

November 30, 2018

Mr. Paul Bucholtz

Michigan Department of Environmental Quality
Remediation and Redevelopment Division
Constitution Hall
525 West Allegan Street
Lansing, MI 48909

RE: Surface Soil, Stockpile, and Soil Vapor Evaluation
RACER Trust Hemphill Road Industrial Land, Burton, Michigan
FILE: 15388 / 68544

Dear **Mr. Bucholtz**:

On behalf of RACER Trust, O'Brien & Gere Engineers, Inc. (OBG) has prepared this letter to provide a summary of the results of the surface soil evaluation for lead impacts, evaluation of the existing soil stockpile at the Site, and the soil vapor evaluation conducted in October 2018 at the Hemphill Road Industrial Land, located in Burton Michigan (Site; [Figure 1](#)).

SITE DESCRIPTION

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 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, MDEQ requested, during our conference call on June 5, 2018, that an evaluation of the lead concentrations in surface soil (defined as 0 to 6 inches below grade, or below the asphalt or concrete covering the soil surface) be evaluated based on the general lack of surficial sampling conducted at the Site and the desire to use existing surficial 6 inches of soil or existing surficial gravel, asphalt, or concrete and underlying 6 inches of material as an exposure barrier.

In addition, during our conference call on August 10, 2018, MDEQ requested that additional stockpile soil samples be collected to evaluate whether the stockpile soil can be utilized as cover soil at the Site. Furthermore, during our January 12, 2018 conference call MDEQ requested 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 the MDEQ 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 scope of work conducted to evaluate the lead concentrations in the surface soil at the Site, the stockpile soil for reuse at the Site, and the VI pathway at the Site.



SURFACE SOIL SAMPLING AND ANALYSIS

To evaluate lead concentrations in the areas where waste fill exists on the Site, the following incremental sampling (IS) program was implemented. The primary objective of this sampling program was to characterize the potential lead impacts in surficial soils within the waste fill areas on the Site.

To evaluate the direct contact exposure pathway to surface soil impacts the sampling focused on soil in the upper 0.5 feet (6 inches) of surficial soils or the upper 6 inches of material below existing surficial gravel, asphalt, and/or concrete, following incremental sampling protocols. This approach was taken because impacts to Site soils were not likely due to localized activities occurring directly on specific areas of the Site, but rather the result of placing fill materials on the Site, some of which may have contained elevated lead concentrations.

INCREMENTAL SAMPLING

IS was used to further characterize soil conditions in designated decision units at the Site. IS involves the unbiased collection of multiple relatively uniform aliquots of soil throughout the decision units, and combining these aliquots into a single mass. The single mass was submitted to the laboratory for processing into a representative composite sample followed by laboratory analysis. When compared to a discrete sampling approach, IS has the potential to give more reliable and reproducible central tendency concentration estimates for a particular decision unit with fewer overall analytical samples.

DECISION UNITS

Three decision units were implemented during this IS program that were selected based on three factors: 1) the presence of waste fill placed on the Site (*i.e.*, both areas contain waste fill material), 2) the separation of the two areas of waste fill, which may have attributed to different timing; therefore, potentially different impacts in these two areas of the Site, and 3) the overall size of the southern waste fill area, which MDEQ requested be split into two individual decision units during our August 10, 2018 conference call. **Figure 3** shows the approximate boundaries of the three proposed decision units. Each of these decision units is further discussed below:

- **Northern Waste Fill Area (Northern / DU-1) Decision Unit** – The Northern decision unit included the area containing waste fill that exists in the northern portion of the Site as the name indicates. This unit had an area of approximately 26,251 square feet (ft², or approximately 0.60 acres). Based on MDEQ IS guidance document (MDEQ, 2015), a grid of 23 feet was utilized to establish 52 incremental sampling locations (roughly a 7 by 7 grid) as shown in **Figure 3**.
- **Southern Waste Fill Area – North Portion (Southern-North Portion / DU-2) Decision Unit** – The Southern-North Portion decision unit included the area containing waste fill that exists in the northern approximate half of the southern portion of the Site as the name indicates. This unit had an area of approximately 37,692 ft² (or approximately 0.87 acres). Therefore, a grid of 27 feet was utilized to establish 53 incremental sampling locations (roughly a 7 by 7 grid) as shown in **Figure 3**.
- **Southern Waste Fill Area – South Portion (Southern-South Portion / DU-3) Decision Unit** – The Southern-South Portion decision unit included the area containing waste fill that exists in the southern approximate half of the southern portion of the Site as the name indicates. This unit had an area of approximately 38,055 ft² (or approximately 0.87 acres). Therefore, a grid of 28 feet was utilized to establish 49 (46 for both the replicate and triplicate) incremental sampling locations (roughly a 7 by 7 grid) as shown in **Figure 3**.

The samples for the Northern (DU-1), Southern-North Portion (DU-2), and Southern-South Portion (DU-3) decision units were labeled DU-1, DU-2, and DU-3, respectively, and the replicate and triplicate samples for DU-3 were labeled DU-3 Replicate and DU-3 Triplicate, respectively.



SAMPLING METHODS

IS was implemented in each decision unit following MDEQ IS guidance (MDEQ, 2015). As indicated above, an approximate 7 by 7 grid system equating $50\pm$ aliquots were collected in each decision unit utilizing a systematic random sampling approach. By collecting samples from multiple, randomly selected locations, the sampling method helps eliminate error and address distributional heterogeneity, also referred to as grouping and segregation error.

The grids and systematic random sampling locations for each decision unit are presented in [Figure 3](#). The systematic random sampling locations for the Northern (DU-1) and Southern-North Portion (DU-2) decision units are denoted with a \square (position within each grid node).

The systematic random sampling locations for the Southern-South Portion (DU-3) decision unit are denoted with an X, O, or \square are shown within each cell (assuming that the sampling location falls within a cell for partial cell locations) to allow the collection of replicate samples, in this case triplicates, to determine the precision and reproducibility of the sampling results due to contaminant variability per MDEQ's IS guidance that recommends "triplicates from a minimum of 10% of the" decision units in an IS program. The locations of the Xs, Os, and \square s were determined by random number generation in accordance with the MDEQ statistics training guidance document (MDEQ, 2002).

OBG utilized a portable global positioning system (GPS) device capable of submeter accuracy to locate the sampling locations in the field based on the proposed grid system in our August 20, 2018 letter. However, the grids established in our original proposal appeared to be shifted approximately 20 feet west than the grids set out by the GPS unit. This is likely due to a coordinate system difference (Michigan State Plane Coordinate System US feet as opposed to international feet). Therefore, the grids furthest to the west, were truncated, especially as this grid shift became clearly evident in the Southern decision units, because they were outside of the waste fill area base on former boring/monitoring well locations that were identifiable in the field. Additional grid locations were added to the east along the eastern property boundary (but still on-Site, see [Figure 3](#)). Several sample locations within the Northern (DU-1) decision unit were moved due to ponded water and brush in the area.

Due to the presence of asphalt and concrete) in the areas to be sampled, a hammer drill or core machine was utilized to carefully core through the asphalt/concrete, so that the soils from 0 to 6 inches beneath the asphalt/concrete could be collected for analysis. $50\pm$ direct-push hand cores were advanced within each decision unit, to a depth of approximately 0.5 feet below ground surface (fbg). At each boring or increment location, at least 40 grams of soil was collected into a new clean container (*i.e.*, one- or two-gallon plastic sealable bag) from the steel core (direct-push sampler) advanced by hand or with the aid of a hammer to drive the core to the full 0.5 fbg sample depth.

Once an aliquot was collected, sampling continued at the next sample increment location (*i.e.*, no decontamination of the hand core was necessary because all aliquots that were collected formed a single sample), until all $50\pm$ aliquots were collected into the sample container. Sample aliquots were stored in a cooler with ice until delivered to the analytical laboratory.

Sampling equipment that was used during sampling at the Site was decontaminated prior to use and after all $50\pm$ aliquots had been collected from a specific decision unit (and systematic random sampling location(s) within each cell).

SUB-SAMPLING

Once field sampling was completed, the single increment samples (containing all aliquots from each decision unit and each systematic random sampling location within a decision unit when replicates are collected) were delivered to the analytical laboratory (Merit Laboratories, Inc. of East Lansing, Michigan) for sample preparation

and analyses. Laboratory sample preparation included drying and sieving each increment sample entirely; a portion of the sample was ground into a fine powder for metal analysis, if necessary and in accordance with MDEQ IS guidance; and composited into one representative sample per decision unit. The laboratory then obtained (a) representative subsample(s) from each of the processed field generated IS sample masses (single incremental samples) to form a final subsample mass (*i.e.*, the aliquot mass) to be used to complete the analytical preparation step.

QUALITY ASSURANCE AND CONTROL

Triplicate samples were collected from the Southern-South Portion decision unit (DU-3) as required by MDEQ IS guidance to verify that an increment sample truly represents the decision unit. Collection of a triplicate sample allowed for the calculation of relative standard deviation (RSD).

CONSTITUENT OF INTEREST AND ANALYTICAL METHODS

Each final subsample mass (sample) was analyzed for total lead by USEPA Method 6020A due to lead being the constituent of interest (COI) for the Site soil based on a review of the available soil/waste data. A Level II data report was requested from the laboratory (see [Attachment A](#)).

IS RESULTS

A summary of the analytical results for three decision units are provided in [Table 1](#). The results are below the current (2013) and the 2017 proposed residential and nonresidential direct contact criteria. The RSD for the Southern-South Portion decision unit (DU-3) was 85.1 percent due to the variability of the replicate sample in comparison with the original and triplicate samples, which is greater than the MDEQ identified 30 percent level presented in MDEQ IS guidance (MDEQ, 2015). However, with the results varying from 7.81 mg/kg to 34.3 mg/kg (an actual difference of only 26.5 mg/kg), even a 500 percent (or 5 times) variability would be below the most conservative residential direct contact criterion (the 2017 proposed criterion). Furthermore, even applying a variability of 5 times to the highest result of 123 mg/kg for DU-1, the nonresidential direct contact criterion would not be exceeded.

Therefore, the IS results support that surficial soils at the Site do not constitute an unacceptable direct contact exposure.

Furthermore, as a result of the recent IS activities we have determined that the asphalt/concrete cover at the Site is generally between 5 inches and 14 inches thick. [Figure 4](#) provides an asphalt/concrete cover thickness map for the areas investigated during the IS activities.

STOCKPILE SOIL SAMPLING AND ANALYSIS

To evaluate the suitability of the existing stockpile soils (the stockpile was created in circa 2002) for use as cover soils at the Site, six (6) additional soil samples were collected to provide a total of nine (9) reference samples for the stockpile soils. In accordance with our discussions with MDEQ on August 10, 2018, the soil samples from the two borings (HP-5-99 and HP-6-99, see [Table 2](#)) conducted in the area where the existing medical building was constructed and where the stockpile soils were reported to have been derived from will count as two of the nine samples associated with the stockpile and the composite sample (labeled: Soil Pile) collected in 2015 from the stockpile will count as the third existing sample for the stockpile. In accordance with the Surface Soil, Stockpile, and Soil Vapor Evaluation Work Plan approved by MDEQ on September 7, 2018, six additional samples (Stockpile-1 through Stockpile-6) were collected in a systematic random sampling manner utilizing the grid and sampling locations shown on [Figure 2](#). The samples were collected at a depth of approximately 0.7 to 1.5 bgs based on the approximate thickness of the stockpiled soil of 1.4 to 3 feet.

The six stockpile soil samples were submitted to Merit Laboratory of East Lansing, MI a National Environmental Laboratory Accreditation Conference (NELAC)-certified laboratory for RCRA metals and volatile organic compounds (VOCs) analysis by USEPA Methods 6020A, 7471B (for mercury), and 8260B, under routine chain-of-custody protocols utilizing standard turn-around times. A Level II data report was requested from the laboratory (see [Attachment A](#)).

STOCKPILE SOIL SAMPLING RESULTS

A summary of the analytical results for the nine stockpile soil samples is provided in [Table 2](#). The results are below the current (2013) and the 2017 proposed nonresidential criteria. The samples from HP-5-99 and HP-6-99 were also analyzed for semi-volatile organic compounds (SVOCs), chlorinated pesticides, and polychlorinated biphenyls (PCBs), which were not detected in the samples. The composite sample (Soil Pile) from the stockpile was also analyzed for SVOCs, which were not detected.

Therefore, the stockpile soils are suitable for reuse at the Site as cover material as needed.

SOIL VAPOR PROBE INSTALLATION / SAMPLING AND ANALYSIS

To further evaluate the VI pathway between the waste fill and off-Site properties and allow for evaluation of the need for any additional investigation and/or remedial action, six soil vapor points (at two nested probes at three locations) were installed due west of monitoring wells OBG-MW-2 (VP-1S/D) and OBG-MW-3 (VP-2S/D) along the western Site property boundary, and near the center of the Southern waste fill area as shown on [Figure 2](#) to evaluate the potential for the accumulation of methane vapors and/or VOCs on-Site.

UTILITY CLEARANCE

Prior to advancing soil borings, Michigan's utility notification organization, MISS DIG, was contacted at least three working days prior to initiation of field activities to locate and clear underground public utilities or subsurface features present at the Site.

SOIL VAPOR PROBE INSTALLATION

The vapor probes were installed according to the requirements set forth in the Surface Soil, Stockpile, and Soil Vapor Evaluation Work Plan approved by MDEQ on September 7, 2018 and MDEQ's May 2013 *Guidance Document for the Vapor Intrusion Pathway*.

The six soil vapor points (two each at three locations: VP-1S/D through VP-3S/D) were advanced utilizing direct push drilling techniques (Geoprobe®). At each soil vapor sampling location, both a shallow (S) (approximately 5 fbg) and a deep (D) (approximately 10 fbg) sample point was installed.

Continuous soil cores (as described previously) were collected from the ground surface to the first water bearing zone to avoid installing the vapor probes below the water table at each of the probe locations. Each vapor point consists of a 6-inch length of double woven stainless steel wire screen attached to an appropriate length of high density polyethylene tubing to extend above the ground surface to allow the collection of the soil vapor samples.

Once the target depth was reached and soil sampling for characterization of the stratigraphy has been completed, the sampler was withdrawn as the annular space around the sampling point was packed with glass beads approximately 6 inches above the screened interval. 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, which was hydrated at approximately 1 ft intervals.

A flush-mounted protector casing was installed around the soil vapor probe tubing. The extra tubing for the soil vapor probes was placed within the protective casing. The location of each vapor probe was established by using

a hand-held GPS surveying device capable of measuring horizontal position to an accuracy of approximately one foot (0.3 meters) and included on [Figure 2](#).

SAMPLE COLLECTION

Due to several rain events after the installation of the vapor probes the soil vapor sampling was delayed until October 26, 2018. 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 MDEQ on September 7, 2018 and MDEQ's "Standard Operating Procedure: Sampling Utilizing USEPA Method TO-15 Via Bottle-Vac® to Support Vapor Intrusion Investigations" (MDEQ, April 30, 2012) guidance document procedures.

Soil gas grab samples were attempted from vapor probes VP-1S, VP-1D, VP-2S, VP-2D, VP-3S, and VP-3D; however, due to interference from groundwater, a sample could not be collected from vapor probe 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.

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 location VP-3S.

