MEMORANDUM

TO:	Richard Conforti	cc:	Mr. Joseph Rogers - MDEQ
FROM:	Clifford Yantz		Mr. John McCabe – MDEQ
RE:	Vapor Intrusion Sampling Event		Mr. Grant Trigger – RACER Trust
FILE:	15388/64737/5		Mr. David Favero – RACER Trust
DATE:	February 8, 2018		Mr. Kevin Schneider – O'Brien & Gere

This technical memorandum has been prepared on behalf of the Revitalizing Auto Communities Environmental Response Trust (RACER Trust) to document the 2017 limited vapor intrusion investigation conducted in December 2017 at Coldwater Road Landfill facility located in Flint, Michigan (Site) (**Figure 1**). The sampling was conducted in response to the MDEQ's Comments on Per- and Polyfluorinated Substances Sampling Event – Letter Dated October 12, 2017 requesting that RACER conduct an evaluation of the Vapor Intrusion (VI) pathway along the western portion of the Site between potential sources of impacts (former WWTP and closed lagoons) and off-site residences.

SITE DESCRIPTION

The RACER Trust Coldwater Road Landfill facility consists of the wastewater treatment sludge monofill landfill, Remaining Materials Area (RMA, where nickel impacted soils were closed in place), former WWTP (decommissioned and demolished in 1999), restored wetlands, and leachate accumulation facility.

The Site is bordered on the south and east by the RACER Trust Coldwater Road Industrial Land, which formerly contained several manufacturing buildings and support facilities. The buildings on the Coldwater Road Industrial Land were decommissioned and demolished between 1999 and 2001.

VAPOR INTRUSION PROBE INSTALLATION

To further evaluate the VI pathway between the potential sources of contamination (former wastewater treatment plant (WWTP) and closed lagoons) and off-site residences four soil vapor points (at two locations) were installed along the western property line.

The two VI borings were located approximately due west of monitoring well OBG-MW-5 near the western site property boundary (VP-1), and approximately 150 feet south located adjacent to OBG-MW-7 (VP-2). See **Figure 2** for VI boring locations.

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

The four soil vapor points (at two locations) were installed by Fibertec, Inc. of Brighton, Michigan utilizing direct push drilling techniques (Geoprobe® 6620 track-mounted drilling rig). At each soil vapor sampling location, both a shallow (S) (approximately 5' ft bgs) and a deep (D) (approximately 10-15' ft bgs) sample point were installed.

Continuous soil cores were not collected for the installation of the vapor probes so that water would not be dragged into the deeper screened zone at each of the probe locations. The soil boring log from the adjacent PFAS boring (SBP-1) was used as a guide to place the probes VP-1S/D, and the soil boring log for OBG-MW-7 was used as a guide to place probes VP-2S/D. See **Attachment A** for the vapor probe construction logs.

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 sand (due to glass bead being out of stock and not avalable at the time of instalaltion) approximately 1.5 ft to 2.5 ft thick on the deep probes and to 6 inches above the screened interval on the shallow 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.

An approximate 1.5-ft section of 2-inch diameter PVC riser pipe was installed as a protector casing for the soil vapor probe tubing. The extra tubing for the soil vapor probes were placed within the protective casing and a two inch internal locking well cap was placed and secured with a lock.

SAMPLING & ANALYSIS

The sample collection activities were completed on December 8, 2017 in accordance with the above documents. A more detailed description of the procedures used during the sampling event can be found in OBG's response letter, dated November 16, 2017, to MDEQ's Comments on Per- and Polyfluorinated Substances Sampling Event – Letter Dated October 12, 2017.

SAMPLE PROCEDURE

Grab samples of soil gas were collected from the soil probes approximately 24 hours after installation.

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 four soil vapor probes to evaluate the adequacy of the sampling technique and identify potential short-circuiting from the ground surface during sample collection. An Ion Science GasCheck G 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. See **Attachment B** for Soil Vapor (Bottle Vac®) Sample Collection Field Forms. However, the deep soil vapor sample at VP-2D could not be collected due to groundwater infiltration.

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 be 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 VP-2S vapor probe location.

ANALYTICAL RESULTS

The analytical results for the samples collected at the Coldwater Road Landfill facility are presented in **Table 1** and discussed below. The complete analytical laboratory report is contained in **Attachment C**.

From the four samples collected (VP-1S, VP-1D, VP-2S, and DUP-1) one constituent, 1,2-dichloroethane was detected above the MDEQ August 2017 proposed screening criteria.

1,2-Dichloroethane was detected above the MDEQ August 2017 proposed screening criteria of 33 µg/m^3 at both VP-1S (85 µg/m^3) and VP-1D (130 µg/m^3).

The duplicate sample results collected from monitoring well VP-2S were comparable to the original sample.

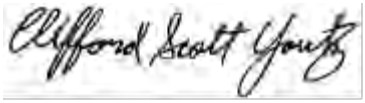
SUMMARY

The analytical result from VP-1S of (85 µg/m^3) and VP-1D of (130 µg/m^3) were above the MDEQ August 2017 proposed screening criteria of 33 µg/m^3 for 1,2-dichloroethane. After the MDEQ has reviewed this report RACER would like to have a conference call to discuss the results and establish a path forward.

If you have any questions regarding this technical memorandum, please contact Cliff at (313) 333-0211.

Very truly yours,

O'BRIEN & GERE ENGINEERS, INC.



Clifford S. Yantz, PG
Scientist-3

ENCLOSURES:

Table 1 – Vapor Intrusion Analytical Results – December 2017
Figure 1 – Site Location Map
Figure 2 – Sample Location Map
Figure 3 – Cross Sections
Attachment A – Vapor Probe Construction Logs
Attachment B – Soil Vapor (Bottle Vac®) Sample Collection Field Forms
Attachment C – Analytical Laboratory Results

TABLES

TABLE 1
RACER Trust - Coldwater Road Landfill
Vapor Intrusion Sampling Results - December 2017

Compound	Sample ID:	VP-1S	VP-1D	VP-2S	VP-2S (VP-DUP-1)	MDEQ Vapor Screening Levels
	Units:	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3
	Sample Date:	*12/8/2017*	*12/8/2017*	*12/8/2017*	*12/8/2017*	*August 2017 Proposed Criteria*
Acetone		<48	95	<48	<48	1.1E+06 (EE) st/**31,000**
Benzene		<6.4	13	<6.4	<6.4	110 ca
Cyclohexane		<6.9	17	<6.9	<6.9	2.1E+05 nc
1,2-Dichloroethane		85	130	8.1	12	33 ca
Heptane		<8.2	12	<8.2	<8.2	1.2E+05 nc
Hexane		56	130	<7.0	<7.0	24,000 nc
Isopropyl Alcohol		370	590	49	74	7,000 nc
Propylene		618	303	<3.4	<3.4	NA
2,2,4-Trimethylpentane		9	37	<9.3	<9.3	1.2E+05 nc
Tetrachloroethene		27	<14	<14	<14	1,400 (EE) st/**41**
Toluene		34	57	<7.5	<7.5	1.7E+05 (EE) nc/**7,500**
p,m-Xylene		<17	22	<17	<17	7,600 nc

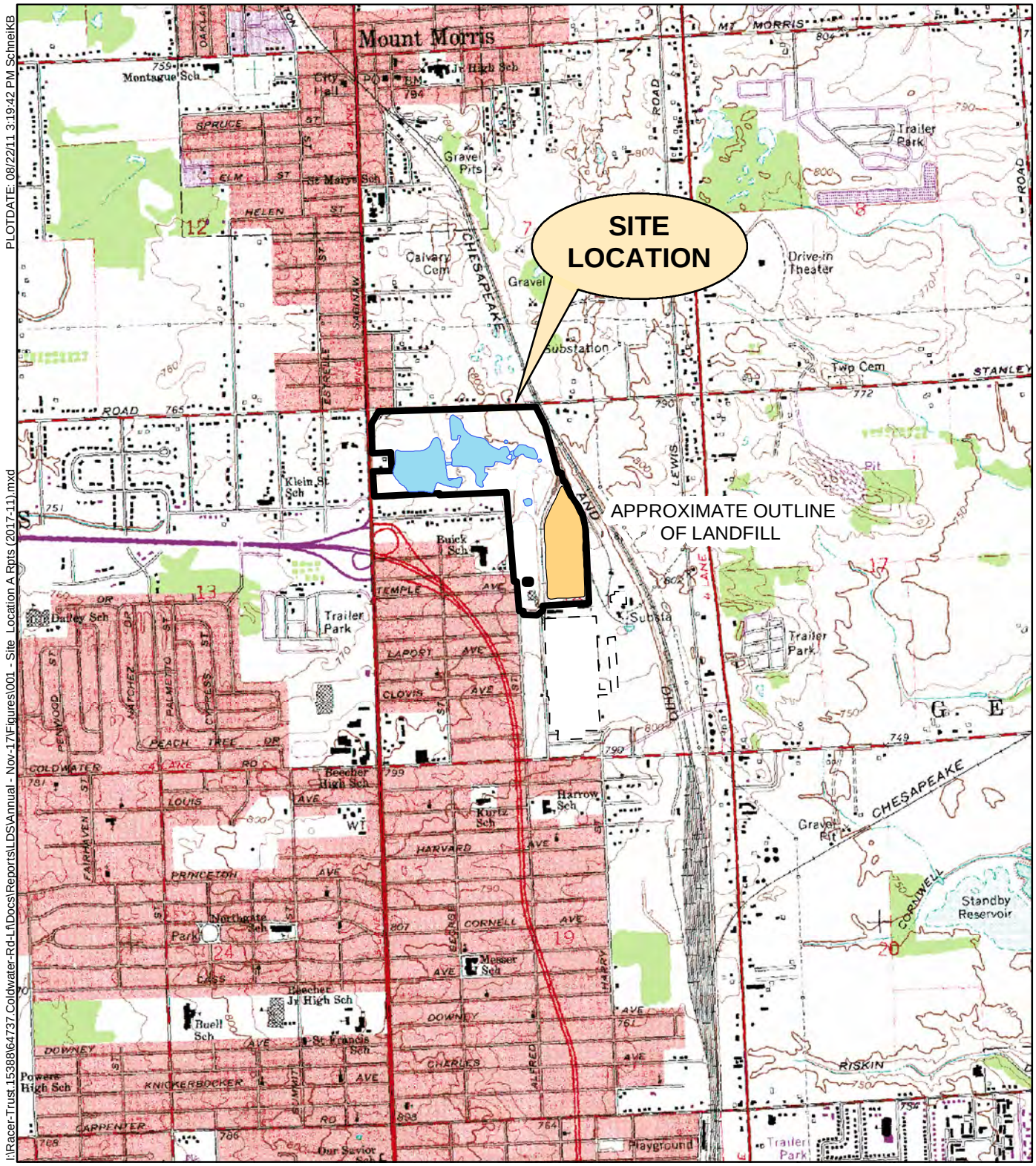
Notes

1) Concentrations in ppbv and µg/m^3 as noted
2) < = Not detected at specified reporting limit.
3) DUP = Duplicate sample.
4) NA = means not available.
5) (EE) = The residential or nonresidential acceptable air concentration (AAC) for the following hazardous substances is not derived pursuant to the equations of R 299.26 and R 299.27. The identified hazardous substance may cause adverse human health effects for less than chronic exposures. The AAC for these hazardous substances is the acute or intermediate minimum risk level (MRL) developed by the Agency for Toxic Substances and Disease Registry (ATSDR), a United States Environmental Protection Agency Integrated Risk Information System (IRIS) acute reference concentration, or an acute initial
6) a = "ATSDR" means Agency for Toxic Substances and Disease Registry.
7) c = "ECHA" means European Chemicals Agency.
8) n = "WHO" means World Health Organization.
9) s = "O/MDEQ" means OPP value has been modified by MDEQ.
10) t = "P/MDEQ" means PPRTV value has been modified by MDEQ.

