

October 21, 2019

**Mr. Paul Bucholtz**

Michigan Department of Environment, Great Lakes, and Energy  
Remediation and Redevelopment Division  
Constitution Hall  
525 West Allegan Street  
Lansing, MI 48909

RE: Soil Vapor Evaluation  
RACER Trust Hemphill Road Industrial Land, Burton, Michigan  
FILE: 15388 / 72203

Dear **Mr. Bucholtz**:

On behalf of RACER Trust, O'Brien & Gere Engineers, Inc., Part of Ramboll (OBG) has prepared this letter to provide a summary of the results of the soil vapor evaluation conducted during four events (October 26, 2018, December 20, 2018, May 6, 2019, and August 14, 2019) at the Hemphill Road Industrial Land, located in Burton Michigan (Site; [Figure 1](#)).

#### **SITE DESCRIPTION**

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The Hemphill Road Industrial Land Site is located at the southeast corner of the South Saginaw Street and Hemphill Road intersection in Genesee County, Burton, Michigan ([Figure 1](#)). The Site is the 7.8-acre western portion of the former Hemphill Landfill and is presently being leased to a utility company as an equipment and vehicle storage lot, but otherwise has been an unused lot with portions covered with asphalt concrete, soil, or gravel. The Site is bounded to the north by Hemphill Road, on the west by an active service station, medical center, and South Saginaw Street, on the east by an open field (privately owned), and on the south by Storage One (commercial property).

Based on evaluation of the available soil data presented in our Surface Soil, Stockpile, and Soil Vapor Evaluation letter dated August 20, 2018, Michigan Department of Environment, Great Lakes, and Energy (EGLE) requested, during our conference call on January 12, 2018, that the vapor intrusion (VI) pathway be evaluated along the western property line of the property at two locations and, during our conference call on August 10, 2018, EGLE requested the evaluation of the VI pathway at a third location (see [Figure 2](#)) within the waste fill material located on the southern portion of the Site.

The following sections provide a summary of the work conducted to continue evaluation of the VI pathway at the Site.

#### **SOIL VAPOR PROBE INSTALLATION**

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Three nested soil vapor points were installed, one due west of monitoring wells OBG-MW-2 (VP-1S/D) and OBG-MW-3 (VP-3S/D) along the western Site property boundary, and near the center of the Southern waste fill area (VP-2S/D), on October 1, 2018 (see [Figure 2](#) for VI boring locations).



The nested vapor probes were installed according to the requirements set forth in the EGLE's May 2013 *Guidance Document for the Vapor Intrusion Pathway* and the methods specified in Appendix F.1 Installation of a Soil Gas Probe/Vapor Monitoring Point to Support Vapor.

The three nested soil vapor points were installed by Stock Drilling, utilizing direct push drilling techniques (Geoprobe® 7730 DT track-mounted drilling rig). At the soil vapor sampling locations, a shallow (S) (approximately 5' feet below ground surface [ft bgs]) and a deep (D) (approximately 10' ft bgs) sample point were installed at each location.

Five-foot-long, 1.25-inch Macro-Core® samplers were used to collect soil cores continuously from grade to the terminal depth. The soil boring was advanced to a depth of 15 ft bgs.

Once the soil core depth was reached for each run, the sampler was removed from the borehole, detached from the drill rods, and the acetate sleeve was cut length-wise and opened to allow for observation of the subsurface soil. The soil cores were visually inspected and logged by an OBG soil scientist in accordance with the Unified Soil Classification System (USCS). **Attachment A** provides the soil boring logs for VP-1, VP-2, and VP-3, and the vapor probe construction logs for the two vapor points installed at each of the three vapor probe locations at the Site.

The vapor points consisted of a 6-inch length of double woven stainless steel wire screen attached to an appropriate length of high density polyethylene tubing.

Once the target depth was reached, the drive rods were withdrawn as the annular space around the sampling point was packed with glass beads approximately 6 inches above the screened interval on the probes. The remainder of the boring's annular space was sealed to prevent ambient air infiltration between screened zones and above the shallow sampling zone to the ground surface with dry fine granular bentonite that was hydrated at 1 ft intervals.

A roadbox cover was installed just below the ground surface to secure the extra tubing.

## SAMPLING & ANALYSIS

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Soil vapor sampling was conducted during four events on October 26, 2018, December 20, 2018, May 6, 2019, and August 14, 2019. A grab soil gas sample was collected from each vapor probe using the procedure outlined in our August 20, 2018 letter. The sampling procedure implemented was consistent with the Surface Soil, Stockpile, and Soil Vapor Evaluation Work Plan approved by EGLE on September 7, 2018, and EGLE's "Standard Operating Procedure: Sampling Utilizing USEPA Method TO-15 Via Bottle-Vac® to Support Vapor Intrusion Investigations" (EGLE, April 30, 2012) guidance document procedures.

Due to interference from groundwater, samples could not be collected from the following vapor probes:

- » October 26, 2018 Event – VP-1D
- » December 20, 2018 Event – VP-1D, and VP-2D
- » May 6, 2019 Event – VP-1D, VP-2S, VP-2D, and VP-3D
- » August 14, 2019 Event – VP-1D

## SAMPLE PROCEDURE

Prior to the collection of the soil vapor samples, the sample tubing was purged of ambient air. A minimum of three volumes of air within the sample probe and tubing were purged prior to sample collection. In addition, helium

tracer gas screening was used during sampling of the soil vapor probes to evaluate the adequacy of the sampling technique and identify potential short-circuiting from the ground surface during sample collection.

A Mark helium detector model MGD-2002 gas leak detector was used to screen the extracted vapor stream for helium prior to and after sample collection. No olfactory observations were recognized during probe installation and sampling. Short-circuiting was not observed during initial or final screening. In addition, each of the soil vapor probes were screened prior to and after sample collection with a Landtec GEM-2000 meter capable of detecting methane gas to evaluate the possibility of methane at or emanating from the Site. [Attachment B](#) provides Soil Vapor (Bottle Vac®) Sample Collection Field Forms for each sampling event.

The soil gas samples were collected in Bottle Vacs® and transported to the laboratory under appropriate chain-of-custody (COC) protocols. The soil gas samples were submitted to Merit Laboratories in East Lansing, Michigan a National Environmental Laboratory Accreditation Conference (NELAC)-certified laboratory for analysis by USEPA Method TO-15.

For quality control purposes, a field duplicate sample (DUP-1) was collected from vapor probe locations VP-3S in October 2018, VP-2S in December 2018, VP-3S in May 2019, and VP-2S in August 2019 .

## **ANALYTICAL RESULTS**

The analytical results for the samples collected at the Hemphill facility are presented in [Table 1](#) and discussed below. The analytical laboratory reports for each sampling event are contained in [Attachment C](#).

To establish a more accurate criteria for comparison at the Site, a site-specific volatilization to indoor air criteria (VIAC) under Part 201 or site-specific screening levels (SSTLs) under Part 213 of the Natural Resources and Environmental Protection Act, 1994 PA 451 as amended was calculated and provided by EGLE in a March 22, 2019 email.

During the October 26, 2018 event, samples were collected from five of the six vapor probes (VP-1S, VP-2S, VP-2D, VP-3S, DUP-1 [VP-3S], and VP-3D). From the samples analyzed, there were no detections above the site-specific nonresidential VIAC.

During the December 20, 2018 event, samples were collected from four of the six vapor probes the (VP-1S, VP-2S, DUP-1 [VP-2S], VP-3S, and VP-3D). From the samples analyzed, there were no detections above the site-specific nonresidential VIAC.

During the May 6, 2019 event, samples were collected from two of the six vapor probes the (VP-1S, VP-3S, and DUP-1 [VP-3S]). From the samples analyzed, there were no detections above the site-specific nonresidential VIAC.

During the August 14, 2019 event, samples were collected from five of the six vapor probes the (VP-1S, VP-2S, VP-2D, VP-3D, VP-3S, and DUP-1 [VP-3S]). From the samples analyzed, there were no detections above the site-specific nonresidential VIAC.

Methane was not detected in vapor probes VP-1S, VP-1D, VP-3S, and VP-3D during the four events. At VP-2S methane detections ranged from 3% (30,000 ppm) on October 26, 2018 to 10% (100,000 ppm) on December 20, 2018. At VP-2S methane was detected at a concentration of 2.7% (27,000 ppm) on October 27, 2018 and was not detected during the August 14, 2019 event.

The lower explosive limit (LEL) for methane is 5%; so should a building be planned over the waste fill areas of the Site, further evaluation of the potential for harmful methane concentrations will need to be evaluated at that time and it is the intent to record a Declaration of Restrictive Covenant (DRC) on the property's deed that includes a provision that requires assessment of the VI pathway or mitigation measures before a building is constructed or occupied.

## SUMMARY

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The sampling results at the six soil gas probes located around the Site showed that VOC concentrations were consistently less than the site-specific VIAC criteria. There were no exceedances identified in the sampling probes near the property boundary, so there is no apparent off-site risk. Based on these findings, no further vapor intrusion sampling is necessary at this time with respect to the Site. A DRC with a soil vapor management provision can address the methane detections.

If you have any questions, please feel free to contact Clifford Yantz at (313) 333-0211.

Very truly yours,

**O'BRIEN & GERE ENGINEERS, INC.**



Clifford S. Yantz  
Senior Hydrogeologist

cc: David Favero- RACER Trust

### ENCLOSURES:

Table 1 – Vapor Intrusion Sampling - Detections

Figure 1 – Site Location Map

Figure 2 – Sample Location Map

Attachment A – Soil Boring Logs & Vapor Probe Construction Logs

Attachment B – Soil Vapor (Bottle Vac®) Sample Collection Field Forms

Attachment C – Laboratory Analytical Reports



## REFERENCES

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MERA Operational Memorandum #18, dated December 30, 2013-Cleanup Criteria Tables.

MDEQ, 2002. Sampling Strategies and Statistics Training Materials for Part 201 Cleanup Criteria.

MDEQ, 2012. Standard Operating Procedure: Sampling Utilizing USEPA Method TO-15 Via Bottle-Vac® to Support Vapor Intrusion Investigations, April 30, 2012 guidance document

MDEQ, 2013. Remediation and Redevelopment Division, Operational Memorandum No. 1. December 30.

MDEQ, 2015. Incremental Sampling Methodology and Applications (RRD-Resource Materials-XX-2014-01) June.

OBG, 2018. Surface Soil, Stockpile, and Soil Vapor Evaluation. RACER Trust Hemphill Road Industrial Land, Burton, Michigan. August 20.

TABLES

**TABLE 1**  
**RACER Trust - Hemphill Road Industrial Land, Burton, Michigan**  
**Vapor Intrusion Sampling - Detections**

Compound	Sample ID: EGLE Vapor Screening Levels Units: $\mu\text{g}/\text{m}^3$	EGLE Site-Specific Nonresidential Volatilization to Indoor Air (VIAC) Criteria $\mu\text{g}/\text{m}^3$	VP-1S	VP-1S	VP-1S	VP-1S	VP-2S	VP-2S	VP-2S (DUP-1)	VP-2S	VP-2S (DUP-1)	VP-2D	VP-2D
			$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$
Sample Date:	2017 Proposed Criteria		10/26/2018	12/20/2018	5/6/2019	8/14/2019	10/26/2018	12/20/2018	12/20/2018	8/14/2019	8/14/2019	10/26/2018	8/14/2019
Acetone	1.1E+06 (EE) st/31,000	NC	<48	<48	<48	<b>95</b>	<48	<48	<48	<b>48</b>	<b>48</b>	<48	<48
Cyclohexane	2.1E+05 nc	3.1E+05 nc	<6.9	<6.9	<6.9	<6.9	<b>995</b>	<b>1,230</b>	<b>1,110</b>	<b>2,500</b>	<b>2,160</b>	<b>150</b>	<17
cis-1,2-Dichloroethene	280 nc	410 nc	<7.9	<7.9	<7.9	<7.9	<b>91</b>	<b>32</b>	<b>32</b>	<b>230</b>	<b>190</b>	<b>7.9</b>	<7.9
Ethanol	6.3E+05 st (EE)	6.3E+05 st (SE)	<47	<b>51</b>	<b>98</b>	<47	<47	<47	<47	<47	<b>77</b>	<47	<47
Ethylbenzene	340 ca	800 ca	<8.7	<8.7	<8.7	<b>17</b>	<8.7	<8.7	<8.7	<8.7	<8.7	<8.7	<8.7
Heptane	1.2E+05 nc	1.8E+05 nc	<8.2	<8.2	<8.2	<8.2	<8.2	<b>8.2</b>	<8.2	<b>12</b>	<b>12</b>	<8.2	<8.2
Hexane	24,000 nc	36,000 nc	<7.0	<b>7.0</b>	<7.0	<7.0	<b>1,280</b>	<b>1,400</b>	<b>1,220</b>	<b>2,170</b>	<b>1,860</b>	<b>74</b>	<b>11</b>
Isopropyl Alcohol	7,000 nc	NC	<49	<49	<49	<b>220</b>	<49	<49	<48	<b>98</b>	<b>74</b>	<49	<49
2,2,4-Trimethylpentane	1.2E+05 nc	1.8E+05 nc	<9.3	<b>14</b>	<b>14</b>	<9.8	<61	<84	<75	<160	<140	<19	<9.3
Tert-butyl Alcohol	NC	NC	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30
Tetrahydrofuran	70,000 nc	1.0E+05 nc	<5.9	<b>32</b>	<b>24</b>	<b>8.8</b>	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9
Toluene	1.7E+05 nc (EE)	2.5E+05 st (SE)	<7.5	<b>68</b>	<b>41</b>	<b>15</b>	<7.5	<b>49</b>	<b>45</b>	<11	<7.5	<7.5	<7.5
Trichloroethene	67 (DD) dev	67 (SE) dev	<11	<11	<11	<11	<11	<11	<11	<11	<11	<11	<b>21</b>
Vinyl chloride	54 (MM) mut	450 ca	<5.1	<5.1	<5.1	<5.1	<b>130</b>	<b>56</b>	<b>46</b>	<b>130</b>	<b>120</b>	<b>7.7</b>	<5.1
p,m-Xylene	NC	NC	<17	<b>30</b>	<b>26</b>	<b>61</b>	<17	<b>22</b>	<b>22</b>	<17	<17	<17	<17
o-Xylene	NC	NC	<8.7	<b>8.7</b>	<b>8.7</b>	<b>26</b>	<8.7	<8.7	<8.7	<8.7	<8.7	<8.7	<8.7
Total Xylenes	7,600 nc	11,000 nc	<26	<b>39</b>	<b>35</b>	<b>87</b>	<26	<26	<26	<26	<26	<26	<26
Methane Reading	--	--	0.0%	0.0%	0.00%	0.00%	3.0%	10.0%	10.0%	9.4%	9.4%	2.7%	0.0%
Carbon Dioxide Reading	--	--	--	0.5%	0.20%	2.20%	--	7.1%	7.1%	7.9%	7.9%	--	7.2%
Oxygen Reading	--	--	--	20.4%	9.8%	19.2%	--	0.4%	0.4%	0.0%	0.0%	--	11.5%

Notes

Detections highlighted in bold.

- Concentrations in  $\mu\text{g}/\text{m}^3$  as noted
- < = Not detected at specified reporting limit.
- Reading not collected.
- DUP = Duplicate sample.
- NC = No criteria.
- Acceptable Air Values (AAV) endpoint basis used for site-specific criterion: (ca) = Carcinogenic; (nc) = Non-Carcinogenic; (dev) = Developmental; (mut) = Mutagenic cancer; (st) = Short-term (i.e., less than chronic exposure); Agency for Toxic Substances and Disease Registry Inhalation Minimum Risk Level for Acute Inhalation or Intermediate Inhalation exposure durations; U.S. Environmental Protection Agency Integrated Risk Information System Reference Concentration for short-term exposure; of Air Quality Division Acute Initial Threshold Screening Level.
- SE = Site-specific criteria based on single event exposure; therefore, sampling methods should reflect shorter exposure scenarios.
- Sample was not collected during 10/26/18 event from vapor point VP-1D due to interference with groundwater.
- Sample was not collected during 12/20/18 event from vapor point VP-1D and VP-2D due to interference with groundwater.
- Sample was not collected during 5/6/19 event from vapor point VP-1D, VP-2S, VP-2D, and VP-3D due to interference with groundwater.
- Sample was not collected during 8/14/19 event from vapor point VP-1D due to interference with groundwater.
- Landtec GEM 2000 Landfill Gas Monitor used to collect methane, oxygen, and carbon dioxide readings. Readings are in total percent.

**TABLE 1**  
**RACER Trust - Hemphill Road Industrial Land, Burton, Michigan**  
**Vapor Intrusion Sampling - Detections**

Compound	Sample ID: EGLE Vapor Screening Levels Units: µg/m <sup>3</sup>	EGLE Site-Specific Nonresidential Volatilization to Indoor Air (VIAC) Criteria µg/m <sup>3</sup>	VP-3S	VP-3S (DUP-1)	VP-3S	VP-3S	VP-3S (DUP-1)	VP-3S	VP-3D	VP-3D	VP-3D
			µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>
Sample Date:	2017 Proposed Criteria		10/26/2018	10/26/2018	12/20/2018	5/6/2019	5/6/2019	8/14/2019	10/26/2018	12/20/2018	8/14/2019
Acetone	1.1E+06 (EE) st/31,000	NC	<48	<48	<48	<48	<48	<48	<48	<48	<48
Cyclohexane	2.1E+05 nc	3.1E+05 nc	<b>180</b>	<b>190</b>	<b>506</b>	<6.9	<6.9	<6.9	<b>38</b>	<6.9	<6.9
cis-1,2-Dichloroethene	280 nc	410 nc	<b>12</b>	<b>16</b>	<b>12</b>	<7.9	<7.9	<7.9	<7.9	<7.9	<7.9
Ethanol	6.3E+05 st (EE)	6.3E+05 st (SE)	<47	<47	<47	<b>62</b>	<47	<b>72</b>	<47	<47	<47
Ethylbenzene	340 ca	800 ca	<8.7	<8.7	<8.7	<b>8.7</b>	<8.7	<b>8.7</b>	<8.7	<8.7	<8.7
Heptane	1.2E+05 nc	1.8E+05 nc	<8.2	<8.2	<8.2	<8.2	<8.2	<8.2	<8.2	<8.2	<8.2
Hexane	24,000 nc	36,000 nc	<b>130</b>	<b>140</b>	<b>370</b>	<7.0	<7.0	<7.0	<b>18</b>	<7.0	<7.0
Isopropyl Alcohol	7,000 nc	NC	<49	<49	<49	<b>660</b>	<b>150</b>	<b>170</b>	<49	<49	<49
2,2,4-Trimethylpentane	1.2E+05 nc	1.8E+05 nc	<19	<19	<47	<9.3	<9.3	<9.3	<9.3	<9.3	<9.3
Tert-butyl Alcohol	NC	NC	<30	<30	<30	<30	<30	<b>30</b>	<30	<30	<30
Tetrahydrofuran	70,000 nc	1.0E+05 nc	<5.9	<5.9	<b>21</b>	<b>18</b>	<5.9	<b>5.9</b>	<5.9	<b>41</b>	<5.9
Toluene	1.7E+05 nc (EE)	2.5E+05 st (SE)	<7.5	<7.5	<b>34</b>	<b>23</b>	<7.5	<7.5	<7.5	<b>38</b>	<7.5
Trichloroethene	67 (DD) dev	67 (SE) dev	<11	<11	<11	<11	<11	<11	<11	<11	<11
Vinyl chloride	54 (MM) mut	450 ca	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1
p,m-Xylene	NC	NC	<17	<17	<b>17</b>	<b>35</b>	<17	<b>30</b>	<17	<17	<17
o-Xylene	NC	NC	<8.7	<8.7	<8.7	<b>13</b>	<8.7	<b>13</b>	<8.7	<8.7	<8.7
Total Xylenes	7,600 nc	11,000 nc	<26	<26	<26	<b>48</b>	<26	<b>48</b>	<26	<26	<26
Methane Reading	--	--	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Carbon Dioxide Reading	--	--	--	--	9.0%	3.6%	3.6%	9.0%	--	9.2%	8.0%
Oxygen Reading	--	--	--	--	7.2%	14.3%	14.3%	10.8%	--	2.5%	0.7%

Notes

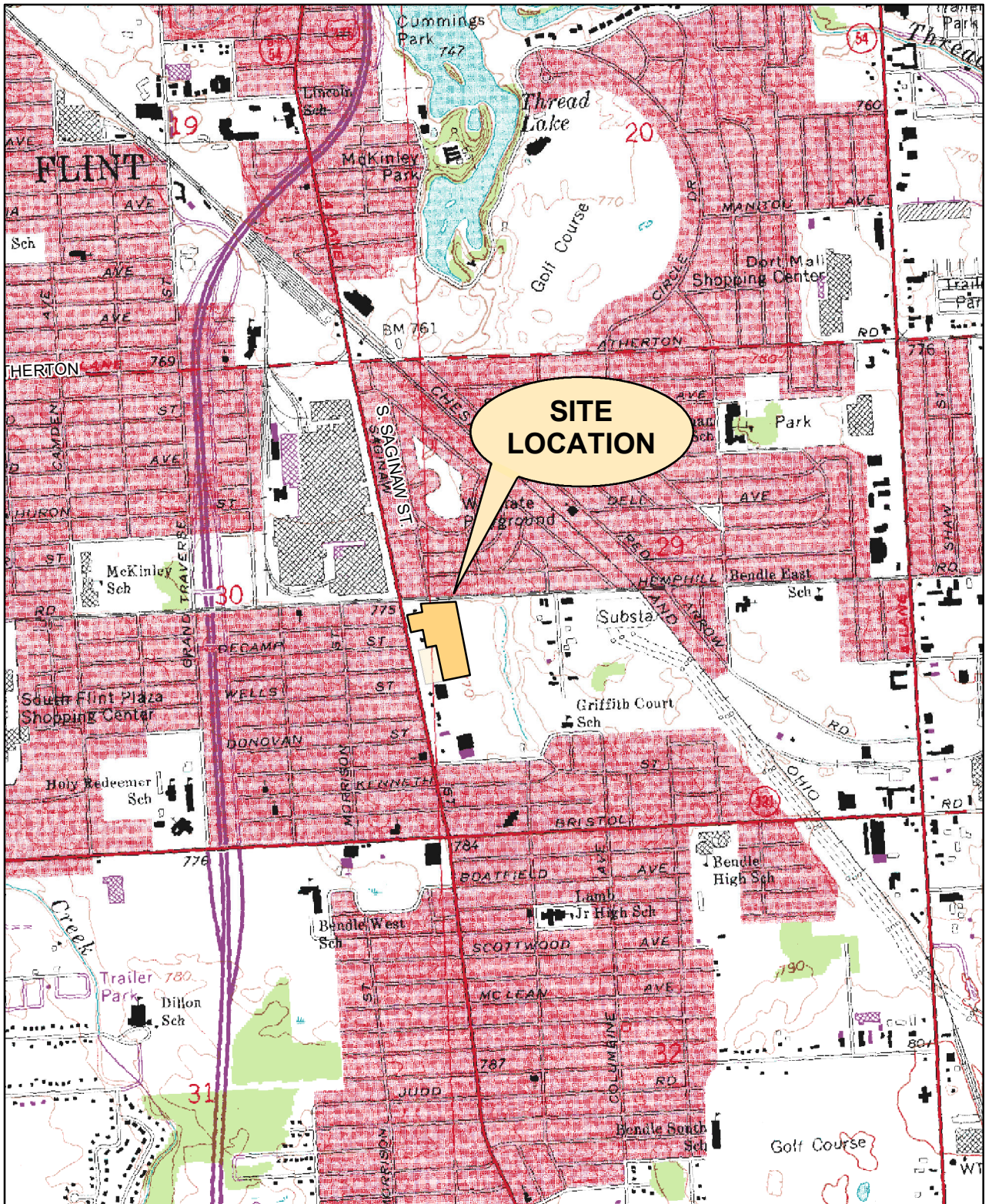
Detections highlighted in bold.

- Concentrations in µg/m<sup>3</sup> as noted
- < = Not detected at specified reporting limit.
- Reading not collected.
- DUP = Duplicate sample.
- NC = No criteria.
- Acceptable Air Values (AAV) endpoint basis used for site-specific criterion: (ca) = Carcinogenic; (nc) = Non-Carcinogenic; (dev) = Developmental; (mut) = Mutagenic cancer; (st) = Short-term (i.e., less than chronic exposure): Agency for Toxic Substances and Disease Registry Inhalation Minimum Risk Level for Acute Inhalation or Intermediate Inhalation exposure durations; U.S. Environmental Protection Agency Integrated Risk Information System Reference Concentration for short-term exposure; of Air Quality Division Acute Initial Threshold Screening Level.
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- Sample was not collected during 10/26/18 event from vapor point VP-1D due to interference with groundwater.
- Sample was not collected during 12/20/18 event from vapor point VP-1D and VP-2D due to interference with groundwater.
- Sample was not collected during 5/6/19 event from vapor point VP-1D, VP-2S, VP-2D, and VP-3D due to interference with groundwater.
- Sample was not collected during 8/14/19 event from vapor point VP-1D due to interference with groundwater.
- Landtec GEM 2000 Landfill Gas Monitor used to collect methane, oxygen, and carbon dioxide readings. Readings are in total percent.

**FIGURES**

6/27/2019 8:45:44 AM

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RACER TRUST  
 HEMPHILL ROAD INDUSTRIAL LAND  
 BURTON, MICHIGAN  
 SITE LOCATION MAP

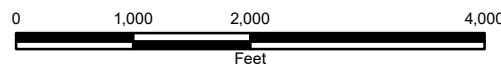
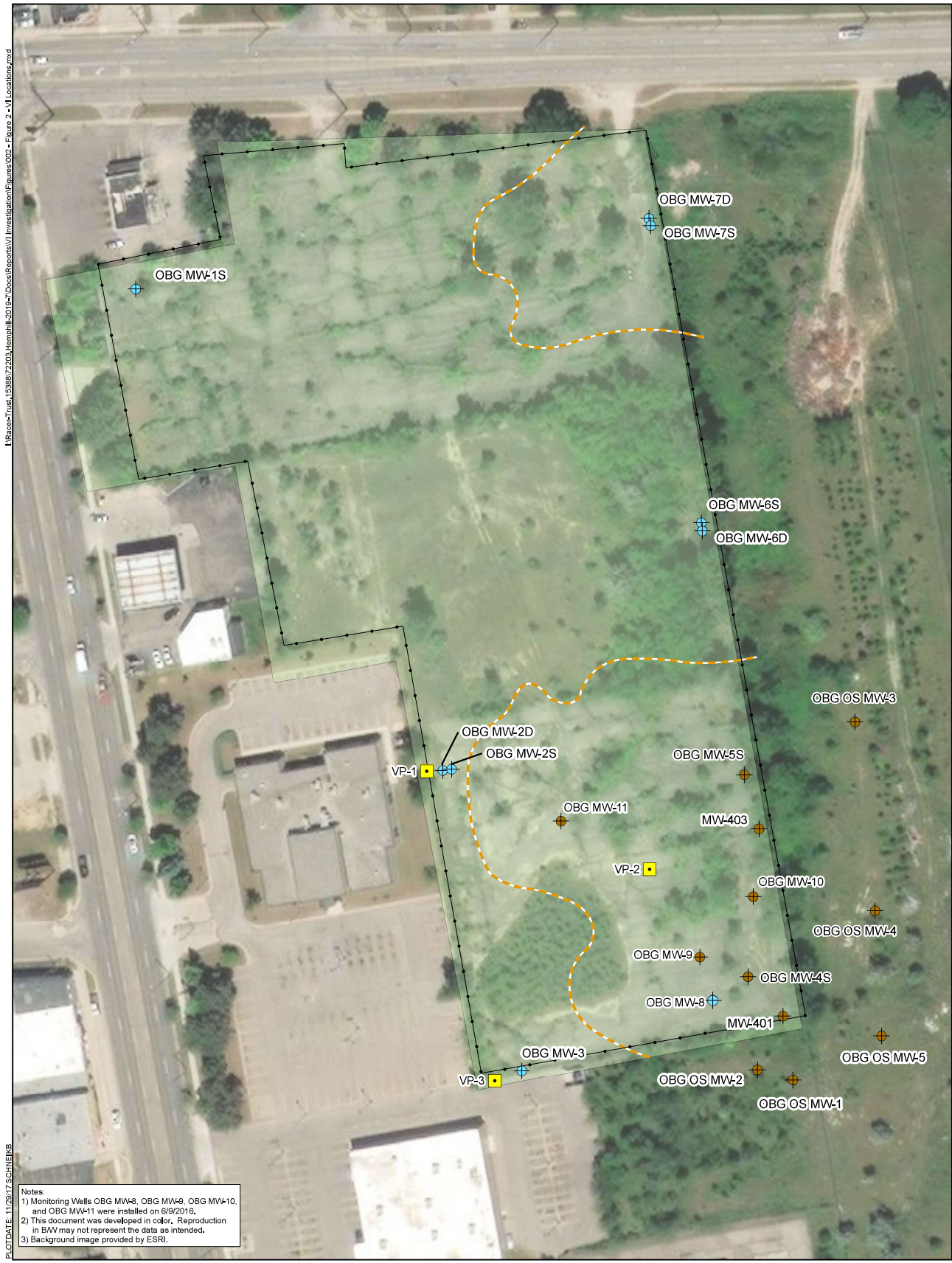


FIGURE 2

I:\Bacnet\Truest\_15388\2203\_Hemphill\_2016\27\_Docs\Reports\VI\_Investigation\Figures\009 - Figure 2 - VI Locations.mxd



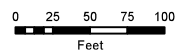
PLTDATE: 11/29/17 SCHNEIKB

Notes:  
 1) Monitoring Wells OBG MW-8, OBG MW-9, OBG MW-10, and OBG MW-11 were installed on 6/9/2016.  
 2) This document was developed in color. Reproduction in B/W may not represent the data as intended.  
 3) Background image provided by ESRI.

- LEGEND**
- VAPOR PROBE LOCATION
  - ⊕ MONITORING WELL LOCATION (SCREENED IN NATIVE SOIL)
  - ⊕ MONITORING WELL LOCATION (SCREENED IN FILL)
  - FENCE LINE
  - ▭ HEMPHILL ROAD INDUSTRIAL LAND
  - - - APPROXIMATE EXTENT OF WASTE FILL ONSITE

RACER TRUST  
 HEMPHILL ROAD INDUSTRIAL LAND  
 BURTON, MICHIGAN

**VAPOR PROBE &  
 MONITORING WELL LOCATIONS**





**ATTACHMENT A**

***Soil Boring Logs & Vapor  
Probe Construction Logs***



OBRIEN & GERE

# BORING LOG

## WELL NO. VP-1

**PROJECT:** Hemphill Road Industrial Land  
**CLIENT:** RACER Trust  
**INSPECTOR:** KevinSchneider

SHEET 1 OF 1  
JOB NO. 72203

**DRILLING CONTRACTOR:** Stock Drilling  
**DRILLER:** Earnest Plylar  
**PURPOSE:** Vapor probe installation  
**DRILLING METHOD:** Direct Push  
**DRILL RIG TYPE:** Geoprobe 7730DT

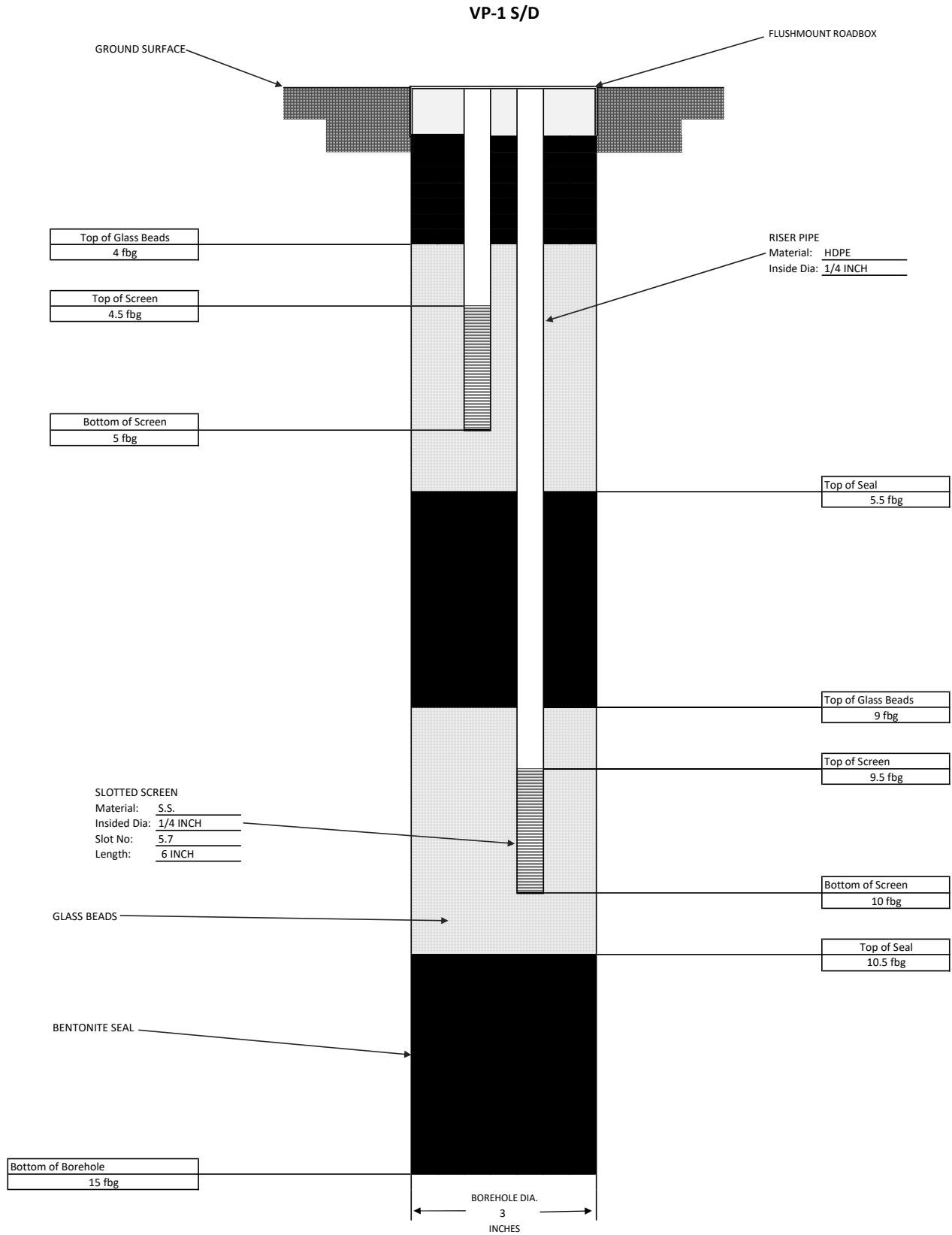
GROUND ELEV. \_\_\_\_\_  
DATUM \_\_\_\_\_  
DATE STARTED 10/1/2018  
DATE FINISHED 10/1/2018

	SAMPLE	CORE	CASING
TYPE	SS	Soil Liner	Dual Tube
DIA.	2"	2"	---

DEPTH (ft)	Sample Type Number	Blows/6" (N Value)	Penetration/ Recovery	MATERIAL DESCRIPTION	Graphic Log	USCS Symbol	Stratum Change	Field Testing PID (ppm)	Well Graphic	REMARKS
0.2				wet, moderate brown, fine to medium SAND, little gravel, asphalt				0		
0.2 - 2.9	SS-1		5.0 / 2.9'	wet, moderate yellowish brown, fine SAND wet, moderate yellowish brown, fine to medium SAND, trace gravel		SP		0		
2.9 - 5.2						SP		0		
5.2 - 8.8	SS-2		5.0 / 4.0'	moist to wet, moderate yellowish brown, silty fine SAND moist, medium gray, silty CLAY, trace gravel, little less gravel with depth, hard to stiff		SM CL-ML		0		
8.8 - 10.0						SP		0		
10.0 - 14.6	SS-3		5.0 / 4.6'	wet, moderate yellowish brown, fine to medium SAND moist, medium gray, silty CLAY moist, medium gray, silty CLAY, trace gravel, medium plastic, less stiff with depth		CL-ML CL-ML		0		
14.6 - 15.0						CL-ML		0		

End of Borehole at 15.0'.

**Notes:** Boring location near OBG MW-2. Vapor probes set at 5' and 10'.





O'BRIEN & GERE

# BORING LOG

## WELL NO. VP-2

**PROJECT:** Hemphill Road Industrial Land  
**CLIENT:** RACER Trust  
**INSPECTOR:** KevinSchneider

SHEET 1 OF 1  
JOB NO. 72203

**DRILLING CONTRACTOR:** Stock Drilling  
**DRILLER:** Earnest Plylar  
**PURPOSE:** Vapor probe installation  
**DRILLING METHOD:** Direct Push  
**DRILL RIG TYPE:** Geoprobe 7730DT

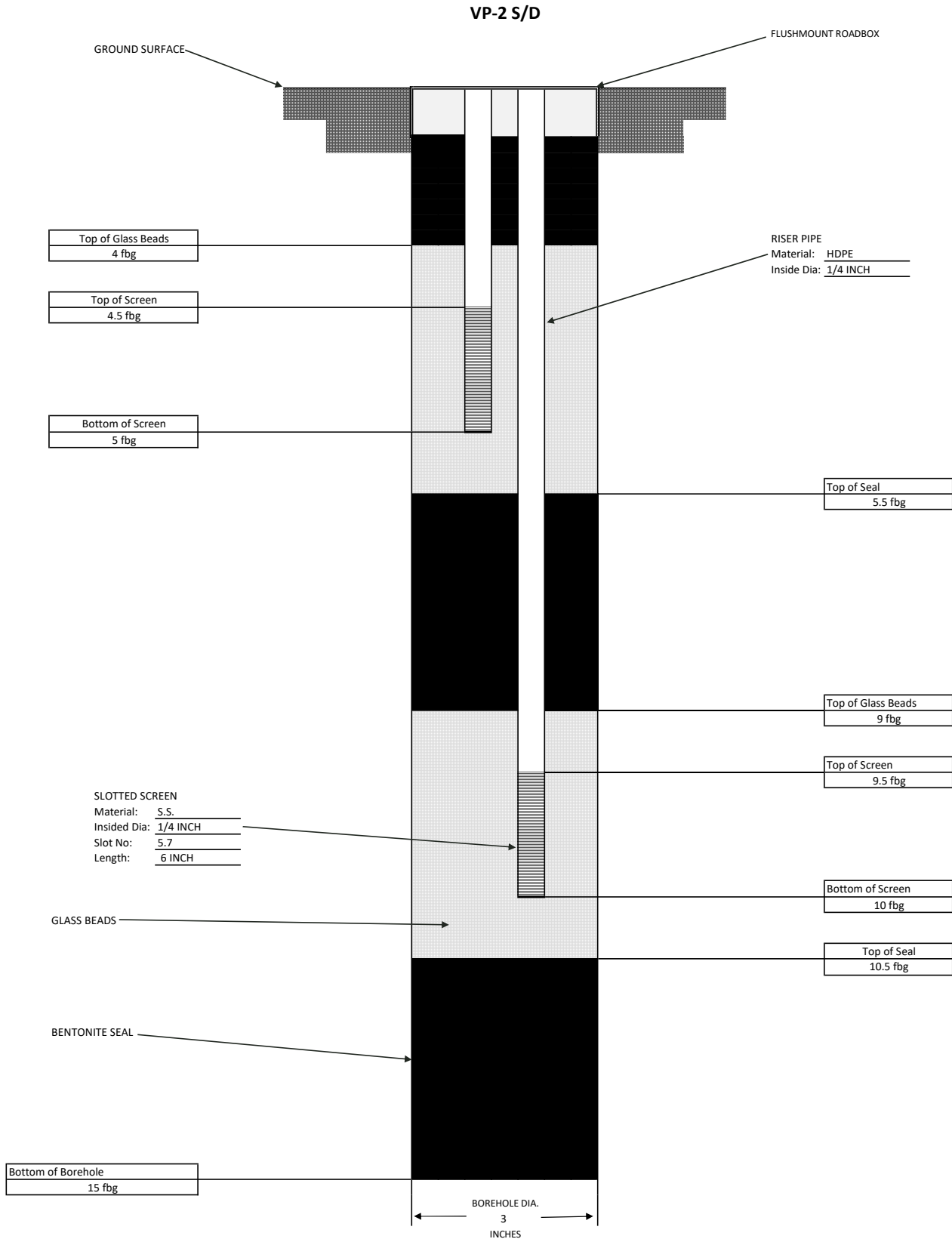
GROUND ELEV. \_\_\_\_\_  
DATUM \_\_\_\_\_  
DATE STARTED 10/1/2018  
DATE FINISHED 10/1/2018

	SAMPLE	CORE	CASING
TYPE	SS	Soil Liner	Dual Tube
DIA.	2"	2"	---

DEPTH (ft)	Sample Type Number	Blows/6" (N Value)	Penetration/ Recovery	MATERIAL DESCRIPTION	Graphic Log	USCS Symbol	Stratum Change	Field Testing PID (ppm)	Well Graphic	REMARKS
0.0				ashpalt / concrete	0.8			0		
0.8				moist, moderate yellowish brown, fine SAND		SM		0		
2.0	SS-1		5.0' / 4.4'	some clay		SM		0		
4.0				same as above, some clay		SM		0		
6.0				same as above, little clay		SM		0		
8.0	SS-2		5.0' / 3.5'	moist, olive brown, silty fine SAND, trace gravel, trace dark staining		SM		0		
10.0				moist, light brown, fine SAND, trace gravel		SM		0		
10.5				same as above	10.5	SM		0		
12.0				moist, olive brown, clayey fine SAND		SM		0		
12.0				moist, dark olive gray, silty fine SAND, little clay, brick pieces, wood pieces, fill	12.0			0		
15.0	SS-3		5.0' / 3.8'			FILL		112.3		
15.0								39.8		

End of Borehole at 15.0'.

