	0.24	1.1	0.64 J+
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	Not Detected	Not Detected
Chloroform	0.10	0.063	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.076	Not Detected	Not Detected
Cyclohexane	0.10	0.088	0.20	0.17
Carbon Tetrachloride	0.10	0.071	0.52	0.37
Benzene	0.40	0.24	0.44	0.26
1,2-Dichloroethane	0.10	0.062	Not Detected	Not Detected
Heptane	0.10	0.082	0.40	0.33
Trichloroethene	0.10	0.069	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected
Toluene	0.10	0.064	1.4	0.90
Tetrachloroethene	0.10	0.080	0.11	0.087
Chlorobenzene	0.10	0.070	Not Detected	Not Detected
Ethyl Benzene	0.10	0.070	0.24	0.17
m,p-Xylene	0.10	0.068	0.69	0.47 J+
o-Xylene	0.10	0.073	0.23	0.16
Styrene	0.10	0.078	Not Detected	Not Detected
Propylbenzene	0.10	0.083	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.093	Not Detected	~~Not Detected~~ R
Naphthalene	0.10	0.19	Not Detected	Not Detected UJ

Temperature = 89.0F , duration time = 20376 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	88	70-130

8/2/2020

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Client Sample ID: 8

Lab ID#: 2006584-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18062421sim**	**Date of Collection: 6/18/20 3:44:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/24/20 05:19 PM**	
		Date of Extraction: 6/24/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.46	Not Detected	Not Detected	
Methyl tert-butyl ether	0.10	0.072	Not Detected	Not Detected	
Hexane	0.10	0.071	0.48	0.34	
Ethyl Acetate	0.40	0.24	Not Detected	Not Detected	R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	Not Detected	Not Detected	
Chloroform	0.10	0.063	0.10	0.063	
1,1,1-Trichloroethane	0.10	0.076	Not Detected	Not Detected	
Cyclohexane	0.10	0.087	0.14	0.12	
Carbon Tetrachloride	0.10	0.070	0.49	0.35	
Benzene	0.40	0.24	0.43	0.26	
1,2-Dichloroethane	0.10	0.061	Not Detected	Not Detected	
Heptane	0.10	0.081	0.28	0.23	
Trichloroethene	0.10	0.068	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected	
Toluene	0.10	0.064	1.0	0.65	
Tetrachloroethene	0.10	0.080	Not Detected	Not Detected	
Chlorobenzene	0.10	0.069	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.069	0.15	0.11	J+
m,p-Xylene	0.10	0.067	0.43	0.29	
o-Xylene	0.10	0.072	0.15	0.11	
Styrene	0.10	0.077	Not Detected	Not Detected	
Propylbenzene	0.10	0.082	Not Detected	Not Detected	
1,4-Dichlorobenzene	0.10	0.092	Not Detected	Not Detected	R
Naphthalene	0.10	0.19	Not Detected	Not Detected	UJ

Temperature = 90.0F , duration time = 20524 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	87	70-130

8/2/2020

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Client Sample ID: 12

Lab ID#: 2006584-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18062422sim**	**Date of Collection: 6/18/20 9:46:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/24/20 05:44 PM**	
		Date of Extraction: 6/24/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.076	Not Detected	Not Detected
Hexane	0.10	0.075	0.45	0.34
Ethyl Acetate	0.40	0.25	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	Not Detected	Not Detected
Chloroform	0.10	0.066	0.10	0.066
1,1,1-Trichloroethane	0.10	0.080	Not Detected	Not Detected
Cyclohexane	0.10	0.092	0.15	0.14
Carbon Tetrachloride	0.10	0.074	0.49	0.36
Benzene	0.40	0.25	0.43	0.27
1,2-Dichloroethane	0.10	0.064	Not Detected	Not Detected
Heptane	0.10	0.086	0.65	0.55
Trichloroethene	0.10	0.072	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.067	0.96	0.65
Tetrachloroethene	0.10	0.084	Not Detected	Not Detected
Chlorobenzene	0.10	0.073	Not Detected	Not Detected
Ethyl Benzene	0.10	0.073	0.15	0.11 J+
m,p-Xylene	0.10	0.071	0.42	0.30
o-Xylene	0.10	0.076	0.14	0.11
Styrene	0.10	0.081	Not Detected	Not Detected
Propylbenzene	0.10	0.087	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.097	Not Detected	Not Detected R
Naphthalene	0.10	0.20	Not Detected	Not Detected UJ