DECONTAMINATION PROCEDURES

Drilling and sampling equipment arrived at the Site clean and were decontaminated before and between sampling locations using laboratory grade detergent (*i.e.*, Alconox® or equivalent), and potable water rinse cleaning methods.

ANALYTICAL RESULTS

The analytical results for the samples collected at the Hemphill facility are presented in [Table 3](#) and discussed below. The complete analytical laboratory report is contained in [Attachment A](#).

From the five samples and one duplicate sample collected (VP-1S, VP-2S, VP-2D, VP-3S, DUP-1 [VP-3S], and VP-3D) only cyclohexane, cis-1,2-dichloroethene, hexane, and vinyl chloride were detected, and only vinyl chloride at VP-2S was detected above the MDEQ August 2017 proposed screening criteria.

Vinyl chloride was detected above the MDEQ August 2017 proposed screening criteria of 54 µg/m³ at VP-2S (130 µg/m³); however, vinyl chloride was below the screening criteria in the remaining samples, including VP-2D.

Methane was not detected in vapor probes VP-1S, VP-1D, VP-3S, and VP-3D, and was detected at a concentration of 3% (30,000 ppm) at VP-2S and a concentration of 2.7% (27,000 ppm) at VP-2D. The lower explosive limit (LEL)



for methane is 5%; therefore, although methane was detected it is below the LEL and does not appear to be an immediate threat to human health. However, 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

The IS results support that surficial soils at the Site do not constitute an unacceptable direct contact exposure pathway, and that the stockpile soils are suitable for reuse at the Site as cover material as needed.

Vinyl chloride was detected above the MDEQ August 2017 proposed screening criteria of $54 \mu\text{g}/\text{m}^3$ at VP-2S ($130 \mu\text{g}/\text{m}^3$). A DRC with a soil vapor management provision can address this on-site exceedance. No exceedances were identified in the sampling probes near the property boundary so there is no apparent off-site risk. A second round of sampling has been proposed to and approved by MDEQ in order to confirm the results of the first event and this second round will also include monitoring of carbon dioxide and oxygen.

We look forward to discussing the results presented herein during our conference call on December 21, 2018.

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

ATTACHMENTS:

Table 1 – Incremental Sampling - Analytical Results

Table 2 – Soil Analytical Results - MDNR/ERD

Table 3 – Vapor Intrusion Sampling - Detections

Figure 1 – Site Location Map

Figure 2 – Soil Sample Locations and Soil Vapor Sample Locations

Figure 3 – Incremental Sampling Grid

Figure 4 – Asphalt/Concrete Cover Thickness Map

Attachment A – Laboratory Analytical Reports



REFERENCES

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
Incremental Sampling - Analytical Results

Compound	Sample ID:	DU-1	DU-2	DU-3	DU-3	DU-3	MDEQ Residential Soil Direct Contact Criteria		MDEQ Nonresidential Soil Direct Contact Criteria	
	Units:	mg/kg	mg/kg	mg/kg	Replicate	Triplicate	mg/kg		mg/kg	
	Sample Date:	10/3/2018	10/5/2018	10/11/2018	10/11/2018	10/11/2018	December 2013 Criteria	August 2017 Proposed Criteria	December 2013 Criteria	August 2017 Proposed Criteria
Lead		123	54.5	7.81	34.3	9.85	400	190 (L,DD) dev	900 (DD)	760 (L,DD)

Notes

- 1) Concentrations in mg/kg as noted
- 2) DD = Hazardous substance causes developmental effects. Hazardous substance causes developmental effects.
 Residential direct contact criteria are protective of both prenatal exposure using a pregnant female receptor and postnatal exposure using a child receptor.
 Nonresidential direct contact criteria are protective for aof prenatal exposure using a pregnant adultfemale receptor.
 Prenatal developmental effects may occur after a single exposure (SE) or full-term (FT) exposure.
 Oral exposure pathways are drinking water and soil direct contact. Inhalation exposure pathways are ambient air and volatilization to indoor air.
- 3) L = Drinking water, soils protective of drinking water and direct contact Ccriteria for lead are derived using a biologically based model, as allowed for under section 20120a(9) of the NREPAact, and are not calculated using the algorithmsequations and generic input values in pathway-specific rules.



Table 2
Hemphill Rd Industrial Land, Burton, Michigan
Soil Stockpile Analytical Results

Sample Depth Date	2013 MDEQ Criteria									2017 MDEQ Criteria										
	HP-5-99	HP-6-99	Soil Pile	Stockpile-1	Stockpile-2	Stockpile-3	Stockpile-4	Stockpile-5	Stockpile-6	Soil Volatilization to Indoor Air Inhalation	Infinite Source Volatile Soil Inhalation	Finite VSIC for 5 Meter Source Thickness	Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation Criteria	Nonresidential Direct Contact	Infinite Source Volatile Soil Inhalation	Finite VSIC for 2 Meter Source Thickness	Finite VSIC for 5 Meter Source Thickness	Particulate Soil Inhalation Criteria	Proposed Nonresidential Direct Contact
	(0-2') Apr-99	(6-8') Apr-99	(6-12") 8/27/2015	(1') 10/18/2018	(1.3') 10/18/2018	(1') 10/18/2018	(1.5') 10/18/2018	(1') 10/18/2018	(0.7') 10/18/2018											
Metals																				
Arsenic	3,500	4,100	2,520	1,610	1,940	2,080	1,850	4,020	3,270	NLV	NLV	NLV	NLV	9.10E+05	37,000	NA	NA	NA	7.0E+05 ca	52,000 ca
Barium	15,000	38,000	34,800	42,900	58,800	43,300	52,000	47,800	29,000	NLV	NLV	NLV	NLV	1.50E+08	1.30E+08	NA	NA	NA	3.8E+08nc	1.0E+08 (D)max
Cadmium	74	100	<200	250	<200	<200	250	<200	<200	NLV	NLV	NLV	NLV	2.20E+06	2.10E+06	NA	NA	NA	1.7E+06ca	2.2E+05nc
Chromium	3,900	9,300	4,650	2,760	3,390	2,850	4,910	6,460	4,310	NLV	NLV	NLV	NLV	1.50E+08	1.0E+09 (D)	NA	NA	NA	7.7E+06nc	1.0E+08 (D)max
Copper	7,800	12,000	6,980	na	na	na	na	na	na	NLV	NLV	NLV	NLV	5.90E+07	7.30E+07	NA	NA	NA	1.5E+08nc	2.5E+06nc
Lead	4,300	6,400	8,950	8,160	7,900	8,350	6,370	6,700	5,940	NLV	NLV	NLV	NLV	4.40E+07	900,000 (DD)	NA	NA	NA	1.2E+07 (L)nc	760,000 (L,DD)
Mercury	<100	<100	<50	<50	<50	<50	<50	70	<50	89,000	62,000	62,000	62,000	8.80E+06	5.80E+05	190nc	3,800nc	1,500nc	2.3E+07nc	1.5E+05 (DD)dev
Selenium	<230	<230	<400	<400	<400	<400	<400	<400	<400	NLV	NLV	NLV	NLV	5.90E+07	9.60E+06	NA	NA	NA	1.5E+09nc	1.2E+07nc
Silver	<500	<500	<200	<200	<200	<200	<200	<200	<200	NLV	NLV	NLV	NLV	2.90E+06	9.00E+06	NA	NA	NA	2.3E+08nc	6.7E+05nc
Zinc	25,000	4,400	24,000	na	na	na	na	na	na	NLV	NLV	NLV	NLV	ID	6.30E+08	NA	NA	NA	NA	1.0E+08 (D)max
VOCs																				
Diethyl ether	<290	<290	<200	<200	<200	<200	<200	<200	<200	5.2E+7 (C)	1.00E+08	1.60E+08	3.50E+08	3.50E+11	3.6E+8 (C)	1.4E+06nc	1.3E+07nc	5.5E+06nc	7.7E+10nc	1.0E+08 (C,D)max
Acetone	<750	<750	<1000	<1000	<1000	<1000	<1000	<1000	<1000	5.4E+8 (C)	1.60E+08	1.60E+08	2.00E+08	1.70E+11	7.30E+07	1.3E+08st	3.0E+08st	1.6E+08st	1.6E+12st	1.0E+08 (C,D)max
Methyl iodide	<58	<58	<100	<100	<100	<100	<100	<100	<100	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Carbon disulfide	<250	<250	<300	<300	<300	<300	<300	<300	<300	1.40E+05	1.60E+06	8.00E+06	1.90E+07	2.10E+10	4.3E+7 (C,DD)	4.0E+05nc	8.8E+06nc	3.6E+06nc	5.4E+10nc	5.5E+07 (C,DD)dev
Meth(tert)butyl ether(MTB)	<290	<290	<200	<200	<200	<200	<200	<200	<200	1.8E+7 (C)	3.00E+07	4.10E+07	8.90E+07	8.80E+10	7.1E+6 (C)	3.4E+05ca	2.0E+06ca	8.7E+05ca	1.2E+10ca	9.8E+06 (C)ca
Acrylonitrile	<290	<290	<100	<100	<100	<100	<100	<100	<100	35,000	17,000	17,000	31,000	5.80E+07	7,800ca	2,000ca	3,600ca	7,800ca	4.4E+07ca	61,000ca
2-Butanone (MEK)	<290	<290	<820	<930	<880	<880	<920	<900	<890	9.9E+7 (C)	3.50E+07	3.50E+07	3.60E+07	2.90E+10	7.0E+8 (C,DD)	1.8E+07 (DD)dev	4.7E+07 (DD)dev	2.4E+07 (DD)dev	5.5E+11 (DD)dev	1.0E+08 (C,D)max
Dichlorodifluoromethane	<290	<290	<300	<300	<300	<300	<300	<300	<300	1.70E+06	6.30E+07	5.50E+08	1.40E+09	1.50E+12	1.7E+8 (C)	1.6E+05nc	4.1E+06nc	1.7E+06nc	2.5E+10nc	4.3E+06nc
Chloromethane	<290	<290	<300	<300	<300	<300	<300	<300	<300	10,000	1.20E+05	1.00E+06	2.50E+06	2.60E+09	7.4E+6 (C)	52,000nc	1.1E+06nc	4.6E+05nc	6.9E+09nc	1.0E+07ca
Vinyl chloride	<100	<100	<50	<60	<60	<60	<60	<60	<60	2,800	29,000	1.70E+05	4.20E+05	8.90E+08	34,000	4,300ca	110,000ca	45,000ca	6.8E+08ca	46,000ca
Bromomethane	<250	<250	<200	<200	<200	<200	<200	<200	<200	1,600	13,000	1.40E+05	5.20E+05	1.00E+08	1.00E+06	6,800nc	52,000nc	1.3E+05nc	7.7E+08nc	1.7E+07nc
Chloroethane	<290	<290	<300	<300	<300	<300	<300	<300	<300	5.3E+6 (C)	3.60E+07	1.20E+08	2.80E+08	2.90E+11	1.2E+7 (C)	2.5E+06nc	5.0E+07nc	2.1E+07nc	3.1E+11nc	1.7E+07ca
Trichlorofluoromethane	<290	<290	<100	<100	<100	<100	<100	<100	<100	5.1E+6 (C)	1.10E+08	1.40E+11	1.70E+11	1.70E+12	2.4E+05nc	5.5E+06nc	2.3E+06nc	3.4E+10nc	1.0E+08 (C,D)max	
1,1-Dichloroethene	<58	<58	<50	<60	<60	<60	<60	<60	<60	330	3,700	15,000	37,000	7.80E+07	6.6E+5 (C)	1.2E+05nc	2.5E+06nc	1.0E+06nc	1.5E+10nc	4.3E+07 (C)nc
Methylene chloride	<290	<290	<100	<100	<100	<100	<100	<100	<100	2.40E+05	7.00E+05	1.70E+06	4.00E+06	8.30E+09	5.8E+6 (C)	6.1E+05nc	7.6E+06nc	3.2E+06nc	4.6E+10nc	5.1E+06 (C)nc
trans-1,2-Dichloroethene	<58	<58	<50	<60	<60	<60	<60	<60	<60	43,000	3.30E+05	8.40E+05	2.00E+06	2.10E+09	1.2E+7 (C)	4.6E+05st	6.5E+06st	2.7E+06st	4.0E+10st	1.7E+07 (C)nc
1,1-Dichloroethane	<58	<58	<50	<60	<60	<60	<60	<60	<60	4.30E+05	2.50E+06	6.00E+06	1.40E+07	1.50E+10	8.7E+7 (C)	24,000	3.1E+05	1.3E+05	1.9E+09	5.8E+06 (C)ca
cis-1,2-Dichloroethene	<58	<58	<50	<60	<60	<60	<60	<60	<60	41,000	2.10E+05	4.30E+05	1.00E+06	1.00E+09	8.0E+6 (C)	9,300nc	1.0E+05nc	43,000nc	6.2E+08nc	1.7E+06 (C)nc
Tetrahydrofuran	na	na	<1000	<1000	<1000	<1000	<1000	<1000	<1000	2.40E+06	1.50E+07	6.70E+07	1.60E+08	1.70E+11	9.50E+06	1.1E+07nc	2.9E+07nc	1.5E+07nc	1.5E+11nc	1.0E+08 (C,D)max
Chloroform	<58	<58	<50	<60	<60	<60	<60	<60	<60	38,000	3.40E+05	7.90E+05	1.60E+06	1.60E+09	5.5E+6 (C)	2,100ca	9,100ca	9,100ca	1.3E+08ca	8.5E+06 (C)nc
Bromochloromethane	<100	<100	<100	<100	<100	<100	<100	<100	<100	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
1,1,1-Trichloroethane	<58	<58	<50	<60	<60	<60	<60	<60	<60	4.60E+05	4.50E+06	1.50E+07	3.10E+07	2.90E+10	1.0E+9 (C,D)	3.7E+06st	5.8E+07st	2.4E+07st	3.5E+11st	1.0E+08 (C,D)max
Methyl-2-pentanone (MIBK)	<290	<290	<3000	<3000	<3000	<3000	<3000	<3000	<3000	6.9E+7 (C)	5.30E+07	5.30E+07	7.00E+07	6.00E+10	1.8E+8 (C)	9.4E+06 (DD)dev	2.8E+07 (DD)dev	1.4E+07 (DD)dev	5.5E+11 (DD)dev	4.3E+07 (C)nc
2-Hexanone	<290	<290	<3000	<3000	<3000	<3000	<3000	<3000	<3000	1.80E+06	1.30E+06	1.30E+06	1.50E+06	1.20E+09	1.0E+8 (C)	1.8E+05	4.4E+05	2.3E+05	2.3E+09	4.3E+06 (C)ca
Carbon tetrachloride	<58	<58	<50	<60	<60	<60	<60	<60	<60	990	34,000	79,000	1.70E+08	4.4E+5 (C)	5,200ca	88,000ca	36,000ca	5.4E+08ca	5.1E+05 (C)ca	5.1E+05 (C)ca
Benzene	<58	<58	<50	<60	<60	<60	<60	<60	<60	8,400	45,000	99,000	2.30E+05	4.70E+08	8.4E+5 (C)	8,200ca	65,000ca	28,000ca	3.8E+08ca	4.3E+05nc
1,2-Dichloroethane	<58	<58	<50	<60	<60	<60	<60	<60	<60	11,000	21,000	33,000	74,000	1.50E+08	4.20E+05	3,100ca	20,000ca	8,600ca	1.2E+08ca	3.6E+05ca
Trichloroethene	<58	<58	<50	<60	<60	<60	<60	<60	<60	1,900	14,000	25,000	58,000	5.90E+07	6.6E+5 (C,DD)	1,400 (DD)dev	17,000 (DD)dev	6,900 (DD)dev	1.0E+08 (DD)dev	2.5E+05 (DD)dev
1,2-Dichloropropane	<58	<58	<50	<60	<60	<60	<60	<60	<60	7,400	30,000	51,000	120E+05	1.20E+08	6.6E+5 (C)	7,000nc	52,000nc	22,000nc	3.1E+08nc	9.2E+05 (C)ca
Bromodichloromethane	<100	<100	<100	<100	<100	<100	<100	<100	<100	6,400	31,000	31,000	57,000	1.10E+08	4.90E+05	3,700nc	26,000nc	11,000nc	1.5E+08nc	5.3E+05 (C)ca
Dibromomethane	<100	<100	<300	<300	<300	<300	<300	<300	<300	ID	ID	ID	ID	ID	8.0E+6 (C)	10,000nc	53,000nc	24,000nc	3.1E+08nc	2.6E+06 (C)nc
cis-1,3-Dichloropropene	<58	<58	<50	<60	<60	<60	<60	<60	<60	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Toluene	<58	<58	<50	<60	<60	<60	<60	<60	<60	6.1E+5 (C)	3.30E+06	3.60E+07	3.60E+07	1.20E+10	1.6E+8 (C)	9.7E+06st	6.4E+07st	2.8E+07st	3.8E+11st	6.7E+07 (C)nc
trans-1,3-Dichloropropene	<58	<58	<50	<60	<60	<60	<60	<60	<60	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
1,1,2-Trichloroethane	<58	<58	<50	<60	<60	<60	<60	<60	<60	24,000	57,000	57,000	1.20E+05	2.50E+08	8.40E+05	0.66nc	2.7nc	1.2nc	15,000nc	3.4E+05nc
Tetrachloroethene	<58	<58	<50	<60	<60	<60	<60	<60	<60	21,000	2.10E+05	4.90E+05	1.10E+06	1.20E+09	9.3E+5 (C)	30,000st	3.4E+05st	1.4E+05st	2.1E+09st	5.1E+06 (C)nc
rans-1,4-Dichloro-2-buten	<10																			