**Notes:** Boring location near center of southern waste fill area. Vapor probes set at 5' and 10'.





OBRIEN & GERE

# BORING LOG

## WELL NO. VP-3

**PROJECT:** Hemphill Road Industrial Land  
**CLIENT:** RACER Trust  
**INSPECTOR:** KevinSchneider

SHEET 1 OF 1  
JOB NO. 72203

**DRILLING CONTRACTOR:** Stock Drilling  
**DRILLER:** Earnest Plylar  
**PURPOSE:** Vapor probe installation  
**DRILLING METHOD:** Direct Push  
**DRILL RIG TYPE:** Geoprobe 7730DT

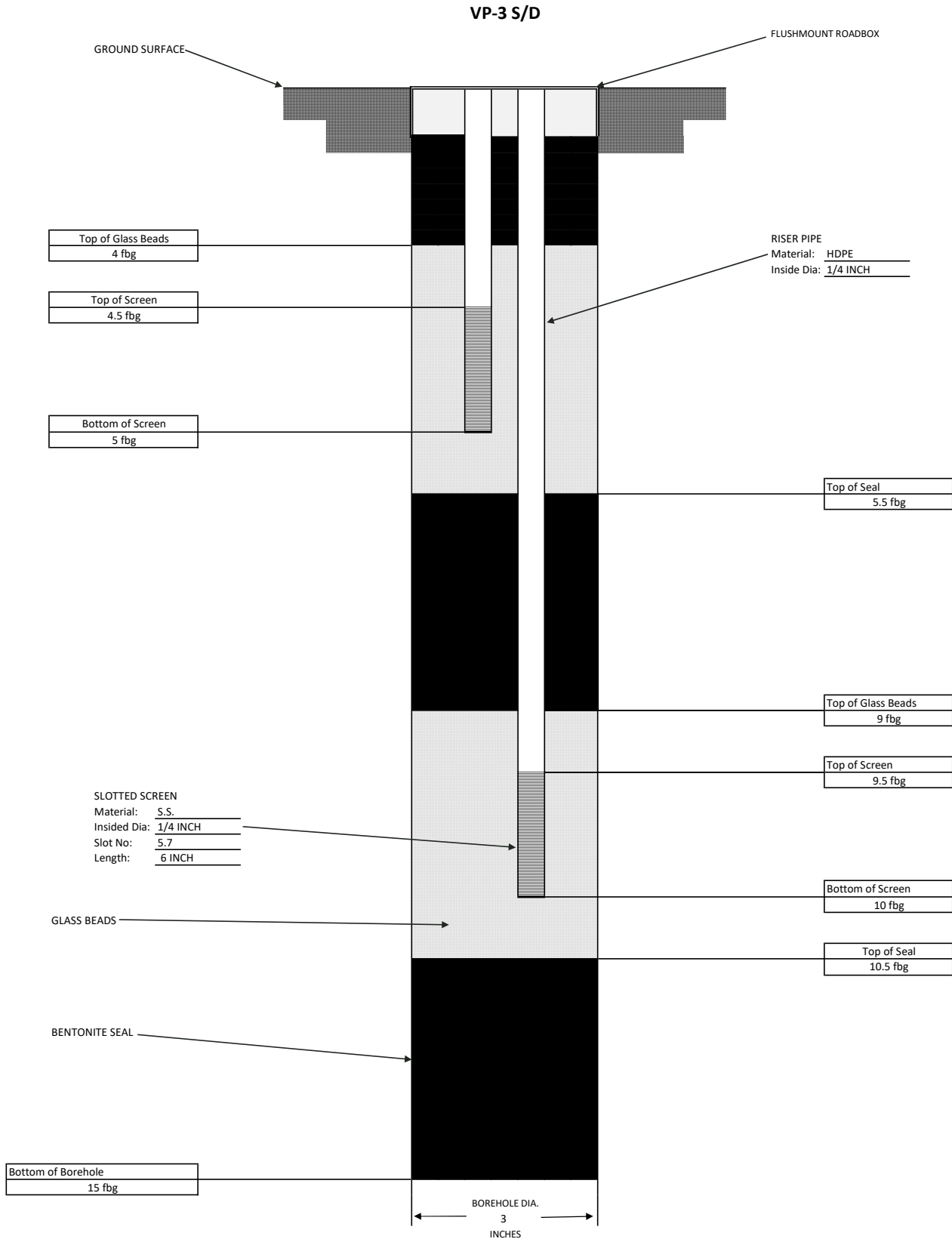
GROUND ELEV. \_\_\_\_\_  
DATUM \_\_\_\_\_  
DATE STARTED 10/1/2018  
DATE FINISHED 10/1/2018

	SAMPLE	CORE	CASING
TYPE	---	Soil Liner	Dual Tube
DIA.	2"	2"	---

DEPTH (ft)	Sample Type Number	Blows/6" (N Value)	Penetration/ Recovery	MATERIAL DESCRIPTION	Graphic Log	USCS Symbol	Stratum Change	Field Testing PID (ppm)	Well Graphic	REMARKS
0.0				ashpalt	0.2			0		
0.2				moist, moderate yellowish brown, sandy CLAY		CLS				
1.1				moist to dry, moderate yellowish brown, fine SAND		SM		0		
5.0	SS-1		5.0' / 3.2'			SM		0		
5.0				moist, moderate yellowish brown, sandy CLAY		CLS				
5.6				moist, moderate yellowish brown, fine SAND		SM				
6.1				moist, moderate yellowish brown, sandy CLAY		CLS		0		
6.4				moist, moderate yellowish brown, fine SAND		SM				
6.8				moist, moderate yellowish brown, sandy CLAY		CLS				
7.2				moist, moderate yellowish brown, fine to medium SAND		SP		0		
10.0	SS-2		5.0' / 3.1'			SP		0		
10.0				moist, olive brown, silty very fine SAND, little clay, trace gravel		SM		0		
10.9				moist, olive brown, sandy CLAY		CLS				
11.4				moist, olive brown, silty CLAY		CL		0		
12.4				very fine SAND seam		SM				
12.5	SS-3		5.0' / 3.3'	moist, olive brown, clayey SILT		ML		0		
15.0				End of Borehole at 15.0'.				0		

Report Name: NEW OBG BORING LOG Data Template: OBG GINT STD US.GDT

**Notes:** Boring location near OBG MW-3. Vapor probes set at 5' and 10'.



**ATTACHMENT B**

***Soil Vapor (Bottle Vac®)  
Sample Collection Field  
Forms***



# Soil Vapor (Bottle Vac®) Sample Collection Field Form

Project # 68574  
 Project Name Hemphill Rd

Date 10/26/18  
 Collector KBS

Sample ID	VP-15	VP-1D
Start Date/Time	<u>10/26 952</u>	<u>10/26 953</u>
End Date/Time	<u>1003</u>	<u>1007</u>
Bottle/Canister ID	<u>13728</u>	<u>18386</u>
Flow controller ID	<u>48</u>	<u>1</u>
Associated ambient air sample ID	<u>N/A</u>	
Analytical method required	<u>TO-15</u>	

	VP-15	VP-1D
Vacuum gauge "zero" ("Hg)	<u>0</u>	<u>0</u>
Start Pressure ("Hg)	<u>-27</u>	<u>-26</u>
End Pressure ("Hg)	<u>-2</u>	<u>-25</u>
End pressure = "zero"?	<u>0</u>	<u>0</u>
Sampling duration (intended)	<u>5 min</u>	<u>5 min</u>
Depth of sample point below grade	<u></u>	
Laboratory used	<u></u>	

Tubing type/inside dia. used 3/8" OD Length of tubing 8'13" cm Tubing volume 5.77 / 1.25 cc  
 Volume purged 3.0 / 3.75 cc @ 0.1 l/min (100cc/min) 3 volumes purged @ < 200cc/min? yes / yes  
 Shroud tracer gas conc. Beginning: 59.9% End of purging: 0/0 End of sampling: 22.9%  
 Gas Analyzer Readings %O<sub>2</sub> N/A %CO<sub>2</sub> N/A %CH<sub>4</sub> N/A PID/FID reading 0.2 / 0.2 (ppmv)  
 Noticeable odor No Soil type clay 0 / 0

### Weather Conditions during Probe Installation:

Air temperature (°F)  Rainfall  Wind direction   
 Barometric pressure  Wind speed (mph)

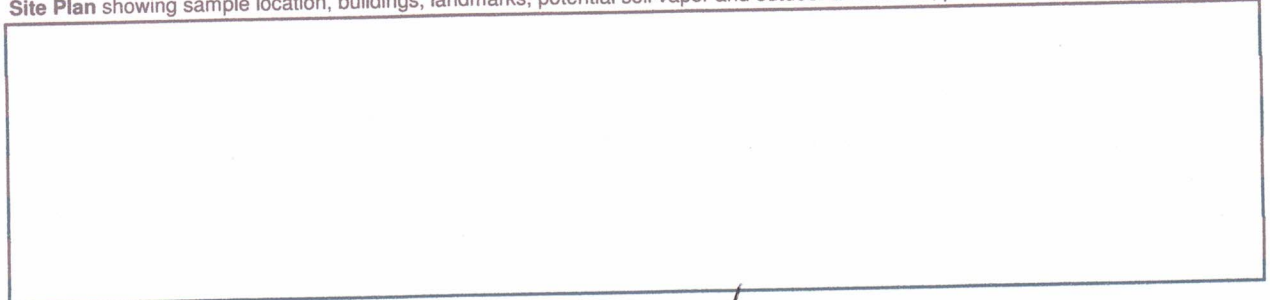
Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

### Weather Conditions at Start of Sampling:

Air temperature (°F) 41 °F Rainfall No Wind direction E  
 Barometric pressure 29.97 Wind speed (mph) 5 mph

Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

Site Plan showing sample location, buildings, landmarks, potential soil vapor and outdoor air sources, preferential pathways



Comments: VP-15 methane 0/0  
VP-1D methane 0/0  
VP-1D water in line



### Soil Vapor (Bottle Vac®) Sample Collection Field Form

Project # 68544 Date 10/26/18  
 Project Name Hemp Hill Collector KBS

Sample ID	<u>VP-2S</u>	<u>VP-2D</u>	Vacuum gauge "zero" ("Hg)	<u>VP-2S 0</u>	<u>VP-2D 0</u>
Start Date/Time	<u>10/26 1049</u>	<u>1051</u>	Start Pressure ("Hg)	<u>-26</u>	<u>-25</u>
End Date/Time	<u>1058</u>	<u>1100</u>	End Pressure ("Hg)	<u>-2</u>	<u>-2</u>
Bottle/Canister ID	<u>16825</u>	<u>18334</u>	End pressure = "zero"?	<u>Yes</u>	<u>Yes</u>
Flow controller ID	<u>5</u>	<u>102</u>	Sampling duration (intended)	<u>5 min</u>	<u>5 min</u>
Associated ambient air sample ID	<u>N/A</u>		Depth of sample point below grade		
Analytical method required	<u>TO-15</u>		Laboratory used	<u>Merit</u>	

Tubing type/inside dia. used 3/8 OD Length of tubing 8' 15" cm Tubing volume 77 | 125 cc  
 Volume purged 530 | 375 cc @ 0.1 l/min (100cc/min) 3 volumes purged @ < 200cc/min? Yes | Yes  
 Shroud tracer gas conc. Beginning: 60.9% End of purging: 95.0 | 225 End of sampling: 33.2%  
 Gas Analyzer Readings %O<sub>2</sub> N/A %CO<sub>2</sub> N/A %CH<sub>4</sub> N/A | 0 PID/FID reading 18.5 | 11.0 (ppmv)  
 Noticeable odor No Soil type clay

Weather Conditions during Probe Installation:  
 Air temperature (°F) \_\_\_\_\_ Rainfall \_\_\_\_\_ Wind direction \_\_\_\_\_  
 Barometric pressure \_\_\_\_\_ Wind speed (mph) \_\_\_\_\_  
 Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs: \_\_\_\_\_

Weather Conditions at Start of Sampling:  
 Air temperature (°F) 46°F Rainfall No Wind direction E  
 Barometric pressure 29.98 Wind speed (mph) 6 mph  
 Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs: \_\_\_\_\_

Site Plan showing sample location, buildings, landmarks, potential soil vapor and outdoor air sources, preferential pathways

Comments: VP-2S - methane 3.0%  
VP-2D - methane 2.7%



### Soil Vapor (Bottle Vac®) Sample Collection Field Form

DVP-1  
Bottle ID  
23692

Project #	68544	Date	10/20/18
Project Name	Hemp Hill	Collector	KBS
Sample ID	VP-35 / DVP-1	VP-3D	
Start Date/Time	10/26 1141	1143	
End Date/Time	1202	1224	
Bottle/Canister ID	16835	18325	
Flow controller ID	10	<del>18</del> 18	
Associated ambient air sample ID	N/A		Depth of sample point below grade
Analytical method required	TO-15		Laboratory used

Tubing type/inside dia. used 3/8 OD Length of tubing 8' | 13' cm Tubing volume 77 | 125 cc

Volume purged 5 230 | 375 cc @ 0.1 l/min (100cc/min) 3 volumes purged @ < 200cc/min? Yes | Yes

Shroud tracer gas conc. Beginning: 57.5% End of purging: 5 | 0 End of sampling: 7.9%

Gas Analyzer Readings %O<sub>2</sub> N/A %CO<sub>2</sub> N/A %CH<sub>4</sub> N/A PID/FID reading 0.7 | 0.7 (ppmv)

Noticeable odor No Soil type 0.60

#### Weather Conditions during Probe Installation:

Air temperature (°F) \_\_\_\_\_ Rainfall \_\_\_\_\_ Wind direction \_\_\_\_\_

Barometric pressure \_\_\_\_\_ Wind speed (mph) \_\_\_\_\_

Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

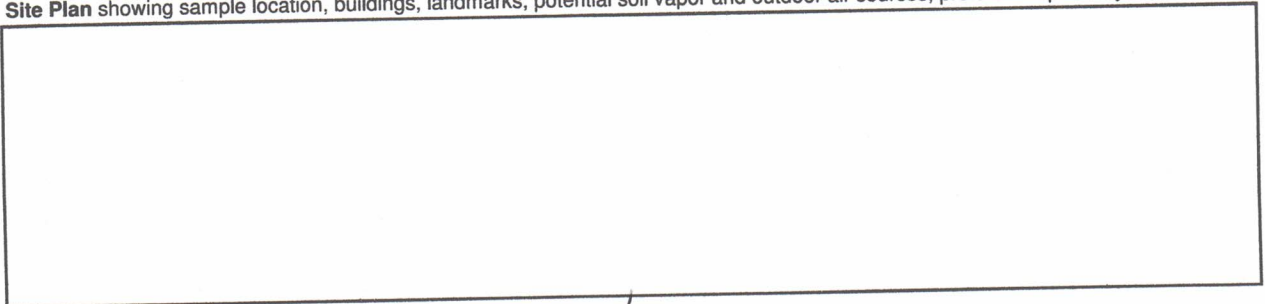
#### Weather Conditions at Start of Sampling:

Air temperature (°F) 45 °F Rainfall No Wind direction E

Barometric pressure 29.98 in Wind speed (mph) 6 MPH

Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

Site Plan showing sample location, buildings, landmarks, potential soil vapor and outdoor air sources, preferential pathways



Comments: VP-35 methane 0/0

VP-3D methane 0/0



### Soil Vapor (Bottle Vac®) Sample Collection Field Form

Project # 08544 Date 10/20/18  
 Project Name Hemp Hill Rd Collector KBS

Sample ID	VP-15	VP-1D	Vacuum gauge "zero" ("Hg)	VP-15	VP-1D
Start Date/Time	10/20 1011	10/20 1612	Start Pressure ("Hg)	-29	-26
End Date/Time	1022	1025	End Pressure ("Hg)	-3	-26
Bottle/Canister ID	16842	12429	End pressure = "zero"?	-3	-26
Flow controller ID	162	152	Sampling duration (intended)		
Associated ambient air sample ID	N/A		Depth of sample point below grade	5	10
Analytical method required	TO-15		Laboratory used		

Tubing type/inside dia. used 3/8<sup>00</sup> Length of tubing 8'13" cm Tubing volume 5/22 | 125<sup>0</sup> cc  
 Volume purged 5/230 | 375<sup>0</sup> cc @ 0.1 l/min (100cc/min) 3 volumes purged @ < 200cc/min? 4.5 | X5  
 Shroud tracer gas conc. Beginning: 54.1 End of purging: 0 | 0 End of sampling: 16.1  
 Gas Analyzer Readings %O<sub>2</sub> N/A %CO<sub>2</sub> N/A %CH<sub>4</sub> N/A PID/FID reading 04<sup>9</sup> | 16.3<sup>0</sup> (ppmv)  
 Noticeable odor No Soil type clay 0.2 -

#### Weather Conditions during Probe Installation:

Air temperature (°F) \_\_\_\_\_ Rainfall \_\_\_\_\_ Wind direction \_\_\_\_\_  
 Barometric pressure \_\_\_\_\_ Wind speed (mph) \_\_\_\_\_

Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

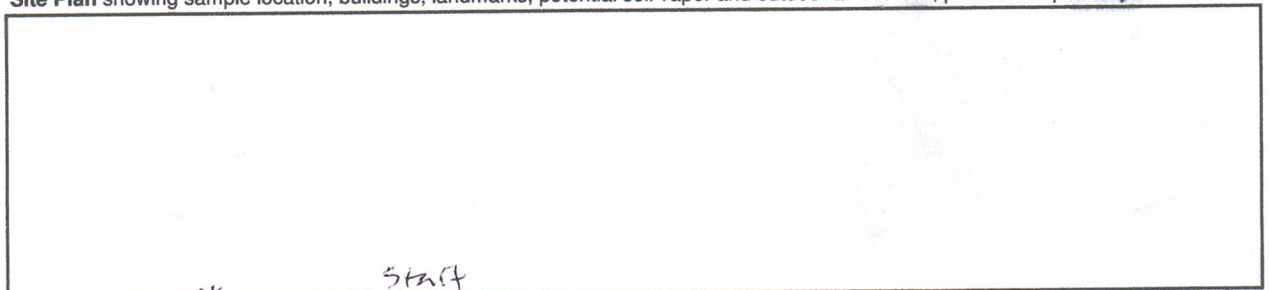
#### Weather Conditions at Start of Sampling:

Air temperature (°F) 37.0<sup>F</sup> Rainfall light Rain Wind direction SSE  
 Barometric pressure 29.80 Wind speed (mph) 4

Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

NONE, light Rain @ start of sampling

#### Site Plan showing sample location, buildings, landmarks, potential soil vapor and outdoor air sources, preferential pathways



Comments: Start VP-15 %O<sub>2</sub> 20.4 %CO<sub>2</sub> 00.5 %CH<sub>4</sub> 00.0  
End VP-15 %O<sub>2</sub> 20.4 %CO<sub>2</sub> 00.5 %CH<sub>4</sub> 00.0  
Start VP-1D %O<sub>2</sub> 20.9 %CO<sub>2</sub> 00.7 %CH<sub>4</sub> 0.0  
End VP-1D %O<sub>2</sub> - %CO<sub>2</sub> 00.2 %CH<sub>4</sub> -

During purging VP-1D was pulling water/vacuum and was unable



### Soil Vapor (Bottle Vac®) Sample Collection Field Form

Project #	68544		Date	12/20/18	
Project Name	Hemphill		Collector	LBS	
Sample ID	VP-35	VP-3D	Vacuum gauge "zero" ("Hg)	VP-35: 8	VP-3D: -2
Start Date/Time	12/20 1223	1224	Start Pressure ("Hg)	-27	-29
End Date/Time	1232	1241	End Pressure ("Hg)	-1	-3
Bottle/Canister ID	13735	13741	End pressure = "zero"?	0	-2
Flow controller ID	140	147	Sampling duration (intended)	5	10
Associated ambient air sample ID	N/A		Depth of sample point below grade		
Analytical method required	TO-15		Laboratory used		

Tubing type/inside dia. used	3/8	Length of tubing	8/13 cm	Tubing volume	17.5	12.5 cc
Volume purged	5 / 230 / 375 cc @ 0.1 l/min (100cc/min)	3 volumes purged @ < 200cc/min?	X	Yes		
Shroud tracer gas conc.	Beginning: 55.5	End of purging: 0/0	End of sampling: 44.3%			
Gas Analyzer Readings	%O <sub>2</sub> N/A	%CO <sub>2</sub> N/A	%CH <sub>4</sub> N/A	PID/FID reading	9.5	0.1 (ppmv)
Noticeable odor	No	Soil type	clay		4.5	0.1

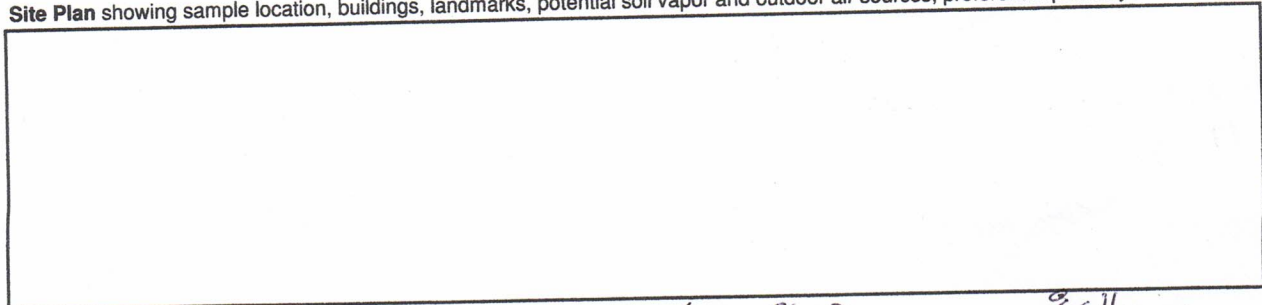
#### Weather Conditions during Probe Installation:

Air temperature (°F)	_____	Rainfall	_____	Wind direction	_____
Barometric pressure	_____			Wind speed (mph)	_____
Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:					

#### Weather Conditions at Start of Sampling:

Air temperature (°F)	38	Rainfall	light rain / none	Wind direction	S
Barometric pressure	29.8			Wind speed (mph)	5
Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:					

#### Site Plan showing sample location, buildings, landmarks, potential soil vapor and outdoor air sources, preferential pathways



Comments:	VP-35	%O <sub>2</sub>	7.2	CO <sub>2</sub> %	9.0	%CH <sub>4</sub>	00.0
	VP-35	%O <sub>2</sub>	7.4	CO <sub>2</sub> %	8.9	%CH <sub>4</sub>	00.0
	VP-3D	%O <sub>2</sub>	2.5	CO <sub>2</sub> %	9.2	%CH <sub>4</sub>	00.0
		%O <sub>2</sub>	18	CO <sub>2</sub> %	00.1%	%CH <sub>4</sub>	00.0



### Soil Vapor (Bottle Vac®) Sample Collection Field Form

Project # 68544 Date 12/20/18  
 Project Name Hemphill Rd Collector KBS

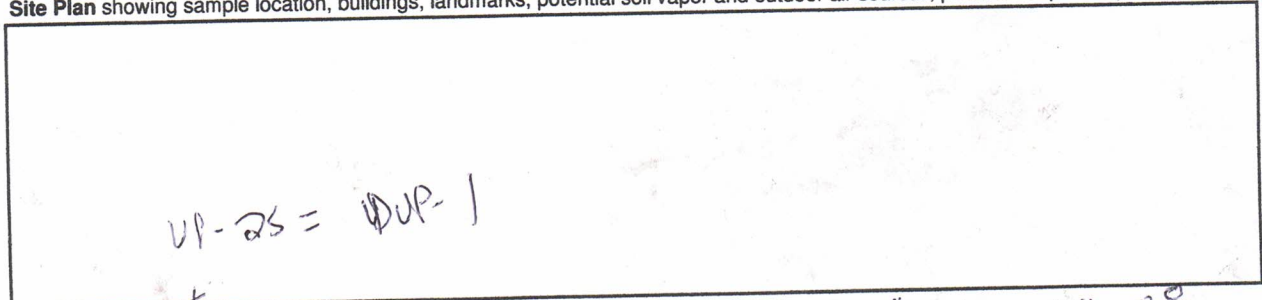
Sample ID	<u>VP-25 / DUP-1</u>	<u>VP-2D</u>	Vacuum gauge "zero" ("Hg)	<u>VP-25</u>	<u>DUP-1</u>	<u>VP-2D</u>
Start Date/Time	<u>12/20 1117</u>	<u>1117</u>	Start Pressure ("Hg)	<u>-29</u>	<u>-29</u>	<u>-26</u>
End Date/Time	<u>1134</u>	<u>1134</u>	End Pressure ("Hg)	<u>-2</u>	<u>-2</u>	<u>-26</u>
Bottle/Canister ID <u>13749</u>	<u>13729</u>	<u>13729</u>	End pressure = "zero"?	<u>Yes</u>	<u>Yes</u>	
Flow controller ID	<u>123</u>	<u>123/3</u>	Sampling duration (intended)			
Associated ambient air sample ID	<u>N/A</u>		Depth of sample point below grade	<u>5</u>	<u>5</u>	<u>10</u>
Analytical method required	<u>TO-15</u>		Laboratory used			

Tubing type/inside dia. used 3/8 Length of tubing 8/13 cm Tubing volume 5 / 125 cc  
 Volume purged 530 / 375 cc @ 0.1 l/min (100cc/min) 3 volumes purged @ < 200cc/min? Yes / -  
 Shroud tracer gas conc. Beginning: 47.1% End of purging: 0 / - End of sampling: 31.9%  
 Gas Analyzer Readings %O<sub>2</sub> N/A %CO<sub>2</sub> N/A %CH<sub>4</sub> N/A PID/FID reading 3.0 / - (ppmv)  
 Noticeable odor no Soil type clay 5.0

Weather Conditions during Probe Installation:  
 Air temperature (°F) \_\_\_\_\_ Rainfall \_\_\_\_\_ Wind direction \_\_\_\_\_  
 Barometric pressure \_\_\_\_\_ Wind speed (mph) \_\_\_\_\_  
 Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs: \_\_\_\_\_

Weather Conditions at Start of Sampling:  
 Air temperature (°F) 38 Rainfall light Rain Wind direction S  
 Barometric pressure 29.83 Wind speed (mph) 4  
 Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs: \_\_\_\_\_

Site Plan showing sample location, buildings, landmarks, potential soil vapor and outdoor air sources, preferential pathways



VP-25 = DUP-1

Comments:

Start	VP-25	%O <sub>2</sub>	<u>00.4</u>	%CO <sub>2</sub>	<u>7.1%</u>	%CH <sub>4</sub>	<u>10.0%</u>
End	VP-25	%O <sub>2</sub>	<u>00.3</u>	%CO <sub>2</sub>	<u>7.1%</u>	%CH <sub>4</sub>	<u>10.3%</u>
Start	VP-2D	%O <sub>2</sub>		%CO <sub>2</sub>		%CH <sub>4</sub>	
End	VP-2D	%O <sub>2</sub>		%CO <sub>2</sub>		%CH <sub>4</sub>	

*Diurnal stopped*

*Drill ... on ... no ... to collect*

Bottle Vac

**Soil Vapor (Canister) Sample Collection Field Form**

Project # 72203  
 Project Name Hemphill Rd Date 5/6/19  
 Collector KSS

Sample ID	VP-1S	VP-1D	Vacuum gauge "zero" ("Hg)	VP-1S	VP-1D
Start Date/Time	5/6 1420	5/6	Start Pressure ("Hg)	-0.6	-
End Date/Time	5/6 1430	-	End Pressure ("Hg)	-2	-
Canister ID	18338	-	End pressure > "zero"?	yes	-
Flow controller ID	103	-	Sampling duration (intended)	-	-
Associated ambient air sample ID			Depth of sample point below grade		
Analytical method required			Laboratory used		

Tubing type used 3/8" Length of tubing 8' / 13' cm Tubing volume 5 / 25 cc  
 Volume purged 230 / 375 cc @ 0.1/min 1 to 3 volumes purged @ < 200cc/min? yes / yes  
 Chamber tracer gas conc. 36.9% / 7.8% Tracer gas conc. during purging 0 / 0  
 Gas Analyzer Readings %O<sub>2</sub> N/A %CO<sub>2</sub> N/A %CH<sub>4</sub> N/A PID/FID reading 114 / 0 (ppmv)  
 Noticeable odor NO Soil type clayey S.S

Weather Conditions during Probe Installation: Sampling  
 Air temperature (°F) 65 Rainfall NONE Wind direction W  
 Barometric pressure 29.98 Wind speed (mph) 7 mph  
 Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

Weather Conditions at Start of Sampling:  
 Air temperature (°F) \_\_\_\_\_ Rainfall \_\_\_\_\_ Wind direction \_\_\_\_\_  
 Barometric pressure \_\_\_\_\_ Wind speed (mph) \_\_\_\_\_  
 Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

**Site Plan** showing sample location, buildings, landmarks, potential soil vapor and outdoor air sources, preferential pathways

Comments: Water in line of VP-1D - NO SAMPLE  
VP-1S CH<sub>4</sub> 00.0 / CO<sub>2</sub> 00.2 / O<sub>2</sub> 19.8%  
CH<sub>4</sub> 00.0 CO<sub>2</sub> 00.2 O<sub>2</sub> 20.2%



Soil Vapor (Canister) Sample Collection Field Form

Project # 72203 Date 5/6/19
Project Name Hemphill Collector KBS

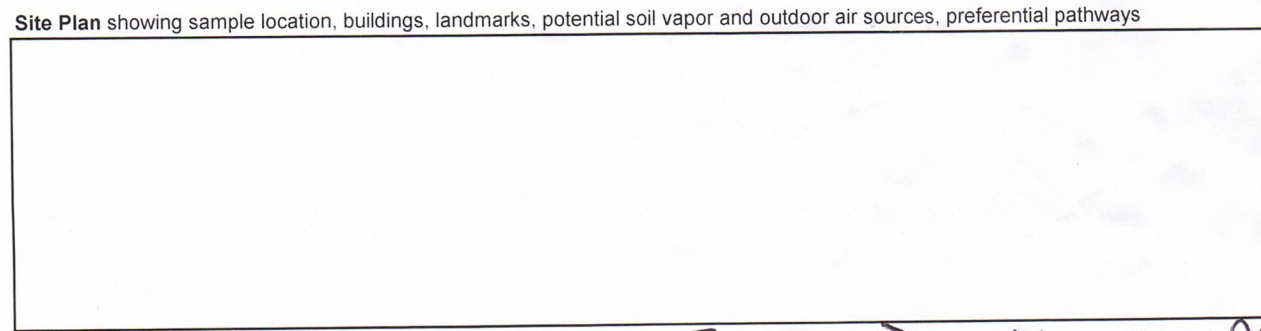
Sample ID VP-35 DUP-050619 Vacuum gauge "zero" ("Hg) VP-35 DUP
Start Date/Time 5/6 1503 5/6 1503 Start Pressure ("Hg) -29 -29
End Date/Time 1513 1513 End Pressure ("Hg) -3 -3
Canister ID 18323 13708 End pressure > "zero"? -2 -2
Flow controller ID 17 - Sampling duration (intended)
Associated ambient air sample ID Depth of sample point below grade
Analytical method required Laboratory used

Tubing type used 3/8 OD Length of tubing 8'13" cm Tubing volume 71 / 125 cc
Volume purged 230 / 375 cc @ 0.1 min 1 to 3 volumes purged @ < 200cc/min? yes
Chamber tracer gas conc. 41.2% / 325 ppm Tracer gas conc. during purging 0 / 0
Gas Analyzer Readings %O2 N/A %CO2 N/A %CH4 N/A PID/FID reading 7.3 (ppmv)
Noticeable odor NO Soil type 5.4

Weather Conditions during Probe Installation:
Air temperature (°F) 60 Rainfall Wind direction
Barometric pressure Wind speed (mph)
Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

Weather Conditions at Start of Sampling:
Air temperature (°F) 60 Rainfall NONE Wind direction W
Barometric pressure 29.98 Wind speed (mph) 8 MPH

Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:
Passing Rain shower 1500 - 1515



Comments: WATER IN LINE OF VP-3D - NO SAMPLE
CH4 00.0 / CO2 03.6% / 17.3%
CH4 00.0 CO2 3.6 0.2 13%



# Soil Vapor (Canister) Sample Collection Field Form

Project # 72203 Date 5/6/19

Project Name Hemphill Collector KBS

Sample ID VP-25

Start Date/Time 5/6/19 Vacuum gauge "zero" ("Hg) \_\_\_\_\_

End Date/Time 5/6/19 Start Pressure ("Hg) \_\_\_\_\_

Canister ID 18344 End Pressure ("Hg) \_\_\_\_\_

Flow controller ID 115 End pressure > "zero"? \_\_\_\_\_

Associated ambient air sample ID \_\_\_\_\_ Sampling duration (intended) \_\_\_\_\_

Analytical method required \_\_\_\_\_ Depth of sample point below grade \_\_\_\_\_

Laboratory used \_\_\_\_\_

Tubing type used \_\_\_\_\_ Length of tubing \_\_\_\_\_ cm Tubing volume \_\_\_\_\_ cc

Volume purged \_\_\_\_\_ cc @ \_\_\_\_\_ 1 to 3 volumes purged @ < 200cc/min? \_\_\_\_\_

Chamber tracer gas conc. 30% Tracer gas conc. during purging \_\_\_\_\_

Gas Analyzer Readings %O<sub>2</sub> N/A %CO<sub>2</sub> N/A %CH<sub>4</sub> N/A PID/FID reading \_\_\_\_\_ (ppmv)

Noticeable odor \_\_\_\_\_ Soil type \_\_\_\_\_

### Weather Conditions during Probe Installation:

Air temperature (°F) \_\_\_\_\_ Rainfall \_\_\_\_\_ Wind direction \_\_\_\_\_

Barometric pressure \_\_\_\_\_ Wind speed (mph) \_\_\_\_\_

Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

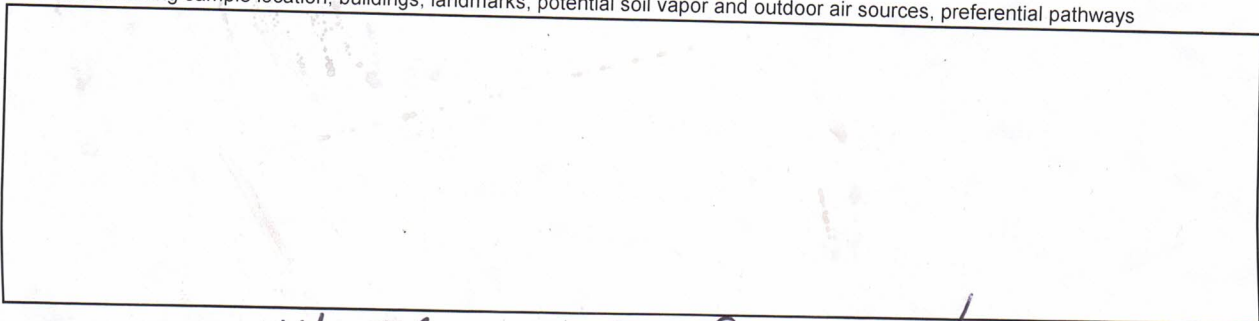
### Weather Conditions at Start of Sampling:

Air temperature (°F) \_\_\_\_\_ Rainfall \_\_\_\_\_ Wind direction \_\_\_\_\_

Barometric pressure \_\_\_\_\_ Wind speed (mph) \_\_\_\_\_

Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

Site Plan showing sample location, buildings, landmarks, potential soil vapor and outdoor air sources, preferential pathways



Comments: WATER IN LINE OF VP-25 / VP-2D



Soil Vapor (Bottle Vac®) Sample Collection Field Form

Project # 70203 Date 8/14/19  
 Project Name Hemp Hill Collector KBS

Sample ID	<u>VP-25</u>	<u>VP-20</u>	Vacuum gauge "zero" ("Hg)	<u>-2 VP-25</u>	<u>VP-20</u>
Start Date/Time	<u>1154</u>	<u>1156</u>	Start Pressure ("Hg)	<u>-28</u>	<u>-18</u>
End Date/Time	<u>1208</u>	<u>1003</u>	End Pressure ("Hg)	<u>-3</u>	<u>-2</u>
Bottle/Canister ID	<u>18359</u>	<u>18392</u>	End pressure = "zero"?	<u>yes</u>	<u>yes</u>
Flow controller ID	<u>141</u>	<u>24</u>	Sampling duration (intended)		
Associated ambient air sample ID	<u>N/A</u>		Depth of sample point below grade		
Analytical method required	<u>TO-15</u>		Laboratory used		

DUP-8/14/19  
 Canister  
 16843  
 -28  
 -3

DUP

Tubing type/inside dia. used 3/8 Length of tubing 8/13 cm Tubing volume 77/125 cc  
 Volume purged 230/375 cc @ 0.1 l/min (100cc/min) 3 volumes purged @ < 200cc/min? yes/yes  
 Shroud tracer gas conc. Beginning: 33.9 End of purging: 10.1 End of sampling: \_\_\_\_\_  
 Gas Analyzer Readings %O<sub>2</sub> N/A %CO<sub>2</sub> N/A %CH<sub>4</sub> N/A PID/FID reading 5.5 | 0.0 (ppmv)  
 Noticeable odor \_\_\_\_\_ Soil type 4.7

Weather Conditions during Probe Installation:  
 Air temperature (°F) \_\_\_\_\_ Rainfall \_\_\_\_\_ Wind direction \_\_\_\_\_  
 Barometric pressure \_\_\_\_\_ Wind speed (mph) \_\_\_\_\_  
 Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs: \_\_\_\_\_

Weather Conditions at Start of Sampling:  
 Air temperature (°F) 75 Rainfall NONE Wind direction ENE  
 Barometric pressure 29.96 Wind speed (mph) 7  
 Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs: \_\_\_\_\_

Site Plan showing sample location, buildings, landmarks, potential soil vapor and outdoor air sources, preferential pathways

Comments: DUP-081419 = VP-25

<u>VP-25</u>	<u>CH<sub>4</sub> 09.4</u>	<u>/ CO<sub>2</sub> 07.9</u>	<u>/ O<sub>2</sub> 00.0</u>
	<u>09.4</u>	<u>67.7</u>	<u>00.2</u>
<u>VP-20</u>	<u>CH<sub>4</sub> 00.0</u>	<u>/ CO<sub>2</sub> 07.2</u>	<u>/ O<sub>2</sub> 11.5</u>
	<u>00.0</u>	<u>04.5</u>	<u>15.6</u>



Soil Vapor (Bottle Vac®) Sample Collection Field Form

Project # 72203 Date 8/14/19
Project Name Hemphill Collector KBS

Sample ID VP-3S VP-3D Vacuum gauge "zero" ("Hg) yes VP-3S -2 VP-3D -2
Start Date/Time 1113 1116 Start Pressure ("Hg) -27 -28
End Date/Time 1121 1124 End Pressure ("Hg) -2 -3
Bottle/Canister ID 13733 12426 End pressure = "zero"? yes yes -2
Flow controller ID 177 1a1 Sampling duration (intended)
Associated ambient air sample ID N/A Depth of sample point below grade
Analytical method required TO-15 Laboratory used

Tubing type/inside dia. used 3/8" Length of tubing 8/13 cm Tubing volume 77/145 cc
Volume purged 230/275 cc @ 0.1 l/min (100cc/min) 3 volumes purged @ < 200cc/min? yes/yes
Shroud tracer gas conc. Beginning: 39.1 End of purging: End of sampling: 21.8
Gas Analyzer Readings %O2 N/A %CO2 N/A %CH4 N/A PID/FID reading 3.8 0.0 (ppmv)
Noticeable odor NONE Soil type 3c6 0.0

Weather Conditions during Probe Installation:
Air temperature (°F) Rainfall Wind direction
Barometric pressure Wind speed (mph)
Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

Weather Conditions at Start of Sampling:
Air temperature (°F) 75 Rainfall NONE Wind direction ENE
Barometric pressure 29.96 Wind speed (mph) 6
Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

Site Plan showing sample location, buildings, landmarks, potential soil vapor and outdoor air sources, preferential pathways

Comments:
VP-15 CH4 00.0 / CO2 29.0 / O2 10.8
2a) 00.0 09.0 11.1

VP-1D CH4 00.0 / CO2 08.0 / O2 00.7 possible water
00.0 08.3 00.0 in hole



Soil Vapor (Bottle Vac®) Sample Collection Field Form

Project # 73203 Date 8/14/19
Project Name Hemphill Rd Collector KBS

Table with columns for Sample ID (VP-15, VP-1D), Start/End Date/Time, Vacuum gauge "zero" ("Hg), Start/End Pressure ("Hg), Bottle/Canister ID, End pressure = "zero"?, Flow controller ID, Sampling duration (intended), Associated ambient air sample ID, Depth of sample point below grade, Analytical method required, TO-15, Laboratory used.