Temperature = 79.0F , duration time = 20064 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	86	70-130

8/4/2020

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Client Sample ID: Dup

Lab ID#: 2006584-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18062423sim**	**Date of Collection: 6/18/20 3:19:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/24/20 06:10 PM**	
		Date of Extraction: 6/24/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.46	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.073	Not Detected	Not Detected
Hexane	0.10	0.072	0.59	0.42
Ethyl Acetate	0.40	0.24	1.0	0.64 J+
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	Not Detected	Not Detected
Chloroform	0.10	0.063	0.10	0.063
1,1,1-Trichloroethane	0.10	0.076	Not Detected	Not Detected
Cyclohexane	0.10	0.088	0.19	0.17
Carbon Tetrachloride	0.10	0.071	0.50	0.36
Benzene	0.40	0.24	0.43	0.25
1,2-Dichloroethane	0.10	0.062	Not Detected	Not Detected
Heptane	0.10	0.082	0.38	0.31
Trichloroethene	0.10	0.069	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected
Toluene	0.10	0.064	1.4	0.86
Tetrachloroethene	0.10	0.080	0.10	0.084
Chlorobenzene	0.10	0.070	Not Detected	Not Detected
Ethyl Benzene	0.10	0.070	0.23	0.16 J+
m,p-Xylene	0.10	0.068	0.65	0.44
o-Xylene	0.10	0.073	0.22	0.16
Styrene	0.10	0.078	Not Detected	Not Detected
Propylbenzene	0.10	0.083	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.093	Not Detected	Not Detected R UJ
Naphthalene	0.10	0.19	Not Detected	Not Detected

Temperature = 89.0F , duration time = 20376 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	86	70-130

6/26/2020

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Client Sample ID: TB

Lab ID#: 2006584-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18062424sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/24/20 06:36 PM**	
		Date of Extraction: 6/24/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.46	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.072	Not Detected	Not Detected
Hexane	0.10	0.071	Not Detected	Not Detected
Ethyl Acetate	0.40	0.24	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	Not Detected	Not Detected
Chloroform	0.10	0.063	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.076	Not Detected	Not Detected
Cyclohexane	0.10	0.087	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.070	Not Detected	Not Detected
Benzene	0.40	0.24	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.061	Not Detected	Not Detected
Heptane	0.10	0.081	Not Detected	Not Detected
Trichloroethene	0.10	0.068	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected
Toluene	0.10	0.064	Not Detected	Not Detected
Tetrachloroethene	0.10	0.080	Not Detected	Not Detected
Chlorobenzene	0.10	0.069	Not Detected	Not Detected
Ethyl Benzene	0.10	0.069	Not Detected	Not Detected R
m,p-Xylene	0.10	0.067	Not Detected	Not Detected
o-Xylene	0.10	0.072	Not Detected	Not Detected
Styrene	0.10	0.077	Not Detected	Not Detected
Propylbenzene	0.10	0.082	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.092	Not Detected	Not Detected R LCJ
Naphthalene	0.10	0.19	Not Detected	Not Detected

Temperature = 90.0F , duration time = 20524 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	86	70-130

8/2/2020

July 1, 2020 Sampling Event

Data Validation Summary Report for the Bridgeton Landfill July 1st, 2020 VOC Air Monitoring Event

Prepared by Jonathan Wilkinson
Residuals Management Team Member
Feezor Engineering, Inc.

August 3rd, 2020

1 INTRODUCTION

Five (5) outdoor air samples, one (1) field duplicate sample, and one (1) trip blank sample were collected at the Bridgeton Landfill on July 1st, 2020. The samples were sent to the Eurofins / Air Toxics Laboratory in Folsom, California and analyzed for Volatile Organic Compounds (VOCs) by EPA Compendium Method TO-17 (modified).

The analytical results were validated using laboratory acceptance criteria and the procedures and guidelines contained in the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, revised January 2017 and USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, dated October 1999.