Table 2
Hemphill Rd Industrial Land, Burton, Michigan
Soil Stockpile Analytical Results

Sample Depth Date	2013 MDEQ Criteria									2017 MDEQ Criteria										
	HP-5-99	HP-6-99	Soil Pile	Stockpile-1	Stockpile-2	Stockpile-3	Stockpile-4	Stockpile-5	Stockpile-6	Soil Volatilization to Indoor Air Inhalation	Infinite Source Volatile Soil Inhalation	Finite VSIC for 5 Meter Source Thickness	Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation Criteria	Nonresidential Direct Contact	Infinite Source Volatile Soil Inhalation	Finite VSIC for 2 Meter Source Thickness	Finite VSIC for 5 Meter Source Thickness	Particulate Soil Inhalation Criteria	Proposed Nonresidential Direct Contact
	(0-2') Apr-99	(6-8') Apr-99	(6-12') 8/27/2015	(1') 10/18/2018	(1.3') 10/18/2018	(1') 10/18/2018	(1.5') 10/18/2018	(1') 10/18/2018	(0.7') 10/18/2018											
SVOCs																				
Acenaphthene	<330	<330	<330	na	na	na	na	na	na	3.50E+08	9.70E+07	9.70E+07	9.70E+07	6.20E+09	1.30E+08	1.4E+07nc	1.4E+07nc	1.4E+07nc	1.6E+10nc	5.1E+07nc
Acenaphthylene	<330	<330	<330	na	na	na	na	na	na	3.00E+06	2.70E+06	2.70E+06	2.70E+06	1.00E+09	5.20E+06	1.8E+07nc	1.8E+07nc	1.8E+07nc	1.6E+10nc	5.1E+07nc
Anthracene	<330	<330	<330	na	na	na	na	na	na	1.0E+9 (D)	1.60E+09	1.60E+09	1.60E+09	2.90E+10	7.30E+08	2.4E+08nc	2.4E+08nc	2.4E+08nc	7.7E+10nc	1.0E+08 (D)max
Benzo(a)anthracene	<330	<330	<330	na	na	na	na	na	na	NLV	NLV	NLV	NLV	ID	80,000	1.3E+06ca	1.4E+06ca	1.4E+06ca	5.0E+07ca	(Q)
Benzo(b)fluoranthene	<330	<330	<330	na	na	na	na	na	na	ID	ID	ID	ID	ID	80,000	NA	NA	NA	5.0E+07ca	(Q)
Benzo(k)fluoranthene	<330	<330	<330	na	na	na	na	na	na	NLV	NLV	NLV	NLV	ID	8,00E+05	NA	NA	NA	5.0E+08ca	(Q)
Benzo(ghi)perylene	<330	<330	<330	na	na	na	na	na	na	NLV	NLV	NLV	NLV	3.50E+08	7.00E+05	NA	NA	NA	5.4E+08nc	2.1E+06nc
Benzo(a)pyrene	<330	<330	<330	na	na	na	na	na	na	NLV	NLV	NLV	NLV	1.90E+06	8,000	NA	NA	NA	1.0E+05 (DD)dev	41,000ca
bis(2-Chloroethoxy)methan	<330	<330	<330	na	na	na	na	na	na	NLV	NLV	NLV	NLV	ID	ID	NA	NA	NA	NA	2.1E+05nc
bis(2-Chloroethyl)ether	<330	<330	<330	na	na	na	na	na	na	44,000	13,000	13,000	13,000	1.20E+07	58,000	1,800ca	2,300ca	1,800ca	9.1E+06ca	30,000ca
bis(2-Chloroisopropyl)ethe	<330	<330	<330	na	na	na	na	na	na	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
bis(2-Ethylhexyl) phthalate	<330	<330	<330	na	na	na	na	na	na	NLV	NLV	NLV	NLV	8.90E+08	1.2E+7 (C)	NA	NA	NA	1.9E+09ca	3.4E+06 (C)ca
Bromophenyl phenyl ethe	<330	<330	<330	na	na	na	na	na	na	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Butyl benzyl phthalate	<330	<330	<330	na	na	na	na	na	na	NLV	NLV	NLV	NLV	2.10E+10	1.2E+8 (C)	NA	NA	NA	6.0E+10nc	9.9E+06 (DD)dev
4-Chloroaniline	<1,300	<1,300	<330	na	na	na	na	na	na	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
2-Chloronaphthalene	<330	<330	<330	na	na	na	na	na	na	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
4-Chloro-3-methylphenol	<330	<330	<280	na	na	na	na	na	na	NLV	NLV	NLV	NLV	ID	1.50E+07	NA	NA	NA	5.0E+07 (DD)dev	5.0E+07 (DD)dev
2-Chlorophenol	<330	<330	<330	na	na	na	na	na	na	8.00E+05	1.10E+06	1.10E+06	1.10E+06	5.30E+08	4.50E+06	6.8E+05 (DD)dev	6.8E+05 (DD)dev	6.8E+05 (DD)dev	1.0E+08 (DD)dev	4.0E+06 (DD)dev
Chlorophenyl phenyl ethe	<330	<330	<330	na	na	na	na	na	na	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Chrysene	<330	<330	<330	na	na	na	na	na	na	ID	ID	ID	ID	ID	8.00E+06	NA	NA	NA	5.0E+09ca	(Q)
p,m-Cresol	na	na	<330	na	na	na	na	na	na	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
o-Cresol	na	na	<330	na	na	na	na	na	na	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Dibenzo(ah)anthracene	<330	<330	<330	na	na	na	na	na	na	NLV	NLV	NLV	NLV	ID	8,000	NA	NA	NA	5.0E+06ca	(Q)
Dibenzofuran	<330	<330	<330	na	na	na	na	na	na	3.60E+06	1.60E+05	1.60E+05	1.60E+05	2.90E+06	ID	4.1E+05nc	4.1E+05nc	4.1E+05nc	3.1E+08nc	8.5E+05nc
di-n-Butyl phthalate	<330	<330	<330	na	na	na	na	na	na	NLV	NLV	NLV	NLV	1.50E+09	8.7E+7 (C)	NA	NA	NA	1.0E+09 (DD)dev	3.3E+06 (C,DD)dev
1,2-Dichlorobenzene	na	na	<100	na	na	na	na	na	na	2.0E+7 (C)	4.60E+07	4.60E+07	5.50E+07	4.40E+10	6.3E+7 (C)	1.6E+06nc	4.3E+06nc	2.2E+06nc	2.3E+10nc	1.0E+08 (C,D)max
1,3-Dichlorobenzene	na	na	<100	na	na	na	na	na	na	48,000	94,000	94,000	1.10E+05	8.80E+07	6.6E+5 (C)	14,000nc	42,000nc	21,000nc	2.3E+08nc	1.7E+06 (C)nc
1,4-Dichlorobenzene	na	na	<100	na	na	na	na	na	na	1.00E+05	2.60E+05	2.60E+05	3.40E+05	5.70E+08	1.90E+06	48,000ca	1.4E+05ca	70,000ca	7.7E+08ca	2.6E+06ca
3,3'-Dichlorobenzidine	<2,000	<2,000	<2,000	na	na	na	na	na	na	NLV	NLV	NLV	NLV	8.20E+06	30,000	NA	NA	NA	8.8E+06ca	74,000ca
2,4-Dichlorophenol	<330	<330	<330	na	na	na	na	na	na	NLV	NLV	NLV	NLV	2.30E+09	3.9E+6 (C,DD)	NA	NA	NA	8.5E+08nc	1.7E+07nc
Diethyl phthalate	<330	<330	<330	na	na	na	na	na	na	NLV	NLV	NLV	NLV	1.50E+09	5.5E+8 (C)	NA	NA	NA	2.2E+11nc	1.0E+08 (C,D)max
2,4-Dimethylphenol	<330	<330	<330	na	na	na	na	na	na	NLV	NLV	NLV	NLV	2.10E+09	3.60E+07	NA	NA	NA	5.4E+09nc	1.7E+07nc
Dimethyl phthalate	na	na	<330	na	na	na	na	na	na	NLV	NLV	NLV	NLV	1.50E+09	1.0E+9 (C,D)	NA	NA	NA	3.8E+09nc	8.5E+07 (C)nc
4,6-Dinitro-2-methylpheno	<1,700	<1,700	<830	na	na	na	na	na	na	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
2,4-Dinitrophenol	<1,700	<1,700	<830	na	na	na	na	na	na	NLV	NLV	NLV	NLV	nc	nc	NA	NA	NA	nc	nc
2,4-Dinitrotoluene	<330	<330	<330	na	na	na	na	na	na	NLV	NLV	NLV	NLV	2.00E+07	2.20E+05	NA	NA	NA	3.4E+07ca	49,000ca
2,6-Dinitrotoluene	<330	<330	<330	na	na	na	na	na	na	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
1,2-Diphenylhydrazine	na	na	<330	na	na	na	na	na	na	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
di-n-Octyl phthalate	<330	<330	<330	na	na	na	na	na	na	NLV	NLV	NLV	NLV	1.40E+10	2.00E+07	4.5E+08nc	4.7E+08nc	4.7E+08nc	3.6E+10nc	1.5E+07nc
Fluoranthene	<330	<330	<330	na	na	na	na	na	na	1.0E+9 (D)	8.90E+08	8.80E+08	8.80E+08	4.10E+09	1.30E+08	NA	NA	NA	1.1E+10nc	4.9E+07nc
Fluorene	<330	<330	<330	na	na	na	na	na	na	1.0E+9 (D)	1.50E+08	1.50E+08	1.50E+08	4.10E+09	8.70E+07	1.5E+07nc	1.5E+07nc	1.5E+07nc	1.1E+10nc	3.4E+07nc
Hexachlorobenzene	<330	<330	<330	na	na	na	na	na	na	2.20E+05	56,000	56,000	56,000	8.50E+06	37,000	NA	NA	NA	2.7E+06nc	12,000nc
Hexachlorobutadiene	<330	<330	<330	na	na	na	na	na	na	7.1E+5 (C)	4.60E+05	4.60E+05	4.60E+05	1.80E+08	4.7E+5 (C)	8,800ca	25,000ca	13,000ca	1.4E+08ca	4.3E+05 (C)ca
Hexachlorocyclopentadien	<330	<330	<330	na	na	na	na	na	na	56,000	60,000	60,000	60,000	5.90E+06	6.7E+6 (C)	780nc	2,800nc	1,300nc	1.5E+07nc	7.4E+06 (C)nc
Hexachloroethane	<330	<330	<330	na	na	na	na	na	na	79,000	6.60E+05	1.40E+06	1.40E+06	1.00E+08	7.30E+05	14,000ca	53,000ca	25,000ca	3.0E+08ca	6.0E+05nc
Indeno(1,2,3-cd)pyrene	<330	<330	<330	na	na	na	na	na	na	NLV	NLV	NLV	NLV	ID	80,000	NA	NA	NA	5.0E+07ca	(Q)
Isophorone	<330	<330	<330	na	na	na	na	na	na	NLV	NLV	NLV	NLV	8.20E+09	2.2E+7 (C)	NA	NA	NA	1.1E+10ca	3.5E+07 (C)ca
2-Methylnaphthalene	<330	<330	<330	na	na	na	na	na	na	4.90E+06	1.80E+06	1.80E+06	1.80E+06	2.90E+08	2.60E+07	2.7E+05nc	2.8E+05nc	2.7E+05nc	7.7E+08nc	3.4E+06nc
Naphthalene	<330	<330	<330	na	na	na	na	na	na	4.70E+05	3.50E+05	3.50E+05	3.50E+05	8.80E+07	5.20E+07	24,000ca	27,000ca	24,000ca	8.8E+07ca	8.5E+07nc
2-Nitroaniline	<1,700	<1,700	<830	na	na	na	na	na	na	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
3-Nitroaniline	<1,700	<1,700	<830	na	na	na	na	na	na	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
4-Nitroaniline	<1,700	<1,700	<830	na	na	na	na	na	na	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Nitrobenzene	<330	<330	<330	na	na	na	na	na	na	1.70E+05	64,000	64,000	64,000	2.10E+07	3.40E+05	33,000ca	33,000ca	33,000ca	7.5E+07ca	1.7E+06 (C)nc
2-Nitrophenol	<330	<330	<330	na	na	na	na	na	na	NLV	NLV	NLV	NLV	ID	2,00E+06	2,700nc	2,700nc	2,700nc	3.9E+06nc	1.7E+06nc
4-Nitrophenol	<1,700	<1,700	<830	na	na	na	na	na	na	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
N-Nitrosodiphenylamine	<330	<330	<330	na	na	na	na	na	na	NLV	NLV	NLV	NLV	2.80E+09	7.80E+06	NA	NA	NA	NA	6.8E+06ca
N-Nitroso-di-n-propylamin	<330	<330	<330	na	na	na	na	na	na	NLV	NLV	NLV	NLV	2.00E+06	5,400	NA	NA	NA	1.5E+06ca	4,700ca

TABLE 3

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

Compound	Sample ID:	VP-1S	VP-2S	VP-2D	VP-3S	VP-3S (DUP-1)	VP-3D	MDEQ Vapor Screening Levels
	Units:	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³
	Sample Date:	10/26/2018	10/26/2018	10/26/2018	10/26/2018	10/26/2018	10/26/2018	August 2017 Proposed Criteria
Cyclohexane		<2	995	150	180	190	38	2.1E+05 nc
cis-1,2-Dichloroethene		<2	91	7.9	12	16	<7.9	280 nc
Hexane		<2	1,280	74	130	140	18	24,000 nc
Vinyl chloride		<2	130	7.7	<5.1	<5.1	<5.1	54 (MM) mut
Methane Reading		0%	3.0%	2.7%	0%	0%	0%	--

Notes

Exceeds MDEQ Vapor Screening Levels

- 1) Concentrations in µg/m³ as noted
- 2) < = Not detected at specified reporting limit.
- 3) DUP = Duplicate sample.
- 4) MM = Hazardous substance is a carcinogen with a mutagenic mode of action. The cancer potency values used in calculating health-based values shall be modified using age-dependent adjustment factors for those carcinogenic chemicals identified as mutagenic.
- 5) c = "ECHA" means European Chemicals Agency.
- 6) n = "WHO" means World Health Organization.
- 7) Sample was not collected this event from vapor point VP-1D due to interference with groundwater.
- 8) Sample was not collected this event from vapor point VP-1D due to interference with groundwater.
- 9) Landtec GEM 2000 Landfill Gas Monitor used to collect methane readings.