Tubing type/inside dia. used 3/8" OD Length of tubing 8' / 13' cm Tubing volume 77 / 125 cc
Volume purged 230 / 375 cc @ 0.1 l/min (100cc/min) 3 volumes purged @ < 200cc/min? Yes / Yes
Shroud tracer gas conc. Beginning: 52.3% End of purging: 23.9 End of sampling:
Gas Analyzer Readings %O2 N/A %CO2 N/A %CH4 N/A PID/FID reading 12.5 0.0 (ppmv)
Noticeable odor NONE Soil type clayey 9.1 -

Weather Conditions during Probe Installation:
Air temperature (°F) Rainfall Wind direction
Barometric pressure Wind speed (mph)
Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

Weather Conditions at Start of Sampling:
Air temperature (°F) 68 Rainfall NONE Wind direction NE
Barometric pressure 29.97 Wind speed (mph) 8 mph
Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

Site Plan showing sample location, buildings, landmarks, potential soil vapor and outdoor air sources, preferential pathways

Comments:
VP-15 CH4 0.00 / CO2 2.2 / O2 19.2
End 00.0 2.1 19.5
VP-1D CH4 / CO2 / O2
End

\* VP-1D water in line No Sample



**ATTACHMENT C**  
*Analytical Laboratory  
Reports*



# Analytical Laboratory Report

Report ID: S96056.01(01)  
Generated on 11/02/2018

## Report to

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Attention: Clifford Yantz  
O'Brien & Gere Engineers, Inc.  
2260 E Saginaw St  
East Lansing, MI 48823

Phone: 248-477-5701 FAX:  
Email: Clifford.Yantz@obg.com

## Report produced by

---

Merit Laboratories, Inc.  
2680 East Lansing Drive  
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:  
John Lavery (johnlavery@meritlabs.com)  
Barbara Ball (bball@meritlabs.com)

## Report Summary

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Lab Sample ID(s): S96056.01-S96056.07  
Project: RACER Hemphill Rd - VP  
Collected Date: 10/26/2018  
Submitted Date/Time: 10/26/2018 14:00  
Sampled by: Kevin Schneider  
P.O. #: PO

## Table of Contents

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Maya Murshak  
Technical Director



# Analytical Laboratory Report

## General Report Notes

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Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (\*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

## Report Narrative

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Sample .02 not run due to water in canister upon receipt



# Analytical Laboratory Report

## Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001

## Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

## Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



# Analytical Laboratory Report

## Method Summary

Method	Version
TO-15	EPA TO-15 Second Edition January 1999

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# Analytical Laboratory Report

## Sample Summary (7 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S96056.01	VP-1S	Air	10/26/18 09:52 - 10/26/18 10:03
S96056.02	VP-1D	Air	10/26/18 09:53 - 10/26/18 10:07
S96056.03	VP-2S	Air	10/26/18 10:49 - 10/26/18 10:58
S96056.04	VP-2D	Air	10/26/18 10:51 - 10/26/18 11:00
S96056.05	VP-3S	Air	10/26/18 11:41 - 10/26/18 12:02
S96056.06	VP-3D	Air	10/26/18 11:43 - 10/26/18 12:24
S96056.07	DUP-1	Air	10/26/18 00:01 - 10/26/18 00:02



# Analytical Laboratory Report

Lab Sample ID: S96056.01

Sample Tag: VP-1S

Collected Date/Time: 10/26/2018 09:52 - 10/26/2018 10:03

Matrix: Air

COC Reference: A01702

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Air Canister	None	No	RT	n/a

### Organics - Volatiles

TO-15, Method: TO-15, Run Date: 10/30/18 04:49, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	20		ppbv	10	67-64-1	
1,3-Butadiene	Not detected	2		ppbv	10	106-99-0	
Benzene	Not detected	2		ppbv	10	71-43-2	
Bromodichloromethane	Not detected	2		ppbv	10	75-27-4	
Bromoform	Not detected	2		ppbv	10	75-25-2	
Bromomethane	Not detected	2		ppbv	10	74-83-9	
Vinyl bromide	Not detected	2		ppbv	10	593-60-2	
Benzyl chloride	Not detected	2		ppbv	10	100-44-7	
Carbon disulfide	Not detected	5		ppbv	10	75-15-0	
Chlorobenzene	Not detected	2		ppbv	10	108-90-7	
Chloroethane	Not detected	2		ppbv	10	75-00-3	
Chloroform	Not detected	2		ppbv	10	67-66-3	
Chloromethane	Not detected	2		ppbv	10	74-87-3	
3-Chloropropene	Not detected	2		ppbv	10	107-05-1	
2-Chlorotoluene	Not detected	2		ppbv	10	95-49-8	
Carbon tetrachloride	Not detected	2		ppbv	10	56-23-5	
Cyclohexane	Not detected	2		ppbv	10	110-82-7	
1,1-Dichloroethane	Not detected	2		ppbv	10	75-34-3	
1,1-Dichloroethene	Not detected	2		ppbv	10	75-35-4	
1,2-Dibromoethane	Not detected	2		ppbv	10	106-93-4	
1,2-Dichloroethane	Not detected	2		ppbv	10	107-06-2	
1,2-Dichloropropane	Not detected	2		ppbv	10	78-87-5	
1,4-Dioxane	Not detected	25		ppbv	10	123-91-1	
Dichlorodifluoromethane	Not detected	2		ppbv	10	75-71-8	
Dibromochloromethane	Not detected	2		ppbv	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	2		ppbv	10	156-60-5	
cis-1,2-Dichloroethene	Not detected	2		ppbv	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	2		ppbv	10	541-73-1	
1,2-Dichlorobenzene	Not detected	2		ppbv	10	95-50-1	
1,4-Dichlorobenzene	Not detected	2		ppbv	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-02-6	
Ethanol*	Not detected	25		ppbv	10	64-17-5	
Ethylbenzene	Not detected	2		ppbv	10	100-41-4	
Ethyl Acetate*	Not detected	10		ppbv	10	141-78-6	
4-Ethyltoluene	Not detected	2		ppbv	10	622-96-8	
Freon 113	Not detected	2		ppbv	10	76-13-1	
Freon 114	Not detected	2		ppbv	10	76-14-2	
Heptane	Not detected	2		ppbv	10	142-82-5	
Hexachlorobutadiene	Not detected	2		ppbv	10	87-68-3	
Hexane	Not detected	2		ppbv	10	110-54-3	



# Analytical Laboratory Report

Lab Sample ID: S96056.01 (continued)

Sample Tag: VP-1S

**TO-15, Method: TO-15, Run Date: 10/30/18 04:49, Analyst: KAG (continued)**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
2-Hexanone*	Not detected	5		ppbv	10	591-78-6	
Isopropyl Alcohol*	Not detected	20		ppbv	10	67-63-0	
Methylene chloride	Not detected	5		ppbv	10	75-09-2	
2-Butanone (MEK)	Not detected	10		ppbv	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	5		ppbv	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	2		ppbv	10	1634-04-4	
Methyl methacrylate	Not detected	2		ppbv	10	80-62-6	
Naphthalene	Not detected	2		ppbv	10	91-20-3	
Propylene*	Not detected	2		ppbv	10	115-07-1	
Styrene	Not detected	2		ppbv	10	100-42-5	
1,1,1-Trichloroethane	Not detected	2		ppbv	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	2		ppbv	10	79-34-5	
1,1,2-Trichloroethane	Not detected	2		ppbv	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ppbv	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	2		ppbv	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	2		ppbv	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	2		ppbv	10	540-84-1	
Tert-butyl Alcohol	Not detected	10		ppbv	10	75-65-0	
Tetrachloroethene	Not detected	2		ppbv	10	127-18-4	
Tetrahydrofuran*	Not detected	2		ppbv	10	109-99-9	
Toluene	Not detected	2		ppbv	10	108-88-3	
Trichloroethene	Not detected	2		ppbv	10	79-01-6	
Trichlorofluoromethane	Not detected	2		ppbv	10	75-69-4	
Vinyl chloride	Not detected	2		ppbv	10	75-01-4	
Vinyl acetate	Not detected	2		ppbv	10	108-05-4	
p,m-Xylene	Not detected	4		ppbv	10		
o-Xylene	Not detected	2		ppbv	10	95-47-6	
Total Xylenes	Not detected	6		ppbv	10	1330-20-7	

**TO-15, Method: TO-15, Run Date: 10/30/18 04:49, Analyst: KAG**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	48		ug/m3	10	67-64-1	
1,3-Butadiene	Not detected	4.4		ug/m3	10	106-99-0	
Benzene	Not detected	6.4		ug/m3	10	71-43-2	
Bromodichloromethane	Not detected	13		ug/m3	10	75-27-4	
Bromoform	Not detected	21		ug/m3	10	75-25-2	
Bromomethane	Not detected	7.8		ug/m3	10	74-83-9	
Vinyl bromide	Not detected	8.7		ug/m3	10	593-60-2	
Benzyl chloride	Not detected	10		ug/m3	10	100-44-7	
Carbon disulfide	Not detected	16		ug/m3	10	75-15-0	
Chlorobenzene	Not detected	9.2		ug/m3	10	108-90-7	
Chloroethane	Not detected	5.3		ug/m3	10	75-00-3	
Chloroform	Not detected	9.8		ug/m3	10	67-66-3	
Chloromethane	Not detected	4.1		ug/m3	10	74-87-3	
3-Chloropropene	Not detected	6.3		ug/m3	10	107-05-1	
2-Chlorotoluene	Not detected	10		ug/m3	10	95-49-8	
Carbon tetrachloride	Not detected	13		ug/m3	10	56-23-5	
Cyclohexane	Not detected	6.9		ug/m3	10	110-82-7	
1,1-Dichloroethane	Not detected	8.1		ug/m3	10	75-34-3	
1,1-Dichloroethene	Not detected	7.9		ug/m3	10	75-35-4	



# Analytical Laboratory Report

Lab Sample ID: S96056.01 (continued)

Sample Tag: VP-1S

TO-15, Method: TO-15, Run Date: 10/30/18 04:49, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromoethane	Not detected	15		ug/m3	10	106-93-4	
1,2-Dichloroethane	Not detected	8.1		ug/m3	10	107-06-2	
1,2-Dichloropropane	Not detected	9.2		ug/m3	10	78-87-5	
1,4-Dioxane	Not detected	90		ug/m3	10	123-91-1	
Dichlorodifluoromethane	Not detected	9.9		ug/m3	10	75-71-8	
Dibromochloromethane	Not detected	17		ug/m3	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-60-5	
cis-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	12		ug/m3	10	541-73-1	
1,2-Dichlorobenzene	Not detected	12		ug/m3	10	95-50-1	
1,4-Dichlorobenzene	Not detected	12		ug/m3	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-02-6	
Ethanol*	Not detected	47		ug/m3	10	64-17-5	
Ethylbenzene	Not detected	8.7		ug/m3	10	100-41-4	
Ethyl Acetate*	Not detected	36		ug/m3	10	141-78-6	
4-Ethyltoluene	Not detected	9.8		ug/m3	10	622-96-8	
Freon 113	Not detected	15		ug/m3	10	76-13-1	
Freon 114	Not detected	14		ug/m3	10	76-14-2	
Heptane	Not detected	8.2		ug/m3	10	142-82-5	
Hexachlorobutadiene	Not detected	21		ug/m3	10	87-68-3	
Hexane	Not detected	7.0		ug/m3	10	110-54-3	
2-Hexanone*	Not detected	20		ug/m3	10	591-78-6	
Isopropyl Alcohol*	Not detected	49		ug/m3	10	67-63-0	
Methylene chloride	Not detected	17		ug/m3	10	75-09-2	
2-Butanone (MEK)	Not detected	29		ug/m3	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	20		ug/m3	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	7.2		ug/m3	10	1634-04-4	
Methyl methacrylate	Not detected	8.2		ug/m3	10	80-62-6	
Naphthalene	Not detected	10		ug/m3	10	91-20-3	
Propylene*	Not detected	3.4		ug/m3	10	115-07-1	
Styrene	Not detected	8.5		ug/m3	10	100-42-5	
1,1,1-Trichloroethane	Not detected	11		ug/m3	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	14		ug/m3	10	79-34-5	
1,1,2-Trichloroethane	Not detected	11		ug/m3	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	37		ug/m3	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	9.8		ug/m3	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	9.8		ug/m3	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	9.3		ug/m3	10	540-84-1	
Tert-butyl Alcohol	Not detected	30		ug/m3	10	75-65-0	
Tetrachloroethene	Not detected	14		ug/m3	10	127-18-4	
Tetrahydrofuran*	Not detected	5.9		ug/m3	10	109-99-9	
Toluene	Not detected	7.5		ug/m3	10	108-88-3	
Trichloroethene	Not detected	11		ug/m3	10	79-01-6	
Trichlorofluoromethane	Not detected	11		ug/m3	10	75-69-4	
Vinyl chloride	Not detected	5.1		ug/m3	10	75-01-4	
Vinyl acetate	Not detected	7.0		ug/m3	10	108-05-4	
p,m-Xylene	Not detected	17		ug/m3	10		
o-Xylene	Not detected	8.7		ug/m3	10	95-47-6	
Total Xylenes	Not detected	26		ug/m3	10	1330-20-7	



# Analytical Laboratory Report

Lab Sample ID: S96056.02

Sample Tag: VP-1D

Collected Date/Time: 10/26/2018 09:53 - 10/26/2018 10:07

Matrix: Air

COC Reference: A01702

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Air Canister	None	No	RT	n/a

**Other / Misc.**

**Method: , Run Date: 10/29/18 10:18, Analyst: SRS**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Hold until notified*	Completed				1		



# Analytical Laboratory Report

Lab Sample ID: S96056.03

Sample Tag: VP-2S

Collected Date/Time: 10/26/2018 10:49 - 10/26/2018 10:58

Matrix: Air

COC Reference: A01702

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Air Canister	None	No	RT	n/a

### Organics - Volatiles

TO-15, Method: TO-15, Run Date: 10/30/18 11:35, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	20		ppbv	10	67-64-1	
1,3-Butadiene	Not detected	2		ppbv	10	106-99-0	
Benzene	Not detected	2		ppbv	10	71-43-2	
Bromodichloromethane	Not detected	2		ppbv	10	75-27-4	
Bromoform	Not detected	2		ppbv	10	75-25-2	
Bromomethane	Not detected	2		ppbv	10	74-83-9	
Vinyl bromide	Not detected	2		ppbv	10	593-60-2	
Benzyl chloride	Not detected	2		ppbv	10	100-44-7	
Carbon disulfide	Not detected	5		ppbv	10	75-15-0	
Chlorobenzene	Not detected	2		ppbv	10	108-90-7	
Chloroethane	Not detected	2		ppbv	10	75-00-3	
Chloroform	Not detected	2		ppbv	10	67-66-3	
Chloromethane	Not detected	2		ppbv	10	74-87-3	
3-Chloropropene	Not detected	2		ppbv	10	107-05-1	
2-Chlorotoluene	Not detected	2		ppbv	10	95-49-8	
Carbon tetrachloride	Not detected	2		ppbv	10	56-23-5	
Cyclohexane	289	2		ppbv	10	110-82-7	
1,1-Dichloroethane	Not detected	2		ppbv	10	75-34-3	
1,1-Dichloroethene	Not detected	2		ppbv	10	75-35-4	
1,2-Dibromoethane	Not detected	2		ppbv	10	106-93-4	
1,2-Dichloroethane	Not detected	2		ppbv	10	107-06-2	
1,2-Dichloropropane	Not detected	2		ppbv	10	78-87-5	
1,4-Dioxane	Not detected	25		ppbv	10	123-91-1	
Dichlorodifluoromethane	Not detected	2		ppbv	10	75-71-8	
Dibromochloromethane	Not detected	2		ppbv	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	2		ppbv	10	156-60-5	
cis-1,2-Dichloroethene	23	2		ppbv	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	2		ppbv	10	541-73-1	
1,2-Dichlorobenzene	Not detected	2		ppbv	10	95-50-1	
1,4-Dichlorobenzene	Not detected	2		ppbv	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-02-6	
Ethanol*	Not detected	25		ppbv	10	64-17-5	
Ethylbenzene	Not detected	2		ppbv	10	100-41-4	
Ethyl Acetate*	Not detected	10		ppbv	10	141-78-6	
4-Ethyltoluene	Not detected	2		ppbv	10	622-96-8	
Freon 113	Not detected	2		ppbv	10	76-13-1	
Freon 114	Not detected	2		ppbv	10	76-14-2	
Heptane	Not detected	2		ppbv	10	142-82-5	
Hexachlorobutadiene	Not detected	2		ppbv	10	87-68-3	
Hexane	362	2		ppbv	10	110-54-3	



# Analytical Laboratory Report

Lab Sample ID: S96056.03 (continued)

Sample Tag: VP-2S

**TO-15, Method: TO-15, Run Date: 10/30/18 11:35, Analyst: KAG (continued)**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
2-Hexanone*	Not detected	5		ppbv	10	591-78-6	
Isopropyl Alcohol*	Not detected	20		ppbv	10	67-63-0	
Methylene chloride	Not detected	5		ppbv	10	75-09-2	
2-Butanone (MEK)	Not detected	10		ppbv	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	5		ppbv	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	2		ppbv	10	1634-04-4	
Methyl methacrylate	Not detected	2		ppbv	10	80-62-6	
Naphthalene	Not detected	2		ppbv	10	91-20-3	
Propylene*	Not detected	68		ppbv	10	115-07-1	X
Styrene	Not detected	2		ppbv	10	100-42-5	
1,1,1-Trichloroethane	Not detected	2		ppbv	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	2		ppbv	10	79-34-5	
1,1,2-Trichloroethane	Not detected	2		ppbv	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ppbv	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	2		ppbv	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	2		ppbv	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	13		ppbv	10	540-84-1	X
Tert-butyl Alcohol	Not detected	10		ppbv	10	75-65-0	
Tetrachloroethene	Not detected	2		ppbv	10	127-18-4	
Tetrahydrofuran*	Not detected	2		ppbv	10	109-99-9	
Toluene	Not detected	2		ppbv	10	108-88-3	
Trichloroethene	Not detected	2		ppbv	10	79-01-6	
Trichlorofluoromethane	Not detected	2		ppbv	10	75-69-4	
Vinyl chloride	51	2		ppbv	10	75-01-4	
Vinyl acetate	Not detected	2		ppbv	10	108-05-4	
p,m-Xylene	Not detected	4		ppbv	10		
o-Xylene	Not detected	2		ppbv	10	95-47-6	
Total Xylenes	Not detected	6		ppbv	10	1330-20-7	

**TO-15, Method: TO-15, Run Date: 10/30/18 11:35, Analyst: KAG**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	48		ug/m3	10	67-64-1	
1,3-Butadiene	Not detected	4.4		ug/m3	10	106-99-0	
Benzene	Not detected	6.4		ug/m3	10	71-43-2	
Bromodichloromethane	Not detected	13		ug/m3	10	75-27-4	
Bromoform	Not detected	21		ug/m3	10	75-25-2	
Bromomethane	Not detected	7.8		ug/m3	10	74-83-9	
Vinyl bromide	Not detected	8.7		ug/m3	10	593-60-2	
Benzyl chloride	Not detected	10		ug/m3	10	100-44-7	
Carbon disulfide	Not detected	16		ug/m3	10	75-15-0	
Chlorobenzene	Not detected	9.2		ug/m3	10	108-90-7	
Chloroethane	Not detected	5.3		ug/m3	10	75-00-3	
Chloroform	Not detected	9.8		ug/m3	10	67-66-3	
Chloromethane	Not detected	4.1		ug/m3	10	74-87-3	
3-Chloropropene	Not detected	6.3		ug/m3	10	107-05-1	
2-Chlorotoluene	Not detected	10		ug/m3	10	95-49-8	
Carbon tetrachloride	Not detected	13		ug/m3	10	56-23-5	
Cyclohexane	995	6.9		ug/m3	10	110-82-7	
1,1-Dichloroethane	Not detected	8.1		ug/m3	10	75-34-3	

X-Elevated reporting limit due to matrix interference



# Analytical Laboratory Report

Lab Sample ID: S96056.03 (continued)

Sample Tag: VP-2S

TO-15, Method: TO-15, Run Date: 10/30/18 11:35, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1-Dichloroethene	Not detected	7.9		ug/m3	10	75-35-4	
1,2-Dibromoethane	Not detected	15		ug/m3	10	106-93-4	
1,2-Dichloroethane	Not detected	8.1		ug/m3	10	107-06-2	
1,2-Dichloropropane	Not detected	9.2		ug/m3	10	78-87-5	
1,4-Dioxane	Not detected	90		ug/m3	10	123-91-1	
Dichlorodifluoromethane	Not detected	9.9		ug/m3	10	75-71-8	
Dibromochloromethane	Not detected	17		ug/m3	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-60-5	
cis-1,2-Dichloroethene	91	7.9		ug/m3	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	12		ug/m3	10	541-73-1	
1,2-Dichlorobenzene	Not detected	12		ug/m3	10	95-50-1	
1,4-Dichlorobenzene	Not detected	12		ug/m3	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-02-6	
Ethanol*	Not detected	47		ug/m3	10	64-17-5	
Ethylbenzene	Not detected	8.7		ug/m3	10	100-41-4	
Ethyl Acetate*	Not detected	36		ug/m3	10	141-78-6	
4-Ethyltoluene	Not detected	9.8		ug/m3	10	622-96-8	
Freon 113	Not detected	15		ug/m3	10	76-13-1	
Freon 114	Not detected	14		ug/m3	10	76-14-2	
Heptane	Not detected	8.2		ug/m3	10	142-82-5	
Hexachlorobutadiene	Not detected	21		ug/m3	10	87-68-3	
Hexane	1,280	7.0		ug/m3	10	110-54-3	
2-Hexanone*	Not detected	20		ug/m3	10	591-78-6	
Isopropyl Alcohol*	Not detected	49		ug/m3	10	67-63-0	
Methylene chloride	Not detected	17		ug/m3	10	75-09-2	
2-Butanone (MEK)	Not detected	29		ug/m3	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	20		ug/m3	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	7.2		ug/m3	10	1634-04-4	
Methyl methacrylate	Not detected	8.2		ug/m3	10	80-62-6	
Naphthalene	Not detected	10		ug/m3	10	91-20-3	
Propylene*	Not detected	120		ug/m3	10	115-07-1	X
Styrene	Not detected	8.5		ug/m3	10	100-42-5	
1,1,1-Trichloroethane	Not detected	11		ug/m3	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	14		ug/m3	10	79-34-5	
1,1,2-Trichloroethane	Not detected	11		ug/m3	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	37		ug/m3	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	9.8		ug/m3	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	9.8		ug/m3	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	61		ug/m3	10	540-84-1	X
Tert-butyl Alcohol	Not detected	30		ug/m3	10	75-65-0	
Tetrachloroethene	Not detected	14		ug/m3	10	127-18-4	
Tetrahydrofuran*	Not detected	5.9		ug/m3	10	109-99-9	
Toluene	Not detected	7.5		ug/m3	10	108-88-3	
Trichloroethene	Not detected	11		ug/m3	10	79-01-6	
Trichlorofluoromethane	Not detected	11		ug/m3	10	75-69-4	
Vinyl chloride	130	5.1		ug/m3	10	75-01-4	
Vinyl acetate	Not detected	7.0		ug/m3	10	108-05-4	
p,m-Xylene	Not detected	17		ug/m3	10		

X-Elevated reporting limit due to matrix interference



# Analytical Laboratory Report

Lab Sample ID: S96056.03 (continued)

Sample Tag: VP-2S

TO-15, Method: TO-15, Run Date: 10/30/18 11:35, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	Not detected	8.7		ug/m3	10	95-47-6	
Total Xylenes	Not detected	26		ug/m3	10	1330-20-7	



# Analytical Laboratory Report

Lab Sample ID: S96056.04

Sample Tag: VP-2D

Collected Date/Time: 10/26/2018 10:51 - 10/26/2018 11:00

Matrix: Air

COC Reference: A01702

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Air Canister	None	No	RT	n/a

### Organics - Volatiles

TO-15, Method: TO-15, Run Date: 10/30/18 05:20, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	20		ppbv	10	67-64-1	
1,3-Butadiene	Not detected	2		ppbv	10	106-99-0	
Benzene	Not detected	2		ppbv	10	71-43-2	
Bromodichloromethane	Not detected	2		ppbv	10	75-27-4	
Bromoform	Not detected	2		ppbv	10	75-25-2	
Bromomethane	Not detected	2		ppbv	10	74-83-9	
Vinyl bromide	Not detected	2		ppbv	10	593-60-2	
Benzyl chloride	Not detected	2		ppbv	10	100-44-7	
Carbon disulfide	Not detected	5		ppbv	10	75-15-0	
Chlorobenzene	Not detected	2		ppbv	10	108-90-7	
Chloroethane	Not detected	2		ppbv	10	75-00-3	
Chloroform	Not detected	2		ppbv	10	67-66-3	
Chloromethane	Not detected	2		ppbv	10	74-87-3	
3-Chloropropene	Not detected	2		ppbv	10	107-05-1	
2-Chlorotoluene	Not detected	2		ppbv	10	95-49-8	
Carbon tetrachloride	Not detected	2		ppbv	10	56-23-5	
Cyclohexane	43	2		ppbv	10	110-82-7	
1,1-Dichloroethane	Not detected	2		ppbv	10	75-34-3	
1,1-Dichloroethene	Not detected	2		ppbv	10	75-35-4	
1,2-Dibromoethane	Not detected	2		ppbv	10	106-93-4	
1,2-Dichloroethane	Not detected	2		ppbv	10	107-06-2	
1,2-Dichloropropane	Not detected	2		ppbv	10	78-87-5	
1,4-Dioxane	Not detected	25		ppbv	10	123-91-1	
Dichlorodifluoromethane	Not detected	2		ppbv	10	75-71-8	
Dibromochloromethane	Not detected	2		ppbv	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	2		ppbv	10	156-60-5	
cis-1,2-Dichloroethene	2	2		ppbv	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	2		ppbv	10	541-73-1	
1,2-Dichlorobenzene	Not detected	2		ppbv	10	95-50-1	
1,4-Dichlorobenzene	Not detected	2		ppbv	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-02-6	
Ethanol*	Not detected	25		ppbv	10	64-17-5	
Ethylbenzene	Not detected	2		ppbv	10	100-41-4	
Ethyl Acetate*	Not detected	10		ppbv	10	141-78-6	
4-Ethyltoluene	Not detected	2		ppbv	10	622-96-8	
Freon 113	Not detected	2		ppbv	10	76-13-1	
Freon 114	Not detected	2		ppbv	10	76-14-2	
Heptane	Not detected	2		ppbv	10	142-82-5	
Hexachlorobutadiene	Not detected	2		ppbv	10	87-68-3	
Hexane	21	2		ppbv	10	110-54-3	



# Analytical Laboratory Report

Lab Sample ID: S96056.04 (continued)

Sample Tag: VP-2D

**TO-15, Method: TO-15, Run Date: 10/30/18 05:20, Analyst: KAG (continued)**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
2-Hexanone*	Not detected	5		ppbv	10	591-78-6	
Isopropyl Alcohol*	Not detected	20		ppbv	10	67-63-0	
Methylene chloride	Not detected	5		ppbv	10	75-09-2	
2-Butanone (MEK)	Not detected	10		ppbv	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	5		ppbv	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	2		ppbv	10	1634-04-4	
Methyl methacrylate	Not detected	2		ppbv	10	80-62-6	
Naphthalene	Not detected	2		ppbv	10	91-20-3	
Propylene*	Not detected	2		ppbv	10	115-07-1	
Styrene	Not detected	2		ppbv	10	100-42-5	
1,1,1-Trichloroethane	Not detected	2		ppbv	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	2		ppbv	10	79-34-5	
1,1,2-Trichloroethane	Not detected	2		ppbv	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ppbv	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	2		ppbv	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	2		ppbv	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	4		ppbv	10	540-84-1	X
Tert-butyl Alcohol	Not detected	10		ppbv	10	75-65-0	
Tetrachloroethene	Not detected	2		ppbv	10	127-18-4	
Tetrahydrofuran*	Not detected	2		ppbv	10	109-99-9	
Toluene	Not detected	2		ppbv	10	108-88-3	
Trichloroethene	Not detected	2		ppbv	10	79-01-6	
Trichlorofluoromethane	Not detected	2		ppbv	10	75-69-4	
Vinyl chloride	3	2		ppbv	10	75-01-4	
Vinyl acetate	Not detected	2		ppbv	10	108-05-4	
p,m-Xylene	Not detected	4		ppbv	10		
o-Xylene	Not detected	2		ppbv	10	95-47-6	
Total Xylenes	Not detected	6		ppbv	10	1330-20-7	

**TO-15, Method: TO-15, Run Date: 10/30/18 05:20, Analyst: KAG**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	48		ug/m3	10	67-64-1	
1,3-Butadiene	Not detected	4.4		ug/m3	10	106-99-0	
Benzene	Not detected	6.4		ug/m3	10	71-43-2	
Bromodichloromethane	Not detected	13		ug/m3	10	75-27-4	
Bromoform	Not detected	21		ug/m3	10	75-25-2	
Bromomethane	Not detected	7.8		ug/m3	10	74-83-9	
Vinyl bromide	Not detected	8.7		ug/m3	10	593-60-2	
Benzyl chloride	Not detected	10		ug/m3	10	100-44-7	
Carbon disulfide	Not detected	16		ug/m3	10	75-15-0	
Chlorobenzene	Not detected	9.2		ug/m3	10	108-90-7	
Chloroethane	Not detected	5.3		ug/m3	10	75-00-3	
Chloroform	Not detected	9.8		ug/m3	10	67-66-3	
Chloromethane	Not detected	4.1		ug/m3	10	74-87-3	
3-Chloropropene	Not detected	6.3		ug/m3	10	107-05-1	
2-Chlorotoluene	Not detected	10		ug/m3	10	95-49-8	
Carbon tetrachloride	Not detected	13		ug/m3	10	56-23-5	
Cyclohexane	150	6.9		ug/m3	10	110-82-7	
1,1-Dichloroethane	Not detected	8.1		ug/m3	10	75-34-3	

X-Elevated reporting limit due to matrix interference



# Analytical Laboratory Report

Lab Sample ID: S96056.04 (continued)

Sample Tag: VP-2D

TO-15, Method: TO-15, Run Date: 10/30/18 05:20, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1-Dichloroethene	Not detected	7.9		ug/m3	10	75-35-4	
1,2-Dibromoethane	Not detected	15		ug/m3	10	106-93-4	
1,2-Dichloroethane	Not detected	8.1		ug/m3	10	107-06-2	
1,2-Dichloropropane	Not detected	9.2		ug/m3	10	78-87-5	
1,4-Dioxane	Not detected	90		ug/m3	10	123-91-1	
Dichlorodifluoromethane	Not detected	9.9		ug/m3	10	75-71-8	
Dibromochloromethane	Not detected	17		ug/m3	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-60-5	
cis-1,2-Dichloroethene	7.9	7.9		ug/m3	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	12		ug/m3	10	541-73-1	
1,2-Dichlorobenzene	Not detected	12		ug/m3	10	95-50-1	
1,4-Dichlorobenzene	Not detected	12		ug/m3	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-02-6	
Ethanol*	Not detected	47		ug/m3	10	64-17-5	
Ethylbenzene	Not detected	8.7		ug/m3	10	100-41-4	
Ethyl Acetate*	Not detected	36		ug/m3	10	141-78-6	
4-Ethyltoluene	Not detected	9.8		ug/m3	10	622-96-8	
Freon 113	Not detected	15		ug/m3	10	76-13-1	
Freon 114	Not detected	14		ug/m3	10	76-14-2	
Heptane	Not detected	8.2		ug/m3	10	142-82-5	
Hexachlorobutadiene	Not detected	21		ug/m3	10	87-68-3	
Hexane	74	7.0		ug/m3	10	110-54-3	
2-Hexanone*	Not detected	20		ug/m3	10	591-78-6	
Isopropyl Alcohol*	Not detected	49		ug/m3	10	67-63-0	
Methylene chloride	Not detected	17		ug/m3	10	75-09-2	
2-Butanone (MEK)	Not detected	29		ug/m3	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	20		ug/m3	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	7.2		ug/m3	10	1634-04-4	
Methyl methacrylate	Not detected	8.2		ug/m3	10	80-62-6	
Naphthalene	Not detected	10		ug/m3	10	91-20-3	
Propylene*	Not detected	3.4		ug/m3	10	115-07-1	
Styrene	Not detected	8.5		ug/m3	10	100-42-5	
1,1,1-Trichloroethane	Not detected	11		ug/m3	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	14		ug/m3	10	79-34-5	
1,1,2-Trichloroethane	Not detected	11		ug/m3	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	37		ug/m3	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	9.8		ug/m3	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	9.8		ug/m3	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	19		ug/m3	10	540-84-1	X
Tert-butyl Alcohol	Not detected	30		ug/m3	10	75-65-0	
Tetrachloroethene	Not detected	14		ug/m3	10	127-18-4	
Tetrahydrofuran*	Not detected	5.9		ug/m3	10	109-99-9	
Toluene	Not detected	7.5		ug/m3	10	108-88-3	
Trichloroethene	Not detected	11		ug/m3	10	79-01-6	
Trichlorofluoromethane	Not detected	11		ug/m3	10	75-69-4	
Vinyl chloride	7.7	5.1		ug/m3	10	75-01-4	
Vinyl acetate	Not detected	7.0		ug/m3	10	108-05-4	
p,m-Xylene	Not detected	17		ug/m3	10		

X-Elevated reporting limit due to matrix interference



# Analytical Laboratory Report

Lab Sample ID: S96056.04 (continued)

Sample Tag: VP-2D

TO-15, Method: TO-15, Run Date: 10/30/18 05:20, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	Not detected	8.7		ug/m3	10	95-47-6	
Total Xylenes	Not detected	26		ug/m3	10	1330-20-7	



# Analytical Laboratory Report

Lab Sample ID: S96056.05

Sample Tag: VP-3S

Collected Date/Time: 10/26/2018 11:41 - 10/26/2018 12:02

Matrix: Air

COC Reference: A01702

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Air Canister	None	No	RT	n/a

**Organics - Volatiles**

**TO-15, Method: TO-15, Run Date: 10/30/18 05:52, Analyst: KAG**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	20		ppbv	10	67-64-1	
1,3-Butadiene	Not detected	2		ppbv	10	106-99-0	
Benzene	Not detected	2		ppbv	10	71-43-2	
Bromodichloromethane	Not detected	2		ppbv	10	75-27-4	
Bromoform	Not detected	2		ppbv	10	75-25-2	
Bromomethane	Not detected	2		ppbv	10	74-83-9	
Vinyl bromide	Not detected	2		ppbv	10	593-60-2	
Benzyl chloride	Not detected	2		ppbv	10	100-44-7	
Carbon disulfide	Not detected	5		ppbv	10	75-15-0	
Chlorobenzene	Not detected	2		ppbv	10	108-90-7	
Chloroethane	Not detected	2		ppbv	10	75-00-3	
Chloroform	Not detected	2		ppbv	10	67-66-3	
Chloromethane	Not detected	2		ppbv	10	74-87-3	
3-Chloropropene	Not detected	2		ppbv	10	107-05-1	
2-Chlorotoluene	Not detected	2		ppbv	10	95-49-8	
Carbon tetrachloride	Not detected	2		ppbv	10	56-23-5	
Cyclohexane	51	2		ppbv	10	110-82-7	
1,1-Dichloroethane	Not detected	2		ppbv	10	75-34-3	
1,1-Dichloroethene	Not detected	2		ppbv	10	75-35-4	
1,2-Dibromoethane	Not detected	2		ppbv	10	106-93-4	
1,2-Dichloroethane	Not detected	2		ppbv	10	107-06-2	
1,2-Dichloropropane	Not detected	2		ppbv	10	78-87-5	
1,4-Dioxane	Not detected	25		ppbv	10	123-91-1	
Dichlorodifluoromethane	Not detected	2		ppbv	10	75-71-8	
Dibromochloromethane	Not detected	2		ppbv	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	2		ppbv	10	156-60-5	
cis-1,2-Dichloroethene	3	2		ppbv	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	2		ppbv	10	541-73-1	
1,2-Dichlorobenzene	Not detected	2		ppbv	10	95-50-1	
1,4-Dichlorobenzene	Not detected	2		ppbv	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-02-6	
Ethanol*	Not detected	25		ppbv	10	64-17-5	
Ethylbenzene	Not detected	2		ppbv	10	100-41-4	
Ethyl Acetate*	Not detected	10		ppbv	10	141-78-6	
4-Ethyltoluene	Not detected	2		ppbv	10	622-96-8	
Freon 113	Not detected	2		ppbv	10	76-13-1	
Freon 114	Not detected	2		ppbv	10	76-14-2	
Heptane	Not detected	2		ppbv	10	142-82-5	
Hexachlorobutadiene	Not detected	2		ppbv	10	87-68-3	
Hexane	37	2		ppbv	10	110-54-3	