Exceeds MDEQ Vapor Screening Levels

FIGURES

FIGURE 1



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RACER TRUST
COLDWATER ROAD LANDFILL FACILITY
FLINT, MICHIGAN

SITE LOCATION MAP

N

0 1

Miles

15388/64737/001
JULY 2017

O'BRIEN & GERE ENGINEERS, INC.

N

LEGEND

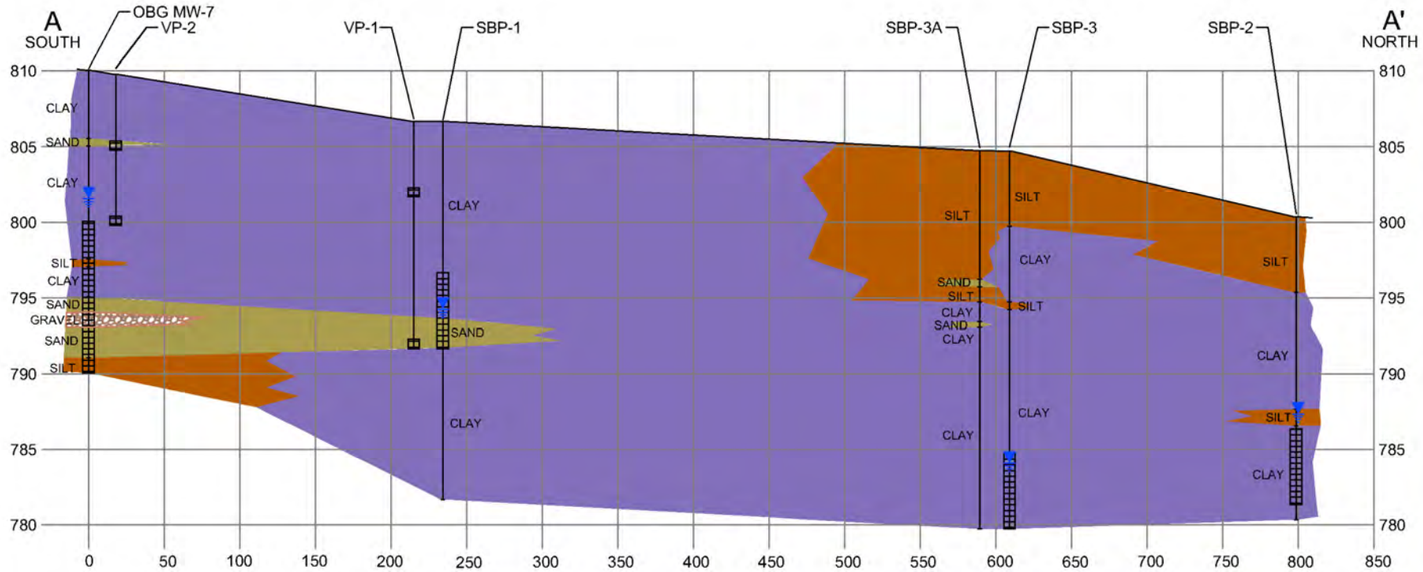
- MONITORING WELL LOCATION
- NEW TEMPORARY WELL LOCATION
- NEW BORING LOCATION
- NEW VAPOR POINT LOCATION
- HISTORIC SOIL BORING LOCATION

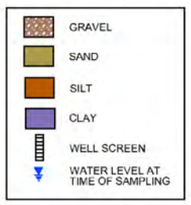
RACER TRUST
COLDWATER ROAD
LANDFILL FACILITY
FLINT, MICHIGAN

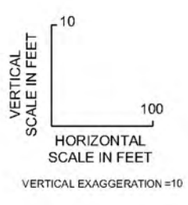
**EXISTING MONITORING WELLS
TEMPORARY WELLS
VAPOR POINTS AND
HISTORICAL SOIL BORINGS**

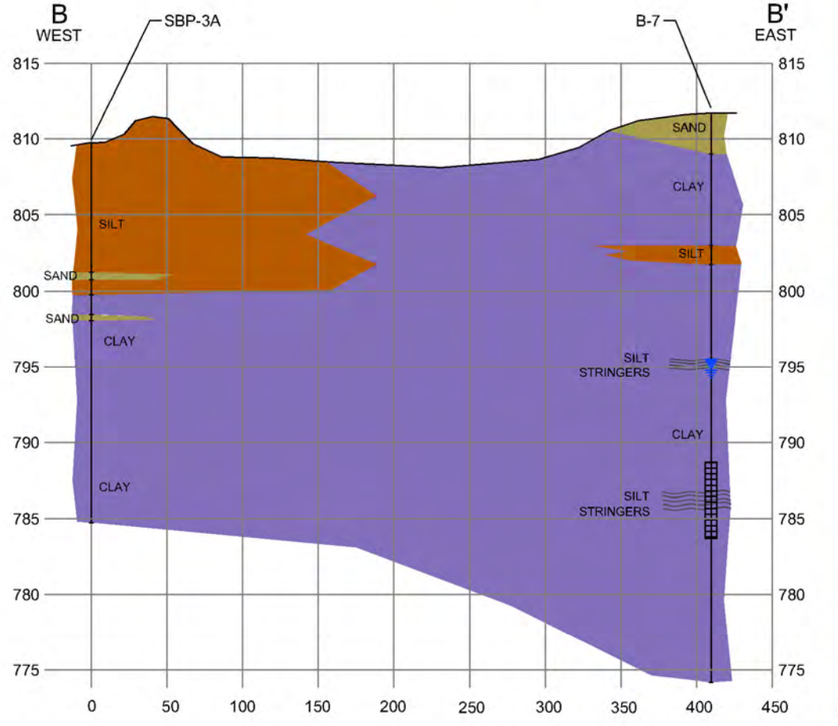
0 50 100 150 200
Feet

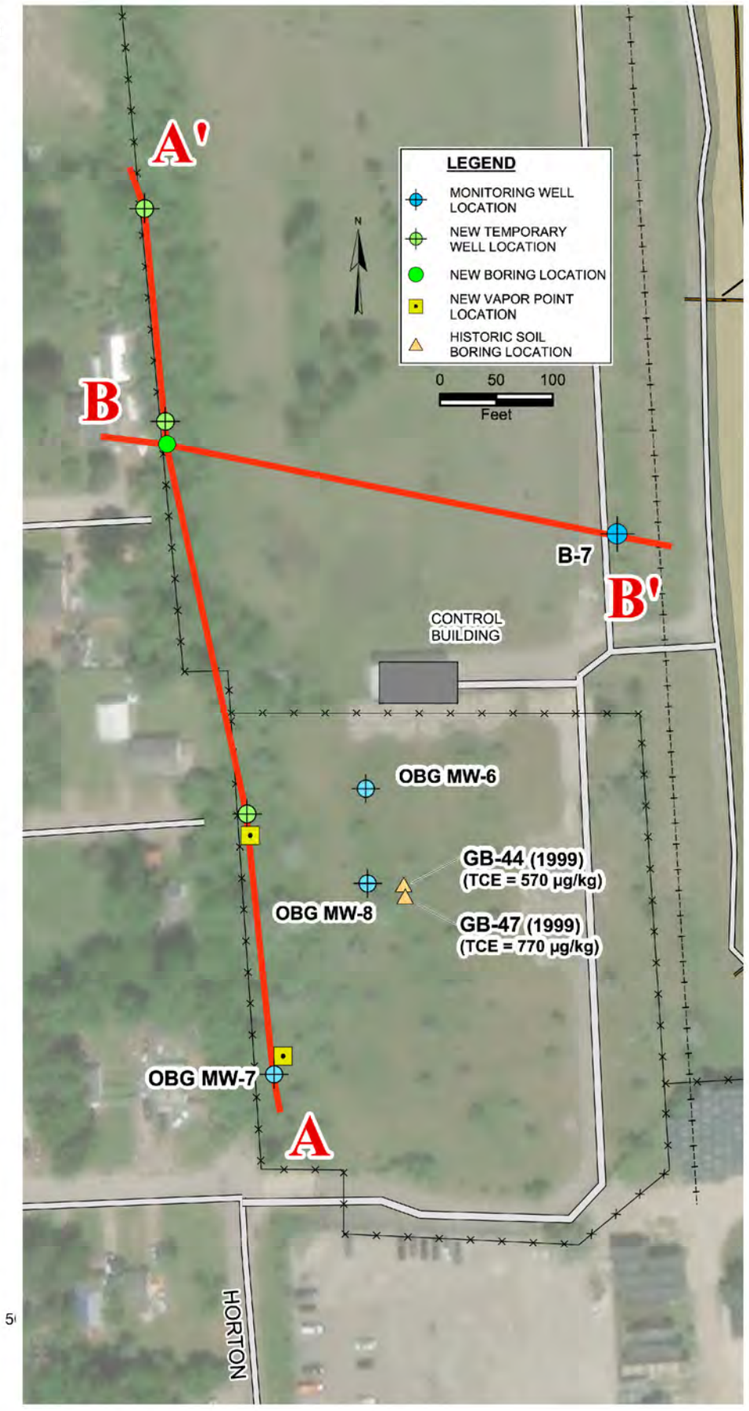
JANUARY 2018











DRAWN BY: JMO DATE: 01/16/2018
CHECKED BY: CSY DATE: 01/16/2018
APPROVED BY: CSY DATE: 01/16/2018
DRAWING NO:
REFERENCE:

GEOLOGIC CROSS-SECTION A-A'
GEOLOGIC CROSS-SECTION B-B'