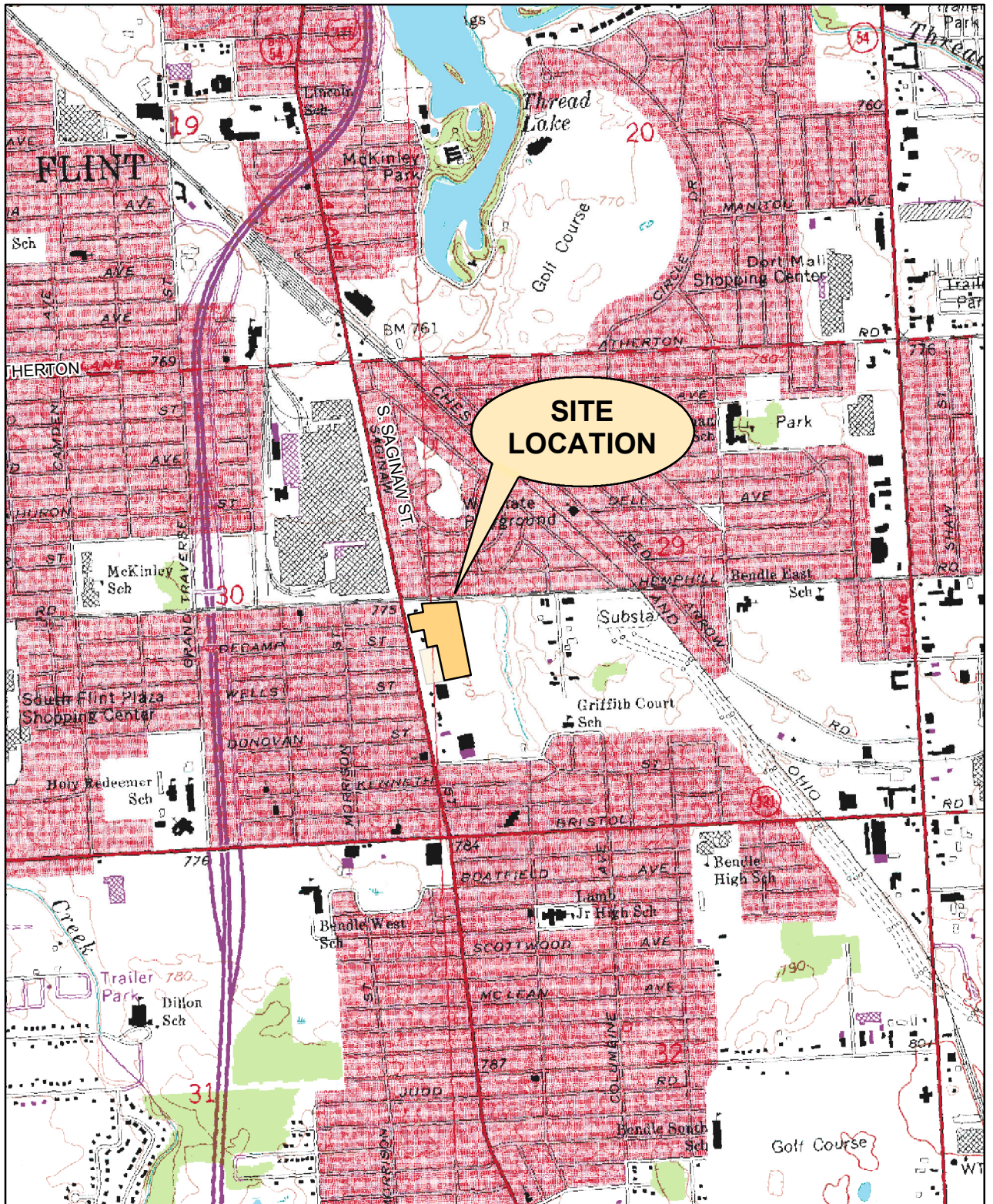




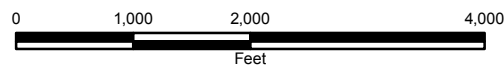
FIGURES

2/12/2018 10:16:55 AM

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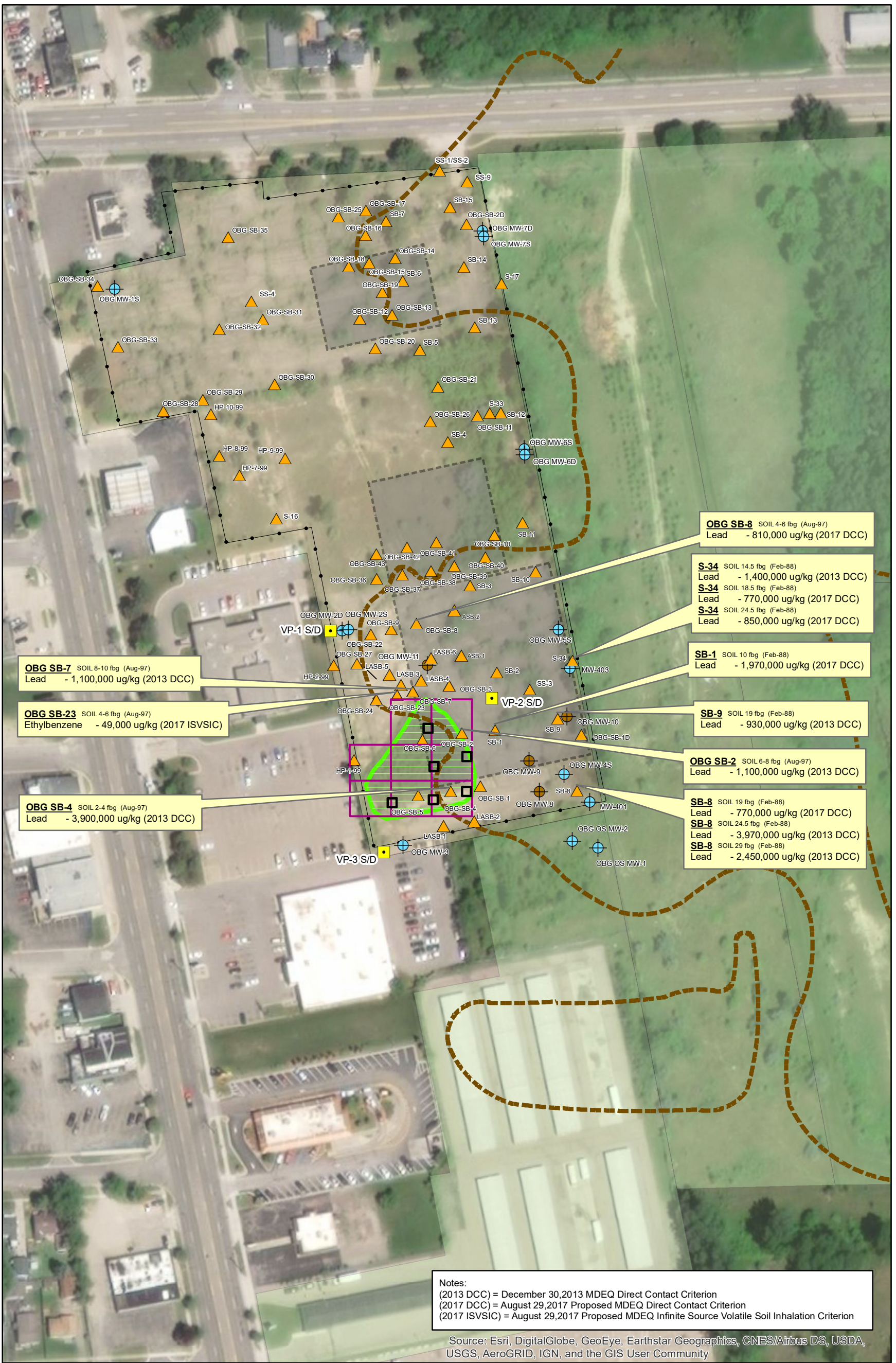


RACER TRUST
 HEMPHILL ROAD INDUSTRIAL LAND
 BURTON, MICHIGAN
 SITE LOCATION MAP



11/21/2018 1:22:20 PM

I:\Racer-Trust\15388\68544-Hemphill-2018-6\Docs\Reports\Soil Cover Work Plan\Figures\002 - Figure 2 VI Locations.mxd

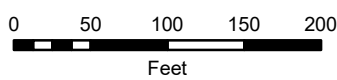


LEGEND

- MONITORING WELL
- LNAPL ASSESSMENT MONITORING WELL
- HISTORICAL SOIL BORING LOCATION
- STOCKPILE SAMPLE LOCATION
- VAPOR PROBE LOCATION
- SOIL STOCKPILE AREA
- FORMER BUILDINGS
- ESTIMATED DEPTH OF WASTE FILL
BASED ON O'BRIEN & SOIL BORINGS AND
HISTORICAL TOPOGRAPHIC REVIEW

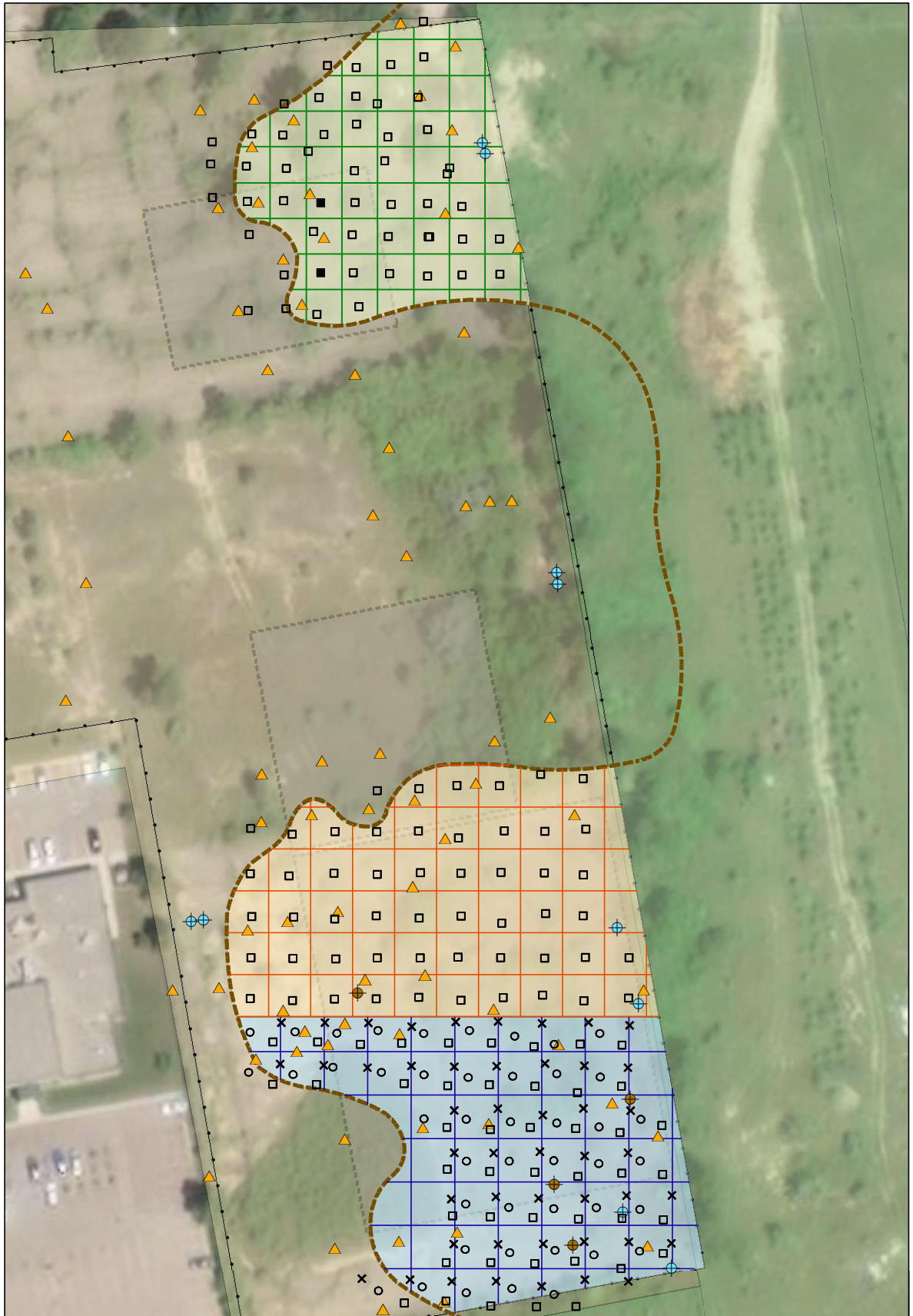
RACER TRUST
HEMPHILL ROAD INDUSTRIAL LAND
BURTON, MICHIGAN

SOIL SAMPLE LOCATIONS AND
SOIL VAPOR PROBE LOCATIONS



11/20/2018 3:10:17 PM

I:\Racer-Trust\15389\68544_Hemphill\2018-6\Docs\Reports\Soil Cover Work Plan\Figures\004 - Figure 4 Grid Sample Location-112018.mxd



- LEGEND**
- ○ INCREMENTAL SAMPLE LOCATION
 - ⊕ MONITORING WELL
 - ⊕ LNAPL ASSESSMENT MONITORING WELL
 - ▲ HISTORICAL SOIL BORING LOCATION
 - FORMER BUILDINGS
 - - - ESTIMATED DEPTH OF WASTE FILL BASED ON O'BRIEN & SOIL BORINGS AND HISTORICAL TOPOGRAPHIC REVIEW

RACER TRUST
HEMPHILL ROAD INDUSTRIAL LAND
BURTON, MICHIGAN
INCREMENTAL SAMPLING GRID



FILE NO. 68544
DATE: JUNE 2018





ATTACHMENT A
*Laboratory Analytical
Report*



Analytical Laboratory Report

Report ID: S95160.01(01)
Generated on 10/26/2018

Report to

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

Phone: 414-837-3607 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): S95160.01
Project: RACER Hemphill Rd -1S
Collected Date: 10/03/2018
Submitted Date/Time: 10/05/2018 08:00
Sampled by: Kevin Schneider
P.O. #: PO

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Laboratory Certifications (Page 3)
Qualifier Descriptions (Page 3)
Glossary of Abbreviations (Page 3)
Method Summary (Page 4)
Sample Summary (Page 5)

Maya Murshak
Technical Director



Analytical Laboratory Report

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.