# Analytical Laboratory Report

Lab Sample ID: S96056.05 (continued)

Sample Tag: VP-3S

**TO-15, Method: TO-15, Run Date: 10/30/18 05:52, Analyst: KAG (continued)**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
2-Hexanone*	Not detected	5		ppbv	10	591-78-6	
Isopropyl Alcohol*	Not detected	20		ppbv	10	67-63-0	
Methylene chloride	Not detected	5		ppbv	10	75-09-2	
2-Butanone (MEK)	Not detected	10		ppbv	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	5		ppbv	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	2		ppbv	10	1634-04-4	
Methyl methacrylate	Not detected	2		ppbv	10	80-62-6	
Naphthalene	Not detected	2		ppbv	10	91-20-3	
Propylene*	Not detected	2		ppbv	10	115-07-1	
Styrene	Not detected	2		ppbv	10	100-42-5	
1,1,1-Trichloroethane	Not detected	2		ppbv	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	2		ppbv	10	79-34-5	
1,1,2-Trichloroethane	Not detected	2		ppbv	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ppbv	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	2		ppbv	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	2		ppbv	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	4		ppbv	10	540-84-1	X
Tert-butyl Alcohol	Not detected	10		ppbv	10	75-65-0	
Tetrachloroethene	Not detected	2		ppbv	10	127-18-4	
Tetrahydrofuran*	Not detected	2		ppbv	10	109-99-9	
Toluene	Not detected	2		ppbv	10	108-88-3	
Trichloroethene	Not detected	2		ppbv	10	79-01-6	
Trichlorofluoromethane	Not detected	2		ppbv	10	75-69-4	
Vinyl chloride	Not detected	2		ppbv	10	75-01-4	
Vinyl acetate	Not detected	2		ppbv	10	108-05-4	
p,m-Xylene	Not detected	4		ppbv	10		
o-Xylene	Not detected	2		ppbv	10	95-47-6	
Total Xylenes	Not detected	6		ppbv	10	1330-20-7	

**TO-15, Method: TO-15, Run Date: 10/30/18 05:52, Analyst: KAG**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	48		ug/m3	10	67-64-1	
1,3-Butadiene	Not detected	4.4		ug/m3	10	106-99-0	
Benzene	Not detected	6.4		ug/m3	10	71-43-2	
Bromodichloromethane	Not detected	13		ug/m3	10	75-27-4	
Bromoform	Not detected	21		ug/m3	10	75-25-2	
Bromomethane	Not detected	7.8		ug/m3	10	74-83-9	
Vinyl bromide	Not detected	8.7		ug/m3	10	593-60-2	
Benzyl chloride	Not detected	10		ug/m3	10	100-44-7	
Carbon disulfide	Not detected	16		ug/m3	10	75-15-0	
Chlorobenzene	Not detected	9.2		ug/m3	10	108-90-7	
Chloroethane	Not detected	5.3		ug/m3	10	75-00-3	
Chloroform	Not detected	9.8		ug/m3	10	67-66-3	
Chloromethane	Not detected	4.1		ug/m3	10	74-87-3	
3-Chloropropene	Not detected	6.3		ug/m3	10	107-05-1	
2-Chlorotoluene	Not detected	10		ug/m3	10	95-49-8	
Carbon tetrachloride	Not detected	13		ug/m3	10	56-23-5	
Cyclohexane	180	6.9		ug/m3	10	110-82-7	
1,1-Dichloroethane	Not detected	8.1		ug/m3	10	75-34-3	

X-Elevated reporting limit due to matrix interference



# Analytical Laboratory Report

Lab Sample ID: S96056.05 (continued)

Sample Tag: VP-3S

TO-15, Method: TO-15, Run Date: 10/30/18 05:52, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1-Dichloroethene	Not detected	7.9		ug/m3	10	75-35-4	
1,2-Dibromoethane	Not detected	15		ug/m3	10	106-93-4	
1,2-Dichloroethane	Not detected	8.1		ug/m3	10	107-06-2	
1,2-Dichloropropane	Not detected	9.2		ug/m3	10	78-87-5	
1,4-Dioxane	Not detected	90		ug/m3	10	123-91-1	
Dichlorodifluoromethane	Not detected	9.9		ug/m3	10	75-71-8	
Dibromochloromethane	Not detected	17		ug/m3	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-60-5	
cis-1,2-Dichloroethene	12	7.9		ug/m3	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	12		ug/m3	10	541-73-1	
1,2-Dichlorobenzene	Not detected	12		ug/m3	10	95-50-1	
1,4-Dichlorobenzene	Not detected	12		ug/m3	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-02-6	
Ethanol*	Not detected	47		ug/m3	10	64-17-5	
Ethylbenzene	Not detected	8.7		ug/m3	10	100-41-4	
Ethyl Acetate*	Not detected	36		ug/m3	10	141-78-6	
4-Ethyltoluene	Not detected	9.8		ug/m3	10	622-96-8	
Freon 113	Not detected	15		ug/m3	10	76-13-1	
Freon 114	Not detected	14		ug/m3	10	76-14-2	
Heptane	Not detected	8.2		ug/m3	10	142-82-5	
Hexachlorobutadiene	Not detected	21		ug/m3	10	87-68-3	
Hexane	130	7.0		ug/m3	10	110-54-3	
2-Hexanone*	Not detected	20		ug/m3	10	591-78-6	
Isopropyl Alcohol*	Not detected	49		ug/m3	10	67-63-0	
Methylene chloride	Not detected	17		ug/m3	10	75-09-2	
2-Butanone (MEK)	Not detected	29		ug/m3	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	20		ug/m3	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	7.2		ug/m3	10	1634-04-4	
Methyl methacrylate	Not detected	8.2		ug/m3	10	80-62-6	
Naphthalene	Not detected	10		ug/m3	10	91-20-3	
Propylene*	Not detected	3.4		ug/m3	10	115-07-1	
Styrene	Not detected	8.5		ug/m3	10	100-42-5	
1,1,1-Trichloroethane	Not detected	11		ug/m3	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	14		ug/m3	10	79-34-5	
1,1,2-Trichloroethane	Not detected	11		ug/m3	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	37		ug/m3	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	9.8		ug/m3	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	9.8		ug/m3	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	19		ug/m3	10	540-84-1	X
Tert-butyl Alcohol	Not detected	30		ug/m3	10	75-65-0	
Tetrachloroethene	Not detected	14		ug/m3	10	127-18-4	
Tetrahydrofuran*	Not detected	5.9		ug/m3	10	109-99-9	
Toluene	Not detected	7.5		ug/m3	10	108-88-3	
Trichloroethene	Not detected	11		ug/m3	10	79-01-6	
Trichlorofluoromethane	Not detected	11		ug/m3	10	75-69-4	
Vinyl chloride	Not detected	5.1		ug/m3	10	75-01-4	
Vinyl acetate	Not detected	7.0		ug/m3	10	108-05-4	
p,m-Xylene	Not detected	17		ug/m3	10		

X-Elevated reporting limit due to matrix interference



# Analytical Laboratory Report

Lab Sample ID: S96056.05 (continued)

Sample Tag: VP-3S

TO-15, Method: TO-15, Run Date: 10/30/18 05:52, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	Not detected	8.7		ug/m3	10	95-47-6	
Total Xylenes	Not detected	26		ug/m3	10	1330-20-7	



# Analytical Laboratory Report

Lab Sample ID: S96056.06

Sample Tag: VP-3D

Collected Date/Time: 10/26/2018 11:43 - 10/26/2018 12:24

Matrix: Air

COC Reference: A01702

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Air Canister	None	No	RT	n/a

**Organics - Volatiles**

**TO-15, Method: TO-15, Run Date: 10/30/18 06:24, Analyst: KAG**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	20		ppbv	10	67-64-1	
1,3-Butadiene	Not detected	2		ppbv	10	106-99-0	
Benzene	Not detected	2		ppbv	10	71-43-2	
Bromodichloromethane	Not detected	2		ppbv	10	75-27-4	
Bromoform	Not detected	2		ppbv	10	75-25-2	
Bromomethane	Not detected	2		ppbv	10	74-83-9	
Vinyl bromide	Not detected	2		ppbv	10	593-60-2	
Benzyl chloride	Not detected	2		ppbv	10	100-44-7	
Carbon disulfide	Not detected	5		ppbv	10	75-15-0	
Chlorobenzene	Not detected	2		ppbv	10	108-90-7	
Chloroethane	Not detected	2		ppbv	10	75-00-3	
Chloroform	Not detected	2		ppbv	10	67-66-3	
Chloromethane	Not detected	2		ppbv	10	74-87-3	
3-Chloropropene	Not detected	2		ppbv	10	107-05-1	
2-Chlorotoluene	Not detected	2		ppbv	10	95-49-8	
Carbon tetrachloride	Not detected	2		ppbv	10	56-23-5	
Cyclohexane	11	2		ppbv	10	110-82-7	
1,1-Dichloroethane	Not detected	2		ppbv	10	75-34-3	
1,1-Dichloroethene	Not detected	2		ppbv	10	75-35-4	
1,2-Dibromoethane	Not detected	2		ppbv	10	106-93-4	
1,2-Dichloroethane	Not detected	2		ppbv	10	107-06-2	
1,2-Dichloropropane	Not detected	2		ppbv	10	78-87-5	
1,4-Dioxane	Not detected	25		ppbv	10	123-91-1	
Dichlorodifluoromethane	Not detected	2		ppbv	10	75-71-8	
Dibromochloromethane	Not detected	2		ppbv	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	2		ppbv	10	156-60-5	
cis-1,2-Dichloroethene	Not detected	2		ppbv	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	2		ppbv	10	541-73-1	
1,2-Dichlorobenzene	Not detected	2		ppbv	10	95-50-1	
1,4-Dichlorobenzene	Not detected	2		ppbv	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-02-6	
Ethanol*	Not detected	25		ppbv	10	64-17-5	
Ethylbenzene	Not detected	2		ppbv	10	100-41-4	
Ethyl Acetate*	Not detected	10		ppbv	10	141-78-6	
4-Ethyltoluene	Not detected	2		ppbv	10	622-96-8	
Freon 113	Not detected	2		ppbv	10	76-13-1	
Freon 114	Not detected	2		ppbv	10	76-14-2	
Heptane	Not detected	2		ppbv	10	142-82-5	
Hexachlorobutadiene	Not detected	2		ppbv	10	87-68-3	
Hexane	5	2		ppbv	10	110-54-3	



# Analytical Laboratory Report

Lab Sample ID: S96056.06 (continued)

Sample Tag: VP-3D

**TO-15, Method: TO-15, Run Date: 10/30/18 06:24, Analyst: KAG (continued)**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
2-Hexanone*	Not detected	5		ppbv	10	591-78-6	
Isopropyl Alcohol*	Not detected	20		ppbv	10	67-63-0	
Methylene chloride	Not detected	5		ppbv	10	75-09-2	
2-Butanone (MEK)	Not detected	10		ppbv	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	5		ppbv	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	2		ppbv	10	1634-04-4	
Methyl methacrylate	Not detected	2		ppbv	10	80-62-6	
Naphthalene	Not detected	2		ppbv	10	91-20-3	
Propylene*	Not detected	2		ppbv	10	115-07-1	
Styrene	Not detected	2		ppbv	10	100-42-5	
1,1,1-Trichloroethane	Not detected	2		ppbv	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	2		ppbv	10	79-34-5	
1,1,2-Trichloroethane	Not detected	2		ppbv	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ppbv	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	2		ppbv	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	2		ppbv	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	2		ppbv	10	540-84-1	
Tert-butyl Alcohol	Not detected	10		ppbv	10	75-65-0	
Tetrachloroethene	Not detected	2		ppbv	10	127-18-4	
Tetrahydrofuran*	Not detected	2		ppbv	10	109-99-9	
Toluene	Not detected	2		ppbv	10	108-88-3	
Trichloroethene	Not detected	2		ppbv	10	79-01-6	
Trichlorofluoromethane	Not detected	2		ppbv	10	75-69-4	
Vinyl chloride	Not detected	2		ppbv	10	75-01-4	
Vinyl acetate	Not detected	2		ppbv	10	108-05-4	
p,m-Xylene	Not detected	4		ppbv	10		
o-Xylene	Not detected	2		ppbv	10	95-47-6	
Total Xylenes	Not detected	6		ppbv	10	1330-20-7	

**TO-15, Method: TO-15, Run Date: 10/30/18 06:24, Analyst: KAG**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	48		ug/m3	10	67-64-1	
1,3-Butadiene	Not detected	4.4		ug/m3	10	106-99-0	
Benzene	Not detected	6.4		ug/m3	10	71-43-2	
Bromodichloromethane	Not detected	13		ug/m3	10	75-27-4	
Bromoform	Not detected	21		ug/m3	10	75-25-2	
Bromomethane	Not detected	7.8		ug/m3	10	74-83-9	
Vinyl bromide	Not detected	8.7		ug/m3	10	593-60-2	
Benzyl chloride	Not detected	10		ug/m3	10	100-44-7	
Carbon disulfide	Not detected	16		ug/m3	10	75-15-0	
Chlorobenzene	Not detected	9.2		ug/m3	10	108-90-7	
Chloroethane	Not detected	5.3		ug/m3	10	75-00-3	
Chloroform	Not detected	9.8		ug/m3	10	67-66-3	
Chloromethane	Not detected	4.1		ug/m3	10	74-87-3	
3-Chloropropene	Not detected	6.3		ug/m3	10	107-05-1	
2-Chlorotoluene	Not detected	10		ug/m3	10	95-49-8	
Carbon tetrachloride	Not detected	13		ug/m3	10	56-23-5	
Cyclohexane	38	6.9		ug/m3	10	110-82-7	
1,1-Dichloroethane	Not detected	8.1		ug/m3	10	75-34-3	
1,1-Dichloroethene	Not detected	7.9		ug/m3	10	75-35-4	



# Analytical Laboratory Report

Lab Sample ID: S96056.06 (continued)

Sample Tag: VP-3D

TO-15, Method: TO-15, Run Date: 10/30/18 06:24, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromoethane	Not detected	15		ug/m3	10	106-93-4	
1,2-Dichloroethane	Not detected	8.1		ug/m3	10	107-06-2	
1,2-Dichloropropane	Not detected	9.2		ug/m3	10	78-87-5	
1,4-Dioxane	Not detected	90		ug/m3	10	123-91-1	
Dichlorodifluoromethane	Not detected	9.9		ug/m3	10	75-71-8	
Dibromochloromethane	Not detected	17		ug/m3	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-60-5	
cis-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	12		ug/m3	10	541-73-1	
1,2-Dichlorobenzene	Not detected	12		ug/m3	10	95-50-1	
1,4-Dichlorobenzene	Not detected	12		ug/m3	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-02-6	
Ethanol*	Not detected	47		ug/m3	10	64-17-5	
Ethylbenzene	Not detected	8.7		ug/m3	10	100-41-4	
Ethyl Acetate*	Not detected	36		ug/m3	10	141-78-6	
4-Ethyltoluene	Not detected	9.8		ug/m3	10	622-96-8	
Freon 113	Not detected	15		ug/m3	10	76-13-1	
Freon 114	Not detected	14		ug/m3	10	76-14-2	
Heptane	Not detected	8.2		ug/m3	10	142-82-5	
Hexachlorobutadiene	Not detected	21		ug/m3	10	87-68-3	
Hexane	18	7.0		ug/m3	10	110-54-3	
2-Hexanone*	Not detected	20		ug/m3	10	591-78-6	
Isopropyl Alcohol*	Not detected	49		ug/m3	10	67-63-0	
Methylene chloride	Not detected	17		ug/m3	10	75-09-2	
2-Butanone (MEK)	Not detected	29		ug/m3	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	20		ug/m3	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	7.2		ug/m3	10	1634-04-4	
Methyl methacrylate	Not detected	8.2		ug/m3	10	80-62-6	
Naphthalene	Not detected	10		ug/m3	10	91-20-3	
Propylene*	Not detected	3.4		ug/m3	10	115-07-1	
Styrene	Not detected	8.5		ug/m3	10	100-42-5	
1,1,1-Trichloroethane	Not detected	11		ug/m3	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	14		ug/m3	10	79-34-5	
1,1,2-Trichloroethane	Not detected	11		ug/m3	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	37		ug/m3	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	9.8		ug/m3	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	9.8		ug/m3	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	9.3		ug/m3	10	540-84-1	
Tert-butyl Alcohol	Not detected	30		ug/m3	10	75-65-0	
Tetrachloroethene	Not detected	14		ug/m3	10	127-18-4	
Tetrahydrofuran*	Not detected	5.9		ug/m3	10	109-99-9	
Toluene	Not detected	7.5		ug/m3	10	108-88-3	
Trichloroethene	Not detected	11		ug/m3	10	79-01-6	
Trichlorofluoromethane	Not detected	11		ug/m3	10	75-69-4	
Vinyl chloride	Not detected	5.1		ug/m3	10	75-01-4	
Vinyl acetate	Not detected	7.0		ug/m3	10	108-05-4	
p,m-Xylene	Not detected	17		ug/m3	10		
o-Xylene	Not detected	8.7		ug/m3	10	95-47-6	
Total Xylenes	Not detected	26		ug/m3	10	1330-20-7	



# Analytical Laboratory Report

Lab Sample ID: S96056.07

Sample Tag: DUP-1

Collected Date/Time: 10/26/2018 00:01 - 10/26/2018 00:02

Matrix: Air

COC Reference: A01702

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Air Canister	None	No	RT	n/a

**Organics - Volatiles**

**TO-15, Method: TO-15, Run Date: 10/30/18 06:55, Analyst: KAG**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	20		ppbv	10	67-64-1	
1,3-Butadiene	Not detected	2		ppbv	10	106-99-0	
Benzene	Not detected	2		ppbv	10	71-43-2	
Bromodichloromethane	Not detected	2		ppbv	10	75-27-4	
Bromoform	Not detected	2		ppbv	10	75-25-2	
Bromomethane	Not detected	2		ppbv	10	74-83-9	
Vinyl bromide	Not detected	2		ppbv	10	593-60-2	
Benzyl chloride	Not detected	2		ppbv	10	100-44-7	
Carbon disulfide	Not detected	5		ppbv	10	75-15-0	
Chlorobenzene	Not detected	2		ppbv	10	108-90-7	
Chloroethane	Not detected	2		ppbv	10	75-00-3	
Chloroform	Not detected	2		ppbv	10	67-66-3	
Chloromethane	Not detected	2		ppbv	10	74-87-3	
3-Chloropropene	Not detected	2		ppbv	10	107-05-1	
2-Chlorotoluene	Not detected	2		ppbv	10	95-49-8	
Carbon tetrachloride	Not detected	2		ppbv	10	56-23-5	
Cyclohexane	56	2		ppbv	10	110-82-7	
1,1-Dichloroethane	Not detected	2		ppbv	10	75-34-3	
1,1-Dichloroethene	Not detected	2		ppbv	10	75-35-4	
1,2-Dibromoethane	Not detected	2		ppbv	10	106-93-4	
1,2-Dichloroethane	Not detected	2		ppbv	10	107-06-2	
1,2-Dichloropropane	Not detected	2		ppbv	10	78-87-5	
1,4-Dioxane	Not detected	25		ppbv	10	123-91-1	
Dichlorodifluoromethane	Not detected	2		ppbv	10	75-71-8	
Dibromochloromethane	Not detected	2		ppbv	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	2		ppbv	10	156-60-5	
cis-1,2-Dichloroethene	4	2		ppbv	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	2		ppbv	10	541-73-1	
1,2-Dichlorobenzene	Not detected	2		ppbv	10	95-50-1	
1,4-Dichlorobenzene	Not detected	2		ppbv	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-02-6	
Ethanol*	Not detected	25		ppbv	10	64-17-5	
Ethylbenzene	Not detected	2		ppbv	10	100-41-4	
Ethyl Acetate*	Not detected	10		ppbv	10	141-78-6	
4-Ethyltoluene	Not detected	2		ppbv	10	622-96-8	
Freon 113	Not detected	2		ppbv	10	76-13-1	
Freon 114	Not detected	2		ppbv	10	76-14-2	
Heptane	Not detected	2		ppbv	10	142-82-5	
Hexachlorobutadiene	Not detected	2		ppbv	10	87-68-3	
Hexane	39	2		ppbv	10	110-54-3	



# Analytical Laboratory Report

Lab Sample ID: S96056.07 (continued)

Sample Tag: DUP-1

**TO-15, Method: TO-15, Run Date: 10/30/18 06:55, Analyst: KAG (continued)**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
2-Hexanone*	Not detected	5		ppbv	10	591-78-6	
Isopropyl Alcohol*	Not detected	20		ppbv	10	67-63-0	
Methylene chloride	Not detected	5		ppbv	10	75-09-2	
2-Butanone (MEK)	Not detected	10		ppbv	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	5		ppbv	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	2		ppbv	10	1634-04-4	
Methyl methacrylate	Not detected	2		ppbv	10	80-62-6	
Naphthalene	Not detected	2		ppbv	10	91-20-3	
Propylene*	Not detected	2		ppbv	10	115-07-1	
Styrene	Not detected	2		ppbv	10	100-42-5	
1,1,1-Trichloroethane	Not detected	2		ppbv	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	2		ppbv	10	79-34-5	
1,1,2-Trichloroethane	Not detected	2		ppbv	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ppbv	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	2		ppbv	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	2		ppbv	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	4		ppbv	10	540-84-1	X
Tert-butyl Alcohol	Not detected	10		ppbv	10	75-65-0	
Tetrachloroethene	Not detected	2		ppbv	10	127-18-4	
Tetrahydrofuran*	Not detected	2		ppbv	10	109-99-9	
Toluene	Not detected	2		ppbv	10	108-88-3	
Trichloroethene	Not detected	2		ppbv	10	79-01-6	
Trichlorofluoromethane	Not detected	2		ppbv	10	75-69-4	
Vinyl chloride	Not detected	2		ppbv	10	75-01-4	
Vinyl acetate	Not detected	2		ppbv	10	108-05-4	
p,m-Xylene	Not detected	4		ppbv	10		
o-Xylene	Not detected	2		ppbv	10	95-47-6	
Total Xylenes	Not detected	6		ppbv	10	1330-20-7	

**TO-15, Method: TO-15, Run Date: 10/30/18 06:55, Analyst: KAG**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	48		ug/m3	10	67-64-1	
1,3-Butadiene	Not detected	4.4		ug/m3	10	106-99-0	
Benzene	Not detected	6.4		ug/m3	10	71-43-2	
Bromodichloromethane	Not detected	13		ug/m3	10	75-27-4	
Bromoform	Not detected	21		ug/m3	10	75-25-2	
Bromomethane	Not detected	7.8		ug/m3	10	74-83-9	
Vinyl bromide	Not detected	8.7		ug/m3	10	593-60-2	
Benzyl chloride	Not detected	10		ug/m3	10	100-44-7	
Carbon disulfide	Not detected	16		ug/m3	10	75-15-0	
Chlorobenzene	Not detected	9.2		ug/m3	10	108-90-7	
Chloroethane	Not detected	5.3		ug/m3	10	75-00-3	
Chloroform	Not detected	9.8		ug/m3	10	67-66-3	
Chloromethane	Not detected	4.1		ug/m3	10	74-87-3	
3-Chloropropene	Not detected	6.3		ug/m3	10	107-05-1	
2-Chlorotoluene	Not detected	10		ug/m3	10	95-49-8	
Carbon tetrachloride	Not detected	13		ug/m3	10	56-23-5	
Cyclohexane	190	6.9		ug/m3	10	110-82-7	
1,1-Dichloroethane	Not detected	8.1		ug/m3	10	75-34-3	

X-Elevated reporting limit due to matrix interference



# Analytical Laboratory Report

Lab Sample ID: S96056.07 (continued)

Sample Tag: DUP-1

TO-15, Method: TO-15, Run Date: 10/30/18 06:55, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1-Dichloroethene	Not detected	7.9		ug/m3	10	75-35-4	
1,2-Dibromoethane	Not detected	15		ug/m3	10	106-93-4	
1,2-Dichloroethane	Not detected	8.1		ug/m3	10	107-06-2	
1,2-Dichloropropane	Not detected	9.2		ug/m3	10	78-87-5	
1,4-Dioxane	Not detected	90		ug/m3	10	123-91-1	
Dichlorodifluoromethane	Not detected	9.9		ug/m3	10	75-71-8	
Dibromochloromethane	Not detected	17		ug/m3	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-60-5	
cis-1,2-Dichloroethene	16	7.9		ug/m3	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	12		ug/m3	10	541-73-1	
1,2-Dichlorobenzene	Not detected	12		ug/m3	10	95-50-1	
1,4-Dichlorobenzene	Not detected	12		ug/m3	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-02-6	
Ethanol*	Not detected	47		ug/m3	10	64-17-5	
Ethylbenzene	Not detected	8.7		ug/m3	10	100-41-4	
Ethyl Acetate*	Not detected	36		ug/m3	10	141-78-6	
4-Ethyltoluene	Not detected	9.8		ug/m3	10	622-96-8	
Freon 113	Not detected	15		ug/m3	10	76-13-1	
Freon 114	Not detected	14		ug/m3	10	76-14-2	
Heptane	Not detected	8.2		ug/m3	10	142-82-5	
Hexachlorobutadiene	Not detected	21		ug/m3	10	87-68-3	
Hexane	140	7.0		ug/m3	10	110-54-3	
2-Hexanone*	Not detected	20		ug/m3	10	591-78-6	
Isopropyl Alcohol*	Not detected	49		ug/m3	10	67-63-0	
Methylene chloride	Not detected	17		ug/m3	10	75-09-2	
2-Butanone (MEK)	Not detected	29		ug/m3	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	20		ug/m3	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	7.2		ug/m3	10	1634-04-4	
Methyl methacrylate	Not detected	8.2		ug/m3	10	80-62-6	
Naphthalene	Not detected	10		ug/m3	10	91-20-3	
Propylene*	Not detected	3.4		ug/m3	10	115-07-1	
Styrene	Not detected	8.5		ug/m3	10	100-42-5	
1,1,1-Trichloroethane	Not detected	11		ug/m3	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	14		ug/m3	10	79-34-5	
1,1,2-Trichloroethane	Not detected	11		ug/m3	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	37		ug/m3	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	9.8		ug/m3	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	9.8		ug/m3	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	19		ug/m3	10	540-84-1	X
Tert-butyl Alcohol	Not detected	30		ug/m3	10	75-65-0	
Tetrachloroethene	Not detected	14		ug/m3	10	127-18-4	
Tetrahydrofuran*	Not detected	5.9		ug/m3	10	109-99-9	
Toluene	Not detected	7.5		ug/m3	10	108-88-3	
Trichloroethene	Not detected	11		ug/m3	10	79-01-6	
Trichlorofluoromethane	Not detected	11		ug/m3	10	75-69-4	
Vinyl chloride	Not detected	5.1		ug/m3	10	75-01-4	
Vinyl acetate	Not detected	7.0		ug/m3	10	108-05-4	
p,m-Xylene	Not detected	17		ug/m3	10		

X-Elevated reporting limit due to matrix interference



# Analytical Laboratory Report

Lab Sample ID: S96056.07 (continued)

Sample Tag: DUP-1

TO-15, Method: TO-15, Run Date: 10/30/18 06:55, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	Not detected	8.7		ug/m3	10	95-47-6	
Total Xylenes	Not detected	26		ug/m3	10	1330-20-7	

# Merit Laboratories Login Checklist

Lab Set ID:S96056

Client:OBG02 (O'Brien & Gere Engineers, Inc.)

Project: RACER Hemphill Rd - VP

Submitted: 10/26/2018 14:00 Login User: SRS

Attention: Clifford Yantz

Address: O'Brien & Gere Engineers, Inc.  
2260 E Saginaw St  
East Lansing, MI 48823

Phone: 248-477-5701 FAX:

Email: Clifford.Yantz@obg.com

Selection	Description	Note
<b>Sample Receiving</b>		
01.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples are received at 4C +/- 2C Thermometer # RT
02.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Received on ice/ cooling process begun
03.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples shipped
04.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples left in 24 hr. drop box
05.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Are there custody seals/tape or is the drop box locked
<b>Chain of Custody</b>		
06.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC adequately filled out
07.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC signed and relinquished to the lab
08.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample tag on bottles match COC
09.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Subcontracting needed? Subcontracted to:
<b>Preservation</b>		
10.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Do sample have correct chemical preservation
11.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Completed pH checks on preserved samples? (no VOAs)
12.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Did any samples need to be preserved in the lab?
<b>Bottle Conditions</b>		
13.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	All bottles intact
14.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Appropriate analytical bottles are used
15.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Merit bottles used
16.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sufficient sample volume received
17.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples require laboratory filtration
18.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples submitted within holding time
19.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: \_\_\_\_\_ Date: \_\_\_\_\_



2680 East Lansing Dr., East Lansing, MI 48823  
 Phone (517) 332-0167 Fax (517) 332-4034  
 www.meritlabs.com

C.O.C. PAGE # 1 OF 1

A 01702

**REPORT TO**

**AIR/GAS SAMPLES CHAIN OF CUSTODY RECORD**

**INVOICE TO**

CONTACT NAME: Clifford Yantz  
 COMPANY: O'Brien & Gere  
 ADDRESS: 2260 East Saginaw  
 CITY: East Lansing STATE: MI ZIP CODE: 48823  
 PHONE NO.: 313-333-0211 FAX NO.: \_\_\_\_\_ P.O. NO.: \_\_\_\_\_  
 EMAIL ADDRESS: clifford.yantz@obg.com QUOTE NO.: \_\_\_\_\_

CONTACT NAME: X SAME  
 COMPANY: \_\_\_\_\_  
 ADDRESS: \_\_\_\_\_  
 CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP CODE: \_\_\_\_\_  
 PHONE NO.: \_\_\_\_\_ EMAIL ADDRESS: \_\_\_\_\_

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME: RACER Hemphill Rd - VP SAMPLER(S) - PLEASE PRINT/SIGN NAME: Kevin Schneider *[Signature]*  
 TURNAROUND TIME REQUIRED:  1 DAY  2 DAYS  3 DAYS  STANDARD  OTHER \_\_\_\_\_  
 DELIVERABLES REQUIRED:  LEVEL II  LEVEL III  LEVEL IV  EDD  OTHER \_\_\_\_\_

Certifications  
 OHIO VAP  NELAP  
 DoD  NPDES

Sample Type					Analyses	
Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (specify in notes)	TO-15	Other (specify in notes)
		X			X	
		X			X	
		X			X	
		X			X	
		X			X	
		X			X	
		X			X	

MERIT LAB NO. FOR LAB USE ONLY	SAMPLE TAG IDENTIFICATION-DESCRIPTION	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID
<u>9100516.01</u>	<u>VP-1S</u>	<u>10/26/18</u>	<u>952</u>	<u>1003</u>	<u>-27</u>	<u>-2</u>	<u>48</u>	<u>13728</u>
<u>.02</u>	<u>* VP-1D</u>	↓	<u>953</u>	<u>1007</u>	<u>-26</u>	<u>-25</u>	<u>1</u>	<u>18386</u>
<u>.03</u>	<u>VP-2S</u>		<u>1049</u>	<u>1058</u>	<u>-26</u>	<u>-2</u>	<u>5</u>	<u>16825</u>
<u>.04</u>	<u>VP-2D</u>		<u>1051</u>	<u>1106</u>	<u>-25</u>	<u>-2</u>	<u>102</u>	<u>18334</u>
<u>.05</u>	<u>VP-3S</u>		<u>1141</u>	<u>1202</u>	<u>-24</u>	<u>-4.5</u>	<u>10</u>	<u>16835</u>
<u>.06</u>	<u>VP-3D</u>		<u>1143</u>	<u>1224</u>	<u>-28</u>	<u>-3</u>	<u>18</u>	<u>18325</u>
<u>.07</u>	<u>DUP-1</u>		<u>-</u>	<u>-</u>	<u>-24</u>	<u>-4.5</u>	<u>N/A</u>	<u>23692</u>

Temperature (Fahrenheit)			Pressure (inches of Hg)		
Interior	Ambient	Notes	Interior	Ambient	Notes
	<u>41 °F</u>			<u>29.97 in</u>	
	<u>45 °F</u>			<u>29.98 in</u>	

Notes: \* stalled - water in line

RELINQUISHED BY: [Signature] OBG \*Sampler DATE: 10/26/18 TIME: 1233  
 RECEIVED BY: [Signature] DATE: 10/26/18 TIME: 12:33  
 RELINQUISHED BY: [Signature] DATE: 10/26/18 TIME: 14:00  
 RECEIVED BY: [Signature] DATE: 10/26/18 TIME: 1400

RELINQUISHED BY: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_  
 RECEIVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_  
 SEAL NO. SEAL INTACT YES  NO  INITIALS \_\_\_\_\_ NOTES: PT TEMP. ON ARRIVAL \_\_\_\_\_  
 SEAL NO. SEAL INTACT YES  NO  INITIALS \_\_\_\_\_



# Analytical Laboratory Report

Report ID: S98039.01(01)  
Generated on 01/02/2019

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**Report to**

Attention: Clifford Yantz  
O'Brien & Gere Engineers, Inc.  
2260 E Saginaw St  
East Lansing, MI 48823

Phone: 248-477-5701 FAX:  
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---

**Report produced by**

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John Lavery (johnlavery@meritlabs.com)  
Barbara Ball (bball@meritlabs.com)

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**Report Summary**

Lab Sample ID(s): S98039.01-S98039.07  
Project: RACER Hemphill Rd - VP  
Collected Date: 12/20/2018  
Submitted Date/Time: 12/20/2018 15:50  
Sampled by: Kevin Schneider  
P.O. #: 11800626

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Maya Murshak  
Technical Director



# Analytical Laboratory Report

## General Report Notes

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Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (\*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

## Report Narrative

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There is no additional narrative for this analytical report



# Analytical Laboratory Report

## Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001

## Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

## Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



# Analytical Laboratory Report

## Method Summary

Method	Version
TO-15	EPA TO-15 Second Edition January 1999

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# Analytical Laboratory Report

## Sample Summary (7 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S98039.01	VP-1S	Air	12/20/18 10:11 - 12/20/18 10:22
S98039.02	VP-1D	Air	12/20/18 10:12 - 12/20/18 10:25
S98039.03	VP-2S	Air	12/20/18 11:17 - 12/20/18 11:34
S98039.04	VP-2D	Air	12/20/18 11:18 - 12/20/18 11:38
S98039.05	VP-3S	Air	12/20/18 12:23 - 12/20/18 12:32
S98039.06	VP-3D	Air	12/20/18 12:24 - 12/20/18 12:41
S98039.07	DUP-1	Air	12/20/18 00:01 - 12/20/18 00:02



# Analytical Laboratory Report

Lab Sample ID: S98039.01

Sample Tag: VP-1S

Collected Date/Time: 12/20/2018 10:11 - 12/20/2018 10:22

Matrix: Air

COC Reference: A01761

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Air Canister	None	No	RT	n/a

### Organics - Volatiles

TO-15, Method: TO-15, Run Date: 12/21/18 16:20, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	20		ppbv	10	67-64-1	
1,3-Butadiene	Not detected	2		ppbv	10	106-99-0	
Benzene	Not detected	2		ppbv	10	71-43-2	
Bromodichloromethane	Not detected	2		ppbv	10	75-27-4	
Bromoform	Not detected	2		ppbv	10	75-25-2	
Bromomethane	Not detected	2		ppbv	10	74-83-9	
Vinyl bromide	Not detected	2		ppbv	10	593-60-2	
Benzyl chloride	Not detected	2		ppbv	10	100-44-7	
Carbon disulfide	Not detected	5		ppbv	10	75-15-0	
Chlorobenzene	Not detected	2		ppbv	10	108-90-7	
Chloroethane	Not detected	2		ppbv	10	75-00-3	
Chloroform	Not detected	2		ppbv	10	67-66-3	
Chloromethane	Not detected	2		ppbv	10	74-87-3	
3-Chloropropene	Not detected	2		ppbv	10	107-05-1	
2-Chlorotoluene	Not detected	2		ppbv	10	95-49-8	
Carbon tetrachloride	Not detected	2		ppbv	10	56-23-5	
Cyclohexane	Not detected	2		ppbv	10	110-82-7	
1,1-Dichloroethane	Not detected	2		ppbv	10	75-34-3	
1,1-Dichloroethene	Not detected	2		ppbv	10	75-35-4	
1,2-Dibromoethane	Not detected	2		ppbv	10	106-93-4	
1,2-Dichloroethane	Not detected	2		ppbv	10	107-06-2	
1,2-Dichloropropane	Not detected	2		ppbv	10	78-87-5	
1,4-Dioxane	Not detected	25		ppbv	10	123-91-1	
Dichlorodifluoromethane	Not detected	2		ppbv	10	75-71-8	
Dibromochloromethane	Not detected	2		ppbv	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	2		ppbv	10	156-60-5	
cis-1,2-Dichloroethene	Not detected	2		ppbv	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	2		ppbv	10	541-73-1	
1,2-Dichlorobenzene	Not detected	2		ppbv	10	95-50-1	
1,4-Dichlorobenzene	Not detected	2		ppbv	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-02-6	
Ethanol*	27	25		ppbv	10	64-17-5	
Ethylbenzene	Not detected	2		ppbv	10	100-41-4	
Ethyl Acetate*	Not detected	10		ppbv	10	141-78-6	
4-Ethyltoluene	Not detected	2		ppbv	10	622-96-8	
Freon 113	Not detected	2		ppbv	10	76-13-1	
Freon 114	Not detected	2		ppbv	10	76-14-2	
Heptane	Not detected	2		ppbv	10	142-82-5	
Hexachlorobutadiene	Not detected	2		ppbv	10	87-68-3	
Hexane	2	2		ppbv	10	110-54-3	



# Analytical Laboratory Report

Lab Sample ID: S98039.01 (continued)