RACER
COLDWATER ROAD LANDFILL SITE
FLINT, MICHIGAN

O'BRIEN & GERE

PROJECT NO.
68545

FIGURE NO.
3

ATTACHMENT A

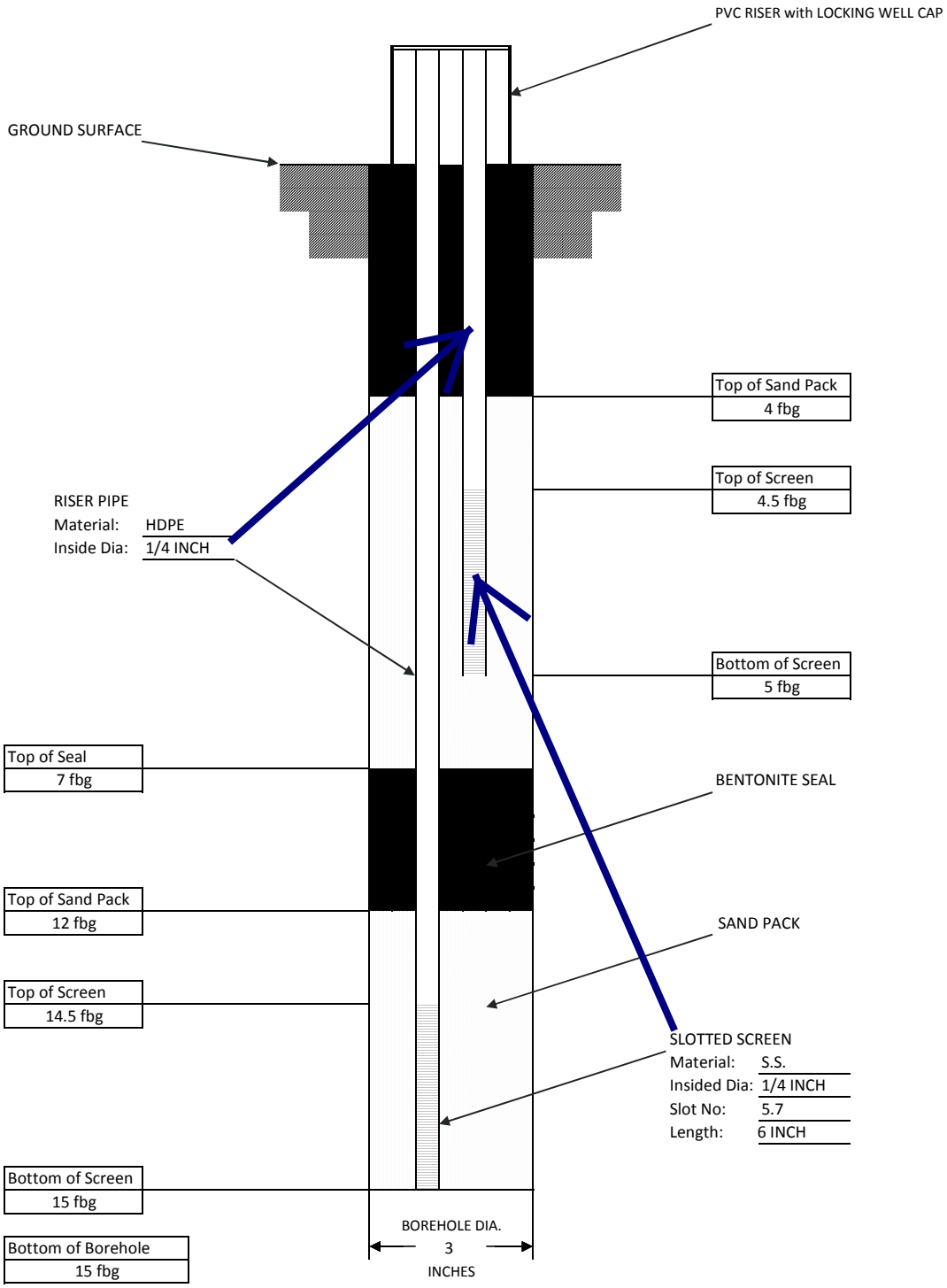
Vapor Probe Construction Logs

ATTACHMENT A

RACER Trust - Coldwater Road Landfill

Vapor Probe Construction Log - December 2017

VP-1 S/D

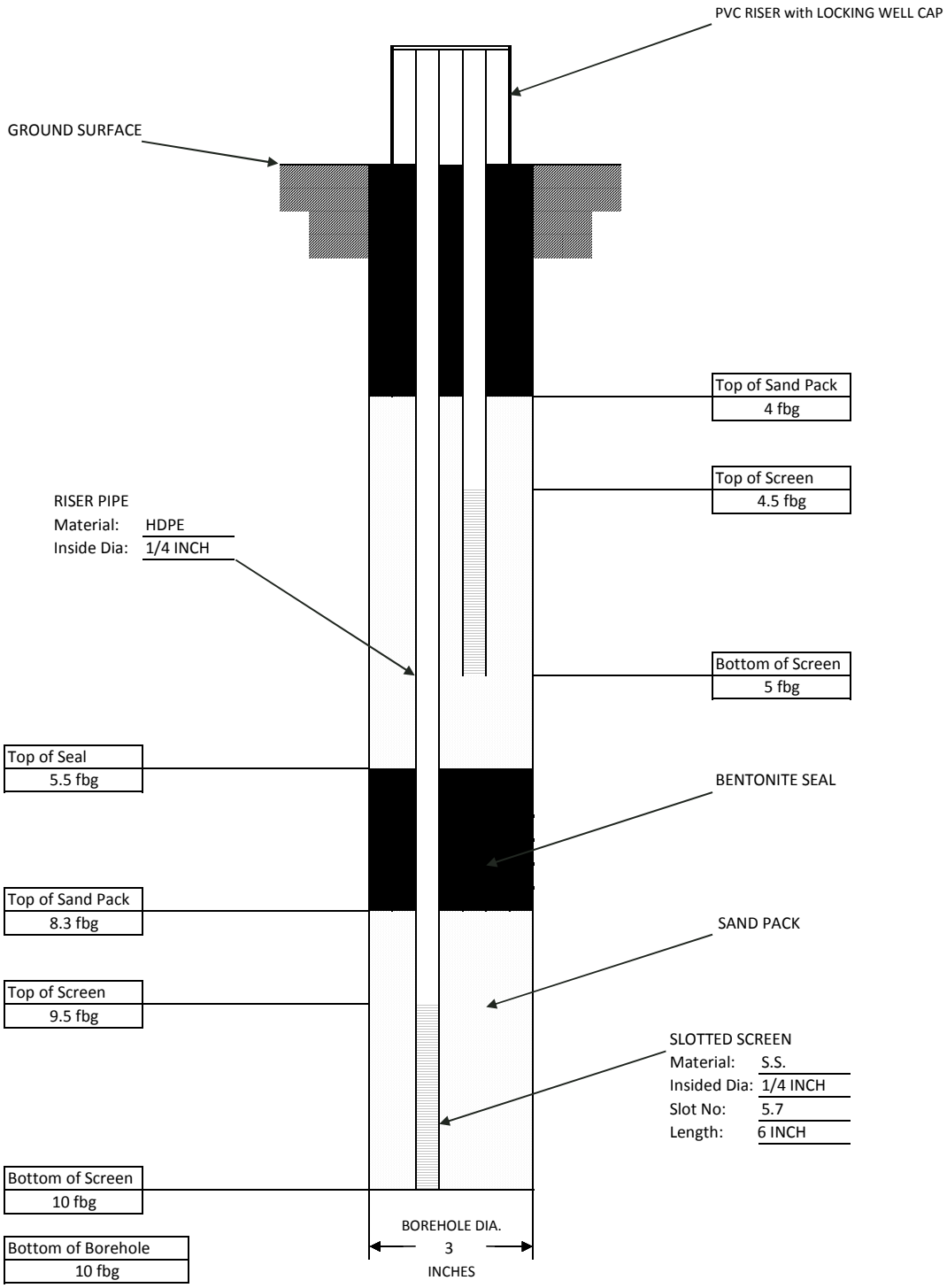


ATTACHMENT A

RACER Trust - Coldwater Road Landfill

Vapor Probe Construction Log - December 2017

VP-2 S/D



ATTACHMENT B

Soil Vapor (Bottle Vac®) Sample Collection Field Forms

O'BRIEN & GERE

Soil Vapor (Canister) Sample Collection Field Form

Project # Coldwater 64737 Date 12/8/17

Project Name Coldwater Collector KBS / CSV

Sample ID VP-15 Vacuum gauge "zero" ("Hg) Yes

Start Date/Time 12/8/17 1015 Start Pressure ("Hg) -30+

End Date/Time 12/8/17 1051 End Pressure ("Hg) -3

Canister ID SN. 12350 End pressure > "zero"? ~~Yes~~ Reading 3

Flow controller ID #53 Sampling duration (intended) Grab

Associated ambient air sample ID _____ Depth of sample point below grade 5 ft

Analytical method required _____ Laboratory used Merit

Tubing type used 3/8 OD Length of tubing 8 ft ~~cm~~ Tubing volume _____ cc

Volume purged 350 cc @ _____ 1 to 3 volumes purged @ < 200cc/min? 3 volumes

Chamber tracer gas conc. 79979 ppm Max out Meter Tracer gas conc. during purging 0 ppm

Gas Analyzer Readings $\%O_2$ N/A $\%CO_2$ N/A $\%CH_4$ N/A PID/FID reading n/a (ppmv)

Noticeable odor _____ Soil type Clay

Weather Conditions during Probe Installation:

Air temperature (°F) 28 Rainfall light snow Wind direction West

Barometric pressure 30.02 Wind speed (mph) 15

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

Weather Conditions at Start of Sampling:

Air temperature (°F) 28°F Rainfall NONE Wind direction calm SW

Barometric pressure 29.91 Wind speed (mph) ~~15~~ 15

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

NO. light snow fall

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

Comments:

O'BRIEN & GERE

Soil Vapor (Canister) Sample Collection Field Form

Project # 64737 Date 12/8/17

Project Name RACER Colvin Rd Collector KCB3 / CSH

Sample ID VP-1D Vacuum gauge "zero" ("Hg) Yes

Start Date/Time 12/8/17 1020 Start Pressure ("Hg) -27

End Date/Time 12/8/17 1052 End Pressure ("Hg) -8

Canister ID SN: 18331 End pressure > "zero"? Yes

Flow controller ID # 46 Sampling duration (intended) Grab

Associated ambient air sample ID _____ Depth of sample point below grade 15ft

Analytical method required TO-15 Laboratory used Merit

Tubing type used 3/8 OD Length of tubing 18' cm Tubing volume 175 cc

Volume purged 550 cc @ _____ 1 to 3 volumes purged @ < 200cc/min? 3 Volumes

Chamber tracer gas conc. 99999 ppm Max out meter Tracer gas conc. during purging 0 PPM

Gas Analyzer Readings $\%O_2$ N/A $\%CO_2$ N/A $\%CH_4$ N/A PID/FID reading N/A (ppmv)

Noticeable odor None Soil type Clay

Weather Conditions during Probe Installation:

Air temperature (°F) 28 Rainfall light snow Wind direction West

Barometric pressure 30.02 Wind speed (mph) 15

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

Weather Conditions at Start of Sampling:

Air temperature (°F) 28 Rainfall None Wind direction SW

Barometric pressure 29.91 Wind speed (mph) 15

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:

O'BRIEN & GERE

Soil Vapor (Canister) Sample Collection Field Form

Project #	64737	Date	12/8/17
Project Name	Falck Coldwater Rd	Collector	KES/CSY

Sample ID	VP-25	VP-DUP-1	Vacuum gauge "zero" ("Hg)	VP-25	DUP-1
Start Date/Time	12/8/17 1130	1130	Start Pressure ("Hg)	-29.5	-29.5
End Date/Time	12/8/17 1229	1229	End Pressure ("Hg)	-3	-3
Canister ID	12412	13717	End pressure > "zero"?	Yes	Yes
Flow controller ID	41		Sampling duration (intended)	6 hrs	6 hrs
Associated ambient air sample ID			Depth of sample point below grade	5ft	5ft
Analytical method required	TO-15		Laboratory used	Merit	

Tubing type used: 3/8 OD Length of tubing: 8ft cm Tubing volume: _____ cc

Volume purged: 350 cc @ _____ 1 to 3 volumes purged @ < 200cc/min? 3 volumes

Chamber tracer gas conc.: 999990 Max out meter Tracer gas conc. during purging: 0 ppm

Gas Analyzer Readings: %O_2 N/A %CO_2 N/A %CH_4 N/A PID/FID reading: — (ppmv)

Noticeable odor: None Soil type: Clay

Weather Conditions during Probe Installation:

Air temperature (°F): 28°F Rainfall: light snow Wind direction: West

Barometric pressure: 30.02 Wind speed (mph): 15

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

Weather Conditions at Start of Sampling:

Air temperature (°F): 28°F Rainfall: — Wind direction: SW

Barometric pressure: 29.91 Wind speed (mph): 15

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-DUP-1 collected

O'BRIEN & GERE

Soil Vapor (Canister) Sample Collection Field Form

Project # 604737 Date 12/8/17

Project Name RACER Coldwater Rd Collector KBS/CSY

Sample ID VP-2D Vacuum gauge "zero" ("Hg) Yes

Start Date/Time 12/8/17 1131 Start Pressure ("Hg) -28

End Date/Time 12/8/17 1230 End Pressure ("Hg) -27.5

Canister ID 18342 End pressure > "zero"? Yes

Flow controller ID 32 Sampling duration (intended) Grab

Associated ambient air sample ID Depth of sample point below grade 10 ft

Analytical method required TO-15 Laboratory used Merit

Tubing type used 3/8 OD Length of tubing 13 ft ~~cm~~ Tubing volume ____ cc

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

Chamber tracer gas conc. 999995 - Max out meter Tracer gas conc. during purging 0 ppm

Gas Analyzer Readings $\%O_2$ N/A $\%CO_2$ N/A $\%CH_4$ N/A PID/FID reading — (ppmv)

Noticeable odor None Soil type Clay

Weather Conditions during Probe Installation:

Air temperature (°F) 28 Rainfall light snow Wind direction West

Barometric pressure 30.02 Wind speed (mph) 15

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

Weather Conditions at Start of Sampling:

Air temperature (°F) 28 Rainfall — Wind direction SW

Barometric pressure 29.91 Wind speed (mph) 15

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: No change in pressure. Submitted sample. Possibly encountered groundwater.