Items checked included holding times, instrument performance check results, initial and continuing calibration procedures and results, method and field blank results, deuterated monitoring compound (DMC) recoveries, Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Laboratory Control Sample (LCS) recoveries, internal standard recoveries, field duplicate results, target compound identification, compound quantitation, and transcriptions from raw data.

All data necessary to complete the data review were provided by the laboratory. Based on the guidelines referenced above, results were qualified as:

- "U": The analyte was not detected at a value greater than the associated analyte quantitation limit;
- "J": An estimated analyte result, "J+" or "J-" used to indicate a high or low bias;
- "NJ": The analyte has been tentatively identified, or is presumed to be present at the associated numerical value;
- "UJ": The analyte was not detected. The reported analyte quantitation limit is approximate and may be inaccurate or imprecise; and
- "R": The result is unusable. The result was rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

2 SAMPLE SUMMARY

Sample results were reported in a Contract Laboratory Program (CLP)-like format data package. Review of the Chain of Custody (COC) form indicates that samples collected on July 1st, 2020 were shipped for delivery to the laboratory on July 2nd, 2020 and were received by the laboratory in good condition via Federal Express (the courier used to deliver the samples to the laboratory). **Table 2.1** provides general information about the laboratory and data package, **Table 2.2** lists the samples validated and their respective laboratory identification numbers.

Table 2.1 General Information

Contract Laboratory:	Eurofins / Air Toxics, Inc. Folsom, California
Total # of Samples:	7
Sample Matrix:	Radiello™ 130 activated charcoal sorbent bed passive air sampler

Table 2.2 Sample Identification

Field Sample ID	QA Sample ID	Laboratory ID
1		2007043-01A
5		2007043-02A
7		2007043-03A
8		2007043-04A
12		2007043-05A
Dup	Field Duplicate @ 5	2007043-06A
TB	Trip Blank	2007043-07A

3 VOLATILE ORGANIC COMPOUNDS (EPA METHOD TO-17 MODIFIED)

Analysis of VOCs is accomplished by chemical extraction of target analytes using carbon disulfide followed by injection into a Gas Chromatograph / Mass Spectrometer (GC/MS) for identification and quantitation of analytes.

3.1 HOLDING TIMES

No holding times are specified by the method. Per the manufacturer, the shelf life of the Radiello™ 130 unit is six (6) months. Samples were analyzed according to the times shown in **Table 3.1**

Table 3.1 EPA Method TO-17 (Modified) Sample Holding Times

Field Sample ID	Date Collected	Date Extracted	Date Analyzed	# Days from Collection to Extraction	# Days from Extraction to Analysis
1	7/1/2020	7/6/2020	7/6/2020	5	0
5	7/1/2020	7/6/2020	7/6/2020	5	0
7	7/1/2020	7/6/2020	7/6/2020	5	0
8	7/1/2020	7/6/2020	7/6/2020	5	0
12	7/1/2020	7/6/2020	7/6/2020	5	0
Dup	7/1/2020	7/6/2020	7/6/2020	5	0
TB	7/1/2020	7/6/2020	7/6/2020	5	0

No qualifications were required based on holding times.

3.2 GC INSTRUMENT PERFORMANCE CHECKS

GC/MS instrument performance check results were reported for each 12-hour period when samples were analyzed. Ion abundance acceptance criteria for performance check compound Bromofluorobenzene (BFB) used by the laboratory were similar to ion abundance acceptance criteria provided in ion abundance acceptance criteria provided in Table 3 of the Functional Guidelines, as presented in **Table 3.2**. Using raw GC/MS instrument performance check results provided by the laboratory, ion abundance results were verified to be within each set of acceptance criteria provided in **Table 3.2**.