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Report Narrative

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
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p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
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Glossary of Abbreviations

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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
SW3050B	SW 846 Method 3050B Revision 2 December 1996
SW6020A	SW 846 Method 6020A Revision 1 February 2007



Analytical Laboratory Report

Sample Summary (1 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S95160.01	DU-1	Soil	10/03/18 00:01



Analytical Laboratory Report

Lab Sample ID: S95160.01

Sample Tag: DU-1

Collected Date/Time: 10/03/2018 00:01

Matrix: Soil

COC Reference: 81841

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	10/16/18 12:05	CCM	

Metals

Method: SW6020A, Run Date: 10/16/18 13:47, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Lead	123	0.30	0.0043	mg/kg	197	7439-92-1	

Other / Misc.

Method: , Run Date: 10/13/18 16:00, Analyst: SRP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		i

i-Incremental sampling

Merit Laboratories Login Checklist

Lab Set ID:S95160

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

Project: RACER Hemphill Rd -1S

Submitted: 10/05/2018 08:00 Login User: SRS

Attention: Clifford Yantz

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

Phone: 414-837-3607 FAX:

Email: Clifford.Yantz@obg.com

Selection	Description	Note
Sample Receiving		
01.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples are received at 4C +/- 2C Thermometer # IR 4.0
02.	<input checked="" type="checkbox"/> Yes <input 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
Chain of Custody		
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:
Preservation		
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?
Bottle Conditions		
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 type="checkbox"/> Yes <input checked="" 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: _____



Analytical Laboratory Report

Report ID: S95206.01(01)
Generated on 10/26/2018

Report to

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

Phone: 414-837-3607 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): S95206.01
Project: RACER Hemphill Rd -1S Sampling
Collected Date: 10/05/2018
Submitted Date/Time: 10/05/2018 15:35
Sampled by: Kevin Schneider
P.O. #: PO

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Sample Summary (Page 5)

Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

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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



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.
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Glossary of Abbreviations

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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
SW3050B	SW 846 Method 3050B Revision 2 December 1996
SW6020A	SW 846 Method 6020A Revision 1 February 2007



Analytical Laboratory Report

Sample Summary (1 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S95206.01	DU-2	Soil	10/05/18 00:01



Analytical Laboratory Report

Lab Sample ID: S95206.01

Sample Tag: DU-2

Collected Date/Time: 10/05/2018 00:01

Matrix: Soil

COC Reference: 81842

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	10/16/18 12:05	CCM	

Metals

Method: SW6020A, Run Date: 10/16/18 13:50, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Lead	54.5	0.30	0.0044	mg/kg	200	7439-92-1	

Other / Misc.

Method: , Run Date: 10/13/18 16:00, Analyst: SRP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		i

i-Incremental sampling

Merit Laboratories Login Checklist

Lab Set ID:S95206

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

Project: RACER Hemphill Rd -1S Sampling

Submitted: 10/05/2018 15:35 Login User: SRS

Attention: Clifford Yantz

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

Phone: 414-837-3607 FAX:

Email: Clifford.Yantz@obg.com

Selection	Description	Note
-----------	-------------	------

Sample Receiving

- | | | |
|-----|--|--|
| 01. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples are received at 4C +/- 2C Thermometer # IR 5.4 |
| 02. | <input checked="" type="checkbox"/> Yes <input 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 |

Chain of Custody

- | | | |
|-----|--|--|
| 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: |

Preservation

- | | | |
|-----|--|---|
| 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? |

Bottle Conditions

- | | | |
|-----|--|---|
| 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 type="checkbox"/> Yes <input checked="" 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

81842

REPORT TO

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.: 513-333-0211 FAX NO.:
 E-MAIL ADDRESS: Clifford.Yantz@obg.com

CONTACT NAME: SAME
 COMPANY:
 ADDRESS:
 CITY: STATE: ZIP CODE:
 PHONE NO.: E-MAIL ADDRESS:

PROJECT NO./NAME: RACER Hemphill Rd-15 sampling SAMPLER(S) - PLEASE PRINT/SIGN NAME: Kuvia Schneider *KS*
 TURNAROUND TIME REQUIRED: 1 DAY 2 DAYS 3 DAYS STANDARD OTHER
 DELIVERABLES REQUIRED: STD LEVEL II LEVEL III LEVEL IV EDD OTHER

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOIL/D
 SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

Containers & Preservatives
 Certifications: OHIO VAP Drinking Water DoD NPDES
 Project Locations: Detroit New York Other
 Special Instructions: Incremental sample

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	
	DATE	TIME											
95206.d	10/5/18	-	DU-2	S	1	X							X
KS													Lead

RELINQUISHED BY: *KS* *OBG* Sampler DATE: 10/5/18 TIME: 1445
 RECEIVED BY: *DNA Miller* DATE: 10/5/18 TIME: 1445
 RELINQUISHED BY: *DNA Miller* DATE: 10/5/18 TIME: 1535
 RECEIVED BY: *Sam Smith* DATE: 10/5/18 TIME: 1535

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: 5.4

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



Analytical Laboratory Report

Report ID: S95448.01(01)
Generated on 10/26/2018

Report to

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

Phone: 414-837-3607 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): S95448.01-S95448.03
Project: RACER Hemphill Rd -1S Sampling
Collected Date: 10/11/2018
Submitted Date/Time: 10/11/2018 14:55
Sampled by: Kevin Schneider
P.O. #: PO

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Maya Murshak
Technical Director



Analytical Laboratory Report

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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.

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Report Narrative

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
SW3050B	SW 846 Method 3050B Revision 2 December 1996
SW6020A	SW 846 Method 6020A Revision 1 February 2007



Analytical Laboratory Report

Sample Summary (3 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S95448.01	DU-3	Soil	10/11/18 00:01
S95448.02	DU-3 Replicate	Soil	10/11/18 00:01
S95448.03	DU-3 Triplicate	Soil	10/11/18 00:01



Analytical Laboratory Report

Lab Sample ID: S95448.01

Sample Tag: DU-3

Collected Date/Time: 10/11/2018 00:01

Matrix: Soil

COC Reference: 81843

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Plastic Bag	None	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	10/16/18 12:05	CCM	

Metals

Method: SW6020A, Run Date: 10/16/18 13:53, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Lead	7.81	0.30	0.0042	mg/kg	192	7439-92-1	

Other / Misc.

Method: , Run Date: 10/13/18 16:00, Analyst: SRP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		i

i-Incremental sampling



Analytical Laboratory Report

Lab Sample ID: S95448.02

Sample Tag: DU-3 Replicate

Collected Date/Time: 10/11/2018 00:01

Matrix: Soil

COC Reference: 81843

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Plastic Bag	None	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	10/16/18 12:05	CCM	

Metals

Method: SW6020A, Run Date: 10/16/18 14:01, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Lead	34.3	0.30	0.0046	mg/kg	207	7439-92-1	

Other / Misc.

Method: , Run Date: 10/13/18 16:00, Analyst: SRP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		i

i-Incremental sampling



Analytical Laboratory Report

Lab Sample ID: S95448.03

Sample Tag: DU-3 Triplicate

Collected Date/Time: 10/11/2018 00:01

Matrix: Soil

COC Reference: 81843

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Plastic Bag	None	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	10/16/18 12:05	CCM	

Metals

Method: SW6020A, Run Date: 10/16/18 14:04, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Lead	9.85	0.30	0.0044	mg/kg	202	7439-92-1	

Other / Misc.

Method: , Run Date: 10/13/18 16:00, Analyst: SRP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		i

i-Incremental sampling

Merit Laboratories Login Checklist

Lab Set ID:S95448

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

Project: RACER Hemphill Rd -1S Sampling

Submitted: 10/11/2018 14:55 Login User: SRS

Attention: Clifford Yantz

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

Phone: 414-837-3607 FAX:

Email: Clifford.Yantz@obg.com

Selection	Description	Note
-----------	-------------	------

Sample Receiving

- | | | |
|-----|--|--|
| 01. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples are received at 4C +/- 2C Thermometer # IR 4.3 |
| 02. | <input checked="" type="checkbox"/> Yes <input 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 |

Chain of Custody

- | | | |
|-----|--|--|
| 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: |

Preservation

- | | | |
|-----|--|---|
| 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? |

Bottle Conditions

- | | | |
|-----|--|---|
| 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 type="checkbox"/> Yes <input checked="" 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

81843

REPORT TO

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.: QUOTENO.:
 E-MAIL ADDRESS: clifford.yantz@obg.com

CONTACT NAME: SAME
 COMPANY:
 ADDRESS:
 CITY: STATE: ZIP CODE:
 PHONE NO.: E-MAIL ADDRESS:

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

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

Certifications
 OHIO VAP Drinking Water
 DoD NPDES
 Project Locations
 Detroit New York
 Other
 Special Instructions

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID
 SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

Containers & Preservatives

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	Lead							
	DATE	TIME																		
95448.01	10/11/18	—	DU-3	S	1	X							X							
.02	↓	—	DU-3 Replicate	S	1	X							X							
.03	↓	—	DU-3 Triplicate	S	1	X							X							

RELINQUISHED BY: *KSS* OBG Sampler DATE: 10/11/18 TIME: 1400
 RECEIVED BY: *JMA Miller* DATE: 10/11/18 TIME: 1400
 RELINQUISHED BY: *JMA Miller* DATE: 10/11/18 TIME: 14:35
 RECEIVED BY: *Angela* DATE: 10/11/18 TIME: 1455

RELINQUISHED BY: DATE: TIME:
 RECEIVED BY: DATE: TIME:
 SEAL NO. SEAL INTACT YES NO INITIALS: TEMP. ON ARRIVAL: 4.3
 SEAL NO. SEAL INTACT YES NO INITIALS:

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



Analytical Laboratory Report

Report ID: S95158.01(01)
Generated on 10/15/2018

Report to

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

Phone: 414-837-3607 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): S95158.01-S95158.07
Project: RACER Hemphill Rd
Collected Date: 10/04/2018
Submitted Date/Time: 10/05/2018 08:00
Sampled by: Kevin Schneider
P.O. #: PO

Table of Contents

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

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

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
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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
SM2540B	Standard Method 2540 B 2011
SW3050B	SW 846 Method 3050B Revision 2 December 1996
SW5035A/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5035A Revision 1 July 2002
SW6020A	SW 846 Method 6020A Revision 1 February 2007
SW7471B	SW 846 Method 7471B Revision 2 February 2007



Analytical Laboratory Report

Sample Summary (7 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S95158.01	Stockpile-1	Soil	10/04/18 09:53
S95158.02	Stockpile-2	Soil	10/04/18 09:37
S95158.03	Stockpile-3	Soil	10/04/18 09:25
S95158.04	Stockpile-4	Soil	10/04/18 08:55
S95158.05	Stockpile-5	Soil	10/04/18 08:35
S95158.06	Stockpile-6	Soil	10/04/18 09:05
S95158.07	MeOH Blank-1	Methanol	10/04/18 00:01



Analytical Laboratory Report

Lab Sample ID: S95158.01

Sample Tag: Stockpile-1

Collected Date/Time: 10/04/2018 09:53

Matrix: Soil

COC Reference: 111364

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	4.0	IR
1	40ml Glass	MeOH	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	10/11/18 10:00	CCM	
Mercury Digestion	Completed	SW7471B	10/15/18 11:30	JRH	

Inorganics

Method: SM2540B, Run Date: 10/05/18 10:25, Analyst: JBL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	88	1	1	%	1		

Metals

Method: SW6020A, Run Date: 10/11/18 13:04, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Selenium	Not detected	0.40		mg/kg	225	7782-49-2	

Method: SW6020A, Run Date: 10/11/18 11:34, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	1.61	0.20		mg/kg	225	7440-38-2	
Barium	42.9	1.0		mg/kg	225	7440-39-3	
Cadmium	0.25	0.20		mg/kg	225	7440-43-9	
Chromium	2.76	0.50		mg/kg	225	7440-47-3	
Lead	8.16	0.30		mg/kg	225	7439-92-1	
Silver	Not detected	0.20		mg/kg	225	7440-22-4	

Method: SW7471B, Run Date: 10/15/18 14:38, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.050		mg/kg	58	7439-97-6	

Organics - Volatiles

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 10/08/18 23:36, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	200		ug/kg	61.7	60-29-7	
Acetone	Not detected	1,000		ug/kg	61.7	67-64-1	
Methyl iodide	Not detected	100		ug/kg	61.7	74-88-4	
Carbon disulfide	Not detected	300		ug/kg	61.7	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	200		ug/kg	61.7	1634-04-4	
Acrylonitrile	Not detected	100		ug/kg	61.7	107-13-1	
2-Butanone (MEK)	Not detected	930		ug/kg	61.7	78-93-3	
Dichlorodifluoromethane	Not detected	300		ug/kg	61.7	75-71-8	
Chloromethane	Not detected	300		ug/kg	61.7	74-87-3	
Vinyl chloride	Not detected	60		ug/kg	61.7	75-01-4	
Bromomethane	Not detected	200		ug/kg	61.7	74-83-9	
Chloroethane	Not detected	300		ug/kg	61.7	75-00-3	



Analytical Laboratory Report

Lab Sample ID: S95158.01 (continued)