ATTACHMENT C

Analytical Laboratory Results

Analytical Laboratory Report

Report ID: S86075.01(01)
Generated on 12/14/2017

Report to

Attention: Clifford Yantz
O'Brien & Gere Engineers, Inc.
1203 Mallow St
Wolverine Lake, MI 48390

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 Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S86075.01-S86075.05
Project: RACER Coldwater Rd VP Study
Collected Date: 12/08/2017
Submitted Date/Time: 12/08/2017 14:20
Sampled by: Kevin Schneider
P.O. #: PO

Table of Contents

Maya Murshak
Technical Director

General Report Notes

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.

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

Report Narrative

There is no additional narrative for this analytical 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

Method Summary

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

Sample Summary (5 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S86075.01	VP-1S	Air	12/08/17 10:15 - 12/08/17
S86075.02	VP-1D	Air	12/08/17 10:20 - 12/08/17
S86075.03	VP-2S	Air	12/08/17 11:30 - 12/08/17
S86075.04	VP-2D	Air	12/08/17 11:31 - 12/08/17
S86075.05	VP-DUP-1	Air	12/08/17 00:01 - 12/08/17

Analytical Laboratory Report

Lab Sample ID: S86075.01
Sample Tag: VP-1S
Collected Date/Time: 12/08/2017 10:15 - 12/08/2017 10:51
Matrix: Air
COC Reference: A00877

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles								
TO-15								
Acetone	Not detected	ppbv	20	TO-15	12/13/17 17:49	KAG	67-64-1	
1,3-Butadiene	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	106-99-0	
Benzene	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	71-43-2	
Bromodichloromethane	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	75-27-4	
Bromoform	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	75-25-2	
Bromomethane	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	74-83-9	
Vinyl bromide	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	593-60-2	
Benzyl chloride	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	100-44-7	
Carbon disulfide	Not detected	ppbv	5	TO-15	12/13/17 17:49	KAG	75-15-0	
Chlorobenzene	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	108-90-7	
Chloroethane*	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	75-00-3	
Chloroform	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	67-66-3	
Chloromethane	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	74-87-3	
3-Chloropropene	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	107-05-1	
2-Chlorotoluene	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	95-49-8	
Carbon tetrachloride	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	56-23-5	
Cyclohexane	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	110-82-7	
1,1-Dichloroethane	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	75-34-3	
1,1-Dichloroethene	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	75-35-4	
1,2-Dibromoethane	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	106-93-4	
1,2-Dichloroethane	21	ppbv	2	TO-15	12/13/17 17:49	KAG	107-06-2	
1,2-Dichloropropane	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	78-87-5	
1,4-Dioxane	Not detected	ppbv	25	TO-15	12/13/17 17:49	KAG	123-91-1	
Dichlorodifluoromethane	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	75-71-8	
Dibromochloromethane	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	124-48-1	
trans-1,2-Dichloroethene	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	156-60-5	
cis-1,2-Dichloroethene	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	156-59-2	
cis-1,3-Dichloropropene	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	10061-01-5	
1,3-Dichlorobenzene	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	541-73-1	
1,2-Dichlorobenzene	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	95-50-1	
1,4-Dichlorobenzene	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	106-46-7	
trans-1,3-Dichloropropene	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	10061-02-6	
Ethanol*	Not detected	ppbv	34	TO-15	12/13/17 17:49	KAG	64-17-5	X
Ethylbenzene	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	100-41-4	
Ethyl Acetate*	Not detected	ppbv	10	TO-15	12/13/17 17:49	KAG	141-78-6	
4-Ethyltoluene	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	622-96-8	
Freon 113	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	76-13-1	
Freon 114	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	76-14-2	
Heptane	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	142-82-5	
Hexachlorobutadiene*	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	87-68-3	
Hexane	16	ppbv	2	TO-15	12/13/17 17:49	KAG	110-54-3	

X-Elevated reporting limit due to matrix interference

Lab Sample ID: S86075.01 (continued)

Sample Tag: VP-1S

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TO-15 (continued)								
2-Hexanone*	Not detected	ppbv	5	TO-15	12/13/17 17:49	KAG	591-78-6	
Isopropyl Alcohol*	150	ppbv	20	TO-15	12/13/17 17:49	KAG	67-63-0	
Methylene chloride	Not detected	ppbv	5	TO-15	12/13/17 17:49	KAG	75-09-2	
2-Butanone (MEK)	Not detected	ppbv	10	TO-15	12/13/17 17:49	KAG	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	ppbv	5	TO-15	12/13/17 17:49	KAG	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	1634-04-4	
Methyl methacrylate	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	80-62-6	
Naphthalene*	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	91-20-3	
Propylene*	359	ppbv	2	TO-15	12/13/17 17:49	KAG	115-07-1	
Styrene	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	100-42-5	
1,1,1-Trichloroethane	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	79-34-5	
1,1,2-Trichloroethane	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	79-00-5	
1,2,4-Trichlorobenzene	Not detected	ppbv	5	TO-15	12/13/17 17:49	KAG	120-82-1	
1,2,4-Trimethylbenzene	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	95-63-6	
1,3,5-Trimethylbenzene	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	108-67-8	
2,2,4-Trimethylpentane	2	ppbv	2	TO-15	12/13/17 17:49	KAG	540-84-1	
Tert-butyl Alcohol	Not detected	ppbv	10	TO-15	12/13/17 17:49	KAG	75-65-0	
Tetrachloroethene	4	ppbv	2	TO-15	12/13/17 17:49	KAG	127-18-4	
Tetrahydrofuran*	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	109-99-9	
Toluene	9	ppbv	2	TO-15	12/13/17 17:49	KAG	108-88-3	
Trichloroethene	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	79-01-6	
Trichlorofluoromethane	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	75-69-4	
Vinyl chloride	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	75-01-4	
Vinyl acetate	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	108-05-4	
p,m-Xylene	Not detected	ppbv	4	TO-15	12/13/17 17:49	KAG		
o-Xylene	Not detected	ppbv	2	TO-15	12/13/17 17:49	KAG	95-47-6	
Total Xylenes	Not detected	ppbv	6	TO-15	12/13/17 17:49	KAG	1330-20-7	
TO-15								
Acetone	Not detected	ug/m3	48	TO-15	12/13/17 17:49	KAG	67-64-1	
1,3-Butadiene	Not detected	ug/m3	4.4	TO-15	12/13/17 17:49	KAG	106-99-0	
Benzene	Not detected	ug/m3	6.4	TO-15	12/13/17 17:49	KAG	71-43-2	
Bromodichloromethane	Not detected	ug/m3	13	TO-15	12/13/17 17:49	KAG	75-27-4	
Bromoform	Not detected	ug/m3	21	TO-15	12/13/17 17:49	KAG	75-25-2	
Bromomethane	Not detected	ug/m3	7.8	TO-15	12/13/17 17:49	KAG	74-83-9	
Vinyl bromide	Not detected	ug/m3	8.7	TO-15	12/13/17 17:49	KAG	593-60-2	
Benzyl chloride	Not detected	ug/m3	10	TO-15	12/13/17 17:49	KAG	100-44-7	
Carbon disulfide	Not detected	ug/m3	16	TO-15	12/13/17 17:49	KAG	75-15-0	
Chlorobenzene	Not detected	ug/m3	9.2	TO-15	12/13/17 17:49	KAG	108-90-7	
Chloroethane*	Not detected	ug/m3	5.3	TO-15	12/13/17 17:49	KAG	75-00-3	
Chloroform	Not detected	ug/m3	9.8	TO-15	12/13/17 17:49	KAG	67-66-3	
Chloromethane	Not detected	ug/m3	4.1	TO-15	12/13/17 17:49	KAG	74-87-3	
3-Chloropropene	Not detected	ug/m3	6.3	TO-15	12/13/17 17:49	KAG	107-05-1	
2-Chlorotoluene	Not detected	ug/m3	10	TO-15	12/13/17 17:49	KAG	95-49-8	
Carbon tetrachloride	Not detected	ug/m3	13	TO-15	12/13/17 17:49	KAG	56-23-5	
Cyclohexane	Not detected	ug/m3	6.9	TO-15	12/13/17 17:49	KAG	110-82-7	
1,1-Dichloroethane	Not detected	ug/m3	8.1	TO-15	12/13/17 17:49	KAG	75-34-3	
1,1-Dichloroethene	Not detected	ug/m3	7.9	TO-15	12/13/17 17:49	KAG	75-35-4	

Lab Sample ID: S86075.01 (continued)