Sample Tag: VP-1S

**TO-15, Method: TO-15, Run Date: 12/21/18 16:20, Analyst: KAG (continued)**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
2-Hexanone*	Not detected	5		ppbv	10	591-78-6	
Isopropyl Alcohol*	Not detected	20		ppbv	10	67-63-0	
Methylene chloride	Not detected	5		ppbv	10	75-09-2	
2-Butanone (MEK)	Not detected	10		ppbv	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	5		ppbv	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	2		ppbv	10	1634-04-4	
Methyl methacrylate	Not detected	2		ppbv	10	80-62-6	
Naphthalene	Not detected	2		ppbv	10	91-20-3	
Propylene*	Not detected	2		ppbv	10	115-07-1	
Styrene	Not detected	2		ppbv	10	100-42-5	
1,1,1-Trichloroethane	Not detected	2		ppbv	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	2		ppbv	10	79-34-5	
1,1,2-Trichloroethane	Not detected	2		ppbv	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ppbv	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	2		ppbv	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	2		ppbv	10	108-67-8	
2,2,4-Trimethylpentane	3	2		ppbv	10	540-84-1	
Tert-butyl Alcohol	Not detected	10		ppbv	10	75-65-0	
Tetrachloroethene	Not detected	2		ppbv	10	127-18-4	
Tetrahydrofuran*	11	2		ppbv	10	109-99-9	
Toluene	18	2		ppbv	10	108-88-3	
Trichloroethene	Not detected	2		ppbv	10	79-01-6	
Trichlorofluoromethane	Not detected	2		ppbv	10	75-69-4	
Vinyl chloride	Not detected	2		ppbv	10	75-01-4	
Vinyl acetate	Not detected	2		ppbv	10	108-05-4	
p,m-Xylene	7	4		ppbv	10		
o-Xylene	2	2		ppbv	10	95-47-6	
Total Xylenes	9	6		ppbv	10	1330-20-7	

**TO-15, Method: TO-15, Run Date: 12/21/18 16:20, Analyst: KAG**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	48		ug/m3	10	67-64-1	
1,3-Butadiene	Not detected	4.4		ug/m3	10	106-99-0	
Benzene	Not detected	6.4		ug/m3	10	71-43-2	
Bromodichloromethane	Not detected	13		ug/m3	10	75-27-4	
Bromoform	Not detected	21		ug/m3	10	75-25-2	
Bromomethane	Not detected	7.8		ug/m3	10	74-83-9	
Vinyl bromide	Not detected	8.7		ug/m3	10	593-60-2	
Benzyl chloride	Not detected	10		ug/m3	10	100-44-7	
Carbon disulfide	Not detected	16		ug/m3	10	75-15-0	
Chlorobenzene	Not detected	9.2		ug/m3	10	108-90-7	
Chloroethane	Not detected	5.3		ug/m3	10	75-00-3	
Chloroform	Not detected	9.8		ug/m3	10	67-66-3	
Chloromethane	Not detected	4.1		ug/m3	10	74-87-3	
3-Chloropropene	Not detected	6.3		ug/m3	10	107-05-1	
2-Chlorotoluene	Not detected	10		ug/m3	10	95-49-8	
Carbon tetrachloride	Not detected	13		ug/m3	10	56-23-5	
Cyclohexane	Not detected	6.9		ug/m3	10	110-82-7	
1,1-Dichloroethane	Not detected	8.1		ug/m3	10	75-34-3	
1,1-Dichloroethene	Not detected	7.9		ug/m3	10	75-35-4	



# Analytical Laboratory Report

Lab Sample ID: S98039.01 (continued)

Sample Tag: VP-1S

TO-15, Method: TO-15, Run Date: 12/21/18 16:20, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromoethane	Not detected	15		ug/m3	10	106-93-4	
1,2-Dichloroethane	Not detected	8.1		ug/m3	10	107-06-2	
1,2-Dichloropropane	Not detected	9.2		ug/m3	10	78-87-5	
1,4-Dioxane	Not detected	90		ug/m3	10	123-91-1	
Dichlorodifluoromethane	Not detected	9.9		ug/m3	10	75-71-8	
Dibromochloromethane	Not detected	17		ug/m3	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-60-5	
cis-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	12		ug/m3	10	541-73-1	
1,2-Dichlorobenzene	Not detected	12		ug/m3	10	95-50-1	
1,4-Dichlorobenzene	Not detected	12		ug/m3	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-02-6	
Ethanol*	51	47		ug/m3	10	64-17-5	
Ethylbenzene	Not detected	8.7		ug/m3	10	100-41-4	
Ethyl Acetate*	Not detected	36		ug/m3	10	141-78-6	
4-Ethyltoluene	Not detected	9.8		ug/m3	10	622-96-8	
Freon 113	Not detected	15		ug/m3	10	76-13-1	
Freon 114	Not detected	14		ug/m3	10	76-14-2	
Heptane	Not detected	8.2		ug/m3	10	142-82-5	
Hexachlorobutadiene	Not detected	21		ug/m3	10	87-68-3	
Hexane	7.0	7.0		ug/m3	10	110-54-3	
2-Hexanone*	Not detected	20		ug/m3	10	591-78-6	
Isopropyl Alcohol*	Not detected	49		ug/m3	10	67-63-0	
Methylene chloride	Not detected	17		ug/m3	10	75-09-2	
2-Butanone (MEK)	Not detected	29		ug/m3	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	20		ug/m3	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	7.2		ug/m3	10	1634-04-4	
Methyl methacrylate	Not detected	8.2		ug/m3	10	80-62-6	
Naphthalene	Not detected	10		ug/m3	10	91-20-3	
Propylene*	Not detected	3.4		ug/m3	10	115-07-1	
Styrene	Not detected	8.5		ug/m3	10	100-42-5	
1,1,1-Trichloroethane	Not detected	11		ug/m3	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	14		ug/m3	10	79-34-5	
1,1,2-Trichloroethane	Not detected	11		ug/m3	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	37		ug/m3	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	9.8		ug/m3	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	9.8		ug/m3	10	108-67-8	
2,2,4-Trimethylpentane	14	9.3		ug/m3	10	540-84-1	
Tert-butyl Alcohol	Not detected	30		ug/m3	10	75-65-0	
Tetrachloroethene	Not detected	14		ug/m3	10	127-18-4	
Tetrahydrofuran*	32	5.9		ug/m3	10	109-99-9	
Toluene	68	7.5		ug/m3	10	108-88-3	
Trichloroethene	Not detected	11		ug/m3	10	79-01-6	
Trichlorofluoromethane	Not detected	11		ug/m3	10	75-69-4	
Vinyl chloride	Not detected	5.1		ug/m3	10	75-01-4	
Vinyl acetate	Not detected	7.0		ug/m3	10	108-05-4	
p,m-Xylene	30	17		ug/m3	10		
o-Xylene	8.7	8.7		ug/m3	10	95-47-6	
Total Xylenes	39	26		ug/m3	10	1330-20-7	



# Analytical Laboratory Report

Lab Sample ID: S98039.02

Sample Tag: VP-1D

Collected Date/Time: 12/20/2018 10:12 - 12/20/2018 10:25

Matrix: Air

COC Reference: A01761

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Air Canister	None	No	RT	n/a

**Other / Misc.**

**Method: , Run Date: 12/26/18 18:18, Analyst: JAL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Hold until notified*	Completed				1		



# Analytical Laboratory Report

Lab Sample ID: S98039.03

Sample Tag: VP-2S

Collected Date/Time: 12/20/2018 11:17 - 12/20/2018 11:34

Matrix: Air

COC Reference: A01761

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Air Canister	None	No	RT	n/a

### Organics - Volatiles

TO-15, Method: TO-15, Run Date: 12/21/18 16:51, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	20		ppbv	10	67-64-1	
1,3-Butadiene	Not detected	2		ppbv	10	106-99-0	
Benzene	Not detected	2		ppbv	10	71-43-2	
Bromodichloromethane	Not detected	2		ppbv	10	75-27-4	
Bromoform	Not detected	2		ppbv	10	75-25-2	
Bromomethane	Not detected	2		ppbv	10	74-83-9	
Vinyl bromide	Not detected	2		ppbv	10	593-60-2	
Benzyl chloride	Not detected	2		ppbv	10	100-44-7	
Carbon disulfide	Not detected	5		ppbv	10	75-15-0	
Chlorobenzene	Not detected	2		ppbv	10	108-90-7	
Chloroethane	Not detected	2		ppbv	10	75-00-3	
Chloroform	Not detected	2		ppbv	10	67-66-3	
Chloromethane	Not detected	2		ppbv	10	74-87-3	
3-Chloropropene	Not detected	2		ppbv	10	107-05-1	
2-Chlorotoluene	Not detected	2		ppbv	10	95-49-8	
Carbon tetrachloride	Not detected	2		ppbv	10	56-23-5	
Cyclohexane	356	2		ppbv	10	110-82-7	
1,1-Dichloroethane	Not detected	2		ppbv	10	75-34-3	
1,1-Dichloroethene	Not detected	2		ppbv	10	75-35-4	
1,2-Dibromoethane	Not detected	2		ppbv	10	106-93-4	
1,2-Dichloroethane	Not detected	2		ppbv	10	107-06-2	
1,2-Dichloropropane	Not detected	2		ppbv	10	78-87-5	
1,4-Dioxane	Not detected	25		ppbv	10	123-91-1	
Dichlorodifluoromethane	Not detected	2		ppbv	10	75-71-8	
Dibromochloromethane	Not detected	2		ppbv	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	2		ppbv	10	156-60-5	
cis-1,2-Dichloroethene	8	2		ppbv	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	2		ppbv	10	541-73-1	
1,2-Dichlorobenzene	Not detected	2		ppbv	10	95-50-1	
1,4-Dichlorobenzene	Not detected	2		ppbv	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-02-6	
Ethanol*	Not detected	25		ppbv	10	64-17-5	
Ethylbenzene	Not detected	2		ppbv	10	100-41-4	
Ethyl Acetate*	Not detected	10		ppbv	10	141-78-6	
4-Ethyltoluene	Not detected	2		ppbv	10	622-96-8	
Freon 113	Not detected	2		ppbv	10	76-13-1	
Freon 114	Not detected	2		ppbv	10	76-14-2	
Heptane	2	2		ppbv	10	142-82-5	
Hexachlorobutadiene	Not detected	2		ppbv	10	87-68-3	
Hexane	390	2		ppbv	10	110-54-3	



# Analytical Laboratory Report

Lab Sample ID: S98039.03 (continued)

Sample Tag: VP-2S

**TO-15, Method: TO-15, Run Date: 12/21/18 16:51, Analyst: KAG (continued)**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
2-Hexanone*	Not detected	5		ppbv	10	591-78-6	
Isopropyl Alcohol*	Not detected	20		ppbv	10	67-63-0	
Methylene chloride	Not detected	5		ppbv	10	75-09-2	
2-Butanone (MEK)	Not detected	10		ppbv	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	5		ppbv	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	2		ppbv	10	1634-04-4	
Methyl methacrylate	Not detected	2		ppbv	10	80-62-6	
Naphthalene	Not detected	2		ppbv	10	91-20-3	
Propylene*	Not detected	5		ppbv	10	115-07-1	X
Styrene	Not detected	2		ppbv	10	100-42-5	
1,1,1-Trichloroethane	Not detected	2		ppbv	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	2		ppbv	10	79-34-5	
1,1,2-Trichloroethane	Not detected	2		ppbv	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ppbv	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	2		ppbv	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	2		ppbv	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	18		ppbv	10	540-84-1	X
Tert-butyl Alcohol	Not detected	10		ppbv	10	75-65-0	
Tetrachloroethene	Not detected	2		ppbv	10	127-18-4	
Tetrahydrofuran*	Not detected	2		ppbv	10	109-99-9	
Toluene	13	2		ppbv	10	108-88-3	
Trichloroethene	Not detected	2		ppbv	10	79-01-6	
Trichlorofluoromethane	Not detected	2		ppbv	10	75-69-4	
Vinyl chloride	22	2		ppbv	10	75-01-4	
Vinyl acetate	Not detected	2		ppbv	10	108-05-4	
p,m-Xylene	5	4		ppbv	10		
o-Xylene	Not detected	2		ppbv	10	95-47-6	
Total Xylenes	Not detected	6		ppbv	10	1330-20-7	

**TO-15, Method: TO-15, Run Date: 12/21/18 16:51, Analyst: KAG**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	48		ug/m3	10	67-64-1	
1,3-Butadiene	Not detected	4.4		ug/m3	10	106-99-0	
Benzene	Not detected	6.4		ug/m3	10	71-43-2	
Bromodichloromethane	Not detected	13		ug/m3	10	75-27-4	
Bromoform	Not detected	21		ug/m3	10	75-25-2	
Bromomethane	Not detected	7.8		ug/m3	10	74-83-9	
Vinyl bromide	Not detected	8.7		ug/m3	10	593-60-2	
Benzyl chloride	Not detected	10		ug/m3	10	100-44-7	
Carbon disulfide	Not detected	16		ug/m3	10	75-15-0	
Chlorobenzene	Not detected	9.2		ug/m3	10	108-90-7	
Chloroethane	Not detected	5.3		ug/m3	10	75-00-3	
Chloroform	Not detected	9.8		ug/m3	10	67-66-3	
Chloromethane	Not detected	4.1		ug/m3	10	74-87-3	
3-Chloropropene	Not detected	6.3		ug/m3	10	107-05-1	
2-Chlorotoluene	Not detected	10		ug/m3	10	95-49-8	
Carbon tetrachloride	Not detected	13		ug/m3	10	56-23-5	
Cyclohexane	1,230	6.9		ug/m3	10	110-82-7	
1,1-Dichloroethane	Not detected	8.1		ug/m3	10	75-34-3	

X-Elevated reporting limit due to matrix interference



# Analytical Laboratory Report

Lab Sample ID: S98039.03 (continued)

Sample Tag: VP-2S

TO-15, Method: TO-15, Run Date: 12/21/18 16:51, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1-Dichloroethene	Not detected	7.9		ug/m3	10	75-35-4	
1,2-Dibromoethane	Not detected	15		ug/m3	10	106-93-4	
1,2-Dichloroethane	Not detected	8.1		ug/m3	10	107-06-2	
1,2-Dichloropropane	Not detected	9.2		ug/m3	10	78-87-5	
1,4-Dioxane	Not detected	90		ug/m3	10	123-91-1	
Dichlorodifluoromethane	Not detected	9.9		ug/m3	10	75-71-8	
Dibromochloromethane	Not detected	17		ug/m3	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-60-5	
cis-1,2-Dichloroethene	32	7.9		ug/m3	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	12		ug/m3	10	541-73-1	
1,2-Dichlorobenzene	Not detected	12		ug/m3	10	95-50-1	
1,4-Dichlorobenzene	Not detected	12		ug/m3	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-02-6	
Ethanol*	Not detected	47		ug/m3	10	64-17-5	
Ethylbenzene	Not detected	8.7		ug/m3	10	100-41-4	
Ethyl Acetate*	Not detected	36		ug/m3	10	141-78-6	
4-Ethyltoluene	Not detected	9.8		ug/m3	10	622-96-8	
Freon 113	Not detected	15		ug/m3	10	76-13-1	
Freon 114	Not detected	14		ug/m3	10	76-14-2	
Heptane	8.2	8.2		ug/m3	10	142-82-5	
Hexachlorobutadiene	Not detected	21		ug/m3	10	87-68-3	
Hexane	1,400	7.0		ug/m3	10	110-54-3	
2-Hexanone*	Not detected	20		ug/m3	10	591-78-6	
Isopropyl Alcohol*	Not detected	49		ug/m3	10	67-63-0	
Methylene chloride	Not detected	17		ug/m3	10	75-09-2	
2-Butanone (MEK)	Not detected	29		ug/m3	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	20		ug/m3	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	7.2		ug/m3	10	1634-04-4	
Methyl methacrylate	Not detected	8.2		ug/m3	10	80-62-6	
Naphthalene	Not detected	10		ug/m3	10	91-20-3	
Propylene*	Not detected	8.6		ug/m3	10	115-07-1	X
Styrene	Not detected	8.5		ug/m3	10	100-42-5	
1,1,1-Trichloroethane	Not detected	11		ug/m3	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	14		ug/m3	10	79-34-5	
1,1,2-Trichloroethane	Not detected	11		ug/m3	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	37		ug/m3	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	9.8		ug/m3	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	9.8		ug/m3	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	84		ug/m3	10	540-84-1	X
Tert-butyl Alcohol	Not detected	30		ug/m3	10	75-65-0	
Tetrachloroethene	Not detected	14		ug/m3	10	127-18-4	
Tetrahydrofuran*	Not detected	5.9		ug/m3	10	109-99-9	
Toluene	49	7.5		ug/m3	10	108-88-3	
Trichloroethene	Not detected	11		ug/m3	10	79-01-6	
Trichlorofluoromethane	Not detected	11		ug/m3	10	75-69-4	
Vinyl chloride	56	5.1		ug/m3	10	75-01-4	
Vinyl acetate	Not detected	7.0		ug/m3	10	108-05-4	
p,m-Xylene	22	17		ug/m3	10		

X-Elevated reporting limit due to matrix interference



# Analytical Laboratory Report

Lab Sample ID: S98039.03 (continued)

Sample Tag: VP-2S

TO-15, Method: TO-15, Run Date: 12/21/18 16:51, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	Not detected	8.7		ug/m3	10	95-47-6	
Total Xylenes	Not detected	26		ug/m3	10	1330-20-7	



# Analytical Laboratory Report

Lab Sample ID: S98039.04

Sample Tag: VP-2D

Collected Date/Time: 12/20/2018 11:18 - 12/20/2018 11:38

Matrix: Air

COC Reference: A01761

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Air Canister	None	No	RT	n/a

Other / Misc.

Method: , Run Date: 12/26/18 18:18, Analyst: JAL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Hold until notified*	Completed				1		



# Analytical Laboratory Report

Lab Sample ID: S98039.05

Sample Tag: VP-3S

Collected Date/Time: 12/20/2018 12:23 - 12/20/2018 12:32

Matrix: Air

COC Reference: A01761

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Air Canister	None	No	RT	n/a

**Organics - Volatiles**

**TO-15, Method: TO-15, Run Date: 12/21/18 17:23, Analyst: KAG**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	20		ppbv	10	67-64-1	
1,3-Butadiene	Not detected	2		ppbv	10	106-99-0	
Benzene	Not detected	2		ppbv	10	71-43-2	
Bromodichloromethane	Not detected	2		ppbv	10	75-27-4	
Bromoform	Not detected	2		ppbv	10	75-25-2	
Bromomethane	Not detected	2		ppbv	10	74-83-9	
Vinyl bromide	Not detected	2		ppbv	10	593-60-2	
Benzyl chloride	Not detected	2		ppbv	10	100-44-7	
Carbon disulfide	Not detected	5		ppbv	10	75-15-0	
Chlorobenzene	Not detected	2		ppbv	10	108-90-7	
Chloroethane	Not detected	2		ppbv	10	75-00-3	
Chloroform	Not detected	2		ppbv	10	67-66-3	
Chloromethane	Not detected	2		ppbv	10	74-87-3	
3-Chloropropene	Not detected	2		ppbv	10	107-05-1	
2-Chlorotoluene	Not detected	2		ppbv	10	95-49-8	
Carbon tetrachloride	Not detected	2		ppbv	10	56-23-5	
Cyclohexane	147	2		ppbv	10	110-82-7	
1,1-Dichloroethane	Not detected	2		ppbv	10	75-34-3	
1,1-Dichloroethene	Not detected	2		ppbv	10	75-35-4	
1,2-Dibromoethane	Not detected	2		ppbv	10	106-93-4	
1,2-Dichloroethane	Not detected	2		ppbv	10	107-06-2	
1,2-Dichloropropane	Not detected	2		ppbv	10	78-87-5	
1,4-Dioxane	Not detected	25		ppbv	10	123-91-1	
Dichlorodifluoromethane	Not detected	2		ppbv	10	75-71-8	
Dibromochloromethane	Not detected	2		ppbv	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	2		ppbv	10	156-60-5	
cis-1,2-Dichloroethene	3	2		ppbv	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	2		ppbv	10	541-73-1	
1,2-Dichlorobenzene	Not detected	2		ppbv	10	95-50-1	
1,4-Dichlorobenzene	Not detected	2		ppbv	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-02-6	
Ethanol*	Not detected	25		ppbv	10	64-17-5	
Ethylbenzene	Not detected	2		ppbv	10	100-41-4	
Ethyl Acetate*	Not detected	10		ppbv	10	141-78-6	
4-Ethyltoluene	Not detected	2		ppbv	10	622-96-8	
Freon 113	Not detected	2		ppbv	10	76-13-1	
Freon 114	Not detected	2		ppbv	10	76-14-2	
Heptane	Not detected	2		ppbv	10	142-82-5	
Hexachlorobutadiene	Not detected	2		ppbv	10	87-68-3	
Hexane	105	2		ppbv	10	110-54-3	



# Analytical Laboratory Report

Lab Sample ID: S98039.05 (continued)

Sample Tag: VP-3S

**TO-15, Method: TO-15, Run Date: 12/21/18 17:23, Analyst: KAG (continued)**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
2-Hexanone*	Not detected	5		ppbv	10	591-78-6	
Isopropyl Alcohol*	Not detected	20		ppbv	10	67-63-0	
Methylene chloride	Not detected	5		ppbv	10	75-09-2	
2-Butanone (MEK)	Not detected	10		ppbv	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	5		ppbv	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	2		ppbv	10	1634-04-4	
Methyl methacrylate	Not detected	2		ppbv	10	80-62-6	
Naphthalene	Not detected	2		ppbv	10	91-20-3	
Propylene*	Not detected	2		ppbv	10	115-07-1	
Styrene	Not detected	2		ppbv	10	100-42-5	
1,1,1-Trichloroethane	Not detected	2		ppbv	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	2		ppbv	10	79-34-5	
1,1,2-Trichloroethane	Not detected	2		ppbv	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ppbv	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	2		ppbv	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	2		ppbv	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	10		ppbv	10	540-84-1	X
Tert-butyl Alcohol	Not detected	10		ppbv	10	75-65-0	
Tetrachloroethene	Not detected	2		ppbv	10	127-18-4	
Tetrahydrofuran*	7	2		ppbv	10	109-99-9	
Toluene	9	2		ppbv	10	108-88-3	
Trichloroethene	Not detected	2		ppbv	10	79-01-6	
Trichlorofluoromethane	Not detected	2		ppbv	10	75-69-4	
Vinyl chloride	Not detected	2		ppbv	10	75-01-4	
Vinyl acetate	Not detected	2		ppbv	10	108-05-4	
p,m-Xylene	4	4		ppbv	10		
o-Xylene	Not detected	2		ppbv	10	95-47-6	
Total Xylenes	Not detected	6		ppbv	10	1330-20-7	

**TO-15, Method: TO-15, Run Date: 12/21/18 17:23, Analyst: KAG**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	48		ug/m3	10	67-64-1	
1,3-Butadiene	Not detected	4.4		ug/m3	10	106-99-0	
Benzene	Not detected	6.4		ug/m3	10	71-43-2	
Bromodichloromethane	Not detected	13		ug/m3	10	75-27-4	
Bromoform	Not detected	21		ug/m3	10	75-25-2	
Bromomethane	Not detected	7.8		ug/m3	10	74-83-9	
Vinyl bromide	Not detected	8.7		ug/m3	10	593-60-2	
Benzyl chloride	Not detected	10		ug/m3	10	100-44-7	
Carbon disulfide	Not detected	16		ug/m3	10	75-15-0	
Chlorobenzene	Not detected	9.2		ug/m3	10	108-90-7	
Chloroethane	Not detected	5.3		ug/m3	10	75-00-3	
Chloroform	Not detected	9.8		ug/m3	10	67-66-3	
Chloromethane	Not detected	4.1		ug/m3	10	74-87-3	
3-Chloropropene	Not detected	6.3		ug/m3	10	107-05-1	
2-Chlorotoluene	Not detected	10		ug/m3	10	95-49-8	
Carbon tetrachloride	Not detected	13		ug/m3	10	56-23-5	
Cyclohexane	506	6.9		ug/m3	10	110-82-7	
1,1-Dichloroethane	Not detected	8.1		ug/m3	10	75-34-3	

X-Elevated reporting limit due to matrix interference



# Analytical Laboratory Report

Lab Sample ID: S98039.05 (continued)

Sample Tag: VP-3S

TO-15, Method: TO-15, Run Date: 12/21/18 17:23, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1-Dichloroethene	Not detected	7.9		ug/m3	10	75-35-4	
1,2-Dibromoethane	Not detected	15		ug/m3	10	106-93-4	
1,2-Dichloroethane	Not detected	8.1		ug/m3	10	107-06-2	
1,2-Dichloropropane	Not detected	9.2		ug/m3	10	78-87-5	
1,4-Dioxane	Not detected	90		ug/m3	10	123-91-1	
Dichlorodifluoromethane	Not detected	9.9		ug/m3	10	75-71-8	
Dibromochloromethane	Not detected	17		ug/m3	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-60-5	
cis-1,2-Dichloroethene	12	7.9		ug/m3	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	12		ug/m3	10	541-73-1	
1,2-Dichlorobenzene	Not detected	12		ug/m3	10	95-50-1	
1,4-Dichlorobenzene	Not detected	12		ug/m3	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-02-6	
Ethanol*	Not detected	47		ug/m3	10	64-17-5	
Ethylbenzene	Not detected	8.7		ug/m3	10	100-41-4	
Ethyl Acetate*	Not detected	36		ug/m3	10	141-78-6	
4-Ethyltoluene	Not detected	9.8		ug/m3	10	622-96-8	
Freon 113	Not detected	15		ug/m3	10	76-13-1	
Freon 114	Not detected	14		ug/m3	10	76-14-2	
Heptane	Not detected	8.2		ug/m3	10	142-82-5	
Hexachlorobutadiene	Not detected	21		ug/m3	10	87-68-3	
Hexane	370	7.0		ug/m3	10	110-54-3	
2-Hexanone*	Not detected	20		ug/m3	10	591-78-6	
Isopropyl Alcohol*	Not detected	49		ug/m3	10	67-63-0	
Methylene chloride	Not detected	17		ug/m3	10	75-09-2	
2-Butanone (MEK)	Not detected	29		ug/m3	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	20		ug/m3	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	7.2		ug/m3	10	1634-04-4	
Methyl methacrylate	Not detected	8.2		ug/m3	10	80-62-6	
Naphthalene	Not detected	10		ug/m3	10	91-20-3	
Propylene*	Not detected	3.4		ug/m3	10	115-07-1	
Styrene	Not detected	8.5		ug/m3	10	100-42-5	
1,1,1-Trichloroethane	Not detected	11		ug/m3	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	14		ug/m3	10	79-34-5	
1,1,2-Trichloroethane	Not detected	11		ug/m3	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	37		ug/m3	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	9.8		ug/m3	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	9.8		ug/m3	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	47		ug/m3	10	540-84-1	X
Tert-butyl Alcohol	Not detected	30		ug/m3	10	75-65-0	
Tetrachloroethene	Not detected	14		ug/m3	10	127-18-4	
Tetrahydrofuran*	21	5.9		ug/m3	10	109-99-9	
Toluene	34	7.5		ug/m3	10	108-88-3	
Trichloroethene	Not detected	11		ug/m3	10	79-01-6	
Trichlorofluoromethane	Not detected	11		ug/m3	10	75-69-4	
Vinyl chloride	Not detected	5.1		ug/m3	10	75-01-4	
Vinyl acetate	Not detected	7.0		ug/m3	10	108-05-4	
p,m-Xylene	17	17		ug/m3	10		

X-Elevated reporting limit due to matrix interference



# Analytical Laboratory Report

Lab Sample ID: S98039.05 (continued)

Sample Tag: VP-3S

TO-15, Method: TO-15, Run Date: 12/21/18 17:23, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	Not detected	8.7		ug/m3	10	95-47-6	
Total Xylenes	Not detected	26		ug/m3	10	1330-20-7	



# Analytical Laboratory Report

Lab Sample ID: S98039.06

Sample Tag: VP-3D

Collected Date/Time: 12/20/2018 12:24 - 12/20/2018 12:41

Matrix: Air

COC Reference: A01761

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Air Canister	None	No	RT	n/a

**Organics - Volatiles**

**TO-15, Method: TO-15, Run Date: 12/21/18 17:54, Analyst: KAG**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	20		ppbv	10	67-64-1	
1,3-Butadiene	Not detected	2		ppbv	10	106-99-0	
Benzene	Not detected	2		ppbv	10	71-43-2	
Bromodichloromethane	Not detected	2		ppbv	10	75-27-4	
Bromoform	Not detected	2		ppbv	10	75-25-2	
Bromomethane	Not detected	2		ppbv	10	74-83-9	
Vinyl bromide	Not detected	2		ppbv	10	593-60-2	
Benzyl chloride	Not detected	2		ppbv	10	100-44-7	
Carbon disulfide	Not detected	5		ppbv	10	75-15-0	
Chlorobenzene	Not detected	2		ppbv	10	108-90-7	
Chloroethane	Not detected	2		ppbv	10	75-00-3	
Chloroform	Not detected	2		ppbv	10	67-66-3	
Chloromethane	Not detected	2		ppbv	10	74-87-3	
3-Chloropropene	Not detected	2		ppbv	10	107-05-1	
2-Chlorotoluene	Not detected	2		ppbv	10	95-49-8	
Carbon tetrachloride	Not detected	2		ppbv	10	56-23-5	
Cyclohexane	Not detected	2		ppbv	10	110-82-7	
1,1-Dichloroethane	Not detected	2		ppbv	10	75-34-3	
1,1-Dichloroethene	Not detected	2		ppbv	10	75-35-4	
1,2-Dibromoethane	Not detected	2		ppbv	10	106-93-4	
1,2-Dichloroethane	Not detected	2		ppbv	10	107-06-2	
1,2-Dichloropropane	Not detected	2		ppbv	10	78-87-5	
1,4-Dioxane	Not detected	25		ppbv	10	123-91-1	
Dichlorodifluoromethane	Not detected	2		ppbv	10	75-71-8	
Dibromochloromethane	Not detected	2		ppbv	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	2		ppbv	10	156-60-5	
cis-1,2-Dichloroethene	Not detected	2		ppbv	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	2		ppbv	10	541-73-1	
1,2-Dichlorobenzene	Not detected	2		ppbv	10	95-50-1	
1,4-Dichlorobenzene	Not detected	2		ppbv	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-02-6	
Ethanol*	30	25		ppbv	10	64-17-5	
Ethylbenzene	Not detected	2		ppbv	10	100-41-4	
Ethyl Acetate*	Not detected	10		ppbv	10	141-78-6	
4-Ethyltoluene	Not detected	2		ppbv	10	622-96-8	
Freon 113	Not detected	2		ppbv	10	76-13-1	
Freon 114	Not detected	2		ppbv	10	76-14-2	
Heptane	Not detected	2		ppbv	10	142-82-5	
Hexachlorobutadiene	Not detected	2		ppbv	10	87-68-3	
Hexane	2	2		ppbv	10	110-54-3	



# Analytical Laboratory Report

Lab Sample ID: S98039.06 (continued)

Sample Tag: VP-3D

**TO-15, Method: TO-15, Run Date: 12/21/18 17:54, Analyst: KAG (continued)**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
2-Hexanone*	Not detected	5		ppbv	10	591-78-6	
Isopropyl Alcohol*	Not detected	20		ppbv	10	67-63-0	
Methylene chloride	Not detected	5		ppbv	10	75-09-2	
2-Butanone (MEK)	Not detected	10		ppbv	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	5		ppbv	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	2		ppbv	10	1634-04-4	
Methyl methacrylate	Not detected	2		ppbv	10	80-62-6	
Naphthalene	Not detected	2		ppbv	10	91-20-3	
Propylene*	Not detected	4		ppbv	10	115-07-1	X
Styrene	Not detected	2		ppbv	10	100-42-5	
1,1,1-Trichloroethane	Not detected	2		ppbv	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	2		ppbv	10	79-34-5	
1,1,2-Trichloroethane	Not detected	2		ppbv	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ppbv	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	2		ppbv	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	2		ppbv	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	2		ppbv	10	540-84-1	
Tert-butyl Alcohol	Not detected	10		ppbv	10	75-65-0	
Tetrachloroethene	Not detected	2		ppbv	10	127-18-4	
Tetrahydrofuran*	14	2		ppbv	10	109-99-9	
Toluene	10	2		ppbv	10	108-88-3	
Trichloroethene	Not detected	2		ppbv	10	79-01-6	
Trichlorofluoromethane	Not detected	2		ppbv	10	75-69-4	
Vinyl chloride	Not detected	2		ppbv	10	75-01-4	
Vinyl acetate	Not detected	2		ppbv	10	108-05-4	
p,m-Xylene	Not detected	4		ppbv	10		
o-Xylene	Not detected	2		ppbv	10	95-47-6	
Total Xylenes	Not detected	6		ppbv	10	1330-20-7	

**TO-15, Method: TO-15, Run Date: 12/21/18 17:54, Analyst: KAG**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	48		ug/m3	10	67-64-1	
1,3-Butadiene	Not detected	4.4		ug/m3	10	106-99-0	
Benzene	Not detected	6.4		ug/m3	10	71-43-2	
Bromodichloromethane	Not detected	13		ug/m3	10	75-27-4	
Bromoform	Not detected	21		ug/m3	10	75-25-2	
Bromomethane	Not detected	7.8		ug/m3	10	74-83-9	
Vinyl bromide	Not detected	8.7		ug/m3	10	593-60-2	
Benzyl chloride	Not detected	10		ug/m3	10	100-44-7	
Carbon disulfide	Not detected	16		ug/m3	10	75-15-0	
Chlorobenzene	Not detected	9.2		ug/m3	10	108-90-7	
Chloroethane	Not detected	5.3		ug/m3	10	75-00-3	
Chloroform	Not detected	9.8		ug/m3	10	67-66-3	
Chloromethane	Not detected	4.1		ug/m3	10	74-87-3	
3-Chloropropene	Not detected	6.3		ug/m3	10	107-05-1	
2-Chlorotoluene	Not detected	10		ug/m3	10	95-49-8	
Carbon tetrachloride	Not detected	13		ug/m3	10	56-23-5	
Cyclohexane	Not detected	6.9		ug/m3	10	110-82-7	
1,1-Dichloroethane	Not detected	8.1		ug/m3	10	75-34-3	

X-Elevated reporting limit due to matrix interference



# Analytical Laboratory Report

Lab Sample ID: S98039.06 (continued)

Sample Tag: VP-3D

TO-15, Method: TO-15, Run Date: 12/21/18 17:54, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1-Dichloroethene	Not detected	7.9		ug/m3	10	75-35-4	
1,2-Dibromoethane	Not detected	15		ug/m3	10	106-93-4	
1,2-Dichloroethane	Not detected	8.1		ug/m3	10	107-06-2	
1,2-Dichloropropane	Not detected	9.2		ug/m3	10	78-87-5	
1,4-Dioxane	Not detected	90		ug/m3	10	123-91-1	
Dichlorodifluoromethane	Not detected	9.9		ug/m3	10	75-71-8	
Dibromochloromethane	Not detected	17		ug/m3	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-60-5	
cis-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	12		ug/m3	10	541-73-1	
1,2-Dichlorobenzene	Not detected	12		ug/m3	10	95-50-1	
1,4-Dichlorobenzene	Not detected	12		ug/m3	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-02-6	
Ethanol*	57	47		ug/m3	10	64-17-5	
Ethylbenzene	Not detected	8.7		ug/m3	10	100-41-4	
Ethyl Acetate*	Not detected	36		ug/m3	10	141-78-6	
4-Ethyltoluene	Not detected	9.8		ug/m3	10	622-96-8	
Freon 113	Not detected	15		ug/m3	10	76-13-1	
Freon 114	Not detected	14		ug/m3	10	76-14-2	
Heptane	Not detected	8.2		ug/m3	10	142-82-5	
Hexachlorobutadiene	Not detected	21		ug/m3	10	87-68-3	
Hexane	7.0	7.0		ug/m3	10	110-54-3	
2-Hexanone*	Not detected	20		ug/m3	10	591-78-6	
Isopropyl Alcohol*	Not detected	49		ug/m3	10	67-63-0	
Methylene chloride	Not detected	17		ug/m3	10	75-09-2	
2-Butanone (MEK)	Not detected	29		ug/m3	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	20		ug/m3	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	7.2		ug/m3	10	1634-04-4	
Methyl methacrylate	Not detected	8.2		ug/m3	10	80-62-6	
Naphthalene	Not detected	10		ug/m3	10	91-20-3	
Propylene*	Not detected	6.9		ug/m3	10	115-07-1	X
Styrene	Not detected	8.5		ug/m3	10	100-42-5	
1,1,1-Trichloroethane	Not detected	11		ug/m3	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	14		ug/m3	10	79-34-5	
1,1,2-Trichloroethane	Not detected	11		ug/m3	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	37		ug/m3	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	9.8		ug/m3	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	9.8		ug/m3	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	9.3		ug/m3	10	540-84-1	
Tert-butyl Alcohol	Not detected	30		ug/m3	10	75-65-0	
Tetrachloroethene	Not detected	14		ug/m3	10	127-18-4	
Tetrahydrofuran*	41	5.9		ug/m3	10	109-99-9	
Toluene	38	7.5		ug/m3	10	108-88-3	
Trichloroethene	Not detected	11		ug/m3	10	79-01-6	
Trichlorofluoromethane	Not detected	11		ug/m3	10	75-69-4	
Vinyl chloride	Not detected	5.1		ug/m3	10	75-01-4	
Vinyl acetate	Not detected	7.0		ug/m3	10	108-05-4	
p,m-Xylene	Not detected	17		ug/m3	10		

X-Elevated reporting limit due to matrix interference



# Analytical Laboratory Report

Lab Sample ID: S98039.06 (continued)

Sample Tag: VP-3D

TO-15, Method: TO-15, Run Date: 12/21/18 17:54, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	Not detected	8.7		ug/m3	10	95-47-6	
Total Xylenes	Not detected	26		ug/m3	10	1330-20-7	



# Analytical Laboratory Report

Lab Sample ID: S98039.07

Sample Tag: DUP-1

Collected Date/Time: 12/20/2018 00:01 - 12/20/2018 00:02

Matrix: Air

COC Reference: A01761

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Air Canister	None	No	RT	n/a

### Organics - Volatiles

TO-15, Method: TO-15, Run Date: 12/21/18 18:38, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	20		ppbv	10	67-64-1	
1,3-Butadiene	Not detected	2		ppbv	10	106-99-0	
Benzene	Not detected	2		ppbv	10	71-43-2	
Bromodichloromethane	Not detected	2		ppbv	10	75-27-4	
Bromoform	Not detected	2		ppbv	10	75-25-2	
Bromomethane	Not detected	2		ppbv	10	74-83-9	
Vinyl bromide	Not detected	2		ppbv	10	593-60-2	
Benzyl chloride	Not detected	2		ppbv	10	100-44-7	
Carbon disulfide	Not detected	5		ppbv	10	75-15-0	
Chlorobenzene	Not detected	2		ppbv	10	108-90-7	
Chloroethane	Not detected	2		ppbv	10	75-00-3	
Chloroform	Not detected	2		ppbv	10	67-66-3	
Chloromethane	Not detected	2		ppbv	10	74-87-3	
3-Chloropropene	Not detected	2		ppbv	10	107-05-1	
2-Chlorotoluene	Not detected	2		ppbv	10	95-49-8	
Carbon tetrachloride	Not detected	2		ppbv	10	56-23-5	
Cyclohexane	322	2		ppbv	10	110-82-7	
1,1-Dichloroethane	Not detected	2		ppbv	10	75-34-3	
1,1-Dichloroethene	Not detected	2		ppbv	10	75-35-4	
1,2-Dibromoethane	Not detected	2		ppbv	10	106-93-4	
1,2-Dichloroethane	Not detected	2		ppbv	10	107-06-2	
1,2-Dichloropropane	Not detected	2		ppbv	10	78-87-5	
1,4-Dioxane	Not detected	25		ppbv	10	123-91-1	
Dichlorodifluoromethane	Not detected	2		ppbv	10	75-71-8	
Dibromochloromethane	Not detected	2		ppbv	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	2		ppbv	10	156-60-5	
cis-1,2-Dichloroethene	8	2		ppbv	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	2		ppbv	10	541-73-1	
1,2-Dichlorobenzene	Not detected	2		ppbv	10	95-50-1	
1,4-Dichlorobenzene	Not detected	2		ppbv	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-02-6	
Ethanol*	Not detected	25		ppbv	10	64-17-5	
Ethylbenzene	Not detected	2		ppbv	10	100-41-4	
Ethyl Acetate*	Not detected	10		ppbv	10	141-78-6	
4-Ethyltoluene	Not detected	2		ppbv	10	622-96-8	
Freon 113	Not detected	2		ppbv	10	76-13-1	
Freon 114	Not detected	2		ppbv	10	76-14-2	
Heptane	Not detected	2		ppbv	10	142-82-5	
Hexachlorobutadiene	Not detected	2		ppbv	10	87-68-3	
Hexane	346	2		ppbv	10	110-54-3	