Table 3.2 BFB Ion Abundance Acceptance Criteria

Ion Mass	Laboratory-Provided Criteria	USEPA CLP Criteria
50	8% to 40% of Mass 95	15% to 40% of Mass 95
75	30% to 66% of Mass 95	30% to 80% of Mass 95
95	Base Peak, 100% Relative Abundance	Base Peak, 100% Relative Abundance
96	5% to 9% of Mass 95	5% to 9% of Mass 95
173	Less than 2% of Mass 174	Less than 2% of Mass 174
174	50% to 120% of Mass 95	50% to 120% of Mass 95
175	4% to 9% of Mass 174	5% to 9% of Mass 174
176	93% to 101% of Mass 174	95% to 101% of Mass 174
177	5% to 9% of Mass 176	5% to 9% of Mass 176

No qualifications were required based on GC/MS instrument performance check results.

3.3 INITIAL CALIBRATION PROCEDURES AND RESULTS

Initial calibration was performed for Instrument MSD-18 on April 15th, 2020 using eleven (11) standards for one (1) analyte, ten (10) standards for seventeen (17) analytes, nine (9) standards for three (3) analytes, eight (8) standards for two (2) analytes, and seven (7) standards for one (1) analyte. Based upon a review of raw calibration results provided by the laboratory, no errors were detected with the calculation of Percent Relative Standard Deviations (%RSDs), relative response factors (RRFs), or mean relative response factors ($\overline{\text{RRFs}}$).

RRFs and $\overline{\text{RRFs}}$ for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.3**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.3**. Analytes listed in **Table 3.3** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results. %RSDs for individual analytes were verified to be less than or equal to analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines and were less than or equal to laboratory-provided criteria for other analytes without an EPA-specified maximum value.

Table 3.3 Initial Calibration Relative Response Factors Outside of Control Limits

Initial Cal. Date and Instrument	Compound, $\overline{\text{RRF}}$, and EPA Minimum	Associated Samples
4/15/2020 MSD-18	Ethyl Acetate: 0.046; Laboratory-provided Min = 0.05 Ethylbenzene: 0.403, EPA Table 4 Min = 0.500 1,4-Dichlorobenzene: RF0.5 = 0.693, RF1.0 = 0.675, RF5.0 = .696; EPA Table 4 Min = 0.700	All

No other qualifications were required based on initial calibration procedures or results.

3.4 INITIAL CALIBRATION VERIFCIATION

An initial calibration verification (ICV) sample was analyzed after the initial calibration samples on April 15th, 2020. As required by the Functional Guidelines, the ICV sample solution was obtained from another source than the sources used for the initial calibration. Also as required by the Functional Guidelines, the concentration of the ICV was at or near the midpoint value of the calibration standards used for the initial calibration.

The ICV RRFs for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.4**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.4**.

Results for analytes listed in **Table 3.4** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results.

Table 3.4 ICV Relative Response Factors Outside of Control Limits

ICV Date / Time and Instrument	Compound, RRF, and EPA Minimum	Associated Samples
4/15/2020 13:54 MSD-18	Ethylbenzene = 0.408, EPA Table 4 Min = 0.500	All

The ICV Percent Differences (%Ds) for target analytes were verified to be less than analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be less than laboratory-provided criteria for other analytes without an EPA-specified value.

No other qualifications were required based on initial calibration procedures or results.

3.5 CONTINUING CALIBRATION VERIFCIATION

A continuing calibration verification (CCV) sample was analyzed prior to analysis of samples on July 6th, 2020. As required by the Functional Guidelines, the concentration of the CCV was at or near the midpoint value of the calibration standards used for the initial calibration.

The CCV RRFs for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.5.1**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.5**. Results for analytes listed in **Table 3.5** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results.

Table 3.5 CCV Relative Response Factors Outside of Control Limits

CCV Date / Time and Instrument	Compound, RRF, and EPA Minimum	Associated Samples
6/24/2020 08:13 MSD-18	Ethyl Acetate: 0.0496; Laboratory-provided Min = 0.05 Ethylbenzene = 0.424, EPA Table 4 Min = 0.500	All

The CCV %Ds for target analytes were verified to be less than analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be less than laboratory-provided criteria.

No other qualifications were required based on continuing calibration procedures or results.

3.6 BLANKS

Samples were analyzed within one (1) twelve (12)-hour time period. A method blank was analyzed after the CCV sample and prior to the primary samples as required by the Functional Guidelines. Method blank results were reported as non-detect by the laboratory and were verified to be non-detect based on a review of raw results provided by the laboratory.