Sample Tag: VP-1S

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TO-15 (continued)								
1,2-Dibromoethane	Not detected	ug/m3	15	TO-15	12/13/17 17:49	KAG	106-93-4	
1,2-Dichloroethane	85	ug/m3	8.1	TO-15	12/13/17 17:49	KAG	107-06-2	
1,2-Dichloropropane	Not detected	ug/m3	9.2	TO-15	12/13/17 17:49	KAG	78-87-5	
1,4-Dioxane	Not detected	ug/m3	90	TO-15	12/13/17 17:49	KAG	123-91-1	
Dichlorodifluoromethane	Not detected	ug/m3	9.9	TO-15	12/13/17 17:49	KAG	75-71-8	
Dibromochloromethane	Not detected	ug/m3	17	TO-15	12/13/17 17:49	KAG	124-48-1	
trans-1,2-Dichloroethene	Not detected	ug/m3	7.9	TO-15	12/13/17 17:49	KAG	156-60-5	
cis-1,2-Dichloroethene	Not detected	ug/m3	7.9	TO-15	12/13/17 17:49	KAG	156-59-2	
cis-1,3-Dichloropropene	Not detected	ug/m3	9.1	TO-15	12/13/17 17:49	KAG	10061-01-5	
1,3-Dichlorobenzene	Not detected	ug/m3	12	TO-15	12/13/17 17:49	KAG	541-73-1	
1,2-Dichlorobenzene	Not detected	ug/m3	12	TO-15	12/13/17 17:49	KAG	95-50-1	
1,4-Dichlorobenzene	Not detected	ug/m3	12	TO-15	12/13/17 17:49	KAG	106-46-7	
trans-1,3-Dichloropropene	Not detected	ug/m3	9.1	TO-15	12/13/17 17:49	KAG	10061-02-6	
Ethanol*	Not detected	ug/m3	64	TO-15	12/13/17 17:49	KAG	64-17-5	X
Ethylbenzene	Not detected	ug/m3	8.7	TO-15	12/13/17 17:49	KAG	100-41-4	
Ethyl Acetate*	Not detected	ug/m3	36	TO-15	12/13/17 17:49	KAG	141-78-6	
4-Ethyltoluene	Not detected	ug/m3	9.8	TO-15	12/13/17 17:49	KAG	622-96-8	
Freon 113	Not detected	ug/m3	15	TO-15	12/13/17 17:49	KAG	76-13-1	
Freon 114	Not detected	ug/m3	14	TO-15	12/13/17 17:49	KAG	76-14-2	
Heptane	Not detected	ug/m3	8.2	TO-15	12/13/17 17:49	KAG	142-82-5	
Hexachlorobutadiene*	Not detected	ug/m3	21	TO-15	12/13/17 17:49	KAG	87-68-3	
Hexane	56	ug/m3	7.0	TO-15	12/13/17 17:49	KAG	110-54-3	
2-Hexanone*	Not detected	ug/m3	20	TO-15	12/13/17 17:49	KAG	591-78-6	
Isopropyl Alcohol*	370	ug/m3	49	TO-15	12/13/17 17:49	KAG	67-63-0	
Methylene chloride	Not detected	ug/m3	17	TO-15	12/13/17 17:49	KAG	75-09-2	
2-Butanone (MEK)	Not detected	ug/m3	29	TO-15	12/13/17 17:49	KAG	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/m3	20	TO-15	12/13/17 17:49	KAG	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	ug/m3	7.2	TO-15	12/13/17 17:49	KAG	1634-04-4	
Methyl methacrylate	Not detected	ug/m3	8.2	TO-15	12/13/17 17:49	KAG	80-62-6	
Naphthalene*	Not detected	ug/m3	10	TO-15	12/13/17 17:49	KAG	91-20-3	
Propylene*	618	ug/m3	3.4	TO-15	12/13/17 17:49	KAG	115-07-1	
Styrene	Not detected	ug/m3	8.5	TO-15	12/13/17 17:49	KAG	100-42-5	
1,1,1-Trichloroethane	Not detected	ug/m3	11	TO-15	12/13/17 17:49	KAG	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	ug/m3	14	TO-15	12/13/17 17:49	KAG	79-34-5	
1,1,2-Trichloroethane	Not detected	ug/m3	11	TO-15	12/13/17 17:49	KAG	79-00-5	
1,2,4-Trichlorobenzene	Not detected	ug/m3	37	TO-15	12/13/17 17:49	KAG	120-82-1	
1,2,4-Trimethylbenzene	Not detected	ug/m3	9.8	TO-15	12/13/17 17:49	KAG	95-63-6	
1,3,5-Trimethylbenzene	Not detected	ug/m3	9.8	TO-15	12/13/17 17:49	KAG	108-67-8	
2,2,4-Trimethylpentane	9.3	ug/m3	9.3	TO-15	12/13/17 17:49	KAG	540-84-1	
Tert-butyl Alcohol	Not detected	ug/m3	30	TO-15	12/13/17 17:49	KAG	75-65-0	
Tetrachloroethene	27	ug/m3	14	TO-15	12/13/17 17:49	KAG	127-18-4	
Tetrahydrofuran*	Not detected	ug/m3	5.9	TO-15	12/13/17 17:49	KAG	109-99-9	
Toluene	34	ug/m3	7.5	TO-15	12/13/17 17:49	KAG	108-88-3	
Trichloroethene	Not detected	ug/m3	11	TO-15	12/13/17 17:49	KAG	79-01-6	
Trichlorofluoromethane	Not detected	ug/m3	11	TO-15	12/13/17 17:49	KAG	75-69-4	
Vinyl chloride	Not detected	ug/m3	5.1	TO-15	12/13/17 17:49	KAG	75-01-4	
Vinyl acetate	Not detected	ug/m3	7.0	TO-15	12/13/17 17:49	KAG	108-05-4	
p,m-Xylene	Not detected	ug/m3	17	TO-15	12/13/17 17:49	KAG		

X-Elevated reporting limit due to matrix interference

Lab Sample ID: S86075.01 (continued)

Sample Tag: VP-1S

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TO-15 (continued)								
o-Xylene	Not detected	ug/m3	8.7	TO-15	12/13/17 17:49	KAG	95-47-6	
Total Xylenes	Not detected	ug/m3	26	TO-15	12/13/17 17:49	KAG	1330-20-7	

Analytical Laboratory Report

Lab Sample ID: S86075.02
Sample Tag: VP-1D
Collected Date/Time: 12/08/2017 10:20 - 12/08/2017 10:52
Matrix: Air
COC Reference: A00877

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles								
TO-15								
Acetone	40	ppbv	20	TO-15	12/13/17 18:21	KAG	67-64-1	
1,3-Butadiene	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	106-99-0	
Benzene	4	ppbv	2	TO-15	12/13/17 18:21	KAG	71-43-2	
Bromodichloromethane	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	75-27-4	
Bromoform	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	75-25-2	
Bromomethane	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	74-83-9	
Vinyl bromide	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	593-60-2	
Benzyl chloride	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	100-44-7	
Carbon disulfide	Not detected	ppbv	5	TO-15	12/13/17 18:21	KAG	75-15-0	
Chlorobenzene	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	108-90-7	
Chloroethane*	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	75-00-3	
Chloroform	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	67-66-3	
Chloromethane	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	74-87-3	
3-Chloropropene	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	107-05-1	
2-Chlorotoluene	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	95-49-8	
Carbon tetrachloride	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	56-23-5	
Cyclohexane	5	ppbv	2	TO-15	12/13/17 18:21	KAG	110-82-7	
1,1-Dichloroethane	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	75-34-3	
1,1-Dichloroethene	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	75-35-4	
1,2-Dibromoethane	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	106-93-4	
1,2-Dichloroethane	33	ppbv	2	TO-15	12/13/17 18:21	KAG	107-06-2	
1,2-Dichloropropane	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	78-87-5	
1,4-Dioxane	Not detected	ppbv	25	TO-15	12/13/17 18:21	KAG	123-91-1	
Dichlorodifluoromethane	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	75-71-8	
Dibromochloromethane	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	124-48-1	
trans-1,2-Dichloroethene	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	156-60-5	
cis-1,2-Dichloroethene	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	156-59-2	
cis-1,3-Dichloropropene	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	10061-01-5	
1,3-Dichlorobenzene	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	541-73-1	
1,2-Dichlorobenzene	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	95-50-1	
1,4-Dichlorobenzene	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	106-46-7	
trans-1,3-Dichloropropene	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	10061-02-6	
Ethanol*	Not detected	ppbv	70	TO-15	12/13/17 18:21	KAG	64-17-5	X
Ethylbenzene	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	100-41-4	
Ethyl Acetate*	Not detected	ppbv	10	TO-15	12/13/17 18:21	KAG	141-78-6	
4-Ethyltoluene	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	622-96-8	
Freon 113	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	76-13-1	
Freon 114	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	76-14-2	
Heptane	3	ppbv	2	TO-15	12/13/17 18:21	KAG	142-82-5	
Hexachlorobutadiene*	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	87-68-3	
Hexane	37	ppbv	2	TO-15	12/13/17 18:21	KAG	110-54-3	

X-Elevated reporting limit due to matrix interference

Lab Sample ID: S86075.02 (continued)

Sample Tag: VP-1D

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TO-15 (continued)								
2-Hexanone*	Not detected	ppbv	5	TO-15	12/13/17 18:21	KAG	591-78-6	
Isopropyl Alcohol*	240	ppbv	20	TO-15	12/13/17 18:21	KAG	67-63-0	
Methylene chloride	Not detected	ppbv	5	TO-15	12/13/17 18:21	KAG	75-09-2	
2-Butanone (MEK)	Not detected	ppbv	10	TO-15	12/13/17 18:21	KAG	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	ppbv	5	TO-15	12/13/17 18:21	KAG	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	1634-04-4	
Methyl methacrylate	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	80-62-6	
Naphthalene*	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	91-20-3	
Propylene*	176	ppbv	2	TO-15	12/13/17 18:21	KAG	115-07-1	
Styrene	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	100-42-5	
1,1,1-Trichloroethane	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	79-34-5	
1,1,2-Trichloroethane	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	79-00-5	
1,2,4-Trichlorobenzene	Not detected	ppbv	5	TO-15	12/13/17 18:21	KAG	120-82-1	
1,2,4-Trimethylbenzene	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	95-63-6	
1,3,5-Trimethylbenzene	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	108-67-8	
2,2,4-Trimethylpentane	8	ppbv	2	TO-15	12/13/17 18:21	KAG	540-84-1	
Tert-butyl Alcohol	Not detected	ppbv	10	TO-15	12/13/17 18:21	KAG	75-65-0	
Tetrachloroethene	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	127-18-4	
Tetrahydrofuran*	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	109-99-9	
Toluene	15	ppbv	2	TO-15	12/13/17 18:21	KAG	108-88-3	
Trichloroethene	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	79-01-6	
Trichlorofluoromethane	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	75-69-4	
Vinyl chloride	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	75-01-4	
Vinyl acetate	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	108-05-4	
p,m-Xylene	5	ppbv	4	TO-15	12/13/17 18:21	KAG		
o-Xylene	Not detected	ppbv	2	TO-15	12/13/17 18:21	KAG	95-47-6	
Total Xylenes	Not detected	ppbv	6	TO-15	12/13/17 18:21	KAG	1330-20-7	
TO-15								
Acetone	95	ug/m3	48	TO-15	12/13/17 18:21	KAG	67-64-1	
1,3-Butadiene	Not detected	ug/m3	4.4	TO-15	12/13/17 18:21	KAG	106-99-0	
Benzene	13	ug/m3	6.4	TO-15	12/13/17 18:21	KAG	71-43-2	
Bromodichloromethane	Not detected	ug/m3	13	TO-15	12/13/17 18:21	KAG	75-27-4	
Bromoform	Not detected	ug/m3	21	TO-15	12/13/17 18:21	KAG	75-25-2	
Bromomethane	Not detected	ug/m3	7.8	TO-15	12/13/17 18:21	KAG	74-83-9	
Vinyl bromide	Not detected	ug/m3	8.7	TO-15	12/13/17 18:21	KAG	593-60-2	
Benzyl chloride	Not detected	ug/m3	10	TO-15	12/13/17 18:21	KAG	100-44-7	
Carbon disulfide	Not detected	ug/m3	16	TO-15	12/13/17 18:21	KAG	75-15-0	
Chlorobenzene	Not detected	ug/m3	9.2	TO-15	12/13/17 18:21	KAG	108-90-7	
Chloroethane*	Not detected	ug/m3	5.3	TO-15	12/13/17 18:21	KAG	75-00-3	
Chloroform	Not detected	ug/m3	9.8	TO-15	12/13/17 18:21	KAG	67-66-3	
Chloromethane	Not detected	ug/m3	4.1	TO-15	12/13/17 18:21	KAG	74-87-3	
3-Chloropropene	Not detected	ug/m3	6.3	TO-15	12/13/17 18:21	KAG	107-05-1	
2-Chlorotoluene	Not detected	ug/m3	10	TO-15	12/13/17 18:21	KAG	95-49-8	
Carbon tetrachloride	Not detected	ug/m3	13	TO-15	12/13/17 18:21	KAG	56-23-5	
Cyclohexane	17	ug/m3	6.9	TO-15	12/13/17 18:21	KAG	110-82-7	
1,1-Dichloroethane	Not detected	ug/m3	8.1	TO-15	12/13/17 18:21	KAG	75-34-3	
1,1-Dichloroethene	Not detected	ug/m3	7.9	TO-15	12/13/17 18:21	KAG	75-35-4	