Sample Tag: Stockpile-1

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 10/08/18 23:36, Analyst: JML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Trichlorofluoromethane	Not detected	100		ug/kg	61.7	75-69-4	
1,1-Dichloroethene	Not detected	60		ug/kg	61.7	75-35-4	
Methylene chloride	Not detected	100		ug/kg	61.7	75-09-2	
trans-1,2-Dichloroethene	Not detected	60		ug/kg	61.7	156-60-5	
1,1-Dichloroethane	Not detected	60		ug/kg	61.7	75-34-3	
cis-1,2-Dichloroethene	Not detected	60		ug/kg	61.7	156-59-2	
Tetrahydrofuran*	Not detected	1,000		ug/kg	61.7	109-99-9	
Chloroform	Not detected	60		ug/kg	61.7	67-66-3	
Bromochloromethane	Not detected	100		ug/kg	61.7	74-97-5	
1,1,1-Trichloroethane	Not detected	60		ug/kg	61.7	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	3,000		ug/kg	61.7	108-10-1	
2-Hexanone	Not detected	3,000		ug/kg	61.7	591-78-6	
Carbon tetrachloride	Not detected	60		ug/kg	61.7	56-23-5	
Benzene	Not detected	60		ug/kg	61.7	71-43-2	
1,2-Dichloroethane	Not detected	60		ug/kg	61.7	107-06-2	
Trichloroethene	Not detected	60		ug/kg	61.7	79-01-6	
1,2-Dichloropropane	Not detected	60		ug/kg	61.7	78-87-5	
Bromodichloromethane	Not detected	100		ug/kg	61.7	75-27-4	
Dibromomethane	Not detected	300		ug/kg	61.7	74-95-3	
cis-1,3-Dichloropropene	Not detected	60		ug/kg	61.7	10061-01-5	
Toluene	Not detected	60		ug/kg	61.7	108-88-3	
trans-1,3-Dichloropropene	Not detected	60		ug/kg	61.7	10061-02-6	
1,1,2-Trichloroethane	Not detected	60		ug/kg	61.7	79-00-5	
Tetrachloroethene	Not detected	60		ug/kg	61.7	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	60		ug/kg	61.7	110-57-6	
Dibromochloromethane	Not detected	100		ug/kg	61.7	124-48-1	
1,2-Dibromoethane	Not detected	20		ug/kg	61.7	106-93-4	M
Chlorobenzene	Not detected	60		ug/kg	61.7	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	100		ug/kg	61.7	630-20-6	
Ethylbenzene	Not detected	60		ug/kg	61.7	100-41-4	
p,m-Xylene	Not detected	100		ug/kg	61.7		
o-Xylene	Not detected	60		ug/kg	61.7	95-47-6	
Styrene	Not detected	60		ug/kg	61.7	100-42-5	
Isopropylbenzene	Not detected	300		ug/kg	61.7	98-82-8	
Bromoform	Not detected	100		ug/kg	61.7	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	60		ug/kg	61.7	79-34-5	
1,2,3-Trichloropropane	Not detected	100		ug/kg	61.7	96-18-4	
n-Propylbenzene	Not detected	60		ug/kg	61.7	103-65-1	
Bromobenzene	Not detected	100		ug/kg	61.7	108-86-1	
1,3,5-Trimethylbenzene	Not detected	60		ug/kg	61.7	108-67-8	
tert-Butylbenzene	Not detected	60		ug/kg	61.7	98-06-6	
1,2,4-Trimethylbenzene	Not detected	60		ug/kg	61.7	95-63-6	
sec-Butylbenzene	Not detected	60		ug/kg	61.7	135-98-8	
p-Isopropyltoluene	Not detected	100		ug/kg	61.7	99-87-6	
1,3-Dichlorobenzene	Not detected	100		ug/kg	61.7	541-73-1	
1,4-Dichlorobenzene	Not detected	100		ug/kg	61.7	106-46-7	
1,2-Dichlorobenzene	Not detected	100		ug/kg	61.7	95-50-1	
1,2,3-Trimethylbenzene	Not detected	60		ug/kg	61.7	526-73-8	
n-Butylbenzene	Not detected	60		ug/kg	61.7	104-51-8	

M-Result reported to MDL not RDL



Analytical Laboratory Report

Lab Sample ID: S95158.01 (continued)

Sample Tag: Stockpile-1

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 10/08/18 23:36, Analyst: JML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Hexachloroethane	Not detected	400		ug/kg	61.7	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	300		ug/kg	61.7	96-12-8	
1,2,4-Trichlorobenzene	Not detected	410		ug/kg	61.7	120-82-1	
1,2,3-Trichlorobenzene	Not detected	410		ug/kg	61.7	87-61-6	
Naphthalene	Not detected	300		ug/kg	61.7	91-20-3	
2-Methylnaphthalene	Not detected	100		ug/kg	61.7	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S95158.02

Sample Tag: Stockpile-2

Collected Date/Time: 10/04/2018 09:37

Matrix: Soil

COC Reference: 111364

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	4.0	IR
1	40ml Glass	MeOH	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	10/11/18 10:00	CCM	
Mercury Digestion	Completed	SW7471B	10/15/18 11:30	JRH	

Inorganics

Method: SM2540B, Run Date: 10/05/18 10:25, Analyst: JBL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	89	1	1	%	1		

Metals

Method: SW6020A, Run Date: 10/11/18 13:04, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Selenium	Not detected	0.40		mg/kg	224	7782-49-2	

Method: SW6020A, Run Date: 10/11/18 11:37, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	1.94	0.20		mg/kg	224	7440-38-2	
Barium	58.8	1.0		mg/kg	224	7440-39-3	
Cadmium	Not detected	0.20		mg/kg	224	7440-43-9	
Chromium	3.39	0.50		mg/kg	224	7440-47-3	
Lead	7.90	0.30		mg/kg	224	7439-92-1	
Silver	Not detected	0.20		mg/kg	224	7440-22-4	

Method: SW7471B, Run Date: 10/15/18 14:40, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.050		mg/kg	53	7439-97-6	

Organics - Volatiles

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 10/08/18 23:56, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	200		ug/kg	58.6	60-29-7	
Acetone	Not detected	1,000		ug/kg	58.6	67-64-1	
Methyl iodide	Not detected	100		ug/kg	58.6	74-88-4	
Carbon disulfide	Not detected	300		ug/kg	58.6	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	200		ug/kg	58.6	1634-04-4	
Acrylonitrile	Not detected	100		ug/kg	58.6	107-13-1	
2-Butanone (MEK)	Not detected	880		ug/kg	58.6	78-93-3	
Dichlorodifluoromethane	Not detected	300		ug/kg	58.6	75-71-8	
Chloromethane	Not detected	300		ug/kg	58.6	74-87-3	
Vinyl chloride	Not detected	60		ug/kg	58.6	75-01-4	
Bromomethane	Not detected	200		ug/kg	58.6	74-83-9	
Chloroethane	Not detected	300		ug/kg	58.6	75-00-3	



Analytical Laboratory Report

Lab Sample ID: S95158.02 (continued)

Sample Tag: Stockpile-2

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 10/08/18 23:56, Analyst: JML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Trichlorofluoromethane	Not detected	100		ug/kg	58.6	75-69-4	
1,1-Dichloroethene	Not detected	60		ug/kg	58.6	75-35-4	
Methylene chloride	Not detected	100		ug/kg	58.6	75-09-2	
trans-1,2-Dichloroethene	Not detected	60		ug/kg	58.6	156-60-5	
1,1-Dichloroethane	Not detected	60		ug/kg	58.6	75-34-3	
cis-1,2-Dichloroethene	Not detected	60		ug/kg	58.6	156-59-2	
Tetrahydrofuran*	Not detected	1,000		ug/kg	58.6	109-99-9	
Chloroform	Not detected	60		ug/kg	58.6	67-66-3	
Bromochloromethane	Not detected	100		ug/kg	58.6	74-97-5	
1,1,1-Trichloroethane	Not detected	60		ug/kg	58.6	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	3,000		ug/kg	58.6	108-10-1	
2-Hexanone	Not detected	3,000		ug/kg	58.6	591-78-6	
Carbon tetrachloride	Not detected	60		ug/kg	58.6	56-23-5	
Benzene	Not detected	60		ug/kg	58.6	71-43-2	
1,2-Dichloroethane	Not detected	60		ug/kg	58.6	107-06-2	
Trichloroethene	Not detected	60		ug/kg	58.6	79-01-6	
1,2-Dichloropropane	Not detected	60		ug/kg	58.6	78-87-5	
Bromodichloromethane	Not detected	100		ug/kg	58.6	75-27-4	
Dibromomethane	Not detected	300		ug/kg	58.6	74-95-3	
cis-1,3-Dichloropropene	Not detected	60		ug/kg	58.6	10061-01-5	
Toluene	Not detected	60		ug/kg	58.6	108-88-3	
trans-1,3-Dichloropropene	Not detected	60		ug/kg	58.6	10061-02-6	
1,1,2-Trichloroethane	Not detected	60		ug/kg	58.6	79-00-5	
Tetrachloroethene	Not detected	60		ug/kg	58.6	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	60		ug/kg	58.6	110-57-6	
Dibromochloromethane	Not detected	100		ug/kg	58.6	124-48-1	
1,2-Dibromoethane	Not detected	20		ug/kg	58.6	106-93-4	M
Chlorobenzene	Not detected	60		ug/kg	58.6	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	100		ug/kg	58.6	630-20-6	
Ethylbenzene	Not detected	60		ug/kg	58.6	100-41-4	
p,m-Xylene	Not detected	100		ug/kg	58.6		
o-Xylene	Not detected	60		ug/kg	58.6	95-47-6	
Styrene	Not detected	60		ug/kg	58.6	100-42-5	
Isopropylbenzene	Not detected	300		ug/kg	58.6	98-82-8	
Bromoform	Not detected	100		ug/kg	58.6	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	60		ug/kg	58.6	79-34-5	
1,2,3-Trichloropropane	Not detected	100		ug/kg	58.6	96-18-4	
n-Propylbenzene	Not detected	60		ug/kg	58.6	103-65-1	
Bromobenzene	Not detected	100		ug/kg	58.6	108-86-1	
1,3,5-Trimethylbenzene	Not detected	60		ug/kg	58.6	108-67-8	
tert-Butylbenzene	Not detected	60		ug/kg	58.6	98-06-6	
1,2,4-Trimethylbenzene	Not detected	60		ug/kg	58.6	95-63-6	
sec-Butylbenzene	Not detected	60		ug/kg	58.6	135-98-8	
p-Isopropyltoluene	Not detected	100		ug/kg	58.6	99-87-6	
1,3-Dichlorobenzene	Not detected	100		ug/kg	58.6	541-73-1	
1,4-Dichlorobenzene	Not detected	100		ug/kg	58.6	106-46-7	
1,2-Dichlorobenzene	Not detected	100		ug/kg	58.6	95-50-1	
1,2,3-Trimethylbenzene	Not detected	60		ug/kg	58.6	526-73-8	
n-Butylbenzene	Not detected	60		ug/kg	58.6	104-51-8	

M-Result reported to MDL not RDL



Analytical Laboratory Report

Lab Sample ID: S95158.02 (continued)

Sample Tag: Stockpile-2

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 10/08/18 23:56, Analyst: JML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Hexachloroethane	Not detected	400		ug/kg	58.6	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	300		ug/kg	58.6	96-12-8	
1,2,4-Trichlorobenzene	Not detected	390		ug/kg	58.6	120-82-1	
1,2,3-Trichlorobenzene	Not detected	390		ug/kg	58.6	87-61-6	
Naphthalene	Not detected	300		ug/kg	58.6	91-20-3	
2-Methylnaphthalene	Not detected	100		ug/kg	58.6	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S95158.03

Sample Tag: Stockpile-3

Collected Date/Time: 10/04/2018 09:25

Matrix: Soil

COC Reference: 111364

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	4.0	IR
1	40ml Glass	MeOH	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	10/11/18 10:00	CCM	
Mercury Digestion	Completed	SW7471B	10/15/18 11:30	JRH	

Inorganics

Method: SM2540B, Run Date: 10/05/18 10:25, Analyst: JBL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	88	1	1	%	1		

Metals

Method: SW6020A, Run Date: 10/11/18 13:05, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Selenium	Not detected	0.40		mg/kg	230	7782-49-2	

Method: SW6020A, Run Date: 10/11/18 11:39, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	2.08	0.20		mg/kg	230	7440-38-2	
Barium	43.3	1.0		mg/kg	230	7440-39-3	
Cadmium	Not detected	0.20		mg/kg	230	7440-43-9	
Chromium	2.85	0.50		mg/kg	230	7440-47-3	
Lead	8.35	0.30		mg/kg	230	7439-92-1	
Silver	Not detected	0.20		mg/kg	230	7440-22-4	

Method: SW7471B, Run Date: 10/15/18 14:42, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.050		mg/kg	55	7439-97-6	

Organics - Volatiles

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 10/09/18 00:16, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	200		ug/kg	58.9	60-29-7	
Acetone	Not detected	1,000		ug/kg	58.9	67-64-1	
Methyl iodide	Not detected	100		ug/kg	58.9	74-88-4	
Carbon disulfide	Not detected	300		ug/kg	58.9	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	200		ug/kg	58.9	1634-04-4	
Acrylonitrile	Not detected	100		ug/kg	58.9	107-13-1	
2-Butanone (MEK)	Not detected	880		ug/kg	58.9	78-93-3	
Dichlorodifluoromethane	Not detected	300		ug/kg	58.9	75-71-8	
Chloromethane	Not detected	300		ug/kg	58.9	74-87-3	
Vinyl chloride	Not detected	60		ug/kg	58.9	75-01-4	
Bromomethane	Not detected	200		ug/kg	58.9	74-83-9	
Chloroethane	Not detected	300		ug/kg	58.9	75-00-3	



Analytical Laboratory Report

Lab Sample ID: S95158.03 (continued)

Sample Tag: Stockpile-3

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 10/09/18 00:16, Analyst: JML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Trichlorofluoromethane	Not detected	100		ug/kg	58.9	75-69-4	
1,1-Dichloroethene	Not detected	60		ug/kg	58.9	75-35-4	
Methylene chloride	Not detected	100		ug/kg	58.9	75-09-2	
trans-1,2-Dichloroethene	Not detected	60		ug/kg	58.9	156-60-5	
1,1-Dichloroethane	Not detected	60		ug/kg	58.9	75-34-3	
cis-1,2-Dichloroethene	Not detected	60		ug/kg	58.9	156-59-2	
Tetrahydrofuran*	Not detected	1,000		ug/kg	58.9	109-99-9	
Chloroform	Not detected	60		ug/kg	58.9	67-66-3	
Bromochloromethane	Not detected	100		ug/kg	58.9	74-97-5	
1,1,1-Trichloroethane	Not detected	60		ug/kg	58.9	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	3,000		ug/kg	58.9	108-10-1	
2-Hexanone	Not detected	3,000		ug/kg	58.9	591-78-6	
Carbon tetrachloride	Not detected	60		ug/kg	58.9	56-23-5	
Benzene	Not detected	60		ug/kg	58.9	71-43-2	
1,2-Dichloroethane	Not detected	60		ug/kg	58.9	107-06-2	
Trichloroethene	Not detected	60		ug/kg	58.9	79-01-6	
1,2-Dichloropropane	Not detected	60		ug/kg	58.9	78-87-5	
Bromodichloromethane	Not detected	100		ug/kg	58.9	75-27-4	
Dibromomethane	Not detected	300		ug/kg	58.9	74-95-3	
cis-1,3-Dichloropropene	Not detected	60		ug/kg	58.9	10061-01-5	
Toluene	Not detected	60		ug/kg	58.9	108-88-3	
trans-1,3-Dichloropropene	Not detected	60		ug/kg	58.9	10061-02-6	
1,1,2-Trichloroethane	Not detected	60		ug/kg	58.9	79-00-5	
Tetrachloroethene	Not detected	60		ug/kg	58.9	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	60		ug/kg	58.9	110-57-6	
Dibromochloromethane	Not detected	100		ug/kg	58.9	124-48-1	
1,2-Dibromoethane	Not detected	20		ug/kg	58.9	106-93-4	M
Chlorobenzene	Not detected	60		ug/kg	58.9	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	100		ug/kg	58.9	630-20-6	
Ethylbenzene	Not detected	60		ug/kg	58.9	100-41-4	
p,m-Xylene	Not detected	100		ug/kg	58.9		
o-Xylene	Not detected	60		ug/kg	58.9	95-47-6	
Styrene	Not detected	60		ug/kg	58.9	100-42-5	
Isopropylbenzene	Not detected	300		ug/kg	58.9	98-82-8	
Bromoform	Not detected	100		ug/kg	58.9	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	60		ug/kg	58.9	79-34-5	
1,2,3-Trichloropropane	Not detected	100		ug/kg	58.9	96-18-4	
n-Propylbenzene	Not detected	60		ug/kg	58.9	103-65-1	
Bromobenzene	Not detected	100		ug/kg	58.9	108-86-1	
1,3,5-Trimethylbenzene	Not detected	60		ug/kg	58.9	108-67-8	
tert-Butylbenzene	Not detected	60		ug/kg	58.9	98-06-6	
1,2,4-Trimethylbenzene	Not detected	60		ug/kg	58.9	95-63-6	
sec-Butylbenzene	Not detected	60		ug/kg	58.9	135-98-8	
p-Isopropyltoluene	Not detected	100		ug/kg	58.9	99-87-6	
1,3-Dichlorobenzene	Not detected	100		ug/kg	58.9	541-73-1	
1,4-Dichlorobenzene	Not detected	100		ug/kg	58.9	106-46-7	
1,2-Dichlorobenzene	Not detected	100		ug/kg	58.9	95-50-1	
1,2,3-Trimethylbenzene	Not detected	60		ug/kg	58.9	526-73-8	
n-Butylbenzene	Not detected	60		ug/kg	58.9	104-51-8	