One (1) trip blank sample was submitted to the laboratory and analyzed with the primary samples. No analytes were detected in the trip blank sample.

No qualifications were required based on blank results.

3.7 DEUTERATED MONITORING COMPOUNDS (SURROGATES)

One (1) deuterated monitoring compound (DMC, or surrogate), Toluene-d8, was added to each sample and used for evaluation of analysis efficiency. The laboratory compared recoveries for Toluene-d8 to the same criteria listed in the Functional Guidelines (70% - 130%). Toluene-d8 recoveries for the primary samples, method blank, and Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) pair were verified to be within 70% - 130%.

No qualifications were required based on DMC results.

3.8 MATRIX SPIKE / MATRIX SPIKE DUPLICATE

No Matrix Spike / Matrix Spike Duplicate (MS/MSD) samples were analyzed.

No qualifications were required based on MS/MSD results.

3.9 LABORATORY CONTROL SAMPLE / LABORATORY CONTROL SAMPLE DUPLICATE

One (1) Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) sample pair was analyzed with the primary samples. LCS/LCSD sample results were verified to be within laboratory-provided control limits and the Relative Percent Difference (RPD) between individual analyte results from the LCS and LCSD were verified be less than 20%, except the results listed in **Table 3.9**.

Table 3.9 LCS / LCSD Results Outside of Laboratory Control Limits

Date & time	Compound	% Recovery		RPD	Acceptance Criteria		Associated Samples
		LCS	LCSD		% Rec	RPD	
LCS 7/6/2020 09:19 LCSD 7/6/2020 09:45	Chlorobenzene	115.1%	90.8%	23.6%	70% - 130%	0% - 20%	All
	Ethylbenzene	119.5%	94.5%	23.4%	70% - 130%	0% - 20%	
	m,p-Xylene	108.9%	87.7%	21.5%	70% - 130%	0% - 20%	
	o-Xylene	108.9%	86.7%	22.7%	70% - 130%	0% - 20%	
	1,4-Dichlorobenzene	93.6%	73.5%	24.1%	50% - 110%	0% - 20%	
	Naphthalene	11.2%	7.5%	38.8%	5% - 80%	0% - 20%	

Analytes listed in **Table 3.9** were qualified as estimated ("J") for positive results and were qualified as estimated non-detect ("UJ") for non-detect results in the associated samples. No other qualifications were required based on LCS/LCSD results.

3.10 INTERNAL STANDARDS

Internal standard area counts and retention times for the samples and blanks were within the Functional Guidelines control limits of 50% to 200% and ±10.0 seconds, respectively, of the corresponding counts and times for the most recent continuing calibration verification sample or midpoint standard from the associated initial calibration. The laboratory-provided internal standard control limit calculations were verified, and the individual sample internal standard results were verified to be within the applicable control limits.

No qualifications were required based on internal standards.

3.11 FIELD DUPLICATES

One (1) field duplicate sample pair (5 / DUP) was collected. Relative Percent Differences (RPDs) between the original and field duplicate samples were calculated to be less than 20% for detected analytes reported above five (5) times the applicable reporting limit (RL) and results were within ±RL for analytes reported at positive values less than five (5) times the RL, except for the results presented in **Table 3.11**.

Table 3.11 Field Duplicate Results Outside of Control Limits

Field Duplicate Pair	Analyte, PQL, and results For the primary and duplicate samples	Both values > 5x PQL?	If Yes, RPD?	If No, Both Values within ±PQL criteria?	Associated Samples
5 / DUP	2-Butanone (PQL: 0.069 µg/m^3) (0.15 µg/m^3, 0.22 µg/m^3)	No	N/A	No	All
	Carbon Tetrachloride (PQL: 0.081 µg/m^3) (0.25 µg/m^3, 0.37 µg/m^3)	No	N/A	No	
	Toluene (PQL: 0.074 µg/m^3) (0.49 µg/m^3, 0.66 µg/m^3)	Yes	29.57%	N/A	

Analytes listed in **Table 3.11** were qualified as estimated ("J") for positive results and were qualified as estimated non-detect ("UJ") for non-detect results in the associated samples. No other qualifications were performed based on field duplicate results.