Lab Sample ID: S86075.02 (continued)

Sample Tag: VP-1D

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TO-15 (continued)								
1,2-Dibromoethane	Not detected	ug/m3	15	TO-15	12/13/17 18:21	KAG	106-93-4	
1,2-Dichloroethane	130	ug/m3	8.1	TO-15	12/13/17 18:21	KAG	107-06-2	
1,2-Dichloropropane	Not detected	ug/m3	9.2	TO-15	12/13/17 18:21	KAG	78-87-5	
1,4-Dioxane	Not detected	ug/m3	90	TO-15	12/13/17 18:21	KAG	123-91-1	
Dichlorodifluoromethane	Not detected	ug/m3	9.9	TO-15	12/13/17 18:21	KAG	75-71-8	
Dibromochloromethane	Not detected	ug/m3	17	TO-15	12/13/17 18:21	KAG	124-48-1	
trans-1,2-Dichloroethene	Not detected	ug/m3	7.9	TO-15	12/13/17 18:21	KAG	156-60-5	
cis-1,2-Dichloroethene	Not detected	ug/m3	7.9	TO-15	12/13/17 18:21	KAG	156-59-2	
cis-1,3-Dichloropropene	Not detected	ug/m3	9.1	TO-15	12/13/17 18:21	KAG	10061-01-5	
1,3-Dichlorobenzene	Not detected	ug/m3	12	TO-15	12/13/17 18:21	KAG	541-73-1	
1,2-Dichlorobenzene	Not detected	ug/m3	12	TO-15	12/13/17 18:21	KAG	95-50-1	
1,4-Dichlorobenzene	Not detected	ug/m3	12	TO-15	12/13/17 18:21	KAG	106-46-7	
trans-1,3-Dichloropropene	Not detected	ug/m3	9.1	TO-15	12/13/17 18:21	KAG	10061-02-6	
Ethanol*	Not detected	ug/m3	130	TO-15	12/13/17 18:21	KAG	64-17-5	X
Ethylbenzene	Not detected	ug/m3	8.7	TO-15	12/13/17 18:21	KAG	100-41-4	
Ethyl Acetate*	Not detected	ug/m3	36	TO-15	12/13/17 18:21	KAG	141-78-6	
4-Ethyltoluene	Not detected	ug/m3	9.8	TO-15	12/13/17 18:21	KAG	622-96-8	
Freon 113	Not detected	ug/m3	15	TO-15	12/13/17 18:21	KAG	76-13-1	
Freon 114	Not detected	ug/m3	14	TO-15	12/13/17 18:21	KAG	76-14-2	
Heptane	12	ug/m3	8.2	TO-15	12/13/17 18:21	KAG	142-82-5	
Hexachlorobutadiene*	Not detected	ug/m3	21	TO-15	12/13/17 18:21	KAG	87-68-3	
Hexane	130	ug/m3	7.0	TO-15	12/13/17 18:21	KAG	110-54-3	
2-Hexanone*	Not detected	ug/m3	20	TO-15	12/13/17 18:21	KAG	591-78-6	
Isopropyl Alcohol*	590	ug/m3	49	TO-15	12/13/17 18:21	KAG	67-63-0	
Methylene chloride	Not detected	ug/m3	17	TO-15	12/13/17 18:21	KAG	75-09-2	
2-Butanone (MEK)	Not detected	ug/m3	29	TO-15	12/13/17 18:21	KAG	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/m3	20	TO-15	12/13/17 18:21	KAG	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	ug/m3	7.2	TO-15	12/13/17 18:21	KAG	1634-04-4	
Methyl methacrylate	Not detected	ug/m3	8.2	TO-15	12/13/17 18:21	KAG	80-62-6	
Naphthalene*	Not detected	ug/m3	10	TO-15	12/13/17 18:21	KAG	91-20-3	
Propylene*	303	ug/m3	3.4	TO-15	12/13/17 18:21	KAG	115-07-1	
Styrene	Not detected	ug/m3	8.5	TO-15	12/13/17 18:21	KAG	100-42-5	
1,1,1-Trichloroethane	Not detected	ug/m3	11	TO-15	12/13/17 18:21	KAG	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	ug/m3	14	TO-15	12/13/17 18:21	KAG	79-34-5	
1,1,2-Trichloroethane	Not detected	ug/m3	11	TO-15	12/13/17 18:21	KAG	79-00-5	
1,2,4-Trichlorobenzene	Not detected	ug/m3	37	TO-15	12/13/17 18:21	KAG	120-82-1	
1,2,4-Trimethylbenzene	Not detected	ug/m3	9.8	TO-15	12/13/17 18:21	KAG	95-63-6	
1,3,5-Trimethylbenzene	Not detected	ug/m3	9.8	TO-15	12/13/17 18:21	KAG	108-67-8	
2,2,4-Trimethylpentane	37	ug/m3	9.3	TO-15	12/13/17 18:21	KAG	540-84-1	
Tert-butyl Alcohol	Not detected	ug/m3	30	TO-15	12/13/17 18:21	KAG	75-65-0	
Tetrachloroethene	Not detected	ug/m3	14	TO-15	12/13/17 18:21	KAG	127-18-4	
Tetrahydrofuran*	Not detected	ug/m3	5.9	TO-15	12/13/17 18:21	KAG	109-99-9	
Toluene	57	ug/m3	7.5	TO-15	12/13/17 18:21	KAG	108-88-3	
Trichloroethene	Not detected	ug/m3	11	TO-15	12/13/17 18:21	KAG	79-01-6	
Trichlorofluoromethane	Not detected	ug/m3	11	TO-15	12/13/17 18:21	KAG	75-69-4	
Vinyl chloride	Not detected	ug/m3	5.1	TO-15	12/13/17 18:21	KAG	75-01-4	
Vinyl acetate	Not detected	ug/m3	7.0	TO-15	12/13/17 18:21	KAG	108-05-4	
p,m-Xylene	22	ug/m3	17	TO-15	12/13/17 18:21	KAG		

X-Elevated reporting limit due to matrix interference

Lab Sample ID: S86075.02 (continued)

Sample Tag: VP-1D

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TO-15 (continued)								
o-Xylene	Not detected	ug/m3	8.7	TO-15	12/13/17 18:21	KAG	95-47-6	
Total Xylenes	Not detected	ug/m3	26	TO-15	12/13/17 18:21	KAG	1330-20-7	

Analytical Laboratory Report

Lab Sample ID: S86075.03
Sample Tag: VP-2S
Collected Date/Time: 12/08/2017 11:30 - 12/08/2017 12:29
Matrix: Air
COC Reference: A00877

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles								
TO-15								
Acetone	Not detected	ppbv	20	TO-15	12/13/17 18:53	KAG	67-64-1	
1,3-Butadiene	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	106-99-0	
Benzene	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	71-43-2	
Bromodichloromethane	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	75-27-4	
Bromoform	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	75-25-2	
Bromomethane	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	74-83-9	
Vinyl bromide	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	593-60-2	
Benzyl chloride	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	100-44-7	
Carbon disulfide	Not detected	ppbv	5	TO-15	12/13/17 18:53	KAG	75-15-0	
Chlorobenzene	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	108-90-7	
Chloroethane*	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	75-00-3	
Chloroform	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	67-66-3	
Chloromethane	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	74-87-3	
3-Chloropropene	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	107-05-1	
2-Chlorotoluene	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	95-49-8	
Carbon tetrachloride	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	56-23-5	
Cyclohexane	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	110-82-7	
1,1-Dichloroethane	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	75-34-3	
1,1-Dichloroethene	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	75-35-4	
1,2-Dibromoethane	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	106-93-4	
1,2-Dichloroethane	2	ppbv	2	TO-15	12/13/17 18:53	KAG	107-06-2	
1,2-Dichloropropane	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	78-87-5	
1,4-Dioxane	Not detected	ppbv	25	TO-15	12/13/17 18:53	KAG	123-91-1	
Dichlorodifluoromethane	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	75-71-8	
Dibromochloromethane	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	124-48-1	
trans-1,2-Dichloroethene	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	156-60-5	
cis-1,2-Dichloroethene	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	156-59-2	
cis-1,3-Dichloropropene	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	10061-01-5	
1,3-Dichlorobenzene	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	541-73-1	
1,2-Dichlorobenzene	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	95-50-1	
1,4-Dichlorobenzene	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	106-46-7	
trans-1,3-Dichloropropene	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	10061-02-6	
Ethanol*	Not detected	ppbv	25	TO-15	12/13/17 18:53	KAG	64-17-5	
Ethylbenzene	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	100-41-4	
Ethyl Acetate*	Not detected	ppbv	10	TO-15	12/13/17 18:53	KAG	141-78-6	
4-Ethyltoluene	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	622-96-8	
Freon 113	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	76-13-1	
Freon 114	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	76-14-2	
Heptane	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	142-82-5	
Hexachlorobutadiene*	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	87-68-3	
Hexane	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	110-54-3	
2-Hexanone*	Not detected	ppbv	5	TO-15	12/13/17 18:53	KAG	591-78-6	

Lab Sample ID: S86075.03 (continued)
Sample Tag: VP-2S

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TO-15 (continued)								
Isopropyl Alcohol*	20	ppbv	20	TO-15	12/13/17 18:53	KAG	67-63-0	
Methylene chloride	Not detected	ppbv	5	TO-15	12/13/17 18:53	KAG	75-09-2	
2-Butanone (MEK)	Not detected	ppbv	10	TO-15	12/13/17 18:53	KAG	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	ppbv	5	TO-15	12/13/17 18:53	KAG	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	1634-04-4	
Methyl methacrylate	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	80-62-6	
Naphthalene*	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	91-20-3	
Propylene*	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	115-07-1	
Styrene	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	100-42-5	
1,1,1-Trichloroethane	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	79-34-5	
1,1,2-Trichloroethane	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	79-00-5	
1,2,4-Trichlorobenzene	Not detected	ppbv	5	TO-15	12/13/17 18:53	KAG	120-82-1	
1,2,4-Trimethylbenzene	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	95-63-6	
1,3,5-Trimethylbenzene	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	108-67-8	
2,2,4-Trimethylpentane	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	540-84-1	
Tert-butyl Alcohol	Not detected	ppbv	10	TO-15	12/13/17 18:53	KAG	75-65-0	
Tetrachloroethene	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	127-18-4	
Tetrahydrofuran*	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	109-99-9	
Toluene	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	108-88-3	
Trichloroethene	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	79-01-6	
Trichlorofluoromethane	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	75-69-4	
Vinyl chloride	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	75-01-4	
Vinyl acetate	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	108-05-4	
p,m-Xylene	Not detected	ppbv	4	TO-15	12/13/17 18:53	KAG		
o-Xylene	Not detected	ppbv	2	TO-15	12/13/17 18:53	KAG	95-47-6	
Total Xylenes	Not detected	ppbv	6	TO-15	12/13/17 18:53	KAG	1330-20-7	
TO-15								
Acetone	Not detected	ug/m3	48	TO-15	12/13/17 18:53	KAG	67-64-1	
1,3-Butadiene	Not detected	ug/m3	4.4	TO-15	12/13/17 18:53	KAG	106-99-0	
Benzene	Not detected	ug/m3	6.4	TO-15	12/13/17 18:53	KAG	71-43-2	
Bromodichloromethane	Not detected	ug/m3	13	TO-15	12/13/17 18:53	KAG	75-27-4	
Bromoform	Not detected	ug/m3	21	TO-15	12/13/17 18:53	KAG	75-25-2	
Bromomethane	Not detected	ug/m3	7.8	TO-15	12/13/17 18:53	KAG	74-83-9	
Vinyl bromide	Not detected	ug/m3	8.7	TO-15	12/13/17 18:53	KAG	593-60-2	
Benzyl chloride	Not detected	ug/m3	10	TO-15	12/13/17 18:53	KAG	100-44-7	
Carbon disulfide	Not detected	ug/m3	16	TO-15	12/13/17 18:53	KAG	75-15-0	
Chlorobenzene	Not detected	ug/m3	9.2	TO-15	12/13/17 18:53	KAG	108-90-7	
Chloroethane*	Not detected	ug/m3	5.3	TO-15	12/13/17 18:53	KAG	75-00-3	
Chloroform	Not detected	ug/m3	9.8	TO-15	12/13/17 18:53	KAG	67-66-3	
Chloromethane	Not detected	ug/m3	4.1	TO-15	12/13/17 18:53	KAG	74-87-3	
3-Chloropropene	Not detected	ug/m3	6.3	TO-15	12/13/17 18:53	KAG	107-05-1	
2-Chlorotoluene	Not detected	ug/m3	10	TO-15	12/13/17 18:53	KAG	95-49-8	
Carbon tetrachloride	Not detected	ug/m3	13	TO-15	12/13/17 18:53	KAG	56-23-5	
Cyclohexane	Not detected	ug/m3	6.9	TO-15	12/13/17 18:53	KAG	110-82-7	
1,1-Dichloroethane	Not detected	ug/m3	8.1	TO-15	12/13/17 18:53	KAG	75-34-3	
1,1-Dichloroethene	Not detected	ug/m3	7.9	TO-15	12/13/17 18:53	KAG	75-35-4	
1,2-Dibromoethane	Not detected	ug/m3	15	TO-15	12/13/17 18:53	KAG	106-93-4	