M-Result reported to MDL not RDL



Analytical Laboratory Report

Lab Sample ID: S95158.03 (continued)

Sample Tag: Stockpile-3

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 10/09/18 00:16, Analyst: JML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Hexachloroethane	Not detected	400		ug/kg	58.9	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	300		ug/kg	58.9	96-12-8	
1,2,4-Trichlorobenzene	Not detected	390		ug/kg	58.9	120-82-1	
1,2,3-Trichlorobenzene	Not detected	390		ug/kg	58.9	87-61-6	
Naphthalene	Not detected	300		ug/kg	58.9	91-20-3	
2-Methylnaphthalene	Not detected	100		ug/kg	58.9	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S95158.04

Sample Tag: Stockpile-4

Collected Date/Time: 10/04/2018 08:55

Matrix: Soil

COC Reference: 111364

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	4.0	IR
1	40ml Glass	MeOH	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	10/11/18 10:00	CCM	
Mercury Digestion	Completed	SW7471B	10/15/18 11:30	JRH	

Inorganics

Method: SM2540B, Run Date: 10/05/18 10:25, Analyst: JBL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	89	1	1	%	1		

Metals

Method: SW6020A, Run Date: 10/11/18 13:06, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Selenium	Not detected	0.40		mg/kg	227	7782-49-2	

Method: SW6020A, Run Date: 10/11/18 11:42, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	1.85	0.20		mg/kg	227	7440-38-2	
Barium	52.0	1.0		mg/kg	227	7440-39-3	
Cadmium	0.25	0.20		mg/kg	227	7440-43-9	
Chromium	4.91	0.50		mg/kg	227	7440-47-3	
Lead	6.37	0.30		mg/kg	227	7439-92-1	
Silver	Not detected	0.20		mg/kg	227	7440-22-4	

Method: SW7471B, Run Date: 10/15/18 14:44, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.050		mg/kg	56	7439-97-6	

Organics - Volatiles

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 10/09/18 17:39, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	200		ug/kg	61.3	60-29-7	
Acetone	Not detected	1,000		ug/kg	61.3	67-64-1	
Methyl iodide	Not detected	100		ug/kg	61.3	74-88-4	
Carbon disulfide	Not detected	300		ug/kg	61.3	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	200		ug/kg	61.3	1634-04-4	
Acrylonitrile	Not detected	100		ug/kg	61.3	107-13-1	
2-Butanone (MEK)	Not detected	920		ug/kg	61.3	78-93-3	
Dichlorodifluoromethane	Not detected	300		ug/kg	61.3	75-71-8	
Chloromethane	Not detected	300		ug/kg	61.3	74-87-3	
Vinyl chloride	Not detected	60		ug/kg	61.3	75-01-4	
Bromomethane	Not detected	200		ug/kg	61.3	74-83-9	
Chloroethane	Not detected	300		ug/kg	61.3	75-00-3	



Analytical Laboratory Report

Lab Sample ID: S95158.04 (continued)

Sample Tag: Stockpile-4

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 10/09/18 17:39, Analyst: JML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Trichlorofluoromethane	Not detected	100		ug/kg	61.3	75-69-4	
1,1-Dichloroethene	Not detected	60		ug/kg	61.3	75-35-4	
Methylene chloride	Not detected	100		ug/kg	61.3	75-09-2	
trans-1,2-Dichloroethene	Not detected	60		ug/kg	61.3	156-60-5	
1,1-Dichloroethane	Not detected	60		ug/kg	61.3	75-34-3	
cis-1,2-Dichloroethene	Not detected	60		ug/kg	61.3	156-59-2	
Tetrahydrofuran*	Not detected	1,000		ug/kg	61.3	109-99-9	
Chloroform	Not detected	60		ug/kg	61.3	67-66-3	
Bromochloromethane	Not detected	100		ug/kg	61.3	74-97-5	
1,1,1-Trichloroethane	Not detected	60		ug/kg	61.3	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	3,000		ug/kg	61.3	108-10-1	
2-Hexanone	Not detected	3,000		ug/kg	61.3	591-78-6	
Carbon tetrachloride	Not detected	60		ug/kg	61.3	56-23-5	
Benzene	Not detected	60		ug/kg	61.3	71-43-2	
1,2-Dichloroethane	Not detected	60		ug/kg	61.3	107-06-2	
Trichloroethene	Not detected	60		ug/kg	61.3	79-01-6	
1,2-Dichloropropane	Not detected	60		ug/kg	61.3	78-87-5	
Bromodichloromethane	Not detected	100		ug/kg	61.3	75-27-4	
Dibromomethane	Not detected	300		ug/kg	61.3	74-95-3	
cis-1,3-Dichloropropene	Not detected	60		ug/kg	61.3	10061-01-5	
Toluene	Not detected	60		ug/kg	61.3	108-88-3	
trans-1,3-Dichloropropene	Not detected	60		ug/kg	61.3	10061-02-6	
1,1,2-Trichloroethane	Not detected	60		ug/kg	61.3	79-00-5	
Tetrachloroethene	Not detected	60		ug/kg	61.3	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	60		ug/kg	61.3	110-57-6	
Dibromochloromethane	Not detected	100		ug/kg	61.3	124-48-1	
1,2-Dibromoethane	Not detected	20		ug/kg	61.3	106-93-4	M
Chlorobenzene	Not detected	60		ug/kg	61.3	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	100		ug/kg	61.3	630-20-6	
Ethylbenzene	Not detected	60		ug/kg	61.3	100-41-4	
p,m-Xylene	Not detected	100		ug/kg	61.3		
o-Xylene	Not detected	60		ug/kg	61.3	95-47-6	
Styrene	Not detected	60		ug/kg	61.3	100-42-5	
Isopropylbenzene	Not detected	300		ug/kg	61.3	98-82-8	
Bromoform	Not detected	100		ug/kg	61.3	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	60		ug/kg	61.3	79-34-5	
1,2,3-Trichloropropane	Not detected	100		ug/kg	61.3	96-18-4	
n-Propylbenzene	Not detected	60		ug/kg	61.3	103-65-1	
Bromobenzene	Not detected	100		ug/kg	61.3	108-86-1	
1,3,5-Trimethylbenzene	Not detected	60		ug/kg	61.3	108-67-8	
tert-Butylbenzene	Not detected	60		ug/kg	61.3	98-06-6	
1,2,4-Trimethylbenzene	Not detected	60		ug/kg	61.3	95-63-6	
sec-Butylbenzene	Not detected	60		ug/kg	61.3	135-98-8	
p-Isopropyltoluene	Not detected	100		ug/kg	61.3	99-87-6	
1,3-Dichlorobenzene	Not detected	100		ug/kg	61.3	541-73-1	
1,4-Dichlorobenzene	Not detected	100		ug/kg	61.3	106-46-7	
1,2-Dichlorobenzene	Not detected	100		ug/kg	61.3	95-50-1	
1,2,3-Trimethylbenzene	Not detected	60		ug/kg	61.3	526-73-8	
n-Butylbenzene	Not detected	60		ug/kg	61.3	104-51-8	

M-Result reported to MDL not RDL



Analytical Laboratory Report

Lab Sample ID: S95158.04 (continued)

Sample Tag: Stockpile-4

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 10/09/18 17:39, Analyst: JML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Hexachloroethane	Not detected	400		ug/kg	61.3	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	300		ug/kg	61.3	96-12-8	
1,2,4-Trichlorobenzene	Not detected	400		ug/kg	61.3	120-82-1	
1,2,3-Trichlorobenzene	Not detected	400		ug/kg	61.3	87-61-6	
Naphthalene	Not detected	300		ug/kg	61.3	91-20-3	
2-Methylnaphthalene	Not detected	100		ug/kg	61.3	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S95158.05

Sample Tag: Stockpile-5

Collected Date/Time: 10/04/2018 08:35

Matrix: Soil

COC Reference: 111364

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	4.0	IR
1	40ml Glass	MeOH	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	10/11/18 10:00	CCM	
Mercury Digestion	Completed	SW7471B	10/15/18 11:30	JRH	

Inorganics

Method: SM2540B, Run Date: 10/05/18 10:25, Analyst: JBL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	90	1	1	%	1		

Metals

Method: SW6020A, Run Date: 10/11/18 13:07, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Selenium	Not detected	0.40		mg/kg	219	7782-49-2	

Method: SW6020A, Run Date: 10/11/18 11:44, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	4.02	0.20		mg/kg	219	7440-38-2	
Barium	47.8	1.0		mg/kg	219	7440-39-3	
Cadmium	Not detected	0.20		mg/kg	219	7440-43-9	
Chromium	6.46	0.50		mg/kg	219	7440-47-3	
Lead	6.70	0.30		mg/kg	219	7439-92-1	
Silver	Not detected	0.20		mg/kg	219	7440-22-4	

Method: SW7471B, Run Date: 10/15/18 14:46, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	0.070	0.050		mg/kg	54	7439-97-6	

Organics - Volatiles

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 10/09/18 00:56, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	200		ug/kg	60.1	60-29-7	
Acetone	Not detected	1,000		ug/kg	60.1	67-64-1	
Methyl iodide	Not detected	100		ug/kg	60.1	74-88-4	
Carbon disulfide	Not detected	300		ug/kg	60.1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	200		ug/kg	60.1	1634-04-4	
Acrylonitrile	Not detected	100		ug/kg	60.1	107-13-1	
2-Butanone (MEK)	Not detected	900		ug/kg	60.1	78-93-3	
Dichlorodifluoromethane	Not detected	300		ug/kg	60.1	75-71-8	
Chloromethane	Not detected	300		ug/kg	60.1	74-87-3	
Vinyl chloride	Not detected	60		ug/kg	60.1	75-01-4	
Bromomethane	Not detected	200		ug/kg	60.1	74-83-9	
Chloroethane	Not detected	300		ug/kg	60.1	75-00-3	



Analytical Laboratory Report

Lab Sample ID: S95158.05 (continued)

Sample Tag: Stockpile-5

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 10/09/18 00:56, Analyst: JML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Trichlorofluoromethane	Not detected	100		ug/kg	60.1	75-69-4	
1,1-Dichloroethene	Not detected	60		ug/kg	60.1	75-35-4	
Methylene chloride	Not detected	100		ug/kg	60.1	75-09-2	
trans-1,2-Dichloroethene	Not detected	60		ug/kg	60.1	156-60-5	
1,1-Dichloroethane	Not detected	60		ug/kg	60.1	75-34-3	
cis-1,2-Dichloroethene	Not detected	60		ug/kg	60.1	156-59-2	
Tetrahydrofuran*	Not detected	1,000		ug/kg	60.1	109-99-9	
Chloroform	Not detected	60		ug/kg	60.1	67-66-3	
Bromochloromethane	Not detected	100		ug/kg	60.1	74-97-5	
1,1,1-Trichloroethane	Not detected	60		ug/kg	60.1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	3,000		ug/kg	60.1	108-10-1	
2-Hexanone	Not detected	3,000		ug/kg	60.1	591-78-6	
Carbon tetrachloride	Not detected	60		ug/kg	60.1	56-23-5	
Benzene	Not detected	60		ug/kg	60.1	71-43-2	
1,2-Dichloroethane	Not detected	60		ug/kg	60.1	107-06-2	
Trichloroethene	Not detected	60		ug/kg	60.1	79-01-6	
1,2-Dichloropropane	Not detected	60		ug/kg	60.1	78-87-5	
Bromodichloromethane	Not detected	100		ug/kg	60.1	75-27-4	
Dibromomethane	Not detected	300		ug/kg	60.1	74-95-3	
cis-1,3-Dichloropropene	Not detected	60		ug/kg	60.1	10061-01-5	
Toluene	Not detected	60		ug/kg	60.1	108-88-3	
trans-1,3-Dichloropropene	Not detected	60		ug/kg	60.1	10061-02-6	
1,1,2-Trichloroethane	Not detected	60		ug/kg	60.1	79-00-5	
Tetrachloroethene	Not detected	60		ug/kg	60.1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	60		ug/kg	60.1	110-57-6	
Dibromochloromethane	Not detected	100		ug/kg	60.1	124-48-1	
1,2-Dibromoethane	Not detected	20		ug/kg	60.1	106-93-4	M
Chlorobenzene	Not detected	60		ug/kg	60.1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	100		ug/kg	60.1	630-20-6	
Ethylbenzene	Not detected	60		ug/kg	60.1	100-41-4	
p,m-Xylene	Not detected	100		ug/kg	60.1		
o-Xylene	Not detected	60		ug/kg	60.1	95-47-6	
Styrene	Not detected	60		ug/kg	60.1	100-42-5	
Isopropylbenzene	Not detected	300		ug/kg	60.1	98-82-8	
Bromoform	Not detected	100		ug/kg	60.1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	60		ug/kg	60.1	79-34-5	
1,2,3-Trichloropropane	Not detected	100		ug/kg	60.1	96-18-4	
n-Propylbenzene	Not detected	60		ug/kg	60.1	103-65-1	
Bromobenzene	Not detected	100		ug/kg	60.1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	60		ug/kg	60.1	108-67-8	
tert-Butylbenzene	Not detected	60		ug/kg	60.1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	60		ug/kg	60.1	95-63-6	
sec-Butylbenzene	Not detected	60		ug/kg	60.1	135-98-8	
p-Isopropyltoluene	Not detected	100		ug/kg	60.1	99-87-6	
1,3-Dichlorobenzene	Not detected	100		ug/kg	60.1	541-73-1	
1,4-Dichlorobenzene	Not detected	100		ug/kg	60.1	106-46-7	
1,2-Dichlorobenzene	Not detected	100		ug/kg	60.1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	60		ug/kg	60.1	526-73-8	
n-Butylbenzene	Not detected	60		ug/kg	60.1	104-51-8	

M-Result reported to MDL not RDL



Analytical Laboratory Report

Lab Sample ID: S95158.05 (continued)

Sample Tag: Stockpile-5

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 10/09/18 00:56, Analyst: JML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Hexachloroethane	Not detected	400		ug/kg	60.1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	300		ug/kg	60.1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	400		ug/kg	60.1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	400		ug/kg	60.1	87-61-6	
Naphthalene	Not detected	300		ug/kg	60.1	91-20-3	
2-Methylnaphthalene	Not detected	100		ug/kg	60.1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S95158.06

Sample Tag: Stockpile-6

Collected Date/Time: 10/04/2018 09:05

Matrix: Soil

COC Reference: 111364

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	4.0	IR
1	40ml Glass	MeOH	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	10/11/18 10:00	CCM	
Mercury Digestion	Completed	SW7471B	10/15/18 11:30	JRH	

Inorganics

Method: SM2540B, Run Date: 10/05/18 10:25, Analyst: JBL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	89	1	1	%	1		

Metals

Method: SW6020A, Run Date: 10/11/18 13:17, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Selenium	Not detected	0.40		mg/kg	228	7782-49-2	