# Analytical Laboratory Report

Lab Sample ID: S98039.07 (continued)

Sample Tag: DUP-1

**TO-15, Method: TO-15, Run Date: 12/21/18 18:38, Analyst: KAG (continued)**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
2-Hexanone*	Not detected	5		ppbv	10	591-78-6	
Isopropyl Alcohol*	Not detected	20		ppbv	10	67-63-0	
Methylene chloride	Not detected	5		ppbv	10	75-09-2	
2-Butanone (MEK)	Not detected	10		ppbv	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	5		ppbv	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	2		ppbv	10	1634-04-4	
Methyl methacrylate	Not detected	2		ppbv	10	80-62-6	
Naphthalene	Not detected	2		ppbv	10	91-20-3	
Propylene*	Not detected	60		ppbv	10	115-07-1	X
Styrene	Not detected	2		ppbv	10	100-42-5	
1,1,1-Trichloroethane	Not detected	2		ppbv	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	2		ppbv	10	79-34-5	
1,1,2-Trichloroethane	Not detected	2		ppbv	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ppbv	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	2		ppbv	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	2		ppbv	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	16		ppbv	10	540-84-1	X
Tert-butyl Alcohol	Not detected	10		ppbv	10	75-65-0	
Tetrachloroethene	Not detected	2		ppbv	10	127-18-4	
Tetrahydrofuran*	Not detected	2		ppbv	10	109-99-9	
Toluene	12	2		ppbv	10	108-88-3	
Trichloroethene	Not detected	2		ppbv	10	79-01-6	
Trichlorofluoromethane	Not detected	2		ppbv	10	75-69-4	
Vinyl chloride	18	2		ppbv	10	75-01-4	
Vinyl acetate	Not detected	2		ppbv	10	108-05-4	
p,m-Xylene	5	4		ppbv	10		
o-Xylene	Not detected	2		ppbv	10	95-47-6	
Total Xylenes	Not detected	6		ppbv	10	1330-20-7	

**TO-15, Method: TO-15, Run Date: 12/21/18 18:38, Analyst: KAG**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	48		ug/m3	10	67-64-1	
1,3-Butadiene	Not detected	4.4		ug/m3	10	106-99-0	
Benzene	Not detected	6.4		ug/m3	10	71-43-2	
Bromodichloromethane	Not detected	13		ug/m3	10	75-27-4	
Bromoform	Not detected	21		ug/m3	10	75-25-2	
Bromomethane	Not detected	7.8		ug/m3	10	74-83-9	
Vinyl bromide	Not detected	8.7		ug/m3	10	593-60-2	
Benzyl chloride	Not detected	10		ug/m3	10	100-44-7	
Carbon disulfide	Not detected	16		ug/m3	10	75-15-0	
Chlorobenzene	Not detected	9.2		ug/m3	10	108-90-7	
Chloroethane	Not detected	5.3		ug/m3	10	75-00-3	
Chloroform	Not detected	9.8		ug/m3	10	67-66-3	
Chloromethane	Not detected	4.1		ug/m3	10	74-87-3	
3-Chloropropene	Not detected	6.3		ug/m3	10	107-05-1	
2-Chlorotoluene	Not detected	10		ug/m3	10	95-49-8	
Carbon tetrachloride	Not detected	13		ug/m3	10	56-23-5	
Cyclohexane	1,110	6.9		ug/m3	10	110-82-7	
1,1-Dichloroethane	Not detected	8.1		ug/m3	10	75-34-3	

X-Elevated reporting limit due to matrix interference



# Analytical Laboratory Report

Lab Sample ID: S98039.07 (continued)

Sample Tag: DUP-1

TO-15, Method: TO-15, Run Date: 12/21/18 18:38, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1-Dichloroethene	Not detected	7.9		ug/m3	10	75-35-4	
1,2-Dibromoethane	Not detected	15		ug/m3	10	106-93-4	
1,2-Dichloroethane	Not detected	8.1		ug/m3	10	107-06-2	
1,2-Dichloropropane	Not detected	9.2		ug/m3	10	78-87-5	
1,4-Dioxane	Not detected	90		ug/m3	10	123-91-1	
Dichlorodifluoromethane	Not detected	9.9		ug/m3	10	75-71-8	
Dibromochloromethane	Not detected	17		ug/m3	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-60-5	
cis-1,2-Dichloroethene	32	7.9		ug/m3	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	12		ug/m3	10	541-73-1	
1,2-Dichlorobenzene	Not detected	12		ug/m3	10	95-50-1	
1,4-Dichlorobenzene	Not detected	12		ug/m3	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-02-6	
Ethanol*	Not detected	47		ug/m3	10	64-17-5	
Ethylbenzene	Not detected	8.7		ug/m3	10	100-41-4	
Ethyl Acetate*	Not detected	36		ug/m3	10	141-78-6	
4-Ethyltoluene	Not detected	9.8		ug/m3	10	622-96-8	
Freon 113	Not detected	15		ug/m3	10	76-13-1	
Freon 114	Not detected	14		ug/m3	10	76-14-2	
Heptane	Not detected	8.2		ug/m3	10	142-82-5	
Hexachlorobutadiene	Not detected	21		ug/m3	10	87-68-3	
Hexane	1,220	7.0		ug/m3	10	110-54-3	
2-Hexanone*	Not detected	20		ug/m3	10	591-78-6	
Isopropyl Alcohol*	Not detected	49		ug/m3	10	67-63-0	
Methylene chloride	Not detected	17		ug/m3	10	75-09-2	
2-Butanone (MEK)	Not detected	29		ug/m3	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	20		ug/m3	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	7.2		ug/m3	10	1634-04-4	
Methyl methacrylate	Not detected	8.2		ug/m3	10	80-62-6	
Naphthalene	Not detected	10		ug/m3	10	91-20-3	
Propylene*	Not detected	100		ug/m3	10	115-07-1	X
Styrene	Not detected	8.5		ug/m3	10	100-42-5	
1,1,1-Trichloroethane	Not detected	11		ug/m3	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	14		ug/m3	10	79-34-5	
1,1,2-Trichloroethane	Not detected	11		ug/m3	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	37		ug/m3	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	9.8		ug/m3	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	9.8		ug/m3	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	75		ug/m3	10	540-84-1	X
Tert-butyl Alcohol	Not detected	30		ug/m3	10	75-65-0	
Tetrachloroethene	Not detected	14		ug/m3	10	127-18-4	
Tetrahydrofuran*	Not detected	5.9		ug/m3	10	109-99-9	
Toluene	45	7.5		ug/m3	10	108-88-3	
Trichloroethene	Not detected	11		ug/m3	10	79-01-6	
Trichlorofluoromethane	Not detected	11		ug/m3	10	75-69-4	
Vinyl chloride	46	5.1		ug/m3	10	75-01-4	
Vinyl acetate	Not detected	7.0		ug/m3	10	108-05-4	
p,m-Xylene	22	17		ug/m3	10		

X-Elevated reporting limit due to matrix interference



# Analytical Laboratory Report

Lab Sample ID: S98039.07 (continued)

Sample Tag: DUP-1

TO-15, Method: TO-15, Run Date: 12/21/18 18:38, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	Not detected	8.7		ug/m3	10	95-47-6	
Total Xylenes	Not detected	26		ug/m3	10	1330-20-7	

# Merit Laboratories Login Checklist

Lab Set ID:S98039

Client:OBG02 (O'Brien & Gere Engineers, Inc.)

Project: RACER Hemphill Rd - VP

Submitted: 12/20/2018 15:50 Login User: MMC

Attention: Clifford Yantz

Address: O'Brien & Gere Engineers, Inc.  
2260 E Saginaw St  
East Lansing, MI 48823

Phone: 248-477-5701 FAX:

Email: Clifford.Yantz@obg.com

Selection	Description	Note
<b>Sample Receiving</b>		
01.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples are received at 4C +/- 2C Thermometer # RT
02.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Received on ice/ cooling process begun
03.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples shipped
04.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples left in 24 hr. drop box
05.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Are there custody seals/tape or is the drop box locked
<b>Chain of Custody</b>		
06.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC adequately filled out
07.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC signed and relinquished to the lab
08.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample tag on bottles match COC
09.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Subcontracting needed? Subcontracted to:
<b>Preservation</b>		
10.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Do sample have correct chemical preservation
11.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Completed pH checks on preserved samples? (no VOAs)
12.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Did any samples need to be preserved in the lab?
<b>Bottle Conditions</b>		
13.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	All bottles intact
14.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Appropriate analytical bottles are used
15.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Merit bottles used
16.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sufficient sample volume received
17.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples require laboratory filtration
18.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples submitted within holding time
19.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: \_\_\_\_\_ Date: \_\_\_\_\_



2680 East Lansing Dr., East Lansing, MI 48823  
 Phone (517) 332-0167 Fax (517) 332-4034  
 www.meritlabs.com

C.O.C. PAGE # 1 OF 1

A 01761

**REPORT TO**

**AIR/GAS SAMPLES CHAIN OF CUSTODY RECORD**

**INVOICE TO**

CONTACT NAME: *Cliff Yantz*  
 COMPANY: *O'Brien & Gere*  
 ADDRESS: *260 East Saginaw*  
 CITY: *East Lansing* STATE: *MI* ZIP CODE: *48823*  
 PHONE NO.: *517-333-0211* FAX NO.: \_\_\_\_\_ P.O. NO.: \_\_\_\_\_  
 EMAIL ADDRESS: *Clifford.Yantz@obg.com* QUOTE NO.: \_\_\_\_\_

CONTACT NAME:  SAME  
 COMPANY: \_\_\_\_\_  
 ADDRESS: \_\_\_\_\_  
 CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP CODE: \_\_\_\_\_  
 PHONE NO.: \_\_\_\_\_ EMAIL ADDRESS: \_\_\_\_\_

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME: *RACER Hemphill Rd - VP* SAMPLER(S) - PLEASE PRINT/SIGN NAME: *Karin Schuster*  
 TURNAROUND TIME REQUIRED:  1 DAY  2 DAYS  3 DAYS  STANDARD  OTHER \_\_\_\_\_  
 DELIVERABLES REQUIRED:  LEVEL II  LEVEL III  LEVEL IV  EDD  OTHER \_\_\_\_\_

Certifications  
 OHIO VAP  NELAP  
 DoD  NPDES

MERIT LAB NO. FOR LAB USE ONLY	SAMPLE TAG IDENTIFICATION-DESCRIPTION	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	Sample Type					Analyses	
									Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (specify in notes)	TO-15	Other (specify in notes)
<i>98039.01</i>	<i>VP-1S</i>	<i>12/20/18</i>	<i>1011</i>	<i>1022</i>	<i>-29</i>	<i>-3</i>	<i>162</i>	<i>16842</i>			<i>X</i>			<i>X</i>	
<i>.02</i>	<i>* VP-1D</i>	<i>12/20/18</i>	<i>1012</i>	<i>1025</i>	<i>-26</i>	<i>-26</i>	<i>156</i>	<i>12429</i>			<i>X</i>			<i>X</i>	
<i>.03</i>	<i>VP-2S</i>	<i>12/20/18</i>	<i>1117</i>	<i>1134</i>	<i>-29</i>	<i>-2</i>	<i>123</i>	<i>13749</i>			<i>X</i>			<i>X</i>	
<i>.04</i>	<i>* VP-2D</i>	<i>12/20/18</i>	<i>1118</i>	<i>1138</i>	<i>-26</i>	<i>-26</i>	<i>159</i>	<i>13725</i>			<i>X</i>			<i>X</i>	
<i>.05</i>	<i>VP-3S</i>	<i>12/20/18</i>	<i>1223</i>	<i>1232</i>	<i>-27</i>	<i>-1</i>	<i>146</i>	<i>13735</i>			<i>x</i>			<i>X</i>	
<i>.06</i>	<i>VP-3D</i>	<i>12/20/18</i>	<i>1224</i>	<i>1241</i>	<i>-29</i>	<i>-3</i>	<i>147</i>	<i>13741</i>			<i>x</i>			<i>X</i>	
<i>.07</i>	<i>DUP-1</i>	<i>12/20/18</i>	<i>-</i>	<i>-</i>	<i>-29</i>	<i>-2</i>	<i>-</i>	<i>13729</i>			<i>X</i>			<i>X</i>	

Temperature (Fahrenheit)			Pressure (inches of Hg)		
Interior	Ambient	Notes	Interior	Ambient	Notes
	<i>37°F</i>			<i>29.80</i>	
<i>Start</i>			<i>Start</i>		
	<i>38°F</i>			<i>29.80</i>	
<i>Stop</i>			<i>Stop</i>		

Notes: *\* Stalled Water in Line*

RELINQUISHED BY: *[Signature]* DATE: *12/20/18* TIME: *13:00*  
 RECEIVED BY: *[Signature]* DATE: *12/20/18* TIME: *15:50*  
 RELINQUISHED BY: *[Signature]* DATE: *12/20/18* TIME: *15:50*  
 RECEIVED BY: *[Signature]* DATE: *12/20/18* TIME: *15:50*

RELINQUISHED BY: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_  
 RECEIVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_  
 SEAL NO. SEAL INTACT INITIALS NOTES: TEMP. ON ARRIVAL  
 YES  NO  \_\_\_\_\_  
 SEAL NO. SEAL INTACT INITIALS  
 YES  NO  \_\_\_\_\_

*RT*



# Analytical Laboratory Report

Report ID: S01707.01(01)  
Generated on 05/15/2019

## Report to

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Attention: Clifford Yantz  
O'Brien & Gere Engineers, Inc.  
2260 East Saginaw Street  
East Lansing, MI 48823

Phone: 248-477-5701 FAX:  
Email: Clifford.Yantz@obg.com

## Report produced by

---

Merit Laboratories, Inc.  
2680 East Lansing Drive  
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:  
John Lavery (johnlavery@meritlabs.com)  
Barbara Ball (bball@meritlabs.com)

## Report Summary

---

Lab Sample ID(s): S01707.01-S01707.03  
Project: RACER Hemphill Rd  
Collected Date(s): 05/06/2019  
Submitted Date/Time: 05/07/2019 15:15  
Sampled by: Kevin Schneider  
P.O. #: PO

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Maya Murshak  
Technical Director



# Analytical Laboratory Report

## General Report Notes

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Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (\*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

## Report Narrative

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There is no additional narrative for this analytical report



# Analytical Laboratory Report

## Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001

## Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

## Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



# Analytical Laboratory Report

## Method Summary

Method	Version
TO-15	EPA TO-15 Second Edition January 1999

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# Analytical Laboratory Report

## Sample Summary (3 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S01707.01	VP-1S	Air	05/06/19 14:20 - 05/06/19 14:30
S01707.02	VP-3S	Air	05/06/19 15:03 - 05/06/19 15:13
S01707.03	DUP-050619	Air	05/06/19 00:01 - 05/06/19 00:02



# Analytical Laboratory Report

Lab Sample ID: S01707.01

Sample Tag: VP-1S

Collected Date/Time: 05/06/2019 14:20 - 05/06/2019 14:30

Matrix: Air

COC Reference: A01998

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Air Canister	None	No	RT	n/a

### Organics - Volatiles

TO-15, Method: TO-15, Run Date: 05/11/19 04:52, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	20		ppbv	10	67-64-1	
1,3-Butadiene	Not detected	2		ppbv	10	106-99-0	
Benzene	Not detected	2		ppbv	10	71-43-2	
Bromodichloromethane	Not detected	2		ppbv	10	75-27-4	
Bromoform	Not detected	2		ppbv	10	75-25-2	
Bromomethane	Not detected	2		ppbv	10	74-83-9	
Vinyl bromide	Not detected	2		ppbv	10	593-60-2	
Benzyl chloride	Not detected	2		ppbv	10	100-44-7	
Carbon disulfide	Not detected	5		ppbv	10	75-15-0	
Chlorobenzene	Not detected	2		ppbv	10	108-90-7	
Chloroethane	Not detected	2		ppbv	10	75-00-3	
Chloroform	Not detected	2		ppbv	10	67-66-3	
Chloromethane	Not detected	2		ppbv	10	74-87-3	
3-Chloropropene	Not detected	2		ppbv	10	107-05-1	
2-Chlorotoluene	Not detected	2		ppbv	10	95-49-8	
Carbon tetrachloride	Not detected	2		ppbv	10	56-23-5	
Cyclohexane	Not detected	2		ppbv	10	110-82-7	
1,1-Dichloroethane	Not detected	2		ppbv	10	75-34-3	
1,1-Dichloroethene	Not detected	2		ppbv	10	75-35-4	
1,2-Dibromoethane	Not detected	2		ppbv	10	106-93-4	
1,2-Dichloroethane	Not detected	2		ppbv	10	107-06-2	
1,2-Dichloropropane	Not detected	2		ppbv	10	78-87-5	
1,4-Dioxane	Not detected	25		ppbv	10	123-91-1	
Dichlorodifluoromethane	Not detected	2		ppbv	10	75-71-8	
Dibromochloromethane	Not detected	2		ppbv	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	2		ppbv	10	156-60-5	
cis-1,2-Dichloroethene	Not detected	2		ppbv	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	2		ppbv	10	541-73-1	
1,2-Dichlorobenzene	Not detected	2		ppbv	10	95-50-1	
1,4-Dichlorobenzene	Not detected	2		ppbv	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-02-6	
Ethanol*	52	25		ppbv	10	64-17-5	
Ethylbenzene	Not detected	2		ppbv	10	100-41-4	
Ethyl Acetate*	Not detected	10		ppbv	10	141-78-6	
4-Ethyltoluene	Not detected	2		ppbv	10	622-96-8	
Freon 113	Not detected	2		ppbv	10	76-13-1	
Freon 114	Not detected	2		ppbv	10	76-14-2	
Heptane	Not detected	2		ppbv	10	142-82-5	
Hexachlorobutadiene	Not detected	2		ppbv	10	87-68-3	
Hexane	Not detected	2		ppbv	10	110-54-3	



# Analytical Laboratory Report

Lab Sample ID: S01707.01 (continued)

Sample Tag: VP-1S

**TO-15, Method: TO-15, Run Date: 05/11/19 04:52, Analyst: KAG (continued)**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
2-Hexanone*	Not detected	5		ppbv	10	591-78-6	
Isopropyl Alcohol*	Not detected	20		ppbv	10	67-63-0	
Methylene chloride	Not detected	5		ppbv	10	75-09-2	
2-Butanone (MEK)	Not detected	10		ppbv	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	5		ppbv	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	2		ppbv	10	1634-04-4	
Methyl methacrylate	Not detected	2		ppbv	10	80-62-6	
Naphthalene	Not detected	2		ppbv	10	91-20-3	
Propylene*	Not detected	3		ppbv	10	115-07-1	X
Styrene	Not detected	2		ppbv	10	100-42-5	
1,1,1-Trichloroethane	Not detected	2		ppbv	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	2		ppbv	10	79-34-5	
1,1,2-Trichloroethane	Not detected	2		ppbv	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ppbv	10	120-82-1	
1,2,4-Trimethylbenzene	2	2		ppbv	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	2		ppbv	10	108-67-8	
2,2,4-Trimethylpentane	3	2		ppbv	10	540-84-1	
Tert-butyl Alcohol	Not detected	10		ppbv	10	75-65-0	
Tetrachloroethene	Not detected	2		ppbv	10	127-18-4	
Tetrahydrofuran*	8	2		ppbv	10	109-99-9	
Toluene	11	2		ppbv	10	108-88-3	
Trichloroethene	Not detected	2		ppbv	10	79-01-6	
Trichlorofluoromethane	Not detected	2		ppbv	10	75-69-4	
Vinyl chloride	Not detected	2		ppbv	10	75-01-4	
Vinyl acetate	Not detected	2		ppbv	10	108-05-4	
p,m-Xylene	6	4		ppbv	10		
o-Xylene	2	2		ppbv	10	95-47-6	
Total Xylenes	8	6		ppbv	10	1330-20-7	

**TO-15, Method: TO-15, Run Date: 05/11/19 04:52, Analyst: KAG**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	48		ug/m3	10	67-64-1	
1,3-Butadiene	Not detected	4.4		ug/m3	10	106-99-0	
Benzene	Not detected	6.4		ug/m3	10	71-43-2	
Bromodichloromethane	Not detected	13		ug/m3	10	75-27-4	
Bromoform	Not detected	21		ug/m3	10	75-25-2	
Bromomethane	Not detected	7.8		ug/m3	10	74-83-9	
Vinyl bromide	Not detected	8.7		ug/m3	10	593-60-2	
Benzyl chloride	Not detected	10		ug/m3	10	100-44-7	
Carbon disulfide	Not detected	16		ug/m3	10	75-15-0	
Chlorobenzene	Not detected	9.2		ug/m3	10	108-90-7	
Chloroethane	Not detected	5.3		ug/m3	10	75-00-3	
Chloroform	Not detected	9.8		ug/m3	10	67-66-3	
Chloromethane	Not detected	4.1		ug/m3	10	74-87-3	
3-Chloropropene	Not detected	6.3		ug/m3	10	107-05-1	
2-Chlorotoluene	Not detected	10		ug/m3	10	95-49-8	
Carbon tetrachloride	Not detected	13		ug/m3	10	56-23-5	
Cyclohexane	Not detected	6.9		ug/m3	10	110-82-7	
1,1-Dichloroethane	Not detected	8.1		ug/m3	10	75-34-3	

X-Elevated reporting limit due to matrix interference



# Analytical Laboratory Report

Lab Sample ID: S01707.01 (continued)

Sample Tag: VP-1S

TO-15, Method: TO-15, Run Date: 05/11/19 04:52, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1-Dichloroethene	Not detected	7.9		ug/m3	10	75-35-4	
1,2-Dibromoethane	Not detected	15		ug/m3	10	106-93-4	
1,2-Dichloroethane	Not detected	8.1		ug/m3	10	107-06-2	
1,2-Dichloropropane	Not detected	9.2		ug/m3	10	78-87-5	
1,4-Dioxane	Not detected	90		ug/m3	10	123-91-1	
Dichlorodifluoromethane	Not detected	9.9		ug/m3	10	75-71-8	
Dibromochloromethane	Not detected	17		ug/m3	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-60-5	
cis-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	12		ug/m3	10	541-73-1	
1,2-Dichlorobenzene	Not detected	12		ug/m3	10	95-50-1	
1,4-Dichlorobenzene	Not detected	12		ug/m3	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-02-6	
Ethanol*	98	47		ug/m3	10	64-17-5	
Ethylbenzene	Not detected	8.7		ug/m3	10	100-41-4	
Ethyl Acetate*	Not detected	36		ug/m3	10	141-78-6	
4-Ethyltoluene	Not detected	9.8		ug/m3	10	622-96-8	
Freon 113	Not detected	15		ug/m3	10	76-13-1	
Freon 114	Not detected	14		ug/m3	10	76-14-2	
Heptane	Not detected	8.2		ug/m3	10	142-82-5	
Hexachlorobutadiene	Not detected	21		ug/m3	10	87-68-3	
Hexane	Not detected	7.0		ug/m3	10	110-54-3	
2-Hexanone*	Not detected	20		ug/m3	10	591-78-6	
Isopropyl Alcohol*	Not detected	49		ug/m3	10	67-63-0	
Methylene chloride	Not detected	17		ug/m3	10	75-09-2	
2-Butanone (MEK)	Not detected	29		ug/m3	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	20		ug/m3	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	7.2		ug/m3	10	1634-04-4	
Methyl methacrylate	Not detected	8.2		ug/m3	10	80-62-6	
Naphthalene	Not detected	10		ug/m3	10	91-20-3	
Propylene*	Not detected	5.2		ug/m3	10	115-07-1	X
Styrene	Not detected	8.5		ug/m3	10	100-42-5	
1,1,1-Trichloroethane	Not detected	11		ug/m3	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	14		ug/m3	10	79-34-5	
1,1,2-Trichloroethane	Not detected	11		ug/m3	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	37		ug/m3	10	120-82-1	
1,2,4-Trimethylbenzene	9.8	9.8		ug/m3	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	9.8		ug/m3	10	108-67-8	
2,2,4-Trimethylpentane	14	9.3		ug/m3	10	540-84-1	
Tert-butyl Alcohol	Not detected	30		ug/m3	10	75-65-0	
Tetrachloroethene	Not detected	14		ug/m3	10	127-18-4	
Tetrahydrofuran*	24	5.9		ug/m3	10	109-99-9	
Toluene	41	7.5		ug/m3	10	108-88-3	
Trichloroethene	Not detected	11		ug/m3	10	79-01-6	
Trichlorofluoromethane	Not detected	11		ug/m3	10	75-69-4	
Vinyl chloride	Not detected	5.1		ug/m3	10	75-01-4	
Vinyl acetate	Not detected	7.0		ug/m3	10	108-05-4	
p,m-Xylene	26	17		ug/m3	10		

X-Elevated reporting limit due to matrix interference



# Analytical Laboratory Report

Lab Sample ID: S01707.01 (continued)

Sample Tag: VP-1S

TO-15, Method: TO-15, Run Date: 05/11/19 04:52, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	8.7	8.7		ug/m3	10	95-47-6	
Total Xylenes	35	26		ug/m3	10	1330-20-7	



# Analytical Laboratory Report

Lab Sample ID: S01707.02

Sample Tag: VP-3S

Collected Date/Time: 05/06/2019 15:03 - 05/06/2019 15:13

Matrix: Air

COC Reference: A01998

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Air Canister	None	No	RT	n/a

### Organics - Volatiles

TO-15, Method: TO-15, Run Date: 05/11/19 05:23, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	20		ppbv	10	67-64-1	
1,3-Butadiene	Not detected	2		ppbv	10	106-99-0	
Benzene	Not detected	2		ppbv	10	71-43-2	
Bromodichloromethane	Not detected	2		ppbv	10	75-27-4	
Bromoform	Not detected	2		ppbv	10	75-25-2	
Bromomethane	Not detected	2		ppbv	10	74-83-9	
Vinyl bromide	Not detected	2		ppbv	10	593-60-2	
Benzyl chloride	Not detected	2		ppbv	10	100-44-7	
Carbon disulfide	Not detected	5		ppbv	10	75-15-0	
Chlorobenzene	Not detected	2		ppbv	10	108-90-7	
Chloroethane	Not detected	2		ppbv	10	75-00-3	
Chloroform	Not detected	2		ppbv	10	67-66-3	
Chloromethane	Not detected	2		ppbv	10	74-87-3	
3-Chloropropene	Not detected	2		ppbv	10	107-05-1	
2-Chlorotoluene	Not detected	2		ppbv	10	95-49-8	
Carbon tetrachloride	Not detected	2		ppbv	10	56-23-5	
Cyclohexane	Not detected	2		ppbv	10	110-82-7	
1,1-Dichloroethane	Not detected	2		ppbv	10	75-34-3	
1,1-Dichloroethene	Not detected	2		ppbv	10	75-35-4	
1,2-Dibromoethane	Not detected	2		ppbv	10	106-93-4	
1,2-Dichloroethane	Not detected	2		ppbv	10	107-06-2	
1,2-Dichloropropane	Not detected	2		ppbv	10	78-87-5	
1,4-Dioxane	Not detected	25		ppbv	10	123-91-1	
Dichlorodifluoromethane	Not detected	2		ppbv	10	75-71-8	
Dibromochloromethane	Not detected	2		ppbv	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	2		ppbv	10	156-60-5	
cis-1,2-Dichloroethene	Not detected	2		ppbv	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	2		ppbv	10	541-73-1	
1,2-Dichlorobenzene	Not detected	2		ppbv	10	95-50-1	
1,4-Dichlorobenzene	Not detected	2		ppbv	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-02-6	
Ethanol*	33	25		ppbv	10	64-17-5	
Ethylbenzene	2	2		ppbv	10	100-41-4	
Ethyl Acetate*	Not detected	10		ppbv	10	141-78-6	
4-Ethyltoluene	Not detected	2		ppbv	10	622-96-8	
Freon 113	Not detected	2		ppbv	10	76-13-1	
Freon 114	Not detected	2		ppbv	10	76-14-2	
Heptane	Not detected	2		ppbv	10	142-82-5	
Hexachlorobutadiene	Not detected	2		ppbv	10	87-68-3	
Hexane	Not detected	2		ppbv	10	110-54-3	



# Analytical Laboratory Report

Lab Sample ID: S01707.02 (continued)

Sample Tag: VP-3S

**TO-15, Method: TO-15, Run Date: 05/11/19 05:23, Analyst: KAG (continued)**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
2-Hexanone*	Not detected	5		ppbv	10	591-78-6	
Isopropyl Alcohol*	270	20		ppbv	10	67-63-0	
Methylene chloride	Not detected	5		ppbv	10	75-09-2	
2-Butanone (MEK)	Not detected	10		ppbv	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	5		ppbv	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	2		ppbv	10	1634-04-4	
Methyl methacrylate	Not detected	2		ppbv	10	80-62-6	
Naphthalene	Not detected	2		ppbv	10	91-20-3	
Propylene*	Not detected	2		ppbv	10	115-07-1	
Styrene	Not detected	2		ppbv	10	100-42-5	
1,1,1-Trichloroethane	Not detected	2		ppbv	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	2		ppbv	10	79-34-5	
1,1,2-Trichloroethane	Not detected	2		ppbv	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ppbv	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	2		ppbv	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	2		ppbv	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	2		ppbv	10	540-84-1	
Tert-butyl Alcohol	Not detected	10		ppbv	10	75-65-0	
Tetrachloroethene	Not detected	2		ppbv	10	127-18-4	
Tetrahydrofuran*	6	2		ppbv	10	109-99-9	
Toluene	6	2		ppbv	10	108-88-3	
Trichloroethene	Not detected	2		ppbv	10	79-01-6	
Trichlorofluoromethane	Not detected	2		ppbv	10	75-69-4	
Vinyl chloride	Not detected	2		ppbv	10	75-01-4	
Vinyl acetate	Not detected	2		ppbv	10	108-05-4	
p,m-Xylene	8	4		ppbv	10		
o-Xylene	3	2		ppbv	10	95-47-6	
Total Xylenes	11	6		ppbv	10	1330-20-7	

**TO-15, Method: TO-15, Run Date: 05/11/19 05:23, Analyst: KAG**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	48		ug/m3	10	67-64-1	
1,3-Butadiene	Not detected	4.4		ug/m3	10	106-99-0	
Benzene	Not detected	6.4		ug/m3	10	71-43-2	
Bromodichloromethane	Not detected	13		ug/m3	10	75-27-4	
Bromoform	Not detected	21		ug/m3	10	75-25-2	
Bromomethane	Not detected	7.8		ug/m3	10	74-83-9	
Vinyl bromide	Not detected	8.7		ug/m3	10	593-60-2	
Benzyl chloride	Not detected	10		ug/m3	10	100-44-7	
Carbon disulfide	Not detected	16		ug/m3	10	75-15-0	
Chlorobenzene	Not detected	9.2		ug/m3	10	108-90-7	
Chloroethane	Not detected	5.3		ug/m3	10	75-00-3	
Chloroform	Not detected	9.8		ug/m3	10	67-66-3	
Chloromethane	Not detected	4.1		ug/m3	10	74-87-3	
3-Chloropropene	Not detected	6.3		ug/m3	10	107-05-1	
2-Chlorotoluene	Not detected	10		ug/m3	10	95-49-8	
Carbon tetrachloride	Not detected	13		ug/m3	10	56-23-5	
Cyclohexane	Not detected	6.9		ug/m3	10	110-82-7	
1,1-Dichloroethane	Not detected	8.1		ug/m3	10	75-34-3	
1,1-Dichloroethene	Not detected	7.9		ug/m3	10	75-35-4	



# Analytical Laboratory Report

Lab Sample ID: S01707.02 (continued)

Sample Tag: VP-3S

TO-15, Method: TO-15, Run Date: 05/11/19 05:23, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromoethane	Not detected	15		ug/m3	10	106-93-4	
1,2-Dichloroethane	Not detected	8.1		ug/m3	10	107-06-2	
1,2-Dichloropropane	Not detected	9.2		ug/m3	10	78-87-5	
1,4-Dioxane	Not detected	90		ug/m3	10	123-91-1	
Dichlorodifluoromethane	Not detected	9.9		ug/m3	10	75-71-8	
Dibromochloromethane	Not detected	17		ug/m3	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-60-5	
cis-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	12		ug/m3	10	541-73-1	
1,2-Dichlorobenzene	Not detected	12		ug/m3	10	95-50-1	
1,4-Dichlorobenzene	Not detected	12		ug/m3	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-02-6	
Ethanol*	62	47		ug/m3	10	64-17-5	
Ethylbenzene	8.7	8.7		ug/m3	10	100-41-4	
Ethyl Acetate*	Not detected	36		ug/m3	10	141-78-6	
4-Ethyltoluene	Not detected	9.8		ug/m3	10	622-96-8	
Freon 113	Not detected	15		ug/m3	10	76-13-1	
Freon 114	Not detected	14		ug/m3	10	76-14-2	
Heptane	Not detected	8.2		ug/m3	10	142-82-5	
Hexachlorobutadiene	Not detected	21		ug/m3	10	87-68-3	
Hexane	Not detected	7.0		ug/m3	10	110-54-3	
2-Hexanone*	Not detected	20		ug/m3	10	591-78-6	
Isopropyl Alcohol*	660	49		ug/m3	10	67-63-0	
Methylene chloride	Not detected	17		ug/m3	10	75-09-2	
2-Butanone (MEK)	Not detected	29		ug/m3	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	20		ug/m3	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	7.2		ug/m3	10	1634-04-4	
Methyl methacrylate	Not detected	8.2		ug/m3	10	80-62-6	
Naphthalene	Not detected	10		ug/m3	10	91-20-3	
Propylene*	Not detected	3.4		ug/m3	10	115-07-1	
Styrene	Not detected	8.5		ug/m3	10	100-42-5	
1,1,1-Trichloroethane	Not detected	11		ug/m3	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	14		ug/m3	10	79-34-5	
1,1,2-Trichloroethane	Not detected	11		ug/m3	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	37		ug/m3	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	9.8		ug/m3	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	9.8		ug/m3	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	9.3		ug/m3	10	540-84-1	
Tert-butyl Alcohol	Not detected	30		ug/m3	10	75-65-0	
Tetrachloroethene	Not detected	14		ug/m3	10	127-18-4	
Tetrahydrofuran*	18	5.9		ug/m3	10	109-99-9	
Toluene	23	7.5		ug/m3	10	108-88-3	
Trichloroethene	Not detected	11		ug/m3	10	79-01-6	
Trichlorofluoromethane	Not detected	11		ug/m3	10	75-69-4	
Vinyl chloride	Not detected	5.1		ug/m3	10	75-01-4	
Vinyl acetate	Not detected	7.0		ug/m3	10	108-05-4	
p,m-Xylene	35	17		ug/m3	10		
o-Xylene	13	8.7		ug/m3	10	95-47-6	
Total Xylenes	48	26		ug/m3	10	1330-20-7	



# Analytical Laboratory Report

Lab Sample ID: S01707.03

Sample Tag: DUP-050619

Collected Date/Time: 05/06/2019 00:01 - 05/06/2019 00:02

Matrix: Air

COC Reference: A01998

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Air Canister	None	No	RT	n/a

**Organics - Volatiles**

**TO-15, Method: TO-15, Run Date: 05/11/19 05:54, Analyst: KAG**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	20		ppbv	10	67-64-1	
1,3-Butadiene	Not detected	2		ppbv	10	106-99-0	
Benzene	Not detected	2		ppbv	10	71-43-2	
Bromodichloromethane	Not detected	2		ppbv	10	75-27-4	
Bromoform	Not detected	2		ppbv	10	75-25-2	
Bromomethane	Not detected	2		ppbv	10	74-83-9	
Vinyl bromide	Not detected	2		ppbv	10	593-60-2	
Benzyl chloride	Not detected	2		ppbv	10	100-44-7	
Carbon disulfide	Not detected	5		ppbv	10	75-15-0	
Chlorobenzene	Not detected	2		ppbv	10	108-90-7	
Chloroethane	Not detected	2		ppbv	10	75-00-3	
Chloroform	Not detected	2		ppbv	10	67-66-3	
Chloromethane	Not detected	2		ppbv	10	74-87-3	
3-Chloropropene	Not detected	2		ppbv	10	107-05-1	
2-Chlorotoluene	Not detected	2		ppbv	10	95-49-8	
Carbon tetrachloride	Not detected	2		ppbv	10	56-23-5	
Cyclohexane	Not detected	2		ppbv	10	110-82-7	
1,1-Dichloroethane	Not detected	2		ppbv	10	75-34-3	
1,1-Dichloroethene	Not detected	2		ppbv	10	75-35-4	
1,2-Dibromoethane	Not detected	2		ppbv	10	106-93-4	
1,2-Dichloroethane	Not detected	2		ppbv	10	107-06-2	
1,2-Dichloropropane	Not detected	2		ppbv	10	78-87-5	
1,4-Dioxane	Not detected	25		ppbv	10	123-91-1	
Dichlorodifluoromethane	Not detected	2		ppbv	10	75-71-8	
Dibromochloromethane	Not detected	2		ppbv	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	2		ppbv	10	156-60-5	
cis-1,2-Dichloroethene	Not detected	2		ppbv	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	2		ppbv	10	541-73-1	
1,2-Dichlorobenzene	Not detected	2		ppbv	10	95-50-1	
1,4-Dichlorobenzene	Not detected	2		ppbv	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-02-6	
Ethanol*	Not detected	25		ppbv	10	64-17-5	
Ethylbenzene	Not detected	2		ppbv	10	100-41-4	
Ethyl Acetate*	Not detected	10		ppbv	10	141-78-6	
4-Ethyltoluene	Not detected	2		ppbv	10	622-96-8	
Freon 113	Not detected	2		ppbv	10	76-13-1	
Freon 114	Not detected	2		ppbv	10	76-14-2	
Heptane	Not detected	2		ppbv	10	142-82-5	
Hexachlorobutadiene	Not detected	2		ppbv	10	87-68-3	
Hexane	Not detected	2		ppbv	10	110-54-3	