Lab Sample ID: S86075.03 (continued)

Sample Tag: VP-2S

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TO-15 (continued)								
1,2-Dichloroethane	8.1	ug/m3	8.1	TO-15	12/13/17 18:53	KAG	107-06-2	
1,2-Dichloropropane	Not detected	ug/m3	9.2	TO-15	12/13/17 18:53	KAG	78-87-5	
1,4-Dioxane	Not detected	ug/m3	90	TO-15	12/13/17 18:53	KAG	123-91-1	
Dichlorodifluoromethane	Not detected	ug/m3	9.9	TO-15	12/13/17 18:53	KAG	75-71-8	
Dibromochloromethane	Not detected	ug/m3	17	TO-15	12/13/17 18:53	KAG	124-48-1	
trans-1,2-Dichloroethene	Not detected	ug/m3	7.9	TO-15	12/13/17 18:53	KAG	156-60-5	
cis-1,2-Dichloroethene	Not detected	ug/m3	7.9	TO-15	12/13/17 18:53	KAG	156-59-2	
cis-1,3-Dichloropropene	Not detected	ug/m3	9.1	TO-15	12/13/17 18:53	KAG	10061-01-5	
1,3-Dichlorobenzene	Not detected	ug/m3	12	TO-15	12/13/17 18:53	KAG	541-73-1	
1,2-Dichlorobenzene	Not detected	ug/m3	12	TO-15	12/13/17 18:53	KAG	95-50-1	
1,4-Dichlorobenzene	Not detected	ug/m3	12	TO-15	12/13/17 18:53	KAG	106-46-7	
trans-1,3-Dichloropropene	Not detected	ug/m3	9.1	TO-15	12/13/17 18:53	KAG	10061-02-6	
Ethanol*	Not detected	ug/m3	47	TO-15	12/13/17 18:53	KAG	64-17-5	
Ethylbenzene	Not detected	ug/m3	8.7	TO-15	12/13/17 18:53	KAG	100-41-4	
Ethyl Acetate*	Not detected	ug/m3	36	TO-15	12/13/17 18:53	KAG	141-78-6	
4-Ethyltoluene	Not detected	ug/m3	9.8	TO-15	12/13/17 18:53	KAG	622-96-8	
Freon 113	Not detected	ug/m3	15	TO-15	12/13/17 18:53	KAG	76-13-1	
Freon 114	Not detected	ug/m3	14	TO-15	12/13/17 18:53	KAG	76-14-2	
Heptane	Not detected	ug/m3	8.2	TO-15	12/13/17 18:53	KAG	142-82-5	
Hexachlorobutadiene*	Not detected	ug/m3	21	TO-15	12/13/17 18:53	KAG	87-68-3	
Hexane	Not detected	ug/m3	7.0	TO-15	12/13/17 18:53	KAG	110-54-3	
2-Hexanone*	Not detected	ug/m3	20	TO-15	12/13/17 18:53	KAG	591-78-6	
Isopropyl Alcohol*	49	ug/m3	49	TO-15	12/13/17 18:53	KAG	67-63-0	
Methylene chloride	Not detected	ug/m3	17	TO-15	12/13/17 18:53	KAG	75-09-2	
2-Butanone (MEK)	Not detected	ug/m3	29	TO-15	12/13/17 18:53	KAG	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/m3	20	TO-15	12/13/17 18:53	KAG	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	ug/m3	7.2	TO-15	12/13/17 18:53	KAG	1634-04-4	
Methyl methacrylate	Not detected	ug/m3	8.2	TO-15	12/13/17 18:53	KAG	80-62-6	
Naphthalene*	Not detected	ug/m3	10	TO-15	12/13/17 18:53	KAG	91-20-3	
Propylene*	Not detected	ug/m3	3.4	TO-15	12/13/17 18:53	KAG	115-07-1	
Styrene	Not detected	ug/m3	8.5	TO-15	12/13/17 18:53	KAG	100-42-5	
1,1,1-Trichloroethane	Not detected	ug/m3	11	TO-15	12/13/17 18:53	KAG	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	ug/m3	14	TO-15	12/13/17 18:53	KAG	79-34-5	
1,1,2-Trichloroethane	Not detected	ug/m3	11	TO-15	12/13/17 18:53	KAG	79-00-5	
1,2,4-Trichlorobenzene	Not detected	ug/m3	37	TO-15	12/13/17 18:53	KAG	120-82-1	
1,2,4-Trimethylbenzene	Not detected	ug/m3	9.8	TO-15	12/13/17 18:53	KAG	95-63-6	
1,3,5-Trimethylbenzene	Not detected	ug/m3	9.8	TO-15	12/13/17 18:53	KAG	108-67-8	
2,2,4-Trimethylpentane	Not detected	ug/m3	9.3	TO-15	12/13/17 18:53	KAG	540-84-1	
Tert-butyl Alcohol	Not detected	ug/m3	30	TO-15	12/13/17 18:53	KAG	75-65-0	
Tetrachloroethene	Not detected	ug/m3	14	TO-15	12/13/17 18:53	KAG	127-18-4	
Tetrahydrofuran*	Not detected	ug/m3	5.9	TO-15	12/13/17 18:53	KAG	109-99-9	
Toluene	Not detected	ug/m3	7.5	TO-15	12/13/17 18:53	KAG	108-88-3	
Trichloroethene	Not detected	ug/m3	11	TO-15	12/13/17 18:53	KAG	79-01-6	
Trichlorofluoromethane	Not detected	ug/m3	11	TO-15	12/13/17 18:53	KAG	75-69-4	
Vinyl chloride	Not detected	ug/m3	5.1	TO-15	12/13/17 18:53	KAG	75-01-4	
Vinyl acetate	Not detected	ug/m3	7.0	TO-15	12/13/17 18:53	KAG	108-05-4	
p,m-Xylene	Not detected	ug/m3	17	TO-15	12/13/17 18:53	KAG		
o-Xylene	Not detected	ug/m3	8.7	TO-15	12/13/17 18:53	KAG	95-47-6	
Total Xylenes	Not detected	ug/m3	26	TO-15	12/13/17 18:53	KAG	1330-20-7	

Analytical Laboratory Report

Lab Sample ID: S86075.04
Sample Tag: VP-2D
Collected Date/Time: 12/08/2017 11:31 - 12/08/2017 12:30
Matrix: Air
COC Reference: A00877

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Other / Misc.								
Hold until notified*	Completed				12/12/17 12:39	JAL		

Lab Sample ID: S86075.05

Sample Tag: VP-DUP-1

Collected Date/Time: 12/08/2017 00:01 - 12/08/2017 00:02

Matrix: Air

COC Reference: A00877

Sample Containers

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

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles								
TO-15								
Acetone	Not detected	ppbv	20	TO-15	12/13/17 19:25	KAG	67-64-1	
1,3-Butadiene	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	106-99-0	
Benzene	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	71-43-2	
Bromodichloromethane	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	75-27-4	
Bromoform	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	75-25-2	
Bromomethane	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	74-83-9	
Vinyl bromide	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	593-60-2	
Benzyl chloride	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	100-44-7	
Carbon disulfide	Not detected	ppbv	5	TO-15	12/13/17 19:25	KAG	75-15-0	
Chlorobenzene	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	108-90-7	
Chloroethane*	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	75-00-3	
Chloroform	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	67-66-3	
Chloromethane	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	74-87-3	
3-Chloropropene	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	107-05-1	
2-Chlorotoluene	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	95-49-8	
Carbon tetrachloride	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	56-23-5	
Cyclohexane	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	110-82-7	
1,1-Dichloroethane	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	75-34-3	
1,1-Dichloroethene	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	75-35-4	
1,2-Dibromoethane	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	106-93-4	
1,2-Dichloroethane	3	ppbv	2	TO-15	12/13/17 19:25	KAG	107-06-2	
1,2-Dichloropropane	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	78-87-5	
1,4-Dioxane	Not detected	ppbv	25	TO-15	12/13/17 19:25	KAG	123-91-1	
Dichlorodifluoromethane	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	75-71-8	
Dibromochloromethane	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	124-48-1	
trans-1,2-Dichloroethene	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	156-60-5	
cis-1,2-Dichloroethene	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	156-59-2	
cis-1,3-Dichloropropene	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	10061-01-5	
1,3-Dichlorobenzene	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	541-73-1	
1,2-Dichlorobenzene	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	95-50-1	
1,4-Dichlorobenzene	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	106-46-7	
trans-1,3-Dichloropropene	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	10061-02-6	
Ethanol*	Not detected	ppbv	25	TO-15	12/13/17 19:25	KAG	64-17-5	
Ethylbenzene	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	100-41-4	
Ethyl Acetate*	Not detected	ppbv	10	TO-15	12/13/17 19:25	KAG	141-78-6	
4-Ethyltoluene	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	622-96-8	
Freon 113	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	76-13-1	
Freon 114	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	76-14-2	
Heptane	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	142-82-5	
Hexachlorobutadiene*	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	87-68-3	
Hexane	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	110-54-3	
2-Hexanone*	Not detected	ppbv	5	TO-15	12/13/17 19:25	KAG	591-78-6	

Lab Sample ID: S86075.05 (continued)