3.12 TARGET ANALYTE IDENTIFICATION

Based on a review of raw sample results provided by the laboratory, no errors were observed with identification of target analytes. Relative intensities of primary and secondary ions for detected analytes were verified to be within ±20% of the laboratory-provided standard relative ion intensities for each analyte. Relative Retention Times (RRTs) were within the EPA-recommended control limits of ±0.06 RRT units of the RRT for the same analyte in the associated opening CCV sample.

No qualifications were performed based on target analyte identification criteria.

3.13 ANALYTE QUANTITATION AND TRANSCRIPTIONS FROM RAW DATA

Compound quantitation was checked for the primary samples, the field duplicate sample, the trip blank sample, and the LCS/LCSD sample pair. No errors were detected in sample quantitation methods or transcriptions from the raw data to the summary forms.

4 PRECISION, ACCURACY, AND COMPLETENESS

Results of the data validation were reviewed to evaluate the precision, accuracy, and completeness of the analyses.

Precision measures the agreement among a set of replicate measurements. Field precision is assessed through the collection and analysis of field duplicates. Analytical precision is estimated by duplicate / replicate analyses, usually on LCS samples, spiked samples, and/or field samples. For this project, precision was assessed by tabulating the results of the relative percent differences (RPDs) of the laboratory control sample/laboratory control sample duplicate (LCS/LCSD) and original sample / field duplicate sample analyses. RPDs that fall within the project or laboratory-specified QA control limits indicate acceptable precision. The precision number given indicates the percentage of RPDs that were within control limits.

Accuracy is the closeness of a measured result to an accepted reference value. Quality Control (QC) analyses used to measure accuracy include internal standard recoveries, LCS samples, spiked samples, and DMC recoveries. For this project, accuracy was assessed by tabulating the results of the percent recoveries for internal standards, LCS/LCSD samples, DMCs, and results for the laboratory method blank sample. The reported accuracy indicates the percentage of recoveries and blank results within the project or QA control limits.

Completeness is a measure of the amount of valid data collected compared to the amount planned. Measurements are considered to be valid if they are unqualified or qualified as estimated during data validation. Rejected results are considered to be invalid. The reported completeness is the number of valid results divided by the total number of results.

4.1 OVERALL PROJECT PRECISION

The overall project precision for the Bridgeton Landfill July 1st, 2020 VOC air monitoring event, based on the percentage of RPD results within control limits, was 79.2% (38 of 48 results in control).

4.2 OVERALL PROJECT ACCURACY

The overall project accuracy for the Bridgeton Landfill July 1st, 2020 VOC air monitoring event, based on the percentage of internal standard recoveries, LCS sample recoveries, and DMC recoveries within control limits, and laboratory method blank non-detects, was 100% (92 of 92 results in control).

4.3 OVERALL PROJECT COMPLETENESS

The overall project completeness for the Bridgeton Landfill July 1st, 2020 VOC air monitoring event, defined as the percentage of data not rejected, was 91.7% (154 of 168 results not rejected).

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Client Sample ID: 1

Lab ID#: 2007043-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18070616sim**	**Date of Collection: 7/1/20 10:30:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/6/20 03:16 PM**	
		Date of Extraction: 7/6/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.081	Not Detected	Not Detected
Hexane	0.10	0.080	0.29	0.23
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.20	0.13 J
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	0.12	0.12
Carbon Tetrachloride	0.10	0.079	0.44	0.35 J
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.091	0.37	0.34
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	0.84	0.60 J
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected UJ
Ethyl Benzene	0.10	0.078	0.13	0.099 J+
m,p-Xylene	0.10	0.075	0.34	0.26 J
o-Xylene	0.10	0.081	Not Detected	Not Detected UJ
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.093	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected R
Naphthalene	0.10	0.21	Not Detected	Not Detected UJ

Temperature = 78.0F , duration time = 18850 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	87	70-130