# Analytical Laboratory Report

Lab Sample ID: S01707.03 (continued)

Sample Tag: DUP-050619

**TO-15, Method: TO-15, Run Date: 05/11/19 05:54, Analyst: KAG (continued)**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
2-Hexanone*	Not detected	5		ppbv	10	591-78-6	
Isopropyl Alcohol*	60	20		ppbv	10	67-63-0	
Methylene chloride	Not detected	5		ppbv	10	75-09-2	
2-Butanone (MEK)	Not detected	10		ppbv	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	5		ppbv	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	2		ppbv	10	1634-04-4	
Methyl methacrylate	Not detected	2		ppbv	10	80-62-6	
Naphthalene	Not detected	2		ppbv	10	91-20-3	
Propylene*	Not detected	2		ppbv	10	115-07-1	
Styrene	Not detected	2		ppbv	10	100-42-5	
1,1,1-Trichloroethane	Not detected	2		ppbv	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	2		ppbv	10	79-34-5	
1,1,2-Trichloroethane	Not detected	2		ppbv	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ppbv	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	2		ppbv	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	2		ppbv	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	2		ppbv	10	540-84-1	
Tert-butyl Alcohol	Not detected	10		ppbv	10	75-65-0	
Tetrachloroethene	Not detected	2		ppbv	10	127-18-4	
Tetrahydrofuran*	Not detected	2		ppbv	10	109-99-9	
Toluene	Not detected	2		ppbv	10	108-88-3	
Trichloroethene	Not detected	2		ppbv	10	79-01-6	
Trichlorofluoromethane	Not detected	2		ppbv	10	75-69-4	
Vinyl chloride	Not detected	2		ppbv	10	75-01-4	
Vinyl acetate	Not detected	2		ppbv	10	108-05-4	
p,m-Xylene	Not detected	4		ppbv	10		
o-Xylene	Not detected	2		ppbv	10	95-47-6	
Total Xylenes	Not detected	6		ppbv	10	1330-20-7	

**TO-15, Method: TO-15, Run Date: 05/11/19 05:54, Analyst: KAG**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	48		ug/m3	10	67-64-1	
1,3-Butadiene	Not detected	4.4		ug/m3	10	106-99-0	
Benzene	Not detected	6.4		ug/m3	10	71-43-2	
Bromodichloromethane	Not detected	13		ug/m3	10	75-27-4	
Bromoform	Not detected	21		ug/m3	10	75-25-2	
Bromomethane	Not detected	7.8		ug/m3	10	74-83-9	
Vinyl bromide	Not detected	8.7		ug/m3	10	593-60-2	
Benzyl chloride	Not detected	10		ug/m3	10	100-44-7	
Carbon disulfide	Not detected	16		ug/m3	10	75-15-0	
Chlorobenzene	Not detected	9.2		ug/m3	10	108-90-7	
Chloroethane	Not detected	5.3		ug/m3	10	75-00-3	
Chloroform	Not detected	9.8		ug/m3	10	67-66-3	
Chloromethane	Not detected	4.1		ug/m3	10	74-87-3	
3-Chloropropene	Not detected	6.3		ug/m3	10	107-05-1	
2-Chlorotoluene	Not detected	10		ug/m3	10	95-49-8	
Carbon tetrachloride	Not detected	13		ug/m3	10	56-23-5	
Cyclohexane	Not detected	6.9		ug/m3	10	110-82-7	
1,1-Dichloroethane	Not detected	8.1		ug/m3	10	75-34-3	
1,1-Dichloroethene	Not detected	7.9		ug/m3	10	75-35-4	



# Analytical Laboratory Report

Lab Sample ID: S01707.03 (continued)

Sample Tag: DUP-050619

TO-15, Method: TO-15, Run Date: 05/11/19 05:54, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromoethane	Not detected	15		ug/m3	10	106-93-4	
1,2-Dichloroethane	Not detected	8.1		ug/m3	10	107-06-2	
1,2-Dichloropropane	Not detected	9.2		ug/m3	10	78-87-5	
1,4-Dioxane	Not detected	90		ug/m3	10	123-91-1	
Dichlorodifluoromethane	Not detected	9.9		ug/m3	10	75-71-8	
Dibromochloromethane	Not detected	17		ug/m3	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-60-5	
cis-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	12		ug/m3	10	541-73-1	
1,2-Dichlorobenzene	Not detected	12		ug/m3	10	95-50-1	
1,4-Dichlorobenzene	Not detected	12		ug/m3	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-02-6	
Ethanol*	Not detected	47		ug/m3	10	64-17-5	
Ethylbenzene	Not detected	8.7		ug/m3	10	100-41-4	
Ethyl Acetate*	Not detected	36		ug/m3	10	141-78-6	
4-Ethyltoluene	Not detected	9.8		ug/m3	10	622-96-8	
Freon 113	Not detected	15		ug/m3	10	76-13-1	
Freon 114	Not detected	14		ug/m3	10	76-14-2	
Heptane	Not detected	8.2		ug/m3	10	142-82-5	
Hexachlorobutadiene	Not detected	21		ug/m3	10	87-68-3	
Hexane	Not detected	7.0		ug/m3	10	110-54-3	
2-Hexanone*	Not detected	20		ug/m3	10	591-78-6	
Isopropyl Alcohol*	150	49		ug/m3	10	67-63-0	
Methylene chloride	Not detected	17		ug/m3	10	75-09-2	
2-Butanone (MEK)	Not detected	29		ug/m3	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	20		ug/m3	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	7.2		ug/m3	10	1634-04-4	
Methyl methacrylate	Not detected	8.2		ug/m3	10	80-62-6	
Naphthalene	Not detected	10		ug/m3	10	91-20-3	
Propylene*	Not detected	3.4		ug/m3	10	115-07-1	
Styrene	Not detected	8.5		ug/m3	10	100-42-5	
1,1,1-Trichloroethane	Not detected	11		ug/m3	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	14		ug/m3	10	79-34-5	
1,1,2-Trichloroethane	Not detected	11		ug/m3	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	37		ug/m3	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	9.8		ug/m3	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	9.8		ug/m3	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	9.3		ug/m3	10	540-84-1	
Tert-butyl Alcohol	Not detected	30		ug/m3	10	75-65-0	
Tetrachloroethene	Not detected	14		ug/m3	10	127-18-4	
Tetrahydrofuran*	Not detected	5.9		ug/m3	10	109-99-9	
Toluene	Not detected	7.5		ug/m3	10	108-88-3	
Trichloroethene	Not detected	11		ug/m3	10	79-01-6	
Trichlorofluoromethane	Not detected	11		ug/m3	10	75-69-4	
Vinyl chloride	Not detected	5.1		ug/m3	10	75-01-4	
Vinyl acetate	Not detected	7.0		ug/m3	10	108-05-4	
p,m-Xylene	Not detected	17		ug/m3	10		
o-Xylene	Not detected	8.7		ug/m3	10	95-47-6	
Total Xylenes	Not detected	26		ug/m3	10	1330-20-7	

# Merit Laboratories Login Checklist

Lab Set ID:S01707

Client:OBG02 (O'Brien & Gere Engineers, Inc.)

Project: RACER Hemphill Rd

Submitted:05/07/2019 15:15 Login User: MMC

Attention: Clifford Yantz

Address: O'Brien & Gere Engineers, Inc.  
2260 East Saginaw Street  
East Lansing, MI 48823

Phone: 248-477-5701 FAX:

Email: Clifford.Yantz@obg.com

Selection	Description	Note
<b>Sample Receiving</b>		
01.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples are received at 4C +/- 2C Thermometer # RT
02.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Received on ice/ cooling process begun
03.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples shipped
04.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples left in 24 hr. drop box
05.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Are there custody seals/tape or is the drop box locked
<b>Chain of Custody</b>		
06.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC adequately filled out
07.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC signed and relinquished to the lab
08.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample tag on bottles match COC
09.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Subcontracting needed? Subcontracted to:
<b>Preservation</b>		
10.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Do sample have correct chemical preservation
11.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Completed pH checks on preserved samples? (no VOAs)
12.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Did any samples need to be preserved in the lab?
<b>Bottle Conditions</b>		
13.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	All bottles intact
14.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Appropriate analytical bottles are used
15.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Merit bottles used
16.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sufficient sample volume received
17.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples require laboratory filtration
18.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples submitted within holding time
19.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: \_\_\_\_\_ Date: \_\_\_\_\_



2680 East Lansing Dr., East Lansing, MI 48823  
 Phone (517) 332-0167 Fax (517) 332-4034  
 www.meritlabs.com

C.O.C. PAGE # 1 OF 1

A 01998

**REPORT TO**

**AIR/GAS SAMPLES CHAIN OF CUSTODY RECORD**

**INVOICE TO**

CONTACT NAME: Clifford Yantz  
 COMPANY: O'Brien & Gere  
 ADDRESS: 2260 East Saginaw  
 CITY: East Lansing STATE: MI ZIP CODE: 48823  
 PHONE NO.: 313-333-0211 FAX NO.:  
 P.O. NO.: QUOTE NO.:  
 EMAIL ADDRESS: clifford.yantz@obg.com

CONTACT NAME:  SAME  
 COMPANY:  
 ADDRESS:  
 CITY: STATE: ZIP CODE:  
 PHONE NO.: EMAIL ADDRESS:

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME: RACER Hemphill Rd  
 SAMPLER(S) - PLEASE PRINT/SIGN NAME: Kevin Scheller *K Scheller*  
 TURNAROUND TIME REQUIRED:  1 DAY  2 DAYS  3 DAYS  STANDARD  OTHER  
 DELIVERABLES REQUIRED:  LEVEL II  LEVEL III  LEVEL IV  EDD  OTHER

Certifications  
 OHIO VAP  NELAP  
 DoD  NPDES

Sample Type: Indoor Air, Ambient Air, Soil Gas, Landfill Gas, Other (specify in notes)  
 Analyses: TO-15, Other (specify in notes)

MERIT LAB NO. FOR LAB USE ONLY	SAMPLE TAG IDENTIFICATION-DESCRIPTION	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	Sample Type					Analyses		
									Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (specify in notes)	TO-15	Other (specify in notes)	
01707.01	VP-1S	5/6/19	1420	1430	-26	-2	103	18338							X	
.02	VP-3S	5/6/19	1503	1513	-29	-3	17	18323							X	
.03	DUP-050619	5/6/19	-	-	-29	-3	-	13708							X	
<del>1835</del>																

Temperature (Fahrenheit)			Pressure (inches of Hg)			Notes
Interior	Ambient	Notes	Interior	Ambient	Notes	
Start	65°F		Start	29.9817		
Stop	63°F		Stop	29.977m		

RELINQUISHED BY: *K Scheller*  Sampler DATE: 5/7/19 TIME: 1320  
 SIGNATURE/ORGANIZATION: OBG  
 RECEIVED BY: *Joseph H. Miller* DATE: 5/7/19 TIME: 1300  
 SIGNATURE/ORGANIZATION:  
 RELINQUISHED BY: *JAM Miller* DATE: 5/7/19 TIME: 13:11  
 SIGNATURE/ORGANIZATION:  
 RECEIVED BY: *M Chilcote* DATE: 5/7/19 TIME: 1515  
 SIGNATURE/ORGANIZATION:

RELINQUISHED BY: DATE: TIME:  
 SIGNATURE/ORGANIZATION:  
 RECEIVED BY: DATE: TIME:  
 SIGNATURE/ORGANIZATION:  
 SEAL NO.: SEAL INTACT YES  NO  INITIALS: NOTES: TEMP. ON ARRIVAL: *RT*  
 SEAL NO.: SEAL INTACT YES  NO  INITIALS:



# Analytical Laboratory Report

Report ID: S05893.01(01)  
Generated on 08/21/2019

## Report to

---

Attention: Clifford Yantz  
O'Brien & Gere Engineers, Inc.  
2260 East Saginaw Street  
East Lansing, MI 48823

Phone: 248-477-5701 FAX:  
Email: Clifford.Yantz@obg.com

## Report produced by

---

Merit Laboratories, Inc.  
2680 East Lansing Drive  
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

## Contacts for report questions:

John Lavery (johnlavery@meritlabs.com)  
Barbara Ball (bball@meritlabs.com)

## Report Summary

---

Lab Sample ID(s): S05893.01-S05893.06  
Project: RACER Hemphill Rd  
Collected Date(s): 08/14/2019  
Submitted Date/Time: 08/14/2019 14:00  
Sampled by: Kevin Schneider  
P.O. #: PO

## Table of Contents

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Maya Murshak  
Technical Director



# Analytical Laboratory Report

## General Report Notes

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Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (\*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

## Report Narrative

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There is no additional narrative for this analytical report



# Analytical Laboratory Report

## Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001

## Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

## Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



# Analytical Laboratory Report

## Method Summary

Method	Version
TO-15	EPA TO-15 Second Edition January 1999

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# Analytical Laboratory Report

## Sample Summary (6 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S05893.01	VP-1S	Air	08/14/19 10:32 - 08/14/19 10:42
S05893.02	VP-3S	Air	08/14/19 11:13 - 08/14/19 11:21
S05893.03	VP-3D	Air	08/14/19 11:16 - 08/14/19 11:24
S05893.04	VP-2D	Air	08/14/19 11:56 - 08/14/19 12:03
S05893.05	VP-2S	Air	08/14/19 11:54 - 08/14/19 12:08
S05893.06	DUP-81419	Air	08/14/19 00:01 - 08/14/19 00:02



# Analytical Laboratory Report

Lab Sample ID: S05893.01

Sample Tag: VP-1S

Collected Date/Time: 08/14/2019 10:32 - 08/14/2019 10:42

Matrix: Air

COC Reference: A02157

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Air Canister	None	No	RT	n/a

### Organics - Volatiles

TO-15, Method: TO-15, Run Date: 08/20/19 09:42, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	40	20		ppbv	10	67-64-1	
1,3-Butadiene	Not detected	2		ppbv	10	106-99-0	
Benzene	Not detected	2		ppbv	10	71-43-2	
Bromodichloromethane	Not detected	2		ppbv	10	75-27-4	
Bromoform	Not detected	2		ppbv	10	75-25-2	
Bromomethane	Not detected	2		ppbv	10	74-83-9	
Vinyl bromide	Not detected	2		ppbv	10	593-60-2	
Benzyl chloride	Not detected	2		ppbv	10	100-44-7	
Carbon disulfide	Not detected	5		ppbv	10	75-15-0	
Chlorobenzene	Not detected	2		ppbv	10	108-90-7	
Chloroethane	Not detected	2		ppbv	10	75-00-3	
Chloroform	Not detected	2		ppbv	10	67-66-3	
Chloromethane	Not detected	2		ppbv	10	74-87-3	
3-Chloropropene	Not detected	2		ppbv	10	107-05-1	
2-Chlorotoluene	Not detected	2		ppbv	10	95-49-8	
Carbon tetrachloride	Not detected	2		ppbv	10	56-23-5	
Cyclohexane	Not detected	2		ppbv	10	110-82-7	
1,1-Dichloroethane	Not detected	2		ppbv	10	75-34-3	
1,1-Dichloroethene	Not detected	2		ppbv	10	75-35-4	
1,2-Dibromoethane	Not detected	2		ppbv	10	106-93-4	
1,2-Dichloroethane	Not detected	2		ppbv	10	107-06-2	
1,2-Dichloropropane	Not detected	2		ppbv	10	78-87-5	
1,4-Dioxane	Not detected	25		ppbv	10	123-91-1	
Dichlorodifluoromethane	Not detected	2		ppbv	10	75-71-8	
Dibromochloromethane	Not detected	2		ppbv	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	2		ppbv	10	156-60-5	
cis-1,2-Dichloroethene	Not detected	2		ppbv	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	2		ppbv	10	541-73-1	
1,2-Dichlorobenzene	Not detected	2		ppbv	10	95-50-1	
1,4-Dichlorobenzene	Not detected	2		ppbv	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-02-6	
Ethanol*	Not detected	25		ppbv	10	64-17-5	
Ethylbenzene	4	2		ppbv	10	100-41-4	
Ethyl Acetate*	Not detected	10		ppbv	10	141-78-6	
4-Ethyltoluene	Not detected	2		ppbv	10	622-96-8	
Freon 113	Not detected	2		ppbv	10	76-13-1	
Freon 114	Not detected	2		ppbv	10	76-14-2	
Heptane	Not detected	2		ppbv	10	142-82-5	
Hexachlorobutadiene	Not detected	2		ppbv	10	87-68-3	
Hexane	Not detected	2		ppbv	10	110-54-3	



# Analytical Laboratory Report

Lab Sample ID: S05893.01 (continued)

Sample Tag: VP-1S

**TO-15, Method: TO-15, Run Date: 08/20/19 09:42, Analyst: KAG (continued)**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
2-Hexanone*	Not detected	5		ppbv	10	591-78-6	
Isopropyl Alcohol*	90	20		ppbv	10	67-63-0	
Methylene chloride	Not detected	5		ppbv	10	75-09-2	
2-Butanone (MEK)	Not detected	10		ppbv	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	5		ppbv	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	2		ppbv	10	1634-04-4	
Methyl methacrylate	Not detected	2		ppbv	10	80-62-6	
Naphthalene	Not detected	2		ppbv	10	91-20-3	
Propylene*	Not detected	2		ppbv	10	115-07-1	
Styrene	Not detected	2		ppbv	10	100-42-5	
1,1,1-Trichloroethane	Not detected	2		ppbv	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	2		ppbv	10	79-34-5	
1,1,2-Trichloroethane	Not detected	2		ppbv	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ppbv	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	2		ppbv	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	2		ppbv	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	2		ppbv	10	540-84-1	
Tert-butyl Alcohol	Not detected	10		ppbv	10	75-65-0	
Tetrachloroethene	Not detected	2		ppbv	10	127-18-4	
Tetrahydrofuran*	3	2		ppbv	10	109-99-9	
Toluene	4	2		ppbv	10	108-88-3	
Trichloroethene	Not detected	2		ppbv	10	79-01-6	
Trichlorofluoromethane	Not detected	2		ppbv	10	75-69-4	
Vinyl chloride	Not detected	2		ppbv	10	75-01-4	
Vinyl acetate	Not detected	2		ppbv	10	108-05-4	
p,m-Xylene	14	4		ppbv	10		
o-Xylene	6	2		ppbv	10	95-47-6	
Total Xylenes	20	6		ppbv	10	1330-20-7	

**TO-15, Method: TO-15, Run Date: 08/20/19 09:42, Analyst: KAG**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	95	48		ug/m3	10	67-64-1	
1,3-Butadiene	Not detected	4.4		ug/m3	10	106-99-0	
Benzene	Not detected	6.4		ug/m3	10	71-43-2	
Bromodichloromethane	Not detected	13		ug/m3	10	75-27-4	
Bromoform	Not detected	21		ug/m3	10	75-25-2	
Bromomethane	Not detected	7.8		ug/m3	10	74-83-9	
Vinyl bromide	Not detected	8.7		ug/m3	10	593-60-2	
Benzyl chloride	Not detected	10		ug/m3	10	100-44-7	
Carbon disulfide	Not detected	16		ug/m3	10	75-15-0	
Chlorobenzene	Not detected	9.2		ug/m3	10	108-90-7	
Chloroethane	Not detected	5.3		ug/m3	10	75-00-3	
Chloroform	Not detected	9.8		ug/m3	10	67-66-3	
Chloromethane	Not detected	4.1		ug/m3	10	74-87-3	
3-Chloropropene	Not detected	6.3		ug/m3	10	107-05-1	
2-Chlorotoluene	Not detected	10		ug/m3	10	95-49-8	
Carbon tetrachloride	Not detected	13		ug/m3	10	56-23-5	
Cyclohexane	Not detected	6.9		ug/m3	10	110-82-7	
1,1-Dichloroethane	Not detected	8.1		ug/m3	10	75-34-3	
1,1-Dichloroethene	Not detected	7.9		ug/m3	10	75-35-4	



# Analytical Laboratory Report

Lab Sample ID: S05893.01 (continued)

Sample Tag: VP-1S

TO-15, Method: TO-15, Run Date: 08/20/19 09:42, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromoethane	Not detected	15		ug/m3	10	106-93-4	
1,2-Dichloroethane	Not detected	8.1		ug/m3	10	107-06-2	
1,2-Dichloropropane	Not detected	9.2		ug/m3	10	78-87-5	
1,4-Dioxane	Not detected	90		ug/m3	10	123-91-1	
Dichlorodifluoromethane	Not detected	9.9		ug/m3	10	75-71-8	
Dibromochloromethane	Not detected	17		ug/m3	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-60-5	
cis-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	12		ug/m3	10	541-73-1	
1,2-Dichlorobenzene	Not detected	12		ug/m3	10	95-50-1	
1,4-Dichlorobenzene	Not detected	12		ug/m3	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-02-6	
Ethanol*	Not detected	47		ug/m3	10	64-17-5	
Ethylbenzene	17	8.7		ug/m3	10	100-41-4	
Ethyl Acetate*	Not detected	36		ug/m3	10	141-78-6	
4-Ethyltoluene	Not detected	9.8		ug/m3	10	622-96-8	
Freon 113	Not detected	15		ug/m3	10	76-13-1	
Freon 114	Not detected	14		ug/m3	10	76-14-2	
Heptane	Not detected	8.2		ug/m3	10	142-82-5	
Hexachlorobutadiene	Not detected	21		ug/m3	10	87-68-3	
Hexane	Not detected	7.0		ug/m3	10	110-54-3	
2-Hexanone*	Not detected	20		ug/m3	10	591-78-6	
Isopropyl Alcohol*	220	49		ug/m3	10	67-63-0	
Methylene chloride	Not detected	17		ug/m3	10	75-09-2	
2-Butanone (MEK)	Not detected	29		ug/m3	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	20		ug/m3	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	7.2		ug/m3	10	1634-04-4	
Methyl methacrylate	Not detected	8.2		ug/m3	10	80-62-6	
Naphthalene	Not detected	10		ug/m3	10	91-20-3	
Propylene*	Not detected	3.4		ug/m3	10	115-07-1	
Styrene	Not detected	8.5		ug/m3	10	100-42-5	
1,1,1-Trichloroethane	Not detected	11		ug/m3	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	14		ug/m3	10	79-34-5	
1,1,2-Trichloroethane	Not detected	11		ug/m3	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	37		ug/m3	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	9.8		ug/m3	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	9.8		ug/m3	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	9.3		ug/m3	10	540-84-1	
Tert-butyl Alcohol	Not detected	30		ug/m3	10	75-65-0	
Tetrachloroethene	Not detected	14		ug/m3	10	127-18-4	
Tetrahydrofuran*	8.8	5.9		ug/m3	10	109-99-9	
Toluene	15	7.5		ug/m3	10	108-88-3	
Trichloroethene	Not detected	11		ug/m3	10	79-01-6	
Trichlorofluoromethane	Not detected	11		ug/m3	10	75-69-4	
Vinyl chloride	Not detected	5.1		ug/m3	10	75-01-4	
Vinyl acetate	Not detected	7.0		ug/m3	10	108-05-4	
p,m-Xylene	61	17		ug/m3	10		
o-Xylene	26	8.7		ug/m3	10	95-47-6	
Total Xylenes	87	26		ug/m3	10	1330-20-7	



# Analytical Laboratory Report

Lab Sample ID: S05893.02

Sample Tag: VP-3S

Collected Date/Time: 08/14/2019 11:13 - 08/14/2019 11:21

Matrix: Air

COC Reference: A02157

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Air Canister	None	No	RT	n/a

### Organics - Volatiles

TO-15, Method: TO-15, Run Date: 08/20/19 10:13, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	20		ppbv	10	67-64-1	
1,3-Butadiene	Not detected	2		ppbv	10	106-99-0	
Benzene	Not detected	2		ppbv	10	71-43-2	
Bromodichloromethane	Not detected	2		ppbv	10	75-27-4	
Bromoform	Not detected	2		ppbv	10	75-25-2	
Bromomethane	Not detected	2		ppbv	10	74-83-9	
Vinyl bromide	Not detected	2		ppbv	10	593-60-2	
Benzyl chloride	Not detected	2		ppbv	10	100-44-7	
Carbon disulfide	Not detected	5		ppbv	10	75-15-0	
Chlorobenzene	Not detected	2		ppbv	10	108-90-7	
Chloroethane	Not detected	2		ppbv	10	75-00-3	
Chloroform	Not detected	2		ppbv	10	67-66-3	
Chloromethane	Not detected	2		ppbv	10	74-87-3	
3-Chloropropene	Not detected	2		ppbv	10	107-05-1	
2-Chlorotoluene	Not detected	2		ppbv	10	95-49-8	
Carbon tetrachloride	Not detected	2		ppbv	10	56-23-5	
Cyclohexane	Not detected	2		ppbv	10	110-82-7	
1,1-Dichloroethane	Not detected	2		ppbv	10	75-34-3	
1,1-Dichloroethene	Not detected	2		ppbv	10	75-35-4	
1,2-Dibromoethane	Not detected	2		ppbv	10	106-93-4	
1,2-Dichloroethane	Not detected	2		ppbv	10	107-06-2	
1,2-Dichloropropane	Not detected	2		ppbv	10	78-87-5	
1,4-Dioxane	Not detected	25		ppbv	10	123-91-1	
Dichlorodifluoromethane	Not detected	2		ppbv	10	75-71-8	
Dibromochloromethane	Not detected	2		ppbv	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	2		ppbv	10	156-60-5	
cis-1,2-Dichloroethene	Not detected	2		ppbv	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	2		ppbv	10	541-73-1	
1,2-Dichlorobenzene	Not detected	2		ppbv	10	95-50-1	
1,4-Dichlorobenzene	Not detected	2		ppbv	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-02-6	
Ethanol*	38	25		ppbv	10	64-17-5	
Ethylbenzene	2	2		ppbv	10	100-41-4	
Ethyl Acetate*	Not detected	10		ppbv	10	141-78-6	
4-Ethyltoluene	Not detected	2		ppbv	10	622-96-8	
Freon 113	Not detected	2		ppbv	10	76-13-1	
Freon 114	Not detected	2		ppbv	10	76-14-2	
Heptane	Not detected	2		ppbv	10	142-82-5	
Hexachlorobutadiene	Not detected	2		ppbv	10	87-68-3	
Hexane	Not detected	2		ppbv	10	110-54-3	



# Analytical Laboratory Report

Lab Sample ID: S05893.02 (continued)

Sample Tag: VP-3S

**TO-15, Method: TO-15, Run Date: 08/20/19 10:13, Analyst: KAG (continued)**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
2-Hexanone*	Not detected	5		ppbv	10	591-78-6	
Isopropyl Alcohol*	70	20		ppbv	10	67-63-0	
Methylene chloride	Not detected	5		ppbv	10	75-09-2	
2-Butanone (MEK)	Not detected	10		ppbv	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	5		ppbv	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	2		ppbv	10	1634-04-4	
Methyl methacrylate	Not detected	2		ppbv	10	80-62-6	
Naphthalene	Not detected	2		ppbv	10	91-20-3	
Propylene*	Not detected	2		ppbv	10	115-07-1	
Styrene	Not detected	2		ppbv	10	100-42-5	
1,1,1-Trichloroethane	Not detected	2		ppbv	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	2		ppbv	10	79-34-5	
1,1,2-Trichloroethane	Not detected	2		ppbv	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ppbv	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	2		ppbv	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	2		ppbv	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	2		ppbv	10	540-84-1	
Tert-butyl Alcohol	10	10		ppbv	10	75-65-0	
Tetrachloroethene	Not detected	2		ppbv	10	127-18-4	
Tetrahydrofuran*	2	2		ppbv	10	109-99-9	
Toluene	Not detected	2		ppbv	10	108-88-3	
Trichloroethene	Not detected	2		ppbv	10	79-01-6	
Trichlorofluoromethane	Not detected	2		ppbv	10	75-69-4	
Vinyl chloride	Not detected	2		ppbv	10	75-01-4	
Vinyl acetate	Not detected	2		ppbv	10	108-05-4	
p,m-Xylene	7	4		ppbv	10		
o-Xylene	3	2		ppbv	10	95-47-6	
Total Xylenes	11	6		ppbv	10	1330-20-7	

**TO-15, Method: TO-15, Run Date: 08/20/19 10:13, Analyst: KAG**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	48		ug/m3	10	67-64-1	
1,3-Butadiene	Not detected	4.4		ug/m3	10	106-99-0	
Benzene	Not detected	6.4		ug/m3	10	71-43-2	
Bromodichloromethane	Not detected	13		ug/m3	10	75-27-4	
Bromoform	Not detected	21		ug/m3	10	75-25-2	
Bromomethane	Not detected	7.8		ug/m3	10	74-83-9	
Vinyl bromide	Not detected	8.7		ug/m3	10	593-60-2	
Benzyl chloride	Not detected	10		ug/m3	10	100-44-7	
Carbon disulfide	Not detected	16		ug/m3	10	75-15-0	
Chlorobenzene	Not detected	9.2		ug/m3	10	108-90-7	
Chloroethane	Not detected	5.3		ug/m3	10	75-00-3	
Chloroform	Not detected	9.8		ug/m3	10	67-66-3	
Chloromethane	Not detected	4.1		ug/m3	10	74-87-3	
3-Chloropropene	Not detected	6.3		ug/m3	10	107-05-1	
2-Chlorotoluene	Not detected	10		ug/m3	10	95-49-8	
Carbon tetrachloride	Not detected	13		ug/m3	10	56-23-5	
Cyclohexane	Not detected	6.9		ug/m3	10	110-82-7	
1,1-Dichloroethane	Not detected	8.1		ug/m3	10	75-34-3	
1,1-Dichloroethene	Not detected	7.9		ug/m3	10	75-35-4	



# Analytical Laboratory Report

Lab Sample ID: S05893.02 (continued)

Sample Tag: VP-3S

TO-15, Method: TO-15, Run Date: 08/20/19 10:13, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dibromoethane	Not detected	15		ug/m3	10	106-93-4	
1,2-Dichloroethane	Not detected	8.1		ug/m3	10	107-06-2	
1,2-Dichloropropane	Not detected	9.2		ug/m3	10	78-87-5	
1,4-Dioxane	Not detected	90		ug/m3	10	123-91-1	
Dichlorodifluoromethane	Not detected	9.9		ug/m3	10	75-71-8	
Dibromochloromethane	Not detected	17		ug/m3	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-60-5	
cis-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	12		ug/m3	10	541-73-1	
1,2-Dichlorobenzene	Not detected	12		ug/m3	10	95-50-1	
1,4-Dichlorobenzene	Not detected	12		ug/m3	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-02-6	
Ethanol*	72	47		ug/m3	10	64-17-5	
Ethylbenzene	8.7	8.7		ug/m3	10	100-41-4	
Ethyl Acetate*	Not detected	36		ug/m3	10	141-78-6	
4-Ethyltoluene	Not detected	9.8		ug/m3	10	622-96-8	
Freon 113	Not detected	15		ug/m3	10	76-13-1	
Freon 114	Not detected	14		ug/m3	10	76-14-2	
Heptane	Not detected	8.2		ug/m3	10	142-82-5	
Hexachlorobutadiene	Not detected	21		ug/m3	10	87-68-3	
Hexane	Not detected	7.0		ug/m3	10	110-54-3	
2-Hexanone*	Not detected	20		ug/m3	10	591-78-6	
Isopropyl Alcohol*	170	49		ug/m3	10	67-63-0	
Methylene chloride	Not detected	17		ug/m3	10	75-09-2	
2-Butanone (MEK)	Not detected	29		ug/m3	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	20		ug/m3	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	7.2		ug/m3	10	1634-04-4	
Methyl methacrylate	Not detected	8.2		ug/m3	10	80-62-6	
Naphthalene	Not detected	10		ug/m3	10	91-20-3	
Propylene*	Not detected	3.4		ug/m3	10	115-07-1	
Styrene	Not detected	8.5		ug/m3	10	100-42-5	
1,1,1-Trichloroethane	Not detected	11		ug/m3	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	14		ug/m3	10	79-34-5	
1,1,2-Trichloroethane	Not detected	11		ug/m3	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	37		ug/m3	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	9.8		ug/m3	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	9.8		ug/m3	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	9.3		ug/m3	10	540-84-1	
Tert-butyl Alcohol	30	30		ug/m3	10	75-65-0	
Tetrachloroethene	Not detected	14		ug/m3	10	127-18-4	
Tetrahydrofuran*	5.9	5.9		ug/m3	10	109-99-9	
Toluene	Not detected	7.5		ug/m3	10	108-88-3	
Trichloroethene	Not detected	11		ug/m3	10	79-01-6	
Trichlorofluoromethane	Not detected	11		ug/m3	10	75-69-4	
Vinyl chloride	Not detected	5.1		ug/m3	10	75-01-4	
Vinyl acetate	Not detected	7.0		ug/m3	10	108-05-4	
p,m-Xylene	30	17		ug/m3	10		
o-Xylene	13	8.7		ug/m3	10	95-47-6	
Total Xylenes	48	26		ug/m3	10	1330-20-7	



# Analytical Laboratory Report

Lab Sample ID: S05893.03

Sample Tag: VP-3D

Collected Date/Time: 08/14/2019 11:16 - 08/14/2019 11:24

Matrix: Air

COC Reference: A02157

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Air Canister	None	No	RT	n/a

### Organics - Volatiles

TO-15, Method: TO-15, Run Date: 08/20/19 10:45, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	20		ppbv	10	67-64-1	
1,3-Butadiene	Not detected	2		ppbv	10	106-99-0	
Benzene	Not detected	2		ppbv	10	71-43-2	
Bromodichloromethane	Not detected	2		ppbv	10	75-27-4	
Bromoform	Not detected	2		ppbv	10	75-25-2	
Bromomethane	Not detected	2		ppbv	10	74-83-9	
Vinyl bromide	Not detected	2		ppbv	10	593-60-2	
Benzyl chloride	Not detected	2		ppbv	10	100-44-7	
Carbon disulfide	Not detected	5		ppbv	10	75-15-0	
Chlorobenzene	Not detected	2		ppbv	10	108-90-7	
Chloroethane	Not detected	2		ppbv	10	75-00-3	
Chloroform	Not detected	2		ppbv	10	67-66-3	
Chloromethane	Not detected	2		ppbv	10	74-87-3	
3-Chloropropene	Not detected	2		ppbv	10	107-05-1	
2-Chlorotoluene	Not detected	2		ppbv	10	95-49-8	
Carbon tetrachloride	Not detected	2		ppbv	10	56-23-5	
Cyclohexane	Not detected	2		ppbv	10	110-82-7	
1,1-Dichloroethane	Not detected	2		ppbv	10	75-34-3	
1,1-Dichloroethene	Not detected	2		ppbv	10	75-35-4	
1,2-Dibromoethane	Not detected	2		ppbv	10	106-93-4	
1,2-Dichloroethane	Not detected	2		ppbv	10	107-06-2	
1,2-Dichloropropane	Not detected	2		ppbv	10	78-87-5	
1,4-Dioxane	Not detected	25		ppbv	10	123-91-1	
Dichlorodifluoromethane	Not detected	2		ppbv	10	75-71-8	
Dibromochloromethane	Not detected	2		ppbv	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	2		ppbv	10	156-60-5	
cis-1,2-Dichloroethene	Not detected	2		ppbv	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	2		ppbv	10	541-73-1	
1,2-Dichlorobenzene	Not detected	2		ppbv	10	95-50-1	
1,4-Dichlorobenzene	Not detected	2		ppbv	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-02-6	
Ethanol*	Not detected	25		ppbv	10	64-17-5	
Ethylbenzene	Not detected	2		ppbv	10	100-41-4	
Ethyl Acetate*	Not detected	10		ppbv	10	141-78-6	
4-Ethyltoluene	Not detected	2		ppbv	10	622-96-8	
Freon 113	Not detected	2		ppbv	10	76-13-1	
Freon 114	Not detected	2		ppbv	10	76-14-2	
Heptane	Not detected	2		ppbv	10	142-82-5	
Hexachlorobutadiene	Not detected	2		ppbv	10	87-68-3	
Hexane	Not detected	2		ppbv	10	110-54-3	



# Analytical Laboratory Report

Lab Sample ID: S05893.03 (continued)

Sample Tag: VP-3D

**TO-15, Method: TO-15, Run Date: 08/20/19 10:45, Analyst: KAG (continued)**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
2-Hexanone*	Not detected	5		ppbv	10	591-78-6	
Isopropyl Alcohol*	Not detected	20		ppbv	10	67-63-0	
Methylene chloride	Not detected	5		ppbv	10	75-09-2	
2-Butanone (MEK)	Not detected	10		ppbv	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	5		ppbv	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	2		ppbv	10	1634-04-4	
Methyl methacrylate	Not detected	2		ppbv	10	80-62-6	
Naphthalene	Not detected	2		ppbv	10	91-20-3	
Propylene*	Not detected	11		ppbv	10	115-07-1	X
Styrene	Not detected	2		ppbv	10	100-42-5	
1,1,1-Trichloroethane	Not detected	2		ppbv	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	2		ppbv	10	79-34-5	
1,1,2-Trichloroethane	Not detected	2		ppbv	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ppbv	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	2		ppbv	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	2		ppbv	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	2		ppbv	10	540-84-1	
Tert-butyl Alcohol	Not detected	10		ppbv	10	75-65-0	
Tetrachloroethene	Not detected	2		ppbv	10	127-18-4	
Tetrahydrofuran*	Not detected	2		ppbv	10	109-99-9	
Toluene	Not detected	2		ppbv	10	108-88-3	
Trichloroethene	Not detected	2		ppbv	10	79-01-6	
Trichlorofluoromethane	Not detected	2		ppbv	10	75-69-4	
Vinyl chloride	Not detected	2		ppbv	10	75-01-4	
Vinyl acetate	Not detected	2		ppbv	10	108-05-4	
p,m-Xylene	Not detected	4		ppbv	10		
o-Xylene	Not detected	2		ppbv	10	95-47-6	
Total Xylenes	Not detected	6		ppbv	10	1330-20-7	

**TO-15, Method: TO-15, Run Date: 08/20/19 10:45, Analyst: KAG**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	48		ug/m3	10	67-64-1	
1,3-Butadiene	Not detected	4.4		ug/m3	10	106-99-0	
Benzene	Not detected	6.4		ug/m3	10	71-43-2	
Bromodichloromethane	Not detected	13		ug/m3	10	75-27-4	
Bromoform	Not detected	21		ug/m3	10	75-25-2	
Bromomethane	Not detected	7.8		ug/m3	10	74-83-9	
Vinyl bromide	Not detected	8.7		ug/m3	10	593-60-2	
Benzyl chloride	Not detected	10		ug/m3	10	100-44-7	
Carbon disulfide	Not detected	16		ug/m3	10	75-15-0	
Chlorobenzene	Not detected	9.2		ug/m3	10	108-90-7	
Chloroethane	Not detected	5.3		ug/m3	10	75-00-3	
Chloroform	Not detected	9.8		ug/m3	10	67-66-3	
Chloromethane	Not detected	4.1		ug/m3	10	74-87-3	
3-Chloropropene	Not detected	6.3		ug/m3	10	107-05-1	
2-Chlorotoluene	Not detected	10		ug/m3	10	95-49-8	
Carbon tetrachloride	Not detected	13		ug/m3	10	56-23-5	
Cyclohexane	Not detected	6.9		ug/m3	10	110-82-7	
1,1-Dichloroethane	Not detected	8.1		ug/m3	10	75-34-3	