Sample Tag: VP-DUP-1

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TO-15 (continued)								
Isopropyl Alcohol*	30	ppbv	20	TO-15	12/13/17 19:25	KAG	67-63-0	
Methylene chloride	Not detected	ppbv	5	TO-15	12/13/17 19:25	KAG	75-09-2	
2-Butanone (MEK)	Not detected	ppbv	10	TO-15	12/13/17 19:25	KAG	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	ppbv	5	TO-15	12/13/17 19:25	KAG	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	1634-04-4	
Methyl methacrylate	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	80-62-6	
Naphthalene*	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	91-20-3	
Propylene*	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	115-07-1	
Styrene	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	100-42-5	
1,1,1-Trichloroethane	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	79-34-5	
1,1,2-Trichloroethane	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	79-00-5	
1,2,4-Trichlorobenzene	Not detected	ppbv	5	TO-15	12/13/17 19:25	KAG	120-82-1	
1,2,4-Trimethylbenzene	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	95-63-6	
1,3,5-Trimethylbenzene	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	108-67-8	
2,2,4-Trimethylpentane	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	540-84-1	
Tert-butyl Alcohol	Not detected	ppbv	10	TO-15	12/13/17 19:25	KAG	75-65-0	
Tetrachloroethene	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	127-18-4	
Tetrahydrofuran*	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	109-99-9	
Toluene	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	108-88-3	
Trichloroethene	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	79-01-6	
Trichlorofluoromethane	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	75-69-4	
Vinyl chloride	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	75-01-4	
Vinyl acetate	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	108-05-4	
p,m-Xylene	Not detected	ppbv	4	TO-15	12/13/17 19:25	KAG		
o-Xylene	Not detected	ppbv	2	TO-15	12/13/17 19:25	KAG	95-47-6	
Total Xylenes	Not detected	ppbv	6	TO-15	12/13/17 19:25	KAG	1330-20-7	
TO-15								
Acetone	Not detected	ug/m3	48	TO-15	12/13/17 19:25	KAG	67-64-1	
1,3-Butadiene	Not detected	ug/m3	4.4	TO-15	12/13/17 19:25	KAG	106-99-0	
Benzene	Not detected	ug/m3	6.4	TO-15	12/13/17 19:25	KAG	71-43-2	
Bromodichloromethane	Not detected	ug/m3	13	TO-15	12/13/17 19:25	KAG	75-27-4	
Bromoform	Not detected	ug/m3	21	TO-15	12/13/17 19:25	KAG	75-25-2	
Bromomethane	Not detected	ug/m3	7.8	TO-15	12/13/17 19:25	KAG	74-83-9	
Vinyl bromide	Not detected	ug/m3	8.7	TO-15	12/13/17 19:25	KAG	593-60-2	
Benzyl chloride	Not detected	ug/m3	10	TO-15	12/13/17 19:25	KAG	100-44-7	
Carbon disulfide	Not detected	ug/m3	16	TO-15	12/13/17 19:25	KAG	75-15-0	
Chlorobenzene	Not detected	ug/m3	9.2	TO-15	12/13/17 19:25	KAG	108-90-7	
Chloroethane*	Not detected	ug/m3	5.3	TO-15	12/13/17 19:25	KAG	75-00-3	
Chloroform	Not detected	ug/m3	9.8	TO-15	12/13/17 19:25	KAG	67-66-3	
Chloromethane	Not detected	ug/m3	4.1	TO-15	12/13/17 19:25	KAG	74-87-3	
3-Chloropropene	Not detected	ug/m3	6.3	TO-15	12/13/17 19:25	KAG	107-05-1	
2-Chlorotoluene	Not detected	ug/m3	10	TO-15	12/13/17 19:25	KAG	95-49-8	
Carbon tetrachloride	Not detected	ug/m3	13	TO-15	12/13/17 19:25	KAG	56-23-5	
Cyclohexane	Not detected	ug/m3	6.9	TO-15	12/13/17 19:25	KAG	110-82-7	
1,1-Dichloroethane	Not detected	ug/m3	8.1	TO-15	12/13/17 19:25	KAG	75-34-3	
1,1-Dichloroethene	Not detected	ug/m3	7.9	TO-15	12/13/17 19:25	KAG	75-35-4	
1,2-Dibromoethane	Not detected	ug/m3	15	TO-15	12/13/17 19:25	KAG	106-93-4	

Lab Sample ID: S86075.05 (continued)

Sample Tag: VP-DUP-1

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TO-15 (continued)								
1,2-Dichloroethane	12	ug/m3	8.1	TO-15	12/13/17 19:25	KAG	107-06-2	
1,2-Dichloropropane	Not detected	ug/m3	9.2	TO-15	12/13/17 19:25	KAG	78-87-5	
1,4-Dioxane	Not detected	ug/m3	90	TO-15	12/13/17 19:25	KAG	123-91-1	
Dichlorodifluoromethane	Not detected	ug/m3	9.9	TO-15	12/13/17 19:25	KAG	75-71-8	
Dibromochloromethane	Not detected	ug/m3	17	TO-15	12/13/17 19:25	KAG	124-48-1	
trans-1,2-Dichloroethene	Not detected	ug/m3	7.9	TO-15	12/13/17 19:25	KAG	156-60-5	
cis-1,2-Dichloroethene	Not detected	ug/m3	7.9	TO-15	12/13/17 19:25	KAG	156-59-2	
cis-1,3-Dichloropropene	Not detected	ug/m3	9.1	TO-15	12/13/17 19:25	KAG	10061-01-5	
1,3-Dichlorobenzene	Not detected	ug/m3	12	TO-15	12/13/17 19:25	KAG	541-73-1	
1,2-Dichlorobenzene	Not detected	ug/m3	12	TO-15	12/13/17 19:25	KAG	95-50-1	
1,4-Dichlorobenzene	Not detected	ug/m3	12	TO-15	12/13/17 19:25	KAG	106-46-7	
trans-1,3-Dichloropropene	Not detected	ug/m3	9.1	TO-15	12/13/17 19:25	KAG	10061-02-6	
Ethanol*	Not detected	ug/m3	47	TO-15	12/13/17 19:25	KAG	64-17-5	
Ethylbenzene	Not detected	ug/m3	8.7	TO-15	12/13/17 19:25	KAG	100-41-4	
Ethyl Acetate*	Not detected	ug/m3	36	TO-15	12/13/17 19:25	KAG	141-78-6	
4-Ethyltoluene	Not detected	ug/m3	9.8	TO-15	12/13/17 19:25	KAG	622-96-8	
Freon 113	Not detected	ug/m3	15	TO-15	12/13/17 19:25	KAG	76-13-1	
Freon 114	Not detected	ug/m3	14	TO-15	12/13/17 19:25	KAG	76-14-2	
Heptane	Not detected	ug/m3	8.2	TO-15	12/13/17 19:25	KAG	142-82-5	
Hexachlorobutadiene*	Not detected	ug/m3	21	TO-15	12/13/17 19:25	KAG	87-68-3	
Hexane	Not detected	ug/m3	7.0	TO-15	12/13/17 19:25	KAG	110-54-3	
2-Hexanone*	Not detected	ug/m3	20	TO-15	12/13/17 19:25	KAG	591-78-6	
Isopropyl Alcohol*	74	ug/m3	49	TO-15	12/13/17 19:25	KAG	67-63-0	
Methylene chloride	Not detected	ug/m3	17	TO-15	12/13/17 19:25	KAG	75-09-2	
2-Butanone (MEK)	Not detected	ug/m3	29	TO-15	12/13/17 19:25	KAG	78-93-3	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/m3	20	TO-15	12/13/17 19:25	KAG	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	ug/m3	7.2	TO-15	12/13/17 19:25	KAG	1634-04-4	
Methyl methacrylate	Not detected	ug/m3	8.2	TO-15	12/13/17 19:25	KAG	80-62-6	
Naphthalene*	Not detected	ug/m3	10	TO-15	12/13/17 19:25	KAG	91-20-3	
Propylene*	Not detected	ug/m3	3.4	TO-15	12/13/17 19:25	KAG	115-07-1	
Styrene	Not detected	ug/m3	8.5	TO-15	12/13/17 19:25	KAG	100-42-5	
1,1,1-Trichloroethane	Not detected	ug/m3	11	TO-15	12/13/17 19:25	KAG	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	ug/m3	14	TO-15	12/13/17 19:25	KAG	79-34-5	
1,1,2-Trichloroethane	Not detected	ug/m3	11	TO-15	12/13/17 19:25	KAG	79-00-5	
1,2,4-Trichlorobenzene	Not detected	ug/m3	37	TO-15	12/13/17 19:25	KAG	120-82-1	
1,2,4-Trimethylbenzene	Not detected	ug/m3	9.8	TO-15	12/13/17 19:25	KAG	95-63-6	
1,3,5-Trimethylbenzene	Not detected	ug/m3	9.8	TO-15	12/13/17 19:25	KAG	108-67-8	
2,2,4-Trimethylpentane	Not detected	ug/m3	9.3	TO-15	12/13/17 19:25	KAG	540-84-1	
Tert-butyl Alcohol	Not detected	ug/m3	30	TO-15	12/13/17 19:25	KAG	75-65-0	
Tetrachloroethene	Not detected	ug/m3	14	TO-15	12/13/17 19:25	KAG	127-18-4	
Tetrahydrofuran*	Not detected	ug/m3	5.9	TO-15	12/13/17 19:25	KAG	109-99-9	
Toluene	Not detected	ug/m3	7.5	TO-15	12/13/17 19:25	KAG	108-88-3	
Trichloroethene	Not detected	ug/m3	11	TO-15	12/13/17 19:25	KAG	79-01-6	
Trichlorofluoromethane	Not detected	ug/m3	11	TO-15	12/13/17 19:25	KAG	75-69-4	
Vinyl chloride	Not detected	ug/m3	5.1	TO-15	12/13/17 19:25	KAG	75-01-4	
Vinyl acetate	Not detected	ug/m3	7.0	TO-15	12/13/17 19:25	KAG	108-05-4	
p,m-Xylene	Not detected	ug/m3	17	TO-15	12/13/17 19:25	KAG		
o-Xylene	Not detected	ug/m3	8.7	TO-15	12/13/17 19:25	KAG	95-47-6	
Total Xylenes	Not detected	ug/m3	26	TO-15	12/13/17 19:25	KAG	1330-20-7	

Merit Laboratories, Inc.

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 00877

AIR/GAS SAMPLES CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Clifford Yantz
COMPANY: O'Brien & Gere
ADDRESS: ~~185 37400~~ 1203 Mallow St
CITY: Wolverine LAKE | STATE: MI | ZIP CODE: 49890
PHONE NO.: 313-333-0311 | FAX NO. | P.O. NO.
EMAIL ADDRESS: Clifford.Yantz@obg.com | QUOTE NO.

INVOICE TO

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 Coldwater Rd VP Study
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Kevin Schneider

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: Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (specify in notes)	Analyses: TO-15	Other (specify in notes)
86075.01	VP-1S	12/8/17	1015	1051	-30+	-3	53	18350			X			X	
.02	VP-1D	12/8/17	1020	1057	-27	-8	46	18331			X			X	
.03	VP-2S	12/8/17	1130	1229	-29.5	-3	41	12412			X			X	
.04	VP-2D	12/8/17	1131	1230	-28	-27.5	32	18342			X			X	
.05	VP-DUP-1	12/8/17	—	—	-29.5	-3	—	13717			X			X	

Temperature (Fahrenheit)	Interior	Ambient	Notes
Start		26 °F	
Stop		26 °F	

Pressure (inches of Hg)	Interior	Ambient	Notes
Start		29.94	
Stop		29.94	

Notes

RELINQUISHED BY: SIGNATURE/ORGANIZATION	OBG ☒ Sampler	DATE 12/8/17	TIME 1240
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE 12/8/17	TIME 12:40
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE 12/8/17	TIME 14:20
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE 12/8/17	TIME 1420

RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME

SEAL NO. | SEAL INTACT YES ☐ NO ☐ | INITIALS
SEAL NO. | SEAL INTACT YES ☐ NO ☐ | INITIALS

NOTES: TEMP. ON ARRIVAL RT

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 7.10.15