Method: SW6020A, Run Date: 10/11/18 12:01, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	3.27	0.20		mg/kg	228	7440-38-2	
Barium	29.0	1.0		mg/kg	228	7440-39-3	
Cadmium	Not detected	0.20		mg/kg	228	7440-43-9	
Chromium	4.31	0.50		mg/kg	228	7440-47-3	
Lead	5.94	0.30		mg/kg	228	7439-92-1	
Silver	Not detected	0.20		mg/kg	228	7440-22-4	

Method: SW7471B, Run Date: 10/15/18 14:47, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.050		mg/kg	56	7439-97-6	

Organics - Volatiles

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 10/09/18 01:16, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	200		ug/kg	59.1	60-29-7	
Acetone	Not detected	1,000		ug/kg	59.1	67-64-1	
Methyl iodide	Not detected	100		ug/kg	59.1	74-88-4	
Carbon disulfide	Not detected	300		ug/kg	59.1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	200		ug/kg	59.1	1634-04-4	
Acrylonitrile	Not detected	100		ug/kg	59.1	107-13-1	
2-Butanone (MEK)	Not detected	890		ug/kg	59.1	78-93-3	
Dichlorodifluoromethane	Not detected	300		ug/kg	59.1	75-71-8	
Chloromethane	Not detected	300		ug/kg	59.1	74-87-3	
Vinyl chloride	Not detected	60		ug/kg	59.1	75-01-4	
Bromomethane	Not detected	200		ug/kg	59.1	74-83-9	
Chloroethane	Not detected	300		ug/kg	59.1	75-00-3	



Analytical Laboratory Report

Lab Sample ID: S95158.06 (continued)

Sample Tag: Stockpile-6

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 10/09/18 01:16, Analyst: JML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Trichlorofluoromethane	Not detected	100		ug/kg	59.1	75-69-4	
1,1-Dichloroethene	Not detected	60		ug/kg	59.1	75-35-4	
Methylene chloride	Not detected	100		ug/kg	59.1	75-09-2	
trans-1,2-Dichloroethene	Not detected	60		ug/kg	59.1	156-60-5	
1,1-Dichloroethane	Not detected	60		ug/kg	59.1	75-34-3	
cis-1,2-Dichloroethene	Not detected	60		ug/kg	59.1	156-59-2	
Tetrahydrofuran*	Not detected	1,000		ug/kg	59.1	109-99-9	
Chloroform	Not detected	60		ug/kg	59.1	67-66-3	
Bromochloromethane	Not detected	100		ug/kg	59.1	74-97-5	
1,1,1-Trichloroethane	Not detected	60		ug/kg	59.1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	3,000		ug/kg	59.1	108-10-1	
2-Hexanone	Not detected	3,000		ug/kg	59.1	591-78-6	
Carbon tetrachloride	Not detected	60		ug/kg	59.1	56-23-5	
Benzene	Not detected	60		ug/kg	59.1	71-43-2	
1,2-Dichloroethane	Not detected	60		ug/kg	59.1	107-06-2	
Trichloroethene	Not detected	60		ug/kg	59.1	79-01-6	
1,2-Dichloropropane	Not detected	60		ug/kg	59.1	78-87-5	
Bromodichloromethane	Not detected	100		ug/kg	59.1	75-27-4	
Dibromomethane	Not detected	300		ug/kg	59.1	74-95-3	
cis-1,3-Dichloropropene	Not detected	60		ug/kg	59.1	10061-01-5	
Toluene	Not detected	60		ug/kg	59.1	108-88-3	
trans-1,3-Dichloropropene	Not detected	60		ug/kg	59.1	10061-02-6	
1,1,2-Trichloroethane	Not detected	60		ug/kg	59.1	79-00-5	
Tetrachloroethene	Not detected	60		ug/kg	59.1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	60		ug/kg	59.1	110-57-6	
Dibromochloromethane	Not detected	100		ug/kg	59.1	124-48-1	
1,2-Dibromoethane	Not detected	20		ug/kg	59.1	106-93-4	M
Chlorobenzene	Not detected	60		ug/kg	59.1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	100		ug/kg	59.1	630-20-6	
Ethylbenzene	Not detected	60		ug/kg	59.1	100-41-4	
p,m-Xylene	Not detected	100		ug/kg	59.1		
o-Xylene	Not detected	60		ug/kg	59.1	95-47-6	
Styrene	Not detected	60		ug/kg	59.1	100-42-5	
Isopropylbenzene	Not detected	300		ug/kg	59.1	98-82-8	
Bromoform	Not detected	100		ug/kg	59.1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	60		ug/kg	59.1	79-34-5	
1,2,3-Trichloropropane	Not detected	100		ug/kg	59.1	96-18-4	
n-Propylbenzene	Not detected	60		ug/kg	59.1	103-65-1	
Bromobenzene	Not detected	100		ug/kg	59.1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	60		ug/kg	59.1	108-67-8	
tert-Butylbenzene	Not detected	60		ug/kg	59.1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	60		ug/kg	59.1	95-63-6	
sec-Butylbenzene	Not detected	60		ug/kg	59.1	135-98-8	
p-Isopropyltoluene	Not detected	100		ug/kg	59.1	99-87-6	
1,3-Dichlorobenzene	Not detected	100		ug/kg	59.1	541-73-1	
1,4-Dichlorobenzene	Not detected	100		ug/kg	59.1	106-46-7	
1,2-Dichlorobenzene	Not detected	100		ug/kg	59.1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	60		ug/kg	59.1	526-73-8	
n-Butylbenzene	Not detected	60		ug/kg	59.1	104-51-8	

M-Result reported to MDL not RDL



Analytical Laboratory Report

Lab Sample ID: S95158.06 (continued)

Sample Tag: Stockpile-6

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 10/09/18 01:16, Analyst: JML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Hexachloroethane	Not detected	400		ug/kg	59.1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	300		ug/kg	59.1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	390		ug/kg	59.1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	390		ug/kg	59.1	87-61-6	
Naphthalene	Not detected	300		ug/kg	59.1	91-20-3	
2-Methylnaphthalene	Not detected	100		ug/kg	59.1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S95158.07

Sample Tag: MeOH Blank-1

Collected Date/Time: 10/04/2018 00:01

Matrix: Methanol

COC Reference: 111364

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	MeOH	Yes	4.0	IR

Organics - Volatiles

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 10/08/18 22:57, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	200		ug/kg	50	60-29-7	
Acetone	Not detected	1,000		ug/kg	50	67-64-1	
Methyl iodide	Not detected	100		ug/kg	50	74-88-4	
Carbon disulfide	Not detected	300		ug/kg	50	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	200		ug/kg	50	1634-04-4	
Acrylonitrile	Not detected	100		ug/kg	50	107-13-1	
2-Butanone (MEK)	Not detected	750		ug/kg	50	78-93-3	
Dichlorodifluoromethane	Not detected	300		ug/kg	50	75-71-8	
Chloromethane	Not detected	300		ug/kg	50	74-87-3	
Vinyl chloride	Not detected	50		ug/kg	50	75-01-4	
Bromomethane	Not detected	200		ug/kg	50	74-83-9	
Chloroethane	Not detected	300		ug/kg	50	75-00-3	
Trichlorofluoromethane	Not detected	100		ug/kg	50	75-69-4	
1,1-Dichloroethene	Not detected	50		ug/kg	50	75-35-4	
Methylene chloride	Not detected	100		ug/kg	50	75-09-2	
trans-1,2-Dichloroethene	Not detected	50		ug/kg	50	156-60-5	
1,1-Dichloroethane	Not detected	50		ug/kg	50	75-34-3	
cis-1,2-Dichloroethene	Not detected	50		ug/kg	50	156-59-2	
Tetrahydrofuran*	Not detected	1,000		ug/kg	50	109-99-9	
Chloroform	Not detected	50		ug/kg	50	67-66-3	
Bromochloromethane	Not detected	100		ug/kg	50	74-97-5	
1,1,1-Trichloroethane	Not detected	50		ug/kg	50	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	3,000		ug/kg	50	108-10-1	
2-Hexanone	Not detected	3,000		ug/kg	50	591-78-6	
Carbon tetrachloride	Not detected	50		ug/kg	50	56-23-5	
Benzene	Not detected	50		ug/kg	50	71-43-2	
1,2-Dichloroethane	Not detected	50		ug/kg	50	107-06-2	
Trichloroethene	Not detected	50		ug/kg	50	79-01-6	
1,2-Dichloropropane	Not detected	50		ug/kg	50	78-87-5	
Bromodichloromethane	Not detected	100		ug/kg	50	75-27-4	
Dibromomethane	Not detected	300		ug/kg	50	74-95-3	
cis-1,3-Dichloropropene	Not detected	50		ug/kg	50	10061-01-5	
Toluene	Not detected	50		ug/kg	50	108-88-3	
trans-1,3-Dichloropropene	Not detected	50		ug/kg	50	10061-02-6	
1,1,2-Trichloroethane	Not detected	50		ug/kg	50	79-00-5	
Tetrachloroethene	Not detected	50		ug/kg	50	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	50		ug/kg	50	110-57-6	
Dibromochloromethane	Not detected	100		ug/kg	50	124-48-1	
1,2-Dibromoethane	Not detected	20		ug/kg	50	106-93-4	M
Chlorobenzene	Not detected	50		ug/kg	50	108-90-7	

M-Result reported to MDL not RDL



Analytical Laboratory Report

Lab Sample ID: S95158.07 (continued)

Sample Tag: MeOH Blank-1

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 10/08/18 22:57, Analyst: JML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,1,2-Tetrachloroethane	Not detected	100		ug/kg	50	630-20-6	
Ethylbenzene	Not detected	50		ug/kg	50	100-41-4	
p,m-Xylene	Not detected	100		ug/kg	50		
o-Xylene	Not detected	50		ug/kg	50	95-47-6	
Styrene	Not detected	50		ug/kg	50	100-42-5	
Isopropylbenzene	Not detected	300		ug/kg	50	98-82-8	
Bromoform	Not detected	100		ug/kg	50	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	50		ug/kg	50	79-34-5	
1,2,3-Trichloropropane	Not detected	100		ug/kg	50	96-18-4	
n-Propylbenzene	Not detected	50		ug/kg	50	103-65-1	
Bromobenzene	Not detected	100		ug/kg	50	108-86-1	
1,3,5-Trimethylbenzene	Not detected	50		ug/kg	50	108-67-8	
tert-Butylbenzene	Not detected	50		ug/kg	50	98-06-6	
1,2,4-Trimethylbenzene	Not detected	50		ug/kg	50	95-63-6	
sec-Butylbenzene	Not detected	50		ug/kg	50	135-98-8	
p-Isopropyltoluene	Not detected	100		ug/kg	50	99-87-6	
1,3-Dichlorobenzene	Not detected	100		ug/kg	50	541-73-1	
1,4-Dichlorobenzene	Not detected	100		ug/kg	50	106-46-7	
1,2-Dichlorobenzene	Not detected	100		ug/kg	50	95-50-1	
1,2,3-Trimethylbenzene	Not detected	50		ug/kg	50	526-73-8	
n-Butylbenzene	Not detected	50		ug/kg	50	104-51-8	
Hexachloroethane	Not detected	300		ug/kg	50	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	300		ug/kg	50	96-12-8	
1,2,4-Trichlorobenzene	Not detected	330		ug/kg	50	120-82-1	
1,2,3-Trichlorobenzene	Not detected	330		ug/kg	50	87-61-6	
Naphthalene	Not detected	300		ug/kg	50	91-20-3	
2-Methylnaphthalene	Not detected	100		ug/kg	50	91-57-6	

Merit Laboratories Login Checklist

Lab Set ID:S95158

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

Project: RACER Hemphill Rd

Submitted: 10/05/2018 08:00 Login User: SRS

Attention: Clifford Yantz

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

Phone: 414-837-3607 FAX:

Email: Clifford.Yantz@obg.com

Selection	Description	Note
-----------	-------------	------

Sample Receiving

- | | | |
|-----|--|--|
| 01. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples are received at 4C +/- 2C Thermometer # IR 4.0 |
| 02. | <input checked="" type="checkbox"/> Yes <input 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 |

Chain of Custody

- | | | |
|-----|--|--|
| 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: |

Preservation

- | | | |
|-----|--|---|
| 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? |

Bottle Conditions

- | | | |
|-----|--|---|
| 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

111364

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME: Clifford Vantz
 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.: _____
 E-MAIL ADDRESS: Clifford.Vantz@obg.com QUOTE NO.: _____

CONTACT NAME: _____ SAME
 COMPANY: _____
 ADDRESS: _____
 CITY: _____ STATE: _____ ZIP CODE: _____
 PHONE NO.: _____ E-MAIL ADDRESS: _____

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

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

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID
 SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

Containers & Preservatives

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives								VOCs	P&A Metals	Certifications	Project Locations	Special Instructions
	DATE	TIME				NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER						
95158.01	10/4/18	953	Stock pile - 1	S	2									X	X			
.02		937	Stock pile - 2											X	X			
.03		925	Stock pile - 3											X	X			
.04		855	Stock pile - 4											X	X			
.05		835	Stock pile - 5											X	X			
.06		905	Stock pile - 6											X	X			
.07		-	MeOH Blank-1	GC	1									X	X	KS		

RELINQUISHED BY: KSC OBG Sampler
 RECEIVED BY: H.A. Miller
 SIGNATURE/ORGANIZATION: _____
 DATE: 10/4/18 TIME: 1455
 DATE: 10/4/18 TIME: 14:51

RELINQUISHED BY: H.A. Miller
 RECEIVED BY: Merit Fudge
 SIGNATURE/ORGANIZATION: _____
 DATE: 10/4/18 TIME: 1720
 DATE: 10/4/18 TIME: 1730

RELINQUISHED BY: Merit Fudge
 RECEIVED BY: Sam Smith
 SIGNATURE/ORGANIZATION: _____
 DATE: 10/5/18 TIME: 800
 DATE: 10/5/18 TIME: 800

SEAL NO.: _____ SEAL INTACT: YES NO INITIALS: _____
 SEAL NO.: _____ SEAL INTACT: YES NO INITIALS: _____

NOTES: _____ TEMP. ON ARRIVAL: 4.0

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



Analytical Laboratory Report

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

Report to

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

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

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

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



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
Sample Receiving		
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
Chain of Custody		
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:
Preservation		
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?
Bottle Conditions		
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.: 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 - VP
 SAMPLER(S) - PLEASE PRINT/SIGN NAME: Kevin Schneider *KCS*
 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
910056.01	UP-1S	10/26/18	952	1003	-27	-2	48	13728
.02	* UP-1D	↓	953	1007	-26	-25	1	18380
.03	UP-2S		1049	1058	-26	-2	5	16825
.04	UP-2D		1051	1106	-25	-2	102	18334
.05	UP-3S		1141	1202	-24	-4.5	10	16835
.06	UP-3D		1143	1224	-28	-3	18	18325
.07	DUP-1		-	-	-24	-4.5	N/A	23692

Temperature (Fahrenheit)			Pressure (inches of Hg)		
Interior	Ambient	Notes	Interior	Ambient	Notes
Start	41 °F		Start	29.97 in	
Stop	45 °F		Stop	29.98 in	

Notes: * stalled - water in line

RELINQUISHED BY: *KCS* 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: 14:00

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

OBG

THERE'S A WAY