8/3/2020

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Client Sample ID: 5

Lab ID#: 2007043-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18070617sim**	**Date of Collection: 7/1/20 10:03:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/6/20 03:42 PM**	
		Date of Extraction: 7/6/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.54	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.084	Not Detected	Not Detected
Hexane	0.10	0.083	0.27	0.22
Ethyl Acetate	0.40	0.28	Not Detected	~~Not Detected~~ R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.22	0.15 J
Chloroform	0.10	0.073	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.088	Not Detected	Not Detected
Cyclohexane	0.10	0.10	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.082	0.30	0.24 J
Benzene	0.40	0.27	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.071	Not Detected	Not Detected
Heptane	0.10	0.094	0.18	0.17
Trichloroethene	0.10	0.079	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.074	0.67	0.50 J
Tetrachloroethene	0.10	0.093	Not Detected	Not Detected
Chlorobenzene	0.10	0.080	Not Detected	Not Detected UJ
Ethyl Benzene	0.10	0.080	0.11	0.088 J+
m,p-Xylene	0.10	0.078	0.30	0.23 J
o-Xylene	0.10	0.084	Not Detected	Not Detected UJ
Styrene	0.10	0.090	Not Detected	Not Detected
Propylbenzene	0.10	0.096	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	~~Not Detected~~ R
Naphthalene	0.10	0.22	Not Detected	Not Detected UJ

Temperature = 76.0F , duration time = 18389 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	86	70-130

8/3/2020

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Client Sample ID: 7

Lab ID#: 2007043-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18070618sim**	**Date of Collection: 7/1/20 9:57:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/6/20 04:08 PM**	
		Date of Extraction: 7/6/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.54	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.084	Not Detected	Not Detected
Hexane	0.10	0.083	0.33	0.28
Ethyl Acetate	0.40	0.28	0.61	0.43 J+
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.31	0.21 J
Chloroform	0.10	0.073	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.088	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.12	0.12
Carbon Tetrachloride	0.10	0.082	0.35	0.28 J
Benzene	0.40	0.27	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.071	Not Detected	Not Detected
Heptane	0.10	0.094	0.30	0.28
Trichloroethene	0.10	0.079	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.074	0.90	0.66 J
Tetrachloroethene	0.10	0.093	Not Detected	Not Detected
Chlorobenzene	0.10	0.080	Not Detected	Not Detected UJ
Ethyl Benzene	0.10	0.080	0.15	0.12 J+
m,p-Xylene	0.10	0.078	0.44	0.34 J
o-Xylene	0.10	0.084	0.15	0.13 J
Styrene	0.10	0.090	Not Detected	Not Detected
Propylbenzene	0.10	0.096	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	~~Not Detected~~ R
Naphthalene	0.10	0.22	Not Detected	Not Detected UJ

Temperature = 76.0F , duration time = 18393 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	84	70-130

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Client Sample ID: 8

Lab ID#: 2007043-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18070619sim**	**Date of Collection: 7/1/20 10:13:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/6/20 04:34 PM**	
		Date of Extraction: 7/6/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.53	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.084	Not Detected	Not Detected
Hexane	0.10	0.082	0.32	0.27
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.30	0.21 J
Chloroform	0.10	0.072	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.088	Not Detected	Not Detected
Cyclohexane	0.10	0.10	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.081	0.39	0.31 J
Benzene	0.40	0.27	0.42	0.28
1,2-Dichloroethane	0.10	0.071	Not Detected	Not Detected
Heptane	0.10	0.094	0.25	0.23
Trichloroethene	0.10	0.079	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.073	0.70	0.51 J
Tetrachloroethene	0.10	0.092	Not Detected	Not Detected
Chlorobenzene	0.10	0.080	Not Detected	Not Detected U
Ethyl Benzene	0.10	0.080	0.11	0.085 J+
m,p-Xylene	0.10	0.078	0.28	0.22 J
o-Xylene	0.10	0.084	0.12	0.098 J
Styrene	0.10	0.089	Not Detected	Not Detected
Propylbenzene	0.10	0.095	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected R
Naphthalene	0.10	0.22	Not Detected	Not Detected U

Temperature = 77.0F , duration time = 18387 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130