X-Elevated reporting limit due to matrix interference



# Analytical Laboratory Report

Lab Sample ID: S05893.03 (continued)

Sample Tag: VP-3D

TO-15, Method: TO-15, Run Date: 08/20/19 10:45, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1-Dichloroethene	Not detected	7.9		ug/m3	10	75-35-4	
1,2-Dibromoethane	Not detected	15		ug/m3	10	106-93-4	
1,2-Dichloroethane	Not detected	8.1		ug/m3	10	107-06-2	
1,2-Dichloropropane	Not detected	9.2		ug/m3	10	78-87-5	
1,4-Dioxane	Not detected	90		ug/m3	10	123-91-1	
Dichlorodifluoromethane	Not detected	9.9		ug/m3	10	75-71-8	
Dibromochloromethane	Not detected	17		ug/m3	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-60-5	
cis-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	12		ug/m3	10	541-73-1	
1,2-Dichlorobenzene	Not detected	12		ug/m3	10	95-50-1	
1,4-Dichlorobenzene	Not detected	12		ug/m3	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-02-6	
Ethanol*	Not detected	47		ug/m3	10	64-17-5	
Ethylbenzene	Not detected	8.7		ug/m3	10	100-41-4	
Ethyl Acetate*	Not detected	36		ug/m3	10	141-78-6	
4-Ethyltoluene	Not detected	9.8		ug/m3	10	622-96-8	
Freon 113	Not detected	15		ug/m3	10	76-13-1	
Freon 114	Not detected	14		ug/m3	10	76-14-2	
Heptane	Not detected	8.2		ug/m3	10	142-82-5	
Hexachlorobutadiene	Not detected	21		ug/m3	10	87-68-3	
Hexane	Not detected	7.0		ug/m3	10	110-54-3	
2-Hexanone*	Not detected	20		ug/m3	10	591-78-6	
Isopropyl Alcohol*	Not detected	49		ug/m3	10	67-63-0	
Methylene chloride	Not detected	17		ug/m3	10	75-09-2	
2-Butanone (MEK)	Not detected	29		ug/m3	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	20		ug/m3	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	7.2		ug/m3	10	1634-04-4	
Methyl methacrylate	Not detected	8.2		ug/m3	10	80-62-6	
Naphthalene	Not detected	10		ug/m3	10	91-20-3	
Propylene*	Not detected	19		ug/m3	10	115-07-1	X
Styrene	Not detected	8.5		ug/m3	10	100-42-5	
1,1,1-Trichloroethane	Not detected	11		ug/m3	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	14		ug/m3	10	79-34-5	
1,1,2-Trichloroethane	Not detected	11		ug/m3	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	37		ug/m3	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	9.8		ug/m3	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	9.8		ug/m3	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	9.3		ug/m3	10	540-84-1	
Tert-butyl Alcohol	Not detected	30		ug/m3	10	75-65-0	
Tetrachloroethene	Not detected	14		ug/m3	10	127-18-4	
Tetrahydrofuran*	Not detected	5.9		ug/m3	10	109-99-9	
Toluene	Not detected	7.5		ug/m3	10	108-88-3	
Trichloroethene	Not detected	11		ug/m3	10	79-01-6	
Trichlorofluoromethane	Not detected	11		ug/m3	10	75-69-4	
Vinyl chloride	Not detected	5.1		ug/m3	10	75-01-4	
Vinyl acetate	Not detected	7.0		ug/m3	10	108-05-4	
p,m-Xylene	Not detected	17		ug/m3	10		

X-Elevated reporting limit due to matrix interference



# Analytical Laboratory Report

Lab Sample ID: S05893.03 (continued)

Sample Tag: VP-3D

TO-15, Method: TO-15, Run Date: 08/20/19 10:45, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	Not detected	8.7		ug/m3	10	95-47-6	
Total Xylenes	Not detected	26		ug/m3	10	1330-20-7	



# Analytical Laboratory Report

Lab Sample ID: S05893.04

Sample Tag: VP-2D

Collected Date/Time: 08/14/2019 11:56 - 08/14/2019 12:03

Matrix: Air

COC Reference: A02157

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Air Canister	None	No	RT	n/a

### Organics - Volatiles

TO-15, Method: TO-15, Run Date: 08/20/19 16:42, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	20		ppbv	10	67-64-1	
1,3-Butadiene	Not detected	2		ppbv	10	106-99-0	
Benzene	Not detected	2		ppbv	10	71-43-2	
Bromodichloromethane	Not detected	2		ppbv	10	75-27-4	
Bromoform	Not detected	2		ppbv	10	75-25-2	
Bromomethane	Not detected	2		ppbv	10	74-83-9	
Vinyl bromide	Not detected	2		ppbv	10	593-60-2	
Benzyl chloride	Not detected	2		ppbv	10	100-44-7	
Carbon disulfide	Not detected	5		ppbv	10	75-15-0	
Chlorobenzene	Not detected	2		ppbv	10	108-90-7	
Chloroethane	Not detected	2		ppbv	10	75-00-3	
Chloroform	Not detected	2		ppbv	10	67-66-3	
Chloromethane	Not detected	2		ppbv	10	74-87-3	
3-Chloropropene	Not detected	2		ppbv	10	107-05-1	
2-Chlorotoluene	Not detected	2		ppbv	10	95-49-8	
Carbon tetrachloride	Not detected	2		ppbv	10	56-23-5	
Cyclohexane	Not detected	5		ppbv	10	110-82-7	X
1,1-Dichloroethane	Not detected	2		ppbv	10	75-34-3	
1,1-Dichloroethene	Not detected	2		ppbv	10	75-35-4	
1,2-Dibromoethane	Not detected	2		ppbv	10	106-93-4	
1,2-Dichloroethane	Not detected	2		ppbv	10	107-06-2	
1,2-Dichloropropane	Not detected	2		ppbv	10	78-87-5	
1,4-Dioxane	Not detected	25		ppbv	10	123-91-1	
Dichlorodifluoromethane	Not detected	2		ppbv	10	75-71-8	
Dibromochloromethane	Not detected	2		ppbv	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	2		ppbv	10	156-60-5	
cis-1,2-Dichloroethene	Not detected	2		ppbv	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	2		ppbv	10	541-73-1	
1,2-Dichlorobenzene	Not detected	2		ppbv	10	95-50-1	
1,4-Dichlorobenzene	Not detected	2		ppbv	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-02-6	
Ethanol*	Not detected	25		ppbv	10	64-17-5	
Ethylbenzene	Not detected	2		ppbv	10	100-41-4	
Ethyl Acetate*	Not detected	10		ppbv	10	141-78-6	
4-Ethyltoluene	Not detected	2		ppbv	10	622-96-8	
Freon 113	Not detected	2		ppbv	10	76-13-1	
Freon 114	Not detected	2		ppbv	10	76-14-2	
Heptane	Not detected	2		ppbv	10	142-82-5	
Hexachlorobutadiene	Not detected	2		ppbv	10	87-68-3	

X-Elevated reporting limit due to matrix interference



# Analytical Laboratory Report

Lab Sample ID: S05893.04 (continued)

Sample Tag: VP-2D

**TO-15, Method: TO-15, Run Date: 08/20/19 16:42, Analyst: KAG (continued)**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Hexane	3	2		ppbv	10	110-54-3	
2-Hexanone*	Not detected	5		ppbv	10	591-78-6	
Isopropyl Alcohol*	Not detected	20		ppbv	10	67-63-0	
Methylene chloride	Not detected	5		ppbv	10	75-09-2	
2-Butanone (MEK)	Not detected	10		ppbv	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	5		ppbv	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	2		ppbv	10	1634-04-4	
Methyl methacrylate	Not detected	2		ppbv	10	80-62-6	
Naphthalene	Not detected	2		ppbv	10	91-20-3	
Propylene*	Not detected	2		ppbv	10	115-07-1	
Styrene	Not detected	2		ppbv	10	100-42-5	
1,1,1-Trichloroethane	Not detected	2		ppbv	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	2		ppbv	10	79-34-5	
1,1,2-Trichloroethane	Not detected	2		ppbv	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ppbv	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	2		ppbv	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	2		ppbv	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	2		ppbv	10	540-84-1	
Tert-butyl Alcohol	Not detected	10		ppbv	10	75-65-0	
Tetrachloroethene	Not detected	2		ppbv	10	127-18-4	
Tetrahydrofuran*	Not detected	2		ppbv	10	109-99-9	
Toluene	Not detected	2		ppbv	10	108-88-3	
Trichloroethene	4	2		ppbv	10	79-01-6	
Trichlorofluoromethane	Not detected	2		ppbv	10	75-69-4	
Vinyl chloride	Not detected	2		ppbv	10	75-01-4	
Vinyl acetate	Not detected	2		ppbv	10	108-05-4	
p,m-Xylene	Not detected	4		ppbv	10		
o-Xylene	Not detected	2		ppbv	10	95-47-6	
Total Xylenes	Not detected	6		ppbv	10	1330-20-7	

**TO-15, Method: TO-15, Run Date: 08/20/19 16:42, Analyst: KAG**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	48		ug/m3	10	67-64-1	
1,3-Butadiene	Not detected	4.4		ug/m3	10	106-99-0	
Benzene	Not detected	6.4		ug/m3	10	71-43-2	
Bromodichloromethane	Not detected	13		ug/m3	10	75-27-4	
Bromoform	Not detected	21		ug/m3	10	75-25-2	
Bromomethane	Not detected	7.8		ug/m3	10	74-83-9	
Vinyl bromide	Not detected	8.7		ug/m3	10	593-60-2	
Benzyl chloride	Not detected	10		ug/m3	10	100-44-7	
Carbon disulfide	Not detected	16		ug/m3	10	75-15-0	
Chlorobenzene	Not detected	9.2		ug/m3	10	108-90-7	
Chloroethane	Not detected	5.3		ug/m3	10	75-00-3	
Chloroform	Not detected	9.8		ug/m3	10	67-66-3	
Chloromethane	Not detected	4.1		ug/m3	10	74-87-3	
3-Chloropropene	Not detected	6.3		ug/m3	10	107-05-1	
2-Chlorotoluene	Not detected	10		ug/m3	10	95-49-8	
Carbon tetrachloride	Not detected	13		ug/m3	10	56-23-5	
Cyclohexane	Not detected	17		ug/m3	10	110-82-7	X

X-Elevated reporting limit due to matrix interference



# Analytical Laboratory Report

Lab Sample ID: S05893.04 (continued)

Sample Tag: VP-2D

TO-15, Method: TO-15, Run Date: 08/20/19 16:42, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1-Dichloroethane	Not detected	8.1		ug/m3	10	75-34-3	
1,1-Dichloroethene	Not detected	7.9		ug/m3	10	75-35-4	
1,2-Dibromoethane	Not detected	15		ug/m3	10	106-93-4	
1,2-Dichloroethane	Not detected	8.1		ug/m3	10	107-06-2	
1,2-Dichloropropane	Not detected	9.2		ug/m3	10	78-87-5	
1,4-Dioxane	Not detected	90		ug/m3	10	123-91-1	
Dichlorodifluoromethane	Not detected	9.9		ug/m3	10	75-71-8	
Dibromochloromethane	Not detected	17		ug/m3	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-60-5	
cis-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	12		ug/m3	10	541-73-1	
1,2-Dichlorobenzene	Not detected	12		ug/m3	10	95-50-1	
1,4-Dichlorobenzene	Not detected	12		ug/m3	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-02-6	
Ethanol*	Not detected	47		ug/m3	10	64-17-5	
Ethylbenzene	Not detected	8.7		ug/m3	10	100-41-4	
Ethyl Acetate*	Not detected	36		ug/m3	10	141-78-6	
4-Ethyltoluene	Not detected	9.8		ug/m3	10	622-96-8	
Freon 113	Not detected	15		ug/m3	10	76-13-1	
Freon 114	Not detected	14		ug/m3	10	76-14-2	
Heptane	Not detected	8.2		ug/m3	10	142-82-5	
Hexachlorobutadiene	Not detected	21		ug/m3	10	87-68-3	
Hexane	11	7.0		ug/m3	10	110-54-3	
2-Hexanone*	Not detected	20		ug/m3	10	591-78-6	
Isopropyl Alcohol*	Not detected	49		ug/m3	10	67-63-0	
Methylene chloride	Not detected	17		ug/m3	10	75-09-2	
2-Butanone (MEK)	Not detected	29		ug/m3	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	20		ug/m3	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	7.2		ug/m3	10	1634-04-4	
Methyl methacrylate	Not detected	8.2		ug/m3	10	80-62-6	
Naphthalene	Not detected	10		ug/m3	10	91-20-3	
Propylene*	Not detected	3.4		ug/m3	10	115-07-1	
Styrene	Not detected	8.5		ug/m3	10	100-42-5	
1,1,1-Trichloroethane	Not detected	11		ug/m3	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	14		ug/m3	10	79-34-5	
1,1,2-Trichloroethane	Not detected	11		ug/m3	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	37		ug/m3	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	9.8		ug/m3	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	9.8		ug/m3	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	9.3		ug/m3	10	540-84-1	
Tert-butyl Alcohol	Not detected	30		ug/m3	10	75-65-0	
Tetrachloroethene	Not detected	14		ug/m3	10	127-18-4	
Tetrahydrofuran*	Not detected	5.9		ug/m3	10	109-99-9	
Toluene	Not detected	7.5		ug/m3	10	108-88-3	
Trichloroethene	21	11		ug/m3	10	79-01-6	
Trichlorofluoromethane	Not detected	11		ug/m3	10	75-69-4	
Vinyl chloride	Not detected	5.1		ug/m3	10	75-01-4	
Vinyl acetate	Not detected	7.0		ug/m3	10	108-05-4	
p,m-Xylene	Not detected	17		ug/m3	10		



# Analytical Laboratory Report

Lab Sample ID: S05893.04 (continued)

Sample Tag: VP-2D

TO-15, Method: TO-15, Run Date: 08/20/19 16:42, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	Not detected	8.7		ug/m3	10	95-47-6	
Total Xylenes	Not detected	26		ug/m3	10	1330-20-7	



# Analytical Laboratory Report

Lab Sample ID: S05893.05

Sample Tag: VP-2S

Collected Date/Time: 08/14/2019 11:54 - 08/14/2019 12:08

Matrix: Air

COC Reference: A02157

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Air Canister	None	No	RT	n/a

### Organics - Volatiles

TO-15, Method: TO-15, Run Date: 08/20/19 11:48, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	20	20		ppbv	10	67-64-1	
1,3-Butadiene	Not detected	2		ppbv	10	106-99-0	
Benzene	Not detected	2		ppbv	10	71-43-2	
Bromodichloromethane	Not detected	2		ppbv	10	75-27-4	
Bromoform	Not detected	2		ppbv	10	75-25-2	
Bromomethane	Not detected	2		ppbv	10	74-83-9	
Vinyl bromide	Not detected	2		ppbv	10	593-60-2	
Benzyl chloride	Not detected	2		ppbv	10	100-44-7	
Carbon disulfide	Not detected	5		ppbv	10	75-15-0	
Chlorobenzene	Not detected	2		ppbv	10	108-90-7	
Chloroethane	Not detected	2		ppbv	10	75-00-3	
Chloroform	Not detected	2		ppbv	10	67-66-3	
Chloromethane	Not detected	2		ppbv	10	74-87-3	
3-Chloropropene	Not detected	2		ppbv	10	107-05-1	
2-Chlorotoluene	Not detected	2		ppbv	10	95-49-8	
Carbon tetrachloride	Not detected	2		ppbv	10	56-23-5	
Cyclohexane	730	2		ppbv	10	110-82-7	
1,1-Dichloroethane	Not detected	2		ppbv	10	75-34-3	
1,1-Dichloroethene	Not detected	2		ppbv	10	75-35-4	
1,2-Dibromoethane	Not detected	2		ppbv	10	106-93-4	
1,2-Dichloroethane	Not detected	2		ppbv	10	107-06-2	
1,2-Dichloropropane	Not detected	2		ppbv	10	78-87-5	
1,4-Dioxane	Not detected	25		ppbv	10	123-91-1	
Dichlorodifluoromethane	Not detected	2		ppbv	10	75-71-8	
Dibromochloromethane	Not detected	2		ppbv	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	2		ppbv	10	156-60-5	
cis-1,2-Dichloroethene	57	2		ppbv	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	2		ppbv	10	541-73-1	
1,2-Dichlorobenzene	Not detected	2		ppbv	10	95-50-1	
1,4-Dichlorobenzene	Not detected	2		ppbv	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-02-6	
Ethanol*	Not detected	25		ppbv	10	64-17-5	
Ethylbenzene	Not detected	2		ppbv	10	100-41-4	
Ethyl Acetate*	Not detected	10		ppbv	10	141-78-6	
4-Ethyltoluene	Not detected	2		ppbv	10	622-96-8	
Freon 113	Not detected	2		ppbv	10	76-13-1	
Freon 114	Not detected	2		ppbv	10	76-14-2	
Heptane	3	2		ppbv	10	142-82-5	
Hexachlorobutadiene	Not detected	2		ppbv	10	87-68-3	
Hexane	616	2		ppbv	10	110-54-3	



# Analytical Laboratory Report

Lab Sample ID: S05893.05 (continued)

Sample Tag: VP-2S

**TO-15, Method: TO-15, Run Date: 08/20/19 11:48, Analyst: KAG (continued)**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
2-Hexanone*	Not detected	5		ppbv	10	591-78-6	
Isopropyl Alcohol*	40	20		ppbv	10	67-63-0	
Methylene chloride	Not detected	5		ppbv	10	75-09-2	
2-Butanone (MEK)	Not detected	10		ppbv	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	5		ppbv	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	2		ppbv	10	1634-04-4	
Methyl methacrylate	Not detected	2		ppbv	10	80-62-6	
Naphthalene	Not detected	2		ppbv	10	91-20-3	
Propylene*	Not detected	248		ppbv	10	115-07-1	X
Styrene	Not detected	2		ppbv	10	100-42-5	
1,1,1-Trichloroethane	Not detected	2		ppbv	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	2		ppbv	10	79-34-5	
1,1,2-Trichloroethane	Not detected	2		ppbv	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ppbv	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	2		ppbv	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	2		ppbv	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	35		ppbv	10	540-84-1	X
Tert-butyl Alcohol	Not detected	10		ppbv	10	75-65-0	
Tetrachloroethene	Not detected	2		ppbv	10	127-18-4	
Tetrahydrofuran*	Not detected	2		ppbv	10	109-99-9	
Toluene	Not detected	3		ppbv	10	108-88-3	X
Trichloroethene	Not detected	2		ppbv	10	79-01-6	
Trichlorofluoromethane	Not detected	2		ppbv	10	75-69-4	
Vinyl chloride	51	2		ppbv	10	75-01-4	
Vinyl acetate	Not detected	2		ppbv	10	108-05-4	
p,m-Xylene	Not detected	4		ppbv	10		
o-Xylene	Not detected	2		ppbv	10	95-47-6	
Total Xylenes	Not detected	6		ppbv	10	1330-20-7	

**TO-15, Method: TO-15, Run Date: 08/20/19 11:48, Analyst: KAG**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	48	48		ug/m3	10	67-64-1	
1,3-Butadiene	Not detected	4.4		ug/m3	10	106-99-0	
Benzene	Not detected	6.4		ug/m3	10	71-43-2	
Bromodichloromethane	Not detected	13		ug/m3	10	75-27-4	
Bromoform	Not detected	21		ug/m3	10	75-25-2	
Bromomethane	Not detected	7.8		ug/m3	10	74-83-9	
Vinyl bromide	Not detected	8.7		ug/m3	10	593-60-2	
Benzyl chloride	Not detected	10		ug/m3	10	100-44-7	
Carbon disulfide	Not detected	16		ug/m3	10	75-15-0	
Chlorobenzene	Not detected	9.2		ug/m3	10	108-90-7	
Chloroethane	Not detected	5.3		ug/m3	10	75-00-3	
Chloroform	Not detected	9.8		ug/m3	10	67-66-3	
Chloromethane	Not detected	4.1		ug/m3	10	74-87-3	
3-Chloropropene	Not detected	6.3		ug/m3	10	107-05-1	
2-Chlorotoluene	Not detected	10		ug/m3	10	95-49-8	
Carbon tetrachloride	Not detected	13		ug/m3	10	56-23-5	
Cyclohexane	2,500	6.9		ug/m3	10	110-82-7	
1,1-Dichloroethane	Not detected	8.1		ug/m3	10	75-34-3	

X-Elevated reporting limit due to matrix interference



# Analytical Laboratory Report

Lab Sample ID: S05893.05 (continued)

Sample Tag: VP-2S

TO-15, Method: TO-15, Run Date: 08/20/19 11:48, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1-Dichloroethene	Not detected	7.9		ug/m3	10	75-35-4	
1,2-Dibromoethane	Not detected	15		ug/m3	10	106-93-4	
1,2-Dichloroethane	Not detected	8.1		ug/m3	10	107-06-2	
1,2-Dichloropropane	Not detected	9.2		ug/m3	10	78-87-5	
1,4-Dioxane	Not detected	90		ug/m3	10	123-91-1	
Dichlorodifluoromethane	Not detected	9.9		ug/m3	10	75-71-8	
Dibromochloromethane	Not detected	17		ug/m3	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-60-5	
cis-1,2-Dichloroethene	230	7.9		ug/m3	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	12		ug/m3	10	541-73-1	
1,2-Dichlorobenzene	Not detected	12		ug/m3	10	95-50-1	
1,4-Dichlorobenzene	Not detected	12		ug/m3	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-02-6	
Ethanol*	Not detected	47		ug/m3	10	64-17-5	
Ethylbenzene	Not detected	8.7		ug/m3	10	100-41-4	
Ethyl Acetate*	Not detected	36		ug/m3	10	141-78-6	
4-Ethyltoluene	Not detected	9.8		ug/m3	10	622-96-8	
Freon 113	Not detected	15		ug/m3	10	76-13-1	
Freon 114	Not detected	14		ug/m3	10	76-14-2	
Heptane	12	8.2		ug/m3	10	142-82-5	
Hexachlorobutadiene	Not detected	21		ug/m3	10	87-68-3	
Hexane	2,170	7.0		ug/m3	10	110-54-3	
2-Hexanone*	Not detected	20		ug/m3	10	591-78-6	
Isopropyl Alcohol*	98	49		ug/m3	10	67-63-0	
Methylene chloride	Not detected	17		ug/m3	10	75-09-2	
2-Butanone (MEK)	Not detected	29		ug/m3	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	20		ug/m3	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	7.2		ug/m3	10	1634-04-4	
Methyl methacrylate	Not detected	8.2		ug/m3	10	80-62-6	
Naphthalene	Not detected	10		ug/m3	10	91-20-3	
Propylene*	Not detected	427		ug/m3	10	115-07-1	X
Styrene	Not detected	8.5		ug/m3	10	100-42-5	
1,1,1-Trichloroethane	Not detected	11		ug/m3	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	14		ug/m3	10	79-34-5	
1,1,2-Trichloroethane	Not detected	11		ug/m3	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	37		ug/m3	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	9.8		ug/m3	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	9.8		ug/m3	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	160		ug/m3	10	540-84-1	X
Tert-butyl Alcohol	Not detected	30		ug/m3	10	75-65-0	
Tetrachloroethene	Not detected	14		ug/m3	10	127-18-4	
Tetrahydrofuran*	Not detected	5.9		ug/m3	10	109-99-9	
Toluene	Not detected	11		ug/m3	10	108-88-3	X
Trichloroethene	Not detected	11		ug/m3	10	79-01-6	
Trichlorofluoromethane	Not detected	11		ug/m3	10	75-69-4	
Vinyl chloride	130	5.1		ug/m3	10	75-01-4	
Vinyl acetate	Not detected	7.0		ug/m3	10	108-05-4	
p,m-Xylene	Not detected	17		ug/m3	10		

X-Elevated reporting limit due to matrix interference



# Analytical Laboratory Report

Lab Sample ID: S05893.05 (continued)

Sample Tag: VP-2S

TO-15, Method: TO-15, Run Date: 08/20/19 11:48, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	Not detected	8.7		ug/m3	10	95-47-6	
Total Xylenes	Not detected	26		ug/m3	10	1330-20-7	



# Analytical Laboratory Report

Lab Sample ID: S05893.06

Sample Tag: DUP-81419

Collected Date/Time: 08/14/2019 00:01 - 08/14/2019 00:02

Matrix: Air

COC Reference: A02157

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Air Canister	None	No	RT	n/a

### Organics - Volatiles

TO-15, Method: TO-15, Run Date: 08/20/19 12:19, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	20	20		ppbv	10	67-64-1	
1,3-Butadiene	Not detected	2		ppbv	10	106-99-0	
Benzene	Not detected	2		ppbv	10	71-43-2	
Bromodichloromethane	Not detected	2		ppbv	10	75-27-4	
Bromoform	Not detected	2		ppbv	10	75-25-2	
Bromomethane	Not detected	2		ppbv	10	74-83-9	
Vinyl bromide	Not detected	2		ppbv	10	593-60-2	
Benzyl chloride	Not detected	2		ppbv	10	100-44-7	
Carbon disulfide	Not detected	5		ppbv	10	75-15-0	
Chlorobenzene	Not detected	2		ppbv	10	108-90-7	
Chloroethane	Not detected	2		ppbv	10	75-00-3	
Chloroform	Not detected	2		ppbv	10	67-66-3	
Chloromethane	Not detected	2		ppbv	10	74-87-3	
3-Chloropropene	Not detected	2		ppbv	10	107-05-1	
2-Chlorotoluene	Not detected	2		ppbv	10	95-49-8	
Carbon tetrachloride	Not detected	2		ppbv	10	56-23-5	
Cyclohexane	628	2		ppbv	10	110-82-7	
1,1-Dichloroethane	Not detected	2		ppbv	10	75-34-3	
1,1-Dichloroethene	Not detected	2		ppbv	10	75-35-4	
1,2-Dibromoethane	Not detected	2		ppbv	10	106-93-4	
1,2-Dichloroethane	Not detected	2		ppbv	10	107-06-2	
1,2-Dichloropropane	Not detected	2		ppbv	10	78-87-5	
1,4-Dioxane	Not detected	25		ppbv	10	123-91-1	
Dichlorodifluoromethane	Not detected	2		ppbv	10	75-71-8	
Dibromochloromethane	Not detected	2		ppbv	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	2		ppbv	10	156-60-5	
cis-1,2-Dichloroethene	49	2		ppbv	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	2		ppbv	10	541-73-1	
1,2-Dichlorobenzene	Not detected	2		ppbv	10	95-50-1	
1,4-Dichlorobenzene	Not detected	2		ppbv	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	2		ppbv	10	10061-02-6	
Ethanol*	41	25		ppbv	10	64-17-5	
Ethylbenzene	Not detected	2		ppbv	10	100-41-4	
Ethyl Acetate*	Not detected	10		ppbv	10	141-78-6	
4-Ethyltoluene	Not detected	2		ppbv	10	622-96-8	
Freon 113	Not detected	2		ppbv	10	76-13-1	
Freon 114	Not detected	2		ppbv	10	76-14-2	
Heptane	3	2		ppbv	10	142-82-5	
Hexachlorobutadiene	Not detected	2		ppbv	10	87-68-3	
Hexane	529	2		ppbv	10	110-54-3	



# Analytical Laboratory Report

Lab Sample ID: S05893.06 (continued)

Sample Tag: DUP-81419

**TO-15, Method: TO-15, Run Date: 08/20/19 12:19, Analyst: KAG (continued)**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
2-Hexanone*	Not detected	5		ppbv	10	591-78-6	
Isopropyl Alcohol*	30	20		ppbv	10	67-63-0	
Methylene chloride	Not detected	5		ppbv	10	75-09-2	
2-Butanone (MEK)	Not detected	10		ppbv	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	5		ppbv	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	2		ppbv	10	1634-04-4	
Methyl methacrylate	Not detected	2		ppbv	10	80-62-6	
Naphthalene	Not detected	2		ppbv	10	91-20-3	
Propylene*	Not detected	149		ppbv	10	115-07-1	X
Styrene	Not detected	2		ppbv	10	100-42-5	
1,1,1-Trichloroethane	Not detected	2		ppbv	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	2		ppbv	10	79-34-5	
1,1,2-Trichloroethane	Not detected	2		ppbv	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ppbv	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	2		ppbv	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	2		ppbv	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	30		ppbv	10	540-84-1	X
Tert-butyl Alcohol	Not detected	10		ppbv	10	75-65-0	
Tetrachloroethene	Not detected	2		ppbv	10	127-18-4	
Tetrahydrofuran*	Not detected	2		ppbv	10	109-99-9	
Toluene	Not detected	2		ppbv	10	108-88-3	
Trichloroethene	Not detected	2		ppbv	10	79-01-6	
Trichlorofluoromethane	Not detected	2		ppbv	10	75-69-4	
Vinyl chloride	47	2		ppbv	10	75-01-4	
Vinyl acetate	Not detected	2		ppbv	10	108-05-4	
p,m-Xylene	Not detected	4		ppbv	10		
o-Xylene	Not detected	2		ppbv	10	95-47-6	
Total Xylenes	Not detected	6		ppbv	10	1330-20-7	

**TO-15, Method: TO-15, Run Date: 08/20/19 12:19, Analyst: KAG**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	48	48		ug/m3	10	67-64-1	
1,3-Butadiene	Not detected	4.4		ug/m3	10	106-99-0	
Benzene	Not detected	6.4		ug/m3	10	71-43-2	
Bromodichloromethane	Not detected	13		ug/m3	10	75-27-4	
Bromoform	Not detected	21		ug/m3	10	75-25-2	
Bromomethane	Not detected	7.8		ug/m3	10	74-83-9	
Vinyl bromide	Not detected	8.7		ug/m3	10	593-60-2	
Benzyl chloride	Not detected	10		ug/m3	10	100-44-7	
Carbon disulfide	Not detected	16		ug/m3	10	75-15-0	
Chlorobenzene	Not detected	9.2		ug/m3	10	108-90-7	
Chloroethane	Not detected	5.3		ug/m3	10	75-00-3	
Chloroform	Not detected	9.8		ug/m3	10	67-66-3	
Chloromethane	Not detected	4.1		ug/m3	10	74-87-3	
3-Chloropropene	Not detected	6.3		ug/m3	10	107-05-1	
2-Chlorotoluene	Not detected	10		ug/m3	10	95-49-8	
Carbon tetrachloride	Not detected	13		ug/m3	10	56-23-5	
Cyclohexane	2,160	6.9		ug/m3	10	110-82-7	
1,1-Dichloroethane	Not detected	8.1		ug/m3	10	75-34-3	

X-Elevated reporting limit due to matrix interference



# Analytical Laboratory Report

Lab Sample ID: S05893.06 (continued)

Sample Tag: DUP-81419

TO-15, Method: TO-15, Run Date: 08/20/19 12:19, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1-Dichloroethene	Not detected	7.9		ug/m3	10	75-35-4	
1,2-Dibromoethane	Not detected	15		ug/m3	10	106-93-4	
1,2-Dichloroethane	Not detected	8.1		ug/m3	10	107-06-2	
1,2-Dichloropropane	Not detected	9.2		ug/m3	10	78-87-5	
1,4-Dioxane	Not detected	90		ug/m3	10	123-91-1	
Dichlorodifluoromethane	Not detected	9.9		ug/m3	10	75-71-8	
Dibromochloromethane	Not detected	17		ug/m3	10	124-48-1	
trans-1,2-Dichloroethene	Not detected	7.9		ug/m3	10	156-60-5	
cis-1,2-Dichloroethene	190	7.9		ug/m3	10	156-59-2	
cis-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-01-5	
1,3-Dichlorobenzene	Not detected	12		ug/m3	10	541-73-1	
1,2-Dichlorobenzene	Not detected	12		ug/m3	10	95-50-1	
1,4-Dichlorobenzene	Not detected	12		ug/m3	10	106-46-7	
trans-1,3-Dichloropropene	Not detected	9.1		ug/m3	10	10061-02-6	
Ethanol*	77	47		ug/m3	10	64-17-5	
Ethylbenzene	Not detected	8.7		ug/m3	10	100-41-4	
Ethyl Acetate*	Not detected	36		ug/m3	10	141-78-6	
4-Ethyltoluene	Not detected	9.8		ug/m3	10	622-96-8	
Freon 113	Not detected	15		ug/m3	10	76-13-1	
Freon 114	Not detected	14		ug/m3	10	76-14-2	
Heptane	12	8.2		ug/m3	10	142-82-5	
Hexachlorobutadiene	Not detected	21		ug/m3	10	87-68-3	
Hexane	1,860	7.0		ug/m3	10	110-54-3	
2-Hexanone*	Not detected	20		ug/m3	10	591-78-6	
Isopropyl Alcohol*	74	49		ug/m3	10	67-63-0	
Methylene chloride	Not detected	17		ug/m3	10	75-09-2	
2-Butanone (MEK)	Not detected	29		ug/m3	10	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	20		ug/m3	10	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	7.2		ug/m3	10	1634-04-4	
Methyl methacrylate	Not detected	8.2		ug/m3	10	80-62-6	
Naphthalene	Not detected	10		ug/m3	10	91-20-3	
Propylene*	Not detected	256		ug/m3	10	115-07-1	X
Styrene	Not detected	8.5		ug/m3	10	100-42-5	
1,1,1-Trichloroethane	Not detected	11		ug/m3	10	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	14		ug/m3	10	79-34-5	
1,1,2-Trichloroethane	Not detected	11		ug/m3	10	79-00-5	
1,2,4-Trichlorobenzene	Not detected	37		ug/m3	10	120-82-1	
1,2,4-Trimethylbenzene	Not detected	9.8		ug/m3	10	95-63-6	
1,3,5-Trimethylbenzene	Not detected	9.8		ug/m3	10	108-67-8	
2,2,4-Trimethylpentane	Not detected	140		ug/m3	10	540-84-1	X
Tert-butyl Alcohol	Not detected	30		ug/m3	10	75-65-0	
Tetrachloroethene	Not detected	14		ug/m3	10	127-18-4	
Tetrahydrofuran*	Not detected	5.9		ug/m3	10	109-99-9	
Toluene	Not detected	7.5		ug/m3	10	108-88-3	
Trichloroethene	Not detected	11		ug/m3	10	79-01-6	
Trichlorofluoromethane	Not detected	11		ug/m3	10	75-69-4	
Vinyl chloride	120	5.1		ug/m3	10	75-01-4	
Vinyl acetate	Not detected	7.0		ug/m3	10	108-05-4	
p,m-Xylene	Not detected	17		ug/m3	10		

X-Elevated reporting limit due to matrix interference



# Analytical Laboratory Report

Lab Sample ID: S05893.06 (continued)

Sample Tag: DUP-81419

TO-15, Method: TO-15, Run Date: 08/20/19 12:19, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	Not detected	8.7		ug/m3	10	95-47-6	
Total Xylenes	Not detected	26		ug/m3	10	1330-20-7	

# Merit Laboratories Login Checklist

Lab Set ID:S05893

Client:OBG02 (O'Brien & Gere Engineers, Inc.)

Project: RACER Hemphill Rd

Submitted:08/14/2019 14:00 Login User: MMC

Attention: Clifford Yantz

Address: O'Brien & Gere Engineers, Inc.  
2260 East Saginaw Street  
East Lansing, MI 48823

Phone: 248-477-5701 FAX:

Email: Clifford.Yantz@obg.com

Selection	Description	Note
<b>Sample Receiving</b>		
01.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples are received at 4C +/- 2C Thermometer # RT
02.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Received on ice/ cooling process begun
03.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples shipped
04.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples left in 24 hr. drop box
05.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Are there custody seals/tape or is the drop box locked
<b>Chain of Custody</b>		
06.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC adequately filled out
07.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC signed and relinquished to the lab
08.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample tag on bottles match COC
09.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Subcontracting needed? Subcontracted to:
<b>Preservation</b>		
10.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Do sample have correct chemical preservation
11.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Completed pH checks on preserved samples? (no VOAs)
12.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Did any samples need to be preserved in the lab?
<b>Bottle Conditions</b>		
13.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	All bottles intact
14.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Appropriate analytical bottles are used
15.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Merit bottles used
16.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sufficient sample volume received
17.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples require laboratory filtration
18.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples submitted within holding time
19.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: \_\_\_\_\_ Date: \_\_\_\_\_



2680 East Lansing Dr., East Lansing, MI 48823  
 Phone (517) 332-0167 Fax (517) 332-4034  
 www.meritlabs.com

C.O.C. PAGE # 1 OF 1 A 02157

**REPORT TO**

**AIR/GAS SAMPLES CHAIN OF CUSTODY RECORD**

**INVOICE TO**

CONTACT NAME: Clifford Yantz  
 COMPANY: O'Brien & Gere Part of Ramboll  
 ADDRESS: 2200 E Saginaw  
 CITY: East Lansing STATE: MI ZIP CODE: 48823  
 PHONE NO.: 313-333-0211 FAX NO.: \_\_\_\_\_ P.O. NO.: \_\_\_\_\_  
 EMAIL ADDRESS: clifford.yantz@ramboll.com QUOTE NO.: \_\_\_\_\_

CONTACT NAME: X SAME  
 COMPANY: \_\_\_\_\_  
 ADDRESS: \_\_\_\_\_  
 CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP CODE: \_\_\_\_\_  
 PHONE NO.: \_\_\_\_\_ EMAIL ADDRESS: \_\_\_\_\_

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME: RACER Hemphill Rd SAMPLER(S) - PLEASE PRINT/SIGN NAME: Kevin Sumner  
 TURNAROUND TIME REQUIRED:  1 DAY  2 DAYS  3 DAYS  STANDARD  OTHER \_\_\_\_\_  
 DELIVERABLES REQUIRED:  LEVEL II  LEVEL III  LEVEL IV  EDD  OTHER \_\_\_\_\_

Certifications  
 OHIO VAP  NELAP  
 DoD  NPDES

Sample Type					Analyses	
Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (specify in notes)	TO-15	Other (specify in notes)
					X	
					X	
					X	
					X	
					X	
					X	

MERIT LAB NO. FOR LAB USE ONLY	SAMPLE TAG IDENTIFICATION-DESCRIPTION	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID
05893.01	VP-15	8/14/19	1032	1042	-28	-3	158	27398
.02	VP-35	8/14/19	1113	1121	-27	-2	177	13733
.03	VP-3D	8/14/19	1116	1124	-28	-3	161	12426
.04	VP-2D	8/14/19	1150	1203	-18	-2	24	18372
.05	VP-2S	8/14/19	1154	1208	-28	-3	141	18359
.06	DUP-81419	8/14/19	-	-	-28	-3	-	16843

Temperature (Fahrenheit)			Pressure (inches of Hg)			Notes
Interior	Ambient	Notes	Interior	Ambient	Notes	
	68			29.97		
Start			Start			
	75			29.96		
Stop			Stop			

RELINQUISHED BY: [Signature] DATE: 8/14/19 TIME: 1305  
 RECEIVED BY: [Signature] DATE: 8/14/19 TIME: 13205  
 RELINQUISHED BY: [Signature] DATE: 8/14/19 TIME: 1400  
 RECEIVED BY: [Signature] DATE: 8/14/19 TIME: 1400

RELINQUISHED BY: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_  
 RECEIVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_  
 SEAL NO. SEAL INTACT INITIALS  
 YES  NO  \_\_\_\_\_  
 SEAL NO. SEAL INTACT INITIALS  
 YES  NO  \_\_\_\_\_

NOTES: \_\_\_\_\_ TEMP. ON ARRIVAL: 29