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Client Sample ID: 12

Lab ID#: 2007043-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18070620sim**	**Date of Collection: 7/1/20 9:39:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/6/20 04:59 PM**	
		Date of Extraction: 7/6/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.53	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.083	Not Detected	Not Detected
Hexane	0.10	0.081	0.37	0.30
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.32	0.22 J
Chloroform	0.10	0.072	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.087	Not Detected	Not Detected
Cyclohexane	0.10	0.099	0.11	0.11
Carbon Tetrachloride	0.10	0.080	0.49	0.39 J
Benzene	0.40	0.27	0.51	0.34
1,2-Dichloroethane	0.10	0.070	Not Detected	Not Detected
Heptane	0.10	0.093	0.48	0.44
Trichloroethene	0.10	0.078	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.072	0.73	0.53 J
Tetrachloroethene	0.10	0.091	Not Detected	Not Detected
Chlorobenzene	0.10	0.079	Not Detected	Not Detected UJ
Ethyl Benzene	0.10	0.079	0.15	0.12 J+
m,p-Xylene	0.10	0.077	0.39	0.30 J
o-Xylene	0.10	0.083	0.13	0.11 J
Styrene	0.10	0.088	Not Detected	Not Detected
Propylbenzene	0.10	0.094	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected R
Naphthalene	0.10	0.21	Not Detected	Not Detected UJ

Temperature = 76.0F , duration time = 18708 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130

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Client Sample ID: Dup

Lab ID#: 2007043-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18070621sim**	**Date of Collection: 7/1/20 10:03:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/6/20 05:25 PM**	
		Date of Extraction: 7/6/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.54	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.084	Not Detected	Not Detected
Hexane	0.10	0.083	0.34	0.28
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.31	0.22 J
Chloroform	0.10	0.073	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.088	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.10	0.10
Carbon Tetrachloride	0.10	0.082	0.45	0.37 J
Benzene	0.40	0.27	0.45	0.31
1,2-Dichloroethane	0.10	0.071	Not Detected	Not Detected
Heptane	0.10	0.094	0.26	0.25
Trichloroethene	0.10	0.079	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.074	0.89	0.66 J
Tetrachloroethene	0.10	0.093	Not Detected	Not Detected
Chlorobenzene	0.10	0.080	Not Detected	Not Detected UJ
Ethyl Benzene	0.10	0.080	0.11	0.092 J+
m,p-Xylene	0.10	0.078	0.31	0.24 J
o-Xylene	0.10	0.084	0.10	0.088 J
Styrene	0.10	0.090	Not Detected	Not Detected
Propylbenzene	0.10	0.096	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected R
Naphthalene	0.10	0.22	Not Detected	Not Detected UJ

Temperature = 76.0F , duration time = 18389 minutes.
Container Type: Radiello 130 (Solvent)

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

8/3/2020

eurofins | Air Toxics

Client Sample ID: TB

Lab ID#: 2007043-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18070622sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/6/20 05:51 PM**	
		Date of Extraction: 7/6/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.52	Not Detected	Not Detected	
Methyl tert-butyl ether	0.10	0.081	Not Detected	Not Detected	
Hexane	0.10	0.080	Not Detected	Not Detected	
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected	R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	Not Detected	Not Detected	UJ
Chloroform	0.10	0.070	Not Detected	Not Detected	
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected	
Cyclohexane	0.10	0.098	Not Detected	Not Detected	
Carbon Tetrachloride	0.10	0.079	Not Detected	Not Detected	UJ
Benzene	0.40	0.26	Not Detected	Not Detected	
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected	
Heptane	0.10	0.091	Not Detected	Not Detected	
Trichloroethene	0.10	0.076	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected	
Toluene	0.10	0.071	Not Detected	Not Detected	UJ
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected	
Chlorobenzene	0.10	0.078	Not Detected	Not Detected	UJ
Ethyl Benzene	0.10	0.078	Not Detected	Not Detected	R
m,p-Xylene	0.10	0.075	Not Detected	Not Detected	UJ
o-Xylene	0.10	0.081	Not Detected	Not Detected	UJ
Styrene	0.10	0.086	Not Detected	Not Detected	
Propylbenzene	0.10	0.093	Not Detected	Not Detected	
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected	R
Naphthalene	0.10	0.21	Not Detected	Not Detected	UJ

Temperature = 78.0F , duration time = 18850 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	88	70-130

8/3/2020